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Hitachi Storage Command Suite

Hitachi Device Manager Software
Command Line Interface (CLI) User's Guide

Hitachi Data Systems

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Hitachi Device Manager Command Line Interface (CLI) User's Guide

Preface

This document describes how to use the Device Manager Command Line Interface (CLI) and Command Line Interface Extended edition (CLIEX) components, and how to interpret command syntax.

This preface includes the following information:

- Intended Audience
- Software Version
- Release Notes
- Document Revision Level
- Document Organization
- Referenced Documents
- Document Conventions
- Convention for Storage Capacity Values
- Getting Help
- Comments

Notice: The use of Hitachi Device Manager and all other Hitachi Data Systems products is governed by the terms of your agreement(s) with Hitachi Data Systems.

Intended Audience

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 Device Manager CLI (e.g., Solaris OS, Windows OS, HP-UX OS, and Linux OS).

Software Version

This document revision applies to Hitachi Device Manager software version 6.4.

Release Notes

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

Document Revision Level

Revision	Date	Description
MK-91HC007-P	November 2001	Preliminary Release
MK-91HC007-00	January 2002	Revision 0, supersedes and replaces MK-91HC007-P
MK-91HC007-1P	May 2002	Preliminary Release of Revision 1, supersedes and replaces MK-91HC007-00
MK-91HC007-01	June 2002	Revision 1, supersedes and replaces MK-91HC007-1P
MK-91HC007-02	August 2002	Revision 2, supersedes and replaces MK-91HC007-01
MK-91HC007-03	Nov 2002	Revision 3, supersedes and replaces MK-91HC007-02
MK-91HC007-04	May 2003	Revision 4, supersedes and replaces MK-91HC007-03
MK-91HC007-05	Sept 2003	Revision 5, supersedes and replaces MK-91HC007-04
MK-91HC007-06	January 2004	Revision 6, supersedes and replaces MK-91HC007-05
MK-91HC007-07	April 2004	Revision 7, supersedes and replaces MK-91HC007-06
MK-91HC007-08	August 2004	Revision 8, supersedes and replaces MK-91HC007-07
MK-91HC007-09	October 2004	Revision 9, supersedes and replaces MK-91HC007-08
MK-91HC007-10	March 2005	Revision 10, supersedes and replaces MK-91HC007-09
MK-91HC007-11	June 2005	Revision 11, supersedes and replaces MK-91HC007-10
MK-91HC007-12	August 2005	Revision 12, supersedes and replaces MK-91HC007-11
MK-91HC007-13	November 2005	Revision 13, supersedes and replaces MK-91HC007-12
MK-91HC007-14	December 2005	Revision 14, supersedes and replaces MK-91HC007-13
MK-91HC007-15	February 2006	Revision 15, supersedes and replaces MK-91HC007-14
MK-91HC007-16	June 2006	Revision 16, supersedes and replaces MK-91HC007-15
MK-91HC007-17	November 2006	Revision 17, supersedes and replaces MK-91HC007-16
MK-91HC007-18	February 2007	Revision 18, supersedes and replaces MK-91HC007-17
MK-91HC007-19	June 2007	Revision 19, supersedes and replaces MK-91HC007-18
MK-91HC007-20	October 2007	Revision 20, supersedes and replaces MK-91HC007-19
MK-91HC007-21	January 2008	Revision 21, supersedes and replaces MK-91HC007-20
MK-91HC007-22	May 2008	Revision 22, supersedes and replaces MK-91HC007-21
MK-91HC007-23	February 2009	Revision 23, supersedes and replaces MK-91HC007-22
MK-91HC007-24	July 2009	Revision 24, supersedes and replaces MK-91HC007-23
MK-91HC007-25	October 2009	Revision 25, supersedes and replaces MK-91HC007-24
MK-91HC007-26	December 2009	Revision 26, supersedes and replaces MK-91HC007-25
MK-91HC007-27	June 2010	Revision 27, supersedes and replaces MK-91HC007-26

Document Organization

The following table provides an overview of the contents and organization of this document. Click the chapter title in the left column to go to that chapter. The first page of each chapter provides links to the sections in that chapter.

Chapter	Description
Overview	Provides an overview of Device Manager Command Line Interface (CLI) and Command Line Interface Extended edition (CLIEX).
System Requirements and Set Up (CLI)	Lists the system requirements for launching and using the Device Manager CLI. For system requirements and set up for CLIEX.
Command Syntax (CLI)	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.
Command Descriptions (CLI)	Provides CLI command descriptions, lists the parameters available for each command, and provides examples.
Device Manager Properties File (CLI)	Describes how to specify options and parameters by using the Device Manager CLI properties file. It also describes how to change certain properties by entering commands on the command line.
System Requirements and Set Up (CLIEX)	Describes system requirements and specifications for operating Device Manager CLIEX.
Command Syntax (CLIEX)	Describes the command syntax for CLIEX commands and provides additional information that you should be aware of before using the CLIEX.
Command Descriptions (CLIEX)	Provides CLIEX command descriptions, lists the parameters available for each CLIEX command, and describes the output of each command.
Device Manager Properties File (CLIEX)	Explains the configuration of the Device Manager CLIEX properties file and log file, and how to create a new properties file.
Troubleshooting	Describes appropriate actions to take if there is a problem with Device Manager CLI or CLIEX.
Using a DTD with Device Manager CLI	Describes how to create and use a Document Type Definition (DTD).
Acronyms and Abbreviations	Defines the acronyms and abbreviations used in this document.
Index	Lists the topics in this document in alphabetical order.

Referenced Documents

The following Hitachi referenced documents can be found on the applicable Hitachi documentation CD:

Hitachi Storage Command Suite documents:

- Hitachi Storage Command Suite Server Installation Guide, MK-98HC150
- Hitachi Device Manager Server Configuration and Operation Guide, MK-08HC157
- Hitachi Device Manager Agent Installation Guide, MK-92HC019
- Hitachi Device Manager Error Codes, MK-92HC016
- Hitachi Device Manager Getting Started Guide, MK-98HC149
- Hitachi Device Manager Mainframe Agent User's Guide, MK-96HC130
- Hitachi Tiered Storage Manager User's Guide, MK-94HC090
- Hitachi Tiered Storage Manager Server Configuration and Operation Guide, MK-08HC158

Document Conventions

This document uses the following typographic conventions:

Convention	Description
Bold	Indicates text on a window, other than the window title, including menus, menu options, buttons, fields, and labels. Example: Click **OK**.
Italic	Indicates a variable, which is a placeholder for actual text provided by the user or system. Example: copy source-file target-file ***Note:*** Angled brackets (< >) are also used to indicate variables.
screen/code	Indicates text that is displayed on screen or entered by the user. Example: # pairdisplay -g oradb
< > angled brackets	Indicates a variable, which is a placeholder for actual text provided by the user or system. Example: # pairdisplay -g <group> ***Note:*** Italic font is also used to indicate variables.
[ ] square brackets	Indicates optional values. Example: [a	b] indicates that you can choose a, b, or nothing.
{ } braces	Indicates required or expected values. Example: { a	b } indicates that you must choose either a or b.
	vertical bar	Indicates that you have a choice between two or more options or arguments. Examples: [a	b] indicates that you can choose a, b, or nothing. { a	b } indicates that you must choose either a or b.

This document uses the following icons to draw attention to information:

Icon	Label	Description
⚠️	Note	Calls attention to important and/or additional information.
💡	Tip	Provides helpful information, guidelines, or suggestions for performing tasks more effectively.
⚠️	Caution	Warns the user of adverse conditions and/or consequences (e.g., disruptive operations).
⚠️	WARNING	Warns the user of severe conditions and/or consequences (e.g., destructive operations).

Convention for Storage Capacity Values

Physical storage capacity values (e.g., disk drive capacity) are calculated based on the following values:

Physical Capacity Unit	Value
1 KB	1,000 bytes
1 MB	$1,000^2$ bytes
1 GB	$1,000^3$ bytes
1 TB	$1,000^4$ bytes
1 PB	$1,000^5$ bytes
1 EB	$1,000^6$ bytes

Logical storage capacity values (e.g., logical device capacity) are calculated based on the following values:

Logical Capacity Unit	Value
1 KB	$1,024 (2^{10})$ bytes
1 MB	1,024 KB or $1,024^2$ bytes
1 GB	1,024 MB or $1,024^3$ bytes
1 TB	1,024 GB or $1,024^4$ bytes
1 PB	1,024 TB or $1,024^5$ bytes
1 EB	1,024 PB or $1,024^6$ bytes
1 BLOCK	512 BYTES

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Getting Help

The Hitachi Data Systems Support Center staff is available 24 hours a day, seven days a week. To reach us, please visit the support Web site for current telephone numbers and other contact information: http://www.hds.com/services/support/. If you purchased this product from an authorized HDS reseller, contact that reseller for support.

Before calling the Hitachi Data Systems Support Center, please provide as much information about the problem as possible, including:

- The circumstances surrounding the error or failure.

- The exact content of any error message(s) displayed on the host system(s).

Comments

Please send us your comments on this document: doc.comments@hds.com. Include the document title, number, and revision, and refer to specific section(s) and paragraph(s) whenever possible.

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

Hitachi Device Manager Command Line Interface (CLI) User's Guide

Overview

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

- □ Overview of Device Manager
- □ Overview of Device Manager CLI and CLIEX
- □ Device Manager Licenses
- □ Downloading CLI and CLIEX from the Device Manager Server

Hitachi Device Manager Command Line Interface (CLI) User's Guide

Overview of Device Manager

Device Manager provides a consistent, easy to use, and easy to configure interface for managing storage products. It 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. It 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. You can 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.

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.

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

Overview of Device Manager CLI and CLIEX

The CLI enables you to acquire configuration information and change the settings of the storage subsystem managed by Device Manager by issuing commands from a command line prompt.

The Device Manager provides two types of command line interface: Device Manager CLI (`HiCommandCLI`) and Device Manager CLIEX (`hdvmcliex`).

The Command Line Interface (CLI) provides functions for collecting configuration information and modifying settings for a storage subsystem managed by 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 Device Manager.
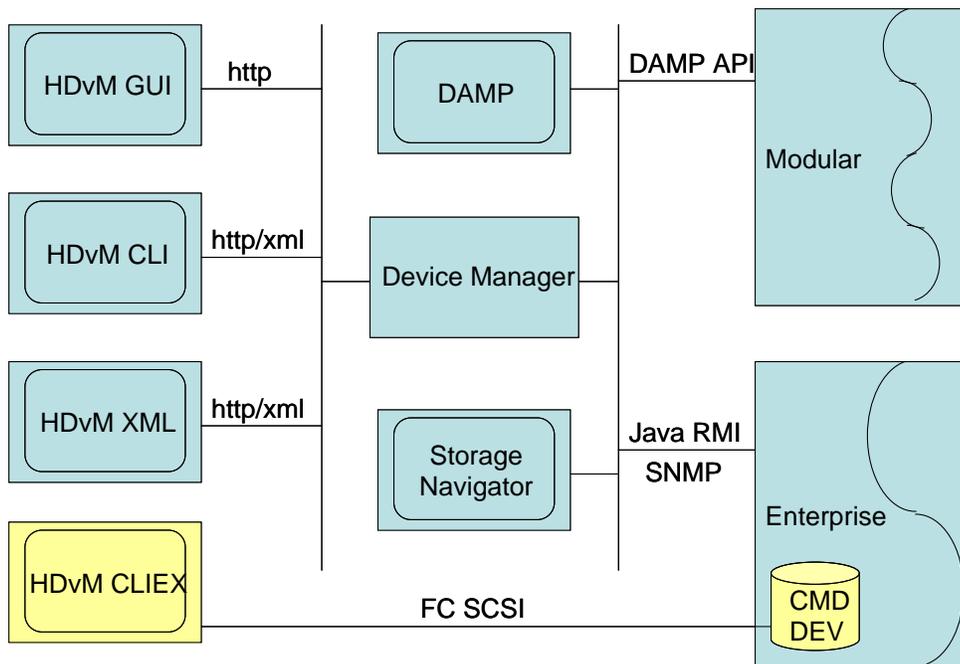
Figure 1-1   Device Manager Communication Protocols

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

Device Manager CLI

As with the Web Client, Device Manager CLI communicates with the Device Manager server to issue requests to the storage subsystem and provides means to check replies from the Device Manager server.

Device Manager CLI enables you to create a script that runs several commands in a specific order, and perform batch operations for the Device Manager server. Therefore, using Device Manager CLI allows efficient operation by the system administrator when setting large volumes of predetermined content, such as when making initial settings for the storage subsystem.

Table 1-1 and Table 1-2 describe the functions supported by Device Manager CLI for each storage subsystem.

Notes regarding the SMI-S Enabled subsystem

Device Manager CLI supports the following functions that allow Tiered Storage Manager to use, as external subsystems, storage subsystems (SMI-S Enabled subsystems) managed by an SMI-S provider:

– Registration and deletion of storage subsystems

– Acquisition of storage subsystem information

– Refreshing of storage subsystems

For details about the SMI-S Enabled subsystems supported by Device Manager, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

Table 1-1   Functions Supported by Device Manager CLI (1/2)

Function	Storage Subsystem			
	USP V/VM	Hitachi USP	Lightning 9900V	Lightning 9900
Detection and removal of storage subsystems	Y	Y	Y	Y
Acquisition of storage subsystem information	Y	Y	Y	Y
Assignment and deletion of LUNs	Y[#1]	Y[#1]	Y[#1]	Y[#1]
Setting and releasing of LUN security for LUNs	Y	Y	Y	Y
Creation and deletion of LDEVs	Y[#2]	Y[#2]	Y[#2]	Y[#2]
Viewing of Data Retention or Open LDEV Guard information	Y	Y	Y	--
Configuring LUSE volumes while LUNs are being assigned	Y	Y	Y	Y
Configuring or releasing LUSE volumes when LDEVs for which LUNs are not assigned are used	Y	Y	Y	--
Creation and deletion of array groups	--	--	--	--

Function	Storage Subsystem			
	USP V/VM	Hitachi USP	Lightning 9900V	Lightning 9900
Creation of external array groups and assignment of LUs	Y	N	--	--
Allocation and removal of spare drives	--	--	--	--
Modification of port attributes	Y	Y	Y	Y
Modification of Fibre Channel adapter attributes	Y	Y	Y	Y
Physical View display of storage subsystems	N	N	N	N
Viewing of ShadowImage copy pair information	Y	Y	Y	Y
Creation, status modification, and deletion of ShadowImage copy pairs	Y	Y	Y	Y
Viewing of TrueCopy copy pair information	Y	Y	Y	Y
Creation, status modification, and deletion of TrueCopy copy pairs	Y	Y	Y	Y
Viewing of QuickShadow/Copy-on-Write Snapshot copy pair information	Y	Y	--	--
Creation, status modification, and deletion of QuickShadow/Copy-on-Write Snapshot copy pairs	N	N	--	--
Viewing of Universal Replicator copy pair information	Y	Y	--	--
Creation, status modification, and deletion of Universal Replicator copy pairs	Y	Y	--	--
Viewing of Simple Data Recovery copy pair information	--	--	--	--
Viewing of CLPR information	Y	Y	--	--
Modification of CLPR information	N	N	--	--
Viewing of SLPR information	Y	Y	--	--
Modification of SLPR information	N	N	--	--
Configuration of command devices	Y	Y	Y	Y
Setting of security for command devices	Y	Y	Y	Y
Management of LUN groups	--	--	--	Y
Management of WWN groups	--	--	--	Y
Viewing of mainframe volume information	Y	Y	Y	Y
Viewing of external volume information	Y	Y	--	--
Viewing of HDP volume information and HDP pool information	Y	--	--	--
Creation, modification, and deletion of HDP volumes and HDP pools	Y	--	--	--
Creation, modification, and deletion of labels	Y	Y	Y	Y
Storage subsystem lock function	Y	Y	Y	Y
Management of logical groups	Y	Y	Y	Y
Management of host information	Y	Y	Y	Y

Function	Storage Subsystem			
	USP V/VM	Hitachi USP	Lightning 9900V	Lightning 9900
Management of host volume information	Y	Y	Y	Y
Host refresh function	Y	Y	Y	Y
Reporting operations	N	N	N	N
Alert management	N	N	N	N

Legend:
    Y: The function is supported.
    --: The function is not present in the storage subsystem.
    N: The function is present in the storage subsystem, but is not supported by Device Manager CLI.
 #1 LUNs can be assigned only to open volumes and HRX intermediate volumes.
 #2 The LDEV to be created must be an open volume.				

Table 1-2　　Functions Supported by Device Manager CLI (2/2)

Function	Storage Subsystem			
	Hitachi SMS	Hitachi AMS2000/ AMS/WMS	Thunder 9500V	Thunder 9200
Detection and removal of storage subsystems	Y	Y	Y	Y
Acquisition of storage subsystem information	Y	Y	Y	Y
Assignment and deletion of LUNs	Y	Y	Y	Y
Setting and releasing of LUN security for LUNs	Y	Y	Y	Y
Creation and deletion of LDEVs	Y	Y	Y	Y
Viewing of Data Retention or Open LDEV Guard information	Y	Y	Y	--
Configuring LUSE volumes while LUNs are being assigned	Y	Y	Y	Y
Configuring or releasing LUSE volumes when LDEVs for which LUNs are not assigned are used	Y	Y	Y	Y
Creation and deletion of array groups	--	Y	Y	Y
Creation of external array groups and assignment of LUs	--	--	--	--
Allocation and removal of spare drives	--	Y	Y	Y
Modification of port attributes	Y	Y	Y	Y
Modification of Fibre Channel adapter attributes	--	--	--	--
Physical View display of storage subsystems	N	N	N	N
Viewing of ShadowImage copy pair information	Y	Y	Y	Y
Creation, status modification, and deletion of ShadowImage copy pairs	Y	Y	Y	Y
Viewing of TrueCopy copy pair information	Y	Y	Y	Y
Creation, status modification, and deletion of TrueCopy copy pairs	N	Y	Y	Y

Function	Storage Subsystem			
	Hitachi SMS	Hitachi AMS2000/ AMS/WMS	Thunder 9500V	Thunder 9200
Viewing of QuickShadow/Copy-on-Write Snapshot copy pair information	Y	Y	Y	--
Creation, status modification, and deletion of QuickShadow/Copy-on-Write Snapshot copy pairs	Y	Y	Y	--
Viewing of Universal Replicator copy pair information	--	--	--	--
Creation, status modification, and deletion of Universal Replicator copy pairs	--	--	--	--
Viewing of Simple Data Recovery copy pair information	Y	--	--	--
Viewing of CLPR information	Y	Y	--	--
Modification of CLPR information	N	N	--	--
Viewing of SLPR information	--	--	--	--
Modification of SLPR information	--	--	--	--
Configuration of command devices	Y	Y	Y	Y
Setting of security for command devices	Y	Y	--	--
Management of LUN groups	--	--	--	--
Management of WWN groups	--	--	--	--
Viewing of mainframe volume information	--	--	--	--
Viewing of external volume information	--	--	--	--
Viewing of HDP volume information and HDP pool information	--	--	--	--
Creation, modification, and deletion of HDP volumes and HDP pools	--	--	--	--
Creation, modification, and deletion of labels	Y	Y	Y	Y
Storage subsystem lock function	N	N	N	N
Management of logical groups	Y	Y	Y	Y
Management of host information	Y	Y	Y	Y
Management of host volume information	Y	Y	Y	Y
Host refresh function	Y	Y	Y	Y
Reporting operations	N	N	N	N
Alert management	N	N	N	N

Legend:

   Y: The function is supported.

   --: The function is not present in the storage subsystem.

   N: The function is present in the storage subsystem, but is not supported by Device Manager CLI.

Device Manager CLIEX

Device Manager Command Line Interface Extended edition (CLIEX) provides commands that are used to acquire system configuration information and manage LUNs.

- Device Manager CLIEX is intended for administrators who are already familiar with Device Manager, because prior storage subsystem settings and host settings are required in order to use Device Manager CLIEX.

- Device Manager CLIEX communicates directly with the storage subsystem to execute instructions via SAN without the Device Manager server. CLIEX can configure various settings for the 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 Device Manager, you must use Device Manager CLIEX in combination with Device Manager CLI.

⚠ *Note:* 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 Device Manager CLI AddArrayReservation and DeleteArrayReservation commands to lock and unlock the target storage subsystem before and after CLIEX operations as described in Device Manager CLIEX Operation.

Table 1-3 and Table 1-4 describe the functions supported by Device Manager CLIEX for each storage subsystem.

Table 1-3   Functions Supported by Device Manager CLIEX (1/2)

Function	Storage Subsystem			
	USP V/VM	Hitachi USP	Lightning 9900V	Lightning 9900
Acquisition of storage subsystem information	Y	Y	Y	Y
Assignment and deletion of LUNs	Y#	Y#	Y#	Y#
Setting and releasing of LUN security for LUNs	Y	Y	Y	Y
Modification of port attributes	Y	Y	Y	Y
Management of LUN groups	--	--	--	Y
Management of WWN groups	--	--	--	Y
Viewing of mainframe volume information	Y	Y	Y	Y

Legend:
    Y: The function is supported.
    --: The function is not present in the storage subsystem.
 # LUNs can be assigned only to open volumes and HRX intermediate volumes.				

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Table 1-4   Functions Supported by Device Manager CLIEX (2/2)

Function	Storage Subsystem			
	Hitachi SMS	Hitachi AMS2000/ AMS/WMS	Thunder 9500V	Thunder 9200
Acquisition of storage subsystem information	N	N	N	N
Assignment and deletion of LUNs	N	N	N	N
Setting and releasing of LUN security for LUNs	N	N	N	N
Modification of port attributes	N	N	N	N
Management of LUN groups	--	--	--	--
Management of WWN groups	--	--	--	--
Viewing of mainframe volume information	--	--	--	--
Legend:				
--: The function is not present in the storage subsystem.				
N: The function is present in the storage subsystem, but is not supported by Device Manager CLIEX.				

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Device Manager Licenses

Device Manager provides the following two licenses: Full and core.

- Full license

  A full license is required to use all Device Manager functions. The three types of full licenses are **permanent**, **temporary**, and **emergency**.

- Core license

  The Core license enables you to use only storage management functions that use SMI-S or Device Manager CLI. With the Core license, you cannot use storage management functions that use Web Clients. For details about how to use the Core license in Device Manager, see the *Hitachi Storage Command Suite Server Installation Guide*.

The following table indicates the differences in functions between the two licenses.

Table 1-5   Differences in Functions between the Core License and a Full License

Item	Functions Available with the Core License
Supported platforms	Same as for a full license
Storage subsystems	
Web Client	Only the functions listed below can be used. The functions that are unavailable with the Core license are not displayed in the `Explorer` menu. ▪ Displaying and registering licenses ▪ Creating, changing, and deleting users ▪ Assigning resource groups[#] ▪ Setting security (setting password conditions, automatic locking of user accounts, and warning banners) ▪ Downloading Device Manager CLI ▪ Downloading the Device Manager agent ▪ The `Dashboard` menu
Device Manager CLI	The following logical group commands cannot be used: ▪ AddLogicalGroup ▪ AddLunScan ▪ AddObjectForLogicalGroup ▪ DeleteLogicalGroup ▪ DeleteObjectForLogicalGroup ▪ GetLogicalGroup ▪ ModifyLogicalGroup
Device Manager CLIEX	Unavailable
Device Manager server	The email notification function cannot be used
Device Manager agent	Same functions as for a full license

Item	Functions Available with the Core License
Linkage with other Hitachi Storage Command Suite products that require Device Manager	If the Device Manager license is the Core license, you can only use the following products: ▪ Provisioning Manager ▪ Tuning Manager (version 6.0 or later)
# Because logical groups cannot be used when using the Core license, only All Resources can be assigned as a resource group.	

⚠️ *Caution:* If the license keys registered in Device Manager include one or more full licenses, Device Manager operates in full license mode. To check the type of the license registered in Device Manager, perform one of the following:

- Use Web Client to check the license information.
- Execute the GetServerInfo command of Device Manager CLI.

Downloading CLI and CLIEX from the Device Manager Server

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

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

- Windows®:

  installation-directory-for-Device-Manager\DeviceManager\HiCommandCLI

- Solaris™ and Linux®:

  *installation-directory-for-Device-Manager/*DeviceManager/HiCommandCLI

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

To download 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 Device Manager agent and Device Manager CLI can be downloaded. Device Manager CLIEX is included in the archive file for the 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 Device Manager CLI file and files required to install Device Manager CLIEX are to be extracted. To use Device Manager CLIEX, install it as instructed in Device Manager CLIEX Installation and Uninstallation.

For details about downloading, see the Device Manager online Help.

⚠️   **Note:** When you want to use 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 How to Configure a Java Environment.

2

System Requirements and Set Up (CLI)

This chapter lists the system requirements for launching and using the Device Manager CLI. For system requirements and set up for CLIEX, see System Requirements and Set Up (CLIEX).

Requirements for CLI Operations

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

- **Storage Subsystems**

  All storage subsystems must be configured for Device Manager operations. Please refer to the Device Manager online Help for detailed information on storage subsystem requirements.

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

- **Device Manager Server**

  Please refer to the *Hitachi Storage Command Suite Server Installation Guide* and *Hitachi Device Manager Server Configuration and Operation Guide* for more information on installing and configuring the Device Manager server.

- **Platforms for Device Manager CLI and the Java Runtime Environment**

  Table 2-1 lists platforms on which Device Manager CLI runs and the requisite Java runtime environments. It also indicates the support status of Device Manager CLI in IPv6 environments (supported or not supported).

Table 2-1   Platform, Java Runtime Environment, and IPv6 Environment Support for Device Manager CLI

OS	OS version	Java Runtime Environment	IPv6 Environment Support
Windows 7 (x86, x64)	Windows 7 Enterprise Edition Windows 7 Professional Edition Windows 7 Ultimate Edition	JRE version 6.0	Supported
Windows Server 2003 (x86)	Windows Server 2003, Standard Edition SP2 Windows Server 2003, Enterprise Edition SP2 Windows Server 2003, Datacenter Edition SP2	JRE version 1.4.2_*xx* (*xx* is 04 or later)[#1]	Not supported
		JRE version 5.0 (Update 7 or later)	Supported
		JRE version 6.0	Supported

OS	OS version	Java Runtime Environment	IPv6 Environment Support
Windows Server 2003 (x64)	Windows Server 2003, Standard x64 Edition SP2 Windows Server 2003, Enterprise x64 Edition SP2 Windows Server 2003, Datacenter x64 Edition SP2	JRE version 1.4.2_*xx* (*xx* is 04 or later)[#1]	Not supported
		JRE version 5.0 (Update 7 or later)	Supported
		JRE version 6.0	Supported
Windows Server 2003 R2 (x86)	Windows Server 2003 R2, Standard Edition SP2 Windows Server 2003 R2, Enterprise Edition SP2 Windows Server 2003 R2, Datacenter Edition SP2	JRE version 1.4.2_*xx* (*xx* is 04 or later)[#1]	Not supported
		JRE version 5.0 (Update 7 or later)	Supported
		JRE version 6.0	Supported
Windows Server 2003 R2 (x64)	Windows Server 2003 R2, Standard x64 Edition SP2 Windows Server 2003 R2, Enterprise x64 Edition SP2 Windows Server 2003 R2, Datacenter x64 Edition SP2	JRE version 1.4.2_*xx* (*xx* is 12 or later)[#1]	Not supported
		JRE version 5.0 (Update 7 or later)	Supported
		JRE version 6.0	Supported

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OS	OS version	Java Runtime Environment	IPv6 Environment Support
Windows Server 2008 (x86, x64)[#2]	Windows Server 2008 Standard	JRE version 6.0	Supported
	Windows Server 2008 Standard SP2		
	Windows Server 2008 Standard 32-bit		
	Windows Server 2008 Standard 32-bit SP2		
	Windows Server 2008 Standard without Hyper-V		
	Windows Server 2008 Standard without Hyper-V SP2		
	Windows Server 2008 Standard without Hyper-V 32-bit		
	Windows Server 2008 Standard without Hyper-V 32-bit SP2		
	Windows Server 2008 Enterprise		
	Windows Server 2008 Enterprise SP2		
	Windows Server 2008 Enterprise 32-bit		
	Windows Server 2008 Enterprise 32-bit SP2		
	Windows Server 2008 Enterprise without Hyper-V		
	Windows Server 2008 Enterprise without Hyper-V SP2		
	Windows Server 2008 Enterprise without Hyper-V 32-bit		
	Windows Server 2008 Enterprise without Hyper-V 32-bit SP2		
	Windows Server 2008 Datacenter		
	Windows Server 2008 Datacenter SP2		
	Windows Server 2008 Datacenter 32-bit		
	Windows Server 2008 Datacenter 32-bit SP2		
	Windows Server 2008 Datacenter without Hyper-V		
	Windows Server 2008 Datacenter without Hyper-V SP2		
	Windows Server 2008 Datacenter without Hyper-V 32-bit		
	Windows Server 2008 Datacenter without Hyper-V 32-bit SP2		
Windows Server 2008 R2 (x64)[#2]	Windows Server 2008 R2 Standard	JRE version 6.0	Supported
	Windows Server 2008 R2 Enterprise		
	Windows Server 2008 R2 Datacenter		

OS	OS version	Java Runtime Environment	IPv6 Environment Support
Windows Vista® (x86, x64)	Windows Vista Business Windows Vista Business SP1 Windows Vista Business SP2 Windows Vista Enterprise Windows Vista Enterprise SP1 Windows Vista Enterprise SP2 Windows Vista Ultimate Windows Vista Ultimate SP1 Windows Vista Ultimate SP2	JRE version 6.0	Supported
Windows XP (x86)	Windows XP Professional SP2	JRE version 1.4.1_*xx* (*xx* is 07 or later)[1]	Not supported
		JRE version 1.4.2_*xx* (*xx* is 04 or later)[1]	Not supported
		JRE version 5.0 (Update 7 or later)	Not supported
		JRE version 6.0	Not supported
	Windows XP Professional SP3	JRE version 1.4.2_*xx* (*xx* is 04 or later)[1]	Not supported
		JRE version 5.0 (Update 7 or later)	Not supported
		JRE version 6.0	Not supported
Solaris	Solaris 8 (SPARC edition) Solaris 9 (SPARC edition)	JRE version 1.4.1_*xx* (*xx* is 07 or later)[1]	Not supported
		JRE version 1.4.2_*xx* (*xx* is 04 or later)[1]	Not supported
		JRE version 5.0 (Update 7 or later)	Not supported
		JRE version 6.0	Not supported
	Solaris 10 (SPARC edition)	JRE version 1.4.2_*xx* (*xx* is 12 or later)[1]	Not supported
		JRE version 5.0 (Update 7 or later)	Supported
		JRE version 6.0	Supported
	Solaris 10 (x64 edition)[3]	JRE version 5.0 (Update 7 or later)	Supported
AIX®	AIX 5L Version 5.3 (POWER)	JRE version 1.4.2	Not supported
		JRE version 5.0 (Update 7 or later)	Not supported

OS	OS version	Java Runtime Environment	IPv6 Environment Support
Linux (x86)	Red Hat Enterprise Linux AS 4 Update 4	JRE version 5.0 (Update 7 or later)	Supported
	Red Hat Enterprise Linux ES 4 Update 4		
	Red Hat Enterprise Linux AS 4.5	JRE version 6.0 (Update 4 or later)	Not supported
	Red Hat Enterprise Linux ES 4.5		
	Red Hat Enterprise Linux AS 4.6		
	Red Hat Enterprise Linux ES 4.6		
	Red Hat Enterprise Linux AS 4.7	JRE version 6.0 (Update 4 or later)	Supported
	Red Hat Enterprise Linux ES 4.7		
	Red Hat Enterprise Linux 5.2		
	Red Hat Enterprise Linux 5.2 Advanced Platform		
	Red Hat Enterprise Linux 5.3		
	Red Hat Enterprise Linux 5.3 Advanced Platform		
	Red Hat Enterprise Linux 5.4		
	Red Hat Enterprise Linux 5.4 Advanced Platform		
	SUSE Linux Enterprise Server 10 SP2	JRE version 5.0 (Update 10 or later)	Supported
	SUSE Linux Enterprise Server 10 SP3		
	SUSE Linux Enterprise Server 11	JRE version 6.0	Supported
Linux (x64)	Red Hat Enterprise Linux 5.3	JRE version 6.0 (Update 4 or later)	Supported
	Red Hat Enterprise Linux 5.3 Advanced Platform		
	Red Hat Enterprise Linux 5.4		
	Red Hat Enterprise Linux 5.4 Advanced Platform		
	SUSE Linux Enterprise Server 10 SP2	JRE version 5.0 (Update 10 or later)	Supported
	SUSE Linux Enterprise Server 10 SP3		
	SUSE Linux Enterprise Server 11	JRE version 6.0	Supported
HP-UX®	HP-UX 11i v1 (PA-RISC)	JRE version 1.4.2_xx (xx is 05 or later)[1]	Not supported
		JRE version 5.0.xx (xx is 03 or later)[1]	Not supported
	HP-UX 11i v2 (IPF)	JRE version 1.4.2_xx (xx is 05 or later)[1]	Not supported
	HP-UX 11i v2 (PA-RISC)	JRE version 5.0.xx (xx is 03 or later)[1]	Supported
	HP-UX 11i v3 (IPF)	JRE version 5.0.xx (xx is 03 or later)[1]	Supported
	HP-UX 11i v3 (PA-RISC)		
#1 For xx, we recommend that the latest version be used.			
#2 Device Manager CLI does not support Hyper-V™.			
#3 Solaris 10 (x64 edition) is supported only when the Sun Fire x64 Servers hardware is used.			

Notes:

- When you use Windows Vista, execute Device Manager CLI from a command prompt initiated as an administrator. If you attempt to execute Device Manager CLI from a command prompt not initiated as an administrator, the log file and execution results may not be output to the specified output location.

- If the system on which HP-UX operates uses a Dual-Core Intel® Itanium® 2 Processor for the CPU, use JRE version 1.4.2_*xx* (*xx* is 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.

- 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.

- 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 version 5.7 or later supports the new DST. If you run Device Manager CLI by using the JRE used in the Device Manager server version 5.7 or later, you do not have to prepare another JRE.

- **Device Manager Agent**

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

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, 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.

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 Device Manager, you need to change the memory heap sizes of Device Manager CLI and the Device Manager server. To calculate the memory heap size for 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, always

attach m or M to the value.

Note: For details about changing the memory heap size of the Device Manager server, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

Formula:

memory-heap-size = the-number-of-LDEVs x 0.03 + *the-total-number-of-paths* x 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, AIX, 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=.

Notes:

- If the 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.
- 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.`

Requirements for Connecting to the Device Manager Server

Before operating Device Manager CLI, check the following items for the Device Manager server to be connected.

Table 2-2   Requirements for Connecting to the 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[#1]	Port number of the Device Manager server. This item is used as an argument of Device Manager CLI.
User ID[#2]	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[#2]	Password you can use to log in to the Device Manager server. This item is used as an option of Device Manager CLI.
#1 If a firewall is set up between the machine on which Device Manager CLI is running and the Device Manager server, set the firewall so the port number of the Device Manager server can be used. The default port number of the Device Manager server is 2001 for non-SSL communication and 2443 for SSL communication.	
#2 You can create a user ID and a password by using Web Client. For details about how to use Web Client, see the Device Manager online Help.	

Java Environment Settings

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

How to Configure a Java Environment

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

Specify a JRE by Using the Environment Variable PATH

Specify the path of the JRE that 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 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 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 Device Manager CLI does not support is displayed, specify the path of the supported JRE to the environment variable PATH.

Specify a JRE by Using the Environment Variable HDVM_CLI_JRE_PATH

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

Note: If you use 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 When Using the Same JRE as the Device Manager Server.

When Using the Same JRE as the Device Manager Server

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

- Windows: *Common-Component-installation-directory*\jdk\jre\bin

- Solaris and Linux: /opt/HiCommand/Base/jdk/jre/bin

If you do not know the installation directory for the Hitachi Storage Command Suite Common Component, check the directory in the server.base.home property of the server.properties property file for the Device Manager server. For details about the file, see the *Hitachi Device Manager Server Configuration and Operation 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 (\).

When Upgrading Device Manager

When upgrading Device Manager, the version of Java that 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. If necessary, change the JRE settings. You have to be especially careful when Device Manager CLI is used in the following environment:

- 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 these conditions are satisfied, the JRE that the Device Manager server uses is updated when 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 Device Manager CLI (that was downloaded from the Web Client) is being used, the Device Manager CLI will not be upgraded even if 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 Device Manager CLI that you are using, take either of the following actions:

- Download the latest version of Device Manager CLI from the Web Client (recommended)

- Prepare another JRE that is supported by the version of Device Manager CLI being used. Afterward, configure that JRE to the environment variable HDVM_CLI_JRE_PATH.

Executing Device Manager CLI Commands over HTTPS

To use HTTPS to connect from Device Manager CLI to the Device Manager server, you need to set up the environment for the management client that executes Device Manager CLI.

⚠️ ***Notes:***

- Before setting up the environment on the management client, set up the security related to communication in the Device Manager server. For details on the settings in the Device Manager server, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

- If you reconfigure the security related to communication in the Device Manager server, the Device Manager server certificate is changed. If this occurs, you need to replace the certificate of the management client.

To set up the environment for the management client that executes Device Manager CLI:

1. Download the HiCommandCerts file (the Device Manager server certificate) from the Device Manager server using your browser:

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

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

2. Store the downloaded file in the installation directory of the Device Manager CLI. This directory contains the `HiCommandCLI.bat` file in a Windows system, or the `HiCommandCLI.sh` file in a Solaris, AIX, 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.

   – Windows: *device-manager-cli-installation-folder*\HiCommandCerts

   – Solaris, AIX, Linux, or HP-UX:

   device-manager-cli-installation-directory/HiCommandCerts

4. In AIX, specify the settings so that JSSE can be used in the JRE. Add the following line to the *JRE-installation-directory*`/lib/security/java.security` file:

```
ssl.SocketFactory.provider=com.sun.net.ssl.internal.ssl.SSLSocketF
actoryImpl
```

Following are examples of executing the GetServerInfo command over HTTPS.

– Windows:

HiCommandCLI -s https://*device-manager-server-host-name*:2443/service GetServerInfo

– Solaris, AIX, Linux, or HP-UX:

HiCommandCLI.sh -s https:// *device-manager-server-host-name*:2443/service GetServerInfo

---

⚠️ ***Note:*** Use the:

- -s (or --secure) option.
- https protocol for the Device Manager server URL.
- server name set in the Device Manager server certificate as the host name for the Device Manager server URL.
- https port for the Device Manager server URL (2443, unless configured differently in the server's configuration file).

Launching the 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, Device Manager CLI has been installed in the C:\HiCommand folder.)

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

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

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

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

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 Command Syntax (CLIEX).

☐ CLI Command Syntax

☐ Displaying CLI Help

☐ CLI Return Responses

☐ List of CLI Commands and Supported Storage Subsystems

☐ Controlled Access to CLI Commands and Device Manager Resources

☐ Guidelines for Executing Certain CLI Commands

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CLI Command Syntax

The syntax for Device Manager CLI commands is as follows:

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

The following table describes the CLI command syntax.

Table 3-1   CLI Command Syntax

Command Component	Description
server-URL	The URL that indicates the location of the Device Manager server in the network. The URL is specified in a form such as http://localhost:2001/service. The URL must include the following items:
	▪ Http protocol: http:// or https:// (see Executing Device Manager CLI Commands over HTTPS for https requirements)
	▪ Host name or IP address of the Device Manager server (enclose IPv6 IP addresses in square brackets ([ ]))
	Note that, if you use HTTPS to execute Device Manager CLI, you must specify the server name set in the Device Manager server certificate as the host name.
	▪ Port number of the Device Manager server (default configuration is 2001)
	▪ Base address of the Device Manager server (default is service, unless the server has been configured with a non-standard servlet alias)
	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 Specifying the URL.
command	The actual command mnemonic that makes a processing requests to the Device Manager server. For example, GetStorageArray or AddLogicalGroup. Command names are not case sensitive. As such, getstoragearray is the same as GETSTORAGEARRAY. A complete list of CLI commands is included in Command Descriptions (CLI).
options	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, -u for the user option) or the option can be preceded by two dash characters and then spelled out (for example, --user). Some options require an argument, which follows the option. For example, the -u option is followed by a user ID. For details about the options that can be used with Device Manager CLI, see Table 3-2.
	Notes:
	▪ 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.
	▪ Options specified in the command line take precedence over options specified in the properties file.
	For more information about CLI property files, refer to Device Manager Properties File (CLI).
	▪ When the same parameter is specified multiple times, the value specified last is used.

Command Component	Description
parameters	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 *parameter-name = parameter-value*. The parameter name is not case sensitive. Unless otherwise noted in parameter descriptions, parameter values are case sensitive. If a parameter value includes the space character, the parameter value should be enclosed in double quotes. parametername=parametervalue parametername="xxxx xxxx" 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 Command Descriptions (CLI). ***Note:*** When the same parameter is specified multiple times, the value specified last is used.

Command Options

The following table describes the Device Manager CLI command options.

Table 3-2   Device Manager CLI Options

Option	Argument	Status	Description
-u or --user	*userid*	Required	A valid user ID for the Device Manager server ***Notes:*** ▪ You must have your user ID registered in Device Manager before using Device Manager CLI. ▪ You can omit this option on the command line when the option has been specified in the properties file.
-p or --password	*password* or *password-file*	Required	The login password for the Device Manager server or the path to the password file that contains the login password[#1, #2] 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 the password file. Do not grant access permissions to common users for the password file. When specifying the password file, include an @ sign at the beginning of the path. The text on the first line of the specified file is read and used as the password. We recommend that you set an encoded character string rather than plain text for the password file. For details on how to encode a password, see Encoding the Password in the Properties File or Password File.
-s or --secure	no argument	Optional	Uses a secure connection (https) to communicate with the Device Manager server.

Option	Argument	Status	Description
-i or --input[#2]	*filename*[#1]	Optional	An XML API request file Takes input from the specified file, which must contain the Device Manager server request as a complete XML document. When this option is selected, the server's response is output as an XML formatted document. ***Notes:*** ▪ If you specify this option, the specification in the file overrides the equivalent specification on the command line. ▪ You cannot specify this option together with either the -f (or --format) option or the -b (or --batch) option.
-o or --output	*filename*[#1]	Optional	The file for storing the execution results Sends output to the specified file, instead of the console. ***Notes:*** ▪ When this option is specified, the command does not send the execution results to the standard output. ▪ If you specify an existing file, that file is overwritten.
-f or --format[#2]	csv or xml	Optional	The format in which the execution results are output. You can use this option only when you execute the GetStorageArray command. The execution results of the GetStorageArray command can be output in the following formats: csv: CSV format[#3] xml: XML format If this option is omitted, the execution results are output in the standard format. ***Note:*** You cannot specify this option together with either the -i (or --input) option or the -b (or --batch) option.
-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 Device Manager server in XML to the MessageTrace.log file.

Option	Argument	Status	Description
-b or --batch[#2]	*batch-file-name*[#1]	Optional	The commands specified in the batch file are executed together. For example usages of this option, see Using Batch Files to Execute Commands. ***Note:*** You cannot specify this option together with either the -i (or --input) option or the -f (or --format) option.
#1 Either an absolute path or a relative path can be specified for the file path.			
#2 If you execute a command other than the Help function by specifying a login user ID but not specifying the login password for the option or property, a message appears prompting you to enter the login password. To use this function, we recommend that you install JRE version 6.0. We do not recommend that you use JRE version 1.4.1, 1.4.2, or 5.0 because entered passwords are displayed on the screen in those versions.			
#3 If you specify csv with the -f (or --format) option as one of the parameters for the GetStorageArray command, there are some parameters that you cannot specify. For details about the parameters that you cannot specify when -f csv is specified, see Outputting Execution Results in CSV Format.			

Usable Character Codes

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

Displaying CLI Help

Device Manager CLI provides three help modes:

- Basic Help

  Displays the Device Manager CLI command format, a list of commands, and a list of options.

- Command Help

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

- Batch Help

  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.

Basic CLI Help Information

To display basic help information, launch CLI without specifying any parameters. This basic help includes the current CLI version as shown in .

- Windows (in the following example, Device Manager CLI has been installed in the C:\HiCommand folder): C:\HiCommand> HiCommandCLI.bat

- Solaris, AIX, Linux, or HP-UX: # ./HiCommandCLI.sh

```
Device Manager CLI version "6.4.0-00"

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
```

```
          AddISCSINameForHostStorageDomain
          DeleteISCSINameForHostStorageDomain
          DeleteWWN
          DeleteWWNGroup
          AddHost
          DeleteHost
          ModifyHost
          MergeHost
          GetHost
          AddHostRefresh
          AddHostInfo
          DeleteHostInfo
          ModifyHostInfo
          GetHostInfo
          HostScan
          AddVirtualizationServer
          RefreshVirtualizationServer
          ModifyVirtualizationServer
          GetServerInfo
          GetLogFile
          ModifyDebugLevel
          GetDebugLevel
          GetAlerts
          DeleteAlerts
          AddArrayGroup
          DeleteArrayGroup
          AddLogicalUnit
          DeleteLogicalUnit
          ModifyLogicalUnit
          FormatLU
          AddVirtualVolume
          DeleteVirtualVolume
          ModifyVirtualVolume
          AddPool
          DeletePool
          ModifyPool
          AddExternalArrayGroup
          DeleteExternalArrayGroup
          AddSpareDrive
          DeleteSpareDrive
          ModifyPort
          ModifyPortController
          AddURLLink
          DeleteURLLink
          GetURLLink
          RefreshStorageArrays
          AddLUSE
          DeleteLUSE
          AddReplication
          DeleteReplication
          ModifyReplication
          AddConfigFileForReplication
          GetReplicationControllerPair
          AddArrayReservation
          ModifyArrayReservation
          DeleteArrayReservation
          GetArrayReservation
          AddLabel
          ModifyLabel
          DeleteLabel

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 MessageTrace.log file

    -f {format} or --format {format}         The execution result of the command
                                             is output in the specified format.
                                             The available arguments for the
                                             option are csv and xml.

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

Command Specific CLI Help

Device Manager 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, 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           (optional) 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         (optional) For USP_V, USP, 9900V, 9500V (with
                 LUNManagement), AMS, WMS, SMS, XP24K/20K,
                 XP12K/10K/SVS200, or XP1024/128, this parameter
                 is required. For others, it is optional. Domain
                 number of the new path. This parameter cannot be
                 specified with the parameter wwn or
                 domainnickname.
  domainnickname (optional) For USP_V, USP, 9900V, 9500V (with
                 LUNManagement), AMS, WMS, SMS, XP24K/20K,
                 XP12K/10K/SVS200, or XP1024/128, this parameter
                 is required. For others, it is optional. Nickname
                 of the host storage domain of the new path. This
                 parameter cannot be specified with the parameter
                 domain or wwn.
  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, SMS, XP24K/20K, 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

Batch Help Information for Device Manager CLI

Batch functions can be executed using the 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
        AddHostStorageDomain
        DeleteHostStorageDomain
        AddVirtualVolume
        ModifyVirtualVolume
        AddExternalArrayGroup
        AddLUSE
        DeleteLUSE

BATCH FILE FORMAT:
     beginbatch
       HiCommandCLI {server-command} {parameters}
       HiCommandCLI {server-command} {parameters}
          ... repeat for other commands
     endbatch
```

CLI Return Responses

Device Manager CLI returns the execution result value at the end of its process. The following table 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 Device Manager server.

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List of CLI Commands and Supported Storage Subsystems

Table 3-4 - Table 3-12 list the CLI commands and related storage subsystems. In these tables:

- Y indicates that the particular storage subsystem can be used to execute the command.

- N indicates that it cannot be used to execute the command.

Note that if the Core license is used, logical group commands (see Table 3-6) cannot be used. For details about the Core license, see Device Manager Licenses.

Only the following commands can be executed for SMI-S Enabled subsystems:

- AddStorageArray (see Table 3-4 and Table 3-5)

- DeleteStorageArray (see Table 3-4 and Table 3-5)

- GetStorageArray (subtarget not specified) (see Table 3-4 and Table 3-5)

- GetStorageArray (subtarget=Commparameters) (see Table 3-4 and Table 3-5)

- RefreshStorageArrays (see Table 3-4 and Table 3-5)

- AddURLLink (see Table 3-10)

- DeleteURLLink (see Table 3-10)

- GetURLLink (see Table 3-10)

For details regarding Device Manager CLI command specifications, execution examples, and execution results, see Command Descriptions (CLI).

Table 3-4   Storage Array Commands and Related Storage Subsystems (1/2)

Command Name	Description	USP V/VM	Hitachi USP	Lightning 9900V	Lightning 9900
AddArrayGroup	Creates an array group.	N	N	N	N
AddArrayReservation	Locks a specified storage subsystem.	Y	Y	Y	Y
AddExternalArrayGroup	Creates an external array group. It also creates an LU for the external array group that is created.	Y	N	N	N
AddHostStorageDomain	Creates a host storage domain or host group.	Y	Y	Y	Y
AddLabel	Sets a label.	Y	Y	Y	Y

Command Name	Description	USP V/VM	Hitachi USP	Lightning 9900V	Lightning 9900
AddLogicalUnit	Creates an LDEV and a logical unit in the storage subsystem.	Y	Y	Y	Y
AddLUSE	Creates a LUSE.	Y	Y	Y	N
AddPool	Creates an HDP pool.	Y	N	N	N
AddSpareDrive	Creates a spare drive.	N	N	N	N
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
AddVirtualVolume	Creates virtual volumes and assigns the HDP volumes (virtual volumes) to an HDP pool.	Y	N	N	N
DeleteArrayGroup	Deletes an array group.	N	N	N	N
DeleteArrayReservation	Unlocks a specified storage subsystem	Y	Y	Y	Y
DeleteExternalArrayGroup	Deletes an external array group. Also, deletes the LU that belongs to the deleted eternal array group.	Y	N	N	N
DeleteHostStorageDomain	Deletes a host storage domain or host group.	Y	Y	Y	Y
DeleteLabel	Deletes a label.	Y	Y	Y	Y
DeleteLogicalUnit	Deletes one or more LUs and the corresponding LDEVs.	Y	Y	Y	Y
DeleteLUSE	Deletes a LUSE that does not have a path.	Y	Y	Y	N
DeletePool	Deletes an HDP pool.	Y	N	N	N
DeleteSpareDrive	Deletes or releases a spare drive.	N	N	N	N
DeleteStorageArray	Excludes a storage subsystem from the group of storage subsystems managed by the Device Manager server.	Y	Y	Y	Y
DeleteVirtualVolume	Deletes HDP volumes (virtual volumes).	Y	N	N	N
FormatLU	Formats an LU.	Y	Y	N	Y

Command Name	Description	USP V/VM	Hitachi USP	Lightning 9900V	Lightning 9900
GetArrayReservation	Obtains information about the locked storage subsystem	Y	Y	Y	Y
GetStorageArray#	Obtains information about the storage subsystems.	Y	Y	Y	Y
ModifyArrayReservation	Expands the maximum period for which a specified storage subsystem is locked.	Y	Y	Y	Y
ModifyLabel	Modifies a label.	Y	Y	Y	Y
ModifyLogicalUnit	Modifies the settings of the logical units and the corresponding LDEVs.	Y	Y	Y	Y
ModifyPool	Expands an HDP pool, or modifies the thresholds related to the HDP pool and to the over-provisioning percent.	Y	N	N	N
ModifyPort	Modifies port attributes.	Y	Y	Y	Y
ModifyPortController	Modifies port controller attributes.	Y	Y	Y	Y
ModifyVirtualVolume	Assigns HDP volumes (virtual volumes) to an HDP pool, releases such assignations, or modifies the usage rate threshold of HDP volumes.	Y	N	N	N
RefreshStorageArrays	Obtains the most recent status of all storage subsystems managed by the Device Manager server.	Y	Y	Y	Y

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, ExternalStorage, Filter, FreeSpace, HostStorageDomain, JournalPool, LDEV, LogicalDKC, LogicalUnit, MFReplicationInfo, Path, PDEV, Pool, Port, PortController, and ReplicationInfo.

Table 3-5   Storage Array Commands and Related Storage Subsystems (2/2)

Command Name	Description	Hitachi AMS2000	Hitachi SMS	Hitachi AMS/WMS	Thunder 9500V and Thunder 9200
AddArrayGroup	Creates an array group.	Y	N	Y	Y
AddArrayReservation	Locks a specified storage subsystem.	N	N	N	N
AddExternalArrayGroup	Creates an external array group. It also creates an LU for the external array group that is created.	N	N	N	N
AddHostStorageDomain	Creates a host storage domain or host group.	Y	Y	Y	Y
AddLabel	Sets a label.	Y	Y	Y	Y
AddLogicalUnit	Creates an LDEV and a logical unit in the storage subsystem.	Y	Y	Y	Y
AddLUSE	Creates a LUSE.	Y	Y	Y	Y
AddPool	Creates an HDP pool.	Y	N	N	N
AddSpareDrive	Creates a spare drive.	Y	N	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
AddVirtualVolume	Creates virtual volumes and assigns the HDP volumes (virtual volumes) to an HDP pool.	Y	N	N	N
DeleteArrayGroup	Deletes an array group.	Y	N	Y	Y
DeleteArrayReservation	Unlocks a specified storage subsystem	N	N	N	N
DeleteExternalArrayGroup	Deletes an external array group. Also, deletes the LU that belongs to the deleted eternal array group.	N	N	N	N
DeleteHostStorageDomain	Deletes a host storage domain or host group.	Y	Y	Y	Y
DeleteLabel	Deletes a label.	Y	Y	Y	Y

Command Name	Description	Hitachi AMS2000	Hitachi SMS	Hitachi AMS/WMS	Thunder 9500V and Thunder 9200
DeleteLogicalUnit	Deletes one or more LUs and the corresponding LDEVs.	Y	Y	Y	Y
DeleteLUSE	Deletes a LUSE that does not have a path.	Y	Y	Y	Y
DeletePool	Deletes an HDP pool.	Y	N	N	N
DeleteSpareDrive	Deletes or releases a spare drive.	Y	N	Y	Y
DeleteStorageArray	Excludes a storage subsystem from the group of storage subsystems managed by the Device Manager server.	Y	Y	Y	Y
DeleteVirtualVolume	Deletes HDP volumes (virtual volumes).	Y	N	N	N
FormatLU	Formats an LU.	N	N	N	N
GetArrayReservation	Obtains information about the locked storage subsystem	N	N	N	N
GetStorageArray[#]	Obtains information about the storage subsystems.	Y	Y	Y	Y
ModifyArrayReservation	Expands the maximum period for which a specified storage subsystem is locked.	N	N	N	N
ModifyLabel	Modifies a label.	Y	Y	Y	Y
ModifyLogicalUnit	Modifies the settings of the logical units and the corresponding LDEVs.	Y	Y	Y	Y
ModifyPool	Expands an HDP pool, or modifies the thresholds related to the HDP pool and to the over-provisioning percent.	Y	N	N	N
ModifyPort	Modifies port attributes.	Y	Y	Y	Y
ModifyPortController	Modifies port controller attributes.	N	N	N	N
ModifyVirtualVolume	Assigns HDP volumes (virtual volumes) to an HDP pool, releases such assignations, or modifies the usage rate threshold of HDP volumes.	Y	N	N	N

Command Name	Description	Hitachi AMS2000	Hitachi SMS	Hitachi AMS/WMS	Thunder 9500V and Thunder 9200
RefreshStorageArrays	Obtains the most recent status of all storage subsystems managed by the Device Manager server.	Y	Y	Y	Y
# 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, ExternalStorage, Filter, FreeSpace, HostStorageDomain, JournalPool, LDEV, LogicalDKC, LogicalUnit, MFReplicationInfo, Path, PDEV, Pool, 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 (1/2)

Command Name	Description	USP V/VM	Hitachi USP	Lightning 9900V	Lightning 9900
AddISCSINameForHostStorageDomain	Sets security by assigning an iSCSI name for the host storage domain.	N	N	N	N
AddLun	Defines a path to a volume from the host.	Y	Y	Y	Y
AddLunGroup	Creates a LUN group.	N	N	N	Y
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
AddWWNForLun	Sets the security of a path by assigning its WWN.	N	N	N	Y

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Command Name	Description	USP V/VM	Hitachi USP	Lightning 9900V	Lightning 9900
AddWWNForLunGroup	Sets the security of a LUN in a LUN group by assigning a WWN in the LUN group.	N	N	N	Y
AddWWNGroup	Creates a WWN group.	N	N	N	Y
DeleteISCSINameForHostStorageDomain	Releases security settings for a LUN by deleting the iSCSI name for the specified host storage domain.	N	N	N	N
DeleteLun	Deletes the path to a volume from the host.	Y	Y	Y	Y
DeleteLunGroup	Deletes a LUN group to which a port is assigned.	N	N	N	Y
DeleteWWN	Deletes a WWN from a port.	Y	Y	Y	Y
DeleteWWNForHostStorageDomain	Releases the security set to a LUN in the specified host storage domain.	Y	Y	Y	Y
DeleteWWNForLun	Deletes a path from the host to a volume.	N	N	N	Y
DeleteWWNForLunGroup	Deletes a WWN assigned to a LUN group.	N	N	N	Y
DeleteWWNGroup	Deletes a WWN group.	N	N	N	Y
ModifyWWNGroup	Modifies the information about a WWN group.	N	N	N	Y

Table 3-8 LUN-related Commands and Related Storage Subsystems (2/2)

Command Name	Description	Hitachi AMS2000	Hitachi SMS	Hitachi AMS/WMS and 9500V[#1]	Thunder 9500V[#2] and Thunder 9200
AddISCSINameForHostStorageDomain	Sets security by assigning an iSCSI name for the host storage domain.	Y	Y	Y[#3]	N
AddLun	Defines a path to a volume from the host.	Y	Y	Y	Y
AddLunGroup	Creates a LUN group.	N	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	N	Y	Y

Command Name	Description	Hitachi AMS2000	Hitachi SMS	Hitachi AMS/WMS and 9500V[#1]	Thunder 9500V[#2] and Thunder 9200
AddWWNForLun	Sets the security of a path by assigning its WWN.	N	N	N	Y
AddWWNForLunGroup	Sets the security of a LUN in a LUN group by assigning a WWN in the LUN group.	N	N	N	N
AddWWNGroup	Creates a WWN group.	N	N	N	N
DeleteISCSINameForHostStorageDomain	Releases security settings for a LUN by deleting the iSCSI name for the specified host storage domain.	Y	Y	Y[#3]	N
DeleteLun	Deletes the path to a volume from the host.	Y	Y	Y	Y
DeleteLunGroup	Deletes a LUN group to which a port is assigned.	N	N	N	N
DeleteWWN	Deletes a WWN from a port.	Y	N	Y	Y
DeleteWWNForHostStorageDomain	Releases the security set to a LUN in the specified host storage domain.	Y	N	Y	Y
DeleteWWNForLun	Deletes a path from the host to a volume.	N	N	N	Y
DeleteWWNForLunGroup	Deletes a WWN assigned to a LUN group.	N	N	N	N
DeleteWWNGroup	Deletes a WWN group.	N	N	N	N
ModifyWWNGroup	Modifies the information about a WWN group.	N	N	N	N
#1 Thunder 9500V (LUN Management mode)					
#2 Thunder 9500V (LUN Security mode)					
#3 Applicable to Hitachi AMS/WMS only.					

Table 3-9   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 that can be acquired from the Device Manager agent, about a host managed by the Device Manager server.
AddVirtualizationServer	Registers information about a virtualization server into the Device Manager server database.
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.
HostScan	Registers (into the Device Manager server database) any host whose host name is the nickname of a host storage domain, and adds (to that host's information in the database) the WWN or iSCSI name that was assigned to the host storage domain.
MergeHost	Merges the WWNs or iSCSI names assigned to multiple hosts into one host.
ModifyHost	Modifies information about a host.
ModifyHostInfo	Modifies host-based information about a LUN.
ModifyVirtualizationServer	Modifies information about a virtualization server.
RefreshVirtualizationServer	Refreshes information about a virtualization server.

Table 3-10   Server Management-related Commands

Command Name	Description
AddURLLink	Sets information about a URL (URLLink) for a Device Manager object managed by the Device Manager server.
DeleteAlerts	Deletes information about one or more alerts that are managed by the Device Manager server.
DeleteURLLink	Deletes a URLLink that is set for a Device Manager object managed by the Device Manager server.
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 information about the URLLinks that are set for a Device Manager object managed by the Device Manager server.
ModifyDebugLevel	Sets the amount of debugging information created by the Device Manager server.

Table 3-11   Replication Commands and Related Storage Subsystems (1/2)

Command Name	Description	USP V/VM	Hitachi USP	Lightning 9900V	Lightning 9900
AddConfigFileForReplication	Create the configuration definition file for copy pairs.	Y	Y	Y	Y
AddReplication	Creates copy pairs.	Y	Y	Y	Y
DeleteReplication	Deletes copy pairs.	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
ModifyReplication	Changes copy pair status.	Y	Y	Y	Y

Table 3-12   Replication Commands and Related Storage Subsystems (2/2)

Command Name	Description	Hitachi AMS2000	Hitachi SMS	Hitachi AMS/WMS	Thunder 9500V and Thunder 9200
AddConfigFileForReplication	Create the configuration definition file for copy pairs.	Y	Y	Y	Y
AddReplication	Creates copy pairs.	Y	Y	Y	Y
DeleteReplication	Deletes copy pairs.	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
ModifyReplication	Changes copy pair status.	Y	Y	Y	Y

Controlled Access to CLI Commands and Device Manager Resources

The Device Manager CLI commands you can use depend on the license in use (full license or Core license) and the permissions granted to you. For details about licenses, see Device Manager Licenses.

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.

⚠️ *Notes:*
- Only users with Admin (user management) permission can change user permissions.
- If the Core license is used, none of the logical group commands (see Table 3-14) are available.

- **Resource Group Controls**
    - A user assigned to the All Resources resource group has access to (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.

⚠️ *Notes:*
- Only users with Admin permission can change Resource Group assignments.
- If the Core license is used, All Resources are allocated to the user.

A matrix showing the various CLI command access and Device Manager resource access scenarios is shown in Table 3-13 through Table 3-18.

CLI Command Access and Device Manager Resource Access Matrix

Table 3-13 through Table 3-18 show 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 3-13   CLI Command Access and Device Manager Resource Access Matrix: Storage Array Commands

CLI Command	All Resources Resource Group		User-defined Resource Group	
	Modify Permission	View Permission	Modify Permission	View Permission
AddArrayGroup	Y	N	N	N
AddArrayReservation	Y	N	R	N
AddExternalArrayGroup	Y	N	N	N
AddHostStorageDomain	Y	N	Y	N
AddLabel	Y	N	R	N
AddLogicalUnit	Y	N	N	N
AddLUSE	Y	N	R	N
AddPool	Y	N	N	N
AddSpareDrive	Y	N	N	N
AddStorageArray	Y	N	R	N
AddVirtualVolume	Y	N	N	N
DeleteArrayGroup	Y	N	N	N
DeleteArrayReservation	Y	N	Y	N
DeleteExternalArrayGroup	Y	N	N	N
DeleteHostStorageDomain	Y	N	R	N
DeleteLabel	Y	N	R	N
DeleteLogicalUnit	Y	N	N	N
DeleteLUSE	Y	N	R	N
DeletePool	Y	N	N	N
DeleteSpareDrive	Y	N	N	N
DeleteStorageArray	Y	N	N	N
DeleteVirtualVolume	Y	N	N	N
FormatLU	Y	N	N	N
GetArrayReservation	Y	N	R	N

CLI Command	All Resources Resource Group		User-defined Resource Group	
	Modify Permission	View Permission	Modify Permission	View Permission
GetStorageArray	Y	Y	R	R
ModifyArrayReservation	Y	N	R	N
ModifyLabel	Y	N	R	N
ModifyLogicalUnit	Y	N	N	N
ModifyPool	Y	N	N	N
ModifyPort	Y	N	N	N
ModifyPortController	Y	N	N	N
ModifyVirtualVolume	Y	N	N	N
RefreshStorageArrays	Y	N	R	N

Table 3-14   CLI Command Access and Device Manager Resource Access Matrix: Logical Group Commands

CLI Command	All Resources Resource Group		User-defined Resource Group	
	Modify Permission	View Permission	Modify Permission	View Permission
AddLogicalGroup	Y	N	R	N
AddLunScan	Y	N	N	N
AddObjectForLogicalGroup	Y	N	R	N
DeleteLogicalGroup	Y	N	R	N
DeleteObjectForLogicalGroup	Y	N	R	N
GetLogicalGroup	Y	Y	R	R
ModifyLogicalGroup	Y	N	R	N

Table 3-15   CLI Command Access and Device Manager Resource Access Matrix: LUN Commands

CLI Command	All Resources Resource Group		User-defined Resource Group	
	Modify Permission	View Permission	Modify Permission	View Permission
AddISCSINameForHostStorageDomain	Y	N	Y	N
AddLun	Y	N	R	N
AddLunGroup	Y	N	Y	N
AddWWNForHostStorageDomain	Y	N	Y	N
AddWWNForLun	Y	N	Y	N
AddWWNForLunGroup	Y	N	Y	N
AddWWNGroup	Y	N	Y	N
DeleteISCSINameForHostStorageDomain	Y	N	Y	N

CLI Command	All Resources Resource Group		User-defined Resource Group	
	Modify Permission	View Permission	Modify Permission	View Permission
DeleteLun	Y	N	R	N
DeleteLunGroup	Y	N	Y	N
DeleteWWN	Y	N	Y	N
DeleteWWNForHostStorageDomain	Y	N	Y	N
DeleteWWNForLun	Y	N	Y	N
DeleteWWNForLunGroup	Y	N	Y	N
DeleteWWNGroup	Y	N	Y	N
ModifyLunGroup	Y	N	Y	N
ModifyWWNGroup	Y	N	Y	N

Table 3-16   CLI Command Access and Device Manager Resource Access Matrix: Host Management Commands

CLI Command	All Resources Resource Group		User-defined Resource Group	
	Modify Permission	View Permission	Modify Permission	View Permission
AddHost	Y	N	Y	N
AddHostInfo	Y	N	R	N
AddHostRefresh	Y	N	R	N
AddVirtualizationServer	Y	N	N	N
DeleteHost	Y	N	R	N
DeleteHostInfo	Y	N	R	N
GetHost	Y	Y	R	R
GetHostInfo	Y	Y	R	R
HostScan	Y	N	N	N
MergeHost	Y	N	R	N
ModifyHost	Y	N	R	N
ModifyHostInfo	Y	N	R	N
ModifyVirtualizationServer	Y	N	N	N
RefreshVirtualizationServer	Y	N	R	N

Table 3-17   CLI Command Access and Device Manager Resource Access Matrix: Server Management Commands

CLI Command	All Resources Resource Group		User-defined Resource Group	
	Modify Permission	View Permission	Modify Permission	View Permission
AddURLLink	Y	N	R	N

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CLI Command	All Resources Resource Group		User-defined Resource Group	
	Modify Permission	View Permission	Modify Permission	View Permission
DeleteAlerts	Y	N	N	N
DeleteURLLink	Y	N	R	N
GetAlerts	Y	Y	Y	Y
GetDebugLevel	Y	Y	Y	Y
GetLogFile	Y	Y	Y	Y
GetServerInfo	Y	Y	Y	Y
GetURLLink	Y	Y	R	R
ModifyDebugLevel	Y	N	N	N

Table 3-18   CLI Command Access and Device Manager Resource Access Matrix: Replication Commands

CLI Command	All Resources Resource Group		User-defined Resource Group	
	Modify Permission	View Permission	Modify Permission	View Permission
AddConfigFileForReplication	Y	N	R	N
AddReplication	Y	N	R	N
DeleteReplication	Y	N	R	N
GetReplicationControllerPair	Y	Y	Y	Y
ModifyReplication	Y	N	R	N

Guidelines for Executing Certain CLI Commands

The following table lists some guidelines to follow when executing certain CLI commands.

Table 3-19   Guidelines for Executing Certain CLI Commands

Item	Description	Related Commands
Adding a LUN or host storage domain (for Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, Hitachi AMS2000/AMS/WMS, Hitachi SMS, 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 AddWWNForLun AddWWNForHostStorageDomain AddISCSINameForHostStorageDomain
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 ModifyLunGroup command to release the target LUNs from the LUN group, and then perform the operation for each LUN.	ModifyLunGroup DeleteLun AddWWNForLun DeleteWWNForLun

Item	Description	Related Commands
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 Hitachi 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 Hitachi Storage Command 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 mulitple CLI commands are executed sequentially in batch, make sure beforehand that the correct password is set for options and properties.	All commands

4

Command Descriptions (CLI)

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

Storage Array Commands

The storage array commands can be used to register, modify, and delete storage subsystem information. For information on storage array operations, please refer to the Device Manager online Help.

AddArrayGroup

AddArrayGroup adds an array group to a storage device. 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.

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

> *Note:* This command is not available for the Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, Lightning 9900, or Hitachi SMS.

The following table describes the parameters of the AddArrayGroup command.

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 RAIDx(yD[+zP]). For Hitachi AMS2000/AMS/WMS and Hitachi SMS, the syntax is RAIDx(yD[+yD]) or RAIDx(yD[+zP]), where x indicates the RAID level, y indicates the number of data disks, and z (if specified) indicates the number of parity disks. (For example, RAID5(3D+1P) 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. Hitachi AMS2000/AMS/WMS and Hitachi SMS supports RAID0, RAID1, RAID1+0, RAID5, and RAID6.
pdevnums	Required	Comma-separated list of physical disk (PDEV) IDs (for more information, see pdevid in Table 4-42)
serialnum	Required	Serial number of the storage array for the array group

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\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=u1ag1
      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
         type=-1
         volumeType=-1
         encrypted=-1
         protectionLevel=-1
         dpPoolID=-1
         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
              arrayGroupName=3
              capacityInKB=75,497,472
              row=0
              column=10
              denseNumber=-1
              densePosition=-1
              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
              arrayGroupName=3
              capacityInKB=75,497,472
              row=0
              column=11
              denseNumber=-1
              densePosition=-1
              depth=1
              role=data
              vendor=SEAGATE
              model=DKS2C-K072FC
              firmwareVersion=F6FF
              serialNumber=
              dkuType=HDS9500V
              rpm=0
              diskType=0
              pdevid=11
```

AddArrayReservation

AddArrayReservation locks the target storage subsystem.

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 Device Manager CLI 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 Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200.

The following table describes the parameters of the AddArrayReservation command.

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 obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

Command execution example

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

Command execution result

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

AddExternalArrayGroup

`AddExternalArrayGroup` performs one-to-one mapping of external volumes (volumes in an externally connected storage subsystem) to internal volumes, and then creates an array group. `AddExternalArrayGroup` also creates an LU in the created external array group. When you perform mapping, you can specify multiple paths (alternate paths).

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

⚠️ *Notes:*
- This command can be used only with Universal Storage Platform V/VM storage subsystems. The required microcode version is 60-02-40-XX/XX or later.
- Before you can execute this command, both the storage subsystem in which to create an external array group and the externally connected storage subsystem must be registered as management targets of Device Manager.

The following table describes the parameters of the AddExternalArrayGroup command.

Table 4-4   AddExternalArrayGroup Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the storage subsystem where you want to create the external array group
model	Required	Model of the storage subsystem where you want to create the external array group
externalgrpnum	Optional	Group number of the external array group Specify the group number of the external array group to be created. You can specify an integer from 1 to 16384. If this parameter is omitted, a value is automatically set by Device Manager.
portname	Required	Port name of the port to which the external subsystem is connected If you specify multiple (alternate) paths, use a comma to separate each entry. *Note:* When specifying paths, the parameters `portname`, `externalwwn`, and `externallun` must all be specified as a set. The order in which they are specified dictates the path priority. (The first parameter in the set will become the primary path.) Make sure that the order and number of the values specified for these parameters are correct.

Parameter Name	Status	Description
externalwwn	Required	Port WWN of the external subsystem If you specify multiple (alternate) paths, use a comma to separate each entry. *Note:* When specifying paths, the parameters `portname`, `externalwwn`, and `externallun` must all be specified as a set. The order in which they are specified dictates the path priority. (The first parameter in the set will become the primary path.) Make sure that the order and number of the values specified for these parameters are correct.
externallun	Required	LUN of the external volume If you specify multiple (alternate) paths, use a comma to separate each entry. *Note:* When specifying paths, the parameters `portname`, `externalwwn`, and `externallun` must all be specified as a set. The order in which they are specified dictates the path priority. (The first parameter in the set will become the primary path.) Make sure that the order and number of the values specified for these parameters are correct.
pathgroupid	Optional	Group number of the path If this parameter is omitted, a value is automatically set by Device Manager.
emulation	Optional	Emulation type of the logical unit OPEN-V is the only value that can be specified. If this parameter is omitted, OPEN-V is set.
clprnumber	Optional	CLPR number If this parameter is omitted, 0 is set.
cachemode	Optional	Option information (cache mode) of the logical unit Either of the following values can be specified: ▪ true: Valid ▪ false: Invalid If the cachemode parameter is omitted, the following values are set: ▪ When the inflowcontrol parameter is specified, true is set. ▪ When the inflowcontrol parameter is omitted If the external volume is a command device, false is set. If the external volume is not a command device, true is set.
inflowcontrol	Optional	Option information (cache inflow control mode) of the logical unit Either of the following values can be specified: ▪ true: Valid ▪ false: Invalid If this parameter is omitted, false is set.

Parameter Name	Status	Description
luoption	Optional	Option information that determines whether logical units are to be created at the same time an external array group is created Either of the following values can be specified: ▪ none: No logical unit is created. ▪ create: Logical units are created. If this parameter is omitted, none is set.
numoflus	Optional	Number of logical units to be created The only valid value is 1. If this parameter is omitted, 1 is set. *Note:* This parameter cannot be specified if none is specified in the luoption parameter or if the luoption parameter is omitted.
devnum	Optional	Device number of the logical unit This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, 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. If this parameter is omitted, a value is automatically set by Device Manager. *Note:* This parameter cannot be specified if none is specified in the luoption parameter or if the luoption parameter is omitted.
capacity	Optional	Volume size of the logical unit If this parameter is omitted, a logical unit having the same size as the external volume is created. *Note:* This parameter cannot be specified if none is specified in the luoption parameter or if the luoption parameter is omitted.
capacitytype	Optional	Unit for the value to be specified in the capacity parameter Either of the following values can be specified: ▪ KB ▪ block If this parameter is omitted, KB is set. *Note:* This parameter cannot be specified if none is specified in the luoption parameter or if the luoption parameter is omitted.

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. For the storage subsystem where you want to create an external array group, specify either an arrayType value or a displayArrayType value for the model parameter. Use the serialNumber value to specify the serialnum parameter.

portname: Obtain this value from the execution result of the GetStorageArray (subtarget=Port) command executed on the storage subsystem where you want to create an external array group. Then, for the portname parameter, specify the displayName value of the port whose portRole value is External. At this time, record the worldWidePortName value.

externalwwn: Obtain this value from the execution result of the GetStorageArray (subtarget=Port, portsubinfo=WWN) command for an external subsystem. Then, select the port whose wwn value displayed below An instance of WWN matches the worldWidePortName value of the portname parameter. Then, for the externalwwn parameter, specify the worldWidePortName value of that port. At this time, record the portID value.

externallun: Obtain this value from the execution result of the GetStorageArray (subtarget=Path, pathsubinfo=WWN) command for an external subsystem. Then, for the externallun parameter, specify the LUN value of a path that satisfies the following conditions:

- The wwn value displayed below An instance of WWN matches the worldWidePortName value of the portname parameter.

- The portID value displayed below An instance of Path matches the portID value of the externalwwn parameter.

Command execution example
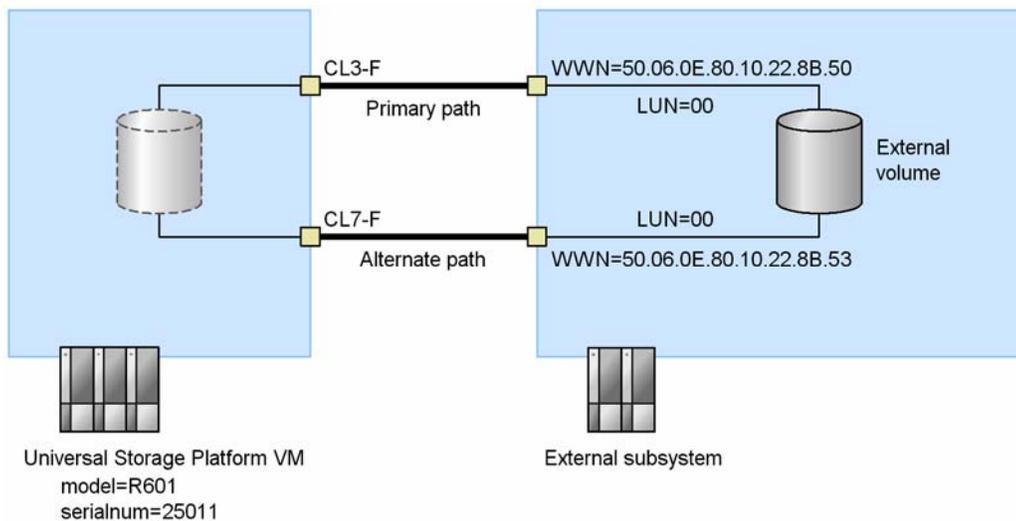
Figure 4-1   Example of Executing the AddExternalArrayGroup Command

The following shows an example of executing the AddExternalArrayGroup command to set up the configuration shown in Figure 4-1:

```
HiCommandCLI AddExternalArrayGroup -o "D:\logs\AddExternalArrayGroup.log" model=R601
serialnum=25011 portname=CL3-F,CL7-F
externalwwn=50.06.0E.80.10.22.8B.50,50.06.0E.80.10.22.8B.53 externallun=00,00
```

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.R601.25011.134.0
      chassis=134
      number=0
      displayName=E34-1
      raidType=-
      emulation=OPEN-V
      diskType=
      diskSize=0
      diskSizeInKB=-1
      controllerID=-1
      totalCapacity=0
      allocatedCapacity=0
      freeCapacity=0
      hiHsmCapacity=0
      onDemandCapacity=0
      totalFreeSpace=2,097,152
      largestFreeSpace=2,097,152
      substance=1
      slprNumber=0
      clprNumber=0
      cuInfo=
      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
      type=1
      volumeType=1
      encrypted=-1
      protectionLevel=-1
      dpPoolID=-1
      List of 1 FreeSpace elements:
        An instance of FreeSpace
          objectID=FREESPACE.R601.25011.134.0.0
          sizeInKB=2,097,152
          cylinders=0
          fsControlIndex=0
      List of 2 ExternalPathInfo elements:
        An instance of ExternalPathInfo
          objectID=ExternalPathInfo.R601.25011.134.0.50060E8010228B50.0.13
          externalWWN=50.06.0E.80.10.22.8B.50
          externalLun=0
```

```
              portID=13
              pathGroupID=22
              priority=1
          An instance of ExternalPathInfo
              objectID=ExternalPathInfo.R601.25011.134.0.50060E8010228B53.0.15
              externalWWN=50.06.0E.80.10.22.8B.53
              externalLun=0
              portID=15
              pathGroupID=22
              priority=2
```

AddHostStorageDomain

AddHostStorageDomain adds a host storage domain. For Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, Hitachi AMS2000/AMS/WMS, Hitachi SMS, and Thunder 9500V (in LUN Management mode), this command creates a host group in 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 execute this command for any resources.

⚠️ **Note:** For Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, Hitachi AMS2000/AMS/WMS, Hitachi SMS, and Thunder 9500V (in LUN Management mode), when AddHostStorageDomain adds a host storage domain, LUN security for the target port is automatically enabled. Make sure that the I/Os of the target port are stopped.

The following table describes the parameters of the AddHostStorageDomain command.

Table 4-5   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. If they are specified at the same time, an error will 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. If they are specified at the same time, an error will occur.

Parameter Name	Status	Description
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 0x prefix.
		Notes:
		▪ The execution results are output in decimal.
		▪ The specifiable values vary, depending on the storage subsystem.
		For the Universal Storage Platform V/VM and Hitachi USP: 1 to 254 For Lightning 9900V: 1 to 127 For Thunder 9500V (in the LUN Management mode): 1 to 127 For Hitachi AMS2000/AMS/WMS and Hitachi SMS (Host group): 1 to 127 For Hitachi AMS2000/AMS/WMS and Hitachi SMS (iSCSI target): 1 to 254 All Others: 1 to 511
hostmode	Optional (USP V/VM, Hitachi USP, 9900V, Hitachi AMS2000/AMS/WMS, Hitachi SMS, and, 9500V (in LUN Management mode))	Host mode of the host storage domain
		The default is Standard.
		For the Universal Storage Platform V/VM, you can specify the following values:
		▪ Standard
		▪ VMware
		▪ HP
		▪ OpenVMS
		▪ Tru64
		▪ Solaris
		▪ NetWare
		▪ Windows
		▪ AIX
		▪ VMware Extension
		▪ Windows Extension
		▪ UVM
		For Hitachi USP, you can specify the following values:
		▪ Standard
		▪ Sequent
		▪ HP
		▪ Solaris
		▪ Netware
		▪ Windows
		▪ Windows Extension
		▪ Tru64
		▪ HI-UX
		▪ AIX
		▪ OPEN-VMS
		The following value relies on the DKC microcode version.
		For 50-03-0X-XX/XX or later:
		▪ UVM

Parameter Name	Status	Description
hostmode		For the Lightning 9900V, you can specify the following values: ▪ Standard ▪ Sequent ▪ HP ▪ Solaris ▪ Netware ▪ Windows ▪ Tru64 ▪ HI-UX ▪ AIX ▪ OPEN-VMS The following value relies on the DKC microcode version. For 21-05-00-XX/XX or later: ▪ Windows Extension ▪ Solaris Extension For 21-14-02-XX/XX or later: ▪ Standard Extension2 ▪ HP Extension2 ▪ Solaris Extension2 ▪ Windows Extension2 ▪ AIX Extension2 For Hitachi AMS2000/AMS/WMS, Hitachi SMS, and Thunder 9500V (in the LUN Management mode), you can specify the following values: ▪ Standard ▪ Open VMS ▪ TRESPASS ▪ Wolfpack

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Parameter Name	Status	Description
hostmode2	Optional (Hitachi AMS2000/AMS/WMS, Hitachi SMS, and 9500V (in the LUN Management mode))	List of host connection mode 2 Each mode is separated using a semicolon (;). In this parameter, you can specify 0 or the following values: For Hitachi AMS2000 and Hitachi SMS, you can specify the following values: ▪ Same Node Name Mode ▪ Tru Cluster Mode ▪ Port-ID Conversion Mode ▪ PSUE Read Reject Mode ▪ Mode Parameters Changed Notification Mode ▪ CCHS Mode ▪ HP-UX Mode ▪ NACA Mode ▪ Product Serial Response Mode ▪ Unique Reserve Mode 1 ▪ Task Management Isolation Mode ▪ NOP-In Suppress Mode ▪ S-VOL Disable Advanced Mode The following value relies on the firmware version. For x860/A or later: ▪ Discovery CHAP Mode For x890/A or later (excluding Hitachi SMS): ▪ Unique Extended COPY Mode ▪ Unique Write Same Mode For Hitachi AMS/WMS, you can specify the following values: ▪ 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
hostmode2		The following value relies on the firmware version.
		For x712/A-x or later:
		▪ SPC-2 Mode
		For x781/A or later:
		▪ S-VOL Disable Advanced Mode
		For Thunder 9500V (in the LUN Management mode), you can specify the following values:
		▪ 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
		The following value relies on the firmware version.
		For x712/A-x or later:
		▪ SPC-2 Mode
		For x6x5 or later:
		▪ 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
		For x6x7 or later:
		▪ Same Node Name Mode
		For x6xA/R or later:
		▪ SPC-2 Mode

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Parameter Name	Status	Description
hostmode2		The following values rely on the DKC microcode version. For x6x3/C or later: ▪ No_RSV_Conf Mode For x6x5 or later: ▪ 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 For x6x7 or later: ▪ Same Node Name Mode For x6xA/R or later: ▪ SPC-2 Mode
hostmodeoption	Optional (for USP V/VM and Hitachi USP)	List of host mode options To specify two or more options, separate them with semicolons (;). For details about the values that you can specify, see Table 4-57.
name	Optional	Name of the host storage domain Specify any name. The value specified for this parameter is used only by Device Manager to identify the host storage domain. You can use a character string of 1-64 bytes for a name. *Note:* Spaces at the beginning or end of a name are not registered.

Parameter Name	Status	Description
nickname	Optional (USP V/VM, Hitachi USP, 9900V, Hitachi AMS2000/AMS/WMS, Hitachi SMS, and 9500V (in LUN Management mode))	Nickname of the host storage domain Specify the name used for the host group or iSCSI target to be created in the storage subsystem. If this parameter is omitted, it is set automatically. ***Note:*** When adding a host storage domain, if you use the `HostScan` command to register a host in Device Manager, in the nickname parameter specify the name of the host that uses the host storage domain. For details about the `HostScan` command, see [HostScan](#). You can use the following characters: A-Z a-z 0-9 ! # $ % & ' ( ) + - . = @ [ ] ^ _ ` { } ~ (space)  ***Notes:***  ▪ A nickname cannot begin or end with spaces.  ▪ For Hitachi AMS2000/AMS/WMS, Hitachi SMS, and the Thunder 9500V series in the LUN Management mode, a grave accent mark ( `) cannot be used. The character string used for a nickname must be within the following range: ▪ Universal Storage Platform V/VM: 1-32 bytes ▪ Hitachi USP: DKC microcode version earlier than 50-04-01: 1-16 bytes DKC microcode version 50-04-01 or later: 1-32 bytes ▪ Lightning 9900V: 1-8 bytes ▪ Hitachi AMS2000: 1-32 bytes ▪ Hitachi SMS: 1-32 bytes ▪ Hitachi AMS/WMS: When domaintype is 0: 1-16 bytes When domaintype is 1: 1-32 bytes ▪ Thunder 9500V (LUN management mode): Firmware version earlier than x6x9/M: 1-8 bytes Firmware version x6x9/M or later: 1-16 bytes
domaintype#	Optional (Hitachi AMS2000/AMS/WMS and Hitachi SMS)	Domain type of the host storage domain You can specify the following values: ▪ 0: Host group ▪ 1: iSCSI target When this parameter is omitted, 0 is set.
domainiscsiname#	Optional (Hitachi AMS2000/AMS/WMS and Hitachi SMS)	iSCSI name of the host storage domain (iSCSI target) Specify the iSCSI name in the iqn or eui format. You can use the following characters: A-Z a-z 0-9 - . : The iSCSI name is not case-sensitive. You can use a character string of 1-233 bytes for a name. If this parameter is omitted, it is set automatically.
# If you specify the domainiscsiname parameter, specify 1 in the domaintype parameter.		

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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 execution example

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

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.USP.11111.16.1
      portID=16
      portName=CL1-E
      domainID=1
      hostMode=Standard
      hostModeOption=2
      displayName=CL1-E-1
      domainType=0
      nickname=HCMD1001
```

AddLabel

AddLabel adds a label to a logical unit.

The following table describes the parameters of the AddLabel command.

Table 4-6   AddLabel Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the storage subsystem
model	Required	Model of the storage subsystem
devnums	Required	Device number of the logical unit to which a label is to be added
		This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for Hitachi USP, Lightning 9900V, or Lightning 9900, use the *xx*:*yy* format, where *xx* is the CU number, and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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.
		Use a comma to delimit multiple values.
		Notes:
		▪ The maximum number of device numbers that can be specified is 1,024.
		▪ If an LDEV to which a label has already been added is included, an error occurs.
label	Required	Label character string
		You can use the following characters:
		A-Z a-z 0-9 ! # $ % & ' ( ) * + , - . / : ; < = > ? @ [ ] ^ _ {	} ~ (space)
		Notes:
		▪ You can use a character string of 1-64 bytes for a label.
		▪ A label character string cannot begin or end with spaces.

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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. For the devnums parameter, specify the devNum value of the LDEV to which you want to add a label.

Command execution example

```
HiCommandCLI AddLabel -o "D:\logs\AddLabel.log" "serialnum=10037" "model=R600"
"devnums=00:00:00,00:00:01" "label=myLabel"
```

Command execution result

```
RESPONSE:
An instance of ObjectLabel
  targetID=LDEV.R600.10037.0
  label=myLabel

An instance of ObjectLabel
  targetID=LDEV.R600.10037.1
  label=myLabel
```

AddLogicalUnit

AddLogicalUnit creates an LDEV and LU. With Universal Storage Platform V/VM and Hitachi USP, you can create multiple logical units at once.

The LDEVs created by this command are formatted when they are created. However, if you are using Universal Storage Platform V/VM or Hitachi USP, you can use the format parameter to specify whether to format the LDEVs and also the format type.

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

Notes:

- For Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, and Lightning 9900, the capacity of LDEV to be created will be larger than the specified capacity.
- For Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, and Lightning 9900, 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.
- For Universal Storage Platform V/VM, Hitachi 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.
- For Universal Storage Platform V/VM, 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.
- For Hitachi 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.
- For Hitachi AMS2000, logical units cannot be created in array groups that are made up of HDP pools.
- For the Thunder 9500V series, Quick Format will be used to format LDEVs if the firmware is any of the following versions:
  – Thunder 9530V or Thunder 9570V: 0655/C or later
  – Thunder 9580V: 1655/D or later
- 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.

Format for Universal Storage Platform V/VM or Hitachi USP

When creating a single LU:

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

When creating multiple logical units in bulk by specifying their capacity and number:

```
HiCommandCLI [URL] AddLogicalUnit [options] serialnum=serial-number model=model
{chassis=chassis-number groupnum=array-group-number|arraygroupname=array-group-name}
[fsindex=free-space] creationoption=bulk capacity=capacity-of-the-logical-unit
numoflus=number-of-logical-units-to-be-created [emulation=OPEN-V] [devnum=logical-unit-
device-number] [lusubinfo=LDEV] [format={none|normal|quick#}] [capacitytype={KB|block}]
```

When creating multiple logical units in bulk by specifying their capacity:

```
HiCommandCLI [URL] AddLogicalUnit [options] serialnum=serial-number model=model
{chassis=chassis-number groupnum=array-group-number|arraygroupname=array-group-name}
[fsindex=free-space] creationoption=dividebycap capacity=capacity-of-the-logical-unit
[emulation=OPEN-V] [devnum=logical-unit-device-number] [lusubinfo=LDEV]
[format={none|normal|quick#}] [capacitytype={KB|block}]
```

When creating multiple logical units in bulk by specifying their number:

```
HiCommandCLI [URL] AddLogicalUnit [options] serialnum=serial-number model=model
{chassis=chassis-number groupnum=array-group-number|arraygroupname=array-group-name}
[fsindex=free-space] creationoption=dividebynum numoflus=number-of-logical-units-to-be-
created [emulation=OPEN-V] [devnum=logical-unit-device-number] [lusubinfo=LDEV]
[format={none|normal|quick#}] [capacitytype={KB|block}]
```

For the Universal Storage Platform V/VM, you can specify `quick` for the `format` parameter.

Format for Lightning 9900V and Lightning 9900

```
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 for Hitachi AMS2000 and Hitachi SMS

```
HiCommandCLI [URL] AddLogicalUnit [options] serialnum=serial-number model=model
{chassis=chassis-number groupnum=array-group-number|arraygroupname=array-group-name}
capacity=capacity-of-the-logical-unit [devnum=logical-unit-device-number] [lusubinfo=LDEV]
[stripeSizeInKB=stripe-size-for-the-LDEV]
```

Format for Hitachi AMS/WMS

```
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
[defportcntl=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 for Thunder 9500V and Thunder 9200

```
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
[defportcntl=logical-unit-port-controller-number|defaultportcontrollername=logical-unit-
port-controller-name] [devnum=logical-unit-device-number] [lusubinfo=LDEV]
```

The following table describes the parameters of the AddLogicalUnit command.

Table 4-7   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. If they are specified at the same time, an error will 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. If they are specified at the same time, an error will 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. If they are specified at the same time, an error will occur.
fsindex	Optional (Universal Storage Platform V/VM and Hitachi USP)	Free space to be used for creating the LU Specify the free space to be used for creating the LU. If you specify this parameter, also specify the creationoption parameter. If you omit this parameter, free space is used as follows: ▪ If you specify bulk for creationoption, all free spaces are used.[#] # You cannot create an LU across multiple free spaces. Therefore, if you specify the LU capacity (capacity) and number of LUs (numoflus) to be created, and none of the free spaces have a capacity greater than the specified LU capacity, an error occurs. ▪ If you specify dividebycap or dividebynum for creationoption, the largest of all the free spaces is used.

Parameter Name	Status	Description
creationoption	Optional (Universal Storage Platform V/VM and Hitachi USP)	LU creation method Specify a creation method for creating multiple LUs at once in the Universal Storage Platform V/VM or Hitachi USP. One of the following values can be specified: ▪ bulk: Creates LUs by specifying their capacity and number. *Note:* If you specify bulk, also specify capacity and numoflus. ▪ dividebynum: Creates LUs by specifying their number. *Note:* If you specify dividebynum, also specify numoflus but do not specify capacity. ▪ dividebycap: Creates LUs by specifying their capacity. *Note:* If you specify dividebynum, also specify capacity but do not specify numoflus. If you omit this parameter, also specify capacity but do not specify fsindex or numoflus.
capacity	Optional	Capacity of the LUs to be created This parameter must be specified if the creationoption parameter is not specified, or if bulk or dividebycap is specified for the creationoption parameter. This parameter cannot be specified if dividebynum is specified for the creationoption parameter. 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. For Universal Storage Platform V/VM and Hitachi USP only, you can use the capacitytype parameter to change the unit of capacity to blocks.
defportcntl	Optional (for Hitachi AMS/WMS, 9500V, and 9200)	Number of the port controller for the LU *Note:* Do not specify this parameter with the defaultportcontrollername parameter. If they are specified at the same time, an error will occur.
defaultportcontrollername	Optional (for Hitachi AMS/WMS, 9500V, and 9200)	LU port controller name *Note:* Do not specify this parameter with the defportcntl parameter. If they are specified at the same time, an error will occur.
numoflus	Optional (Universal Storage Platform V/VM and Hitachi USP)	Number of LUs to be created This parameter must be specified if bulk or dividebynum is specified for the creationoption parameter. Do not specify this parameter if the creationoption parameter is not specified, or dividebycap is specified for the creationoption parameter.

Command Descriptions (CLI)

Parameter Name	Status	Description
emulation	Optional (for USP V/VM, Hitachi USP, 9900V, and 9900)	Emulation type of the logical unit The following are the specifiable emulation types: ▪ OPEN-3 ▪ OPEN-8 ▪ OPEN-9 ▪ OPEN-E ▪ OPEN-K ▪ OPEN-V (available only for Universal Storage Platform V/VM, Hitachi USP and Lightning 9900V) Specify the same emulation type as the array group in which a logical unit is created. If no such emulation is present, array group emulation is used. This parameter must be specified if the creationoption parameter is specified. In this case, OPEN-V is the only value you can specify. If you specify the creationoption parameter, OPEN-V is the only value that you can specify for emulation. Furthermore, if you omit emulation but specify creationoption, OPEN-V is set as the default value for emulation.
devnum	Optional	LU device number If omitted, the number is automatically generated. This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for Hitachi USP, Lightning 9900V or Lightning 9900, use the *xx*:*yy* format, where *xx* is the CU number, and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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.
lusubinfo	Optional	If set to LDEV, return the information on LDEV(s) related to the LU. The value you can specify is LDEV only which is not case-sensitive.
clprNumber	Optional (Hitachi SMS)	CLPR number for the LDEV If omitted, the LDEV is created using the CLPR default number.
stripeSizeInKB	Optional (Hitachi AMS2000/AMS/WMS and Hitachi SMS)	Stripe size for the LDEV (in KB) The following are the specifiable values: ▪ 64 ▪ 256 ▪ 512 The default setting is 64 KB.

Parameter Name	Status	Description
format	Optional (for Universal Storage Platform V/VM and Hitachi USP)	Format status of LDEVs that constitute an LU You can specify the following values: ▪ none: Creates an unformatted LDEV. ▪ normal: Creates a formatted LDEV. ▪ quick: Creates an LDEV formatted by using Quick Format. *Notes:* ▪ If omitted,, a formatted LDEV will be created. ▪ If you specify this value, make sure that the value of the autoFormatLU attribute of the StorageArray instance is 0. ▪ You can specify quick only when Universal Storage Platform V/VM is used and the DKC microcode version is 60-02-4x-xx/xx or later.
capacitytype	Optional	The unit for the value specified in the capacity parameter The values you can specify are KB or block. If this parameter is omitted, KB is set as the unit. *Note:* block can be specified for Universal Storage Platform V/VM and Hitachi USP only.

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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.

fsindex: Obtain this value from the execution result of the GetStorageArray (subtarget=FreeSpace) command. In the execution result of this command, fsControlIndex appears under An instance of FreeSpace. Use this value to specify the fsindex 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\AddLogicalUnit.log" serialnum=10001 model=HDS9980V
chassis=4 groupnum=32 capacity=1000080 emulation=OPEN-3 lusubinfo=LDEV devnum=176
```

Command execution result 1

```
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
      arrayGroupName=4-3-1
      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
      dpType=-1
      consumedCapacityInKB=-1
      dpPoolID=-1
      threshold=-1
      tcaPoolID=-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: 87010257, model: D800H). The LDEVs composing the created logical unit are obtained from the execution result.

```
HiCommandCLI AddLogicalUnit -o "D:\logs\AddLogicalUnit.log" serialnum=87010257 model=D800H
chassis=0 groupnum=2 capacity=1000080 defportcntl=0 lusubinfo=LDEV
```

Command execution result 2

```
RESPONSE:
An instance of StorageArray
  .
  . (Attributes of StorageArray are omitted here)
  .
  List of 1 Lu elements:
    An instance of LogicalUnit
      objectID=LU.D800H.87010257.58
      devNum=58
      displayName=58
      devCount=1
      devType=
      capacityInKB=1,000,080
      path=false
      commandDevice=false
      commandDeviceEx=0
      commandDeviceSecurity=false
      chassis=0
      arrayGroup=2
      arrayGroupName=2
      raidType=RAID5
      currentPortController=0
      defaultPortController=-1
      isComposite=0
      trueCopyVolumeType=Simplex
      shadowImageVolumeType=Simplex
      quickShadowVolumeType=Simplex
      universalReplicatorVolumeType=Simplex
      externalVolume=0
      differentialManagement=false
      quickShadowPoolID=-1
      universalReplicatorPoolID=-1
      dpType=-1
      consumedCapacityInKB=1,000,080
      dpPoolID=-1
      threshold=-1
      tcaPoolID=-1
```

AddLUSE

AddLUSE adds a LUSE volume to a storage subsystem.

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.

⚠️ *Notes:*

- This function is not available for Lightning 9900.
- 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.
- 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.

The following table describes the parameters of the AddLUSE command.

Table 4-8   AddLUSE Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the storage array from which LUSE is added
model	Required	Model of the storage array from which the LUSE is added
devnums	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 Hitachi USP, Lightning 9900V or Lightning 9900, use the *xx*:*yy* format, where *xx* is the CU number, and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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.

Parameter Name	Status	Description
luseoption	Optional	An option for adding a LUSE volume to a volume for which a path is set
		The value you can specify is force 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 obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\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=03:E9
      emulation=OPEN-3
      devCount=2
      devType=
      capacityInKB=4,806,720
      path=false
      commandDevice=false
      commandDeviceEx=0
      commandDeviceSecurity=false
      chassis=3
      arrayGroup=16
      arrayGroupName=3-2-1
      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
        dpType=-1
        consumedCapacityInKB=-1
        dpPoolID=-1
        threshold=-1
        tcaPoolID=-1
        List of 2 Ldev elements:
          An instance of LDEV
            objectID=LDEV.HDS9980V.15001.1001
            devNum=1,001
            displayName=03: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
            arrayGroupName=3-2-1
            path=false
            onDemandDevice=false
            devType=
            isStandardLDEV=true
            guardMode=
            diskType=0
            slprNumber=-1
            clprNumber=-1
            cacheResidencyMode=-1
            stripeSizeInKB=-1
            volumeKind=3
            status=Blocked
            dpType=-1
            consumedSizeInKB=-1
            mfTrueCopyVolumeType=Unknown
            mfShadowImageVolumeType=Unknown
            mfUniversalReplicatorVolumeType=Unknown
            mfUniversalReplicatorPoolID=-1
            dpPoolID=-1
            threshold=-1
            systemDisk=0
            encrypted=-1
          An instance of LDEV
            objectID=LDEV.HDS9980V.15001.1002
            devNum=1,002
            displayName=03: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
            arrayGroupName=3-2-1
            path=false
            onDemandDevice=false
```

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```
devType=
isStandardLDEV=true
guardMode=
diskType=0
slprNumber=-1
clprNumber=-1
cacheResidencyMode=-1
stripeSizeInKB=-1
volumeKind=3
status=Blocked
dpType=-1
consumedSizeInKB=-1
mfTrueCopyVolumeType=Unknown
mfShadowImageVolumeType=Unknown
mfUniversalReplicatorVolumeType=Unknown
mfUniversalReplicatorPoolID=-1
dpPoolID=-1
threshold=-1
systemDisk=0
encrypted=-1
```

AddPool

AddPool creates an HDP pool in a targeted storage subsystem.

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

Notes:

- This command can be used only with Universal Storage Platform V/VM and Hitachi AMS2000 storage subsystems.
- The parameters `thresholdvolforewarn` and `thresholdvoloverwarn`, which were supported in version 6.2, have changed to `overprovisioningwarning` and `overprovisioninglimit`, respectively. In addition, the attributes of the Pool instance, `thresholdVolForewarn` and `thresholdVolOverwarn`, which were output as the execution results of this command, have changed to `overProvisioningWarning` and `overProvisioningLimit`, respectively. Check and, if necessary, revise the script settings that you use in version 6.3 or later.

For Universal Storage Platform V/VM, a logical unit that satisfies the following conditions can be used as a pool volume in an HDP pool:

- It has a capacity of between 8 GB and 4 TB.
- It is not a LUSE volume.
- It is not a paired volume created with ShadowImage, TrueCopy, Universal Replicator, or QuickShadow.
- It is not a Volume Migration reserved volume.
- It is not a pool volume or a journal volume.
- It has a status of Normal.
- It has a guard mode of Read/Write.
- It has an emulation type of OPEN-V.
- It is not a QuickShadow or Hitachi Dynamic Provisioning virtual volume.
- It is not a command device.
- It does not have Cache Residency Manager set.
- It does not have a path.
- If more than one logical unit is specified, then:
  - all of them must have the same CLPR number.
  - all of them must have the same cache mode.
  - internal volumes cannot coexist with external volumes.

- If the HDP pool consists of internal volumes, the logical units must have the same disk drive type.

- It is not a system disk.

⚠️ *Notes:*

- For details about the number of pool volumes that can be specified in an HDP pool, see the Hitachi Dynamic Provisioning documentation.

- If the HDP pool consists of external volumes, we do not recommend that you use logical units that have different disk drive types to make up an HDP pool.

- For details about the total maximum number of Hitachi Dynamic Provisioning and QuickShadow pools, see the Hitachi Dynamic Provisioning documentation.

For Hitachi AMS2000, a PDEV that satisfies the following conditions can be used as a pool volume in an HDP pool:

- All disk drives must have the same type.

- The status of all disk drives must be unallocated.

Format for the Universal Storage Platform V/VM

```
HiCommandCLI [URL] AddPool [options] model=model serialnum=serial-number [poolid=pool-ID]
[threshold=threshold-related-to-HDP-pool] [overprovisioningwarning=over-provisioning-
warning-threshold] [overprovisioninglimit=over-provisioning-limit-threshold]
devnums=device-number-of-logical-unit
```

Format for the Hitachi AMS2000

When automatically selecting PDEVs by using the disk drive type, disk size, and number of disk drives as conditions:

```
HiCommandCLI [URL] AddPool [options] model=model serialnum=serial-number [poolid=pool-ID]
[threshold=threshold-related-to-HDP-pool] [threshold2=threshold-related-to-HDP-pool]
[overprovisioningwarning=over-provisioning-warning-threshold] [overprovisioninglimit=over-
provisioning-limit-threshold] [volalertnotice={0|1}]
[raidlevel={RAID1|RAID1+0|RAID5|RAID6}] [automode=true] disktype={1|4|5}
diskmodelsize={146GB|300GB|400GB|450GB|500GB|750GB|1TB|2TB } numberofpdevs=number-of-PDEVs
```

When selecting PDEVs by specifying their IDs:

```
HiCommandCLI [URL] AddPool [options] model=model serialnum=serial-number [poolid=pool-ID]
[threshold=threshold-related-to-HDP-pool] [threshold2=threshold-related-to-HDP-pool]
[overprovisioningwarning=over-provisioning-warning-threshold] [overprovisioninglimit=over-
provisioning-limit-threshold] [volalertnotice={0|1}]
[raidlevel={RAID1|RAID1+0|RAID5|RAID6}] automode=false pdevnums=list-of-PDEV-IDs
```

The following table describes the parameters of the AddPool command.

Table 4-9   AddPool Command Parameters

Parameter Name	Status	Description
model	Required	Model of the storage subsystem
serialnum	Required	Serial number of the storage subsystem
poolid	Optional	Pool ID Specify the pool ID of the HDP pool to be created. You can specify an integer from 0 to 127. If this parameter is omitted, it is set automatically. ***Note:*** Do not specify a pool ID that is already being used by QuickShadow or Hitachi Dynamic Provisioning.
threshold	Optional	Threshold related to the HDP pool (%) The threshold of the HDP pool is the usage rate of the HDP pool. One of the following values can be specified: For Universal Storage Platform V/VM: Specify a multiple of 5 from 5 to 95. If this parameter is omitted, 70 is set. For Hitachi AMS2000: By specifying threshold values for threshold and threshold2, warnings can be issued in two levels. For threshold, specify a threshold value used to report HDP pool shortage at an early stage. Specify an integer from 1 to 99. You need to specify a value smaller than the one specified for threshold2. If this parameter is omitted, 40 is set.
threshold2	Optional (for Hitachi AMS2000)	Threshold related to the HDP pool (%) The threshold of the HDP pool is the usage rate of the HDP pool. For threshold2, specify a threshold value used to warn of HDP pool shortage by using an integer from 1 to 99. You need to specify a value larger than the one specified for threshold. If this parameter is omitted, 50 is set.

Parameter Name	Status	Description

overprovisioningwarning[#1]	Optional	Over provisioning warning threshold (%)
		
		This is a threshold value related to the over-provisioning percent.[#2]
		
		One of the following values can be specified:
		
		For Universal Storage Platform V/VM:
		
		    Specify a threshold value used to issue an advance warning.
		
		    Specify an integer from 10 to 1000. You need to specify a value smaller than the one specified for overprovisioninglimit.
		
		    If this parameter is omitted, –1 is set.
		
		    –1 indicates that a threshold value is not set.
		
		For Hitachi AMS2000:
		
		    Specify a threshold value used to issue an advance warning.
		
		    Specify an integer from 50 to 1000. You need to specify a value smaller than the one specified for overprovisioninglimit.
		
		    If this parameter is omitted, 100 is set.

overprovisioninglimit[#1]	Optional	Over provisioning limit threshold (%)
		
		This is a threshold value related to the over-provisioning percent.[#2]
		
		One of the following values can be specified:
		
		For Universal Storage Platform V/VM:
		
		    Specify a threshold value used to issue an excess limit warning.
		
		    Specify an integer from 10 to 1000. You need to specify a value larger than the one specified for overprovisioningwarning.
		
		    If this parameter is omitted, –1 is set.
		
		    –1 indicates that a threshold value is not set.
		
		    If you specify a threshold value and the over-provisioning percent[#2] exceeds the specified threshold value, you cannot create an HDP volume or assign HDP volumes to an HDP pool.
		
		For Hitachi AMS2000:
		
		    Specify a threshold value used to issue an excess limit warning.
		
		    Specify an integer from 50 to 1000. You need to specify a value larger than the one specified for overprovisioningwarning.
		
		    If this parameter is omitted, 130 is set.

volalertnotice	Optional (for Hitachi AMS2000)	For Hitachi AMS2000, specify whether to enable the thresholds related to the over-provisioning percent[#2] (overprovisioningwarning and overprovisioninglimit). One of the following values can be specified: ▪ 0: Disables the thresholds ▪ 1: Enables the thresholds If this parameter is omitted, 0 is set.

Parameter Name	Status	Description
devnums	Required (for Universal Storage Platform V/VM)	Device number of the logical unit(s)
		Specify this parameter as a decimal number or colon-delimited hexadecimal number in the format *ww*:*xx*:*yy*, where *ww* is the LDKC number, *xx* is the CU number, and *yy* is the LDEV number. *ww* is optional. If *ww* is omitted, LDKC is assumed to be 0.
		Use a comma to delimit multiple values.
raidlevel	Optional (for Hitachi AMS2000)	RAID level of the HDP pool
		You can specify RAID1, RAID1+0, RAID5, or RAID6. If this parameter is omitted, RAID6 is set.
automode[#3, #4]	Optional (for Hitachi AMS2000)	Specify how to select PDEVs that make up the HDP pool.
		One of the following values can be specified. The values are not case-sensitive.
		▪ true: Automatically selects PDEVs by using the disk drive type, disk size, and the number of disks as conditions.
		▪ false: Selects PDEVs by specifying their IDs.
		If this parameter is omitted, true is set.
disktype[#3, #4]	Optional (for Hitachi AMS2000)	Type of PDEVs
		One of the following values can be specified:
		▪ 1: SATA
		▪ 4: SAS
		▪ 5: SSD
diskmodelsize[#3, #4]	Optional (for Hitachi AMS2000)	Disk size of a PDEV in the catalog
		You can specify 146 GB, 300 GB, 400 GB, 450 GB, 500 GB, 750 GB, 1 TB, or 2 TB.
numberofpdevs[#3, #4]	Optional (for Hitachi AMS2000)	Number of PDEVs
		Specify one of the following values based on the RAID level specified for raidlevel.
		▪ RAID1: 2
		▪ RAID1+0: A multiple of 2 from 4 to 16
		▪ RAID5: An integer from 3 to 16
		▪ RAID6: An integer from 4 to 30
pdevnums[#3, #4]	Optional (for Hitachi AMS2000)	Comma-separated list of physical disk (PDEV) IDs

#1 If you specify threshold values for overprovisioningwarning and overprovisioninglimit, two warning levels related to the over-provisioning percent can be issued. For Universal Storage Platform V/VM, these threshold values are specific to and managed by the Device Manager server.

#2 The over-provisioning percent is the percentage of the total size of all HDP volumes with respect to the HDP pool size. For example, if the HDP pool size is 500 GB and the total size of all HDP volumes is 400 GB, the threshold value will be 80 %.

#3 If you specify true for the automode parameter, you also need to specify the disktype, diskmodelsize, and numberofpdevs parameters. However, do not specify the pdevnums parameter at the same time as the above parameters. If they are specified at the same time, an error will occur.

#4 If you specify false for the automode parameter, you also need to specify the pdevnums parameter. However, do not specify the disktype, diskmodelsize, or numberofpdevs parameter at the same time as the pdevnums parameter. If they are specified at the same time, an error will occur.

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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 results, the devNum value of LogicalUnit appears under An instance of LogicalUnit. Use the devNum value of a logical unit that satisfies the conditions to be used as a pool volume in an HDP pool to specify the devnums parameter.

pdevnums: 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 pdevnums parameter. If a comma is included in the pdevid value, specify the value, excluding the comma.

Command execution example

In this example, the AddPool command creates an HDP pool whose pool ID is 0 (poolid: 0) in the storage subsystem (serialnum: 15065, model: USP_V). In addition, this command also sets the usage rate threshold for the HDP pool to 75% (threshold: 75).

```
HiCommandCLI AddPool -o "D:\logs\AddPool.log" model=USP_V serialnum=15065 poolid=0
threshold=75 devnums=00:09:41,00:09:42
```

Command execution result

```
RESPONSE:
An instance of StorageArray
  .
  . (Attributes of StorageArray are omitted here)
  .
  List of 1 Pool elements:
    An instance of Pool
      objectID=JOURNALPOOL.R600.15065.5.0
      name=Pool
      poolFunction=5
      poolID=0
      controllerID=-1
      poolType=32
      status=0
      threshold=75
      threshold2=80
      capacityInKB=20,972,160
      freeCapacityInKB=20,972,160
      usageRate=0
```

```
numberOfPoolVols=2
numberOfVVols=0
capacityOfVVolsInKB=0
clprNumber=0
raidLevel=-
combination=
volAlertNotice=-1
overProvisioningPercent=0
overProvisioningWarning=-1
overProvisioningLimit=-1
List of 2 Lu elements:
  An instance of LogicalUnit
    objectID=LU.R600.15065.2369
    devNum=2,369
    displayName=00:09:41
    emulation=OPEN-V
    devCount=1
    devType=
    capacityInKB=10,486,080
    path=false
    commandDevice=false
    commandDeviceEx=0
    commandDeviceSecurity=false
    chassis=1
    arrayGroup=64
    arrayGroupName=1-5-1
    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
    dpType=1
    consumedCapacityInKB=10,486,080
    dpPoolID=0
    threshold=-1
    tcaPoolID=-1
  An instance of LogicalUnit
    objectID=LU.R600.15065.2370
    devNum=2,370
    displayName=00:09:42
    emulation=OPEN-V
    devCount=1
    devType=
    capacityInKB=10,486,080
    path=false
    commandDevice=false
    commandDeviceEx=0
    commandDeviceSecurity=false
    chassis=1
    arrayGroup=64
    arrayGroupName=1-5-1
    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
dpType=1
consumedCapacityInKB=10,486,080
dpPoolID=0
threshold=-1
tcaPoolID=-1
```

AddSpareDrive

AddSpareDrive adds a spare drive to a storage device. 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.

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

⚠️ *Note:* This command is not available for the Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, Lightning 9900, or Hitachi SMS.

The following table describes the parameters of the AddSpareDrive command.

Table 4-10   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 pdevid in Table 4-42)

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\AddSpareDrive.log" "model=D800H"
"serialnum=87010257" "pdevid=9"
```

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.D800H.87010257.9
        chassis=0
        arrayGroup=-1
        arrayGroupName=-1
        capacityInKB=280,887,296
        row=0
        column=9
        denseNumber=-1
        densePosition=-1
        depth=1
        role=spareuninitialized
        vendor=SEAGATE
        model=DKS2E-K300SS
        firmwareVersion=4C5B
        dkuType=D800
        rpm=15000
        diskType=4
        pdevid=9
        diskModelSize=300GB
```

AddStorageArray

AddStorageArray searches for storage subsystems (including SMI-S Enabled subsystems), and registers the storage subsystem information (such as the IP address, user ID, and password) into the Device Manager server database. 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.

Notes:

- 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 do so, the AddStorageArray command might take longer to perform.

- 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.

- 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. For details about the meaning of the statusOfDBInconsistency values other than 0, see Table 4-151 in StorageArray Instance.

When you execute the AddStorageArray command for SMI-S Enabled subsystems, note the following:

- If one SMI-S provider manages multiple SMI-S Enabled subsystems, all of the SMI-S Enabled subsystems supported by Device Manager will be registered into the Device Manager server database at the same time.

- If multiple SMI-S providers manage one SMI-S Enabled subsystem that has already been registered in the Device Manager server database, when another of the managing SMI-S providers is registered, the subsystem will not be re-registered for that provider and will not be refreshed.

- If the number of SMI-S Enabled subsystems managed by an SMI-S provider changes, you must re-register all the subsystems into the Device Manager server database by specifying the SMI-S provider they are registered to.

- If you change the user ID or password of an SMI-S provider, you must re-register that SMI-S provider by specifying the new user ID or password. When you do this, all the SMI-S Enabled subsystems registered in the Device Manager server database will be refreshed.

- If you change the SMI-S provider that manages an SMI-S Enabled subsystem, or if you modify the information about the SMI-S provider (such as the IP address, port number, or protocol), you must refresh the SMI-S Enabled subsystem. When you do this, specify the object ID of the SMI-S Enabled subsystem registered in the Device Manager server database and the new SMI-S provider information.

Format for the Universal Storage Platform V/VM, Hitachi 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]
```

Format for Lightning 9900

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

Format for the Hitachi AMS2000 and Hitachi SMS

```
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] [protocol={Non-secure|Secure|Either}]
```

Format for the Hitachi AMS/WMS, Thunder 9500V and Thunder 9200

```
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 SMI-S Enabled subsystems

When registering an SMI-S Enabled subsystem:

```
HiCommandCLI [URL] AddStorageArray [options] ipaddress={IP-address-of-SMI-S-provider|host-
name-of-SMI-S-provider} family=SMI-S_Enabled displayfamily=SMI-S_Enabled userid=user-ID
arraypasswd=user-password [protocol={Non-secure|Secure}] [portnumber=port-number-of-SMI-S-
provider-service]
```

When refreshing an SMI-S Enabled subsystem:

```
HiCommandCLI [URL] AddStorageArray [options] ipaddress={IP-address-of-SMI-S-provider|host-
name-of-SMI-S-provider} family=SMI-S_Enabled [displayfamily=SMI-S_Enabled] [userid=user-ID
arraypasswd=user-password] [protocol={Non-secure|Secure}] [portnumber=port-number-of-SMI-S-
provider] saobjid=object-ID-of-SMI-S-Enabled-subsystem
```

The following table describes the parameters of the AddStorageArray command.

Table 4-11   AddStorageArray Command Parameters

Parameter Name	Status	Description
arraypasswd	Required or optional (USP V/VM, Hitachi USP, 9900V, Hitachi AMS2000/AMS/WMS, Hitachi SMS, 9500V, 9200, and SMI-S Enabled subsystem)	User password One of the following values can be specified: For Universal Storage Platform V/VM, Hitachi USP, and Lightning 9900V: Specify the user password used to access the storage subsystem. You cannot omit this parameter when using the command to perform initial registration of information. However, you can omit this parameter when updating information, if you do not change the user password. For Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200: Specify the user password used to access the storage subsystem. If the password protection feature is enabled, you cannot omit this parameter when using the command to perform initial registration of information. For other cases, you can omit this parameter. *Note:* For Hitachi AMS2000/AMS/WMS and Hitachi SMS, 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). For an SMI-S Enabled subsystem: Specify the user password used to access the SMI-S provider. You cannot omit this parameter when using the command to perform initial registration of information. However, you can omit this parameter when using the command to refresh the information about the storage subsystem.
displayfamily	Required or optional	Display name of array family for the storage subsystem. You cannot omit this parameter when using the command to perform initial registration of information.
family	Required	Array family of the storage subsystem

Parameter Name	Status	Description
ipaddress[#]	Required	IP address
		One of the following values can be specified:
		For Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, and Lightning 9900:
		Specify the IP address of the storage subsystem.
		For Universal Storage Platform V/VM, this parameter can be specified by using an IPv6 IP address.
		For Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200:
		Specify the IP address of the storage subsystem.
		For an SMI-S Enabled subsystem:
		Specify the IP address of the SMI-S provider.
		You can also specify the host name.
ipaddress2[#]	Required or optional (Hitachi AMS2000/AMS/WMS, Hitachi SMS, 9500V, and 9200)	Second IP address for the storage subsystem
		When a dual configuration is consists of Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, or Thunder 9200, you cannot omit this parameter when information about the storage subsystem is initially registered or refreshed.
		You can omit this parameter when updating information, if you do not change the second IP address.
portnumber	Optional (SMI-S Enabled subsystem)	Port number of the SMI-S provider service
		If this parameter is omitted, one of the following values is set. The value set depends on the value specified for the protocol parameter.
		▪ Non-secure: 5988
		▪ Secure: 5989
protocol[#]	Optional (Hitachi AMS2000, Hitachi SMS, and SMI-S Enabled subsystem)	Protocol
		One of the following values can be specified. The values are not case-sensitive.
		For Hitachi AMS2000 and Hitachi SMS:
		Specify the protocol used to access the storage subsystem.
		▪ Non-secure: Non-SSL communication
		▪ Secure: SSL communication
		▪ Either: Gives priority to SSL communication
		If you omit this parameter when initially registering a storage subsystem, Either is set.
		Note: Specify Secure only if the Hitachi AMS2000 or Hitachi SMS firmware version is x84x/x-x or later. In other cases, specifying Secure will result in an error.
		For an SMI-S Enabled subsystem:
		Specify the data transfer protocol used by the SMI-S provider.
		▪ Non-secure: HTTP communication
		▪ Secure: HTTPS communication
		If you omit this parameter when initially registering an SMI-S Enabled subsystem, Secure is set.

Parameter Name	Status	Description
saobjid	Optional (SMI-S Enabled subsystem)	Object ID of the SMI-S Enabled subsystem Specify this parameter to refresh a particular SMI-S Enabled subsystem.
searchcommunity	Optional (for 9900)	SNMP Community string, used for identifying device elements via SNMP (9900 array) Default is public.
userid	Required or optional (USP V/VM, Hitachi USP, 9900V, Hitachi AMS2000/AMS/WMS, Hitachi SMS, 9500V, 9200, and SMI-S Enabled subsystem)	User ID One of the following values can be specified: For Universal Storage Platform V/VM, Hitachi USP, and Lightning 9900V: Specify the user ID used to access the storage subsystem. You cannot omit this parameter when using the command to perform initial registration of information. However, you can omit this parameter when updating information, if you do not change the user ID. For Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200: Specify the user ID used to access the storage subsystem. If the password protection feature is enabled, you cannot omit this parameter when using the command to perform initial registration of information. For other cases, you can omit this parameter. ***Note:*** For Hitachi AMS2000/AMS/WMS and Hitachi SMS, 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). For an SMI-S Enabled subsystem: Specify the user ID used to access the SMI-S provider. You cannot omit this parameter when using the command to perform initial registration of information. However, you can omit this parameter when using the command to refresh the information about the storage subsystem.

If a storage subsystem is managed by both Device Manager and Storage Navigator Modular 2, and both programs are installed on the same computer, the values for ipaddress, ipaddress2, or protocol must be the same as the ones set in Storage Navigator Modular 2.

Parameter values to obtain in advance

family and displayfamily: Obtain the values of these parameters from the execution results of the GetServerInfo command. Use the arrayFamily value or the displayArrayFamily value displayed in the execution result to specify the family parameter, and use the displayArrayFamily value to specify the displayfamily parameter.

saobjid: Obtain this value from the execution result of the GetStorageArray command. Set the value of objectID, obtained from the execution result, into the saobjid parameter.

Command execution 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 (rootpass). Information about the detected storage subsystems is registered in the Device Manager Server database.

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

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
configUpdateStatus=-1
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
distributedMode=-1
List of 1 CommParameters elements:
  An instance of CommParameters
    userID=root
    ipAddress=172.16.45.1
```

AddVirtualVolume

AddVirtualVolume creates HDP volumes (virtual volumes) in a target storage subsystem. This command also assigns the HDP volumes to be added to a target HDP pool.

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

> ⚠ **Note:** This command can be used only with Universal Storage Platform V/VM and Hitachi AMS2000 storage subsystems.

If you use the poolid parameter to specify the pool ID of an HDP pool, the HDP volumes that are created are assigned to that HDP pool.

For Universal Storage Platform V/VM, AddVirtualVolume can be used either to create a virtual volume group and populate it with HDP volumes, or to create HDP volumes in an existing virtual volume group.

For Universal Storage Platform V/VM, if no SSID is assigned to devNum of the created HDP volumes, one is assigned automatically. For details about the SSID, see the storage subsystem documentation.

If you use this command with Universal Storage Platform V/VM, the virtual volume group and the virtual volumes must satisfy the following conditions:

- They must have an emulation type of OPEN-V.

- The free space on the virtual volume must be larger than the capacity of the HDP volumes.

- If you are creating virtual volumes in an existing virtual group, the CLPR number of any HDP pool that you specify must be the same as the CLPR number of the virtual volume group.

- When an HDP pool is specified, its status must not be Blocked.

- When an HDP pool is specified, the over-provisioning percent must be less than the over provisioning limit threshold.

Notes:

Note the following when using this command with Universal Storage Platform V/VM:

- We recommend that you do not create more than one HDP volume in a virtual volume group. Also, if the DKC microcode version is 60-04-XX-XX/XX or later and the system option 726 is set to ON, you cannot create more than one HDP volume in a virtual volume group.

- Because an HDP volume management area is created, you cannot create HDP volumes that have a total capacity equal to the free space in the virtual volume group.

- To create virtual volumes within an existing virtual volume group, you must have Open Volume Management installed in the storage subsystem.

- If you execute this command when the threshold values related to the over-provisioning percent (the over provisioning warning threshold and over provisioning limit threshold) are set, make sure that the Device Manager server database is consistent. These threshold values are specific thresholds managed by the Device Manager server. If the over-provisioning percent information that has been obtained by Device Manager does not match the actual over-provisioning percent, the system's determination of whether the over provisioning warning threshold and over provisioning limit threshold values have been exceeded might be incorrect.

For Hitachi AMS2000, the following conditions must be satisfied when specifying an HDP pool:

- The status of the HDP pool is not Blocked.

- The usage of the HDP pool is less than the threshold value used to warn of HDP pool shortage (threshold2).

  For details about the threshold value used to warn of HDP pool shortage (threshold2), see AddPool.

For details about the following conditions, see the Hitachi Dynamic Provisioning documentation:

- The minimum and maximum capacities of HDP volumes

- The number of HDP volumes that you can create in a single virtual volume group

- The number of HDP volumes that you can assign to a single HDP pool

- The number of virtual volume groups that you can create under a single disk controller

Format for the Universal Storage Platform V/VM

When the command is used to create a virtual volume group, and to populate the group with HDP volumes:

```
HiCommandCLI [URL] AddVirtualVolume [options] model=model serialnum=serial-number
arraygroupname=name-of-virtual-volume-group capacity=capacity-of-virtual-volumes
[numoflus=number-of-HDP-volumes] [devnum=device-number-of-logical-unit] [clprNumber=CLPR-
number] [poolid=pool-ID-of-HDP-pool [threshold=usage-rate-threshold-of-HDP-volumes]]
[capacitytype={KB|block}]
```

When the command is used to create as many virtual volume groups as the HDP volumes to be created, and to populate each group with an HDP volume:

```
HiCommandCLI [URL] AddVirtualVolume [options] model=model serialnum=serial-number
capacity=capacity-of-virtual-volumes [numoflus=number-of-HDP-volumes] [devnum=device-
number-of-logical-unit] [clprNumber=CLPR-number] [poolid=pool-ID-of-HDP-pool
[threshold=usage-rate-threshold-of-HDP-volumes]] [capacitytype={KB|block}]
```

When the command is used to create HDP volumes in an existing virtual volume group:

```
HiCommandCLI [URL] AddVirtualVolume [options] model=model serialnum=serial-number
groupoption=exist arraygroupname=name-of-virtual-volume-group capacity=capacity-of-virtual-
volumes [numoflus=number-of-HDP-volumes] [devnum=device-number-of-logical-unit]
[poolid=pool-ID-of-HDP-pool [threshold=usage-rate-threshold-of-HDP-volumes]]
[capacitytype={KB|block}]
```

Format for the Hitachi AMS2000

```
HiCommandCLI [URL] AddVirtualVolume [options] model=model serialnum=serial-number
capacity=capacity-of-virtual-volumes [devnum=device-number-of-logical-unit] poolid=pool-ID-
of-HDP-pool
```

The following table describes the parameters of the AddVirtualVolume command.

Table 4-12   AddVirtualVolume Command Parameters

Parameter Name	Status	Description
model	Required	Model of the storage subsystem
serialnum	Required	Serial number of the storage subsystem
groupoption	Optional (for Universal Storage Platform V/VM)	Specifies whether to create HDP volumes within an existing virtual volume group. Specify exist to create the HDP volumes in an existing virtual volume group. **Note:** If you specify this parameter, you must also specify the arraygroupname parameter.
arraygroupname	Optional (for Universal Storage Platform V/VM)	Name of a virtual volume group Use the format X*n*-1 (where *n* is a numeric character) to specify the virtual volume group name. **Note:** You must specify this parameter if you specify exist in the groupoption parameter.

Parameter Name	Status	Description
capacity	Required	Capacity of HDP volumes (KB). You can specify the following values: For Universal Storage Platform V/VM: You can use the capacitytype parameter to change the unit of capacity to blocks. If the microcode version is earlier than 60-03: ▪ 48000 to 3221159680 (in KB) ▪ 96000 to 6442319360 (in blocks) If the microcode version is 60-03 or later: ▪ 48000 to 4294967296 (in KB) ▪ 96000 to 8589934592 (in blocks) For Hitachi AMS2000: ▪ 32768 to 64424509440 (in KB)
numoflus	Optional (for Universal Storage Platform V/VM)	Number of HDP volumes Specify the number of HDP volumes to be created. If this parameter is omitted, 1 is set.
devnum	Optional	Device number of the logical unit Specify this parameter as a decimal number or colon-delimited hexadecimal number in the format *ww*:*xx*:*yy*, where *ww* is the LDKC number, *xx* is the CU number, and *yy* is the LDEV number. *ww* is optional. If *ww* is omitted, LDKC is assumed to be 0. If this parameter is omitted, it is set automatically.
clprNumber	Optional (Universal Storage Platform V/VM)	CLPR number If this parameter is omitted, 0 is set. ***Note:*** If you have specified the poolid parameter, the CLPR number of the HDP pool specific to that pool ID is set.
poolid[#]	Optional	Pool ID of an HDP pool Specify the pool ID of the HDP pool to which to assign the HDP volumes to be created.
threshold	Optional (for Universal Storage Platform V/VM)	Usage rate threshold for the HDP volumes (%) Specify a multiple of 5 from 5 to 300. If omitted, 5 is set. ***Note:*** If the poolid parameter is omitted, the specification for this parameter becomes invalid.
capacitytype	Optional (for Universal Storage Platform V/VM)	Unit of the value specified in the capacity parameter. You can specify either KB or block. If this parameter is omitted, KB is set.
# For Hitachi AMS2000, always specify the `poolid` parameter.		

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

arraygroupname: 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, displayName appears under An instance of ArrayGroup. Use this value to specify the arraygroupname parameter.

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

Command execution example

In this example, the AddVirtualVolume command creates a virtual volume group (arraygroupname: X200-1) that has two HDP volumes (numoflus: 2) and assigns the virtual volume group to an HDP pool whose pool ID is 0 (poolid: 0) in the storage subsystem (serialnum: 15065, model: USP_V). In addition, this command also sets the usage rate threshold for the HDP pool to 10% (threshold: 10).

```
HiCommandCLI AddVirtualVolume -o "D:\logs\AddVirtualVolume.log" model=USP_V serialnum=15065
arraygroupname=X200-1 capacity=209715200 numoflus=2 devnum=00:30:00 poolid=0 threshold=10
```

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.R600.15065.16485.199
      chassis=16,485
      number=199
      displayName=X200-1
      raidType=-
      emulation=OPEN-V
      diskType=
      diskSize=-1
      diskSizeInKB=-1
      controllerID=-1
      totalCapacity=419,430,400
      allocatedCapacity=0
      freeCapacity=419,430,400
      hiHsmCapacity=0
      onDemandCapacity=0
      totalFreeSpace=2,801,729,280
      largestFreeSpace=2,801,729,280
```

```
        substance=0
        slprNumber=0
        clprNumber=0
        cuInfo=
        openTotalCapacity=419,430,400
        openAllocatedCapacity=0
        openFreeCapacity=419,430,400
        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=419,430,400
        openUnallocatedActualCapacity=0
        openReservedCapacity=0
        openReservedActualCapacity=0
        type=3
        volumeType=-1
        encrypted=0
        protectionLevel=-1
        dpPoolID=-1
        List of 2 Lu elements:
          An instance of LogicalUnit
            objectID=LU.R600.15065.12288
            devNum=12,288
            displayName=00:30:00
            emulation=OPEN-V
            devCount=1
            devType=
            capacityInKB=209,715,200
            path=false
            commandDevice=false
            commandDeviceEx=0
            commandDeviceSecurity=false
            chassis=16,485
            arrayGroup=199
            arrayGroupName=X200-1
            raidType=Unknown
            currentPortController=-1
            defaultPortController=-1
            isComposite=0
            trueCopyVolumeType=Simplex
            shadowImageVolumeType=Simplex
            quickShadowVolumeType=Simplex
            universalReplicatorVolumeType=Simplex
            sysVolFlag=0
            externalVolume=0
            differentialManagement=false
            quickShadowPoolID=-1
            universalReplicatorPoolID=-1
            dpType=0
            consumedCapacityInKB=0
            dpPoolID=0
            threshold=10
            tcaPoolID=-1
            List of 1 Ldev elements:
              An instance of LDEV
                objectID=LDEV.R600.15065.12288
```

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```
                    devNum=12,288
                    displayName=00:30:00
                    emulation=OPEN-V
                    cylinders=0
                    isComposite=0
                    sizeInKB=209,715,200
                    lba=419,430,400
                    raidType=-
                    substance=0
                    volumeType=-1
                    slotSizeInKB=48
                    chassis=16,485
                    arrayGroup=199
                    arrayGroupName=X200-1
                    path=false
                    onDemandDevice=false
                    devType=
                    isStandardLDEV=true
                    diskType=-1
                    slprNumber=-1
                    clprNumber=0
                    cacheResidencyMode=0
                    stripeSizeInKB=-1
                    volumeKind=3
                    status=Normal
                    dpType=0
                    consumedSizeInKB=0
                    mfTrueCopyVolumeType=Simplex
                    mfShadowImageVolumeType=Simplex
                    mfUniversalReplicatorVolumeType=Simplex
                    mfUniversalReplicatorPoolID=-1
                    dpPoolID=0
                    threshold=10
                    systemDisk=0
                    encrypted=0
            An instance of LogicalUnit
                objectID=LU.R600.15065.12289
                devNum=12,289
                displayName=00:30:01
                emulation=OPEN-V
                devCount=1
                devType=
                capacityInKB=209,715,200
                path=false
                commandDevice=false
                commandDeviceEx=0
                commandDeviceSecurity=false
                chassis=16,485
                arrayGroup=199
                arrayGroupName=X200-1
                raidType=Unknown
                currentPortController=-1
                defaultPortController=-1
                isComposite=0
                trueCopyVolumeType=Simplex
                shadowImageVolumeType=Simplex
                quickShadowVolumeType=Simplex
                universalReplicatorVolumeType=Simplex
                sysVolFlag=0
                externalVolume=0
                differentialManagement=false
                quickShadowPoolID=-1
                universalReplicatorPoolID=-1
                dpType=0
                consumedCapacityInKB=0
                dpPoolID=0
```

```
        threshold=10
        tcaPoolID=-1
        List of 1 Ldev elements:
          An instance of LDEV
             objectID=LDEV.R600.15065.12289
             devNum=12,289
             displayName=00:30:01
             emulation=OPEN-V
             cylinders=0
             isComposite=0
             sizeInKB=209,715,200
             lba=419,430,400
             raidType=-
             substance=0
             volumeType=-1
             slotSizeInKB=48
             chassis=16,485
             arrayGroup=199
             arrayGroupName=X200-1
             path=false
             onDemandDevice=false
             devType=
             isStandardLDEV=true
             diskType=-1
             slprNumber=-1
             clprNumber=0
             cacheResidencyMode=0
             stripeSizeInKB=-1
             volumeKind=3
             status=Normal
             dpType=0
             consumedSizeInKB=0
             mfTrueCopyVolumeType=Simplex
             mfShadowImageVolumeType=Simplex
             mfUniversalReplicatorVolumeType=Simplex
             mfUniversalReplicatorPoolID=-1
             dpPoolID=0
             threshold=10
             systemDisk=0
             encrypted=0
List of 1 FreeSpace elements:
  An instance of FreeSpace
    objectID=FREESPACE.R600.15065.16485.199.0
    sizeInKB=2,801,729,280
    cylinders=0
    fsControlIndex=0
```

DeleteArrayGroup

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

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

Notes:

- This command is not available for the Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, Lightning 9900, or Hitachi SMS.
- For Hitachi AMS2000, you cannot delete an array group that is made up of HDP pools.

The following table describes the parameters of the DeleteArrayGroup command.

Table 4-13   DeleteArrayGroup Command Parameters

Parameter Name	Status	Description
chassis	Optional	Number of chassis for the array group 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. If they are specified at the same time, an error will occur.
groupnum	Optional	Group number of the group array to delete If you specify this parameter, make sure that chassis is also specified. *Note:* Either specify chassis and groupnum at the same time, or specify arraygroupname. If they are specified at the same time, an error will 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 chassis or groupnum. *Note:* Either specify chassis and groupnum at the same time, or specify arraygroupname. If they are specified at the same time, an error will occur.

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\DeleteArrayGroup.log" "serialnum=87010257"
"model=D800H" "chassis=0" "groupnum=2"
```

Command execution result

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

DeleteArrayReservation

DeleteArrayReservation unlocks the target 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 execute this command for any resources.

> ⚠️ **Note:** This command is not available for Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, or Thunder 9200.

The following table describes the parameters of the DeleteArrayReservation command.

Table 4-14   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 obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

Command execution example

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

Command execution result

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

DeleteExternalArrayGroup

`DeleteExternalArrayGroup` deletes mapping of the volume (external volume) of an externally connected storage subsystem (external subsystem) that is mapped on a one-to-one basis to an internal volume, and deletes the array group (external array group). This command also deletes the LU that belongs to the deleted external array group.

Only users who have `All Resources` assigned as their resource group and have the Modify permission can use this command.

Notes:

⚠

- This command can be used only with Universal Storage Platform V/VM storage subsystems. The required microcode version is 60-06-00-XX/XX or later.
- Before you can execute this command, both the storage subsystem in which to create an external array group and the externally connected storage subsystem must be registered as management targets of Device Manager.

The following table describes the parameters of the DeleteExternalArrayGroup command.

Table 4-15   DeleteExternalArrayGroup Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the storage subsystem where you want to delete the external array group
model	Required	Model of the storage subsystem where you want to delete the external array group
arraygroupnames	Required	List of external array group names to be deleted Use a comma to delimit multiple values.

Parameter values to obtain in advance

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. For the storage subsystem where you want to delete an external array group, specify either an `arrayType` value or a `displayArrayType` value for the `model` parameter. Use the `serialNumber` value to specify the `serialnum` parameter.

`arraygroupnames`: 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 `arraygroupnames` parameter.

Command execution example

```
HiCommandCLI DeleteExternalArrayGroup -o "D:\logs\DeleteExternalArrayGroup.log"
"model=USP_V" "serialnum=10037" "arraygroupnames=E1-1,E1-2"
```

Command execution result

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

DeleteHostStorageDomain

DeleteHostStorageDomain deletes a host storage domain. For Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, Hitachi AMS2000/AMS/WMS, Hitachi SMS, and Thunder 9500V (in LUN Management mode), this command deletes host groups 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 execute this command for any resources. 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.

The following table describes the parameters of the DeleteHostStorageDomain command.

Table 4-16   DeleteHostStorageDomain Command Parameters

Parameter Name	Status	Description
deletionoption	Optional	Only possible value is: lusekeep 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 0x prefix. ***Notes:*** ▪ The execution results are output in decimal. ▪ Do not specify 0. You cannot delete host domain 0. ▪ You must specify either domain or domainnickname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
domainnickname	Optional (USP V/VM, Hitachi USP, 9900V, Hitachi AMS2000/AMS/ WMS, Hitachi SMS, and 9500V (in LUN Management mode))	Nickname of the host storage domain to delete ***Note:*** You must specify either domain or domainnickname. Do not specify both parameters at the same time. If they are specified at the same time, an error will 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 port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.

Parameter Name	Status	Description
portname	Optional	Port name for the host storage domain to delete ***Note:*** Specify either port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
serialnum	Required	Serial number of the storage array for the host storage domain

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\DeleteHostStorageDomain.log"
"serialnum=10001" "model=HDS9980V" "port=16" "domain=1" "deletionoption=lusekeep"
```

Command execution result

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

DeleteLabel

DeleteLabel deletes a label from a logical unit.

The following table describes the parameters of the DeleteLabel command.

Table 4-17   DeleteLabel Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the storage subsystem
model	Required	Model of the storage subsystem
devnums	Required	Device number of the logical unit
		This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for Hitachi USP, Lightning 9900V, or Lightning 9900, use the *xx:yy* format, where *xx* is the CU number, and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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.
		Use a comma to delimit multiple values.
		Note: The maximum number of device numbers that can be specified is 1,024.

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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. For the devnums parameter, specify the devNum value of the LDEV from which you want to delete a label.

Command execution example

```
HiCommandCLI DeleteLabel -o "D:\logs\DeleteLabel.log" "serialnum=10037" "model=R600"
"devnums=00:00:00,00:00:01"
```

Command execution result

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

DeleteLogicalUnit

DeleteLogicalUnit deletes the LogicalUnit and corresponding LDEV from the storage device. With Universal Storage Platform V/VM and Hitachi USP, you can delete multiple logical units at once.

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

Notes:
- For Hitachi 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.
- For Universal Storage Platform V/VM, 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.

The following table describes the parameters of the DeleteLogicalUnit command.

Table 4-18   DeleteLogicalUnit Command Parameters

Parameter Name	Status	Description
devnum	Optional	Device number of the LU
		This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for Hitachi USP, Lightning 9900V or Lightning 9900, use the *xx*:*yy* format, where *xx* is the CU number, and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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.
		Notes:
		▪ The execution results are output in decimal.
		▪ Either the devnum or devnums parameter must be specified. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.

Parameter Name	Status	Description
devnums	Optional	Device number of the LU
		This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for Hitachi USP, use the *xx*:*yy* format, where *xx* is the CU number and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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.
		Use a comma to delimit multiple values.
		Notes:
		▪ The execution results are output in decimal.
		▪ Either the `devnum` or `devnums` parameter must be specified. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
		▪ When you delete multiple LUs at once, you can specify the LUs whose emulation type is OPEN-V.
model	Required	Model of the storage array of the LU
serialnum	Required	Serial number of the storage array of the LU

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

devnum or devnums**:** 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 or devnums parameter.

Command execution example

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

Command execution result

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

DeleteLUSE

DeleteLUSE deletes a LUSE volume on a storage subsystem.

A user who only has View permissions cannot use this command. A user to whom a user-defined resource group is assigned, and who has Modify permissions, 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.

The following table describes the parameters of the DeleteLUSE command.

Table 4-19   DeleteLUSE Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the storage array from which the LUSE is to be deleted
model	Required	Model of the storage array from which the LUSE is to be deleted
devnum	Required	Device number used to identify the LUSE to be deleted. The 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 Hitachi USP, Lightning 9900V or Lightning 9900, use the *xx*:*yy* format, where *xx* is the CU number, and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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.

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. Use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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, 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\DeleteLUSE.log" "serialnum=10001" "model=HDS9980V"
"devnum=209"
```

Command execution result

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

DeletePool

DeletePool deletes an HDP pool, and releases the assignations to the pool volumes, PDEVs, and array groups that made up the HDP pool.

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

⚠️ ***Notes:***
- This command can be used only with Universal Storage Platform V/VM and Hitachi AMS2000 storage subsystems.
- Before deleting an HDP pool, release all assignations between the HDP pool and the HDP volumes (virtual volumes). You cannot delete the HDP pool until you release these assignations. For details, see ModifyVirtualVolume.

The following table describes the parameters of the DeletePool command.

Table 4-20   DeletePool Command Parameters

Parameter Name	Status	Description
model	Required	Model of the storage subsystem
serialnum	Required	Serial number of the storage subsystem
poolid	Required	Pool ID. Specify the pool ID of the HDP pool to be deleted.

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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

Command execution example

In this example, the DeletePool command deletes the HDP pool whose pool ID is 0 (poolid: 0) from the storage subsystem (serialnum: 15065, model: USP_V).

```
HiCommandCLI DeletePool –o "D:\logs\DeletePool.log" model=USP_V serialnum=15065 poolid=0
```

Command execution result

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

DeleteSpareDrive

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

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

⚠️ *Note:* This command is not available for the Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, Lightning 9900, or Hitachi SMS.

The following table describes the parameters of the DeleteSpareDrive command.

Table 4-21   DeleteSpareDrive Command Parameters

Parameter Name	Status	Description
serialnum	Required	serial number of the storage array of the spare drive
model	Required	model of the storage array of the spare drive
pdevid	Required	Physical device ID of the spare drive (for more information, see pdevid in Table 4-42)

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\DeleteSpareDrive.log" serialnum=87010257
model=D800H pdevid=9
```

Command execution result

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

DeleteStorageArray

`DeleteStorageArray` removes a storage subsystem (including an SMI-S Enabled subsystem) so that it is no longer managed by the Device Manager server. This command only removes the subsystem from Device Manager management control. The command does not change the configuration of the storage subsystem.

Only users who have All Resources assigned as their resource group and have the Modify permission can use 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.

Format

When deleting a storage subsystem other than an SMI-S Enabled subsystem:

```
HiCommandCLI [URL] DeleteStorageArray [options] serialnum=serial-number model=model
```

When deleting an SMI-S Enabled subsystem:

```
HiCommandCLI [URL] DeleteStorageArray [options] saobjid=object-ID-of-SMI-S-Enabled-subsystem
```

The following table describes the parameters of the DeleteStorageArray command.

Table 4-22   DeleteStorageArray Command Parameters

Parameter Name	Status	Description
serialnum	Optional#	Serial number of the storage array to delete You cannot specify this parameter if you are deleting an SMI-S Enabled subsystem.
model	Optional#	Model of the storage array to delete You cannot specify this parameter if you are deleting an SMI-S Enabled subsystem.
saobjid	Optional#	Object ID of the SMI-S Enabled subsystem
# Always specify either the serialnum and model parameters together, or the saobjid parameter by itself. Do not set saobjid together with serialnum and model. Doing so will result in an error.		

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

saobjid: Obtain this value from the execution result of the GetStorageArray command. Set the value of objectID, obtained from the execution result, into the saobjid parameter.

Command execution example

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

Command execution result

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

DeleteVirtualVolume

DeleteVirtualVolume deletes an HDP volume (virtual volume).

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

⚠️ *Note:* This command can be used only with Universal Storage Platform V/VM and Hitachi AMS2000 storage subsystems.

For Universal Storage Platform V/VM, to delete an HDP volume, the following conditions must be satisfied:

- The HDP volume does not have any paths.

- Open Volume Management must be installed in the storage subsystem.

- The HDP volume has a guard mode of Read/Write.

⚠️ *Note:* For Universal Storage Platform V/VM, if you delete specified HDP volumes only, you cannot delete the virtual volume group that contains the HDP volumes.

For Hitachi AMS2000, you can delete an HDP volume that does not have any paths.

Format for the Universal Storage Platform V/VM

When the command is used to specify a virtual volume group, and delete both the virtual volume group and the HDP volumes in that virtual volume group:

```
HiCommandCLI [URL] DeleteVirtualVolume [options] model=model serialnum=serial-number
[deletionoption=force] arraygroupnames=name-of-virtual-volume-group
```

When the command is used to delete specified HDP volumes only[#]:

```
HiCommandCLI [URL] DeleteVirtualVolume [options] model=model serialnum=serial-number
[deletionoption=force] devnums=device-number-of-virtual-volume
```

If the DKC microcode version is 60-04-XX-XX/XX or later and the system option 726 is set to ON, you cannot specify this format. If you specify this format, an error will occur.

Format for the Hitachi AMS2000

```
HiCommandCLI [URL] DeleteVirtualVolume [options] model=model serialnum=serial-number
[deletionoption=force] devnums=device-number-of-virtual-volume
```

The following table describes the parameters of the DeleteVirtualVolume command.

Table 4-23   DeleteVirtualVolume Command Parameters

Parameter Name	Status	Description
model	Required	Model of the storage subsystem
serialnum	Required	Serial number of the storage subsystem
deletionoption	Optional (for Universal Storage Platform V/VM)	Specifies whether to delete virtual volumes that have not been released from the HDP pool. To delete such HDP volumes, specify force.
arraygroupnames [1]	Optional (for Universal Storage Platform V/VM)	Name(s) of the virtual volume group(s). Use a comma to delimit multiple values.
devnums[1, 2]	Optional	Device number(s) of the HDP volume(s). Specify this parameter as a decimal number or colon-delimited hexadecimal number in the format ww:xx:yy, where ww is the LDKC number, xx is the CU number, and yy is the LDEV number. ww is optional. If ww is omitted, LDKC is assumed to be 0. Use a comma to delimit multiple values.
#1 For Universal Storage Platform V/VM, always specify either the arraygroupnames parameter or the devnums parameter. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.		
#2 For Hitachi AMS2000, always specify the devnums parameter.		

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

arraygroupnames: 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 arraygroupnames parameter.

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

In this example, the DeleteVirtualVolume command deletes the virtual volume group (arraygroupnames: X200-1) containing HDP volumes from the storage subsystem (serialnum: 15065, model: USP_V). In addition, this command also deletes HDP volumes whose assignations with HDP pools have not been released by specifying force for the deletionoption parameter.

```
HiCommandCLI DeleteVirtualVolume -o "D:\logs\DeleteVirtualVolume.log" model=USP_V
serialnum=15065 deletionoption=force arraygroupnames=X200-1
```

Command execution result

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

FormatLU

FormatLU formats an LU.

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

To check whether the LDEV was formatted properly if you omitted the wait parameter, or if you specified false in the wait parameter, first use the AddStorageArray command to refresh the storage subsystem, then execute the GetStorageArray (subtarget=LDEV) command. Check the value of status in the execution results. If you specified true in the wait parameter, check the value of status in the execution results of the FormatLU command.

> ⚠ ***Notes:***
> - This command erases data on the LU. If you format an LU that is being used, you cannot restore its data.
> - This command is available only for Universal Storage Platform V/VM and Hitachi USP. The microcode version required for Hitachi USP is 50-09-00-XX/XX or later.
> - When formatting the LDEV, make sure that the value of the status attribute of the LDEV is Blocked. If the value of status is Normal, specify true in the force parameter when you format the LDEV.
> - 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.
> - If you execute this command while LDEVs are being formatted in the target storage subsystem, an error occurs.

The following table describes the parameters of the FormatLU command.

Table 4-24   FormatLU Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the storage subsystem of the LU to be formatted
model	Required	Model of the storage subsystem of the LU to be formatted

Parameter Name	Status	Description
devnums	Required	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. This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for Hitachi USP, use the *xx*:*yy* format, where *xx* is the CU number, and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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.
wait	Optional	Specifies whether to wait until formatting is complete before ending the command. You can specify the following values: ▪ true: Wait until formatting is complete before ending the command. ▪ false: Do not wait until formatting is complete before ending the command. If this parameter is omitted, false is set. ***Note:*** If you specify true for this parameter, you cannot specify true for the quickformat parameter at the same time.
force	Optional	Specifies whether to format LDEVs whose status is Normal. You can specify the following values: ▪ true: Format LDEVs whose status is Normal. ▪ false: Do not format LDEVs whose status is Normal. If this parameter is omitted, false is set.
quickformat	Optional (for Universal Storage Platform V/VM)	Specifies whether to format the LU by using Quick Format. You can specify the following values: ▪ true: Format the LU by using Quick Format. ▪ false: Do not format the LU by using Quick Format. If this parameter is omitted, false is set. ***Notes:*** ▪ If you specify true for this parameter, you cannot specify true for the wait parameter at the same time. ▪ The DKC microcode version required for formatting the LU by using Quick Format is 60-02-4x-xx/xx or later.

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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=R600 serialnum=10007 devnums=00:04:97,00:04:98
```

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.R600.10007.1175
      devNum=1,175
      displayName=00:04:97
      emulation=OPEN-V
      devCount=1
      devType=
      capacityInKB=100,000
      path=false
      commandDevice=false
      commandDeviceEx=0
      commandDeviceSecurity=false
      chassis=1
      arrayGroup=0
      arrayGroupName=1-1-1
      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
      dpType=-1
      consumedCapacityInKB=100,000
      dpPoolID=-1
      threshold=-1
      tcaPoolID=-1
      List of 1 Ldev elements:
        An instance of LDEV
          objectID=LDEV.R600.10007.1175
          devNum=1,175
          displayName=00:04:97
          emulation=OPEN-V
          cylinders=0
          isComposite=0
          sizeInKB=100,000
          lba=200,000
```

```
            raidType=RAID5(3D+1P)
            substance=0
            volumeType=-1
            slotSizeInKB=256
            chassis=1
            arrayGroup=0
            arrayGroupName=1-1-1
            path=false
            onDemandDevice=false
            devType=
            isStandardLDEV=false
            guardMode=
            diskType=0
            slprNumber=0
            clprNumber=0
            cacheResidencyMode=0
            stripeSizeInKB=-1
            volumeKind=3
            status=Normal
            dpType=-1
            consumedSizeInKB=100,000
            mfTrueCopyVolumeType=Simplex
            mfShadowImageVolumeType=Simplex
            mfUniversalReplicatorVolumeType=Simplex
            mfUniversalReplicatorPoolID=-1
            dpPoolID=-1
            threshold=-1
            systemDisk=0
            encrypted=0
    An instance of LogicalUnit
      objectID=LU.R600.10007.1176
      devNum=1,176
      displayName=00:04:99
      emulation=OPEN-V
      devCount=1
      devType=
      capacityInKB=100,000
      path=false
      commandDevice=false
      commandDeviceEx=0
      commandDeviceSecurity=false
      chassis=1
      arrayGroup=0
      arrayGroupName=1-1-1
      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
      dpType=-1
      consumedCapacityInKB=100,000
      dpPoolID=-1
      threshold=-1
      tcaPoolID=-1
      List of 1 Ldev elements:
        An instance of LDEV
          objectID=LDEV.R600.10007.1176
          devNum=1,176
```

```
displayName=00:04:98
emulation=OPEN-V
cylinders=0
isComposite=0
sizeInKB=100,000
lba=200,000
raidType=RAID5(3D+1P)
substance=0
volumeType=-1
slotSizeInKB=256
chassis=1
arrayGroup=0
arrayGroupName=1-1-1
path=false
onDemandDevice=false
devType=
isStandardLDEV=false
guardMode=
diskType=0
slprNumber=0
clprNumber=0
cacheResidencyMode=0
stripeSizeInKB=-1
volumeKind=3
status=Normal
dpType=-1
consumedSizeInKB=100,000
mfTrueCopyVolumeType=Simplex
mfShadowImageVolumeType=Simplex
mfUniversalReplicatorVolumeType=Simplex
mfUniversalReplicatorPoolID=-1
dpPoolID=-1
threshold=-1
systemDisk=0
encrypted=0
```

Hitachi Device Manager Command Line Interface (CLI) User's Guide

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 Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, or Thunder 9200.

Command execution example

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

Command execution result

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

GetStorageArray

GetStorageArray obtains information about storage subsystems managed by the Device Manager server. To acquire the information about a specific element or to pinpoint the range of information acquired by specifying conditions, use the parameter subtarget, the subinfo parameters (such as the parameters arraygroupsubinfo and lusubinfo), and other parameters of the GetStorageArray command.

Using the Subtarget and Subinfo Parameters

You can acquire various information by combining the parameter subtarget and the subinfo parameters of the GetStorageArray command.

- The parameter subtarget:

  Use this parameter to acquire more specific information about an element than the basic storage subsystem-related information that can be obtained by the GetStorageArray command.

⚠ *Note:* When executing 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, it indicates that the status of the database is inconsistent. For details about the meaning of the statusOfDBInconsistency values other than 0, see Table 4-151 in StorageArray Instance.

- The subinfo parameters:

  Specify the subinfo parameters when you want to acquire the information related to a specific element specified for the parameter subtarget. The subinfo parameters that you can specify differ depending on the value of the parameter subtarget.

Table 4-25 shows the element information that can be acquired by using the parameter subtarget. Table 4-26 shows the subinfo parameters that can be used together with the parameter subtarget.

Table 4-25   Element Information that Can be Acquired by Using the Parameters subtarget

Value of subtarget	Information that Can Be Acquired	Location
subtarget not specified.	Basic information about storage subsystems	GetStorageArray (subtarget not specified)
ArrayGroup	Information about array groups	GetStorageArray (subtarget=ArrayGroup)
Commparameters	Information about how to access storage subsystems	GetStorageArray (subtarget=Commparameters)
Component	Information about the configuration of storage subsystems	GetStorageArray (subtarget=Component)
ExternalStorage	Information about the external connection of storage subsystems	GetStorageArray (subtarget=ExternalStorage)
Filter	Information about the storage subsystem for a specific element	GetStorageArray (subtarget=Filter)
FreeSpace	Information about the free space in array groups	GetStorageArray (subtarget=FreeSpace)
HostStorageDomain	Information about host storage domains	GetStorageArray (subtarget=HostStorageDomain)
JournalPool	Information about journal pools (for QuickShadow, Copy-on-Write Snapshot, or Universal Replicator)	GetStorageArray (subtarget=JournalPool)
LDEV	Information about LDEVs	GetStorageArray (subtarget=LDEV)
LogicalDKC	Information about the logical DKC	GetStorageArray (subtarget=LogicalDKC)
LogicalUnit	Information about logical units (LUs)	GetStorageArray (subtarget=LogicalUnit)
MFReplicationInfo	Information about copy pairs consisting of mainframe volumes	GetStorageArray (subtarget=MFReplicationInfo)
Path	Information about paths	GetStorageArray (subtarget=Path)
PDEV	Information about PDEVs	GetStorageArray (subtarget=PDEV)
Pool	Information about journal pools (for QuickShadow, Copy-on-Write Snapshot, Universal Replicator ,or Hitachi Dynamic Provisioning)	GetStorageArray (subtarget=Pool)
Port	Information about ports	GetStorageArray (subtarget=Port)
PortController	Information about port controllers	GetStorageArray (subtarget=PortController)
ReplicationInfo	Information about copy pairs	GetStorageArray (subtarget=ReplicationInfo)

Table 4-26   subinfo Parameters that Can be Used Together with the Parameter subtarget

Value of the Parameter subtarget	Specifiable subinfo Parameter	Value to Be Specified for the subinfo parameter and Acquirable Information
ArrayGroup	arraygroupsubinfo	The following information about array groups can be acquired: ▪ ExternalPathInfo: Path information about external array groups ▪ LogicalUnit: Logical unit information ▪ PDEV: PDEV information ▪ RelatedDistributedArrayGroup: Information about other array groups that belong to the same concatenated parity groups
	lusubinfo	Specify LogicalUnit for the parameter arraygroupsubinfo when using this parameter. The following information about logical units for each array group can be acquired: ▪ LDEV: LDEV information ▪ Path: Path information
HostStorageDomain	hsdsubinfo	The following information about host storage domains can be acquired: ▪ FreeLUN: Information about LUNs that can be assigned to the host storage domains ▪ ISCSIName: iSCSI name information ▪ Path: Path information ▪ WWN: WWN information
JournalPool	poolsubinfo	The following information about journal pools can be acquired: ▪ LogicalUnit: Logical unit information ▪ PairedJournalPool: Information about the journal pool on the other side of the copy pair (if a copy pair is set for the journal pool) ▪ ReplicationInfo: Copy pair information
LDEV	ldevsubinfo	▪ VolumeConnection: Mapping information of external volumes for LDEVs

Value of the Parameter subtarget	Specifiable subinfo Parameter	Value to Be Specified for the subinfo parameter and Acquirable Information
LogicalUnit	lusubinfo	The following information about logical units can be acquired: ▪ LDEV: LDEV information ▪ Path: Path information ▪ VolumeConnection: Mapping information of external volumes for LDEVs
	pathsubinfo	Specify Path for the parameter lusubinfo when using this parameter. The following information about paths assigned to the logical units can be acquired: ▪ HostInfo: Host information ▪ ISCSIName: iSCSI name information ▪ WWN: WWN information ▪ WWNGroup: WWN group information
	ldevsubinfo	Specify LDEV for the parameter lusubinfo when using this parameter. ▪ VolumeConnection: Mapping information of external volumes
MFReplicationInfo	mfreplicationsubinfo	▪ LDEV: Information about LDEVs related to a copy pair
Path	pathsubinfo	The following information about paths can be acquired: ▪ HostInfo: Host information ▪ ISCSIName: iSCSI name information ▪ LogicalGroup: Logical group information ▪ WWN: WWN information ▪ WWNGroup: WWN group information
Pool	poolsubinfo	The following information about journal pools can be acquired: ▪ ArrayGroup: Array groups information ▪ LogicalUnit: Logical unit information ▪ PairedPool: Information about the journal pool on the other side of the copy pair (if a copy pair is set for the journal pool) ▪ ReplicationInfo: Copy pair information
	arraygroupsubinfo	▪ PDEV: PDEV information

Value of the Parameter subtarget	Specifiable subinfo Parameter	Value to Be Specified for the subinfo parameter and Acquirable Information
Port	portsubinfo	The following information about ports can be acquired: ▪ HostStorageDomain: Host storage domain information ▪ ISCSIName: iSCSI name information ▪ LUNGroup: LUN group information ▪ WWN: WWN information ▪ WWNGroup: WWN group information
	wwngroupsubinfo	You can specify this parameter only when Lightning 9900 is used. Specify WWNGroup for the parameter portsubinfo when using this parameter. The following information about WWW groups set for the port can be acquired: ▪ WWN: WWN information
	lungroupsubinfo	You can specify this parameter only when Lightning 9900 is used. Specify LUNGroup for the parameter portsubinfo when using this parameter. The following information about LUN groups set for the port can be acquired: ▪ Path: Path information
	pathsubinfo	You can specify this parameter only when Lightning 9900 is used. Specify LUNGroup for the parameter portsubinfo when using this parameter. The following information about paths set for the LUN group can be acquired: ▪ WWN: WWN information ▪ WWNGroup: WWN group information
PortController	controllersubinfo	This parameter is valid for the NAS configuration. ▪ IPAddress: IP address of the port controller ▪ PairedPortController: Information of the paired port controller
ReplicationInfo	replicationsubinfo	▪ LogicalUnit: Information about logical units related to a copy pair

The following table shows examples of specifying the parameter subtarget and the subinfo parameters.

Table 4-27   Examples of Using the GetStorageArray Command

Information to Acquire	Command Specification
LDEV information	GetStorageArray subtarget=LDEV
Information about paths for logical units	GetStorageArray subtarget=LogicalUnit lusubinfo=Path
Mapping information of external volumes for LDEVs	GetStorageArray subtarget=LDEV ldevsubinfo=VolumeConnection
Information about logical units for array groups and about LDEVs and paths for those logical units	GetStorageArray subtarget=ArrayGroup arraygroupsubinfo=LogicalUnit lusubinfo=LDEV,Path
Information about paths and WWNs for those paths	GetStorageArray subtarget=Path pathsubinfo=WWN,HostInfo
Information about journal pools and logical units for those journal groups	GetStorageArray subtarget=Pool poolsubinfo=LogicalUnit

For details about parameters other than the parameter subtarget and the subinfo parameters, see GetStorageArray (subtarget=ArrayGroup) - GetStorageArray (subtarget=ReplicationInfo).

GetStorageArray (subtarget not specified)

By executing `GetStorageArray` without specifying the `subtarget` parameter, you can obtain basic information about all the storage subsystems (including SMI-S Enabled subsystems) that are registered on the Device Manager server.

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

Format

When obtaining information about all storage subsystems:
```
HiCommandCLI [URL] GetStorageArray [option]
```

When obtaining information about a storage subsystem (other than an SMI-S Enabled subsystem):
```
HiCommandCLI [URL] GetStorageArray [option] serialnum=serial-number model=model
```

When obtaining information about an SMI-S Enabled subsystem:
```
HiCommandCLI [URL] GetStorageArray [option] saobjid=object-ID-of-SMI-S-Enabled-subsystem
```

The following table describes the parameters of the GetStorageArray (subtarget not specified) command.

Table 4-28   GetStorageArray (subtarget not specified) Command Parameters

Parameter Name	Status	Description
model	Optional[#]	Model of the storage subsystem
		You cannot specify this parameter if you are obtaining information about a particular SMI-S Enabled subsystem.
saobjid	Optional[#]	Object ID of the SMI-S Enabled subsystem
serialnum	Optional[#]	Serial number of the storage subsystem
		You cannot specify this parameter if you are obtaining information about a particular SMI-S Enabled subsystem.
# Do not set serialnum, model and saobjid all at the same time. Doing so will result in an error. Omitting all three parameters will cause all of the storage subsystems to be targeted.		

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

saobjid: Obtain this value from the execution result of the GetStorageArray command. Set the value of objectID, obtained from the execution result, into the saobjid parameter.

Command execution 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 execution 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=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
configUpdateStatus=-1
openAllocatedActualCapacity=1,038,504,240
openUnallocatedCapacity=355,420,800
openUnallocatedActualCapacity=355,420,800
openReservedCapacity=0
openReservedActualCapacity=0
numberOfReservedLUs=0
numberOfOpenReservedLUs=0
numberOfImReservedLUs=0
distributedMode=-1
```

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GetStorageArray (subtarget=ArrayGroup)

GetStorageArray (subtarget=ArrayGroup) obtains information about 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 array groups in the storage subsystems that the user is permitted to access.

The following table describes the parameters of the GetStorageArray (subtarget=ArrayGroup) command.

Table 4-29   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.
objectid	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 model and serialnum parameters.
		If you specify the model and serialnum 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 values you can specify are ExternalPathInfo, LogicalUnit, PDEV, and RelatedDistributedArrayGroup. If you specify multiple values at the same time, separate the values by commas.
lusubinfo	Optional	Information about a logical unit
		The values you can specify are Path and LDEV. If you specify multiple values at the same time, separate the values by commas.
		If you specify this parameter, you must also specify arraygroupsubinfo=LogicalUnit.

Parameter Name	Status	Description
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:
		1. Chassis numbers in ascending order
		2. Array group numbers in ascending order
		This parameter must be specified together with the numOfElementsFilter, model, and serialnum parameters.
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 startElementNumFilter, model, and serialnum parameters.
		The maximum recommended value is 16384.
arraygroupname	Optional	Array group name
		The following value specification formats can be used:
		▪ *n*
		▪ *n–n*
		▪ *n–n–n*
		▪ E*n–n*
		▪ V*n*-1
		▪ X*n*-1
		Here, *n* is an integer, while `E`, `V`, and `X` are fixed.
		If this parameter is specified of 1 or greater, the `model` parameter must also be specified.

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

Command execution 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\GetStorageArray_ArrayGroup.log"
subtarget=ArrayGroup model=USP serialnum=14010
```

Command execution 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
      type=0
      volumeType=-1
      encrypted=-1
      protectionLevel=-1
      dpPoolID=-1
  .
  . (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\GetStorageArray_ArrayGroup.log"
subtarget=ArrayGroup model=HDS9980V serialnum=10001 objectid=ARRAYGROUP.HDS9980V.10001.1.0
```

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.10001.1.0
      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
      type=0
      volumeType=-1
      encrypted=-1
      protectionLevel=-1
      dpPoolID=-1
```

GetStorageArray (subtarget=Commparameters)

GetStorageArray (subtarget=Commparameters) obtains information about how to access one or all of the storage subsystems (including SMI-S Enabled 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.

Format

When obtaining information about all storage subsystems:

```
HiCommandCLI [URL] GetStorageArray [option] subtarget=Commparameters
```

When obtaining information about a storage subsystem (other than an SMI-S Enabled subsystem):

```
HiCommandCLI [URL] GetStorageArray [option] subtarget=Commparameters serialnum=serial-
number model=model
```

When obtaining information about an SMI-S Enabled subsystem:

```
HiCommandCLI [URL] GetStorageArray [option] subtarget=Commparameters saobjid=object-ID-of-
SMI-S-Enabled-subsystem
```

The following table describes the parameters of the GetStorageArray (subtarget=Commparameters) command.

Table 4-30   GetStorageArray (subtarget=Commparameters) Command Parameters

Parameter Name	Status	Description
model	Optional#	Model of the storage subsystem
		You cannot specify this parameter if you are obtaining information about a particular SMI-S Enabled subsystem.
saobjid	Optional#	Object ID of the SMI-S Enabled subsystem
serialnum	Optional#	Serial number of the storage subsystem
		You cannot specify this parameter if you are obtaining information about a particular SMI-S Enabled subsystem.
subtarget	Required	Specify Commparameters.
# Always specify either the serialnum and model parameters together, or the saobjid parameter by itself. Do not set saobjid together with serialnum and model. Doing so will result in an error.		

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

saobjid: Obtain this value from the execution result of the GetStorageArray command. Set the value of objectID, obtained from the execution result, into the saobjid parameter.

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\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
```

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.

The following table describes the parameters of the GetStorageArray (subtarget=Component) command.

Table 4-31   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 obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\GetStorageArray_Component.log" subtarget=Component
model=HDS9960 serialnum=10011
```

Command execution 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
configUpdateStatus=-1
openAllocatedActualCapacity=1,038,504,240
openUnallocatedCapacity=355,420,800
openUnallocatedActualCapacity=355,420,800
openReservedCapacity=0
openReservedActualCapacity=0
numberOfReservedLUs=0
numberOfOpenReservedLUs=0
numberOfImReservedLUs=0
distributedMode=-1
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
```

GetStorageArray (subtarget=ExternalStorage)

GetStorageArray (subtarget=ExternalStorage) acquires information about the external connection of storage subsystems.

A user who is allocated a user-defined resource group can acquire information about the external connection of storage subsystems to which access rights are granted.

The following table describes the parameter of the GetStorageArray (subtarget=ExternalStorage) command.

Table 4-32 GetStorageArray (subtarget=ExternalStorage) Command Parameter

Parameter Name	Status	Description
subtarget	Required	Specify ExternalStorage.
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.

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

Command execution example

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

Command execution result

```
RESPONSE:
An instance of StorageArray
  .
  . (Attributes of StorageArray are omitted here)
  .
  List of 1 ExternalStorage elements:
    An instance of ExternalStorage
      numOfExternalVolume=112
      externalCapacityInKB=251,590,622
```

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.

The following table describes the parameters of the GetStorageArray (subtarget=Filter) command.

Table 4-33   GetStorageArray (subtarget=Filter) Command Parameters

Parameter Name	Status	Description
subtarget	Required	Specify Filter.
objectid	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\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
configUpdateStatus=-1
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
distributedMode=-1
```

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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.

The following table describes the parameters of the GetStorageArray (subtarget=FreeSpace) command.

Table 4-34 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.
arraygroupname	Optional	Array group name
		The following value specification formats can be used:
		▪ n
		▪ n–n
		▪ n–n–n
		▪ En–n
		▪ Vn–1
		▪ Xn–1
		Here, n is an integer of 1 or greater, while E, V, and X are fixed.
		If this parameter is specified, the model parameter must also be specified.

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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 execution 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\GetStorageArray_FreeSpace.log" subtarget=FreeSpace
model=USP serialnum=14010
```

Command execution 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
        type=0
        volumeType=-1
        encrypted=-1
        protectionLevel=-1
        dpPoolID=-1
        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\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
type=0
volumeType=-1
encrypted=-1
protectionLevel=-1
dpPoolID=-1
List of 1 FreeSpace elements:
  An instance of FreeSpace
    objectID=FREESPACE.HDS9980V.10001.1.0.85
    sizeInKB=1,492,992
    cylinders=0
    fsControlIndex=85
```

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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.

The following table describes the parameters of the GetStorageArray (subtarget=HostStorageDomain) command.

Table 4-35   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 model and serialnum parameters. This parameter can be specified in decimal and hexadecimal. If you specify a hexadecimal number, add the 0x prefix. *Notes:* ▪ The execution results are output in decimal. ▪ If you specify this parameter, you must also specify the port or portname parameter. If neither is specified, this parameter will be ignored. ▪ Do not specify domain and domainnickname at the same time. If they are specified at the same time, an error will occur.
domainnickname	Optional (USP V/VM, Hitachi USP, 9900V, Hitachi AMS2000/AMS/WMS, Hitachi SMS, and 9500V (in LUN Management mode))	Nickname 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 model and serialnum parameters. *Notes:* ▪ If you specify this parameter, you must specify the port or portname parameter. If neither is specified, this parameter will be ignored. ▪ Do not specify domain and domainnickname at the same time. If they are specified at the same time, an error will occur.

Parameter Name	Status	Description
hsdsubinfo	Optional	Specific information about the host storage domain The values you can specify are WWN, Path, FreeLUN, and ISCSIName. If you specify multiple values at the same time, separate the values by commas.
port	Optional	Number of the port containing the host storage domain If port and portname are omitted, information about all ports is displayed. If you specify this parameter, you must also specify the model and serialnum parameters. ***Notes:*** ▪ If you specify this parameter, you must specify the domain or domainnickname parameter. If neither is specified, this parameter will be ignored. ▪ Do not specify port and portname at the same time. If they are specified at the same time, an error will occur.
portname	Optional	Port name of the host storage domain If port and portname are omitted, information about all ports is displayed. If you specify this parameter, you must also specify the model and serialnum parameters. ***Notes:*** ▪ If you specify this parameter, you must specify the domain or domainnickname parameter. If neither is specified, this parameter will be ignored. ▪ Do not specify port and portname at the same time. If they are specified at the same time, an error will occur.
startElementNum Filter	Optional	Starting sequence number of host storage domains for which information is to be obtained Specify this parameter when you want to obtain information for a part of host storage domains for a specific storage subsystem. 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. Order of host storage domains: 1. Port IDs in ascending order 2. Domain IDs in ascending order This parameter must be specified together with the numOfElementsFilter, model, and serialnum parameters.
numOfElementsFilter	Optional	Number of host storage domains for which information is to be obtained 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 startElementNumFilter, model, and serialnum parameters. The maximum recommended value is 16384.

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\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
     portName=CL2-H
     domainID=1
     hostMode=Standard
     displayName=CL1-A-0
     domainType=0
     nickname=1A-G00
     List of 1 WWN elements:
       An instance of WWN
         WWN=88.77.77.77.77.77.00.01
         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
         displayDevNum=00:0A
         portID=23
         portName=CL2-H
         domainID=1
         scsiID=15
         LUN=10
         wwnSecurityValidity=true
```

GetStorageArray (subtarget=JournalPool)

GetStorageArray (subtarget=JournalPool) obtains the information about the journal pools for QuickShadow, Copy-on-Write Snapshot, or Universal Replicator.

Note: The GetStorageArray (subtarget=JournalPool) command has not been enhanced to support functions added in Device Manager CLI 5.9 and later. We recommend that you use the GetStorageArray (subtarget=Pool) command, which now provides the functionality of the former command. For details about the GetStorageArray (subtarget=Pool) command, see GetStorageArray (subtarget=Pool).

When SLPR functionality is used in Universal Storage Platform V/VM or Hitachi USP, the partitioned storage administrator cannot obtain information about the journal pool even if he or she registers the storage subsystem (SLPR) as a target to be managed by Device Manager.

For Universal Replicator, 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 is not displayed when information about journal pools used by Hitachi Universal Replicator for Mainframe is obtained.

Information about replication appears as the ReplicationInfo instance. This information is not displayed when information about journal pools used by Hitachi Universal Replicator for Mainframe is obtained. For details about access permissions used when a user assigned to a user-defined resource group obtains information about replication, see GetStorageArray (subtarget=ReplicationInfo).

To obtain information about a journal pool that consists of journal volumes included in a particular CLPR, specify the clprfilter parameter. When you obtain information about journal pools used by Hitachi Universal Replicator for Mainframe, only information about journal pools made up of open volume journal volumes that satisfy the condition can be obtained.

The following table describes the parameters of the GetStorageArray (subtarget=JournalPool) command.

Table 4-36   GetStorageArray (subtarget=JournalPool) Command Parameters

Parameter Name	Status	Description
subtarget	Required	Specify JournalPool.
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	Type of function used to operate the journal pools
		You can specify the following values:
		For Universal Storage Platform V/VM:
		▪ 3: QuickShadow
		▪ 4: Universal Replicator
		For Hitachi USP:
		▪ 4: Universal Replicator
		For Hitachi AMS2000 and Hitachi SMS:
		▪ 3: QuickShadow or TrueCopy Async
		For Hitachi AMS/WMS and Thunder 9500V:
		▪ 3: QuickShadow
		If model and serialnum are omitted, the specification for this parameter becomes invalid.
		You must specify the poolid and poolfunction parameters together. If the poolid parameter is omitted, the specification for this parameter becomes invalid.
poolid	Optional	Pool ID of the journal pool
		If model and serialnum are omitted, the specification for this parameter becomes invalid.
		You must specify the poolid and poolfunction parameters together. If the poolfunction parameter is omitted, the specification for this parameter becomes invalid.
poolsubinfo	Optional	Information about the journal pool
		You can specify LogicalUnit, PairedJournalPool, or ReplicationInfo.
		When you specify multiple values, use a comma to delimit the values.
clprfilter	Optional	CLPR number of the journal pool
	(for Universal Storage Platform V/VM and Hitachi USP)	The information about the journal pool that is composed of journal volumes included in the specific CLPR.
		You cannot specify the clprfilter parameter if the model, serialnum, poolfunction, poolid, and poolsubinfo parameters are all specified.

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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: 25011, model: R601). The information includes information about the logical unit, paired journal pool and replication in the journal pool.

```
HiCommandCLI GetStorageArray -o "D:\logs\GetStorageArray_JournalPool.log"
subtarget=JournalPool model=R601 serialnum=25011
poolsubinfo=LogicalUnit,PairedJournalPool,ReplicationInfo
```

Command execution result

```
RESPONSE:
An instance of StorageArray
  .
  . (Attributes of StorageArray are omitted here)
  .
  List of 6 JournalPool elements:
    An instance of JournalPool
      objectID=JOURNALPOOL.R601.25011.4.1
      poolFunction=4
      poolID=1
      controllerID=0
      poolType=0
      List of 1 ReplicationInfo elements:
        An instance of ReplicationInfo
          objectID=REPINFO.25011.2320.10037.1492
          pvolSerialNumber=25011
          pvolArrayType=R601
          pvolDevNum=2,320
          displayPvolDevNum=00:09:10
          pvolObjectID=LU.R601.25011.2320
          pvolPoolID=1
          svolSerialNumber=10037
```

```
             svolArrayType=Unknown
             svolDevNum=1,492
             displaySvolDevNum=1,492
             svolPoolID=2
             replicationFunction=UniversalReplicator
             status=17
             muNumber=1
             copyTrackSize=-1
             splitTime=-1
             remotePathGroupID=-1
      List of 1 Lu elements:
        An instance of LogicalUnit
             objectID=LU.R601.25011.18
             devNum=18
             displayName=00:00:12
             emulation=OPEN-V
             devCount=1
             devType=
             capacityInKB=1,024,320
             path=false
             commandDevice=false
             commandDeviceEx=0
             commandDeviceSecurity=false
             chassis=1
             arrayGroup=0
             arrayGroupName=1-1-1
             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
             dpType=-1
             consumedCapacityInKB=1,024,320
             dpPoolID=-1
             threshold=-1
             tcaPoolID=-1
      List of 1 PairedJournalPool elements:
        An instance of PairedJournalPool
             muNumber=1
             pairedArrayType=Unknown
             pairedSerialNumber=10037
             pairedPoolID=2
   An instance of JournalPool
      objectID=JOURNALPOOL.R601.25011.4.10
      poolFunction=4
      poolID=10
      controllerID=0
      poolType=1
      List of 1 ReplicationInfo elements:
        An instance of ReplicationInfo
             objectID=REPINFO.10007.98.25011.46
             pvolSerialNumber=10007
             pvolArrayType=Unknown
             pvolDevNum=98
             displayPvolDevNum=98
             pvolPoolID=10
             svolSerialNumber=25011
             svolArrayType=R601
```

```
            svolDevNum=46
            displaySvolDevNum=00:00:2E
            svolObjectID=LU.R601.25011.46
            svolPoolID=10
            replicationFunction=UniversalReplicator
            status=1
            muNumber=0
            copyTrackSize=-1
            splitTime=-1
            remotePathGroupID=-1
      List of 1 Lu elements:
        An instance of LogicalUnit
            objectID=LU.R601.25011.49
            devNum=49
            displayName=00:00:31
            emulation=OPEN-V
            devCount=1
            devType=
            capacityInKB=1,024,320
            path=false
            commandDevice=false
            commandDeviceEx=0
            commandDeviceSecurity=false
            chassis=1
            arrayGroup=0
            arrayGroupName=1-1-1
            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=10
            dpType=-1
            consumedCapacityInKB=1,024,320
            dpPoolID=-1
            threshold=-1
            tcaPoolID=-1
      List of 1 PairedJournalPool elements:
        An instance of PairedJournalPool
            muNumber=0
            pairedArrayType=Unknown
            pairedSerialNumber=10007
            pairedPoolID=10
  .
  . (repeated for other JournalPool instances)
  .
```

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.

The following table describes the parameters of the GetStorageArray (subtarget=LDEV) command.

Table 4-37   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.
devnum	Optional	Device number of the LDEV that you intend to obtain
		Specify this parameter when you want to obtain information about a specific LDEV. 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 devnum parameter, information about all the LDEVs in the specified storage subsystem is obtained.
		This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for Hitachi USP, Lightning 9900V or Lightning 9900, use the xx:yy format, where xx is the CU number, and yy is the LDEV number. For Universal Storage Platform V/VM, 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.
ldevfilter	Optional	Filter used for selecting the LDEV
		Available values are OPEN, INTERMEDIATE, and MAINFRAME, 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 OPEN, the LDEVs for an open volume will be displayed. If you specify INTERMEDIATE, the LDEVs for an intermediate volume will be displayed. If you specify MAINFRAME , the LDEVs for a mainframe volume will be displayed. If you specify OPEN;MAINFRAME, the LDEVs for both the open volume and mainframe volume will be displayed.
ldevsubinfo	Optional	Information about the LDEV
		The value you can specify is VolumeConnection.

Parameter Name	Status	Description
startElementNum Filter	Optional	Starting sequence number of logical devices for which information is to be obtained
		Specify this parameter when you want to obtain information for a part of logical devices in a specific storage subsystem.
		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.
		This parameter must be specified together with the numOfElementsFilter, model, and serialnum parameters.
numOfElementsFilter	Optional	Number of logical devices for which information is to be obtained
		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 startElementNumFilter, model, and serialnum parameters.
		The maximum recommended value is 16384.
label	Optional	Label name of logical units for which information is to be obtained
		Specify this parameter when you want to obtain information about logical devices for which a specific label is specified. You can specify only one label.

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\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
      arrayGroupName=1-1-1
      path=true
      onDemandDevice=false
      devType=
      isStandardLDEV=true
      guardMode=
      diskType=0
      slprNumber=-1
      clprNumber=-1
      cacheResidencyMode=-1
      stripeSizeInKB=-1
      volumeKind=3
      status=Normal
      dpType=-1
      consumedSizeInKB=-1
      mfTrueCopyVolumeType=Simplex
      mfShadowImageVolumeType=Simplex
      mfUniversalReplicatorVolumeType=Simplex
      mfUniversalReplicatorPoolID=-1
      dpPoolID=-1
      threshold=-1
      systemDisk=0
      encrypted=-1
      List of 1 VolumeConnection elements:
        An instance of VolumeConnection
          objectid=VOLCONN.USP.10001.0
          mappedArrayType=USP
          mappedSerialNumber=10001
          mappedDevNum=0
          displayMappedDevNum=00:00
          externalArrayType=HDS9960
          externalSerialNumber=10002
          externalDevNum=150
          displayExternalDevNum=00:96
          externalVolumeName=0096
          productName=0400
          vendor=Hitachi
```

GetStorageArray (subtarget=LogicalDKC)

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

The following table describes the parameters of the GetStorageArray (subtarget=LogicalDKC) command.

Table 4-38   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.

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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
configUpdateStatus=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
distributedMode=-1
List of 1 LogicalDKC elements:
  An instance of LogicalDKC
    logicalDKCNumber=00
    mfLogicalSerialNumber=12345
```

GetStorageArray (subtarget=LogicalUnit)

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

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.

The following table describes the parameters of the GetStorageArray (subtarget=LogicalUnit) command.

Table 4-39   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.

Parameter Name	Status	Description
objectid	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, HostInfo, or ISCSIName.
		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
dpvolfilter	Optional	Filter for selecting an HDP volume
		Specify either the pool ID of an HDP pool, or Unassigned. If you specify the pool ID of an HDP pool, information about the HDP volumes assigned to that HDP pool is obtained.
		If you specify Unassigned, information about HDP volumes not assigned to an HDP pool is obtained.
		Notes:
		▪ This information cannot be obtained by the partitioned storage administrator.
		▪ If you specify model and serialnum at the same time, the specification for this parameter becomes invalid.
startElementNum Filter	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.
numOfElementsFil ter	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 Name	Status	Description
displayname	Optional	Device number of the logical unit
		Specify this parameter to acquire information about a particular logical unit. This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for Hitachi USP, Lightning 9900V, or Lightning 9900, use the *xx*:*yy* format, where *xx* is the CU number and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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.
		If you specify this parameter, you must also specify the model and serialnum parameters.
		Note: The execution results are output in decimal.
label	Optional	Label name of logical units for which information is to be obtained
		Specify this parameter to obtain information about logical units for which a specific label is specified. You can specify only one label.If you specify this parameter, you must also specify lusubinfo=LDEV.

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\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
      arrayGroupName=1-1-17
      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
      dpType=-1
      consumedCapacityInKB=-1
      dpPoolID=-1
      threshold=-1
      tcaPoolID=-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=88.77.77.77.77.77.00.01
              nickname=Jane
            An instance of WWN
              WWN=88.77.77.77.77.77.3F.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
          arrayGroupName=1-1-17
          path=true
          onDemandDevice=false
          devType=
          isStandardLDEV=true
          guardMode=
          diskType=0
          slprNumber=-1
          clprNumber=-1
          cacheResidencyMode=-1
          stripeSizeInKB=-1
          volumeKind=3
          status=Normal
          dpType=-1
          consumedSizeInKB=-1
          mfTrueCopyVolumeType=Simplex
          mfShadowImageVolumeType=Simplex
          mfUniversalReplicatorVolumeType=Simplex
          mfUniversalReplicatorPoolID=-1
          dpPoolID=-1
          threshold=-1
          systemDisk=0
          encrypted=-1
          List of 1 VolumeConnection elements:
            An instance of VolumeConnection
              objectID=VOLCONN.USP.10001.0
              mappedArrayType=USP
              mappedSerialNumber=10001
              mappedDevNum=100
              displayMappedDevNum=00:64
              externalArrayType=HDS9960
              externalSerialNumber=10002
              externalDevNum=150
              displayExternalDevNum=00:96
              externalVolumeName=0096
              productName=0400
              vendor=Hitachi
          List of 1 ObjectLabel elements:
            An instance of ObjectLabel
              targetID=LDEV.USP.10001.100
              label=myLabel
.
. (repeated for other VolumeConnection instances)
.
```

GetStorageArray (subtarget=MFReplicationInfo)

GetStorageArray (subtarget=MFReplicationInfo) obtains information about copy pairs consisting of mainframe volumes in one or all storage subsystems.

A user assigned to a user-defined resource group can obtain information about copy pairs of storage subsystems that contain at least one LDEV for which the user has access permissions. If the user does not have access permissions for the P-VOLs, the pvolObjectID for the MFReplicationInfo instance is displayed as n/a. Likewise, if the user does not have access permissions for the S-VOLs, the svolObjectID for the MFReplicationInfo instance is displayed as n/a.

Notes:

- For Universal Storage Platform V/VM and Hitachi USP, the partitioned storage administrator cannot obtain all the information about paired volumes and external volumes.
- For Universal Storage Platform V/VM, if there is information about copy pairs consisting of mainframe volumes, microcode version 60-01-6x-xx/xx or later is required.

The following table describes the parameters of the GetStorageArray (subtarget=MFReplicationInfo) command.

Table 4-40 GetStorageArray (subtarget=MFReplicationInfo) 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 MFReplicationInfo.
objectid	Optional	ID of the mainframe volume copy pair information (MFReplicationInfo instance) Specify this parameter to obtain information about a copy pair of a specific mainframe volume. If you specify this parameter, you must also specify the model and serialnum parameters. If you specify the model and serialnum parameters and do not specify the objectid parameter, information is obtained about copy pairs of all mainframe volumes on the specified storage subsystems.
mfreplicationsubinfo	Optional	LDEV information related to mainframe-volume copy pairs. LDEV is the only value that you can specify.

Parameter Name	Status	Description
startElementNumFilter	Optional	Starting sequence number of the copy pair information of mainframe volumes for which information is to be obtained
		Specify this parameter to obtain information about copy pairs of some mainframe volumes from a specific storage subsystem.
		When mainframe-volume copy pair information is in the order shown below and starts from 0, specify the first number in the sequence of the mainframe-volume copy pair information that you want to obtain.
		Order of mainframe-volume copy pair information:
		1. Serial numbers of P-VOLs in ascending order
		2. Device numbers of P-VOLs in ascending order
		3. Serial numbers of S-VOLs in ascending order
		4. Device numbers of S-VOLs in ascending order
		This parameter must be specified together with the `numOfElementsFilter`, `model`, and `serialnum` parameters.
numOfElementsFilter	Optional	Number of mainframe-volume copy pair information items to be obtained.
		Specify this parameter to obtain information for copy pairs of some mainframe volumes from a specific storage subsystem.
		This parameter must be specified together with the `startElementNumFilter`, `model`, and `serialnum` parameters.
		The maximum recommended value is 16384.

Parameter values to obtain in advance

`serialnum` and `model`: Obtain these values from the execution result of the `GetStorageArray` command. In the execution result, use the `arrayType` value or the `displayArrayType` value to specify the `model` parameter, and use the `serialNumber` value to specify the `serialnum` parameter.

`objectid`: Obtain this value from the execution result of the `GetStorageArray` (`subtarget=MFReplicationInfo`) command. Execute this command by specifying only the `model` and `serialnum` parameters, and specify `MFReplicationInfo` for the `subtarget` parameter. You can now obtain information about copy pairs of mainframe volumes from specified storage subsystems. In the execution result of this command, an `objectID` value appears under `An instance of MFReplicationInfo`. Use this `objectID` value to specify the `objectid` parameter.

Command execution example

```
HiCommandCLI GetStorageArray -o "D:\logs\GetStorageArray_MFReplicationInfo.log"
"subtarget=MFReplicationInfo" "model=USP_V" "serialnum=10037" "mfreplicationsubinfo=LDEV"
"startElementNumFilter=0" "numOfElementsFilter=1"
```

Command execution result

```
RESPONSE:
An instance of StorageArray
  .
  . (Attributes of StorageArray are omitted here)
  .
  List of 1 MFReplicationInfo elements:
    An instance of MFReplicationInfo
      objectID=MFREP.10037.3332.10037.3333
      pvolSerialNumber=10037
      pvolArrayType=R600
      pvolDevNum=3,332
      displayPvolDevNum=00:0D:04
      pvolObjectID=LDEV.R600.10037.3332
      pvolPoolID=-1
      svolSerialNumber=10037
      svolArrayType=R600
      svolDevNum=3,333
      displaySvolDevNum=00:0D:05
      svolObjectID=LDEV.R600.10037.3333
      svolPoolID=-1
      replicationFunction=ShadowImageForMF
      status=1
      muNumber=3
      List of 2 Ldev elements:
        An instance of LDEV
          objectID=LDEV.R600.10037.3332
          devNum=3,332
          displayName=00:0D:04
          emulation=3390-3
          cylinders=3,339
          isComposite=0
          sizeInKB=2,904,930
          lba=5,809,860
          raidType=RAID5(3D+1P)
          substance=0
          volumeType=-1
          slotSizeInKB=58
          chassis=2
          arrayGroup=32
          arrayGroupName=2-3-1
          path=false
          onDemandDevice=false
          devType=
          isStandardLDEV=true
          guardMode=
          diskType=0
          slprNumber=0
          clprNumber=0
          cacheResidencyMode=0
          stripeSizeInKB=-1
          volumeKind=1
          status=Normal
          dpType=-1
          consumedSizeInKB=2,904,930
          mfTrueCopyVolumeType=Simplex
          mfShadowImageVolumeType=P-VOL
          mfUniversalReplicatorVolumeType=Simplex
          mfUniversalReplicatorPoolID=-1
          dpPoolID=-1
          threshold=-1
          systemDisk=0
          encrypted=0
        An instance of LDEV
          objectID=LDEV.R600.10037.3333
```

```
devNum=3,333
displayName=00:0D:05
emulation=3390-3
cylinders=3,339
isComposite=0
sizeInKB=2,904,930
lba=5,809,860
raidType=RAID5(3D+1P)
substance=0
volumeType=-1
slotSizeInKB=58
chassis=2
arrayGroup=32
arrayGroupName=2-3-1
path=false
onDemandDevice=false
devType=
isStandardLDEV=true
guardMode=
diskType=0
slprNumber=0
clprNumber=0
cacheResidencyMode=0
stripeSizeInKB=-1
volumeKind=1
status=Normal
dpType=-1
consumedSizeInKB=2,904,930
mfTrueCopyVolumeType=Simplex
mfShadowImageVolumeType=S-VOL
mfUniversalReplicatorVolumeType=Simplex
mfUniversalReplicatorPoolID=-1
dpPoolID=-1
threshold=-1
systemDisk=0
encrypted=0
```

GetStorageArray (subtarget=Path)

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

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.

The following table describes the parameters of the GetStorageArray (subtarget=Path) command.

Table 4-41   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, HostInfo, and ISCSIName If you specify multiple values at the same time, separate the values by commas.
startElementNumFilter	Optional	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. 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. Order of paths: 1. Port IDs in ascending order 2. Domain IDs in ascending order 3. Device numbers in ascending order This parameter must be specified together with the numOfElementsFilter, model, and serialnum parameters.

Parameter Name	Status	Description
numOfElementsFilter	Optional	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 startElementNumFilter, model, and serialnum parameters.
		The maximum recommended value is 16384.
portname	Optional	Port name of the storage subsystem
		Specify this parameter to acquire information about a particular path. When you specify this parameter, you must also specify the model and serialnum parameters, either the domainnickname or domain parameter, and the devnum parameter.
		Do not specify this parameter together with the port parameter. If they are specified at the same time, an error will occur.
port	Optional	Port ID of the storage subsystem
		Specify this parameter to acquire information about a particular path. When you specify this parameter, you must also specify the model and serialnum parameters, either the domainnickname or domain parameter, and the devnum parameter.
		Do not specify this parameter together with the portname parameter. If they are specified at the same time, an error will occur.
domainnickname	Optional	Nickname of the host storage domain
		Specify this parameter to acquire information about a particular path. When you specify this parameter, you must also specify the model and serialnum parameters, either the portname or port parameter and the devnum parameter.
		Do not specify this parameter together with the domain parameter. If they are specified at the same time, an error will occur.
domain	Optional	Domain ID of the host storage domain
		Specify this parameter to acquire information about a particular path. You can specify a decimal or hexadecimal value. When you specify this parameter, you must also specify the model and serialnum parameters, either the portname or port parameter, and the devnum parameter. Do not specify this parameter together with the domainnickname parameter. If they are specified at the same time, an error will occur.

Parameter Name	Status	Description
devnum	Optional	Device number of the logical unit
		Specify this parameter to acquire information about a particular path. This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for Hitachi USP, Lightning 9900V, or Lightning 9900, use the *xx:yy* format, where *xx* is the CU number and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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.
		When you specify this parameter, you must also specify the `model` and `serialnum` parameters, either the `portname` or `port` parameter, and either the `domainnickname` or `domain` parameter.

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\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
      displayDevNum=00:00
      portID=0
      portName=CL1-A
      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
      displayDevNum=00:63
      portID=7
      portName=CL1-H
      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\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
      displayDevNum=00:63
      portID=7
      portName=CL1-H
      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
```

GetStorageArray (subtarget=PDEV)

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

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.

The following table describes the parameters of the GetStorageArray (subtarget=PDEV) command.

Table 4-42   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 model and serialnum parameters. If you specify the model and serialnum parameters and omit the arraygroupobjid 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 ALL.
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 model and serialnum parameters. If you specify the model and serialnum parameters and omit the pdevid parameter, information about all the PDEVs in the specified storage subsystem is obtained.

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\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.10001.1
        chassis=1
        arrayGroup=0
        arrayGroupName=1-1-1
        capacityInKB=75,497,472
        row=-1
        column=-1
        denseNumber=-1
        densePosition=-1
        depth=-1
        role=
        vendor=
        model=DKR2D-J072FC
        firmwareVersion=
        serialNumber=
        dkuType=HDS9900V
        rpm=-1
        diskType=-1
        pdevid=1
.
```

```
.  (repeated for other PDEV instances)
.
```

GetStorageArray (subtarget=Pool)

GetStorageArray (subtarget=Pool) obtains information about journal pools for QuickShadow, Copy-on-Write Snapshot, Universal Replicator, or Hitachi Dynamic Provisioning.

Notes:

- When SLPR functionality is used in Universal Storage Platform V/VM or Hitachi USP, the partitioned storage administrator cannot obtain information about the journal pool even if he or she registers the storage subsystem (SLPR) as a target to be managed by Device Manager.

- For Universal Replicator, 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 PairedPool instance. This information is not displayed when information about journal pools used by Hitachi Universal Replicator for Mainframe is obtained.

- Information about replication appears as the ReplicationInfo instance. This information is not displayed when information about journal pools used by Hitachi Universal Replicator for Mainframe is obtained. For details about access permissions used when a user assigned to a user-defined resource group obtains information about replication, see GetStorageArray (subtarget=ReplicationInfo).

- To obtain information about a journal pool that consists of journal volumes or pool volumes included in a particular CLPR, specify the clprfilter parameter. When you obtain information about journal pools used by Hitachi Universal Replicator for Mainframe, only information about journal pools made up of open volume journal volumes that satisfy the condition can be obtained.

The following table describes the parameters of the GetStorageArray (subtarget=Pool) command.

Table 4-43   GetStorageArray (subtarget=Pool) 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.

Parameter Name	Status	Description
serialnum	Optional	Serial number of the storage subsystem
		If you omit this parameter, all the storage subsystems become the target.
subtarget	Required	Specify Pool.
poolfunction	Optional	Type of function used to operate the journal pools
		You can specify the following values:
		For Universal Storage Platform V/VM:
		▪ 3: QuickShadow
		▪ 4: Universal Replicator
		▪ 5: Hitachi Dynamic Provisioning
		For Hitachi USP:
		▪ 3: QuickShadow
		▪ 4: Universal Replicator
		For Hitachi AMS2000:
		▪ 3: QuickShadow or TrueCopy Async
		▪ 5: Hitachi Dynamic Provisioning
		For Hitachi SMS:
		▪ 3: QuickShadow or TrueCopy Async
		For Hitachi AMS/WMS and Thunder 9500V:
		▪ 3: QuickShadow
		If the model or serialnum parameter is omitted, the specification for this parameter becomes invalid.
		You must specify the poolid and poolfunction parameters together. If the poolid parameter is omitted, the specification for this parameter becomes invalid.
poolid	Optional	Pool ID of the journal pool
		If the model or serialnum parameter is omitted, the specification for this parameter becomes invalid.
		You must specify the poolid and poolfunction parameters together. If the poolfunction parameter is omitted, the specification for this parameter becomes invalid.
poolsubinfo	Optional	Information about the journal pool
		The values you can specify are ArrayGroup#, LogicalUnit, PairedPool, and ReplicationInfo.
		Use a comma to delimit multiple values.
		# You can specify ArrayGroup only if the storage subsystem is Hitachi AMS2000 and you specify 5 for poolfunction.
arraygroupsubinfo	Optional (for Hitachi AMS2000)	Information about the PDEV
		PDEV is the only value that you can specify.
		You can specify this parameter only if the storage subsystem is Hitachi AMS2000 and you specify ArrayGroup for poolsubinfo.

Parameter Name	Status	Description
clprfilter	Optional (for Universal Storage Platform V/VM and Hitachi USP)	CLPR number When Universal Replicator is specified as the type of function used to operate the journal pools, specify the CLPR number of the journal volumes. When Hitachi Dynamic Provisioning is specified as the type of function used to operate the journal pools, specify the CLPR number of the journal pool. This parameter obtains information about the journal pool that consists of the journal volumes or pool volumes included in the specified CLPR. You cannot specify the clprfilter parameter if the model, serialnum, poolfunction, poolid, and poolsubinfo parameters are all specified.
poolfilter	Optional	Filter for selecting the type of function used to operate the journal pools. You can specify the following values: ▪ 3: QuickShadow or TrueCopy Async ▪ 4: Universal Replicator ▪ 5: Hitachi Dynamic Provisioning Use a comma to delimit multiple values. You cannot specify the clprfilter parameter if the model, serialnum, poolfunction, poolid, and poolsubinfo parameters are all specified.

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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

poolid: Obtain this value from the execution result of the GetStorageArray (subtarget=Pool) command. In the execution result of this command, the poolID value appears under An instance of Pool. 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=Pool) command obtains information about the journal pool in a storage subsystem (serial number: 25011, model: R601). The information includes data about the logical unit, paired journal pool and replication in the journal pool.

```
HiCommandCLI GetStorageArray -o "D:\logs\GetStorageArray_Pool.log"
subtarget=Pool model=R601 serialnum=25011
poolsubinfo=LogicalUnit,PairedPool,ReplicationInfo
```

Command execution result

```
RESPONSE:
An instance of StorageArray
  .
  . (Attributes of StorageArray are omitted here)
  .
  List of 9 Pool elements:
    An instance of Pool
      objectID=JOURNALPOOL.R601.25011.4.1
      poolFunction=4
      poolID=1
      controllerID=0
      poolType=0
      status=-1
      threshold=-1
      threshold2=-1
      capacityInKB=1,024,320
      freeCapacityInKB=-1
      usageRate=-1
      numberOfPoolVols=1
      numberOfVVols=-1
      capacityOfVVolsInKB=-1
      clprNumber=0
      raidLevel=-
      combination=
      volAlertNotice=-1
      overProvisioningPercent=-1
      overProvisioningWarning=-1
      overProvisioningLimit=-1
      List of 1 ReplicationInfo elements:
        An instance of ReplicationInfo
          objectID=REPINFO.25011.2320.10037.1492
          pvolSerialNumber=25011
          pvolArrayType=R601
          pvolDevNum=2,320
          displayPvolDevNum=00:09:10
          pvolObjectID=LU.R601.25011.2320
          pvolPoolID=1
          svolSerialNumber=10037
          svolArrayType=Unknown
          svolDevNum=1,492
          displaySvolDevNum=1,492
          svolPoolID=2
          replicationFunction=UniversalReplicator
          status=17
          muNumber=1
          copyTrackSize=-1
          splitTime=-1
          remotePathGroupID=-1
      List of 1 Lu elements:
        An instance of LogicalUnit
          objectID=LU.R601.25011.18
```

```
                devNum=18
                displayName=00:00:12
                emulation=OPEN-V
                devCount=1
                devType=
                capacityInKB=1,024,320
                path=false
                commandDevice=false
                commandDeviceEx=0
                commandDeviceSecurity=false
                chassis=1
                arrayGroup=0
                arrayGroupName=1-1-1
                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
                dpType=-1
                consumedCapacityInKB=1,024,320
                dpPoolID=-1
                threshold=-1
                tcaPoolID=-1
          List of 1 PairedPool elements:
             An instance of PairedPool
                muNumber=1
                pairedArrayType=Unknown
                pairedSerialNumber=10037
                pairedPoolID=2
       An instance of Pool
          objectID=JOURNALPOOL.R601.25011.4.10
          poolFunction=4
          poolID=10
          controllerID=0
          poolType=1
          status=-1
          threshold=-1
          threshold2=-1
          capacityInKB=1,024,320
          freeCapacityInKB=-1
          usageRate=-1
          numberOfPoolVols=1
          numberOfVVols=-1
          capacityOfVVolsInKB=-1
          clprNumber=0
          raidLevel=-
          combination=
          volAlertNotice=-1
          overProvisioningPercent=-1
          overProvisioningWarning=-1
          overProvisioningLimit=-1
          List of 1 ReplicationInfo elements:
             An instance of ReplicationInfo
                objectID=REPINFO.10007.98.25011.46
                pvolSerialNumber=10007
                pvolArrayType=Unknown
                pvolDevNum=98
                displayPvolDevNum=98
```

```
                pvolPoolID=10
                svolSerialNumber=25011
                svolArrayType=R601
                svolDevNum=46
                displaySvolDevNum=00:00:2E
                svolObjectID=LU.R601.25011.46
                svolPoolID=10
                replicationFunction=UniversalReplicator
                status=1
                muNumber=0
                copyTrackSize=-1
                splitTime=-1
                remotePathGroupID=-1
          List of 1 Lu elements:
            An instance of LogicalUnit
                objectID=LU.R601.25011.49
                devNum=49
                displayName=00:00:31
                emulation=OPEN-V
                devCount=1
                devType=
                capacityInKB=1,024,320
                path=false
                commandDevice=false
                commandDeviceEx=0
                commandDeviceSecurity=false
                chassis=1
                arrayGroup=0
                arrayGroupName=1-1-1
                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=10
                dpType=-1
                consumedCapacityInKB=1,024,320
                dpPoolID=-1
                threshold=-1
                tcaPoolID=-1
          List of 1 PairedPool elements:
            An instance of PairedPool
                muNumber=0
                pairedArrayType=Unknown
                pairedSerialNumber=10007
                pairedPoolID=10
 .
 . (repeated for other Pool instances)
 .
```

GetStorageArray (subtarget=Port)

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

The following table describes the parameters of the GetStorageArray (subtarget=Port) command.

Table 4-44   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 port and portname are omitted, information about all ports is displayed. 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 port parameter, information about all the ports of the specified storage subsystem is obtained. *Note:* Do not specify port and portname at the same time. If they are specified at the same time, an error will occur.
portname	Optional	Port name for the storage subsystem Specify this parameter when you want to obtain information about a specific port. If port and portname are omitted, information about all ports is displayed. If you specify this parameter, you must also specify the model and serialnum parameters. *Note:* Do not specify port and portname at the same time. If they are specified at the same time, an error will occur.
portsubinfo	Optional	Specific information about the ports The values you can specify are WWN, WWNGroup, LUNGroup, HostStorageDomain, and ISCSIName. If you specify multiple values at the same time, separate the values by commas.
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.

Parameter Name	Status	Description
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.
portfilter	Optional	Type of port about which you want to obtain information
		The values you can specify are LCP, Fibre, SCSI, FICON, NAS, and ISCSI.
		If you specify multiple values at the same time, separate the values by semicolons (;).
# This can only be specified for Lightning 9900.		

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\GetStorageArray_Port.log" subtarget=Port
model=HDS9960 serialnum=10001 port=0 portsubinfo=WWN,WWNGroup,LUNGroup,HostStorageDomain
wwngroupsubinfo=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
      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
      portNumber=-1
      keepAliveTime=-1
      slprNumber=-1
      List of 2 WWN elements:
        An instance of WWN
          WWN=00.00.00.00.00.00.00.01
          nickname=Jane
        An instance of WWN
          WWN=00.00.00.00.00.00.00.50
          nickname=Jone
      List of 2 HostStorageDomain elements:
        An instance of HostStorageDomain
          objectID=HSDOMAIN.HDS9960.10001.0.0
          portID=0
          portName=CL1-A
          domainID=0
          hostMode=Standard
          displayName=CL1-A-0
          domainType=0
          nickname=1A-G00
        An instance of HostStorageDomain
          objectID=HSDOMAIN.HDS9960.10001.0.1
          portID=0
          portName=CL1-A
          domainID=1
          hostMode=Standard
          displayName=CL1-A-1
          domainType=0
          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
```

GetStorageArray (subtarget=PortController)

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

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.

The following table describes the parameters of the GetStorageArray (subtarget=PortController) command.

Table 4-45   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 model and serialnum parameters. If controllernum and controllername are omitted, all port controller information is obtained for the specified storage subsystem. *Note:* Do not specify controllernum and controllername at the same time. If they are specified at the same time, an error will 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 model and serialnum parameters. If controllernum and controllername are omitted, all port controller information is obtained for the specified storage subsystem. *Note:* Do not specify controllernum and controllername at the same time. If they are specified at the same time, an error will occur.
controllersubinfo	Optional	Specific information about the port controller you intend to obtain Available values are IPAddress and PairedPortController. You can specify either one or both of these values. *Note:* The information about IPAddress and PairedPortController is valid for the NAS configuration.

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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.

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 1

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\GetStorageArray_PortController.log"
subtarget=PortController model=HDS9980V serialnum=10001
```

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\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
```

GetStorageArray (subtarget=ReplicationInfo)

GetStorageArray (subtarget=ReplicationInfo) obtains information about copy pairs in one or all storage subsystems.

A user to whom a user-defined resource group is assigned can obtain information about copy pairs of logical units for which the user has access permissions. If the user does not have access permissions for the P-VOLs, the pvolObjectID for the ReplicationInfo instance is displayed as n/a. Likewise, if the user does not have access permissions for the S-VOLs, the svolObjectID for the ReplicationInfo instance is displayed as n/a.

⚠️ *Notes:*

- For Universal Storage Platform V/VM and Hitachi USP, the partitioned storage administrator cannot obtain all the information about paired volumes and external volumes.
- For Universal Storage Platform V/VM, if there is information about copy pairs consisting of mainframe volumes, microcode version 60-01-6x-xx/xx or later is required. When using an older microcode version and obtaining copy pair information, the information about copy pairs consisting of mainframe volumes is output as the information about copy pairs consisting of open volumes.

The following table describes the parameters of the GetStorageArray (subtarget=ReplicationInfo) command.

Table 4-46 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	ID of the copy pair information (ReplicationInfo instance)
		Specify this parameter if you want to obtain specific copy pair information. If you specify this parameter, you must also specify the model and serialnum parameters. If you specify the model and serialnum parameters and do not specify the objectid parameter, information about all copy pairs of the specified storage subsystem is obtained.
replicationsubinfo	Optional	Information about logical units related to a copy pair.
		LogicalUnit is the only value that you can specify.

Parameter Name	Status	Description
startElementNumFilter	Optional	Starting sequence number of copy pair information to be obtained
		Specify this parameter to obtain information for some copy pairs from a specific storage subsystem.
		When copy pair information is in the order shown below and starts from 0, specify the first number in the sequence of copy pair information that you want to obtain.
		Order of copy pair information:
		1. Serial numbers of P-VOLs in ascending order
		2. Device numbers of P-VOLs in ascending order
		3. Serial numbers of S-VOLs in ascending order
		4. Device numbers of S-VOLs in ascending order
		This parameter must be specified together with the numOfElementsFilter, model, and serialnum parameters.
numOfElementsFilter	Optional	Number of copy pair information items to be obtained
		Specify this parameter to obtain information about some copy pairs from a specific storage subsystem.
		This parameter must be specified together with the startElementNumFilter, model, and serialnum parameters.
		The maximum recommended value is 16384.

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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. You can now obtain information about copy pairs, from specified storage subsystems. 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

```
HiCommandCLI GetStorageArray -o "D:\logs\GetStorageArray_ReplicationInfo.log"
subtarget=ReplicationInfo model=R601 serialnum=25011 replicationsubinfo=LogicalUnit
```

Command execution result

```
RESPONSE:
An instance of StorageArray
  .
  . (Attributes of StorageArray are omitted here)
  .
  List of 39 ReplicationInfo elements:
    An instance of ReplicationInfo
      objectID=REPINFO.10007.1549.25011.1028
      pvolSerialNumber=10007
      pvolArrayType=Unknown
      pvolDevNum=1,549
      displayPvolDevNum=1,549
      pvolPoolID=7
      svolSerialNumber=25011
      svolArrayType=R601
      svolDevNum=1,028
      displaySvolDevNum=00:04:04
      svolObjectID=LU.R601.25011.1028
      svolPoolID=7
      replicationFunction=UniversalReplicator
      status=1
      muNumber=1
      copyTrackSize=-1
      splitTime=-1
      remotePathGroupID=-1
      List of 1 Lu elements:
        An instance of LogicalUnit
          objectID=LU.R601.25011.1028
          devNum=1,028
          displayName=00:04:04
          emulation=OPEN-V
          devCount=1
          devType=
          capacityInKB=1,024,320
          path=true
          commandDevice=false
          commandDeviceEx=0
          commandDeviceSecurity=false
          chassis=1
          arrayGroup=32
          arrayGroupName=1-3-1
          raidType=RAID5(3D+1P)
          currentPortController=-1
          defaultPortController=-1
          isComposite=0
          trueCopyVolumeType=Simplex
          shadowImageVolumeType=Simplex
          quickShadowVolumeType=Simplex
          universalReplicatorVolumeType=S-VOL
          sysVolFlag=0
          externalVolume=0
          differentialManagement=false
          quickShadowPoolID=-1
          universalReplicatorPoolID=7
          dpType=-1
          consumedCapacityInKB=1,024,320
          dpPoolID=-1
          threshold=-1
          tcaPoolID=-1
  .
  . (repeated for other ReplicationInfo instances)
  .
```

ModifyArrayReservation

ModifyArrayReservation extends the interval before the target storage subsystem is unlocked.

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 Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, or Thunder 9200.

The following table describes the parameters of the ModifyArrayReservation command.

Table 4-47   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 obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

Command execution example

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

Command execution result

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

ModifyLabel

ModifyLabel modifies the label of a logical unit.

The following table describes the parameters of the ModifyLabel command.

Table 4-48   ModifyLabel Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the storage subsystem
model	Required	Model of the storage subsystem
devnums	Required	Device number of the logical unit. This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number for Hitachi USP, Lightning 9900V, or Lightning 9900, use the **xx**:*yy* format, where **xx** is the CU number, and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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. Use a comma to delimit multiple values. ***Note:*** The maximum number of device numbers that can be specified is 1,024.
label	Required	Label character string. You can use the following characters: A-Z a-z 0-9 ! # $ % & ' ( ) * + , - . / : ; < = > ? @ [ ] ^ _ { | } ~ (space) ***Notes:*** ▪ You can use a character string of 1-64 bytes for a label. ▪ A label character string cannot begin or end with spaces.

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter. Use the serialNumber value to specify the serialnum parameter.

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

Command execution example

```
HiCommandCLI ModifyLabel -o "D:\logs\ModifyLabel.log" "serialnum=10037" "model=R600"
"devnums=00:00:00,00:00:01" "label=myLabel"
```

Command execution result

```
RESPONSE:
An instance of ObjectLabel
  targetID=LDEV.R600.10037.0
  label=myLabel
An instance of ObjectLabel
  targetID=LDEV.R600.10037.1
  label=myLabel
```

ModifyLogicalUnit

ModifyLogicalUnit modifies the LU and its corresponding LDEV in a storage device.

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

Format for the Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V , Hitachi AMS2000/AMS/WMS, Hitachi SMS, and Thunder 9500V

```
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}]
```

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, verify 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, Hitachi USP, and Universal Storage Platform V/VM, 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.

The following table describes the parameters of the ModifyLogicalUnit command.

Table 4-49   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 Hitachi USP, Lightning 9900V or Lightning 9900, use the *xx*:*yy* format, where *xx* is the CU number, and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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.
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 obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\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
       arrayGroupName=1-1-1
       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
       dpType=-1
       consumedCapacityInKB=-1
       dpPoolID=-1
       threshold=-1
       tcaPoolID=-1
```

ModifyPool

ModifyPool expands an HDP pool or changes the thresholds related to the HDP pool and the over-provisioning percent.

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

⚠️ ***Notes:***

- This command can be used only with Universal Storage Platform V/VM and Hitachi AMS2000 storage subsystems.
- The parameters `thresholdvolforewarn` and `thresholdvoloverwarn`, which were supported in version 6.2, have changed to `overprovisioningwarning` and `overprovisioninglimit`, respectively. In addition, the attributes of the Pool instance, `thresholdVolForewarn` and `thresholdVolOverwarn`, which were output as the execution results of this command, have changed to `overProvisioningWarning` and `overProvisioningLimit`, respectively. Check and, if necessary, revise the script settings that you use in version 6.3 or later.
- When you use this command to expand an HDP pool, the logical units or PDEVs specified to be used as pool volumes must satisfy the conditions listed in [AddPool](#).
- For Universal Storage Platform V/VM, you can change the thresholds related to an HDP pool only if the status of the HDP pool is Normal and the usage rate is less than 95%. The new threshold value also must be larger than the value that is currently set as the usage rate of the HDP pool.
- For Universal Storage Platform V/VM, if the status of the HDP pool is Blocked, the usage rate must be 100% to expand the HDP pool.
- For Hitachi AMS2000, if the status of the HDP pool is Blocked, you cannot expand the HDP pool.

Format for the Universal Storage Platform V/VM

When the command is used to expand an HDP pool:

```
HiCommandCLI [URL] ModifyPool [options] model=model serialnum=serial-number poolid=pool-ID
adddevnums=device-number-of-logical-unit [threshold=threshold-related-to-HDP-pool]
[overprovisioningwarning=over-provisioning-warning-threshold] [overprovisioninglimit=over-
provisioning-limit-threshold]
```

When changing the thresholds only:

```
HiCommandCLI [URL] ModifyPool [options] model=model serialnum=serial-number poolid=pool-ID
[threshold=threshold-related-to-HDP-pool] [overprovisioningwarning=over-provisioning-
warning-threshold] [overprovisioninglimit=over-provisioning-limit-threshold]
```

Format for the Hitachi AMS2000

When automatically selecting PDEVs to expand an HDP pool:

```
HiCommandCLI [URL] ModifyPool [options] model=model serialnum=serial-number poolid=pool-ID
[threshold=threshold-related-to-HDP-pool] [threshold2=threshold-related-to-HDP-pool]
[overprovisioningwarning=over-provisioning-warning-threshold] [overprovisioninglimit=over-
provisioning-limit-threshold] [volalertnotice={0|1}] automode=true
```

When selecting PDEVs by specifying their IDs to expand an HDP pool:

```
HiCommandCLI [URL] ModifyPool [options] model=model serialnum=serial-number poolid=pool-ID
[threshold=threshold-related-to-HDP-pool] [threshold2=threshold-related-to-HDP-pool]
[overprovisioningwarning=over-provisioning-warning-threshold] [overprovisioninglimit=over-
provisioning-limit-threshold] [volalertnotice={0|1}] automode=false addpdevnums=list-of-
PDEV-IDs
```

When changing the thresholds only:

```
HiCommandCLI [URL] ModifyPool [options] model=model serialnum=serial-number poolid=pool-ID
[threshold=threshold-related-to-HDP-pool] [threshold2=threshold-related-to-HDP-pool]
[overprovisioningwarning=over-provisioning-warning-threshold] [overprovisioninglimit=over-
provisioning-limit-threshold] [volalertnotice={0|1}]
```

The following table describes the parameters of the ModifyPool command.

Table 4-50   ModifyPool Command Parameters

Parameter Name	Status	Description
model	Required	Model of the storage subsystem
serialnum	Required	Serial number of the storage subsystem
poolid	Required	Pool ID Specify the pool ID of the HDP pool that you plan to expand or whose threshold you plan to change.

threshold[#1, #2]	Optional	Threshold related to the HDP pool (%)
		
		The threshold of the HDP pool is the usage rate of the HDP pool.
		
		One of the following values can be specified:
		
		For Universal Storage Platform V/VM:
		
		    When you want to change the threshold, specify a multiple of 5 from 5 to 95.
		
		For Hitachi AMS2000:
		
		    By specifying threshold values for threshold and threshold2, warnings can be issued in two levels. For threshold, specify a threshold value used to report HDP pool shortage at an early stage.
		
		    Specify an integer from 1 to 99. You need to specify a value smaller than the one specified for threshold2.

threshold2[#2]	Optional (for Hitachi AMS2000)	Threshold related to the HDP pool (%) The threshold of the HDP pool is the usage rate of the HDP pool. For threshold2, specify a threshold value used to warn of HDP pool shortage by using an integer from 1 to 99. You need to specify a value larger than the one specified for threshold.

Parameter Name	Status	Description
overprovisioningwarning[#1, #2, #3]	Optional	Over provisioning warning threshold (%) This is a threshold value related to the over-provisioning percent.[#4] The following values can be specified when modifying the threshold value: For Universal Storage Platform V/VM: Specify an integer from 10 to 1000. You need to specify a value smaller than the one specified for overprovisioninglimit. Specify –1 to cancel an already set threshold value. For Hitachi AMS2000: Specify an integer from 50 to 1000. You need to specify a value smaller than the one specified for overprovisioninglimit.
overprovisioninglimit[#1, #2, #3]	Optional	Over provisioning limit threshold (%) This is a threshold value related to the over-provisioning percent.[#4] The following values can be specified when modifying the threshold value: For Universal Storage Platform V/VM: Specify an integer from 10 to 1000. You need to specify a value larger than the one specified for overprovisioningwarning. Specify –1 to cancel an already set threshold value. If you specify a threshold value and the over-provisioning percent[#4] exceeds the specified threshold value, you cannot create an HDP volume or assign HDP volumes to an HDP pool. For Hitachi AMS2000: Specify an integer from 50 to 1000. You need to specify a value larger than the one specified for overprovisioningwarning.
volalertnotice[#2]	Optional (for Hitachi AMS2000)	Specify whether to enable the thresholds related to HDP volumes (thresholdvolforewarn and thresholdvoloverwarn). One of the following values can be specified: ▪ 0: Disables the thresholds ▪ 1: Enables the thresholds
adddevnums[#1]	Optional (for Universal Storage Platform V/VM)	Device number of the logical unit(s) Specify this parameter as a decimal number or colon-delimited hexadecimal number in the format *ww*:*xx*:*yy*, where *ww* is the LDKC number, *xx* is the CU number, and *yy* is the LDEV number. *ww* is optional. If *ww* is omitted, LDKC is assumed to be 0. Use a comma to delimit multiple values.

Parameter Name	Status	Description
automode[#2, #5]	Optional (for Hitachi AMS2000)	Specify how to select PDEVs to be added to the HDP pool. One of the following values can be specified. The values are not case-sensitive. • `true`: Automatically selects PDEVs. • `false`: Selects PDEVs by specifying their IDs.
addpdevnums[#5]	Optional (for Hitachi AMS2000)	Comma-separated list of physical disk (PDEV) IDs

#1 For Universal Storage Platform V/VM, you need to specify at least one of the following parameters: `threshold`, `overprovisioningwarning`, `overprovisioninglimit`, or `adddevnums`.

#2 For Hitachi AMS2000, you need to specify at least one of the following parameters: `threshold`, `threshold2`, `overprovisioningwarning`, `overprovisioninglimit`, `volalertnotice`, or `automode`.

#3 If you specify threshold values for `overprovisioningwarning` and `overprovisioninglimit`, two levels of warnings related to the over-provisioning percent can be issued. For Universal Storage Platform V/VM, these threshold values are specific to and managed by the Device Manager server.

#4 The over-provisioning percent is the percentage of the total size of all HDP volumes with respect to the HDP pool size. For example, if the HDP pool size is 500 GB and the total size of all HDP volumes is 400 GB, the threshold value will be 80 %.

#5 For Hitachi AMS2000, if you specify false for the `automode` parameter, you also need to specify the `addpdevnums` parameter. If you specify true, do not specify the `addpdevnums` parameter. If they are specified at the same time, an error will occur.

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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

adddevnums: 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 the devNum value of a logical unit that satisfies the conditions to be used as a pool volume in an HDP pool, to specify the adddevnums parameter.

addpdevnums: 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 addpdevnums parameter. If a comma is included in the pdevid value, specify the value, excluding the comma.

Command execution example

In this example, the ModifyPool command expands the HDP pool whose pool ID is 0 (poolid: 0) in the storage subsystem (serialnum: 15065, model: USP_V).

```
HiCommandCLI ModifyPool -o "D:\logs\ModifyPool.log" model=USP_V serialnum=15065 poolid=0
adddevnums=00:09:43
```

Command execution result

```
RESPONSE:
An instance of StorageArray
  .
  . (Attributes of StorageArray are omitted here)
  .
  List of 1 Pool elements:
    An instance of Pool
      objectID=JOURNALPOOL.R600.15065.5.0
      name=Pool
      poolFunction=5
      poolID=0
      controllerID=-1
      poolType=32
      status=0
      threshold=75
      threshold2=80
      capacityInKB=31,458,240
      freeCapacityInKB=31,458,240
      usageRate=0
      numberOfPoolVols=3
      numberOfVVols=0
      capacityOfVVolsInKB=0
      clprNumber=0
      raidLevel=-
      combination=
      volAlertNotice=-1
      overProvisioningPercent=0
      overProvisioningWarning=-1
      overProvisioningLimit=-1
      List of 3 Lu elements:
        An instance of LogicalUnit
          objectID=LU.R600.15065.2369
          devNum=2,369
          displayName=00:09:41
          emulation=OPEN-V
          devCount=1
          devType=
          capacityInKB=10,486,080
          path=false
          commandDevice=false
          commandDeviceEx=0
          commandDeviceSecurity=false
```

```
                  chassis=1
                  arrayGroup=64
                  arrayGroupName=1-5-1
                  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
                  dpType=1
                  consumedCapacityInKB=10,486,080
                  dpPoolID=0
                  threshold=-1
                  tcaPoolID=-1
                An instance of LogicalUnit
                  objectID=LU.R600.15065.2370
                  devNum=2,370
                  displayName=00:09:42
                  emulation=OPEN-V
                  devCount=1
                  devType=
                  capacityInKB=10,486,080
                  path=false
                  commandDevice=false
                  commandDeviceEx=0
                  commandDeviceSecurity=false
                  chassis=1
                  arrayGroup=64
                  arrayGroupName=1-5-1
                  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
                  dpType=1
                  consumedCapacityInKB=10,486,080
                  dpPoolID=0
                  threshold=-1
                  tcaPoolID=-1
                An instance of LogicalUnit
                  objectID=LU.R600.15065.2371
                  devNum=2,371
                  displayName=00:09:43
                  emulation=OPEN-V
                  devCount=1
                  devType=
                  capacityInKB=10,486,080
                  path=false
                  commandDevice=false
                  commandDeviceEx=0
                  commandDeviceSecurity=false
```

```
chassis=1
arrayGroup=64
arrayGroupName=1-5-1
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
dpType=1
consumedCapacityInKB=10,486,080
dpPoolID=0
threshold=-1
tcaPoolID=-1
```

ModifyPort

ModifyPort will change port and host storage domain attributes.

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

⚠️ ***Note:***

- For Hitachi AMS2000/AMS/WMS, Hitachi AMS, the 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.
- For Lightning 9900V, if you change the attributes (channel speed or topology) of a port that is set to high-speed mode, the same change is applied to the attributes of all the ports that are in the same high-speed unit as the target port. The attribute change made to ports other than the target port is not immediately applied to the Device Manager server database. Therefore, after you execute the `ModifyPort` command, refresh the storage subsystem by executing the `AddStorageArray` command. You can check whether the target port is set to high-speed mode from the `mode` attribute of the `PortController` instance that is output as the execution result of the `GetStorageArray` (`subtarget=PortController`) command. For details about high-speed units, see the LUN Management documentation for Lightning 9900V.

Format for Hitachi AMS2000/AMS/WMS and Hitachi SMS

For a fibre channel connection:
```
HiCommandCLI [URL] ModifyPort [option] serialnum=serial-number model=model {port=port-
number|portname=port-name} [topology=new-port-topology] [fibreaddr=new-fibre-channel-
address-for-the-port] [channelspeed={0|1|2|4|8}] [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=host-mode-for-port] [hostmode2=host-connection-mode-2-list-for-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 firmware version. For details, see Table 4-51. Also, 8 Gbps can be specified only for Hitachi AMS2300/2500 storage, or for Hitachi AMS2100 storage whose hardware revision number is 0200.

For an iSCSI connection:

```
HiCommandCLI [URL] ModifyPort [option] serialnum=serial-number model=model {port=port-
number|portname=port-name} [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=host-mode-for-port]
[hostmode2=host-connection-mode-2-list-for-port] [ipaddress=IP-address-of-the-port]
[subnetmask=subnet-mask-of-the-port] [gateway=gateway-IP-address-of-the-port]
[netportnum=port-number] [keepalivetime=keep-alive-time] [domainiscsiname=iSCSI-name-of-
the-host-storage-domain] [iscsiname=iSCSI-name-of-the-host newiscsinickname=new-iSCSI-
nickname-of-the-host] [iscsinickname=iSCSI-nickname-of-the-host newiscsinickname=new-iSCSI-
nickname-of-the-host]
```

Format for Universal Storage Platform V/VM and Hitachi USP

```
HiCommandCLI [URL] ModifyPort [option] serialnum=serial-number model=model {port=port-
number|portname=port-name} [topology=new-port-topology] [fibreaddr=new-fibre-channel-
address-for-the-port] [channelspeed={0|1|2|4|8}] [lunsec={true|false}] [domain=domain-ID]
[nickname={new-host-storage-domain-name|existing-host-storage-domain-name}]
[newdomainnickname=new-host-storage-domain-name] [hostmode=host-mode-for-port]
[hostmodeoption=host-mode-option-list] [wwn=WWN wwnnickname=WWN nickname] [wwn=WWN
newwwnnickname=new-WWN-nickname] [wwnnickname=WWN-nickname newwwnnickname=new-WWN-nickname]
```

⚠️ *Note:* 8 Gbps can be specified only for Universal Storage Platform V/VM.

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] [fibreaddr=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=host-mode-for-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=host-mode-for-
port] [hostmode2=host-connection-mode-2-list-for-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=host-mode-for-port] [hostmode2=host-connection-mode-
2-list-for-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=host-mode-for-port]
```

The following table describes the parameters of the ModifyPort command.

Table 4-51   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 port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
portname	Optional	Port name **Note:** Specify either port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
topology[#]	Optional	New topology value for the port Possible values are as follows. For Universal Storage Platform V/VM, Hitachi 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 Hitachi AMS2000/AMS/WMS, Hitachi SMS, 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 (for USP V/VM, Hitachi USP, 9900V, Hitachi AMS2000/AMS/ WMS, and Hitachi SMS)	New transmission speed for a Fibre Channel connection to a port You can specify the following values: For Universal Storage Platform V/VM: ▪ 0: Automatic ▪ 1: 1 Gbps ▪ 2: 2 Gbps ▪ 4: 4 Gbps ▪ 8: 8 Gbps For Hitachi USP: ▪ 0: Automatic ▪ 1: 1 Gbps ▪ 2: 2 Gbps ▪ 4: 4 Gbps For Lightning 9900V: ▪ 0: Automatic ▪ 1: 1 Gbps ▪ 2: 2 Gbps For Hitachi AMS2000 and Hitachi SMS: ▪ 0: Automatic ▪ 1: 1 Gbps ▪ 2: 2 Gbps ▪ 4: 4 Gbps ▪ 8: 8 Gbps 8 Gbps can be specified only for Hitachi AMS2300/2500, or for Hitachi AMS2100 whose hardware revision is 0200. For Hitachi AMS (firmware version 0720/x-S or before, 0720/x-X): ▪ 0: Automatic ▪ 1: 1 Gbps ▪ 2: 2 Gbps For Hitachi AMS (firmware version 0710/x-M or later, 0723/x-S or later, 0723/x-X or later, 0730/x-H or later): ▪ 0: Automatic ▪ 1: 1 Gbps ▪ 2: 2 Gbps ▪ 4: 4 Gbps For Hitachi WMS: ▪ 0: Automatic ▪ 1: 1 Gbps ▪ 2: 2 Gbps
lunsec	Optional	New setting for LUN security enabled (either "true" or "false")

Parameter Name	Status	Description
portoption	Optional (Hitachi AMS2000/AMS/ WMS, Hitachi SMS, 9500V, and 9200)	Semicolon-separated new option list of the port Possible values are as follows. ▪ Reset ALL LIP Port Mode ▪ Reset/LIP Mode (Process) ▪ Reset/LIP Mode (Signal) ▪ Read Frame Min 128 Byte Mode (for Thunder 9500V only)
ipaddress#	Optional (Hitachi AMS2000/AMS/ WMS and Hitachi SMS)	IP address of the port Omit this when no change is made to the port's IP address.
subnetmask#	Optional (Hitachi AMS2000/AMS/ WMS and Hitachi SMS)	Subnet mask of the port Omit this when no change is made to the port's subnet mask.
gateway#	Optional (Hitachi AMS2000/AMS/ WMS and Hitachi SMS)	Gateway IP address of the port Omit this when no change is made to the port's gateway IP address.
netportnum#	Optional (Hitachi AMS2000/AMS/ WMS and Hitachi SMS)	Port number Omit this when no change is made to the port number.
keepalivetime#	Optional (Hitachi AMS2000/AMS/ WMS and Hitachi SMS)	Keep-alive time Omit this when no change is made to the keep-alive time. The permitted value is in the range from 30 to 64,800 seconds.
domain	Optional	DomainID of the host storage domain (please refer to notes) If you specify the nickname, newdomainnickname, hostmode, hostmode2, hostmodeoption, wwn, wwnnickname or newwwnnickname storage domain attribute, you must also specify either the domain or nickname 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 0x prefix. *Note:* The execution results are output in decimal.

Parameter Name	Status	Description
nickname	Optional (USP V/VM, Hitachi USP, 9900V, Hitachi AMS2000/AMS/WMS, Hitachi SMS, and 9500V (in LUN Management mode))	Specify the nickname of the host storage domain. The value specified for this parameter differs depending on whether domain is specified. If domain is specified: Specify the new nickname of the host storage domain. If domain is not specified: Specify the nickname of the host storage domain. You can use the following characters: A-Z a-z 0-9 ! # $ % & ' ( ) + - . = @ [ ] ^ _ ` { }   ~ (space)  ***Notes:***  ▪ A nickname cannot begin or end with spaces.  ▪ For Hitachi AMS2000/AMS/WMS, Hitachi SMS, and the Thunder 9500V series in the LUN Management mode, a grave accent mark (`) cannot be used. The character string used for a nickname must be within the following range: ▪ Universal Storage Platform V/VM: 1-32 bytes ▪ Hitachi USP: DKC microcode version earlier than 50-04-01: 1-16 bytes DKC microcode version 50-04-01 or later: 1-32 bytes ▪ Lightning 9900V: 1-8 bytes ▪ Hitachi AMS2000: 1-32 bytes ▪ Hitachi SMS: 1-32 bytes ▪ Hitachi AMS/WMS: When the domain type of the host storage domain is host group: 1-16 bytes When the domain type of the host storage domain is iSCSI target: 1-32 bytes ▪ Thunder 9500V (LUN management mode): Firmware version earlier than x6x9/M: 1-8 bytes Firmware version x6x9/M or later: 1-16 bytes
newdomainnickname	Optional (USP V/VM, Hitachi USP, 9900V, Hitachi AMS2000/AMS/WMS, Hitachi SMS, and 9500V (in LUN Management mode))	New nickname of the host storage domain Specify the name used for the host group or iSCSI target to be created in the storage subsystem. ***Notes:*** ▪ If you specify this parameter, you must also specify the domain or nickname parameter. ▪ If you use the HostScan command to register a host in Device Manager, specify the host name that uses the host storage domain for the newdomainnickname parameter. For details about the HostScan command, see [HostScan](#).

Parameter Name	Status	Description
hostmode	Optional	Host mode for the port The default is Standard. For the values available for Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200, see Table 4-53. For the values available for the Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, and Lightning 9900, see Table 4-54. *Note:* If you specify this parameter, you must also specify the domain or nickname parameter.
hostmode2	Optional (Hitachi AMS2000/AMS/WMS, Hitachi SMS, 9500V, and 9200)	Host connection mode 2 for the port To specify two or more options, separate them with semicolons (;). For details on the values that you can specify, see Table 4-55. *Note:* If you specify this parameter, you must also specify the domain or nickname parameter.
hostmodeoption	Optional (for USP V/VM and Hitachi USP)	List of host mode options To specify two or more options, separate them with semicolons (;). For details on the values that you can specify, see Table 4-57. *Note:* If you specify this parameter, you must also specify the domain or nickname 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. *Notes:* ▪ If you specify this parameter, you must also specify the domain or nickname parameter. ▪ If you specify this parameter, you must also specify the wwnnickname or newwwnnickname parameter. You must specify the same number of values for each parameter.

Parameter Name	Status	Description
wwnnickname[#]	Optional (USP V/VM, Hitachi USP, 9900V, Hitachi AMS2000/AMS/ WMS, Hitachi SMS, and 9500V (in LUN Management mode))	The nickname for the WWN To specify two or more WWN nicknames, separate them with commas. The value specified for this parameter differs depending on whether wwn is specified. If wwn is specified: Specify the new nickname for WWN. If wwn is not specified: Specify the nickname for the WWN that is used to provide security for the host storage domain. If you specify the wwn parameter and do not specify the wwnnickname parameter, the WWN nickname will not be changed. Paired wwn parameters and wwnnickname parameters must be specified in the same sequence. You can use the following characters. A-Z a-z 0-9 ! # $ % & ' ( ) + - . = @ [ ] ^ _ ` { } ~   (space)  ***Notes:*** ▪ A WWN nickname cannot begin or end with spaces. ▪ For Hitachi AMS2000/AMS/WMS, Hitachi SMS, and the Thunder 9500V series in the LUN Management mode, a grave accent mark (`) cannot be used. The character string used for a WWN nickname must be within the following range: ▪ Universal Storage Platform V/VM: 0-32 bytes ▪ Hitachi USP: DKC microcode version earlier than 50-04-01: 0-16 bytes DKC microcode version 50-04-01 or later: 0-32 bytes ▪ Lightning 9900V: 0-8 bytes ▪ Hitachi AMS2000: 0-32 bytes ▪ Hitachi SMS: 0-32 bytes ▪ Hitachi AMS/WMS: 0-16 bytes ▪ Thunder 9500V (LUN management mode): Firmware version earlier than x6x9/M: 0-8 bytes Firmware version x6x9/M or later: 0-16 bytes ***Notes:*** ▪ If you specify this parameter, you must also specify the domain or nickname parameter. ▪ If you specify this parameter, you must also specify the wwn or newwwnnickname parameter. You must specify the same number of values for each parameter.

Parameter Name	Status	Description
newwwnnickname[#]	Optional (USP V/VM, Hitachi USP, 9900V, Hitachi AMS2000/AMS/ WMS, Hitachi SMS, and 9500V (in LUN Management mode))	New nickname of the WWN ***Notes:*** ▪ If you specify this parameter, you must also specify the domain or nickname parameter. ▪ If you specify this parameter, you must also specify the wwn or newwwnnickname parameter. You must specify the same number of values for each parameter.
domainiscsiname[#]	Optional (Hitachi AMS2000/AMS/ WMS and Hitachi SMS)	iSCSI name of the host storage domain (iSCSI target) Specify the iSCSI name in the iqn or eui format. You can use the following characters: A-Z a-z 0-9 - . : The iSCSI name is not case-sensitive. You can use a character string of 1-233 bytes for a name.
iscsiname[#]	Optional (Hitachi AMS2000/AMS/ WMS and Hitachi SMS)	iSCSI name of the host (iSCSI initiator) at which security is to be set for the host storage domain Specify the iSCSI name in the iqn or eui format. Omit this when no change is made to the iSCSI name. To specify two or more values, separate them with commas (,). You must specify the same number of values for the iscsiname and newiscsinickname parameters. You can use the following characters: A-Z a-z 0-9 - . : The iSCSI name is not case-sensitive. You can use a character string of 1-233 bytes for a name. ***Notes:*** ▪ If you specify this parameter, you must also specify the newiscsinickname parameter. You must specify the same number of values for each parameter. ▪ Do not specify the iscsiname and iscsinickname parameters at the same time. If they are specified at the same time, an error will occur.

Parameter Name	Status	Description
iscsinickname#	Optional (Hitachi AMS2000/AMS/WMS and Hitachi SMS)	iSCSI nickname of the host (iSCSI initiator) To specify two or more values, separate them with commas (,). You can use the following characters: A-Z a-z 0-9 ! # $ % & ( ) + - . = @ [ ] ^ _ ` { } ~ (space)  You can use a character string of 1-64 bytes for the name.  *Notes:*  ▪ An iSCSI initiator nickname cannot begin or end with spaces.  ▪ For Hitachi AMS2000/AMS/WMS and Hitachi SMS, a grave accent mark (`) cannot be used. ▪ If you specify this parameter, you must also specify the newiscsinickname parameter. You must specify the same number of values for each parameter. ▪ Do not specify the iscsiname and iscsinickname parameters at the same time. If they are specified at the same time, an error will occur.
newiscsinickname#	Optional (Hitachi AMS2000/AMS/WMS and Hitachi SMS)	New iSCSI nickname of the host (iSCSI initiator) Omit this when no change is made to the iSCSI nickname of the host (iSCSI initiator). To specify two or more values, separate them with commas (,). You can use the following characters: A-Z a-z 0-9 ! # $ % & ( ) + - . = @ [ ] ^ _ ` { } ~ (space)  *Notes:*  ▪ An iSCSI initiator nickname cannot begin or end with spaces.  ▪ For Hitachi AMS2000/AMS/WMS and Hitachi SMS, a grave accent mark (`) cannot be used. You can use a character string of 1-64 bytes for the name. *Note:* If you specify this parameter, you must also specify the iscsiname or iscsinickname parameter. You must specify the same number of values for each parameter.
# topology, fibreaddr, channelspeed, wwn, wwnnickname, and newwwnnickname are host group parameters. ipaddress, subnetmask, gateway, netportnum, keepalivetime, domainiscsiname, iscsiname, iscsinickname, and newiscsinickname are iSCSI target parameters. Do not specify a host group parameter together with an iSCSI target parameter. If they are specified together, an error will occur.		

The following table describes the portoption settings.

Table 4-52   Available Values for Setting the portoption Parameter for Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200

Value of PortOption	Description
Read Frame Min 128 Byte Mode[#]	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)
# This setting can be specified for Thunder 9500V only.	

Table 4-53 and Table 4-54 describe the hostmode settings.

Table 4-53   Available Values for Setting the hostmode Parameter for Hitachi SMS, Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200

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

Table 4-54   Available Values for Setting the hostmode Parameter for Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, and Lightning 9900

Storage Subsystem	Available Values for Setting HostMode Parameter
Universal Storage Platform V/VM	Possible values are: ▪ Standard ▪ VMware ▪ HP ▪ OpenVMS ▪ Tru64 ▪ Solaris ▪ NetWare ▪ Windows ▪ AIX ▪ VMware Extension ▪ Windows Extension ▪ UVM

Storage Subsystem	Available Values for Setting HostMode Parameter
Hitachi USP	Possible values are: ▪ Standard ▪ Sequent ▪ HP ▪ Solaris ▪ Netware ▪ Windows ▪ Windows Extension ▪ Tru64 ▪ HI-UX ▪ AIX ▪ OPEN-VMS The following value relies on the DKC microcode version. For 50-03-0X-XX/XX or later: ▪ UVM
Lightning 9900V	Possible values are: ▪ Standard ▪ Sequent ▪ HP ▪ Solaris ▪ Netware ▪ Windows ▪ Tru64 ▪ HI-UX ▪ AIX ▪ OPEN-VMS The following value relies on the DKC microcode version. For 21-05-00-XX/XX or later: ▪ Windows Extension ▪ Solaris Extension For 21-14-02-XX/XX or later: ▪ Standard Extension2 ▪ HP Extension2 ▪ Solaris Extension2 ▪ Windows Extension2 ▪ AIX Extension2

Storage Subsystem	Available Values for Setting HostMode Parameter
Lightning 9900	Possible values are: - 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 . Separate the strings with semicolons, as shown in the example for the channelspeed parameter.

- For Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and the Thunder 9200 series, the values available for the hostmode parameter are sometimes dependent on the values set for the hostmode2 parameter (or the firmware version for Thunder 9500V and Thunder 9200).

The following table describes the hostmode2 settings.

Table 4-55   Available Values for Setting the hostmode2 Parameter

Storage Subsystem	Value of Hostmode2
Hitachi AMS2000 and Hitachi SMS	• Same Node Name Mode • Tru Cluster Mode • Port-ID Conversion Mode • PSUE Read Reject Mode • Mode Parameters Changed Notification Mode • CCHS Mode • HP-UX Mode • NACA Mode • Product Serial Response Mode • Unique Reserve Mode 1 • Task Management Isolation Mode • NOP-In Suppress Mode • S-VOL Disable Advanced Mode The following value relies on the firmware version. For x860/A or later: • Discovery CHAP Mode For x890/A or later (excluding Hitachi SMS): • Unique Extended COPY Mode • Unique Write Same Mode
Hitachi AMS/WMS	• 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 The following value relies on the firmware version. For x712/A-x or later: • SPC-2 Mode For x781/A or later: • S-VOL Disable Advanced Mode

Storage Subsystem	Value of Hostmode2
Thunder 9500V	- 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 The firmware version: x6x3/C or later - No_RSV_Conf Mode x6x5 or later - Tru Cluster Connection Mode - Path Switch Mode(Active/Passive) - Path Switch Mode(Active/Active) - Port-ID No Report Mode - Port-ID Conversion Mode x6x7 or later - Same Node Name Mode x6xA/R or later: - SPC-2 Mode

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

The following table lists the HostMode2 names and descriptions:

Table 4-56   HostMode2 Names and Descriptions

Hostmode2 Names	Description
ASL Report Mode(Active/Active)	Shows that the ASL Report Mode(Active/Active) 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.
CCHS Mode	Shows that the CCHS Mode is set.
Discovery CHAP Mode	Shows that the Discovery CHAP Mode is set.
Unique Extended COPY Mode	Shows that the XCOPY command issued from VMware can be used.
Unique Write Same Mode	Shows that the Write Same command issued from VMware can be used.
ftServer Connection Mode 1	Shows that the ftServer Connection Mode 1 is set.

Hostmode2 Names	Description
ftServer Connection Mode 2	Shows that the ftServer Connection Mode 2 is set.
HBA WWN Report Mode	Shows that the Expanded INQUIRY WWN Mode is set.
HISUP Mode	Shows that the HISUP Mode is set.
HISUP OFF Mode	Shows that the HISUP OFF Mode is set.
HP Connection Mode	Shows that the HP Connection Mode is set.
HP Connection Mode 2	Shows that the HP Connection Mode 2 is set.
HP-UX Mode	Shows that the HP-UX Mode is set.
NACA Mode	Shows that the NACA Mode is set.
No_RSV_Conf Mode	Shows that the No Reservation Conflict Mode is set.
Path Switch Mode(Active/Active)	Shows that the VxVM DMP switch mode is set to Active/Active mode.
Path Switch Mode(Active/Passive)	Shows that the VxVM DMP switch mode is set to Active/Passive mode.
Path Switch Mode(Active/Passive Group)	Shows that the VxVM DMP switch mode is set to Active/Passive Group mode.
Port-ID Conversion Mode	Shows that the VxVM ASL sets the conversion of the port ID to be reported with the DMP.
Port-ID No Report Mode	Shows that the VxVM ASL does not report a port ID with the DMP.
Product ID DF400 Mode	Shows that the Product ID DF400 Mode is set.
Product Serial Response Mode	Shows that the Product Serial Response Mode is set.
PSUE Read Reject Mode	Shows that the PSUE Read Reject Mode is set.
Report inquiry page 83H	Shows that the Inquiry: 83H Page Report 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.
Reset Propagation Mode	Shows that the Reset Propagation Mode is set.
Reset Target (Reset Bus Device) Mode	Shows that the Reset Target (Reset Bus Device) Mode is set.
S-VOL Disable Advanced Mode	Shows that the S-VOL Disable Advanced Mode is set.
Same Node Name Mode	Shows that the Same Node Name Mode is set.
SPC-2 Mode	Shows that the SPC-2 Mode is set.
SRC Read Command Reject Mode	Shows that the SRC Read Command Reject Mode is set.
Standard INQUIRY data expand Mode	Shows that the Standard INQUIRY data expand Mode is set.
SUN Cluster Connection Mode	Shows that the SUN Cluster Connection 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.
Tru Cluster Mode	Shows that the Tru Cluster Mode is set.
UA(06/2A00) suppress Mode	Shows that the UA(06/2A00) suppress Mode is set.
Unique Reserve Mode 1	Shows that the Unique Reserve Mode 1 is set.

Hostmode2 Names	Description
VxVM DMP Mode	Shows that the VxVM DMP Mode is set.

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

The following table describes the hostmodeoption settings.

Table 4-57   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: ▪ The host mode is set to Windows (mode 0C) or Windows Extension (mode 2C). ▪ An Emulex host bus adapter is in use. ▪ A mini-port driver is in use. The TPRLO 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: ▪ The host mode is set to Standard (mode 00) or Solaris (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: ▪ The host mode is set to HP (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: ▪ The host mode is set to Tru64 (mode 07). ▪ You want to use HP TruCluster to set up a cluster on both the primary and secondary volumes for TrueCopy or Universal Replicator.
15	Specify this value when both of the following conditions are satisfied: ▪ The host mode is set to AIX (mode 0F). ▪ HACMP 4.5 4.5.13 or later, HACMP 5.1 5.1.0.4 or later, or HACMP 5.2 or later is in use.
19	Specify this value when you are using Hitachi USP to register a host on which VMware is running in a host group.
22	Specify this value when both of the following conditions are satisfied: ▪ The host mode is set to AIX (mode 0F). ▪ VERITAS Cluster Server is in use.

hostmodeoption Values	Description
23	Specify this value when you are using Universal Storage Platform V/VM or Hitachi USP, and want to shorten the recovery time of the host if data transfer fails.
24	Specify this value when both of the following conditions are satisfied: The host accesses a volume that exceeds 2 TB. The host OS is one of the following: AIX 5L Version 5.2 TL08 or later, or AIX 5L Version 5.3 TL04 or later Windows Server 2003 SP1 Red Hat Enterprise Linux AS 4 Update 1 or later ***Notes:*** ▪ OSs other than above cannot access volumes that exceed 2 TB. ▪ The maximum size of the volume varies, depending on the file system of the OS. ▪ This value is valid when the DKC microcode version of Hitachi USP is 50-08-0X-XX/XX or later.
27	Specify this value when you are using Hitachi USP and an iSCSI connection.
33	Specify this value when you are using Universal Storage Platform V/VM and both of the following conditions are satisfied: ▪ The host mode is set to HP (mode 03). ▪ You want to enable the commands that set a nickname for a device.
40	Specify this value when you are using Universal Storage Platform V/VM and both of the following conditions are satisfied: ▪ The host mode is set to Windows (mode 0C) or Windows Extension (mode 2C). ▪ After increasing the HDP volume capacity, you want to force that capacity to be automatically recognized.
41	Specify this value when you are using Universal Storage Platform V/VM and want to prioritize commands that force devices to be recognized.
42	Specify this value when you are using Universal Storage Platform V/VM and want to use IBM Z10 Linux.
43	Specify this value if you want to force QueueFull to be the reply to a host when the queue for Universal Storage Platform V/VM is full.

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

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\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
      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
      portNumber=-1
      keepAliveTime=-1
      slprNumber=-1
      List of 1 HostStorageDomain elements:
        An instance of HostStorageDomain
          objectID=HSDOMAIN.HDS9980V.10001.16.0
          portID=16
          portName=CL2-A
          domainID=0
          hostMode=Standard
          displayName=CL2-A-0
          domainType=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=
```

ModifyPortController

ModifyPortController supports changing characteristics of a PortController.

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

> ⚠ **Note:** This command is not available for Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, or Thunder 9200.

The following table describes the parameters of the ModifyPortController command.

Table 4-58   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 ctrlid or controllername. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
controllername	Optional	Port controller name **Note:** Specify either ctrlid or controllername. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
adaptermode	Required	Mode value of the port controller Specify either of the following values: ▪ 1: Normal ▪ 2: High Speed

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\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
```

ModifyVirtualVolume

For Universal Storage Platform V/VM, ModifyVirtualVolume assigns and releases assignations between HDP volumes (virtual volumes) and HDP pools, and changes the usage threshold rate of HDP volumes. For Hitachi AMS2000, this command expands an HDP volume.

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

> ***Notes:***
> - This command can be used only with Universal Storage Platform V/VM and Hitachi AMS2000 storage subsystems.
> - For Hitachi AMS2000, the HDP pool that the HDP volume to be expanded is assigned to must satisfy the following conditions:
>   - The status of the HDP pool is not Blocked.
>   - The usage of the HDP pool is less than the threshold value used to warn of HDP pool shortage (`threshold2`).
>   For details about the threshold value used to warn of HDP pool shortage (`threshold2`), see AddPool.

For Universal Storage Platform V/VM, the following conditions must be satisfied when specifying an HDP volume:

- If you are assigning an HDP volume to an HDP pool, the HDP volume must not already be assigned to an HDP pool.

- If you are assigning an HDP volume to an HDP pool, the status of the HDP pool must not be Blocked.

- If you are assigning an HDP pool, the over-provisioning percent must be less than the over provisioning limit threshold.

- If you are releasing an HDP volume from an HDP pool, or if you are only changing the threshold value, the HDP volume must already be assigned to an HDP pool.

- If you are releasing an HDP volume from an HDP pool, it must not have a path.

⚠️ **Notes:**

- If you execute this command when the threshold values related to the over-provisioning percent (the over provisioning warning threshold and over provisioning limit threshold) are set, make sure that the Device Manager server database is consistent. These threshold values are specific thresholds managed by the Device Manager server. If the over-provisioning percent information that has been obtained by Device Manager does not match the actual over-provisioning percent, the system's determination of whether the over provisioning warning threshold and over provisioning limit threshold values have been exceeded might be incorrect.
- For Hitachi AMS2000, an HDP volume can be expanded only if the status of the HDP volume is Normal.
- For details about the number of HDP volumes that can be assigned to a single HDP pool, see the Hitachi Dynamic Provisioning documentation.

Format for the Universal Storage Platform V/VM

When the command is used to assign HDP volumes to an HDP pool:

```
HiCommandCLI [URL] ModifyVirtualVolume [options] model=model serialnum=serial-number
assign=true devnums=device-number-of-HDP-volume poolid=pool-ID-of-HDP-pool
[threshold=usage-rate-threshold-of-HDP-volumes]
```

When the command is used to release the assignation between HDP volumes and an HDP pool:

```
HiCommandCLI [URL] ModifyVirtualVolume [options] model=model serialnum=serial-number
assign=false devnums=device-number-of-HDP-volume
```

When the command is used to change the usage rate threshold of HDP volumes:

```
HiCommandCLI [URL] ModifyVirtualVolume [options] model=model serialnum=serial-number
devnums=device-number-of-HDP-volume threshold=usage-rate-threshold-of-HDP-volumes
```

Format for the Hitachi AMS2000

```
HiCommandCLI [URL] ModifyVirtualVolume [options] model=model serialnum=serial-number
devnums=device-number-of-HDP-volume capacity=capacity-of-the-HDP-volume-after-expansion
```

The following table describes the parameters of the ModifyVirtualVolume command.

Table 4-59   ModifyVirtualVolume Command Parameters

Parameter Name	Status	Description
model	Required	Model of the storage subsystem
serialnum	Required	Serial number of the storage subsystem
assign	Optional (for Universal Storage Platform V/VM)	Specify true to assign HDP volumes to an HDP pool. Specify false to release HDP volumes from an HDP pool. Omit this parameter if you are changing the threshold value.

Parameter Name	Status	Description
devnums	Required	Device number(s) of HDP volume(s)
		Specify this parameter as a decimal number or colon-delimited hexadecimal number in the format *ww*:*xx*:*yy*, where *ww* is the LDKC number, *xx* is the CU number, and *yy* is the LDEV number. *ww* is optional. If *ww* is omitted, LDKC is assumed to be 0.
		Use a comma to delimit multiple values.
poolid	Optional (for Universal Storage Platform V/VM)	Pool ID of the HDP pool
		You need specify this parameter only if true is specified for the assign parameter.
threshold	Optional (for Universal Storage Platform V/VM)	Usage rate threshold for the HDP volumes (%)
		Specify this parameter when you are assigning HDP volumes to an HDP pool, or when you are changing the threshold value.
		Specify a multiple of 5 from 5 to 300.
		If omitted, 5 is set.
		If this parameter is omitted when true is specified for the assign parameter, 5 is set.
		This parameter must be specified if the assign parameter is omitted.
		Note: Do not specify this parameter when false is specified for the assign parameter. If the parameter is specified in this condition, an error will occur.
capacity	Required (for Hitachi AMS2000)	Capacity of the HDP volume after expansion (KB)
		Specify the capacity of the expanded volume. The maximum value that can be specified is 64424509440.

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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.

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

Command execution example

In this example, the ModifyVirtualVolume command changes the usage rate threshold for the HDP volume (devNum: 00:30:00) to 15% (threshold: 15) in the storage subsystem (serialnum: 15065, model: USP_V).

```
HiCommandCLI ModifyVirtualVolume -o "D:\logs\ModifyVirtualVolume.log" model=USP_V
serialnum=15065 devnums=00:30:00 threshold=15
```

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.R600.15065.12288
      devNum=12,288
      displayName=00:30:00
      emulation=OPEN-V
      devCount=1
      devType=
      capacityInKB=209,715,200
      path=false
      commandDevice=false
      commandDeviceEx=0
      commandDeviceSecurity=false
      chassis=16,485
      arrayGroup=199
      arrayGroupName=X200-1
      raidType=Unknown
      currentPortController=-1
      defaultPortController=-1
      isComposite=0
      trueCopyVolumeType=Simplex
      shadowImageVolumeType=Simplex
      quickShadowVolumeType=Simplex
      universalReplicatorVolumeType=Simplex
      sysVolFlag=0
      externalVolume=0
      differentialManagement=false
      quickShadowPoolID=-1
      universalReplicatorPoolID=-1
      dpType=0
      consumedCapacityInKB=0
      dpPoolID=0
      threshold=15
      tcaPoolID=-1
```

RefreshStorageArrays

The RefreshStorageArrays command refreshes the configuration information for all of the storage subsystems (including SMI-S Enabled subsystems) that are managed by the Device Manager server and that support use of the Device Manager CLI.

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.

⚠️ **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.

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

The following table describes the parameter of the RefreshStorageArrays command.

Table 4-60   RefreshStorageArrays Command Parameter

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 Device Manager. Any storage array reconfigurations made by tools other than Device Manager (e.g., 9900V Remote Console-Storage Navigator) will be applied in the Device Manager database.

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

Parameter values to obtain 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
      ipAddress=172.16.116.106
      userID=root
]
[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)
       .
```

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 group s are retrieved with the GetLogicalGroup command, the ID of all logical group s is provided.

For further information on logical group operations, please refer to the Device Manager online Help.

⚠ **_Note:_** When using the Core license, you cannot use the logical group commands. For details about the Core license, see Device Manager Licenses.

AddLogicalGroup

AddLogicalGroup creates a new logical group, which supports the organization and naming of related devices on the Device Manager server. 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.

The following table describes the parameters of the AddLogicalGroup command.

Table 4-61   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 parent parameter is supplied) or unique among top-level groups (if no parent is specified).
		You can use a character string of 1-64 bytes for the group name.
		Notes:
		▪ Spaces at the beginning or end of a group name are not registered.
		▪ When Web Client is also used, follow the Web Client's specification rule.

Parameter Name	Status	Description
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 group_plain.gif file is set. If the specified icon file does not exist, the specified file is set. In Web Client, however, the group_plain.gif 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 parent and parentpath parameter at the same time. If they are specified at the same time, an error will occur.
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. If they are specified at the same time, an error will occur.

Parameter values to obtain 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 execution example 1

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

Command execution 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 execution example 2

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

Command execution 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
```

AddLunScan

AddLunScan detects LUNs not allocated to logical groups on a storage subsystem, and allocates them to a logical group. 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.

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

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

The following table describes the parameters of the AddLunScan command.

Table 4-62   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

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

Command execution example

```
HiCommandCLI AddLunScan -o "D:\logs\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
      portName=CL1-A
      domainID=0
      hostMode=HP
      displayName=CL1-A-0
      domainType=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
      displayDevNum=00:65
      portID=0
      portName=CL1-A
      domainID=0
      scsiID=15
      LUN=8
      wwnSecurityValidity=true
    .
    . (repeated for other Path instances)
    .
```

AddObjectForLogicalGroup

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

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.

The following table describes the parameters of the AddObjectForLogicalGroup command.

Table 4-63 AddObjectForLogicalGroup Command Parameters

Parameter Name	Status	Description
objectid	Optional	Object ID of the logical group **Note:** Do not specify the objectid and logicalpath parameter at the same time. If they are specified at the same time, an error will occur.
logicalpath	Optional	Path of the logical group to add objects to **Note:** Do not specify the objectid and logicalpath parameter at the same time. If they are specified at the same time, an error will occur.
groupelements	Required	Comma-separated list of one or more Object IDs of the HostStorageDomains and/or hosts to add to the logical group

Parameter values to obtain 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\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
      displayDevNum=00:00
      portID=0
      portName=CL1-A
      domainID=0
      scsiID=15
      LUN=0
      wwnSecurityValidity=true
```

DeleteLogicalGroup

DeleteLogicalGroup deletes an existing logical group from the Device Manager server.

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.

The following table describes the parameters of the DeleteLogicalGroup command.

Table 4-64   DeleteLogicalGroup Command Parameters

Parameter Name	Status	Description
objectid	Optional	Object ID of the logical group to delete
		Note: You must specify either objectid or logicalpath. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
logicalpath	Optional	Path of logical group to delete
		Note: You must specify either objectid or logicalpath. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.

Parameter values to obtain 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

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

Command execution result

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

DeleteObjectForLogicalGroup

DeleteObjectForLogicalGroup deletes the specified object from a logical 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, can remove a single object or objects from logical groups that the user is permitted to access.

The following table describes the parameters of the DeleteObjectForLogicalGroup command.

Table 4-65   DeleteObjectForLogicalGroup Command Parameters

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

Parameter values to obtain 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\DeleteObjectForLogicalGroup.log"
"objectID=GROUP.0" "groupelements=PATH.HDS9980V.10001.0.0.1"
```

Command execution result

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

GetLogicalGroup

GetLogicalGroup obtains a list for the specified logical group or all logical groups. 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.

The following table describes the parameters of the GetLogicalGroup command.

Table 4-66   GetLogicalGroup Command Parameters

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

Parameter values to obtain 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
      hostID=1
      ipAddress=192.168.32.63
      capacityInKB=0
      hostType=-1
      statusOfDBUpdating=-1
    An instance of HostStorageDomain
      objectID=HSDOMAIN.HDS9980V.10001.0.0
      portID=0
      portName=CL1-A
      domainID=0
      hostMode=HP
      displayName=CL1-A-0
      domainType=0
      nickname=1A-G00
    An instance of Path
      objectID=PATH.HDS9980V.10001.0.0.101
      devNum=101
      displayDevNum=00:65
      portID=0
      portName=CL1-A
      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
      hostID=1
      ipAddress=192.168.32.63
      capacityInKB=0
      hostType=-1
      statusOfDBUpdating=-1
    An instance of HostStorageDomain
      objectID=HSDOMAIN.HDS9980V.10001.0.0
      portID=0
      portName=CL1-A
      domainID=0
      hostMode=HP
      displayName=CL1-A-0
      domainType=0
      nickname=1A-G00
    An instance of Path
      objectID=PATH.HDS9980V.10001.0.0.101
      devNum=101
      displayDevNum=00:65
      portID=0
      portName=CL1-A
      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)
    .
```

ModifyLogicalGroup

ModifyLogicalGroup changes one or more characteristics of an existing logical 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, can change the characteristics of logical groups that the user is permitted to access.

The following table describes the parameters of the ModifyLogicalGroup command.

Table 4-67   ModifyLogicalGroup Command Parameters

Parameter Name	Status	Description
objectid	Optional	Object ID of the logical group to modify ***Note:*** You must specify either objectid or logicalpath. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
logicalpath	Optional	Path of the logical group to modify ***Note:*** You must specify either objectid or logicalpath. Do not specify both parameters at the same time. If they are specified at the same time, an error will 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. You can use a character string of 1-64 bytes for the group name. ***Notes:*** ▪ Spaces at the beginning or end of a group name are not registered. ▪ 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 4-61.
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 parent and parentpath parameter at the same time. If they are specified at the same time, an error will 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. If they are specified at the same time, an error will occur.

Parameter values to obtain 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 execution example

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

Command execution 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
```

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 Device Manager online Help.

AddISCSINameForHostStorageDomain

AddISCSINameForHostStorageDomain sets security by assigning the iSCSI name of the host (iSCSI initiator) to the host storage domain (iSCSI target).

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 execute this command for any resources.

⚠️ **Notes:**

- When security is set for a host storage domain (iSCSI target), the LUN security setting of a port to which the host storage domain belongs is automatically enabled. Make sure that the I/Os of the target port are stopped.
- This command supports only the Hitachi AMS2000/AMS/WMS and Hitachi SMS subsystems.

The following table describes the parameters of the AddISCSINameForHostStorageDomain command.

Table 4-68   AddISCSINameForHostStorageDomain Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the storage subsystem for which security is to be set
model	Required	Model of the storage subsystem for which security is to be set
port	Optional	Number of the port to which the host storage domain belongs ***Note:*** Specify either the port or portname parameter. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
portname	Optional	Name of the port to which the host storage domain belongs ***Note:*** Specify either the port or portname parameter. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.

Parameter Name	Status	Description
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 0x prefix. ***Notes:*** ▪ The execution results are output in decimal. ▪ You must specify either the domain or domainnickname parameter. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
domainnickname	Optional	Nickname of the host storage domain ***Note:*** You must specify either the domain or domainnickname parameter. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
iscsiname	Required	iSCSI name of the host (iSCSI initiator) for which security is to be set Specify the iSCSI name in the iqn or eui format. To specify two or more values, separate them with commas (,). You must specify the same number of values for the iscsiname and iscsinickname parameters. You can use the following characters: `A-Z a-z 0-9 - . :` The iSCSI name is not case-sensitive. You can use a character string of 1-223 bytes for the iSCSI name. ***Note:*** If you use the HostScan command to register a host in Device Manager, every iSCSI name that you specify in the iscsiname parameter must be an iSCSI name used by that host only. In this case, the value specified for the domainnickname parameter is used as the name of the host. For details about the HostScan command, see [HostScan](#).
iscsinickname	Optional	iSCSI nickname of the host (iSCSI initiator) for which security is to be set To specify two or more values, separate them with commas (,). You must specify the same number of values for the iscsiname and iscsinickname parameters. You can use the following characters: `A-Z a-z 0-9 ! # $ % & ( )` `+ - . = @ [ ] ^ _ \` { } ~ (space)`  ***Notes:***  ▪ An iSCSI initiator nickname cannot begin or end with spaces.  ▪ For Hitachi SMS and Hitachi AMS/WMS, a grave accent mark (\`) cannot be used. You can use a character string of 1-32 bytes for the iSCSI nickname.

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

port, domain, and domainnickname: 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, domainID, and nickname values appear under An instance of HostStorageDomain. Use these portID, domainID, and nickname values to specify the port, domain, and domainnickname 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.

iscsiname and iscsinickname: Obtain these values from the execution result of the GetHost command. In the execution result of this command, the iSCSIname and nickname values appear under An instance of ISCSIName. Use these iSCSIname and nickname values to specify the iscsiname and iscsinickname parameters respectively.

Command execution example

 In this example, the AddISCSINameForHostStorageDomain command sets security in the storage subsystem (serialnum: 77010005, model: AMS1000) by assigning the iSCSI name (iscsiname: iqn.1991-05.com.microsoft:host10) of the host (iSCSI initiator) to the port number 0 (port: 0) to which the host storage domain (domain: 11) belongs.

```
HiCommandCLI AddISCSINameForHostStorageDomain -o
"D:\logs\AddISCSINameForHostStorageDomain.log" "serialnum=77010005" "model=AMS1000"
"port=0" "domain=11" "iscsiname=iqn.1991-05.com.microsoft:host10"
```

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.AMS1000.77010005.0.11
      portID=0
      portName=CTL0-A
      domainID=11
      hostMode=Standard
      hostMode2=
      displayName=CTL0-A-11
      domainType=1
      iSCSIName=iqn.2006-09.com.hitachi:model-d7h:hdvm-0--1
      nickname=hdvm0--1
      List of 1 ISCSIName elements:
        An instance of ISCSIName
          iSCSIName=iqn.1991-05.com.microsoft:host10
          nickname=
```

AddLun

AddLun sets paths from a host to a volume. 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/VM, Hitachi USP, Lightning 9900V, Hitachi AMS2000/AMS/WMS, Hitachi SMS, 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. Make sure that the I/Os of the target port are stopped.

Format for the Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, Hitachi AMS2000/AMS/WMS, Hitachi SMS, and 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=vail11 port=3
domain=0 scsi=15 lun=10 devnum=263
```

The following table describes the parameters of the AddLun command.

Table 4-69   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

Parameter Name	Status	Description
name	Optional	Name of the new path You can use a character string of 1-64 bytes for a name. **Note:** Spaces at the beginning or end of a name are not registered.
port	Optional	Port number of the new path **Note:** Specify either port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
portname	Optional	Port name of the new path **Note:** Specify either port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
domain	Optional	Domain ID of the new path **Note:** You cannot specify this parameter and the domainnickname or wwn parameter at the same time. If they are specified at the same time, an error will occur. 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.
domainnickname	Optional	Nickname of the host storage domain of the new path **Note:** You cannot specify this parameter and the domain or wwn parameter at the same time. If they are specified at the same time, an error will occur.
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 Hitachi USP, Lightning 9900V or Lightning 9900, use the xx:yy format, where xx is the CU number, and yy is the LDEV number. For Universal Storage Platform V/VM, 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. **Notes:** ▪ The execution results are output in decimal. ▪ Specify either devnum or lusedevnums. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
lusedevnums[#]	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 devnum. **Note:** Specify either devnum or lusedevnums. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.

Parameter Name	Status	Description
wwn	Optional except for 9900V, 9500V (using LUN Management)	Comma-separated list of WWN to secure the path ***Note:*** You cannot specify this parameter and the domain or domainnickname parameter at the same time. If they are specified at the same time, an error will occur. This parameter is not valid for the Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, Hitachi AMS2000/AMS/WMS, Hitachi SMS, and Thunder 9500V in the LUN Management mode.
# 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 obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

port, domain or domainnickname, 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, domainID and nickname values appear under An instance of HostStorageDomain. Use these portID values to specify the port parameter. Use the domainID value to specify the domain parameter, or use the nickname value to specify the domainnickname parameter.

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

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.

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\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
      displayDevNum=00:7F
      portID=3
      portName=CL1-D
      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
          arrayGroupName=1-7
          path=true
          onDemandDevice=false
          devType=
          isStandardLDEV=false
          diskType=0
```

```
           slprNumber=-1
           clprNumber=-1
           cacheResidencyMode=-1
           stripeSizeInKB=-1
           volumeKind=3
           status=Blocked
           dpType=-1
           consumedSizeInKB=-1
           mfTrueCopyVolumeType=Unknown
           mfShadowImageVolumeType=Unknown
           mfUniversalReplicatorVolumeType=Unknown
           mfUniversalReplicatorPoolID=-1
           dpPoolID=-1
           threshold=-1
           systemDisk=0
           encrypted=-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
           arrayGroupName=1-7
           path=false
           onDemandDevice=false
           devType=
           isStandardLDEV=false
           diskType=0
           slprNumber=-1
           clprNumber=-1
           cacheResidencyMode=-1
           stripeSizeInKB=-1
           volumeKind=3
           status=Blocked
           dpType=-1
           consumedSizeInKB=-1
           mfTrueCopyVolumeType=Unknown
           mfShadowImageVolumeType=Unknown
           mfUniversalReplicatorVolumeType=Unknown
           mfUniversalReplicatorPoolID=-1
           dpPoolID=-1
           threshold=-1
           systemDisk=0
           encrypted=-1
        List of 1 WWN elements:
          An instance of WWN
             WWN=AA.AA.AA.AA.AA.AA.AA.AA
```

Command execution example 2

```
HiCommandCLI AddLun -o "D:\logs\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
      displayDevNum=03:E9
      portID=1
      portName=CL1-B
      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=03: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
          arrayGroupName=3-2-1
          path=false
          onDemandDevice=false
          devType=
          isStandardLDEV=true
          guardMode=
          diskType=0
          slprNumber=-1
          clprNumber=-1
          cacheResidencyMode=-1
          stripeSizeInKB=-1
          volumeKind=3
          status=Blocked
          dpType=-1
          consumedSizeInKB=-1
          mfTrueCopyVolumeType=Unknown
          mfShadowImageVolumeType=Unknown
          mfUniversalReplicatorVolumeType=Unknown
          mfUniversalReplicatorPoolID=-1
          dpPoolID=-1
          threshold=-1
          systemDisk=0
          encrypted=-1
        An instance of LDEV
          objectID=LDEV.HDS9980V.10001.1002
          devNum=1,002
          displayName=03: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
                arrayGroupName=3-2-1
                path=false
                onDemandDevice=false
                devType=
                isStandardLDEV=true
                guardMode=
                diskType=0
                slprNumber=-1
                clprNumber=-1
                cacheResidencyMode=-1
                stripeSizeInKB=-1
                volumeKind=3
                status=Blocked
                dpType=-1
                consumedSizeInKB=-1
                mfTrueCopyVolumeType=Unknown
                mfShadowImageVolumeType=Unknown
                mfUniversalReplicatorVolumeType=Unknown
                mfUniversalReplicatorPoolID=-1
                dpPoolID=-1
                threshold=-1
                systemDisk=0
                encrypted=-1
```

Command execution example 3

```
HiCommandCLI AddLun -o "D:\logs\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
      displayDevNum=03:EE
      portID=1
      portName=CL1-B
      domainID=4
      scsiID=15
      LUN=120
      wwnSecurityValidity=true
```

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. 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 user-defined resource groups are assigned, and who also has the Modify permission, can execute this command for any resources.

The following table describes the parameters of the AddLunGroup command.

Table 4-70   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 port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
portname	Optional	Port name of the LUN group ***Note:*** Specify either port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will 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 ! # $ % & ' ( ) + - . = @ [ ] ^ _ ` { } ~ You can use a character string of 1-8 bytes for the nickname.
name	Optional	The name given to the LUN group You can use a character string of 1-64 bytes for a name. ***Note:*** Spaces at the beginning or end of a name are not registered.

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\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
          displayDevNum=00:00
          portID=19
          portName=CL2-D
          domainID=16
          scsiID=15
          LUN=8
          wwnSecurityValidity=true
      .
      . (repeated for other Path instances)
      .
```

AddWWNForHostStorageDomain

AddWWNForHostStorageDomain allocates one or more WWNs to a host storage domain LUN, and performs security settings. A user who has only the View permission cannot use this command. A user to whom user-defined resource groups are assigned, and who also has the Modify permission, can execute this command for any resources.

⚠️ *Note:* When security is set for a host storage domain, the LUN security setting of a port to which the host storage domain belongs is automatically enabled. Make sure that the I/Os of the target port are stopped.

Format for the Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, Hitachi AMS2000/AMS/WMS, Hitachi SMS, 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 [wwnnickname=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
```

The following table describes the parameters of the AddWWNForHostStorageDomain command.

Table 4-71   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 port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
portname	Optional	Port name of the host storage domain *Note:* Specify either port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will 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 0x prefix. *Notes:* ▪ The execution results are output in decimal. ▪ You must specify either domain or domainnickname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.

Parameter Name	Status	Description
domainnickname	Optional (Universal Storage Platform V/VM, Hitachi USP, 9900V, Hitachi AMS2000/AMS/WMS, Hitachi SMS, and 9500V (in LUN Management mode))	Nickname of the host storage domain ***Note:*** You must specify either domain or domainnickname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
wwn	Required	Comma-separated list of WWN to secure the host storage domain ***Note:*** If you use the HostScan command to register a host in Device Manager, every WWN that you specify in the wwn parameter must be a WWN used by that host only. In this case, the value specified for the domainnickname parameter is used as the name of the host. For details about the HostScan command, see HostScan.
wwnnickname	Optional (Universal Storage Platform V/VM, Hitachi USP, 9900V, Hitachi AMS2000/AMS/WMS, Hitachi SMS, and 9500V (in LUN Management mode))	The nickname of the WWN Specify this parameter to register the WWN nickname. To specify two or more WWN nicknames, separate them with commas. The number of wwn parameters must match the number of wwnnickname parameters. Paired wwn parameters and wwnnickname parameters must be specified in the same sequence. You can use the following characters: A-Z a-z 0-9 ! # $ % & ' ( ) + - . = @ [ ] ^ _ ` { } ~ (space)  ***Notes:*** ▪ A WWN nickname cannot begin or end with spaces. ▪ For Hitachi AMS2000/AMS/WMS, Hitachi SMS, and the Thunder 9500V series in the LUN Management mode, a grave accent mark (`) cannot be used. The character string used for a WWN nickname must be within the following range: ▪ Universal Storage Platform V/VM: 0-32 bytes ▪ Hitachi USP: DKC microcode version earlier than 50-04-01: 0-16 bytes DKC microcode version 50-04-01 or later: 0-32 bytes ▪ Lightning 9900V: 0-8 bytes ▪ Hitachi AMS2000: 0-32 bytes ▪ Hitachi SMS: 0-32 bytes ▪ Hitachi AMS/WMS: 0-16 bytes ▪ Thunder 9500V (LUN management mode): Firmware version earlier than x6x9/M: 0-8 bytes Firmware version x6x9/M or later: 0-16 bytes

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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, 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, 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, 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\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
      portName=CL1-B
      domainID=1
      hostMode=Standard
      displayName=CL1-B-1
```

```
        domainType=0
        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=Jone
```

Hitachi Device Manager Command Line Interface (CLI) User's Guide

AddWWNForLun

AddWWNForLun secures a path by assigning a WWN to it. 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 execute this command for any resources.

⚠️ ***Notes:***

- When AddWWNForLun secures a path, LUN security is automatically enabled. Make sure that the I/Os of the target port are stopped.

- This command supports only Lightning 9900, Thunder 9500V (LUN Security mode), and Thunder 9200 subsystems.

The following table describes the parameters of the AddWWNForLUN command.

Table 4-72   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 port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
portname	Optional	Port name ***Note:*** Specify either port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will 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 0x 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 *xx*:*yy* format, where *xx* is the CU number, and *yy* 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 obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\AddWWNForLun.log" "serialnum=10001" "model=HDS9960"
"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.HDS9960.10001.16.0.16
      devNum=16
      displayDevNum=00:10
      portID=16
      portName=CL2-A
      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
```

AddWWNForLunGroup

AddWWNForLunGroup secures a LUN group by assigning one or more WWN(s) to it (9900 subsystem only). 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 user-defined resource groups are assigned, and who also has the Modify permission, can execute this command for any resources.

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

The following table describes the parameters of the AddWWNForLunGroup command.

Table 4-73   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
port	Optional	Port number of the LUN Group **Note:** Specify either port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
portname	Optional	Port name of the LUN group **Note:** Specify either port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
objectid	Required	Object ID of the LUN Group
wwn	Required	Comma-separated list of WWNs to secure the LUN group

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\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)
    .
```

AddWWNGroup

AddWWNGroup adds a WWN group to the target storage subsystem port, and adds two or more WWNs to the WWN group. 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 user-defined resource groups are assigned, and who also has the Modify permission, can execute this command for any resources.

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

The following table describes the parameters of the AddWWNGroup command.

Table 4-74   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. If they are specified at the same time, an error will occur.
portname	Optional	Port name of the WWN group *Note:* Specify either port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
wwn	Required	Comma-separated list of WWNs to be added to the WWN group
nickname	Required	A unique nickname of the WWN group You can use the following characters: A-Z a-z 0-9 ! # $ % & ' ( ) + - . = @ [ ] ^ _ ` { } ~ You can use a character string of 1-8 bytes for the nickname.

Parameter Name	Status	Description
name	Optional	The name given to the WWN group
		You can use a character string of 1-64 bytes for a name.
		Note: Spaces at the beginning or end of a name are not registered.

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\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 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=Jone
```

DeleteISCSINameForHostStorageDomain

DeleteISCSINameForHostStorageDomain deletes the iSCSI name of a host (iSCSI initiator) that exists in the specified host storage domain, and releases the LUN security.

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 execute this command for any resources.

⚠ *Note:* This command supports only the Hitachi AMS2000/AMS/WMS and Hitachi SMS subsystems.

The following table describes the parameters of the DeleteISCSINameForHostStorageDomain command.

Table 4-75 DeleteISCSINameForHostStorageDomain Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the storage array from which security is to be released
model	Required	Model of the storage array from which security is to be released
port	Optional	Number of the port to which the host storage domain belongs *Note:* Specify either the port or portname parameter. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
portname	Optional	Name of the port to which the host storage domain belongs *Note:* Specify either the port or portname parameter. Do not specify both parameters at the same time. If they are specified at the same time, an error will 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 0x prefix. *Notes:* ▪ The execution results are output in decimal. ▪ You must specify either the domain or domainnickname parameter. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
domainnickname	Optional	The nickname of the host storage domain *Note:* You must specify either the domain or domainnickname parameter. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.

Parameter Name	Status	Description
iscsiname	Optional	iSCSI name of the host (iSCSI initiator) from which security is to be released
		Specify the iSCSI name in the iqn or eui format.
		To specify two or more values, separate them with commas (,).
		Note: You must specify either the iscsiname or iscsinickname parameter. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
iscsinickname	Optional	iSCSI nickname of the host (iSCSI initiator) from which security is to be released
		To specify two or more values, separate them with commas (,).
		Note: You must specify either the iscsiname or iscsinickname parameter. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

port, domain, domainnickname, iscsiname, and iscsinickname: Obtain these values from the execution result of the GetStorageArray (subtarget=HostStorageDomain, hsdsubinfo=ISCSIName) command. Execute this command by specifying only the model and serialnum parameters, HostStorageDomain for the subtarget parameter, and ISCSIName for the hsdsubinfo parameter. In the execution result of this command, the portID, domainID, and nickname values appear under An instance of HostStorageDomain. Use these portID, domainID, and nickname values to specify the port, domain, and domainnickname parameters respectively. The iSCSI name and iSCSI nickname of the host from which security is to be released are displayed in the List of *(nn)* ISCSIName elements, where *nn* indicates the number of ISCSINames. Select the target ISCSIName from this list, and use the iSCSIname and nickname values to specify the iscsiname and iscsinickname 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 DeleteISCSINameForHostStorageDomain command releases the LUN security in the storage subsystem (serialnum: 77010005, model: AMS1000) by deleting the iSCSI name (iscsiname: iqn.1991-05.com.microsoft:host10) of the host (iSCSI initiator) in the port number 0 (port: 0) to which the host storage domain (domain: 11) belongs.

```
HiCommandCLI DeleteISCSINameForHostStorageDomain -o
"D:\logs\DeleteISCSINameForHostStorageDomain.log" "serialnum=77010005" "model=AMS1000"
"port=0" "domain=11" "iscsiname=iqn.1991-05.com.microsoft:host10"
```

Command execution result

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

DeleteLun

DeleteLun deletes paths set from a host to a volume. 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.

The following table describes the parameters of the DeleteLUN command.

Table 4-76   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 port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
portname	Optional	Port name of the path ***Note:*** Specify either port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
domain	Optional	Domain ID of the host storage domain to which the path belongs This parameter can be specified in decimal and hexadecimal. If you specify a hexadecimal number, add the 0x prefix. ***Notes:*** ▪ The execution results are output in decimal. ▪ Either the `domain` or `domainnickname` parameter must be specified. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
domainnickname	Optional	Nickname of the host storage domain to which the path belongs ***Note:*** Either the `domain` or `domainnickname` parameter must be specified. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.

Parameter Name	Status	Description
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 Hitachi USP, Lightning 9900V or Lightning 9900, use the *xx*:*yy* format, where *xx* is the CU number, and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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.
deletionoption	Optional	Only value possible is "lusekeep", which is not case-sensitive.
		Omit this parameter to delete LUSE.

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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.

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

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

DeleteLunGroup

DeleteLunGroup deletes LUN groups allocated to ports on the target storage subsystem; any LUNs (paths) in the group are not deleted. A WWN can be specified, and access is removed for just that WWN. Only a user to whom user-defined resource groups are assigned, and who also has the Modify permission, can execute this command for any resources.

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

The following table describes the parameters of the DeleteLunGroup command.

Table 4-77   DeleteLunGroup Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the LUN Group's storage array
model	Required	Model of the LUN Group's storage array
port	Optional	ID for the port of LUN Group to delete
		Note: Specify either port or portname. To prevent errors, do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
portname	Optional	Port name for the LUN group to delete
		Note: Specify either port or portname. To prevent errors, do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
lungroupid	Required	Object ID of the LUN Group to delete

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter. Use the serialNumber value to specify the serialnum parameter.

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, 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, the displayName value appears under An instance of Port. Use this value to specify the portname parameter.

Command execution example

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

Command execution result

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

DeleteWWN

DeleteWWN removes a WWN from a port. A user who has only the View permission cannot use this command. A user to whom user-defined resource groups are assigned, and who also has the Modify permission, can execute this command for any resources.

The following table describes the parameters of the DeleteWWN command.

Table 4-78   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
port	Optional	Port number ***Note:*** Specify either port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
portname	Optional	Port name ***Note:*** Specify either port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
wwn	Required	WWN to delete from the port

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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, 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, 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\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)
```

DeleteWWNForHostStorageDomain

DeleteWWNForHostStorageDomain removes security for LUNs that are under a specified HostStorageDomain. The HostStorageDomain must already exist and be secured.

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 execute this command for any resources.

The following table describes the parameters of the DeleteWWNForHostStorageDomain command.

Table 4-79   DeleteWWNForHostStorageDomain 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 port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
portname	Optional	Port name of the host storage domain ***Note:*** Specify either port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
domain	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 0x prefix. ***Notes:*** ▪ The execution results are output in decimal. ▪ You must specify either domain or domainnickname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
domainnickname	Optional (Universal Storage Platform V/VM, Hitachi USP, 9900V, Hitachi AMS2000/AMS/WMS, Hitachi SMS, and 9500V (in LUN Management mode))	The nickname of the host storage domain ***Note:*** You must specify either domain or domainnickname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.

Parameter Name	Status	Description
wwn	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 wwn or wwnnickname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
wwnnickname	Optional (Universal Storage Platform V/VM, Hitachi USP, 9900V, Hitachi AMS2000/AMS/WMS, Hitachi SMS, and 9500V (in LUN Management mode))	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 wwn or wwnnickname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

domain**,** port**,** and wwn**:** Obtain these values from the execution result of the GetStorageArray (subtarget=HostStorageDomain, hsdsubinfo=WWN) command. Execute this command by specifying only the model and serialnum parameters, HostStorageDomain for the subtarget parameter, and WWN for the hsdsubinfo 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, 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

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

Command execution result

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

DeleteWWNForLun

DeleteWWNForLun removes access to a WWN path. 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 execute this command for any resources.

⚠️ **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.

The following table describes the parameters of the DeleteWWNForLUN command.

Table 4-80   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 port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
portname	Optional	Port name ***Note:*** Specify either port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will 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 0x 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 *xx*:*yy* format, where *xx* is the CU number, and *yy* 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 obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\AddWWNForLun.log" "serialnum=10001"
"model=HDS9960" "port=16" "devnum=16" "domain=0" "wwn=11.55.77.99.33.00.22.66"
```

Command execution result

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

DeleteWWNForLunGroup

DeleteWWNForLunGroup removes one or more WWN(s) from a LUN group.

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 execute this command for any resources.

⚠️ **Note:** DeleteWWNForLunGroup is supported by Lightning 9900 storage subsystems only.

The following table describes the parameters of the DeleteWWNForLunGroup command.

Table 4-81   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 port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
portname	Optional	Port name of the LUN group **Note:** Specify either port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will 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 obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\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)
```

DeleteWWNGroup

DeleteWWNGroup removes a WWN Group from a port. The corresponding WWNs are not removed from the port. Only a user to whom user-defined resource groups are assigned, and who also has the Modify permission, can execute this command for any resources.

> ⚠️ *Note:* DeleteWWNGroup is supported by Lightning 9900 storage subsystems only.

The following table describes the parameters of the DeleteWWNGroup command.

Table 4-82   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 port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
portname	Optional	Port name *Note:* Specify either port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
wwngroup	Required	Nickname of the WWN group to delete from the port

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter. Use the serialNumber value to specify the serialnum parameter.

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, the:

- portID value appears in Port. Use the value to specify the port parameter.

- nickname value appears under in WWNGroup. Use the value to specify the wwngroup parameter.

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

Command execution example

```
HiCommandCLI DeleteWWNGroup -o "D:\logs\DeleteWWNGroup.log" "serialnum=10011"
"model=HDS9960" "port=19" "wwngroup=WG"
```

Command execution result

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

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.

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 execute this command for any resources.

⚠️ **Note:** ModifyLunGroup is supported by Lightning 9900 storage subsystems only.

The following table describes the parameters of the ModifyLunGroup command.

Table 4-83   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 port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
portname	Optional	Port name of the LUN group **Note:** Specify either port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will 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 ! # $ % & ' ( ) + - . = @ [ ] ^ _ ` { } ~ You can use a character string of 1-8 bytes for the nickname.

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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 groupelements parameter.

Command execution example

```
HiCommandCLI ModifyLunGroup -o "D:\logs\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
          displayDevNum=00:00
          portID=19
          portName=CL2-D
          domainID=16
          scsiID=15
          LUN=8
          wwnSecurityValidity=true
        .
        . (repeated for other Path instances)
        .
```

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.

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 user-defined resource groups are assigned, and who also has the Modify permission, can execute this command for any resources.

⚠️ **Note:** ModifyWWNGroup is supported by Lightning 9900 storage subsystems only.

The following table describes the parameters of the ModifyWWNGroup command.

Table 4-84   ModifyWWNGroup Command Parameters

Parameter Name	Status	Description
serialnum	Required	Serial number of the storage array in which the WWN Group exists
model	Required	Model of the storage array in which the WWN Group exists
port	Optional	Port number of the WWN Group ***Note:*** Specify either port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
portname	Optional	Port name of the WWN group ***Note:*** Specify either port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
objectid	Required	Object ID of the WWN group
wwn	Required	Comma-separated list of WWNs to be added to the WWN group
nickname	Optional	Unique nickname of the WWN group You can use the following characters: A-Z a-z 0-9 ! # $ % & ' ( ) + - . = @ [ ] ^ _ ` { } ~ You can use a character string of 1-8 bytes for the nickname.

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\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
```

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 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 Device Manager online Help.

AddHost

AddHost adds information about a host server to the Device Manager server.

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 execute this command for any resources.

⚠️ **Note:** This command does not support virtualization servers or file servers. To register a virtualization server, use the `AddVirtualizationServer` command.

The following table describes the parameters of the AddHost command.

Table 4-85   AddHost Command Parameters

Parameter Name	Status	Description
hostname	Required	Name of the new host
		You can use a character string of 1-64 bytes for a name.
		Notes:
		▪ Spaces at the beginning or end of a name are not registered.
		▪ When Web Client is also used, follow the Web Client's specification rule.
wwnlist	Optional	Comma-separated list of WWNs
ipaddress	Optional	IPv4 IP address of the new host
ipv6address	Optional	IPv6 IP address of the new host
hosttype	Optional	Value indicating the host type
		When you register a normal host, omit this parameter.
		When you register a mainframe host, specify 2.
		For details about registering a mainframe host, see [Managing Mainframe Hosts](#)

Parameter Name	Status	Description
iscsinamelist	Optional (Hitachi AMS2000/AMS/ WMS and Hitachi SMS)	List of iSCSI names of the host (iSCSI initiator). Specify the iSCSI name in the iqn or eui format To specify two or more values, separate them with commas (,). *Note:* If you specify 2 in the hosttype parameter, do not specify the iscsinamelist parameter. Specifying the iscsinamelist parameter results in an error. You can use the following characters: A-Z a-z 0-9 - . : The iSCSI name is not case-sensitive. You can use a character string of 1-233 bytes for a name.

Parameter values to obtain in advance

None.

Command execution example

```
HiCommandCLI AddHost -o "D:\logs\AddHost.log" "hostname=toro2"
"wwnlist=AA.CC.CC.CC.CC.CC.CC.CC,00.CC.CC.CC.CC.CC.CC.CC" "ipaddress=192.168.32.63"
```

Command execution result

```
RESPONSE:
An instance of Host
  objectID=HOST.279
  name=toro2
  hostID=279
  ipAddress=192.168.32.63
  capacityInKB=0
  hostType=-1
  statusOfDBUpdating=-1
```

AddHostInfo

AddHostInfo adds host-based information on a LUN (information on storage used by hosts.

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.

⚠️ *Note:* This command does not support virtualization servers or file servers.

The following table describes the parameters of the AddHostInfo command.

Table 4-86   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 HostInfo You can use a character string of 1-50 bytes for the name.
ipaddress	Optional	IPv4 IP address of the host
ipv6address	Optional	IPv6 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 port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
portname	Optional	Port name that the path is on *Note:* Specify either port or portname. Do not specify both parameters at the same time. If they are specified at the same time, an error will 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 0x 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 Hitachi USP, Lightning 9900V or Lightning 9900, use the $xx:yy$ format, where xx is the CU number, and yy is the LDEV number. For Universal Storage Platform V/VM, 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.
osscsibus	Required	Host SCSI bus number

Parameter Name	Status	Description
osscsiid	Required	Virtualized host SCSI ID
oslun	Required	Virtualized host LUN
portwwn	Optional	Port WWN on the host bus adapter ***Note:*** Do not specify the portwwn and portiscsiname parameters at the same time. If they are specified at the same time, an error will occur.
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
portiscsiname	Optional (Hitachi AMS2000/AMS/WMS and Hitachi SMS)	iSCSI name of the host (iSCSI initiator). Specify the iSCSI name in the iqn or eui format. You can use the following characters: A-Z a-z 0-9 - . : The iSCSI name is not case-sensitive. You can use a character string of 1-233 bytes for a name. ***Note:*** Do not specify the portwwn and portiscsiname parameters at the same time. If they are specified at the same time, an error will occur.

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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 portID, domainID and devNum values appear in a Path. Use these portID, 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\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
  portName=CL1-H
  domainID=0
  scsiID=15
  lun=2
  devNum=2
  displayDevNum=00:02
  osScsiBus=0
  osScsiID=15
  osLun=1
  portWWN=11.22.33.44.55.66.77.88
  fileSystemType=NTFS
  fileSystemName=C:
  sizeInMB=10
  percentUsed=10
  lastUpdated=1039003476
```

AddHostRefresh

AddHostRefresh refreshes the information about the hosts that Device Manager manages, which is obtained from the Device Manager agent.

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.

Notes:

- This command does not support virtualization servers or file servers. To refresh the information of a virtualization server, use the `RefreshVirtualizationServer` command.

- 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.

Format

When refreshing the information for a host:

```
HiCommandCLI [URL] AddHostRefresh [option] {objectid=object-ID-of-target-
host|hostname=name-of-target-host}
```

The following table describes the parameters of the AddHostRefresh command.

Table 4-87   AddHostRefresh Command Parameters

Parameter Name	Status	Description
objectid	Optional	Object ID of the target host
		If 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. If they are specified at the same time, an error will 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. If they are specified at the same time, an error will occur.

Parameter values to obtain 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

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 execution result

```
RESPONSE:
An instance of Host
  objectID=Host.5
  name=rise
  hostID=5
  ipAddress=192.168.32.164
  capacityInKB=0
  hostType=-1
  statusOfDBUpdating=-1
```

AddVirtualizationServer

`AddVirtualizationServer` registers a virtualization server into the Device Manager server database.

If the target virtualization server is already registered, this command updates the Device Manager server database with the most recent information. In addition, any virtualization server information that is removed from the virtualization-server management program is deleted from the Device Manager server database.

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

Notes:

- Notes for registering a virtualization server with a structure that monitors VMware vCenter Server with vMA are described below.
  - Virtualization servers registered in VMware vCenter Server for a particular IP address of a virtualization server are registered on the Device Manager server with the IP address as the host name. This is because the name of a virtualization server registered on a VMware vCenter Server is registered as the host name of the Device Manager server.
  - If the virtualization server is cut off from VMware vCenter Server and then reconnected, that virtualization server might not be registered correctly in Device Manager server. In this situation, use the management client for the virtualization server to remove the target virtualization server from VMware vCenter Server, and then register it again. After that, register it on the Device Manager server.
- When using VMware ESX 3.5 with virtualization software and not vMA, registering the virtualization server might take a few hours to complete, depending on the configuration of the virtualization server and the number of volumes connected.

Format

When registering information about a virtualization server:

```
HiCommandCLI [URL] AddVirtualizationServer [option] ipaddress=IP-address hosttype=3
hostprotocol={Secure|Non-secure} hostuserid=user-ID hostuserpassword=user-password
```

The following table describes the parameters of the AddVirtualizationServer command.

Table 4-88   AddVirtualizationServer Command Parameters

Parameter Name	Status	Description
ipaddress	Required	IP address
		Specify the IP address of the virtualization server or the virtualization-server management program.
		To specify the IP address of the virtualization server, use an IPv4 address. To specify the IP address of the virtualization-server management program, use either an IPv4 or IPv6 address.
hosttype	Required	Value indicating the host type
		Specify 3.
		3 indicates a virtualization server (VMware ESX or VMware ESXi)
hostprotocol	Required	Protocol of the virtualization server or virtualization server management program
		Specify either of the following:
		▪ Non-secure: HTTP communication
		▪ Secure: HTTPS communication
hostuserid	Required	User ID
		Specify the user ID used to access the virtualization server or the virtualization-server management program.
hostuserpassword	Required	User password
		Specify the password for the user ID specified in hostuserid.

Parameter values to obtain in advance

None.

Command execution example 1

In this example, the command accesses the virtualization server (IP address: 10.208.119.114) to detect the VMware ESX (host type: 3). For the command, the following parameters are specified: the virtualization server protocol (Secure), user ID (vi-admin), and password (boss!). The information about the detected virtualization server will be registered into the Device Manager server database.

```
HiCommandCLI AddVirtualizationServer -o "D:\logs\AddVirtualizationServer.log"
ipaddress=10.208.119.114 hosttype=3 hostprotocol=Secure hostuserid=vi-admin
"hostuserpassword=boss!"
```

Command execution result 1

```
RESPONSE:
An instance of Host
  objectID=HOST.13
  name=boss.boss
  hostID=13
```

```
capacityInKB=21,995,840
hostType=3
statusOfDBUpdating=0
virtualizationServerVersion=VMware ESX 4.0.0 build-171294
List of 1 CommParameters elements:
  An instance of CommParameters
    ipAddress=10.208.119.114
    portNumber=5989
    protocol=Secure
    userID=vi-admin
```

Command execution example 2

In this example, the command accesses the virtualization-server management program (IP address: `10.208.119.114`) to detect two instances of the VMware ESX (host type: `3`) that are registered in the virtualization-server management program. For the command, the following parameters are specified: the protocol of the virtualization-server management program (`Secure`), user ID (`vi-admin`), and password (`boss!`). The information about the detected virtualization servers will be registered into the Device Manager server database.

```
HiCommandCLI AddVirtualizationServer -o "D:\logs\AddVirtualizationServer.log"
ipaddress=10.208.119.114 hosttype=3 hostprotocol=Secure hostuserid=vi-admin
"hostuserpassword=boss!"
```

Command execution result 2

```
RESPONSE:
An instance of Host
  objectID=HOST.13
  name=boss.boss1
  hostID=13
  capacityInKB=21,995,840
  hostType=3
  statusOfDBUpdating=0
  virtualizationServerVersion=VMware ESX 4.0.0 build-171294
  List of 1 CommParameters elements:
    An instance of CommParameters
      ipAddress=10.208.119.114
      portNumber=5989
      protocol=Secure
      userID=vi-admin

An instance of Host
  objectID=HOST.13
  name=boss.boss2
  hostID=13
  capacityInKB=21,995,840
  hostType=3
  statusOfDBUpdating=0
  virtualizationServerVersion=VMware ESX 4.0.0 build-171294
  List of 1 CommParameters elements:
    An instance of CommParameters
      ipAddress=10.208.119.114
      portNumber=5989
      protocol=Secure
      userID=vi-admin
```

DeleteHost

DeleteHost deletes information about a host server from the Device Manager server.

> ⚠️ *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.

The following table describes the parameters of the DeleteHost command.

Table 4-89   DeleteHost Command Parameters

Parameter Name	Status	Description
objectid	Optional#	Object ID of the host to remove
hostname	Optional#	Name of the host to remove
# You must specify either objectid or hostname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.		

Parameter values to obtain 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 DeleteHost -o "D:\logs\DeleteHost.log" "objectID=HOST.1"
```

Command execution result

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

DeleteHostInfo

DeleteHostInfo deletes a HostInfo instance from the Device Manager server.

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.

⚠️ *Note:* This command does not support virtualization servers or file servers.

The following table describes the parameter of the DeleteHostInfo command.

Table 4-90   DeleteHostInfo Command Parameter

Parameter Name	Status	Description
objectid	Required	Object ID of the HostInfo record to remove

Parameter values to obtain 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 execution example

```
HiCommandCLI DeleteHostInfo -o "D:\logs\DeleteHostInfo.log"
"objectid=HOSTINFO.MY_HOSTINFO_HDS9980V.0.15.1"
```

Command execution result

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

GetHost

GetHost returns the information about one or all host servers.

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.

⚠️ *Note:* If two or more paths are set from a virtualization server for a single volume, the values for the `portID` attribute, `domainID` attribute, and `scsiID` attribute for the `HostInfo` instance for the target volume might not be correct. Use the management client for the virtualization server to check this information.

Format

When obtaining information about all hosts, or information for a particular type of host:

```
HiCommandCLI [URL] GetHost [option] [hostfilter=type-of-host-for-which-information-is-
obtained]
```

When obtaining information about a specific host:

```
HiCommandCLI [URL] GetHost [option] {objectid=object-ID-of-host-for-which-information-is-
obtained|hostname=name-of-host-for-which-information-is-obtained}
```

When obtaining information about a particular HORCM configuration file on the host, or information for a particular copy group related to the host:

```
HiCommandCLI [URL] GetHost [option] objectid=object-ID-of-host-for-which-information-is-
obtained {configfileid=object-ID-of-HORCM-configuration-file-of-RAID-Manager-of-
host|configfileid=object-ID-of-HORCM-configuration-file-of-RAID-Manager-of-host
replicationgroupid=copy-group-related-to-host}
```

The following table describes the parameters of the GetHost command.

Table 4-91   GetHost Command Parameters

Parameter Name	Status	Description
objectid	Optional	Object ID of the host to return Omit this parameter to include all hosts. *Note:* Do not specify the hostname and hostfilter parameter at the same time. If they are specified at the same time, an error will occur.
hostname	Optional	Name of the host to obtain information about Omit this parameter to include all hosts. *Note:* Do not specify the objectid and hostfilter parameter at the same time. If they are specified at the same time, an error will occur.

Parameter Name	Status	Description
configfileid	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 objectid parameter.
replicationgroupid	Optional	ID of the copy group associated with the host (ReplicationGroup)
		If you specify this parameter, you must specify the objectid and configfileid parameters.
hostfilter	Optional	Type of the host that acquires information
		Omit this parameter when all hosts are the target.
		You can specify the following values:
		▪ NORMAL: Normal host
		▪ EXT_PORT: External port
		▪ MAINFRAME: Mainframe host
		▪ VMWARE_ESX: Virtualization server (VMware ESX or VMware ESXi)
		▪ FILE_SERVER: File server
		To specify two or more values, separate them with semicolons (;).
		Note: Do not specify the objectid and hostname parameters at the same time. If they are specified at the same time, an error will occur.
subtarget	Optional	Specify this parameter if you want to obtain information about an element in addition to information about the host.
		You can specify the following values:
		▪ CommParameters: CommParameters instance
		▪ Datastore: Datastore instance and VirtualDisk instance related to Datastore instance
		▪ LogicalUnit: LogicalUnit instance
		▪ VM: VM instance and LogicalUnit instance related to VM instance
		If you specify multiple values, separate them with commas.
lusubinfo	Optional	Specify this parameter if you want to obtain path information (Path instance) about a logical unit.
		Path is the only value that you can specify.
		If you specify this parameter, you must also specify subtarget=LogicalUnit.
pathsubinfo	Optional	Specify this parameter if you want to obtain HostInfo information (HostInfo instance) about a path.
		HostInfo is the only value that you can specify.
		If you specify this parameter, you must also specify subtarget=LogicalUnit and lusubinfo=Path.

Parameter values to obtain 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
  hostID=1
  ipAddress=192.168.32.63
  capacityInKB=0
  hostType=-1
  statusOfDBUpdating=-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
        pvolHORCMMONHostName=192.168.32.63
        pvolHORCMINSTHostName=192.168.32.63
```

```
        svolHostID=2
        svolInstanceNumber=12
        svolPortNumber=50,001
        svolHORCMMONHostName=192.168.32.64
        svolHORCMINSTHostName=192.168.32.64
        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
            displayPvolDevNum=11
            pvolObjectID=LU.HDS9570V.65010001.11
            pvolPoolID=-1
            svolSerialNumber=65010001
            svolArrayType=HDS9570V
            svolDevNum=12
            displaySvolDevNum=12
            svolObjectID=LU.HDS9570V.65010001.12
            svolPoolID=-1
            replicationFunction=ShadowImage
            status=8
            muNumber=0
            copyTrackSize=15
            splitTime=-1
            remotePathGroupID=0
          An instance of ReplicationInfo
            objectID=REPINFO. 65010001.1012.65010001.102
            pairName=HCMD_CP0002
            pvolSerialNumber=65010001
            pvolArrayType=HDS9570V
            pvolDevNum=101
            displayPvolDevNum=101
            pvolObjectID=LU.HDS9570V.65010001.101
            pvolPoolID=-1
            svolArrayType=HDS9570V
            svolSerialNumber=65010001
            svolDevNum=102
            displaySvolDevNum=102
            svolObjectID=LU.HDS9570V.65010001.102
            svolPoolID=-1
            replicationFunction=ShadowImage
            status=1
            muNumber=0
            copyTrackSize=15
            splitTime=-1
            remotePathGroupID=0
```

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
  hostID=11
  capacityInKB=0
  hostType=2
  statusOfDBUpdating=-1

An instance of Host
  objectID=HOST.12
  name=testmf2
  hostID=12
  capacityInKB=0
  hostType=2
  statusOfDBUpdating=-1
```

Command execution example 3

In this example, the command obtains information about the logical unit that is assigned to the host (`hostname = test`). The information contains information about the paths that are assigned to the logical unit and about the `HostInfo` information that is related to the paths.

```
HiCommandCLI GetHost -o "D:\logs\GetHost_LogicalUnit.log" "hostname=test"
subtarget=LogicalUnit lusubinfo=Path pathsubinfo=HostInfo
```

Command execution result 3

```
RESPONSE:
An instance of Host
  objectID=HOST.39
  name=test
  hostID=39
  capacityInKB=8,097,280
  hostType=3
  statusOfDBUpdating=0
  virtualizationServerVersion=VMware ESX 4.0.0 build-171294
  List of 1 WWN elements:
    An instance of WWN
      WWN=10.00.00.00.C9.6F.EB.D6
  List of 6 Lu elements:
    An instance of LogicalUnit
      objectID=LU.R600.10037.1008
      devNum=1,008
      emulation=OPEN-V
      devCount=1
      devType=
      capacityInKB=2,000,000
      path=true
      commandDevice=false
      commandDeviceEx=0
      commandDeviceSecurity=false
      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
      dpType=-1
      consumedCapacityInKB=2,000,000
      dpPoolID=-1
      threshold=-1
      tcaPoolID=-1
      List of 3 Path elements:
        An instance of Path
           objectID=PATH.R600.10037.9.15.1008
           devNum=1,008
           portID=9
           domainID=15
           scsiID=15
           LUN=12
           wwnSecurityValidity=true
        An instance of Path
           objectID=PATH.R600.10037.10.7.1008
           devNum=1,008
           portID=10
           domainID=7
           scsiID=15
           LUN=20
           wwnSecurityValidity=true
        An instance of Path
           objectID=PATH.R600.10037.11.7.1008
           devNum=1,008
           portID=11
           domainID=7
           scsiID=15
           LUN=20
           wwnSecurityValidity=true
           List of 1 HostInfo elements:
             An instance of HostInfo
                objectID=HOSTINFO.test.1.4.20
                name=test
                serialNumber=10037
                arrayType=R600
                mountPoint=
                portID=11
                portName=CL7-E
                domainID=7
                scsiID=15
                lun=20
                devNum=1,008
                displayDevNum=00:03:F0
                osScsiBus=1
                osScsiID=4
                osLun=20
                portWWN=10.00.00.00.C9.6F.EB.D6
                fileSystemType=Datastore
                fileSystemName=
                datastoreName=R600#2_1
                sizeInMB=1,953
                percentUsed=-1
                lastUpdated=1254708417
 An instance of LogicalUnit
   .
   . (Attributes of LogicalUnit are omitted here)
   .
```

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Command execution example 4

In this example, the command obtains the information for accessing the virtualization server (hostname = boss.boss) or for accessing the virtualization-server management program in which the virtualization server is registered.

```
HiCommandCLI GetHost -o "D:\logs\GetHost_CommParameters.log" "hostname=boss.boss"
subtarget=CommParameters
```

Command execution result 4

```
RESPONSE:
An instance of Host
  objectID=HOST.13
  name=boss.boss
  hostID=13
  capacityInKB=21,995,840
  hostType=3
  statusOfDBUpdating=0
  virtualizationServerVersion=VMware ESX 4.0.0 build-171294
  List of 1 WWN elements:
    An instance of WWN
      WWN=10.00.00.00.C9.6F.E8.FD
  List of 1 CommParameters elements:
    An instance of CommParameters
      ipAddress=10.208.119.114
      portNumber=5989
      protocol=Secure
      userID=vi-admin
```

Command execution example 5

In this example, the command obtains information regarding the disk configuration of the virtualization server (hostname = boss.boss).

```
HiCommandCLI GetHost -o "D:\logs\GetHost_CommParameters.log" "hostname=boss.boss"
subtarget=VM,Datastore
```

Command execution result 5

```
RESPONSE:
An instance of Host
  objectID=HOST.9
  name=boss.boss
  hostID=9
  capacityInKB=4,097,280
  hostType=3
  statusOfDBUpdating=0
  virtualizationServerVersion=VMware ESX Server 3.5.0 build-153875
  List of 2 WWN elements:
    An instance of WWN
      WWN=10.00.00.00.C9.53.23.FE
    An instance of WWN
      WWN=20.00.00.E0.8B.00.00.00
  List of 2 VM elements:
    An instance of VM
      vmID=VMWARE_VMComputerSystem.192
      name=Test
      guestOSVersion=Microsoft Windows Server 2003, Standard Edition (32-bit)
      List of 2 VirtualDisk elements:
        An instance of VirtualDisk
```

```
        vmDiskID=VMWARE_ESXComputerSystem.00304831-ac72-0000-0000-
000000000000.VMWARE_FileStorageVolume.[4570460f-a98026f0-ef48-000423d5232a]
+5paw6KaP5Luu5oOz44Oe44K344Oz- D/+5paw6KaP5Luu5oOz44Oe44K344Oz- D.vmdk
        name=[storage1] +5paw6KaP5Luu5oOz44Oe44K344Oz- D/+5paw6KaP5Luu5oOz44Oe44K344Oz-
D.vmdk
        datastoreID=4570460f-a98026f0-ef48-000423d5232a
      An instance of VirtualDisk
        vmDiskID=VMWARE_ESXComputerSystem.00304831-ac72-0000-0000-
000000000000.VMWARE_FileStorageVolume.[4570460f-a98026f0-ef48-000423d5232a]
+5paw6KaP5Luu5oOz44Oe44K344Oz- D/+5paw6KaP5Luu5oOz44Oe44K344Oz- D_1.vmdk
        name=[storage1] +5paw6KaP5Luu5oOz44Oe44K344Oz- D/+5paw6KaP5Luu5oOz44Oe44K344Oz-
D_1.vmdk
        datastoreID=4570460f-a98026f0-ef48-000423d5232a
  An instance of VM
    vmID=VMWARE_VMComputerSystem.336
    name=vm_0
    guestOSVersion=Microsoft Windows Server 2003, Standard Edition (32-bit)
    List of 1 VirtualDisk elements:
      An instance of VirtualDisk
        vmDiskID=VMWARE_ESXComputerSystem.00304831-ac72-0000-0000-
000000000000.VMWARE_FileStorageVolume.[4b7e9e78-813a0bf8-688b-00304831ac73] vm_0/vm_0.vmdk
        name=[datastore_0] vm_0/vm_0.vmdk
        datastoreID=4b7e9e78-813a0bf8-688b-00304831ac73
  List of 1 Datastore elements:
    An instance of Datastore
      datastoreID=4570460f-a98026f0-ef48-000423d5232a
      name=storage1
      datastoreType=1
```

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GetHostInfo

GetHostInfo returns either a selected HostInfo record or all the HostInfo on the Device Manager server.

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.

⚠ **Note:** If two or more paths are set from a virtualization server for a single volume, the values for the `portID` attribute, `domainID` attribute, and `scsiID` attribute for the `HostInfo` instance for the target volume might not be correct. Use the management client for the virtualization server to check this information.

The following table describes the parameter of the GetHostInfo command.

Table 4-92   GetHostInfo Command Parameter

Parameter Name	Status	Description
objectid	Optional	Object ID of the HostInfo record to retrieve Omit this parameter to obtain all HostInfo records.

Parameter values to obtain 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\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
  portName=CL1-H
  domainID=0
  scsiID=15
  lun=3
```

```
devNum=3
displayDevNum=00:03
osScsiBus=0
osScsiID=15
osLun=1
portWWN=11.22.33.44.55.66.77.88
fileSystemType=NTFS
fileSystemName=C:
sizeInMB=10
percentUsed=10
lastUpdated=1039003852
```

Command execution example 2

```
HiCommandCLI GetHostInfo -o "D:\logs\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
  portName=CL1-H
  domainID=0
  scsiID=15
  lun=3
  devNum=3
  displayDevNum=00:03
  osScsiBus=0
  osScsiID=15
  osLun=1
  portWWN=11.22.33.44.55.66.77.88
  fileSystemType=NTFS
  fileSystemName=C:
  sizeInMB=10
  percentUsed=10
  lastUpdated=1039003852
.
. (repeated for other HostInfo instances)
.
```

HostScan

HostScan registers (into the Device Manager server database) any host whose host name is the nickname of a host storage domain, and adds (to that host's information in the database) the WWN or iSCSI name that was assigned to the host storage domain. In an environment that satisfies the following conditions, the HostScan command can be used to easily register hosts into the Device Manager server: (1) all WWNs or iSCSI names in one host storage domain must be assigned to one host only, and (2) that host name is set as the nickname of the host storage domain.

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

⚠️ **Note:** The HostScan command operates by using the information in the Device Manager server database. Before executing the HostScan command, execute the AddStorageArray command to refresh the target storage subsystem.

The following lists the conditions for using the HostScan command:

- LUN Manager (or LUN Management) is installed on the storage subsystem.
- The host name is the nickname of a host storage domain.[#]
- There is a one-to-one correspondence between the host storage domain and host.[#]
- The WWNs assigned to the host storage domain match the WWNs of the host HBA.
- The iSCSI name assigned to the host storage domain matches the iSCSI name of the host HBA or the iSCSI name of the host NIC.

For a cluster configuration, set a logical host name for the nickname.

The HostScan command will do the following:

1. Among the WWNs and iSCSI names that have been allocated to a host storage domain, HostScan detects (from the Device Manager server database) any existing WWNs or iSCSI names that have not been allocated to a host.

2. HostScan obtains (from the Device Manager server database) the host storage domains for which nicknames are set.

   The host storage domains are obtained in the ascending order of their nicknames. The case of nicknames is ignored.

3. For each of the host storage domains (ordered as described in step 2), HostScan adds the WWNs and iSCSI names detected in step 1 into the host information.

The information is added for any host whose host name is the nickname of a host storage domain.

However, if a corresponding host is not registered, the host is registered with a host name identical to a host storage domain nickname and then the information is added to the host information.

⚠️ *Note:* If the same WWN or iSCSI name is assigned to multiple host storage domains, this processing will be performed for the first host storage domain only.

Format

When scanning one or more (but not all) storage subsystems:

```
HiCommandCLI [URL] HostScan [option] serialnum=serial-number model=model
```

When scanning all storage subsystems:

```
HiCommandCLI [URL] HostScan [option] option=all
```

The following table describes the parameters of the HostScan command.

Table 4-93 HostScan Command Parameters

Parameter Name	Status	Description
model	Optional[#1, #2]	Model of the storage array to scan Use a comma to delimit multiple values.
serialnum	Optional[#1, #2]	Serial number of the storage array to scan Use a comma to delimit multiple values.
option	Optional[#1]	Parameters used when scanning all storage subsystems The value you can specify is all, which is not case-sensitive.
#1 Always specify either the model and serialnum parameters together, or specify option=all.		
#2 To specify a storage subsystem, both the model and serialnum parameters must be specified together. Make sure that both the order and values specified for model and serialnum are correct.		

Parameter values to obtain in advance

serialnum and model: Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

Command execution example

```
HiCommandCLI HostScan -o "D:\logs\HostScan.log" "model=USP" "serialnum=14053"
```

Command execution result

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

MergeHost

`MergeHost` merges the WWNs or iSCSI names assigned to one or more hosts (source hosts) that are registered in the Device Manager server database into one host (target host). The source hosts are deleted after they are merged.

You cannot merge the following types of hosts:

- Mainframe hosts
- External ports
- Virtualization servers
- File servers

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.

The following table describes the parameters of the `MergeHost` command.

Table 4-94   MergeHost Command Parameters

Parameter Name	Status	Description
targetname	Required	Name of the target host
hostnames	Required	Names of the source hosts[#1, #2, #3] To specify multiple host names, separate them by commas.
#1 Do not specify a host to which a WWN or iSCSI name is not registered. If you do so, an error will occur.		
#2 A comma contained in the host name is recognized as a delimiter. Therefore, if you want to specify a host whose name contains a comma, you need to use the ModifyHost command to change the host name so that it does not contain a comma before executing the MergeHost command.		
#3 You can migrate a maximum of 100 WWNs and iSCSI names at one time. Specify source hosts so that the total number of WWNs and iSCSI names assigned to those hosts does not exceed 100.		

Parameter values to obtain in advance

`targetname` and `hostnames`: 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 `targetname` or `hostnames` parameter.

Command execution example

```
HiCommandCLI MergeHost -o "D:\logs\MergeHost.log" "targetname=host0"
"hostnames=host6,host7"
```

Command execution result

```
RESPONSE:
An instance of Host
  objectID=HOST.1
  name=host0
  hostID=1
  capacityInKB=0
  hostType=-1
  statusOfDBUpdating=-1
  List of 2 WWN elements:
    An instance of WWN
      WWN=50.06.0E.80.05.27.35.47
    An instance of WWN
      WWN=10.00.00.00.C9.3D.2A.88
  List of 1 ISCSIName elements:
    An instance of ISCSIName
      iSCSIName=iqn.1991-05.com.hitachi:thomas
```

ModifyHost

ModifyHost modifies information about a host server.

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.

⚠️ *Notes:*

- This command cannot change WWN information for the external port of a host.
- This command does not support virtualization servers. To modify information about a virtualization server, use the `ModifyVirtualizationServer` command.
- If the type of host is a file server, this command can be used to change only the host name.

Format

When the type of host is a normal host, external port, or mainframe host:

```
HiCommandCLI [URL] ModifyHost [option] {objectid=object-ID-of-host-to-be-changed
[{hostname=new-name-of-host|newhostname=new-name-of-host}]|hostname=name-of-host-to-be-
changed [newhostname=new-name-of-host]} [wwnlist=WWN-list-to-replace-existing-WWN]
[ipaddress=new-IPv4-IP-address-for-existing-host] [ipv6address=new-IPv6-IP-address-for-
existing-host] [iscsinamelist=iSCSI-name-list-for-host]
```

When the type of host is a file server:

```
HiCommandCLI [URL] ModifyHost [option] {objectid=object-ID-of-host-to-be-changed
[{hostname=new-name-of-host|newhostname=new-name-of-host}]|hostname=name-of-host-to-be-
changed [newhostname=new-name-of-host]}
```

The following table describes the parameters of the ModifyHost command.

Table 4-95   ModifyHost Command Parameters

Parameter Name	Status	Description
objectid	Optional	Object ID of the host to modify ***Note:*** You must specify objectid or hostname.

Parameter Name	Status	Description
hostname	Optional	Name of the host to modify
		Omit this parameter if you do not want to change the name.
		You can use a character string of 1-64 bytes for a name.
		The value specified for this parameter differs depending on whether objectid is specified.
		When objectid is specified:
		Specify the new name of the host.
		When objectid is not specified:
		Specify the host name to manipulate
		Notes:
		▪ Spaces at the beginning or end of a name are not registered.
		▪ When Web Client is also used, follow the Web Client's specification rule.
		▪ You must specify objectid or hostname.
newhostname	Optional	New name of the host
		Note: If you specify this parameter, you must also specify objectid or hostname.
wwnlist	Optional	Comma-separated list of WWNs to replace existing WWNs
		If you omit this parameter, all WWNs in the host will be deleted.
ipaddress	Optional	New IPv4 IP address of an existing host
		Omit this parameter if you are not changing the IPv4 IP address of the host.
ipv6address	Optional	New IPv6 IP address of an existing host
		Omit this parameter if you are not changing the IPv6 IP address of the host.
iscsinamelist	Optional (Hitachi AMS2000/AMS/WMS and Hitachi SMS)	List of iSCSI names of the host (iSCSI initiator).
		Specify the iSCSI name in the iqn or eui format
		To specify two or more values, separate them with commas (,).
		Note: If you omit the iscsinamelist parameter, the host's iSCSI names are all deleted.
		You can use the following characters:
		A-Z a-z 0-9 - . :
		The iSCSI name is not case-sensitive.
		You can use a character string of 1-233 bytes for a name.

Parameter values to obtain 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
  hostID=3
  ipAddress=172.18.32.9
  capacityInKB=0
  hostType=-1
  statusOfDBUpdating=-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
```

ModifyHostInfo

ModifyHostInfo modifies a HostInfo record in the Device Manager server.

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.

⚠️ *Note:* This command does not support virtualization servers or file servers.

The following table describes the parameters of the ModifyHostInfo command.

Table 4-96   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. You can use a character string of 1-50 bytes for the name.
ipaddress	Optional	New IPv4 IP address of the host Omit this parameter if you are not changing the IPv4 IP address of the host.
ipv6address	Optional	New IPv6 IP address of the host Omit this parameter if you are not changing the IPv6 IP address of the host.
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. If they are specified at the same time, an error will 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. If they are specified at the same time, an error will 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 Hitachi USP, Lightning 9900V or Lightning 9900, use the *xx*:*yy* format, where *xx* is the CU number, and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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. ***Note:*** Do not specify the portwwn and portiscsiname parameters at the same time. If they are specified at the same time, an error will occur.
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.
portiscsiname	Optional (Hitachi AMS2000/AMS/WMS and Hitachi SMS)	iSCSI name of the host (iSCSI initiator). Specify the iSCSI name in the iqn or eui format. You can use the following characters: A-Z a-z 0-9 - . : The iSCSI name is not case-sensitive. You can use a character string of 1-233 bytes for a name. ***Notes:*** ▪ Do not specify the portwwn and portiscsiname parameters at the same time. If they are specified at the same time, an error will occur. ▪ If the portiscsiname parameter is omitted, the iSCSI name of the host (iSCSI initiator) is not changed.

Parameter values to obtain in advance

serialnum and model**:** Obtain these values from the execution result of the GetStorageArray command. In the execution result, use the arrayType value or the displayArrayType value to specify the model parameter, and use the serialNumber value to specify the serialnum parameter.

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\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
  portName=CL1-H
  domainID=0
  scsiID=15
  lun=2
  devNum=2
  displayDevNum=00:02
  osScsiBus=0
  osScsiID=15
  osLun=1
  portWWN=11.33.55.77.99.BB.DD.FF
  fileSystemType=NTFS1
  fileSystemName=E:
  sizeInMB=156
  percentUsed=50
  lastUpdated=1039003476
```

ModifyVirtualizationServer

`ModifyVirtualizationServer` modifies information about virtualization servers.

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

Format

When modifying information about a virtualization server:

```
HiCommandCLI [URL] ModifyVirtualizationServer [option] hostname=host-name-of-
virtualization-server [ipaddress=IP-address] [hostprotocol={Secure|Non-secure}]
[hostuserid=user-ID] [hostuserpassword=user-password]
```

The following table describes the parameters of the `ModifyVirtualizationServer` command.

Table 4-97   ModifyVirtualizationServer Command Parameters

Parameter Name	Status	Description
hostname	Required	Host name of the virtualization server whose information is to be modified
ipaddress	Optional#	IP address
		Specify this parameter if you want to modify the IP address of the virtualization server or the virtualization-server management program.
		To specify the IP address of the virtualization server, use an IPv4 address. To specify the IP address of the virtualization-server management program, use either an IPv4 or IPv6 address.
hostprotocol	Optional#	Protocol of the virtualization server or virtualization server management program
		Specify this parameter if you want to modify the protocol.
		You can specify either of the following values:
		Non-secure: HTTP communication
		Secure: HTTPS communication
hostuserid	Optional#	User ID
		Specify this parameter if you want to modify the user ID used to access the virtualization server or the virtualization-server management program.
hostuserpassword	Optional#	User password
		Specify this parameter if you want to modify the password for the user ID specified in hostuserid.
# You need to specify at least one of the following parameters: ipaddress, hostprotocol, hostuserid, or hostuserpassword.		

Parameter values to obtain in advance

hostname: Obtain this value from the execution result of the GetHost command. Execute this command by specifying VMWARE_ESX for the hostfilter parameter. In the execution result of this command, the name value appears under An instance of Host. In the hostname parameter, specify the name value for the virtualization server whose information you want to modify.

Command execution example

```
HiCommandCLI ModifyVirtualizationServer -o "D:\logs\ModifyVirtualizationServer.log"
"hostname=boss.boss" "hostuserpassword=boss!"
```

Command execution result

```
RESPONSE:
An instance of Host
  objectID=HOST.13
  name=boss.boss
  hostID=13
  capacityInKB=21,995,840
  hostType=3
  statusOfDBUpdating=0
  virtualizationServerVersion=VMware ESX 4.0.0 build-171294
  List of 1 CommParameters elements:
    An instance of CommParameters
      ipAddress=10.208.119.114
      portNumber=5989
      protocol=Secure
      userID=vi-admin
```

RefreshVirtualizationServer

`RefreshVirtualizationServer` refreshes information about virtualization servers.

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 virtualization servers only. If a virtualization server that is not allowed is specified, an error occurs.

> ⚠️ **Note:** When using VMware ESX 3.5 with virtualization software and not vMA, registering the virtualization server might take a few hours to complete, depending on the configuration of the virtualization server and the number of volumes connected.

Format

When refreshing all information for a virtualization server, or only the capacity data for the datastore of a virtualization server:

```
HiCommandCLI [URL] RefreshVirtualizationServer [option] hostname=host-name [mode=Datastore]
```

The following table describes the parameter of the `RefreshVirtualizationServer` command.

Table 4-98   RefreshVirtualizationServer Command Parameters

Parameter Name	Status	Description
hostname	Required	Host name
		Specify the host name of the virtualization server whose information you want to refresh.
mode	Optional	Refresh mode for virtualization server
		Used to refresh only the capacity data of a virtualization server datastore.
		The only value that can be specified is `Datastore`. This setting is not case sensitive.

Parameter values to obtain in advance

`hostname`: Obtain this value from the execution result of the `GetHost` command. Execute this command by specifying `VMWARE_ESX` for the `hostfilter` parameter. In the execution result of this command, the `name` value appears under `An instance of Host`. In the `hostname` parameter, specify the `name` value for the virtualization server whose information you want to refresh.

Command execution example

```
HiCommandCLI RefreshVirtualizationServer –o "D:\logs\RefreshVirtualizationServer.log"
"hostname=boss.boss"
```

Command execution result

```
RESPONSE:
An instance of Host
  objectID=HOST.13
  name=boss.boss
  hostID=13
  capacityInKB=21,995,840
  hostType=3
  statusOfDBUpdating=0
  virtualizationServerVersion=VMware ESX 4.0.0 build-171294
  List of 1 CommParameters elements:
    An instance of CommParameters
      ipAddress=10.208.119.114
      portNumber=5989
      protocol=Secure
      userID=vi-admin
```

Hitachi Device Manager Command Line Interface (CLI) User's Guide

Server Management Commands

The Server Management commands provide some management support for the Device Manager server.

AddURLLink

AddURLLink allows a user to specify URL information (referred to as a URLLink) for a Device Manager object managed by the Device Manager server. AddURLLink is used for the following purposes:

- To specify a URLLink for a non-SMI-S Enabled subsystem

  When a user specifies a URLLink for a storage subsystem, a button (containing a user-specified name) will appear, which can be used to access the URL when you click on the storage subsystem in Web Client. Note that a user can set only one URLLink for each storage subsystem.

- To specify a URLLink for an SMI-S Enabled subsystem

  When a user specifies a URLLink for an SMI-S Enabled subsystem, the URL information normally displayed when the user clicks on the Manage button is changed to the URL information that was specified by the user. The Manage button is displayed when a user clicks on the SMI-S Enabled subsystem in Web Client. Note that a user can set only one URLLink for each SMI-S Enabled subsystem.

- To specify a URLLink to Mainframe Agent for a mainframe host

  For a mainframe host, you can set a URLLink to the Mainframe Agent running on the mainframe host. For details on how to specify the settings for managing mainframe hosts, see Managing Mainframe Hosts.

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 Device Manager object.

⚠️ *Note:* This command does not support virtualization servers or file servers.

Format

When setting a URLLink for a Device Manager object other than an SMI-S Enabled subsystem:

```
HiCommandCLI [URL] AddURLLink [option] url=URL name=URLLink-name linkedid=object-ID-of-the-
Device-Manager-object [targetoption=other] [description=description-of-the-URLLink]
```

When setting a URLLink for an SMI-S Enabled subsystem:

```
HiCommandCLI [URL] AddURLLink url=URL name=URLLink-name linkedid=object-ID-of-the-SMI-S-
Enabled-subsystem targetoption=smi-s
```

The following table describes the parameters of the AddURLLink command.

Table 4-99   AddURLLink Command Parameters

Parameter Name	Status	Description
url	Required	The complete URL is required to launch the application or Web page
		If you specify the URL as an IPv6 IP address, enclose the IP address in square brackets ([ ]).
name [#1]	Required	Name of the URLLink
		When you specify a URLLink for a non-SMI-S Enabled subsystem, the specified name will be displayed on the button displayed in Web Client.
		When you specify a URLLink for an SMI-S Enabled subsystem, the name of the button displayed in Web Client will be Manage and will not change, regardless of the value specified for this parameter.
linkedid[#1, #2]	Required	Object ID of the Device Manager object for which the URLLink is set
		Must be a valid, existing the object ID.
targetoption	Optional	Type of the Device Manager object for which the URLLink is set
		One of the following values can be specified. The values are not case-sensitive.
		▪ smi-s: SMI-S Enabled subsystem
		▪ other: Device Manager object other than an SMI-S Enabled subsystem
		If this parameter is omitted, other is set.
description	Optional	Description of the URLLink
		Note: Do not specify this parameter when smi-s is specified for the targetoption parameter. If you do so, an error will occur.

#1 When you specify the object ID of a host for the linkedid parameter, if you specify a value for the name parameter that is set for an existing URLLink, the existing URLLink will be overwritten. If you specify a value for the name parameter that is not set for an existing URLLink, a new URLLink will be added. Note that only one URLLink can be set for a storage subsystem. Therefore, if a URLLink has already been set for the storage subsystem that you specify for the linkedid parameter, the existing URLLink will be overwritten regardless of the value specified for the name parameter.

#2 When you specify an SMI-S Enabled subsystem object ID for the linkedid parameter, any URLLink that has already been specified for the SMI-S Enabled subsystem will be overwritten.

Command execution example

```
HiCommandCLI AddURLLink -o "D:\logs\AddURLLink.log" "url=http://192.168.99.AA/" "name=AUTO"
"linkedid=HSDOMAIN.R601.25011.0.1" "description=ARRAY.R601.25011"
```

Command execution result

```
RESPONSE:
An instance of URLLink
  objectID=URLLINK.HSDOMAIN.R601.25011.0.1.1
  name=AUTO
  description=ARRAY.R601.25011
  url=http://192.168.99.AA/
  linkedID=HSDOMAIN.R601.25011.0.1
  createdByUser=-1
```

DeleteAlerts

DeleteAlerts deletes one or more alerts from the Device Manager server. You can specify alerts to be deleted using either the alert number or the source.

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

The following table describes the parameters of the DeleteAlerts command.

Table 4-100 DeleteAlerts Command Parameters

Parameter Name	Status	Description
alertnum	Optional#	The number identifying the alert to delete
source	Optional#	Identifies a source of alerts; all alerts from this source are deleted.
# Specify either `alertnum` or `source`. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.		

Parameter values to obtain 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 execution example 1

```
HiCommandCLI DeleteAlerts -o "D:\logs\DeleteAlerts.log" "alertnum=6"
```

Command execution result 1

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

Command execution example 2

```
HiCommandCLI DeleteAlerts -o "D:\logs\DeleteAlerts.log" "source=ARRAY.R600.10007"
```

Command execution result 2

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

DeleteURLLink

DeleteURLLink deletes the URLLinks that is set for a Device Manager object managed by the Device Manager server.

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 Device Manager object only.

⚠️

Note: This command does not support virtualization servers.

Format

When deleting a URLLink for a Device Manager object other than an SMI-S Enabled subsystem:

```
HiCommandCLI [URL] DeleteURLLink [option] {objectid=object-ID-of-the-
URLLink|linkedid=object-ID-of-the-Device-Manager-object} [targetoption=other]
```

When deleting the URLLink set for an SMI-S Enabled subsystem:

```
HiCommandCLI [URL] DeleteURLLink {objectid=object-ID-of-the-URLLink|linkedid=object-ID-of-
the-SMI-S-Enabled-subsystem} targetoption=smi-s
```

The following table describes the parameters of the DeleteURLLink command.

Table 4-101 DeleteURLLink Command Parameters

Parameter Name	Status	Description
objectid	Optional [#1]	The object ID of the URLLink to delete [#2]
linkedid	Optional [#1]	The object ID of the Device Manager object from which the URLLink is deleted
		All the URLLinks set for the specified Device Manager object will be deleted. [#2]
targetoption	Optional	Type of the Device Manager object from which the URLLink is deleted
		One of the following values can be specified. The values are not case-sensitive.
		▪ smi-s: SMI-S Enabled subsystem
		▪ other: Device Manager object other than an SMI-S Enabled subsystem
		If this parameter is omitted, other is set.
#1 Specify either objectid or linkedid. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.		
#2 The DeleteURLLink command only deletes URLLinks set by a user. The command cannot delete URLLinks that are automatically set by the Device Manager server when an SMI-S Enabled subsystem is initially registered.		

Command execution example 1

```
HiCommandCLI DeleteURLLink -o "D:\logs\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\DeleteURLLink.log"
"objectid=URLLINK.HSDOMAIN.HDS9980V.10001.0.3.1"
```

Command execution result 2

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

GetAlerts

GetAlerts returns the alert messages previously generated by the Device Manager server. The returned alerts can be limited by specifying a time and/or a number of messages. When no condition is specified to limit the number of alert messages obtained, information about all alerts is displayed in the execution results.

For GetAlerts, there are no access restrictions regarding the resource groups or permissions assigned to a user.

Note: For Hitachi AMS2000/AMS/WMS, Hitachi SMS, 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. The physical location of the hard disk is indicated by the locations of Unit and HDU. You need to calculate the locations of Unit and HDU by using the displayed disk drive number.

The variable and functions used for the calculation are as follows:

- n: Indicates the disk drive number output to the command execution result.

- 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.

Following shows how to calculate the locations of Unit and HDU:

- For Hitachi AMS2000[#], Hitachi AMS/WMS and Hitachi SMS

  location-of-Unit = INT (n / 15)

  location-of-HDU = n MOD 15

  Example:

  When n is 17:

  location-of-Unit = INT (17 /15) = 1

  location-of-HDU = 17 MOD 15 = 2

  # If an additional high density storage expansion tray has been installed in Hitachi AMS2000, you do not need to calculate the locations of Unit and HDU. You can determine the locations by using the value output to the component attribute of the Alert instance. The following shows the format of a value output to the component attribute:

  ```
  Disk Drive #disk-drive-number (location-of-Unit - location-of-
  HDU)
  ```

Example:

When the value output to the `component` attribute is `Disk Drive #55(3-1)`:

location-of-Unit = 3

location-of-HDU = 1

- For Thunder 9500V

When *n* is less than or equal to 13:

location-of-Unit = 0

location-of-HDU = *n*

When *n* is greater than 13:

location-of-Unit = INT ((n + 1) / 15)

location-of-HDU = (n + 1) MOD 15

Example:

When *n* is 12:

location-of-Unit = 0

location-of-HDU = 12

When *n* is 17:

location-of-Unit = INT((17 + 1) / 15) = 1

location-of-HDU = (17 + 1) MOD 15 = 3

The following table describes the parameters of the GetAlerts command.

Table 4-102 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 obtain in advance

None.

Command execution example

```
HiCommandCLI GetAlerts -o D:\logs\GetAlerts.log "countfilter=2" "timefilter=2002/04/01
00:00:00"
```

Command execution 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
```

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 execution example

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

Command execution result

```
RESPONSE:
An instance of DebugLevel
  value=0 [Full Debugging trace]
  description=Debugging Trace
```

GetLogFile

GetLogFile returns the requested Device Manager server log file.

For this command, there are no access restrictions regarding the resource groups or permissions assigned to a user.

The following table describes the parameter of the GetLogFile command.

Table 4-103 GetLogFile Command Parameter

Parameter Name	Status	Description
filename	Required	Name of the requested log file (access.log, service.log, error.log, or trace.log)

Parameter values to obtain in advance

None.

Command execution example

```
HiCommandCLI GetLogFile -o "D:\logs\GetLogFile.log" "filename=error.log"
```

Command execution 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 - -----
```

GetServerInfo

GetServerInfo acquires information, such as the Device Manager server's version and URL, a list of supported array families, and the status of the license in use. This command has 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=Hitachi Device Manager Server v6.4 Build 0640-01 (Jun 01, 2010)
  serverURL=http://localhost:2001
  upTime=2 minutes 5 seconds
  upSince=Tue, 1 Jun 2010 02:52:13 GMT
  currentApiVersion=6.4
  license=0
  List of 12 StorageArray elements:
    An instance of StorageArray
      arrayFamily=AMS/WMS/SMS
      displayArrayFamily=AMS/WMS/SMS
    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=USP
      displayArrayFamily=USP
    An instance of StorageArray
      arrayFamily=R600
      displayArrayFamily=USP_V
    An instance of StorageArray
      arrayFamily=HDS9900V
      displayArrayFamily=XP1024/128
    An instance of StorageArray
      arrayFamily=USP
      displayArrayFamily=XP12K/10K/SVS200
    An instance of StorageArray
      arrayFamily=R600
      displayArrayFamily=XP24K/20K
    An instance of StorageArray
      arrayFamily=HDS9900
      displayArrayFamily=XP512/48
    An instance of StorageArray
      arrayFamily=SMI-S_Enabled
      displayArrayFamily=SMI-S_Enabled
```

GetURLLink

GetURLLink obtains information about the URLLinks that are set for a Device Manager object managed by the Device Manager server.

A user to whom a user-defined resource group is assigned can specify the allowed Device Manager object only.

Format

When obtaining all URLLink information:

```
HiCommandCLI [URL] GetURLLink [option] [targetoption={smi-s|other}]
```

When obtaining URLLink information for a particular Device Manager object that is not an SMI-S Enabled subsystem:

```
HiCommandCLI [URL] GetURLLink {objectid=object-ID-of-the-URLLink|linkedid=object-ID-of-the-
Device-Manager-object} [targetoption=other]
```

When obtaining URLLink information for a particular SMI-S Enabled subsystem:

```
HiCommandCLI [URL] GetURLLink {objectid=object-ID-of-the-URLLink|linkedid=object-ID-of-the-
SMI-S-Enabled-subsystem} targetoption=smi-s
```

The following table describes the parameters of the GetURLLink command.

Table 4-104 GetURLLink Command Parameters

Parameter Name	Status	Description
objectid	Optional[#]	The object ID of the URLLink for which you want to obtain information
		Note: Do not specify this parameter with the linkedid parameter. If they are specified at the same time, an error will occur.
linkedid	Optional[#]	The object ID of the Device Manager object
		Information about all the URLLinks set for the specified Device Manager object is acquired.
		Note: Do not specify this parameter with the objectid parameter. If they are specified at the same time, an error will occur.

Parameter Name	Status	Description
targetoption	Optional#	Type of the Device Manager object for which the URLLink is set
		One of the following values can be specified. The values are not case-sensitive.
		▪ smi-s: SMI-S Enabled subsystem
		▪ other: Device Manager object other than an SMI-S Enabled subsystem
		If objectid or linkedid is specified and this parameter is omitted, other is set.
		If targetoption is specified, but both objectid and linkedid are omitted, URLLink information for all of the Device Manager objects of the type specified for targetoption will be acquired.

If objectid, linkedid, and targetoption are all omitted, all URLLink information will be acquired for all of the Device Manager objects, regardless of the type.

Command execution example 1

```
HiCommandCLI GetURLLink -o "D:\logs\GetURLLink.log"
"objectid=URLLINK.HSDOMAIN.R601.25011.0.1.1"
```

Command execution result 1

```
RESPONSE:
An instance of URLLink
  objectID=URLLINK.HSDOMAIN.R601.25011.0.1.1
  name=AUTO
  description=ARRAY.R601.25011
  url=http://192.168.99.AA/
  linkedID=HSDOMAIN.R601.25011.0.1
  createdByUser=-1
```

Command execution example 2

```
HiCommandCLI GetURLLink -o "D:\logs\GetURLLink.log" "linkedid=HSDOMAIN.R601.25011.0.1"
```

Command execution result 2

```
RESPONSE:
An instance of URLLink
  objectID=URLLINK.HSDOMAIN.R601.25011.0.1.1
  name=AUTO
  description=ARRAY.R601.25011
  url=http://192.168.99.AA/
  linkedID=HSDOMAIN.R601.25011.0.1
  createdByUser=-1
```

ModifyDebugLevel

ModifyDebugLevel sets the amount of debugging information generated by the Device Manager server. 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.

Only users who have All Resources assigned as their resource group and have the Modify permission can use this command.

The following table describes the parameter of the ModifyDebugLevel command.

Table 4-105 ModifyDebugLevel Command Parameter

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 obtain in advance

None.

Command execution example

```
HiCommandCLI ModifyDebugLevel -o "D:\logs\ModifyDebugLevel.log" "level=0"
```

Command execution result

```
RESPONSE:
An instance of DebugLevel
  value=0 [Full Debugging trace]
  description=Debugging Trace
```

Replication Commands

The Replication commands can be used to manage copy pairs.

AddConfigFileForReplication

AddConfigFileForReplication creates the HORCM configuration file for CCI that is required to create copy pairs for ShadowImage, TrueCopy Sync, TrueCopy Async, QuickShadow, Copy-on-Write Snapshot, and Universal Replicator.

TrueCopy Async can be used for Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, Lightning 9900, Hitachi AMS2000, and Hitachi AMS.

Copy-on-Write Snapshot can be used for Hitachi AMS2000/AMS/WMS and Hitachi SMS, and QuickShadow can be used for Thunder 9500V.

Universal Replicator can be used for Universal Storage Platform V/VM and Hitachi 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.

⚠️ *Note:* Device Manager does not support a configuration in which both P-VOLs and S-VOLs exist in a single HORCM instance. Make sure all the volumes in a single HORCM instance are either all P-VOLs or all S-VOLs.

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
[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]
```

The following table describes the parameters of the AddConfigFileForReplication command.

Table 4-106 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.

Parameter Name	Status	Description
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.
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 svolinstancenum 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 Hitachi USP, Lightning 9900V or Lightning 9900, use the *xx*:*yy* format, where *xx* is the CU number, and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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.
pvolportid	Optional	Port number in the HORCM configuration file that manages the P-VOL path *Note:* If you specify this parameter, specify either pvolportid or pvolportname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.

Parameter Name	Status	Description
pvolportname	Optional	Port name in the HORCM configuration file that manages the P-VOL path ***Note:*** If you specify this parameter, specify either pvolportid or pvolportname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
pvolpoolid	Optional	Pool ID of the pool in which the differential data and journal data for the P-VOL is to be stored. You must specify this parameter when you are using method 2 or 3 with Universal Replicator, QuickShadow, or TrueCopy Async. For other cases, 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 Hitachi USP, Lightning 9900V or Lightning 9900, use the *xx*:*yy* format, where *xx* is the CU number, and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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.
svolportid	Optional	Port number in the HORCM configuration file that manages the S-VOL path ***Note:*** If you specify this parameter, specify either svolportid or svolportname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
svolportname	Optional	Port name in the HORCM configuration file that manages the S-VOL path ***Note:*** If you specify this parameter, specify either svolportid or svolportname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
svolpoolid	Optional	Pool ID of the pool in which the differential data and journal data for the S-VOL is to be stored. You must specify this parameter when you are using method 2 or 3 with Universal Replicator or TrueCopy Async. For other cases, this parameter value is invalid even if you specify a value.

Parameter Name	Status	Description
replicationfunction	Optional	Type of operation that is to be executed with the copy pair You can specify the following values: ▪ ShadowImage: ShadowImage including MRCF-Lite ▪ TrueCopySync: TrueCopy including Synchronous Remote Copy ▪ TrueCopyAsync: TrueCopy Async ▪ QuickShadow: QuickShadow or Copy-on-Write Snapshot ▪ UniversalReplicator: Universal Replicator The following value is set if this parameter is omitted: ▪ 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 Hitachi AMS2000/AMS/WMS, Thunder 9500V, and Thunder 9200) TrueCopyAsync (for Universal Storage Platform V/VM, Hitachi 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 Hitachi AMS2000/AMS/WMS, Hitachi SMS, and Thunder 9500V) The HORCM configuration file for TrueCopySync is the same as for TrueCopyAsync.
munum	Optional	MU number of the P-VOL This parameter can be specified only for Universal Replicator. **Notes:** ▪ For Universal Replicator, if this parameter is not specified, the MU number of the created HORCM configuration file for CCI is set to 1. ▪ For ShadowImage, QuickShadow, or Copy-on-Write 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.
pairoption	Optional	Specify this parameter to create the configuration of the 3DC delta resync. You can specify suspend only. **Note:** This parameter can be specified only when Universal Replicator is being used.

 Note: To operate a specific copy pair in a copy group, you must specify all of the pvolserialnum, pvoldevnum, svolserialnum, and svoldevnum parameters. If you omit all of these parameters, all the copy pairs in the copy group will be changed.

Parameter values to obtain in advance

Parameter values to obtain in advance depend on how you will create a configuration definition file.

- When using Method 1 (when adding a copy pair definition to a copy group in which another copy pair has been defined):

  See No. 1, No. 5, and No. 6 in the table below.

- When using Method 1 (when adding a copy pair definition to a copy group in which no copy pair has been defined):

  See No. 2, No. 3, No. 5, and No. 6 in the table below.

- When using Method 2:

  See No. 2, No. 4, No. 5, No. 6, and No. 7 in the table below.

- When using Method 3:

  See No. 2, No. 5, No. 6, and No. 7 in the table below.

Table 4-107 How to Obtain Parameter Values (AddConfigFileForReplication Command)

No.	Parameter Name	How to Obtain

1	pvolhostid
	svolhostid
	pvolinstancenum
	svolinstancenum
	groupname
		Execute the GetHost command with the host name indicated below specified for the hostname parameter.
		
		• When managing copy pairs by using local management
		  Specify the host on which the CCI instance that manages the P-VOL is installed.
		• When managing copy pairs by using central management
		  Specify the host that centrally manages copy pairs.
		
		The execution result of the GetHost command displays the values of groupName, pvolHostID, pvolInstanceNumber, svolHostID, and svolInstanceNumber under An instance of ReplicationGroup. See the output under the line that reads An instance of ReplicationGroup for which the target group name is displayed as the groupName value. The values displayed in the execution result correspond to the parameter values as follows:
		
		• The pvolHostID value corresponds to the pvolhostid parameter value.
		• The pvolInstanceNumber value corresponds to the pvolinstancenum parameter value.
		• The svolHostID value corresponds to the svolhostid parameter value.
		• The svolInstanceNumber value corresponds to the svolinstancenum parameter value.

No.	Parameter Name	How to Obtain
2	pvolhostid svolhostid	Execute the GetHost command with the host name indicated below specified for the hostname parameter. ▪ When managing copy pairs by using local management To obtain the pvolhostid parameter value, specify the host on which the CCI instance that manages the P-VOL is installed. To obtain the svolhostid parameter value, specify the host on which the CCI instance that manages the S-VOL is installed. The execution result of the GetHost command displays the hostID value under An instance of Host. If you execute the command by specifying the host on which the CCI instance that manages the P-VOL is installed, the hostID value corresponds to the pvolhostid parameter value. If you execute the command by specifying the host on which the CCI instance that manages the S-VOL is installed, the hostID value corresponds to the svolhostid parameter value. ▪ When managing copy pairs by using central management Specify the host that centrally manages copy pairs. The execution result of the GetHost command displays the hostID value under An instance of Host. The hostID value corresponds to the pvolhostid and svolhostid parameter values.
3	pvolinstancenum svolinstancenum groupname	Execute the GetHost command with the host name indicated below specified for the hostname parameter. ▪ When managing copy pairs by using local management First, execute the GetHost command with the host that manages the P-VOL specified. The execution result of the GetHost command displays the values of valid and instanceNumber under An instance of ConfigFile, and the groupName value under An instance of ReplicationGroup. See the output under the line that reads An instance of ConfigFile for which 1 is displayed as the valid value. The instanceNumber value in the configuration definition file information for managing the P-VOL corresponds to the pvolinstancenum parameter value. Record the target group name (the groupName value). Then, execute the GetHost command with the host that manages the S-VOL specified. See the output under the line that reads An instance of ConfigFile for which the groupName value is the same as the group name recorded above and for which 1 is displayed as the valid value. The instanceNumber value corresponds to the svolinstancenum parameter value. ▪ When managing copy pairs by using central management Specify the host that centrally manages copy pairs. The execution result of the GetHost command displays the values of valid and instanceNumber under An instance of ConfigFile and the groupName value under An instance of ReplicationGroup. See the output under the two lines that read An instance of ConfigFile for which 1 is displayed as the valid value and for which the target group name is displayed as the groupName value under An instance of ReplicationGroup. Information located under these two lines shows the configuration definition file information for managing the P-VOL or the S-VOL. The instanceNumber value displayed under these lines corresponds to the pvolinstancenum or svolinstancenum parameter value.

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No.	Parameter Name	How to Obtain
4	pvolinstancenum svolinstancenum	Execute the GetHost command with the host name indicated below specified for the hostname parameter. ▪ When managing copy pairs by using local management First, execute the GetHost command with the host that manages the P-VOL specified. The execution result of the GetHost command displays the values of valid and instanceNumber under An instance of ConfigFile (configuration definition file information). From the output under the line that reads An instance of ConfigFile for which 1 is displayed as the valid value, see the configuration definition file information for managing the P-VOL. The instanceNumber value corresponds to the pvolinstancenum parameter value. Likewise, execute the GetHost command with the host that manages the S-VOL specified. From the output under the line that reads An instance of ConfigFile for which 1 is displayed as the valid value, the instanceNumber value in the configuration definition file information for managing the S-VOL corresponds to the svolinstancenum parameter value. ▪ When managing copy pairs by using central management Specify the host that centrally manages copy pairs. The execution result of the GetHost command displays the values of valid and instanceNumber under An instance of ConfigFile (configuration definition file information). See the output under the two lines that read An instance of ConfigFile for which 1 is displayed as the valid value. Information located under these two lines shows the configuration definition file information for managing the P-VOL or the S-VOL. The instanceNumber value displayed under these lines corresponds to the pvolinstancenum or svolinstancenum parameter value.
5	pvoldevnum svoldevnum	Execute the GetHost command with LogicalUnit specified for the subtarget parameter and the name of the host that recognizes the P-VOL or the S-VOL specified for the hostname parameter. The execution result of the GetHost command displays the objectID value (object ID of the logical unit) and the devNum value under An instance of LogicalUnit. If you execute the command with the host that recognizes the P-VOL specified, see the output under An instance of LogicalUnit that will be used as the P-VOL. The devNum value corresponds to the pvoldevnum parameter value. Record the objectID value. If you execute the command with the host that recognizes the S-VOL specified, the devNum value under An instance of LogicalUnit corresponds to the svoldevnum parameter value. Record the objectID value.

No.	Parameter Name	How to Obtain
6	pvolarraytype pvolserialnum svolarraytype svolserialnum	Execute the GetStorageArray (subtarget=LogicalUnit) with LogicalUnit specified for the subtarget parameter and the object ID of the logical unit to be used as the P-VOL or the S-VOL (the object ID recorded in No. 5) specified for the objectID parameter. The execution result of the GetStorageArray (subtarget=LogicalUnit) command displays the specified object ID under An instance of LogicalUnit. See the values of arrayType, displayArrayType, and serialNumber under An instance of StorageArray that includes below it An instance of LogicalUnit for which the specified object ID is displayed. If you execute the command with the object ID of the logical unit to be used as the P-VOL specified, the value of arrayType or displayArrayType corresponds to the pvolarraytype parameter value, and the value of serialNumber corresponds to the pvolserialnum parameter value. Likewise, if you execute the command with the object ID of the logical unit to be used as the S-VOL specified, the value of arrayType or displayArrayType corresponds to the svolarraytype parameter value, and the value of serialNumber corresponds to the svolserialnum parameter value. If the copy type of the copy pair to be created is TrueCopy Async, QuickShadow, Copy-on-Write Snapshot, or Universal Replicator, record the values of the pvolarraytype, pvolserialnum, svolarraytype, and svolserialnum parameters.
7	pvolpoolid svolpoolid	Execute the GetStorageArray (subtarget=Pool) with Pool specified for the subtarget parameter, the model name specified for the model parameter, and the serial number specified for the serialnum parameter. The execution result of the GetStorageArray (subtarget=Pool) command displays the values of poolFunction and PoolID under An instance of Pool. If you execute the command with the values of pvolarraytype and pvolserialnum recorded in No. 6 specified for the model and serialnum parameters, see the output under the line that reads An instance of Pool for which the poolFunction value is the same as the type of copy pair to be created. The poolID value corresponds to the pvolpoolid parameter value. If you execute the command with the values of svolarraytype and svolserialnum recorded in No. 6 specified for the model and serialnum parameters, see the output under the line that reads An instance of Pool for which the poolFunction value is the same as the type of copy pair to be created. The poolID value corresponds to the svolpoolid parameter value.

Command execution example 1

This example adds pairs to the existing group in the configuration files:

```
HiCommandCLI AddConfigFileForReplication -o "D:\logs\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 execution result 1

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

Command execution example 2

This example creates a group in the configuration files, and then adds pairs to the group:

```
HiCommandCLI AddConfigFileForReplication -o "D:\logs\AddConfigFileForReplication.log"
"pvolhostid=1" "pvolinstancenum=11" "svolhostid=1" "svolinstancenum=12"
pvolarraytype=HDS9980V" "pvolserialnum=15001" "pvoldevnum=11" "svolarraytype=HDS9980V"
"svolserialnum=15001" "svoldevnum=12"
```

Command execution result 2

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

Command execution example 3

This example creates configuration files and a group, and then adds pairs to the group:

```
HiCommandCLI AddConfigFileForReplication -o "D:\logs\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 execution result 3

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

AddReplication

The AddReplication command creates copy pairs for ShadowImage, TrueCopy Sync, TrueCopy Async, QuickShadow, Copy-on-Write Snapshot, and Universal Replicator. When you create a copy pair, the HORCM configuration file for CCI, contained in the host, is rewritten.

TrueCopy Async can be used for Universal Storage Platform V/VM, Hitachi USP, Lightning 9900, Lightning 9900V, Hitachi AMS2000, and Hitachi AMS.

Copy-on-Write Snapshot can be used for Hitachi AMS2000/AMS/WMS and Hitachi SMS, and QuickShadow can be used for Thunder 9500V. Before using Copy-on-Write 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.

Universal Replicator is valid for Universal Storage Platform V/VM and Hitachi 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.

Notes:

- Device Manager does not support a configuration in which both P-VOLs and S-VOLs exist in a single HORCM instance. Make sure all the volumes in a single HORCM instance are either all P-VOLs or all S-VOLs.

- 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 Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200, use DAMP, Storage Navigator Modular, or Storage Navigator Modular 2. For Universal Storage Platform V/VM and Hitachi 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.

- When you create a copy pair by using Hitachi AMS2000/AMS/WMS and Hitachi SMS 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 or Storage Navigator Modular 2.

- 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.

- When you attempt to create a copy pair for TrueCopy or Universal Replicator by using an HDP volume and normal volume, the attempt might fail depending on the microcode version of the storage subsystem. For details on which microcode version you should use to create such a copy pair, see the TrueCopy or Universal Replicator manual. There are three ways to create a copy pair.

- For Hitachi AMS2000, you cannot create a copy pair for TrueCopy or TrueCopy Async by using HDP volumes.

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
[pvolportid=port-number/pvolportname=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
[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|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, and 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
[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] pvolpoolid=pool-ID
[replicationfunction={ShadowImage|TrueCopy|TrueCopyAsync|QuickShadow|UniversalReplicato
r }] [munum=Mu-number] [fencelevel=fence-level] [copytracksize=copy-pace]
[pairoption=suspend]
```

The following table describes the parameters of the AddReplication command.

Table 4-108 AddReplication Command Parameters

Parameter Name	Status	Description
replicationgroupid	Optional	Copy group number ***Notes:*** • If you are using method 1, you must specify this parameter. • If you are using method 2 or 3, do not specify this parameter. If you specify this parameter, method 1 is applied.
groupname	Optional	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.
pvolhostid	Optional	ID of the host that recognizes the primary volume (P-VOL) ***Notes:*** • If you are using method 2 or 3, you must specify this parameter. • If the replicationgroupid parameter is specified, this parameter is ignored.

Command Descriptions (CLI)

Parameter Name	Status	Description
pvolinstancenum	Optional	Number of the HORCM instance that manages the P-VOL **Notes:** ▪ If you are using method 2, you must specify this parameter. ▪ If the replicationgroupid parameter is specified, this parameter is ignored.
pvolportnum	Optional	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. **Notes:** ▪ If you are using method 3, you must specify this parameter. ▪ If the replicationgroupid or pvolinstancenum parameter is specified, this parameter is ignored.
svolhostid	Optional	ID of the host that recognizes the secondary volume (S-VOL) **Notes:** ▪ If you are using method 2 or 3, you must specify this parameter. ▪ If the replicationgroupid parameter is specified, this parameter is ignored.
svolinstancenum	Optional	Number of the HORCM instance that manages the S-VOL **Notes:** ▪ If you are using method 2, you must specify this parameter. ▪ If the replicationgroupid parameter is specified, this parameter is ignored.
svolportnum	Optional	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. **Notes:** ▪ If you are using method 3, you must specify this parameter. ▪ If the replicationgroupid or svolinstancenum parameter is specified, this parameter is ignored.
pvolarraytype	Required	Model of the storage subsystem that contains the P-VOL
pvolserialnum	Required	Serial number of the storage subsystem that contains the P-VOL

Parameter Name	Status	Description
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 Hitachi USP, Lightning 9900V or Lightning 9900, use the *xx*:*yy* format, where *xx* is the CU number, and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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.
pvolportid	Optional	Port ID in the HORCM configuration file that manages the P-VOL paths
		When a Device Manager agent version 3.0 or earlier is installed, the Device Manager agent is automatically set if this parameter is omitted.
		Note: If you specify this parameter, specify either pvolportid or pvolportname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
pvolportname	Optional	Port name in the HORCM configuration file managing the P-VOL path
		Note: If you specify this parameter, specify either pvolportid or pvolportname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
pvolpoolid	Optional	Pool ID of the pool in which the differential data and journal data for the P-VOL is to be stored
		You must specify this parameter when you are using method 2 or 3 with Universal Replicator, QuickShadow, or TrueCopy Async.
		For other cases, this parameter value is invalid even if you specify a value.
svolarraytype	Required	Model of the storage subsystem that contains the S-VOL
svolserialnum	Required	Serial number of the storage subsystem that contains 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 Hitachi USP, Lightning 9900V or Lightning 9900, use the *xx*:*yy* format, where *xx* is the CU number, and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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.

Parameter Name	Status	Description
svolportid	Optional	Port ID in the HORCM configuration file that manages the S-VOL paths
		When a Device Manager agent version 3.0 or earlier is installed, the Device Manager server creates this parameter automatically.
		Note: If you specify this parameter, specify either svolportid or svolportname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
svolportname	Optional	Port name in the HORCM configuration file that manages the S-VOL paths
		Note: If you specify this parameter, specify either svolportid or svolportname. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
svolpoolid	Optional	Pool ID of the pool in which the differential data and journal data for the S-VOL is to be stored
		You must specify this parameter when you are using method 2 or 3 with Universal Replicator, or TrueCopy Async.
		For other cases, this parameter value is invalid even if you specify a value.
replicationfunction	Optional	Type of operation that is to be executed with the copy pair
		You can specify the following values:
		▪ ShadowImage: Execute ShadowImage (including MRCF-Lite).
		▪ TrueCopySync: Execute TrueCopy (including Synchronous Remote Copy).
		▪ TrueCopyAsync: Execute TrueCopy Async.
		▪ QuickShadow: Execute QuickShadow or Copy-on-Write Snapshot.
		▪ UniversalReplicator: Execute Universal Replicator.
		The following value is set if this parameter is omitted:
		▪ When the P-VOL and S-VOL are located in the same storage subsystem: ShadowImage
		▪ When the P-VOL and S-VOL are located in different storage subsystems:
		For Hitachi AMS2000/AMS/WMS, Thunder 9500V, and Thunder 9200: TrueCopySync
		For the Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, and Lightning 9900: TrueCopyAsync
		▪ 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 Hitachi AMS2000/AMS/WMS, Hitachi SMS, and Thunder 9500V)
munum	Optional	MU number of the P-VOL
		This parameter can be specified only for Universal Replicator.
		Note: If this parameter is not specified, Device Manager automatically specifies the value.

Parameter Name	Status	Description
fencelevel	Optional	Fence level of the P-VOL
		The fence level is ignored for ShadowImage, TrueCopyAsync, QuickShadow, Copy-on-Write Snapshot, and Universal Replicator.
		You can specify the following values:
		▪ Never: If you specify Never, 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.
		▪ Data: If you specify Data, a host write request to the P-VOL will be rejected when an update copy fails.
		▪ Status: If you specify Status (Universal Storage Platform V/VM, Hitachi 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.
		If you omit the parameter, Never is specified.
copytracksize	Optional	Copy pace (number of tracks copied at one time during initial copy)
		You can specify an integer from 1 to 15.
		If you omit this parameter, the following value is specified.
		▪ For Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, and Lightning 9900: 3
		▪ For Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200: 15
		Note: If QuickShadow or UniversalReplicator is specified for the replicationfunction parameter, this parameter will be ignored.
pairoption	Optional	The following value can be specified only when Hitachi USP is being used:
		suspend: Creates a delta resync pair.

Parameter values to obtain in advance

Parameter values to obtain in advance depend on how you will create a copy pair.

- When Method 1 is used:

  See No. 1, No. 4, and No. 5 in the table below.

- When Method 2 is used:

  See No. 2, No. 3, No. 4, No. 5, and No. 6 in the table below.

- When Method 3 is used:

  See No. 2, No. 4, No. 5, and No. 6 in the table below.

Table 4-109 How to Obtain Parameter Values (AddReplication Command)

No.	Parameter Name	How to Obtain
1	replicationgroup id	Execute the GetHost command with the host name indicated below for the hostname parameter. • When managing copy pairs by using local management Specify the host on which the CCI instance that manages the P-VOL is installed. • When managing copy pairs by using central management Specify the host that centrally manages copy pairs. The execution result of the GetHost command displays the replicationGroupID value under An instance of ReplicationGroup. See the output under the line that reads An instance of ReplicationGroup for which the target group name is displayed as the groupName value. The replicationGroupID value corresponds to the replicationgroupid parameter value.
2	pvolhostid svolhostid	Execute the GetHost command with the host name indicated below specified for the hostname parameter. • When managing copy pairs by using local management To obtain the pvolhostid parameter value, specify the host on which the CCI instance that manages the P-VOL is installed. To obtain the svolhostid parameter value, specify the host on which the CCI instance that manages the S-VOL is installed. The execution result of the GetHost command displays the hostID value under An instance of Host. If you execute the command by specifying the host on which the CCI instance that manages the P-VOL is installed, the hostID value corresponds to the pvolhostid parameter value. If you execute the command by specifying the host on which the CCI instance that manages the S-VOL is installed, the hostID value corresponds to the svolhostid parameter value. • When managing copy pairs by using central management Specify the host that centrally manages copy pairs. The execution result of the GetHost command displays the hostID value under An instance of Host. The hostID value corresponds to the pvolhostid and svolhostid parameter values.

No.	Parameter Name	How to Obtain
3	pvolinstancenum svolinstancenum	Execute the GetHost command with the host name indicated below specified for the hostname parameter. ▪ When managing copy pairs by using local management First, execute the GetHost command with the host that manages the P-VOL specified. The execution result of the GetHost command displays the values of valid and instanceNumber under An instance of ConfigFile (configuration definition file information). From the output under the line that reads An instance of ConfigFile for which 1 is displayed as the valid value, see the configuration definition file information for managing the P-VOL. The instanceNumber value corresponds to the pvolinstancenum parameter value. Likewise, execute the GetHost command with the host that manages the S-VOL specified. From the output under the line that reads An instance of ConfigFile for which 1 is displayed as the valid value, the instanceNumber value in the configuration definition file information for managing the S-VOL corresponds to the svolinstancenum parameter value. ▪ When managing copy pairs by using central management Specify the host that centrally manages copy pairs. The execution result of the GetHost command displays the values of valid and instanceNumber under An instance of ConfigFile (configuration definition file information). See the output under the two lines that read An instance of ConfigFile for which 1 is displayed as the valid value. Information located under these two lines shows the configuration definition file information for managing the P-VOL or the S-VOL. The instanceNumber value displayed under these lines corresponds to the pvolinstancenum or svolinstancenum parameter value.
4	pvoldevnum svoldevnum	Execute the GetHost command with LogicalUnit specified for the subtarget parameter and the name of the host that recognizes the P-VOL or the S-VOL specified for the hostname parameter. The execution result of the GetHost command displays the objectID value (object ID of the logical unit) and the devNum value under An instance of LogicalUnit. If you execute the command with the host that recognizes the P-VOL specified, see the output under An instance of LogicalUnit that will be used as the P-VOL. The devNum value corresponds to the pvoldevnum parameter value. Record the objectID value. If you execute the command with the host that recognizes the S-VOL specified, the devNum value under An instance of LogicalUnit corresponds to the svoldevnum parameter value. Record the objectID value.

No.	Parameter Name	How to Obtain
5	pvolarraytype pvolserialnum svolarraytype svolserialnum	Execute the GetStorageArray (subtarget=LogicalUnit) with LogicalUnit specified for the subtarget parameter and the object ID of the logical unit to be used as the P-VOL or the S-VOL (the object ID recorded in No. 4) specified for the objectID parameter. The execution result of the GetStorageArray (subtarget=LogicalUnit) command displays the specified object ID under An instance of LogicalUnit. See the values of arrayType, displayArrayType, and serialNumber under An instance of StorageArray that includes below it An instance of LogicalUnit for which the specified object ID is displayed. If you execute the command with the object ID of the logical unit to be used as the P-VOL specified, the value of arrayType or displayArrayType corresponds to the pvolarraytype parameter value, and the value of serialNumber corresponds to the pvolserialnum parameter value. Likewise, if you execute the command with the object ID of the logical unit to be used as the S-VOL specified, the value of arrayType or displayArrayType corresponds to the svolarraytype parameter value, and the value of serialNumber corresponds to the svolserialnum parameter value. If the copy type of the copy pair to be created is TrueCopy Async, QuickShadow, Copy-on-Write Snapshot, or Universal Replicator, record the values of the pvolarraytype, pvolserialnum, svolarraytype, and svolserialnum parameters.
6	pvolpoolid svolpoolid	Execute the GetStorageArray (subtarget=Pool) with Pool specified for the subtarget parameter, the model name specified for the model parameter, and the serial number specified for the serialnum parameter. The execution result of the GetStorageArray (subtarget=Pool) command displays the values of poolFunction and PoolID under An instance of Pool. If you execute the command with the values of pvolarraytype and pvolserialnum recorded in No. 5 specified for the model and serialnum parameters, see the output under the line that reads An instance of Pool for which the poolFunction value is the same as the type of copy pair to be created. The poolID value corresponds to the pvolpoolid parameter value. If you execute the command with the values of svolarraytype and svolserialnum recorded in No. 5 specified for the model and serialnum parameters, see the output under the line that reads An instance of Pool for which the poolFunction value is the same as the type of copy pair to be created. The poolID value corresponds to the svolpoolid parameter value.

Command execution 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\AddReplication.log" "replicationgroupid=0"
"pvolarraytype=HDS9570V" "pvolserialnum=65010001" "pvoldevnum=5" "svolarraytype=HDS9570V"
"svolserialnum=65010012" "svoldevnum=10" "replicationfunction=TrueCopySync"
"fencelevel=Data"
```

Command execution result 1

```
RESPONSE:
An instance of ReplicationGroup
  objectID=REPGROUP.0
  replicationGroupID=0
  groupName=HCMD_CG0003
  pvolHostID=1
  pvolInstanceNumber=11
  pvolPortNumber=50,001
  pvolHORCMMONHostName=192.168.32.63
  pvolHORCMINSTHostName=192.168.32.63
  svolHostID=1
  svolInstanceNumber=12
  svolPortNumber=50,002
  svolHORCMMONHostName=192.168.32.63
  svolHORCMINSTHostName=192.168.32.63
  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
    displayPvolDevNum=5
    pvolObjectID=LU.HDS9570V.65010001.5
    pvolPoolID=-1
    svolSerialNumber=65010012
    svolArrayType=HDS9570V
    svolDevNum=10
    displaySvolDevNum=10
    svolObjectID=LU.HDS9570V.65010012.10
    svolPoolID=-1
    fenceLevel=Data
    replicationFunction=TrueCopySync
    status=1
    muNumber=-1
    copyTrackSize=15
    splitTime=-1
    remotePathGroupID=-1
```

Command execution 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\AddReplication.log" "pvolhostid=1"
"pvolinstancenum=11" "svolhostid=1" "svolinstancenum=12" "pvolarraytype=HDS9980V"
"pvolserialnum=15001" "pvoldevnum=11" "svolarraytype=HDS9980V" "svolserialnum=15001"
"svoldevnum=12"
```

Command execution result 2

```
RESPONSE:
An instance of ReplicationGroup
  objectID=REPGROUP.1
  replicationGroupID=1
  groupName=HCMD_CG0001
  pvolHostID=1
  pvolInstanceNumber=11
  pvolPortNumber=50,001
  pvolHORCMMONHostName=192.168.32.63
  pvolHORCMINSTHostName=192.168.32.63
  svolHostID=1
  svolInstanceNumber=12
  svolPortNumber=50,002
  svolHORCMMONHostName=192.168.32.63
  svolHORCMINSTHostName=192.168.32.63
  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
    displayPvolDevNum=00:0B
    pvolObjectID=LU.HDS9980V.15001.11
    pvolPoolID=-1
    svolSerialNumber=15001
    svolArrayType=HDS9980V
    svolDevNum=12
    displaySvolDevNum=00:0C
    svolObjectID=LU.HDS9980V.15001.12
    svolPoolID=-1
    replicationFunction=ShadowImage
    status=1
    muNumber=2
    copyTrackSize=15
    splitTime=-1
    remotePathGroupID=0
```

Command execution 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\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 execution result 3

```
RESPONSE:
An instance of ReplicationGroup
  objectID=REPGROUP.2
  replicationGroupID=2
  groupName=HCMD_CG0002
  pvolHostID=5
  pvolInstanceNumber=15
  pvolPortNumber=50,001
  pvolHORCMMONHostName=192.168.32.63
  pvolHORCMINSTHostName=192.168.32.63
  svolHostID=4
  svolInstanceNumber=15
  svolPortNumber=50.002
  svolHORCMMONHostName=192.168.32.64
  svolHORCMINSTHostName=192.168.32.64
  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
    displayPvolDevNum=00:0B
    pvolObjectID=LU.HDS9980V.15001.11
    pvolPoolID=-1
    svolSerialNumber=35001
    svolArrayType=HDS9970V
    svolDevNum=128
    displaySvolDevNum=00:80
    svolObjectID=LU.HDS9970V.35001.128
    svolPoolID=-1
    fenceLevel=Never
    replicationFunction=TrueCopySync
    status=1
    muNumber=-1
    copyTrackSize=14
    splitTime=-1
```

```
remotePathGroupID=-1
```

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, 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.

The following table describes the parameters of the DeleteReplication command.

Table 4-110 DeleteReplication Command Parameters

Parameter Name	Status	Description
replicationgroupid	Required	Number of the copy group
pvolserialnum	Optional	Serial number of the storage subsystem that contains the primary volume (P-VOL)
pvoldevnum	Optional	Device number of P-VOL This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for Hitachi USP, Lightning 9900V or Lightning 9900, use the *xx*:*yy* format, where *xx* is the CU number, and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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.
svolserialnum	Optional	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 svolserialnum or svolsequencenum. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
svolsequencenum	Optional	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 svolserialnum or svolsequencenum. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.

Parameter Name	Status	Description
svoldevnum	Optional	Device number of S-VOL
		This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for Hitachi USP, Lightning 9900V or Lightning 9900, use the *xx*:*yy* format, where *xx* is the CU number, and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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.

Parameter values to obtain 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 pvolSerialNumber that is displayed as An instance of ReplicationInfo in the pvolserialnum parameter, the value of pvolDevNum in the pvoldevnum parameter, the value of svolSerialNumber 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 execution 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\DeleteReplication.log" "replicationgroupid=8"
"pvolserialnum=65010001" "pvoldevnum=10" "svolsequencenum=0012" "svoldevnum=11"
```

Command execution 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
    pvolHORCMMONHostName=192.168.32.63
    pvolHORCMINSTHostName=192.168.32.63
    svolHostID=2
    svolInstanceNumber=12
    svolPortNumber=50,002
    svolHORCMMONHostName=192.168.32.64
    svolHORCMINSTHostName=192.168.32.64
    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
      displayPvolDevNum=12
      pvolObjectID=LU.HDS9570V.65010001.12
      pvolPoolID=-1
      svolSerialNumber=65010012
      svolArrayType=HDS9570V
      svolDevNum=25
      displayPvolDevNum=25
      svolObjectID=LU.HDS9570V.65010012.25
      svolPoolID=-1
      fenceLevel=Never
      replicationFunction=TrueCopySync
      status=8
      muNumber=-1
      copyTrackSize=15
      splitTime=-1
      remotePathGroupID=-1
```

Command execution example 2

This example deletes copy group 7 and all copy pairs defined in this copy
group.

```
HiCommandCLI DeleteReplication -o "D:\logs\DeleteReplication.log" "replicationgroupid=7"
```

Command execution result 2

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

GetReplicationControllerPair

GetReplicationControllerPair obtains information about a replication controller pair.

In Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and the Thunder 9200 series, replication controller pairs indicate remote paths. In Universal Storage Platform V/VM, Hitachi 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.

Format

When obtaining information about a replication controller pair:

```
HiCommandCLI [URL] GetReplicationControllerPair [option] masterserialnum=serial-number-of-
the-storage-subsystem-containing-the-MCU mastercontrollerid=CU-number-of-the-MCU
remoteserialnum=serial-number-of-the-storage-subsystem-containing-the-RCU remotessid=SSID-
of-the-RCU [mastermodel=model-of-the-storage-subsystem-containing-the-MCU
remotefamily=array-family-of-the-storage-subsystem-containing-the-RCU
remotepathgroupid=path-group-ID-of-the-RCU]
```

When obtaining information about all replication controller pairs:

```
HiCommandCLI [URL] GetReplicationControllerPair [option]
```

The following table describes the parameters of the GetReplicationControllerPair command.

Table 4-111 GetReplicationControllerPair Command Parameters

Parameter Name	Status	Description
masterserialnum	Optional#	Serial number of the storage subsystem that contains the main control unit (MCU)
mastercontrollerid	Optional#	CU number of the MCU
remoteserialnum	Optional#	Serial number of the storage subsystem that contains the remote control unit (RCU)
remotessid	Optional#	SSID of the RCU
mastermodel	Optional#	Model of the storage subsystem that contains the MCU
remotefamily	Optional#	Array family of the storage subsystem that contains the RCU
remotepathgroupid	Optional#	Path group ID of the RCU
# The following describes the parameter combinations that can be specified:		
▪ You need to specify the masterserialnum, mastercontrollerid, remoteserialnum, and remotessid parameters at the same time. If you do not specify them at the same time, an error will occur.		
▪ If you specify the mastermodel, remotefamily, or remotepathgroupid parameter, you also need to specify all other parameters (masterserialnum, mastercontrollerid, remoteserialnum, remotessid, mastermodel, remotefamily, and remotepathgroupid). If you do not specify them at the same time, an error will occur.		
▪ If you omit all the parameters, the command will obtain the information about all replication controller pairs.		

Parameter values to obtain in advance

Execute the GetReplicationControllerPair command without specifying any parameters, and then obtain the values from the execution result. Specify the value of masterSerialNumber that is displayed as An instance of ReplicationControllerPair in the masterserialnum parameter, the value of masterControllerID in the mastercontrollerid parameter, the value of remoteSerialNumber in the remoteserialnum parameter, the value of remoteSSID in the remotessid parameter, the value of masterArrayType in the mastermodel parameter, the value of remoteArrayFamily in the remotefamily parameter, and the value of remotePathGroupID in the remotepathgroupid parameter.

Command execution 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\GetReplicationControllerPair.log"
"masterserialnum=35001" "mastercontrollerid=10" "remoteserialnum=15001" "remotessid=65534"
```

Command execution result 1

```
RESPONSE:
An instance of ReplicationControllerPair
  objectID=REPCTLPAIR.35001.10.15001.65534
  masterArrayType=HDS9970V
  masterSerialNumber=35001
  masterControllerID=10
  masterStartDevNum=0
  displayMasterStartDevNum=0
  masterEndDevNum=255
  displayMasterEndDevNum=255
  remoteArrayType=HDS9980V
  remoteSerialNumber=15001
  remoteSSID=65534
  remoteControllerID=15
  remoteStartDevNum=0
  displayRemoteStartDevNum=00:00
  remoteEndDevNum=255
  displayRemoteEndDevNum=00:FF
```

Command execution 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\GetReplicationControllerPair.log"
```

Command execution result 2

```
RESPONSE:
An instance of ReplicationControllerPair
  objectID=REPCTLPAIR.AMS1000.77010132.0.AMS.75010421.0.0
  masterArrayType=AMS1000
  masterSerialNumber=77010132
  masterControllerID=0
  masterStartDevNum=0
  displayMasterStartDevNum=0
  masterEndDevNum=4,095
  displayMasterEndDevNum=4,095
  remoteArrayFamily=AMS
  remoteArrayType=AMS500
  remoteSerialNumber=75010421
  remoteSSID=0
  remoteControllerID=0
  remotePathGroupID=0
  remoteStartDevNum=0
  displayRemoteStartDevNum=0
  remoteEndDevNum=2,047
  displayRemoteEndDevNum=2,047
  pairType=0
  bandwidth=-1
  numOfMinConnection=-1
.
. (repeated for other ReplicationControllerPair instances)
.
```

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 Hitachi AMS2000/AMS/WMS or Hitachi SMS 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 or Storage Navigator Modular 2.

The following table describes the parameters of the ModifyReplication command.

Table 4-112 ModifyReplication Command Parameters

Parameter Name	Status	Description
replicationgroupid	Required	Number of the copy group
operation	Required	Specify one of the following values: ▪ split: Split the copy pair. ▪ resync: Re-synchronize the copy pair from the primary volume (P-VOL) to the secondary volume (S-VOL). ▪ restore: Re-synchronize the copy pair from S-VOL to P-VOL.
pvolserialnum	Optional	Serial number of the storage subsystem that contains the P-VOL
pvoldevnum	Optional	Device number of P-VOL This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for Hitachi USP, Lightning 9900V or Lightning 9900, use the *xx*:*yy* format, where *xx* is the CU number, and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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.

Parameter Name	Status	Description
svolserialnum	Optional	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 svolserialnum or svolsequencenum. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
svolsequencenum	Optional	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 svolserialnum or svolsequencenum. Do not specify both parameters at the same time. If they are specified at the same time, an error will occur.
svoldevnum	Optional	Device number of S-VOL This parameter can be specified in decimal, and in colon-separated hexadecimal. If you specify a hexadecimal number, for Hitachi USP, Lightning 9900V or Lightning 9900, use the *xx*:*yy* format, where *xx* is the CU number, and *yy* is the LDEV number. For Universal Storage Platform V/VM, 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.
copytracksize	Optional	Copy pace You can specify an integer from 1 to 15. When changing the copy pace for an identified copy, specify the parameters pvolserialnum, pvoldevnum, svolserialnum, and svoldevnum. When using one operation to change the copy paces of all copy pairs, omit these parameters. *Notes:* ▪ If split or resync is specified for the operation parameter, this parameter will be ignored. ▪ If the type of operation that is to be executed with the copy pair is QuickShadow or Universal Replicator, this parameter will be ignored.

⚠ *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 obtain 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 pvolSerialNumber that is displayed as An instance of ReplicationInfo in the pvolserialnum parameter, the value of pvolDevNum in the pvoldevnum parameter, the value of svolSerialNumber 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 execution 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\ModifyReplication.log" "replicationgroupid=12"
"operation=split" "pvolserialnum=65010001" "pvoldevnum=20" "svolserialnum=65010001"
"svoldevnum=21"
```

Command execution result

```
RESPONSE:
An instance of ReplicationGroup
  objectID=REPGROUP.12
  replicationGroupID=12
  groupName=HCMD_CG000d
  pvolHostID=1
  pvolInstanceNumber=11
  pvolPortNumber=50,000
  pvolHORCMMONHostName=192.168.32.63
  pvolHORCMINSTHostName=192.168.32.63
  svolHostID=3
  svolInstanceNumber=12
  svolPortNumber=50,001
  svolHORCMMONHostName=192.168.32.64
  svolHORCMINSTHostName=192.168.32.64
  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
    displayPvolDevNum=20
    pvolObjectID=LU.HDS9570V.65010001.20
```

```
pvolPoolID=-1
svolSerialNumber=65010001
svolArrayType=HDS9570V
svolDevNum=21
displaySvolDevNum=21
svolObjectID=LU.HDS9570V.65010001.21
svolPoolID=-1
replicationFunction=ShadowImage
status=16
muNumber=0
copyTrackSize=15
splitTime=-1
remotePathGroupID=0
```

Items Output as Command Execution Results

This section lists the items that are 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.

Alert Instance

The Alert instance is output when the GetAlerts command is executed.

The following table describes the attributes of the Alert instance.

Table 4-113 Alert Instance Attributes

Attribute	Description
number	Alert number
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 name of the instance Component.
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 type is Trap, the SIM data required by the customer service is output.
timeOfAlert	Time at which the alert occurred (example: `2008/04/06 20:13:56`)

ArrayGroup Instance

The ArrayGroup instance is output when the following commands are executed:

- AddArrayGroup
- AddExternalArrayGroup
- AddPool
- AddVirtualVolume
- GetStorageArray (subtarget=ArrayGroup)
- GetStorageArray (subtarget=FreeSpace)
- GetStorageArray (subtarget=PDEV)
- GetStorageArray (subtarget=Pool)
- ModifyPool

The following table describes the attributes of the ArrayGroup instance.

Table 4-114 ArrayGroup Instance Attributes

Attribute	Description
objectID	Object ID of the array group
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, Hitachi AMS/WMS, and Hitachi SMS ▪ 1 - 12: Lightning 9900 ▪ 1 - 12, 101 - 256: Lightning 9900V ▪ 1 - 18, 65 - 96, 101 - 16484: Hitachi USP ▪ 1 - 4, 65 - 96, 101 - 16484: Hitachi NSC ▪ 1 - 32, 68 - 96, 101 - 16484, 16485 - 16516: Universal Storage Platform V ▪ 1 - 4, 68 - 96, 101 - 16484, 16485 - 16516: Universal Storage Platform VM
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

Attribute	Description
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, Hitachi USP, and Universal Storage Platform V/VM (example: OPEN-8).
diskType	Type of the physical disks making up the array group
	This item is output for the Lightning 9900, Lightning 9900V, Hitachi USP, and Universal Storage Platform V/VM (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	DKA pair number of the array group
	One of the following values is output:
	▪ -1: Thunder 9200, Thunder 9500V, Hitachi AMS/WMS, and Hitachi SMS
	▪ 1 - 4: Lightning 9900
	▪ -1, 1 - 4: Universal Storage Platform VM, Hitachi USP, and Lightning 9900V
	▪ -1, 1 - 8: 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
slprNumber	SLPR number
	Valid for Hitachi USP and Universal Storage Platform V/VM.
	-1 is output when the SLPR is invalid or for other storage subsystems.

Attribute	Description
clprNumber	CLPR number
	Valid for Hitachi USP and Universal Storage Platform V/VM. -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 Hitachi USP or Universal Storage Platform V/VM and the operator is the partitioned storage administrator.
	This item is not output when the storage subsystem is Hitachi USP or Universal Storage Platform V/VM 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)
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	Total size of the open logical units and the intermediate logical units that satisfy both the following conditions (in KB):
	▪ Paths are assigned.
	▪ The logical unit is a real volume that has physical capacity.
openUnallocatedCapacity	Total size of the open logical units and the intermediate logical units that satisfy both the following conditions (in KB):
	▪ Paths are not assigned.
	▪ Paths can be assigned by using Device Manager.

Attribute	Description
openUnallocatedActualCapacity	Total size of the open logical units and the intermediate logical units that satisfy all the following conditions (in KB): ▪ Paths are not assigned. ▪ Paths can be assigned by using Device Manager. ▪ The logical unit is a real volume that has physical capacity.
openReservedCapacity	Total size of the open logical units and the intermediate logical units that satisfy both the following conditions (in KB): ▪ 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): ▪ Paths are not assigned. ▪ Paths cannot be assigned by using Device Manager. ▪ The logical unit is a real volume that has physical capacity.
type	Type of the array group One of the following values is output: For Universal Storage Platform V/VM: ▪ -1: None ▪ 0: Normal array group ▪ 1: External volume array group ▪ 2: QuickShadow or Copy-on-Write Snapshot V-VOL array group ▪ 3: HDP volume array group For Hitachi USP: ▪ -1: None ▪ 0: Internal volume array group (normal array group) ▪ 1: External volume array group ▪ 2: QuickShadow or Copy-on-Write Snapshot V-VOL array group For Hitachi AMS2000: ▪ -1: None ▪ 0: Normal array group ▪ 4: HDP pool array group -1 is output for other storage subsystems.
volumeType	Option information of the external array group For the Universal Storage Platform V/VM and Hitachi USP, a 3-bit value is converted to decimal and is output. ▪ Bit 0 (0x01): Whether or not the cache mode is enabled ▪ Bit 1 (0x02): Whether or not the I/O suppression mode is enabled ▪ Bit 2 (0x04): Whether or not the cache inflow control mode is enabled For each of these bits, 1 means enabled and 0 means disabled. For example, when the cache mode and the cache inflow control mode are enabled, 5 is output as the value of the volumeType attribute. -1 is output in other cases.

Attribute	Description
encrypted	Indicates whether the data that is stored in the array group is encrypted. For Universal Storage Platform V/VM, one of the following values is output: ▪ 0: The data is not encrypted. ▪ 1: The data is encrypted. -1 is output for other storage subsystems.

protectionLevel	Protection level of the array group
	
	For Universal Storage Platform V/VM, one of the following values is output:
	
	▪ 0: Standard
	
	   The array group consists of drives other than SATA drives
	
	▪ 1: SATA-W/V
	
	   The array group consists of SATA drives
	
	▪ 2: SATA-E
	
	   The array group consists of SATA drives and the write performance is more enhanced than *SATA-W/V*
	
	-1 is output if any of the following conditions are satisfied:
	
	▪ The protection level of the array group is unknown.
	
	▪ The array group is of the internal volume to which an external volume is mapped.
	
	▪ The array group is an HDP volume array group.
	
	▪ The array group is a QuickShadow or Copy-on-Write Snapshot V-VOL array group.
	
	▪ The microcode version of Universal Storage Platform V/VM is 60-04-10-xx/xx or earlier
	
	-1 is output for other storage subsystems.

dpPoolID	Pool ID of the Hitachi Dynamic Provisioning If the value of type is 4, the following value is output: Pool ID of the HDP pool that makes up the array group –1 is output in other cases.

ArrayReservation Instance

The ArrayReservation instance is output when the following commands are executed:

- AddArrayReservation

- GetArrayReservation

- ModifyArrayReservation

The following table describes the attributes of the ArrayReservation instance.

Table 4-115 ArrayReservation Instance Attributes

Attribute	Description
objectID	Object ID of the locked object
target	Object ID of the locked storage subsystem
serialNumber	Serial number of the storage subsystem
arrayType	Type of the storage subsystem
loginID	Login ID of the user who locked the storage subsystem
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 Instance

The CommParameters instance is output when the following commands are executed:

- AddStorageArray
- AddVirtualizationServer
- GetHost
- GetStorageArray (subtarget=Commparameters)
- RefreshStorageArrays

The following table describes the attributes of the CommParameters instance.

Table 4-116 CommParameters Instance Attributes

Attribute	Description
userID	User ID One of the following values is output: For a storage subsystem: User ID for accessing the storage subsystem. This item is not output for Lightning 9900. For a virtualization server: User ID for accessing the virtualization server or the virtualization-server management program
ipAddress	IP address One of the following values is output: For a storage subsystem: IP address of the storage subsystem For a virtualization server: IP address of the virtualization server or the virtualization-server management program
ipAddress2	Second IP address of the storage subsystem. This item is output for Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200.
snmpWrCommunity	SNMP community name This item is output for Lightning 9900.
snmpRdCommunity	
snmpPort	SNMP port number. This item is output for Lightning 9900.

Attribute	Description

protocol	Protocol
	
	One of the following values is output:
	
	For Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200:
	
	    Protocol for accessing the storage subsystem
	
	▪ `Non-secure`: Non-SSL communication
	
	▪ `Secure`: SSL communication
	
	For SMI-S Enabled subsystems:
	
	    Data transfer protocol of the SMI-S provider
	
	▪ `Non-secure`: HTTP communication
	
	▪ `Secure`: HTTPS communication
	
	For a virtualization server:
	
	    Protocol of the virtualization server or virtualization server management program
	
	▪ Non-secure: HTTP communication
	
	▪ Secure: HTTPS communication
	
	For other cases, no value is output.

portNumber	Port number
	
	For SMI-S Enabled subsystems:
	
	    Port number of the SMI-S provider service
	
	For a virtualization server:
	
	    Port number of the virtualization server or virtualization server management program
	
	For other cases, no value is output.

Component Instance

The Component instance is output when the GetStorageArray (subtarget=Component) command is executed. The following table describes the attributes of the Component instance.

Table 4-117 Component Instance Attributes

Attribute	Description
name	Component name
	One of the following values is output:
	For the Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, and Lightning 9900:
	▪ DKC Battery: Status of all batteries
	▪ DKC Cache: Status of the controller cache
	▪ DKC Cache Switch: Status of the internal bus
	▪ DKC Environment: Status of the controller environment
	▪ DKC Fan: Status of controller fans
	▪ DKC Power Supply: Status of the controller power supply
	▪ DKC Processor: Status of the processor
	▪ DKC Shared Memory: Status of the shared memory
	▪ DKU Drive: Status of all drives
	▪ DKU Environment: Status of the disk enclosure environment
	▪ DKU Fan: Status of the disk enclosure fan
	▪ DKU Power Supply: Status of the disk enclosure power supply

Attribute	Description
name	For Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200: - AC #[0-1] - Additional Battery #[0-1] - Backup Battery #[0-1] - Battery #[0-3] - Cache #[0-3] - Connector #cCTL[0-1]-[A-H]-[0-1] - Controller #[0-1] - Disk Drive #[0-479]$^{\#1}$ - Disk Drive #[0-479]([0-31]-[0-23])$^{\#2}$ - Enclosure #[0-121] - Fan #[0-243] - Loop #[0-7]$^{\#3}$ - I/F Board #CTL[0-1]-[0-1] - Power Supply #[0-60] #1 The format of the value output if an additional high density storage expansion tray has not been installed. #2 The format of the value output if an additional high density storage expansion tray has been installed. #3 Backbone Fibre Channel loop between the controller and physical disks ***Note:*** You need to calculate the physical location of the hard disk by using the number of the output disk drive. For details about this calculation, see [GetAlerts](#). The CTU component is output only for Thunder 9580V: - CTU Enclosure #[0-1] - CTU Fan #[0-1] - CTU Power Supply #[0-1] The host connector component is output only for Hitachi AMS2000/AMS/WMS and Hitachi SMS: 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. The NNC component is output only for Hitachi AMS/WMS: - 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])

Attribute	Description
value	Current status of the component One of the following values is output: ▪ 1: Normal ▪ 2: Acute ▪ 3: Serious ▪ 4: Moderate ▪ 5: Service
description	Current status of the component One of the following values is output depending on the value of value: ▪ Normal ▪ Acute ▪ Serious ▪ Moderate ▪ Service

ConfigFile Instance

The ConfigFile instance is output when the GetHost command is executed. The following table describes the attributes of the ConfigFile instance.

Table 4-118 ConfigFile Instance Attributes

Attribute	Description
objectID	Object ID of the configuration definition file for CCI
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.

Datastore Instance

The Datastore instance is output when the GetHost command is executed. The following table describes the attributes of the Datastore instance.

Table 4-119 Datastore Instance Attributes

Attribute	Description
datastoreID	Datastore ID
name	Datastore name
datastoreType	Datastore type The following values are output: ▪ 0: Unknown ▪ 1: VMFS ▪ 2: Raw Device Mapping

DebugLevel Instance

The DebugLevel instance is output when the following commands are executed:

- GetDebugLevel
- ModifyDebugLevel

The following table describes the attributes of the DebugLevel instance.

Table 4-120 DebugLevel Instance Attributes

Attribute	Description
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
description	Description of the debug level indicated by value

ExternalPathInfo Instance

The ExternalPathInfo instance is output when either of the following commands is executed:

- [GetStorageArray (subtarget=ArrayGroup)](#)

- [AddExternalArrayGroup](#)

The following table describes the attributes of the ExternalPathInfo instance.

Table 4-121 ExternalPathInfo Instance Attributes

Attribute	Description
objectID	Object ID of the external path information
externalWWN	Port WWN of the external subsystem
externalLun	LUN of the external volume
portID	Port ID of the port to which the external subsystem is connected
pathGroupID	Group ID of the path
priority	Path priority One of the following values is output: ▪ −1: None ▪ 1: Primary path ▪ 2 or greater: Alternate path

ExternalStorage Instance

The ExternalStorage instance is output when the GetStorageArray (subtarget=ExternalStorage) command is executed.

The following table describes the attributes of the ExternalStorage instance.

Table 4-122 ExternalStorage Instance Attributes

Attribute	Description
numOfExternalVolume	Number of external volumes
externalCapacityInKB	External volume capacity (KB)

File Instance

The File instance is output when the GetLogFile command is executed. The following table describes the attribute of the File instance.

Table 4-123 File Instance Attribute

Attribute	Description
name	Log file name The log recorded in the log file is output after the file name.

FreeLUN Instance

The FreeLUN instance is output when the GetStorageArray (subtarget=HostStorageDomain) command is executed.

The following table describes the attribute of the FreeLUN instance.

Table 4-124 FreeLUN Instance Attribute

Attribute	Description
lun	LUN that can be assigned to the host storage domain

FreeSpace Instance

The FreeSpace instance is output when the following commands are executed:

- AddArrayGroup

- AddExternalArrayGroup

- AddVirtualVolume

- GetStorageArray (subtarget=FreeSpace)

The following table describes the attributes of the FreeSpace instance.

Table 4-125 FreeSpace Instance Attributes

Attribute	Description
objectID	Object ID of the free area in the array group
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.
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 Instance

The Host instance is output when the following commands are executed:

- AddHost

- AddHostRefresh

- AddObjectForLogicalGroup

- AddVirtualizationServer

- GetHost

- GetLogicalGroup

- MergeHost

- ModifyHost

- ModifyVirtualizationServer

- RefreshVirtualizationServer

The following table describes the attributes of the Host instance.

Table 4-126 Host Instance Attributes

Attribute	Description
objectID	Object ID of the host
name	Host name
	If EXSP_*xxxx_xxxx_xxxx* is output as this value, the value indicates a Hitachi USP port connected to an external subsystem.
hostID	ID of the host
ipAddress	IPv4 IP address of the host
ipv6Address	IPv6 IP address of the host
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: Normal host
	▪ 1: External port
	▪ 2: Mainframe host
	▪ 3: Virtualization server (VMware ESX or VMware ESXi)
	▪ 5: File server
sysplexID	Mainframe host sysplexID.

Attribute	Description
statusOfDBUpdating	Status of the processing to update the Device Manager database
	If the value of hostType is 3, one of the following values is output:
	▪ 0: The Device Manager database is consistent.
	▪ 1: The Device Manager database is being updated.
	▪ 2: The Device Manager database is inconsistent. Use the RefreshVirtualizationServer command to refresh the information.
	If the value of hostType is not 3, -1 is output.
virtualizationServerVersion	Name and version of the virtualization software
	This item is output if the value of hostType is 3.
cluster	Cluster name to which the file server belongs
	This item is output only if the value for hostType is 5 and a cluster is set.

HostInfo Instance

The HostInfo instance is output when the following commands are executed:

- AddHostInfo
- GetHost
- GetHostInfo
- GetStorageArray (subtarget=LogicalUnit)
- GetStorageArray (subtarget=Path)
- ModifyHostInfo

The following table describes the attributes of the HostInfo instance.

Table 4-127 HostInfo Instance Attributes

Attribute	Description
objectID	Object ID of HostInfo
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	IPv4 IP address of the host
ipv6Address	IPv6 IP address of the host
mountPoint	LUN mount point A space is output for a virtualization server or file server.
portID	Port ID
domainID	Domain ID of the host storage domain
scsiID	SCSI ID assigned to a channel in the storage subsystem 15 is output for Fibre Channel.
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 ***Note:*** If this value is 64000, the values for osScsiID, osScsiBus, and osLun are invalid.
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 The name of the disk type (`Datastore` or `Raw LUN`) is output for a virtualization server. Note that if the volume is not used as a datastore or Raw Device Mapping, a space is output. A space is output for a file server.

Attribute	Description
fileSystemName	File system name
	A space is output for a virtualization server or file server.
datastoreName	Datastore name for a virtualization server
	Datastore identification name or datastore mapping file name is output for a virtualization server.
	If the volume is not used as a datastore or Raw Device Mapping, a space is output.
	This item is output only for a virtualization server.
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.
portISCSIName	iSCSI name of the host (iSCSI initiator)
	This item is output for Hitachi AMS2000/AMS/WMS and Hitachi SMS.
portName	Port name
displayDevNum	Display name of the device number of the logical unit
	This value is output in one of the following formats:
	For Universal Storage Platform V/VM:
	The value is output in the $ww{:}xx{:}yy$ format, where ww is the logical DKC number, xx is the CU number, and yy is the LDEV number.
	For Hitachi USP, Lightning 9900V, or Lightning 9900:
	The value is output in the $xx{:}yy$ format, where xx is the CU number and yy is the LDEV number.
	For Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, or Thunder 9200:
	The value is output in decimal.

HostStorageDomain Instance

The HostStorageDomain instance is output when the following commands are executed:

- AddISCSINameForHostStorageDomain
- AddHostStorageDomain
- AddLunScan
- AddObjectForLogicalGroup
- AddWWNForHostStorageDomain
- GetLogicalGroup
- GetStorageArray (subtarget=HostStorageDomain)
- GetStorageArray (subtarget=Port)
- ModifyPort

⚠ **Note:** In Device Manager CLI, host storage domain information is output as the HostStorageDomain instance even if the LUN security for the port is disabled.

The following table describes the attributes of the HostStorageDomain instance.

Table 4-128 HostStorageDomain Instance Attributes

Attribute	Description
objectID	Object ID of the host storage domain
name	Name of the host storage domain
	This is a user-specified name and used only by Device Manager to identify the host storage domain. This item is output only if it has been registered.
portID	Port ID of the host storage domain
domainID	Domain ID of the host storage domain

Attribute	Description
hostMode	Host mode One of the following values is output: For the Universal Storage Platform V/VM: • Standard • VMware • HP • OpenVMS • Tru64 • Solaris • NetWare • Windows • AIX • VMware Extension • Windows Extension • UVM
hostMode	For Hitachi USP: • Standard • Sequent • HP • Solaris • Netware • Windows • Windows Extension • Tru64 • HI-UX • AIX • OPEN-VMS • UVM

Attribute	Description
hostMode	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 Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200:
	▪ Standard
	▪ Open VMS
	▪ TRESPASS
	▪ Wolfpack

Attribute	Description
hostMode2	Host connection mode 2
	The following values is output for Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200:
	For Hitachi AMS2000 and Hitachi SMS:
	▪ Discovery CHAP Mode
	▪ Same Node Name Mode
	▪ Tru Cluster Mode
	▪ Port-ID No Report Mode
	▪ Port-ID Conversion Mode
	▪ PSUE Read Reject Mode
	▪ CCHS Mode
	▪ HP-UX Mode
	▪ NACA Mode
	▪ Product Serial Response Mode
	▪ Unique Reserve Mode 1
	▪ Task Management Isolation Mode
	▪ NOP-In Suppress Mode
	▪ S-VOL Disable Advanced Mode
	▪ Unique Extended COPY Mode
	▪ Unique Write Same Mode
	For Hitachi AMS/WMS:
	▪ 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
	▪ S-VOL Disable Advanced Mode

Attribute	Description
hostMode2	For Thunder 9500V:
	▪ 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
	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

Attribute	Description
hostModeOption	Host mode option For details about the output values, see Table 4-57. One of the following values is output for the Universal Storage Platform V/VM: ▪ 2 ▪ 6 ▪ 7 ▪ 12 ▪ 13 ▪ 14 ▪ 23 ▪ 33 ▪ 40 ▪ 41 ▪ 42 ▪ 43 One of the following values is output for Hitachi USP: ▪ 2 ▪ 6 ▪ 7 ▪ 12 ▪ 13 ▪ 14 ▪ 19 ▪ 23 ▪ 24 ▪ 27
displayName	Display name of the host storage domain
nickname	Nickname of the host storage domain The name specified for the host group or iSCSI target of the storage subsystem is output.
domainType	Domain type of the host storage domain One of the following values is output for Hitachi AMS2000/AMS/WMS and Hitachi SMS: ▪ 0: Host group ▪ 1: iSCSI target
iSCSIName	iSCSI name of the host storage domain (iSCSI target) This item is output when Hitachi AMS2000/AMS/WMS or Hitachi SMS is used and domainType is 1.
portName	Port name of the host storage domain

IPAddress Instance

The IPAddress instance is output when the GetStorageArray (subtarget=PortController) command is executed.

The following table describes the attribute of the IPAddress instance.

Table 4-129 IPAddress Instance Attribute

Attribute	Description
ipAddress	IP address of the port controller This item is output when NAS is created.

ISCSIName Instance

The ISCSIName instance is output when the following commands are executed:

- AddISCSINameForHostStorageDomain
- GetHost
- GetStorageArray (subtarget=HostStorageDomain)
- GetStorageArray (subtarget=LogicalUnit)
- GetStorageArray (subtarget=Path)
- GetStorageArray (subtarget=Port)
- MergeHost
- ModifyHost
- ModifyPort

The following table describes the attributes of the ISCSIName instance.

Table 4-130 ISCSIName Instance Attributes

Attribute	Description
iSCSIname	iSCSI name of the host (iSCSI initiator)
	The iSCSI name is output in the iqn or eui format.
nickname	iSCSI nickname of the host (iSCSI initiator)

JournalPool Instance

The JournalPool instance is output when the GetStorageArray (subtarget=JournalPool) command is executed.

The following table describes the attributes of the JournalPool instance.

Table 4-131 JournalPool Instance Attributes

Attribute	Description
objectID	Object ID of the journal pool
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 Universal Storage Platform V/VM: ▪ 3: QuickShadow ▪ 4: Universal Replicator For Hitachi USP: ▪ 4: Universal Replicator For Hitachi AMS2000 and Hitachi SMS: ▪ 3: QuickShadow or TrueCopy Async For Hitachi AMS/WMS and Thunder 9500V: ▪ 3: QuickShadow
poolID	Pool ID to which the journal pool belongs One of the following values is output: For Universal Storage Platform V/VM: ▪ QuickShadow: QuickShadow pool number ▪ Universal Replicator: This value is output based on the following formula: $controllerID$ x 256 + $journal\text{-}group\text{-}number$ For Hitachi USP: ▪ Journal group number For Hitachi AMS2000 and Hitachi SMS: ▪ Pool number For Thunder 9500V and Hitachi AMS/WMS: ▪ This value is output based on the following formula: $controllerID$ x 16 + $pool\text{-}number$
controllerID	Disk controller ID of the journal pool One of the following values is output: For Universal Storage Platform V/VM: ▪ Universal Replicator: Logical DKC number ▪ For other cases: -1 For Hitachi AMS2000/AMS/WMS, Hitachi SMS, and Thunder 9500V: ▪ ID of the controller to which the pool belongs -1 is output for other storage subsystems.

Attribute	Description
poolType	Type of pool The output value differs depending on the poolFunction value. When poolFunction is 3: ▪ -1: None ▪ 16: QuickShadow pool When poolFunction is 4: ▪ -1: None ▪ 0: Main journal group (M-JNL) of Universal Replicator ▪ 1: Remote journal group (R-JNL) of Universal Replicator ▪ 2: Initialized journal group of Universal Replicator ▪ 3: Journal group of Universal Replicator or Hitachi Universal Replicator for Mainframe that has no journal volumes ▪ 4: Main journal group (M-JNL) of Universal Replicator and also remote journal group (R-JNL) of Universal Replicator ▪ 8: Main journal group (M-JNL) of Hitachi Universal Replicator for Mainframe ▪ 9: Remote journal group (R-JNL) of Hitachi Universal Replicator for Mainframe ▪ 10: Initialized journal group of Hitachi Universal Replicator for Mainframe

LDEV Instance

The LDEV instance is output when the following commands are executed:

- AddLogicalUnit
- AddLun
- AddLUSE
- AddVirtualVolume
- FormatLU
- GetStorageArray (subtarget=ArrayGroup)
- GetStorageArray (subtarget=LDEV)
- GetStorageArray (subtarget=LogicalUnit)
- GetStorageArray (subtarget=MFReplicationInfo)

The following table describes the attributes of the LDEV instance.

Table 4-132 LDEV Instance Attributes

Attribute	Description
objectID	Object ID of the LDEV
name	LDEV name This item is output if it has been registered.
devNum	Device number of the LDEV For Universal Storage Platform V/VM, a combination of a logical DKC number, a CU number, and an LDEV number (=*logical-DKC-number**65536+CU*256+LDEV) is output. For Hitachi USP, Lightning 9900V, and Lightning 9900, a combination of a CU number and an LDEV number (=CU*256+LDEV) is output. For Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200, an LU number is output.
displayName	Display name of the LDEV
emulation	Emulation mode This item is output for Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, and Lightning 9900 (example: OPEN-8).
cylinders	Number of cylinders in the LDEV One of the following values is output: For Universal Storage Platform V/VM, Hitachi USP, or Lightning 9900V: ▪ When a mainframe volume or intermediate volume is used: Number of cylinders in the LDEV ▪ When an open volume is used: 0 For Lightning 9900: Number of cylinders in the LDEV -1 is output for other storage subsystems.

Attribute	Description
isComposite	Indicates whether the LDEV is used on a LUSE volume. ▪ 0: Not a LUSE volume ▪ 1: LUSE volume
sizeInKB	LDEV size (in KB)
lba	Number of LBAs This item is output for Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, and Lightning 9900. -1 is output for other storage subsystems.
raidType	RAID level of the LDEV RAID levels are output in the format RAID*x*(*y*D+*z*P). ▪ RAID*x*: RAID level ▪ *y*D: Number of data disks ▪ *z*P: 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 volume is internal or external ▪ 0: Internal volume ▪ 1: External volume
volumeType	Option information of the external volume For Universal Storage Platform V/VM and Hitachi USP, a 3-bit value is converted to decimal and is output. ▪ Bit 0 (0x01): Whether or not the cache mode is enabled ▪ Bit 1 (0x02): Whether or not the I/O suppression mode is enabled ▪ Bit 2 (0x04): Whether or not the cache inflow control mode is enabled For each of these bits, 1 means enabled and 0 means disabled. For example, when the cache mode and the cache inflow control mode are enabled, 5 is output as the value of the volumeType attribute. -1 is output in other cases.
slotSizeInKB	Size of one slot This item is used by FlashAccess (DCR). This item is output for Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, and Lightning 9900. -1 is output for other storage subsystems.
chassis	Number of the chassis containing the LDEV
arrayGroup	Number of the array group containing the LDEV -1 is output if the storage subsystem is Hitachi AMS2000 and either of the following conditions is satisfied: ▪ The LDEV is an HDP volume. ▪ The LDEV is a QuickShadow or Copy-on-Write Snapshot V-VOL.
path	Indicates whether a path is assigned to the LDEV. ▪ true: A path is assigned. ▪ false: No path is assigned.

Attribute	Description
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.
devType	Indicates the purpose of the LDEV. ▪ HiHSMReserved: The LDEV is reserved for Volume Migration. ▪ OnDemandDevice: The LDEV is expanded on demand.
isStandardLDEV	Indicates whether the size of the LDEV is the standard size or a custom size. ▪ true: Standard size ▪ false: Custom size (CVS)
guardMode	Guard mode 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. The following values are output: ▪ Protect ▪ Read only ▪ Invisible ▪ Zero Read Capacity ▪ S-VOL disable This item is output only for Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, Hitachi AMS2000/AMS/WMS, Hitachi SMS, and Thunder 9500V. This item is not output for other storage subsystems.

Attribute	Description
diskType	Type of the disk drive
	One of the following values is output:
	For Universal Storage Platform V/VM:
	▪ -1: Unknown
	▪ 0: FC
	▪ 1: SATA
	▪ 5: SSD
	If the storage subsystem is Universal Storage Platform V/VM and an external volume is mapped to the internal volume:
	▪ -1: Unknown
	▪ 1: SATA
	▪ 2: BD
	▪ 4: SAS#
	▪ 5: SSD
	# If the microcode version of Universal Storage Platform V/VM is 60-03-00-xx/xx or earlier and the mapped external volume is made up of SSD drives in Hitachi AMS2000, 4 is output.
	For Hitachi USP:
	▪ -1: Unknown
	▪ 0: FC
	If the storage subsystem is Hitachi USP and an external volume is mapped to the internal volume:
	▪ -1: Unknown
	▪ 1: SATA
	▪ 2: BD
	▪ 4: SAS#
	# If the mapped external volume is made up of SSD drives in Hitachi AMS2000, 4 is output.
	For Lightning 9900V and Lightning 9900:
	▪ -1: Unknown
	▪ 0: FC

Attribute	Description
diskType	For Hitachi AMS2000: ▪ -1: Unknown# ▪ 1: SATA# ▪ 4: SAS# ▪ 5: SSD# # If the LDEV is an HDP volume, the disk drive type of the PDEVs that make up the HDP pool to which the HDP volume is assigned. For Hitachi SMS: ▪ -1: Unknown ▪ 1: SATA ▪ 4: SAS For Hitachi AMS/WMS: ▪ -1: Unknown ▪ 0: FC ▪ 1: SATA For Thunder 9500V: ▪ -1: Unknown ▪ 0: FC ▪ 1: SATA ▪ 2: BD -1 is output in other cases.
slprNumber	SLPR number This item is output only for Universal Storage Platform V/VM and Hitachi USP. -1 is output for other storage subsystems.
clprNumber	CLPR number (for Universal Storage Platform V/VM, Hitachi USP, Hitachi AMS2000/AMS/WMS, and Hitachi SMS) -1 is output for other storage subsystems. **Note:** For Hitachi AMS/WMS, the default port controller number of the LDEV is output.
cacheResidencyMode	Cache residency mode One of the following values is output for Universal Storage Platform V/VM and Hitachi USP: ▪ -1: Unknown ▪ 0: None ▪ 1: Bind mode ▪ 2: Priority mode -1 is output for other storage subsystems.
stripeSizeInKB	Stripe size (in KB) This item is output for Hitachi AMS2000/AMS/WMS and Hitachi SMS. -1 is output for other storage subsystems.

Attribute	Description
volumeKind	LDEV type One of the following values is output for Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, and Lightning 9900: ▪ -1: Unknown ▪ 1: Mainframe volume ▪ 2: Intermediate volume ▪ 3: Open volume 3 is output for other storage subsystems.
status	LDEV status One of the following values is output: For Universal Storage Platform V/VM and Hitachi USP: ▪ Unknown: Unknown ▪ Normal: Normal status ▪ Normal (Quick Format): Normal status (Quick Format) ▪ Blocked $^{\#}$: Blocked status or unformatted ▪ Format: The LDEV is being formatted. ▪ Correction Access: The access attribute is being modified. ▪ Copying: Data is being copied. ▪ ReadOnly: Read-only ▪ Shredding: The LDEV is being shredded. ▪ Preparing Quick Format: Quick Format is being prepared. # For all unformatted LDEVs, Blocked is output. You cannot format blocked volumes. For Hitachi AMS2000/AMS/WMS and Hitachi SMS: ▪ Unknown: Unknown ▪ Normal: Normal status ▪ Unformat: Unformatted ▪ Regressed: Degenerated status ▪ Detached: Blocked status ▪ n/a: None Unknown is output for other storage subsystems.
dpType	Volume type of Hitachi Dynamic Provisioning One of the following values is output: For Universal Storage Platform V/VM: ▪ -1: Non-HDP volume ▪ 0: HDP volume ▪ 1: HDP pool volume For Hitachi AMS2000: ▪ -1: Non-HDP volume ▪ 0: HDP volume -1 is output for other storage subsystems.

Attribute	Description
consumedSizeInKB	Usage of the HDP volume (KB)
	One of the following values is output:
	For Universal Storage Platform V/VM:
	▪ When the LDEV is not an HDP volume: The same value as sizeInKB
	▪ When the LDEV is an HDP volume: Usage of the HDP volume [1, 2, 3]
	#1 When the HDP volume has not been assigned to an HDP pool, 0 is displayed. When the operator is the partitioned storage administrator, -1 is displayed.
	#2 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 consumedSizeInKB might not be equal to the value of sizeInKB.
	#3 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.
	For Hitachi AMS2000:
	▪ When the LDEV is not an HDP volume: The same value as sizeInKB
	▪ When the LDEV is an HDP volume: Usage of the HDP volume
	-1 is output for other storage subsystems.
mfTrueCopyVolumeType	Volume type of Hitachi TrueCopy for Mainframe or Hitachi TrueCopy Asynchronous for Mainframe
	One of the following values is output:
	If the storage subsystem is Universal Storage Platform V/VM or Hitachi USP and volumeKind is 1:
	▪ Unknown: Unknown
	▪ Simplex: Not a Hitachi TrueCopy for Mainframe volume or Hitachi TrueCopy Asynchronous for Mainframe volume
	▪ P-VOL: Hitachi TrueCopy for Mainframe P-VOL or Hitachi TrueCopy Asynchronous for Mainframe P-VOL
	▪ S-VOL: Hitachi TrueCopy for Mainframe S-VOL or Hitachi TrueCopy Asynchronous for Mainframe S-VOL
	If the storage subsystem is Universal Storage Platform V/VM or Hitachi USP and volumeKind is not 1:
	▪ Unknown: Unknown
	▪ Simplex: Not a Hitachi TrueCopy for Mainframe volume or Hitachi TrueCopy Asynchronous for Mainframe volume
	Unknown is output for other storage subsystems.

Attribute	Description
mfShadowImageVolumeType	Volume type of Hitachi ShadowImage for Mainframe One of the following values is output: If the storage subsystem is Universal Storage Platform V/VM or Hitachi USP and volumeKind is 1: - Unknown: Unknown - Simplex: Not a Hitachi ShadowImage for Mainframe volume - P-VOL: Hitachi ShadowImage for Mainframe P-VOL - S-VOL: Hitachi ShadowImage for Mainframe S-VOL - SP-VOL: Hitachi ShadowImage for Mainframe SP-VOL If the storage subsystem is Universal Storage Platform V/VM or Hitachi USP and volumeKind is not 1: - Unknown: Unknown - Simplex: Not a Hitachi ShadowImage for Mainframe volume Unknown is output for other storage subsystems.
mfUniversalReplicatorVolumeType	Volume type of Hitachi Universal Replicator for Mainframe One of the following values is output: If the storage subsystem is Universal Storage Platform V/VM or Hitachi USP and volumeKind is 1: - Unknown: Unknown - Simplex: Not a Hitachi Universal Replicator for Mainframe volume - P-VOL: Hitachi Universal Replicator for Mainframe P-VOL - S-VOL: Hitachi Universal Replicator for Mainframe S-VOL - MF-JNL: Hitachi Universal Replicator for Mainframe MF-JNL If the storage subsystem is Universal Storage Platform V/VM or Hitachi USP and volumeKind is not 1: - Unknown: Unknown - Simplex: Not a Hitachi Universal Replicator for Mainframe volume Unknown is output for other storage subsystems.

mfUniversalReplicatorPoolID	Pool ID of LDEV
	
	One of the following values is output:
	
	If the storage subsystem is Universal Storage Platform V/VM or Hitachi USP and volumeKind is 1:
	
	- When the LDEV is the P-VOL or S-VOL of Hitachi Universal Replicator for Mainframe:
	  Pool ID of the pool used by the logical unit
	- When the LDEV is a pool volume:
	  Pool ID of the pool to which the LDEV has been assigned
	  In other cases, -1 is output.
	
	If the storage subsystem is Universal Storage Platform V/VM or Hitachi USP and volumeKind is not 1, -1 is output.
	
	-1 is output for other storage subsystems.

Attribute	Description
dpPoolID	Pool ID of the Hitachi Dynamic Provisioning One of the following values is output: For Universal Storage Platform V/VM: ▪ When the LDEV is an HDP volume: Pool ID of the HDP pool to which the HDP volume is assigned.[#1, #2] ▪ When the LDEV is an HDP pool volume: Pool ID of the HDP pool that contains the HDP pool volume.[#2] -1 is output for other volumes. #1 When the HDP volume has not been assigned to an HDP pool, -1 is displayed. #2 When the operator is a partitioned storage administrator, -1 is displayed. For Hitachi AMS2000: ▪ When the LDEV is an HDP volume: Pool ID of the HDP pool to which the HDP volume is assigned -1 is output for volumes other than HDP volumes. -1 is output for other storage subsystems.
threshold	Usage rate threshold of the virtual volume One of the following values is output for Universal Storage Platform V/VM: When the LDEV is an HDP volume: usage rate threshold value of the HDP volume[#1, #2] -1 is output for volumes other than HDP volumes. #1 When the HDP volume is not assigned to an HDP pool, -1 is displayed. #2 When the operator is a partitioned storage administrator, -1 is displayed. -1 is output for other storage subsystems.
systemDisk	Indicates whether the LDEV is being used as a system disk. One of the following values is output for Universal Storage Platform V/VM: ▪ -1: Unknown ▪ 0: Not being used as a system disk ▪ 1: Being used as a system disk 0 is output for other storage subsystems.
arrayGroupName	Name of the array group to which the LDEV belongs
encrypted	Indicates whether the data that is stored in the LDEV is encrypted. For Universal Storage Platform V/VM, one of the following values is output: ▪ 0: The data is not encrypted. ▪ 1: The data is encrypted. -1 is output for other storage subsystems.

LogicalDKC Instance

The LogicalDKC instance is output when the GetStorageArray (subtarget=LogicalDKC) command is executed.

The following table describes the attributes of the LogicalDKC instance.

Table 4-133 LogicalDKC Instance Attributes

Attribute	Description
logicalDKCNumber	Logical DKC number
mfLogicalSerialNumber	Serial number of the logical DKC recognized by a mainframe host

LogicalGroup Instance

The LogicalGroup instance is output when the following commands are executed:

- AddLogicalGroup

- AddObjectForLogicalGroup

- GetLogicalGroup

- GetStorageArray (subtarget=Path)

- ModifyLogicalGroup

The following table describes the attributes of the LogicalGroup instance.

Table 4-134 LogicalGroup Instance Attributes

Attribute	Description
objectID	Object ID of the logical group
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.
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 Instance

The LogicalUnit instance is output when the following commands are executed:

- AddExternalArrayGroup
- AddLogicalUnit
- AddLUSE
- AddPool
- AddVirtualVolume
- FormatLU
- GetHost
- GetStorageArray (subtarget=ArrayGroup)
- GetStorageArray (subtarget=JournalPool)
- GetStorageArray (subtarget=LogicalUnit)
- GetStorageArray (subtarget=Pool)
- GetStorageArray (subtarget=ReplicationInfo)
- ModifyLogicalUnit
- ModifyPool
- ModifyVirtualVolume

The following table describes the attributes of the LogicalUnit instance.

Table 4-135 LogicalUnit Instance Attributes

Attribute	Description
objectID	Object ID of the logical unit
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/VM, a combination of a logical DKC number, a CU number, and an LDEV number (=*logical-DKC-number**65536+CU*256+LDEV) is output.
	For Hitachi USP, Lightning 9900V, and Lightning 9900, a combination of a CU number and an LDEV number (=CU*256+LDEV) is output.
	For Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200, an LU number is displayed.
displayName	Display name of the logical unit
emulation	Emulation mode
	This item is output for Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, and Lightning 9900 (example: OPEN-8).

Attribute	Description
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
commandDeviceSecurity	Indicates whether command device security is set when the logical unit is used as a command device.
	▪ true: Set.
	▪ false: Not set.
commandDeviceEx	Indicates the usage status of the logical unit.
	▪ 0: Not a command device.
	▪ 1: Command device.
	▪ 2: Remote command device.
chassis	Number of the chassis where the logical unit is located
arrayGroup	Number of the array group containing the logical unit
	-1 is output if the storage subsystem is Hitachi AMS2000 and any of the following conditions are satisfied:
	▪ The logical unit is an HDP volume.
	▪ The logical unit is a QuickShadow or Copy-on-Write Snapshot V-VOL.
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 Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200. -1 is output for other storage subsystems.
defaultPortController	Default number of port controllers for the logical unit
	This item is output only for Hitachi AMS/WMS, Thunder 9500V, and Thunder 9200. -1 is output for other storage subsystems.
isComposite	Indicates whether the logical unit is a LUSE volume.
	▪ 0: Not a LUSE volume
	▪ 1: LUSE volume

Attribute	Description
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
quickShadowVolumeType	Volume type of QuickShadow or Copy-on-Write Snapshot One of the following types is output: - Unknown: Unknown - Simplex: Not a QuickShadow or Copy-on-Write Snapshot volume - P-VOL: QuickShadow or Copy-on-Write Snapshot P-VOL - V-VOL: QuickShadow or Copy-on-Write Snapshot V-VOL - POOL: QuickShadow or Copy-on-Write Snapshot pool
universalReplicatorVolumeType	Volume type of Universal Replicator One of the following types is output: - Unknown: Unknown - Simplex: Not a Universal Replicator volume - P-VOL: Universal Replicator P-VOL - S-VOL: Universal Replicator S-VOL - SP-VOL: Universal Replicator SP-VOL - JNL-VOL: Universal Replicator JNL-VOL - MF-JNL: Hitachi Universal Replicator for Mainframe JNL-VOL
sysVolFlag	Indicates whether the logical unit is a system volume. - 0: Not system volume - 1: System volume This item is output only for Hitachi AMS/WMS, Thunder 9500V, and Thunder 9200. 0 is output for other storage subsystems.
externalVolume	Indicates whether the logical unit is used as an external volume. - 0: Not used as an external volume. - 1: Used as an external volume.
differentialManagement	Indicates whether the logical unit is used for difference management. - true: Used for difference management. - false: Not used for difference management.

Attribute	Description
quickShadowPoolID	Pool ID of QuickShadow or Copy-on-Write Snapshot One of the following values is output: ▪ When the logical unit is the P-VOL or S-VOL of QuickShadow or Copy-on-Write Snapshot: Pool ID of the pool used by the logical unit ▪ When the logical unit is a pool volume: Pool ID of the pool to which the logical unit has been assigned In other cases, -1 is output.
universalReplicatorPoolID	Pool ID of logical unit One of the following values is output: For Universal Storage Platform V/VM: ▪ When the logical unit is the P-VOL, S-VOL, or SP-VOL of Universal Replicator: Pool ID of the pool used by the logical unit ▪ When the logical unit is a pool volume: Pool ID of the pool to which the logical unit has been assigned ▪ In other cases, -1 is output. For Hitachi USP: ▪ When the logical unit is the P-VOL or S-VOL of Universal Replicator: Pool ID of the pool used by the logical unit ▪ When the logical unit is a pool volume: Pool ID of the pool to which the logical unit has been assigned ▪ In other cases, -1 is output. -1 is output for other storage subsystems.
dpType	Type of the Hitachi Dynamic Provisioning volume One of the following values is output: For Universal Storage Platform V/VM: ▪ -1: Volume not used by HDP ▪ 0: HDP volume ▪ 1: HDP pool volume For Hitachi AMS2000: ▪ -1: Volume not used by HDP ▪ 0: HDP volume -1 is output for other storage subsystems.

Attribute	Description
consumedCapacityInKB	Space used on the HDP volume (KB)
	One of the following values is output:
	For Universal Storage Platform V/VM:
	• When the logical unit does not consist of HDP volumes:
	The same value as capacityInKB.
	• When the logical unit consists of HDP volumes:
	Space used on the HDP volumes.[1, 2, 3, 4]
	#1 When the HDP volumes are not assigned to an HDP pool, 0 is displayed.
	#2 When the operator is a partitioned storage manager, -1 is output.
	#3 Volume capacity is allocated from the logical unit in units of tens of megabytes, so, when the usage rate of the logical unit reaches 100%, the value of consumedCapacityInKB might not match the value of capacityInKB.
	#4 This value might increase significantly depending on the combination of the file system and the OS of the host that is using the HDP volumes. For details, see the HDP documentation.
	For Hitachi AMS2000:
	• When the logical unit does not consist of HDP volumes:
	The same value as capacityInKB.
	• When the logical unit consists of HDP volumes:
	Space used on the HDP volumes.
	-1 is output for other storage subsystems.
dpPoolID	Pool ID of the Hitachi Dynamic Provisioning
	One of the following values is output:
	For Universal Storage Platform V/VM:
	• When the logical unit consists of HDP volumes:
	Pool ID of the HDP pool to which the HDP volumes are assigned.[1, 2]
	• When the logical unit consists of HDP pool volumes:
	Pool ID of the HDP pool that contains the HDP pool volumes.[2]
	-1 is output for other volumes.
	#1 When the HDP volumes are not assigned to an HDP pool, -1 is displayed.
	#2 When the operator is a partitioned storage administrator, -1 is displayed.
	For Hitachi AMS2000:
	• When the logical unit consists of HDP volumes:
	Pool ID of the HDP pool to which the HDP volumes are assigned.
	-1 is output for volumes other than HDP volumes.
	-1 is output for other storage subsystems.

Attribute	Description
threshold	Usage rate threshold of the virtual volumes
	One of the following values is output for Universal Storage Platform V/VM:
	When the logical unit consists of HDP volumes: usage rate threshold value of the HDP volumes[#1, #2]
	-1 is output for volumes other than HDP volumes.
	#1 When the HDP volumes are not assigned to an HDP pool, -1 is displayed.
	#2 When the operator is a partitioned storage administrator, -1 is displayed.
	-1 is output for other storage subsystems.
tcaPoolID	Pool ID of TrueCopy Async
	This is output only for Hitachi AMS2000 and Hitachi SMS. When the logical unit is the P-VOL or S-VOL of Simple Data Recovery, the pool ID of the pool used by the logical unit is output.
	-1 is output in other cases.
arrayGroupName	The name of the array group to which the logical unit belongs

LUNGroup Instance

The LUNGroup instance is output when the following commands are executed:

- AddLunGroup

- AddWWNForLun

- GetStorageArray (subtarget=Port)

- ModifyLunGroup

The following table describes the attributes of the LUNGroup instance.

Table 4-136 LUNGroup Instance Attributes

Attribute	Description
objectID	Object ID of the LUN group
name	Name of the LUN group This item is output if it has been registered.
nickname	Nickname of the LUN group

MFReplicationInfo Instance

The `MFReplicationInfo` instance is output when the `GetStorageArray` (`subtarget=MFReplicationInfo`) command (see [GetStorageArray (subtarget=MFReplicationInfo)](#)) is executed.

The following table describes the attributes of the MFReplicationInfo instance.

Table 4-137 MFReplicationInfo Instance Attributes

Attribute	Description
objectID	Object ID of `MFReplicationInfo`
pvolSerialNumber	Serial number of the storage subsystem containing the P-VOL
pvolArrayType	Type of the storage subsystem containing the P-VOL If the storage subsystem containing the P-VOL is not registered, `Unknown` is output.
pvolDevNum	Device number of the P-VOL
displayPvolDevNum	Device number of the P-VOL This value is output in one of the following formats: For Universal Storage Platform V/VM: The value is output in the *ww*:*xx*:*yy* format, where *ww* is the logical DKC number, *xx* is the CU number, and *yy* is the LDEV number. For Hitachi USP: The value is output in the *xx*:*yy* format, where *xx* is the CU number and *yy* is the LDEV number.
pvolObjectID	P-VOL object ID
pvolPoolID	ID of the pool containing the P-VOL If the value of `replicationFunction` is `UniversalReplicatorForMF`, a journal group ID is output. `-1` is output for other copy types.
svolSerialNumber	Serial number of the storage system containing the S-VOL
svolArrayType	Type of the storage subsystem containing the S-VOL If the storage subsystem containing the S-VOL is not registered, `Unknown` is output.
svolDevNum	Device number of the S-VOL
displaySvolDevNum	Device number of the S-VOL This value is output in one of the following formats: For Universal Storage Platform V/VM: The value is output in the *ww*:*xx*:*yy* format, where *ww* is the logical DKC number, *xx* is the CU number, and *yy* is the LDEV number. For Hitachi USP: The value is output in the *xx*:*yy* format, where *xx* is the CU number and *yy* is the LDEV number.
svolObjectID	S-VOL object ID

Attribute	Description
svolPoolID	ID of the pool containing the S-VOL If the value of `replicationFunction` is `UniversalReplicatorForMF`, a journal group ID is output. `-1` is output for other copy types.
replicationFunction	Copy type One of the following values is output: ▪ `ShadowImageForMF`: Hitachi ShadowImage for Mainframe ▪ `TrueCopySyncForMF`: Hitachi TrueCopy for Mainframe ▪ `TrueCopyAsyncForMF`: Hitachi TrueCopy Asynchronous for Mainframe ▪ `UniversalReplicatorForMF`: Hitachi Universal Replicator for Mainframe
fenceLevel	Fence level of the P-VOL One of the following values is output when the value of `replicationFunction` is `TrueCopySyncForMF`: For Universal Storage Platform V/VM, and Hitachi USP: ▪ `Never` ▪ `Data` ▪ `Status`
status	Copy status One of the following values is output: ▪ `-1`: Unknown ▪ `0`: Simplex ▪ `1`: Pair ▪ `8`: Copying ▪ `9`: Reverse-Copying ▪ `16`: Split ▪ `17`: Error ▪ `18`: Error in LUSE ▪ `24`: Suspending ▪ `25`: Deleting
muNumber	MU number of the P-VOL One of the following values is output: If the value of `replicationFunction` is `UniversalReplicatorForMF`: 0 to 3 `-1` is output if the MU number is unknown. If the value of `replicationFunction` is not `UniversalReplicatorForMF`, this information is invalid.

ObjectLabel Instance

The ObjectLabel instance is output when one of the following commands is executed:

- GetStorageArray (subtarget=ArrayGroup)

- GetStorageArray (subtarget=LDEV)

- GetStorageArray (subtarget=LogicalUnit)

- AddLabel

- ModifyLabel

The following table describes the attributes of the ObjectLabel instance.

Table 4-138 ObjectLabel Instance Attributes

Attribute	Description
targetID	Object ID of the label
label	Label name

PairedJournalPool Instance

The PairedJournalPool instance is output when one of the following commands is executed:

- GetStorageArray (subtarget=JournalPool)

- GetStorageArray (subtarget=Pool)

The following table describes the attributes of the PairedJournalPool instance.

Table 4-139 PairedJournalPool Instance Attributes

Attribute	Description
muNumber	The MU number of the paired journal pool
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 storage subsystem that contains the paired journal pool has been registered in Device Manager.
pairedPoolID	Pool ID of the paired journal pool

PairedPool Instance

The PairedPool instance is output when the GetStorageArray (subtarget=Pool) command is executed. The following table describes the attributes of the PairedPool instance.

Table 4-140 PairedPool Instance Attributes

Attribute	Description
muNumber	The MU number of the paired journal pool
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 storage subsystem that contains the paired journal pool has been registered in Device Manager.
pairedPoolID	Pool ID of the paired journal pool

PairedPortController Instance

The PairedPortController instance is output when the GetStorageArray (subtarget=PortController) command is executed. The following table describes the attributes of the PairedPortController instance.

Table 4-141 PairedPortController Instance Attributes

Attribute	Description
pairedObjectID	Object ID of the paired port controller
name	Name of the paired port controller. This item is output if it has been registered.

Path Instance

The Path instance is output when the following commands are executed:

- AddLun
- AddLunGroup
- AddLunScan
- AddObjectForLogicalGroup
- AddWWNForLun
- GetLogicalGroup
- GetStorageArray (subtarget=ArrayGroup)
- GetStorageArray (subtarget=HostStorageDomain)
- GetStorageArray (subtarget=LogicalUnit)
- GetStorageArray (subtarget=Path)
- GetStorageArray (subtarget=Port)
- ModifyLunGroup

The following table describes the attributes of the Path instance.

Table 4-142 Path Instance Attributes

Attribute	Description
objectID	Object ID of the path
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/VM, a combination of a logical DKC number, a CU number, and an LDEV number (=*logical-DKC-number**65536+CU*256+LDEV) is output. For Hitachi USP, Lightning 9900V, and Lightning 9900, a combination of a CU number and an LDEV number (=CU*256+LDEV) is output. For Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200, an LU number is displayed.
portID	Port ID
domainID	Domain ID of the host storage domain
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

Attribute	Description
portName	Port name
displayDevNum	Display name of the device number of the logical unit
	This value is output in one of the following formats:
	For Universal Storage Platform V/VM:
	The value is output in the *ww*:*xx*:*yy* format, where *ww* is the logical DKC number, *xx* is the CU number, and *yy* is the LDEV number.
	For Hitachi USP, Lightning 9900V, or Lightning 9900:
	The value is output in the *xx*:*yy* format, where *xx* is the CU number and *yy* is the LDEV number.
	For Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, or Thunder 9200:
	The value is output in decimal.

PDEV Instance

The PDEV instance is output when the following commands are executed:

- AddArrayGroup

- AddPool

- AddSpareDrive

- GetStorageArray (subtarget=ArrayGroup)

- GetStorageArray (subtarget=PDEV)

- GetStorageArray (subtarget=Pool)

- ModifyPool

The following table describes the attributes of the PDEV instance.

Table 4-143 PDEV Instance Attributes

Attribute	Description
objectID	Object ID of the physical device
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)
	Note: The following shows how to calculate the value that is output as Disk Size:
	For Universal Storage Platform V/VM or Hitachi USP:
	    The capacity that is calculated by treating 1,024 bytes as 1 KB is output.
	For Lightning 9900V or Lightning 9900:
	    The capacity that is calculated by treating 1,000 bytes as 1 KB is output.
	For Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, or Thunder 9200:
	    The capacity that is calculated by treating 1,024 bytes as 1 KB is output. The output value is the smallest in an array group.

row	Physical horizontal position of the physical device -1 is output for Universal Storage Platform V/VM, Hitachi USP, and Lightning 9900V.
column	Physical vertical position of the physical device -1 is output for Universal Storage Platform V/VM, Hitachi USP, and Lightning 9900V.

Attribute	Description
denseNumber	Number of the high density storage expansion tray
	This item is output if an additional high density storage expansion tray has been installed in a Hitachi AMS2000.
	-1 is output for other cases.
densePosition	Location of the the high density storage expansion tray
	This item is output if an additional high density storage expansion tray has been installed in a Hitachi AMS2000.
	▪ 0: A
	▪ 1: B
	-1 is output for other cases.
depth	Physical side of the storage subsystem containing the physical device
	Note: Currently, this information does not apply to storage subsystems.
role	Current status of the drive
	One of the following values is output for Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200:
	▪ unknown: Unknown
	▪ data: Data
	▪ unallocated: Unallocated
	▪ offline: Offline
	▪ outofservice: Inactive
	▪ spare: Spare drive
	▪ spareuninitialized: Uninitialized spare
	This attribute is not displayed for other storage subsystems.
vendor	Name of the drive vendor
	Note: This item is not output for Universal Storage Platform V/VM, Hitachi USP, or Lightning 9900V.
model	Drive model
firmwareVersion	Firmware version of the physical device
	Note: This item is not output for Universal Storage Platform V/VM, Hitachi USP, or Lightning 9900V.
serialNumber	Serial number of the drive
	Note: This item is not output.
dkuType	Type of the disk unit containing the physical device
	One of the following values is output:
	▪ R600: Universal Storage Platform V/VM
	▪ USP: Hitachi USP
	▪ HDS9900V: Lightning 9900V
	▪ HDS9900: Lightning 9900
	▪ DF800: Hitachi AMS2000
	▪ AMS: Hitachi AMS
	▪ WMS: Hitachi WMS
	▪ SA800: Hitachi SMS
	▪ HDS9500V: Thunder 9500V
	▪ HDS9200: Thunder 9200

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Attribute	Description
rpm	Drive revolutions per minute This information is output for Universal Storage Platform V/VM, Hitachi USP, Hitachi AMS2000/AMS/WMS, and Hitachi SMS. 0 or -1 is output if the drive revolutions are unknown.
diskType	Disk type of the physical device One of the following values is output: For Hitachi AMS2000: ▪ -1: Unknown ▪ 1: SATA ▪ 4: SAS ▪ 5: SSD For Hitachi SMS: ▪ -1: Unknown ▪ 1: SATA ▪ 4: SAS For Hitachi AMS/WMS: ▪ -1: Unknown ▪ 0: FC ▪ 1: SATA For Thunder 9500V: ▪ -1: Unknown ▪ 0: FC ▪ 1: SATA ▪ 2: BD -1 is output for other storage subsystems.
pdevid	ID of the PDEV
arrayGroupName	Name of the array group to which the PDEV belongs
diskModelSize	Disk size in the PDEV catalog (example: 146 GB, 1 TB) This information is output for Hitachi AMS2000. This information is invalid for other storage subsystems.

Pool Instance

The Pool instance is output when the following commands are executed:

- AddPool
- GetStorageArray (subtarget=Pool)
- ModifyPool

The following table describes the attributes of the Pool instance.

⚠️ *Note:* The attributes `thresholdVolForewarn` and `thresholdVolOverwarn`, which were supported in version 6.2, have changed to `overProvisioningWarning` and `overProvisioningLimit`, respectively. Check and, if necessary, revise the script that you use in version 6.3 or later.

Table 4-144 Pool Instance Attributes

Attribute	Description
objectID	Object ID of the journal pool
name	Name of the journal pool This is output if the name has been registered.
poolFunction	Outputs the function by which the journal pools are being used. For Universal Storage Platform V/VM: ▪ 3: QuickShadow ▪ 4: Universal Replicator ▪ 5: Hitachi Dynamic Provisioning For Hitachi USP: ▪ 3: QuickShadow ▪ 4: Universal Replicator For Hitachi AMS2000: ▪ 3: QuickShadow or TrueCopy Async ▪ 5: Hitachi Dynamic Provisioning For Hitachi SMS: ▪ 3: QuickShadow or TrueCopy Async For Hitachi AMS/WMS and Thunder 9500V: ▪ 3: QuickShadow

Attribute	Description
poolID	Pool ID to which the journal pool belongs
	One of the following values is output:
	For Universal Storage Platform V/VM:
	▪ QuickShadow: QuickShadow pool number
	▪ Universal Replicator: This value is output based on the following formula:
	controllerID x 256 + *journal-group-number*
	▪ Hitachi Dynamic Provisioning: Hitachi Dynamic Provisioning pool number
	For Hitachi USP:
	▪ QuickShadow: QuickShadow pool number
	▪ Universal Replicator: Journal group number
	For Hitachi AMS2000:
	▪ QuickShadow or TrueCopy Async: QuickShadow or TrueCopy Async pool number
	▪ Hitachi Dynamic Provisioning: Hitachi Dynamic Provisioning pool number
	For Hitachi SMS:
	▪ Pool number
	For Thunder 9500V and Hitachi AMS/WMS:
	▪ This value is output based on the following formula:
	controllerID x 16 + *pool-number*
controllerID	ID of the disk controller for the journal pool
	One of the following values is output:
	For Universal Storage Platform V/VM:
	▪ Universal Replicator: Logical DKC number
	▪ For other cases: -1
	For Hitachi AMS2000/AMS/WMS, Hitachi SMS, and Thunder 9500V:
	▪ QuickShadow or TrueCopy Async: ID of the controller to which the pool belongs
	▪ For other cases: -1
	-1 is output for other storage subsystems.

Attribute	Description
poolType	Indicates the pool type.
	The value output depends on the poolFunction value.
	When poolFunction is 3:
	▪ -1: None
	▪ 16: QuickShadow pool or TrueCopy Async pool
	When poolFunction is 4:
	▪ -1: None
	▪ 0: Main journal group (M-JNL) of Universal Replicator
	▪ 1: Remote journal group (R-JNL) of Universal Replicator
	▪ 2: Initialized journal group of Universal Replicator
	▪ 3: Journal group of Universal Replicator or Hitachi Universal Replicator for Mainframe that has no journal volumes
	▪ 4: Main journal group (M-JNL) of Universal Replicator and also remote journal group (R-JNL) of Universal Replicator
	▪ 8: Main journal group (M-JNL) of Hitachi Universal Replicator for Mainframe
	▪ 9: Remote journal group (R-JNL) of Hitachi Universal Replicator for Mainframe
	▪ 10: Initialized journal group of Hitachi Universal Replicator for Mainframe
	When poolFunction is 5:
	▪ -1: None
	▪ 32: HDP pool

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Attribute	Description
status	Status of the journal group
	One of the following values is output:
	If the storage subsystem is Universal Storage Platform V/VM and `poolFunction` is 3 or 5:
	▪ 0: Normal
	▪ 16: Blocked
	▪ 17: Over threshold
	If the storage subsystem is Hitachi USP and `poolFunction` is 3:
	▪ 0: Normal
	▪ 16: Blocked
	▪ 17: Over threshold
	If the storage subsystem is Hitachi AMS2000 and `poolFunction` is 3:
	▪ 0: Normal
	▪ 1: PFUS
	If the storage subsystem is Hitachi AMS2000 and `poolFunction` is 5:
	▪ 0: Normal
	▪ 16: Blocked
	▪ 18: Regressed
	If the storage subsystem is Hitachi SMS and `poolFunction` is 3:
	▪ 0: Normal
	▪ 1: PFUS
	If the storage subsystem is Hitachi AMS/WMS or Thunder 9500V and `poolFunction` is 3:
	▪ 0: Normal
	▪ 1: PFUS
	-1 is output for other cases.
threshold	Threshold related to the journal pool or HDP pool (%)
	For example, for Universal Storage Platform V/VM or Hitachi AMS2000, when poolFunction is 5, the threshold value used to report HDP pool shortage at an early stage is output.
threshold2	Threshold related to the HDP pool (%)
	One of the following values is output:
	If the storage subsystem is Universal Storage Platform V/VM and poolFunction is 5:
	The value determined by the storage subsystem to be the usage rate threshold for the HDP pool is output.
	If the storage subsystem is Hitachi AMS2000 and poolFunction is 5:
	The threshold value used to warn of HDP pool shortage is output.
	This information is invalid for other cases (-1 is output).
capacityInKB	Capacity of the journal pool (KB)
	When poolFunction is 3 or 5, this value does not match the total capacity of the pool volumes because the pool of QuickShadow or Hitachi Dynamic Provisioning uses a control area.

Attribute	Description
freeCapacityInKB	Free space of the journal pool (KB)
	For example, for Universal Storage Platform V/VM, when poolFunction is 5, the free space of the HDP pool is output.
usageRate	Usage rate of the journal pool
	For example, for Universal Storage Platform V/VM, when poolFunction is 5, the usage rate of the HDP pool is output.
numberOfPoolVols	Number of journal pool volumes
	For example, for Universal Storage Platform V/VM, when poolFunction is 5, the number of HDP pool volumes is output.
numberOfVVols	Number of virtual volumes assigned to the journal pool
	For example, for Universal Storage Platform V/VM, when poolFunction is 5, the number of HDP volumes assigned to the HDP pool is output.
capacityOfVVolsInKB	Total capacity of the virtual volumes assigned to the journal pool (KB)
	For example, for Universal Storage Platform V/VM, when poolFunction is 5, the total capacity of the HDP volumes assigned to the HDP pool is output.
clprNumber	CLPR number of the journal pool
	For example, for Universal Storage Platform V/VM, when poolFunction is 5, the CLPR number of the HDP pool is output.
raidLevel	RAID level of the HDP pool (Example: RAID6 or RAID1+0)
	This item is output if the storage subsystem is Hitachi AMS2000 and poolFunction is 5.
	This information is invalid for other cases.
combination	Combination of data disks and parity disks in a RAID configuration set for the HDP pool.
	This item is output as $yD+zP$ if the storage subsystem is Hitachi AMS2000 and poolFunction is 5.
	▪ yD: Number of data disks
	▪ zP: Number of parity disks
	Unknown is output if the combination is unknown.
	A space is output for other cases.
volAlertNotice	Indicates whether thresholds related to the over-provisioning percent (overProvisioningWarning and overProvisioningLimit) are enabled.
	If the storage subsystem is Hitachi AMS2000 and poolFunction is 5, either of the following values is output:
	▪ 0: The thresholds are disabled.
	▪ 1: The thresholds are enabled.
	This information is invalid for other cases (-1 is output).
overProvisioningPercent	Over-provisioning percent (%)
	If the storage subsystem is Universal Storage Platform V/VM and poolFunction is 5, the ratio of the total size of all HDP volumes compared to the HDP pool size is output.
	This value is output as a whole number.
	This information is invalid for other cases (–1 is output).

Attribute	Description
overProvisioningWarning	Over provisioning warning threshold (%)
	If the storage subsystem is Universal Storage Platform V/VM or Hitachi AMS2000 and `poolFunction` is 5, the threshold used to issue an advance warning for the over-provisioning percent is output.
	This information is invalid for other cases (`-1` is output).
overProvisioningLimit	Over provisioning limit threshold (%)
	One of the following values is output:
	If the storage subsystem is Universal Storage Platform V/VM and `poolFunction` is 5:
	The threshold used to report an excess limit for the over-provisioning percent is output.
	If the storage subsystem is Hitachi AMS2000 and `poolFunction` is 5:
	The threshold used to report an excess limit for the over-provisioning percent is output.
	This information is invalid for other cases (`-1` is output).

Port Instance

The Port instance is output when the following commands are executed:

- AddLunGroup
- AddWWNForLunGroup
- AddWWNGroup
- GetStorageArray (subtarget=Port)
- ModifyLunGroup
- ModifyPort
- ModifyWWNGroup

The following table describes the attributes of the PDEV instance.

Table 4-145 Port Instance Attributes

Attribute	Description
objectID	Object ID of the port
name	Port name This item is output if it has been registered.
portID	Port ID
portType	Port type One of the following values is output: ▪ LCP ▪ Fibre ▪ SCSI ▪ FICON ▪ NAS ▪ iSCSI
fibreAddress	Address of the Fibre port (AL_PA) For Lightning 9900, Lightning 9900V, Hitachi USP, and Universal Storage Platform V/VM, either of the following values is output: ▪ 00 or no value: 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

Attribute	Description
portOption	Port option This item is output for Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200. No value is output if the option is invalid.
worldWidePortName	WWN of the port This item is valid when the port is a Fibre port.
channelSpeed	Channel speed One of the following values is output: ▪ -1: None ▪ 0: Automatic ▪ 1: 1 Gbps ▪ 2: 2 Gbps ▪ 4: 4 Gbps ▪ 8: 8 Gbps
portRole	Port attribute One of the following values is output: ▪ Target ▪ RCU Target ▪ Initiator ▪ LCP ▪ RCP ▪ External: External port ▪ No value: Unknown
slprNumber	SLPR number -1 is output for storage subsystems that do not support SLPR.
ipAddress	IP address of the port
subnetMask	Subnet mask of the port
gateway	Gateway IP address of the port
portNumber	Port number -1 is output if the port number is invalid.
keepAliveTime	Keep-alive time The output value is in seconds. -1 is output if the value for the keep-alive time is invalid.

PortController Instance

The PortController instance is output when the following commands are executed:

- GetStorageArray (subtarget=PortController)
- ModifyPortController

The following table describes the attributes of the PortController instance.

Table 4-146 PortController Instance Attributes

Attribute	Description
objectID	Object ID of the port controller
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: ▪ 1: Normal mode ▪ 2: High-speed mode ▪ 3: Unknown For Lightning 9900V: ▪ 1: Normal mode ▪ 2: High-speed mode ▪ 3: Unknown ▪ 4: High-speed mode (2 ports) For Hitachi USP: ▪ 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.

Attribute	Description
mode	For Universal Storage Platform V/VM: ▪ 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) For Thunder 9200, Thunder 9500V, Hitachi AMS2000/AMS/WMS, and Hitachi SMS: ▪ 3: Unknown
type	Port type. One of the following values is output: For Lightning 9900: ▪ 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) For Lightning 9900V: ▪ 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)

Attribute	Description
type	For Hitachi USP: ▪ 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) ▪ 61: FICON (8 ports) ▪ 62: Fibre-Tachyon (8 ports) For Universal Storage Platform V/VM: ▪ 80: ESCON (4 ports) ▪ 81: FICON (4 ports) ▪ 82: CHT (8 ports) ▪ 85: CHT (4 ports) ▪ 88: CHT (4 ports) -1 is output for Thunder 9200, Thunder 9500V, Hitachi AMS2000/AMS/WMS, and Hitachi SMS.

RelatedDistributedArrayGroup Instance

The RelatedDistributedArrayGroup instance is output when GetStorageArray (subtarget=ArrayGroup) is executed with RelatedDistributedArrayGroup specified for the arraygroupsubinfo parameter.

The attributes of the RelatedDistributedArrayGroup instance that are output are the same as those of the ArrayGroup instance. For details about the attributes of the RelatedDistributedArrayGroup instance, see ArrayGroup Instance.

ReplicationControllerPair Instance

The ReplicationControllerPair instance is output when the GetReplicationControllerPair command is executed. The following table describes the attributes of the ReplicationControllerPair instance.

Table 4-147 ReplicationControllerPair Instance Attributes

Attribute	Description
objectID[#1]	Object ID of ReplicationControllerPair
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
remoteArrayFamily[#2]	Array family of the storage subsystem that contains the RCU
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
remotePathGroupID[#2]	Path group ID of the RCU If the storage subsystem that contains the MCU is Universal Storage Platform V/VM, Hitachi USP, or Hitachi NSC, one of the following values is output: ▪ Free of the CU (Independent): 0 to 255 (path group ID of the RCU) ▪ Dependent on the CU: 0 0 is output for other storage subsystems.
pairType	Type of ReplicationControllerPair One of the following values is output: ▪ -1: Unknown ▪ 0: Free of the CU (Independent) ▪ 1: Dependent on the CU

Attribute	Description
displayMasterEndDevNum	Display name of the highest device number among the applicable LUs in the MCU
	This value is output in one of the following formats:
	For Universal Storage Platform V/VM:
	The value is output in the *ww*:*xx*:*yy* format, where *ww* is the logical DKC number, *xx* is the CU number, and *yy* is the LDEV number.
	For Hitachi USP, Lightning 9900V, or Lightning 9900:
	The value is output in the *xx*:*yy* format, where *xx* is the CU number and *yy* is the LDEV number.
	For Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, or Thunder 9200:
	The LDEV number is output in decimal.
displayMasterStartDevNum	Display name of the lowest device number among the applicable LUs in the MCU
	The output format is the same as displayMasterEndDevNum.
displayRemoteEndDevNum	Display name of the highest device number among the applicable LUs in the RCU
	The output format is the same as displayMasterEndDevNum.
displayRemoteStartDevNum	Display name of the lowest device number among the applicable LUs in the RCU
	The output format is the same as displayMasterEndDevNum.
pairPortType[#2]	Port type
	If the storage subsystem that contains the MCU is Hitachi AMS2000 or Hitachi SMS, one of the following values is output:
	▪ Fibre
	▪ ISCSI
	This item is not output for other storage subsystems.
bandwidth[#2]	Bandwidth of the remote path
	If the storage subsystem that contains the MCU is Hitachi AMS2000 or Hitachi SMS, the following value is output:
	1 to 40000: Bandwidth of the path (units: 0.1 Mbps)
	-1 is output for other storage subsystems.
numOfMinConnection[#2]	Minimum number of paths between the MCU and RCU
	If the storage subsystem that contains the MCU is Universal Storage Platform V/VM, Hitachi USP, or Hitachi NSC, the following value is output:
	1 to 8: The minimum number of paths between the MCU and RCU
	-1 is output for other storage subsystems.

Attribute	Description
nickname[#2]	Remote path name
	This value is output when Hitachi AMS2000 is used and the firmware version is x862/A-x or later.
	This information is invalid for other cases.

#1 If the GetReplicationControllerPair command is executed by specifying only the masterserialnum, mastercontrollerid, remoteserialnum, and remotessid parameters, the value for objectID will be invalid.

#2 If the GetReplicationControllerPair command is executed by specifying only the masterserialnum, mastercontrollerid, remoteserialnum, and remotessid parameters, the remoteArrayFamily, remotePathGroupID, pairPortType, numOfMinConnection, and nickname attributes will not be output.

ReplicationGroup Instance

The ReplicationGroup instance is output when the following commands are executed:

- AddReplication
- DeleteReplication
- GetHost
- ModifyReplication

The following table describes the attributes of the ReplicationGroup instance.

Table 4-148 ReplicationGroup Instance Attributes

Attribute	Description
objectID	Object ID of the copy group
replicationGroupID	Group ID of the copy group
groupName	Name of the copy group used by the CCI
pvolHostID	Host ID of the host that recognizes the P-VOL
pvolInstanceNumber	Instance number of the HORCM instance that manages the P-VOL
pvolPortNumber	Port number of the HORCM instance that manages the P-VOL
pvolHORCMMONHostName	Value specified in HORCM_MON for the P-VOL in the HORCM configuration file ***Note:*** In the HORCM configuration file, if HORCM_MON is set to NONE, __NONE__ is output. If HORCM_MON is set to localhost, the loopback address is output.
pvolHORCMINSTHostName	Value specified in HORCM_INST for the P-VOL in the HORCM configuration file ***Note:*** In the HORCM configuration file, if HORCM_INST is set to localhost, the loopback address is output.
svolHostID	Host ID of the host that recognizes the S-VOL
svolInstanceNumber	Instance number of the HORCM instance that manages the S-VOL
svolPortNumber	Port number of the HORCM instance that manages the S-VOL
svolHORCMMONHostName	Value specified in HORCM_MON for the S-VOL in the HORCM configuration file ***Note:*** In the HORCM configuration file, if HORCM_MON is set to NONE, __NONE__ is output. If HORCM_MON is set to localhost, the loopback address is output.
svolHORCMINSTHostName	Value specified in HORCM_INST for the S-VOL in the HORCM configuration file ***Note:*** In the HORCM configuration file, if HORCM_INST is set to localhost, the loopback address is output.

Attribute	Description
replicationFunction	Copy type
	One of the following values is output:
	▪ ShadowImage: ShadowImage
	▪ TrueCopySync: TrueCopy
	▪ TrueCopyAsync: TrueCopy Async
	▪ QuickShadow: QuickShadow or Copy-on-Write Snapshot
	▪ UniversalReplicator: Universal Replicator
fenceLevel	Fence level of the P-VOL
	One of the following values is output when the value of replicationFunction is TrueCopySync:
	For Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, and Lightning 9900:
	▪ Never
	▪ Data
	▪ Status
	For Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200:
	▪ Never
	▪ Data
copyTrackSize	Copy pace
	-1 is output for unknown or Universal Replicator.

ReplicationInfo Instance

The ReplicationInfo instance is output when the following commands are executed:

- AddReplication
- DeleteReplication
- GetHost
- GetStorageArray (subtarget=JournalPool)
- GetStorageArray (subtarget=Pool)
- GetStorageArray (subtarget=ReplicationInfo)
- ModifyReplication

The following table describes the attributes of the ReplicationInfo instance.

Table 4-149 ReplicationInfo Instance Attributes

Attribute	Description
objectID	Object ID of ReplicationInfo
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
	If the storage subsystem containing the P-VOL is not registered, Unknown is output.
pvolDevNum	Device number of the P-VOL
pvolObjectID	P-VOL object ID
pvolPoolID	ID of the pool containing the P-VOL
	For Universal Replicator, a journal group ID is output.
	For QuickShadow, Copy-on-Write Snapshot, or TrueCopy Async, the pool ID of a data pool is output.
	-1 is output for other copy types.
svolSerialNumber	Serial number of the storage system containing the S-VOL
svolArrayType	Type of the storage subsystem containing the S-VOL
	If the storage subsystem containing the S-VOL is not registered, Unknown is output.
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, Copy-on-Write Snapshot, or TrueCopy Async, the pool ID of a data pool is output.
	-1 is output for other copy types.

Attribute	Description
replicationFunction	Copy type One of the following values is output: - ShadowImage: ShadowImage - TrueCopySync: TrueCopy - TrueCopyAsync: TrueCopy Async - QuickShadow: QuickShadow or Copy-on-Write Snapshot - UniversalReplicator: Universal Replicator
fenceLevel	Fence level of the P-VOL One of the following values is output when the value of replicationFunction is TrueCopySync: For Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, and Lightning 9900: - Never - Data - Status For Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, and Thunder 9200: - Never - Data
status	Copy status One of the following values is output: - -1: Unknown - 0: Simplex - 1: Pair - 8: Copying - 9: Reverse-Copying - 16: Split - 17: Error - 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: Hitachi AMS2000/AMS/WMS, Hitachi SMS, Lightning 9900, Lightning 9900V, Hitachi USP, and Universal Storage Platform V/VM For QuickShadow and Copy-on-Write Snapshot: - 0 to 13: Thunder 9500V - 0 to 14: Hitachi AMS2000/AMS/WMS and Hitachi SMS - 0 to 63: Hitachi USP and Universal Storage Platform V/VM For Universal Replicator: - 0 to 3: Hitachi USP and Universal Storage Platform V/VM -1 is output if the MU number is unknown. This information is invalid for TrueCopySync and TrueCopy Async.

Attribute	Description
copyTrackSize	Copy pace
	-1 is output for unknown or Universal Replicator.
splitTime	Time when the S-VOL image is created by using the replication function
	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).
	This item is valid when the copy type is QuickShadow or Copy-on-Write Snapshot. When the copy type differs from these two, -1 is output.
displayPvolDevNum	Device number of the P-VOL
	This value is output in one of the following formats:
	For Universal Storage Platform V/VM:
	The value is output in the *ww:xx:yy* format, where *ww* is the logical DKC number, *xx* is the CU number, and *yy* is the LDEV number.
	For Hitachi USP, Lightning 9900V, or Lightning 9900:
	The value is output in the *xx:yy* format, where *xx* is the CU number and *yy* is the LDEV number.
	For Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, or Thunder 9200:
	The value is output in decimal.
displaySvolDevNum	Device number of the S-VOL
	This value is output in one of the following formats:
	For Universal Storage Platform V/VM:
	The value is output in the *ww:xx:yy* format, where *ww* is the logical DKC number, *xx* is the CU number, and *yy* is the LDEV number.
	For Hitachi USP, Lightning 9900V, or Lightning 9900:
	The value is output in the *xx:yy* format, where *xx* is the CU number and *yy* is the LDEV number.
	For Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, or Thunder 9200:
	The value is output in decimal.
remotePathGroupID	Path group ID of the RCU
	If the storage subsystem that contains the MCU is Universal Storage Platform V/VM (the DKC microcode version is 60-04-XX-XX/XX or later) or Hitachi USP, one of the following values is output:
	For TrueCopy and TrueCopy Async:
	▪ -1: Unknown
	▪ 0 to 255 Path group ID of the RCU
	▪ 513: Dependent on the CU
	▪ 514: None
	For other products: -1 (None)
	-1 is output for other storage subsystems.

ServerInfo Instance

The ServerInfo instance is output when the [GetServerInfo](#) command is executed.

The following table describes the attributes of the ServerInfo instance.

Table 4-150 ServerInfo Instance Attributes

Attribute	Description
serverVersion	Version and build date of Device Manager Server (example: `Hitachi Device Manager Server v6.4 Build 0640-01 (Jun 01, 2010)`)
serverURL	URL of Device Manager Server (example: http://localhost:2001)
upTime	Length of time that Device Manager Server is active (example: `2 minutes 5 seconds`)
upSince	Time and date when the server was started (example: `Tue, 1 Jun 2010 02:52:13 GMT`)
currentApiVersion	API version of Device Manager Server (example: `6.4`)
license	License status One of the following values is output: ▪ -1: Unknown ▪ 0: Permanent license ▪ 1: Temporary license ▪ 2: Emergency license ▪ 100: Core license ▪ 200: A license has not been installed. ▪ 201: A temporary license has expired. ▪ 202: An emergency license has expired.

StorageArray Instance

The StorageArray instance is output when the following commands are executed:

- AddArrayGroup
- AddExternalArrayGroup
- AddHostStorageDomain
- AddISCSINameForHostStorageDomain
- AddLogicalUnit
- AddLun
- AddLunGroup
- AddLunScan
- AddLUSE
- AddPool
- AddSpareDrive
- AddStorageArray
- AddVirtualVolume
- AddWWNForHostStorageDomain
- AddWWNForLun
- AddWWNForLunGroup
- AddWWNGroup
- FormatLU
- GetServerInfo
- GetStorageArray (subtarget not specified)
- GetStorageArray (subtarget=ArrayGroup)
- GetStorageArray (subtarget=Commparameters)
- GetStorageArray (subtarget=Component)
- GetStorageArray (subtarget=ExternalStorage)
- GetStorageArray (subtarget=Filter)
- GetStorageArray (subtarget=FreeSpace)
- GetStorageArray (subtarget=HostStorageDomain)
- GetStorageArray (subtarget=JournalPool)
- GetStorageArray (subtarget=LDEV)

- [GetStorageArray (subtarget=LogicalDKC)](#)

- [GetStorageArray (subtarget=LogicalUnit)](#)

- [GetStorageArray (subtarget=MFReplicationInfo)](#)

- [GetStorageArray (subtarget=Path)](#)

- [GetStorageArray (subtarget=PDEV)](#)

- [GetStorageArray (subtarget=Pool)](#)

- [GetStorageArray (subtarget=Port)](#)

- [GetStorageArray (subtarget=PortController)](#)

- [GetStorageArray (subtarget=ReplicationInfo)](#)

- [ModifyLogicalUnit](#)

- [ModifyLunGroup](#)

- [ModifyPool](#)

- [ModifyPort](#)

- [ModifyPortController](#)

- [ModifyVirtualVolume](#)

- [ModifyWWNGroup](#)

- [RefreshStorageArrays](#)

The following table describes the attributes of the StorageArray instance.

Table 4-151 StorageArray Instance Attributes

Attribute	Description
objectID	Object ID of the storage subsystem
name	Name of the storage subsystem This item is output if it has been registered.
description[#1]	Description of the storage subsystem
serialNumber	Serial number of the storage subsystem
arrayFamily	Family of the storage subsystem
arrayType	Type of the storage subsystem
microcodeVersion[#1]	Version of the SVP microcode This item is output for Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, and Lightning 9900.
agentVersion[#1]	Version of the SNMP agent This item is output for Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, and Lightning 9900.
productName[#1]	Product name
controllerVersion[#1]	Microcode level of the DKC controller
numberOfControllers[#2]	Number of array controllers

Attribute	Description
capacityInGB	Total size of storage subsystems (in GB)
cacheInMB[#2]	Cache size (in MB)
sharedMemoryInMB[#2]	Size of shared memory (in MB) *Note:* Currently, this information does not apply to storage subsystems (-1 is output).
numberOfSpareDrives[#2]	Number of spare drives -1 is output for Universal Storage Platform V/VM, Hitachi USP, Lightning 9900V, Lightning 9900, and SMI-S Enabled subsystems.
freeCapacityInGB[#2]	Total size of the logical units to which paths are not assigned (in GB)
allocatedCapacityInGB[#2]	Total size of the logical units to which paths are assigned (in GB)
hihsmCapacityInGB[#2]	Total size of the logical units reserved for Volume Migration (in GB)
onDemandCapacityInGB[#2]	Total size of the LDEVs expanded on demand (in GB)
totalFreeSpaceInGB[#2]	Total size of the areas (free areas) that are not logical units (in GB) For Universal Storage Platform V/VM and Hitachi USP, this calculation is also performed for external volume array groups.
largestFreeSpaceInGB[#2]	Maximum size of the area (free area) that is not a logical unit (in GB) For Universal Storage Platform V/VM and Hitachi USP, this calculation is also performed for external volume array groups.
capacityInKB	Total size of storage subsystems (in KB)
freeCapacityInKB[#2]	Total size of the logical units to which paths are not assigned (in KB)
allocatedCapacityInKB[#2]	Total size of the logical units to which paths are assigned (in KB)
hihsmCapacityInKB[#2]	Total size of the logical units reserved for Volume Migration (in KB)
onDemandCapacityInKB[#2]	Total size of the LDEVs expanded on demand (in KB)
totalFreeSpaceInKB[#2]	Total size of the areas that are not logical units (in KB)
largestFreeSpaceInKB[#2]	Maximum size of the area that is not a logical unit (in KB)
multipathSupport[#2]	Path support option Currently, either of the following values is output: ▪ For a non-SMI-S Enabled subsystem: 1 ▪ For an SMI-S Enabled subsystem: -1
securityStatus[#2]	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[#1]	Serial number or part of the serial number of the storage subsystem
displayArrayFamily[#1]	Display name of the array family
displayArrayType[#1]	Display name of the array type
numberOfLUs[#2]	Number of logical units
numberOfAllocatedLUs[#2]	Number of logical units to which paths are assigned
numberOfUnallocatedLUs[#2]	Number of logical units to which paths can be assigned by using Device Manager, but to which no paths are assigned

Attribute	Description
slprStatus[#2]	SLPR status of the storage subsystem One of the following values is output: ▪ -1: None ▪ 0: The storage subsystem has all the resources. ▪ 1: The storage subsystem has some of the resources divided by using the SLPR. -1 is output for storage subsystems other than Hitachi USP and Universal Storage Platform V/VM.
openTotalCapacity[#2]	Total size of the open logical units (in KB)
openAllocatedCapacity[#2]	Total size of the open logical units to which paths are assigned (in KB)
openFreeCapacity[#2]	Total size of the open logical units to which paths are not assigned (in KB)
openHiHsmCapacity[#2]	Total size of the open logical units reserved for Volume Migration (in KB)
openOnDemandCapacity[#2]	Total size of the open logical units expanded on demand (in KB)
imTotalCapacity[#2]	Total size of the intermediate logical units (in KB)
imAllocatedCapacity[#2]	Total size of the intermediate logical units to which paths are assigned (in KB)
imFreeCapacity[#2]	Total size of the intermediate logical units to which paths are not assigned (in KB)
imHiHsmCapacity[#2]	Total size of the intermediate logical units reserved for Volume Migration (in KB)
imOnDemandCapacity[#2]	Total size of the intermediate logical units expanded on demand (in KB)
mfTotalCapacity[#2]	Total size of the mainframe logical devices (in KB)
mfHiHsmCapacity[#2]	Total size of the mainframe logical devices reserved for Volume Migration (in KB)
mfOnDemandCapacity[#2]	Total size of the mainframe logical devices expanded on demand (in KB)
mfAllocatedCapacity[#2]	Total size of the mainframe logical devices to which paths are assigned (in KB)
mfUnallocatedCapacity[#2]	Total size of the mainframe logical devices to which paths are not assigned (in KB)
numberOfOpenAllocatedLUs[#2]	Number of open logical units to which paths are assigned
numberOfOpenUnallocatedLUs[#2]	Number of open logical units that satisfy the following conditions: ▪ Paths are not assigned. ▪ Paths can be assigned by using Device Manager.
numberOfImAllocatedLUs[#2]	Number of intermediate logical units to which paths are assigned
numberOfImUnallocatedLUs[#2]	Number of intermediate logical units that satisfy the following conditions: ▪ Paths are not assigned. ▪ Paths can be assigned by using Device Manager.
numberOfMfLDEVs[#2]	Number of mainframe logical devices

Attribute	Description
numberOfAllocatedMfLDEVs[2]	Number of mainframe logical devices to which paths are assigned
numberOfUnallocatedMfLDEVs[2]	Number of mainframe logical devices to which paths are not assigned
productCode[2]	Product code of the storage subsystem
lastRefreshed[2]	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[2]	This item indicates whether an unformatted logical unit can be created. One of the following values is output for Universal Storage Platform V/VM and Hitachi USP: ▪ -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: ▪ 0: The Device Manager database is consistent. ▪ 1: The database is being updated. Wait until the update is done, and then execute the GetStorageArray command. ▪ 2: The Device Manager database is inconsistent. Execute the AddStorageArray command to update the configuration information of the storage subsystem, and then execute the GetStorageArray command. ▪ 3 or 4: The database is being updated in the background. These values are output only for SMI-S Enabled subsystems. If one of these values is output, you can use the GetStorageArray command to obtain information.
configUpdateStatus[2]	Indicates whether the actual configuration information of the target storage subsystem matches the configuration information in the Device Manager database. One of the following values is output for Universal Storage Platform V/VM version 60-04-10-xx/xx or later: ▪ 0: The configuration information matches. ▪ 1: The configuration information does not match. Use the AddStorageArray command to update the configuration information of the storage subsystem. -1 is output for other storage subsystems.
openAllocatedActualCapacity[2]	Total size of the open logical units and the intermediate logical units that satisfy both the following conditions (in KB): ▪ Paths are assigned. ▪ The logical unit is a real volume that has physical capacity.
openUnallocatedCapacity[2]	Total size of the open logical units and the intermediate logical units that satisfy both the following conditions (in KB): ▪ Paths are not assigned. ▪ Paths can be assigned by using Device Manager.

Attribute	Description
openUnallocatedActualCapacity[#2]	Total size of the open logical units and the intermediate logical units that satisfy all the following conditions (in KB): - Paths are not assigned. - Paths can be assigned by using Device Manager. - The logical unit is a real volume that has physical capacity.
openReservedCapacity[#2]	Total size of the open logical units and the intermediate logical units that satisfy both the following conditions (in KB): - Paths are not assigned. - Paths cannot be assigned by using Device Manager.
openReservedActualCapacity[#2]	Total size of the open logical units and the intermediate logical units that satisfy all the following conditions (in KB): - Paths are not assigned. - Paths cannot be assigned by using Device Manager. - The logical unit is a real volume that has physical capacity.
numberOfReservedLUs[#2]	Number of open logical units and intermediate logical units that satisfy both the following conditions: - Paths are not assigned. - Paths cannot be assigned by using Device Manager.
numberOfOpenReservedLUs[#2]	Number of open logical units that satisfy both the following conditions: - Paths are not assigned. - Paths cannot be assigned by using Device Manager.
numberOfImReservedLUs[#2]	Number of intermediate logical units that satisfy both the following conditions: - Paths are not assigned. - Paths cannot be assigned by using Device Manager.
distributedMode[#2]	Distributed mode This item indicates the role of the storage subsystem in a TrueCopy Modular Distributed configuration. One of the following values is output for Hitachi AMS2000: - -1: The TrueCopy Modular Distributed function is disabled. - 0: Edge - 1: Hub -1 is output for other storage subsystems.
hardwareRevision[#1]	Hardware revision number This item is output for Hitachi AMS2000 and Hitachi SMS.
#1 For an SMI-S Enabled subsystem, this item is not output.	
#2 For an SMI-S Enabled subsystem, -1 is output for this item.	

URLLink Instance

The URLLink instance is output when the following commands are executed:

- AddURLLink
- GetURLLink

The following table describes the attributes of the URLLink instance.

Table 4-152 URLLink Instance Attributes

Attribute	Description
objectID	Object ID of URLLink
name	Name of the URLLink
description	Additional description of the URLLink
url	URL required for starting an application or a Web page
linkedID	Object ID of the Device Manager object for which URLLink is set
createdByUser	Type of the URLLink One of the following values is output: ▪ -1: URLLink set for a Device Manager object other than SMI-S Enabled subsystem ▪ 0: URLLink set by he Device Manager server for an SMI-S Enabled subsystem ▪ 1: URLLink set by a user for an SMI-S Enabled subsystem

VirtualDisk Instance

The VirtualDisk instance is output when the GetHost command is executed. The following table describes the attributes of the VirtualDisk instance.

Table 4-153 VirtualDisk Instance Attributes

Attribute	Description
vmDiskID	Virtual disk ID
name	Virtual disk name
datastoreID	Datastore ID

VM Instance

The VM instance is output when the GetHost command is executed. The following table describes the attributes of the VM instance.

Table 4-154 VM Instance Attributes

Attribute	Description
vmID	Virtual machine ID
name	Virtual machine name
guestOSVersion	Guest OS name

VolumeConnection Instance

The VolumeConnection instance is output when the following commands are executed:

- GetStorageArray (subtarget=LDEV)
- GetStorageArray (subtarget=LogicalUnit)

The following table describes the attributes of the VolumeConnection instance.

Table 4-155 VolumeConnection Instance Attributes

Attribute	Description
objectID	Object ID of VolumeConnection
name	Name of VolumeConnection This item is output if it has been registered.
mappedArrayType	Storage subsystem type to which an external volume is mapped One of the following values is output: ▪ NSC55: Hitachi NSC ▪ R600: Universal Storage Platform V ▪ R601: Universal Storage Platform VM ▪ USP: Hitachi 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.
vendor	Vendor name of the external volume

Attribute	Description
displayMappedDevNum	Display name of the device number of the internal volume to which the external volume is mapped. This value is output in one of the following formats:
	For Universal Storage Platform V/VM:
	The value is output in the *ww:xx:yy* format, where *ww* is the logical DKC number, *xx* is the CU number, and *yy* is the LDEV number.
	For Hitachi USP, Lightning 9900V, or Lightning 9900:
	The value is output in the *xx:yy* format, where *xx* is the CU number and *yy* is the LDEV number.
	For Hitachi AMS2000/AMS/WMS, Hitachi SMS, Thunder 9500V, or Thunder 9200:
	The LDEV number is output in decimal.
displayExternalDevNum	Display name of the device number of the external volume
	The output format is the same as displayMappedDevNum.

WWN Instance

The WWN instance is output when the following commands are executed:

- AddLun
- AddWWNForHostStorageDomain
- AddWWNForLun
- AddWWNForLunGroup
- AddWWNGroup
- GetHost
- GetStorageArray (subtarget=HostStorageDomain)
- GetStorageArray (subtarget=LogicalUnit)
- GetStorageArray (subtarget=Path)
- GetStorageArray (subtarget=Port)
- MergeHost
- ModifyHost
- ModifyPort
- ModifyWWNGroup

The following table describes the attributes of the WWN instance.

Table 4-156 WWN Instance Attributes

Attribute	Description
wwn	World Wide Name. A World Wide Name is usually assigned to the HBA in the server.
nickname	WWN nickname. This item is output if it has been registered.

WWNGroup Instance

The WWNGroup instance is output when these commands are executed:

- AddWWNGroup
- GetStorageArray (subtarget=LogicalUnit)
- GetStorageArray (subtarget=Path)
- GetStorageArray (subtarget=Port)
- ModifyWWNGroup

The following table describes the attributes of the WWNGroup instance.

Table 4-157 WWNGroup Instance Attributes

Attribute	Description
objectID	Object ID of the WWN group
name	Name of the WWN group. This item is output when registered.
nickname	Nickname of the WWN group

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. The batch option allows you to simultaneously execute many commands and is useful when installing a new storage subsystem.

- AddExternalArrayGroup
- AddHostStorageDomain
- AddLun
- AddLUSE
- AddVirtualVolume
- DeleteHostStorageDomain
- DeleteLun
- DeleteLUSE
- ModifyVirtualVolume

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 When an Error Occurs During Batch Functionality Execution.

> **Notes:**
>
> - 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 AddArrayReservation.
> - 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.

Creating Batch Files

A batch file needs to be created to execute the batch functionality. This section 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

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.

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. 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
```

Conditions for Parameters to Process Commands Together

When commands are executed together, the following conditions must be satisfied for the parameter values and combinations on consecutive command lines.

- Parameters for which the same values as the previous line must be specified

  If you specify a parameter for which this condition applies, you need to specify the same parameter and parameter value in the following line. If you specify the same parameter but use a different value, the commands will not be executed together.

  For example, if you specify `model=USP` for the `AddExternalArrayGroup` command in the first line, you also need to specify `model=USP` in the second line to execute commands together.

  In addition, for a parameter for which the default value is set when you omit the parameter, you need to specify the parameter in the following line exactly as in the previous line.

  For example, if you omit the `luoption` parameter of the `AddExternalArrayGroup` command, `luoption=none` is assumed. To execute commands together, if you omit the parameter in the first line, you also need to do so in the next line. If you specify `luoption=none` in the first line, you also need to do so in the next line.

- Parameters that must be specified if they are specified in the previous line

  If you specify a parameter for which this condition applies, you need to specify the same parameter in the following line. If you specify the same parameter, the commands will be executed together even if the parameter value is different from the previous line.

  For example, if you specify the `port` and `domain` parameters for the `AddLun` command in the first line, you also need to specify the same parameters in the second line to execute commands together. If you add a parameter that is not specified in the first line, for example, if you specify `port`, `domain`, and `devnum` parameters in the second line, the commands will not be executed together.

The following tables list the conditions for specifying parameters for each command.

Table 4-158 Specification Conditions for Parameters (AddExternalArrayGroup Command)

Specification Condition	Parameter
Parameters for which the same values as the previous line must be specified	serialnum model luoption numoflus
No conditions	externalgrpnum portname externalwwn externallun pathgroupid emulation clprnumber cachemode inflowcontrol devnum capacity capacitytype

⚠️ ***Note:*** In the same batch file, to include both a command line in which the devnum parameter is specified and a command line in which the devnum parameter is omitted, first write the command line in which the devnum parameter is specified. If you omit the devnum parameter of the AddExternalArrayGroup command, the device number of the logical unit is automatically set. Therefore, if a command line in which the devnum parameter is omitted is written first, an error might occur because the specified device number might already be in use when the command line in which the devnum parameter is specified is executed.

Table 4-159 Specification Conditions for Parameters (AddHostStorageDomain Command)

Specification Condition	Parameter
Parameters for which the same values as the previous line must be specified	serialnum model
Parameters that must be specified if they are specified in the previous line	port portname
No conditions	domain hostmode hostmode2 hostmodeoption name nickname domaintype domainiscsiname

⚠️ **Note:** In the same batch file, to include both a command line in which the `domain` parameter is specified and a command line in which the `domain` parameter is omitted, first write the command line in which the `domain` parameter is specified. If you omit the `domain` parameter of the `AddHostStorageDomain` command, the domain ID of the host storage domain is automatically set. Therefore, if a command line in which the `domain` parameter is omitted is written first, an error might occur because the specified domain ID might already be in use when the command line in which the `domain` parameter is specified is executed. Likewise, in the same batch file, if you want to include a command line in which the `nickname` parameter is specified and a command line in which the `nickname` parameter is omitted, first write the command line in which the `nickname` parameter is specified.

Table 4-160 Specification Conditions for Parameters (AddLun Command)

Specification Condition	Parameter
Parameters for which the same values as the previous line must be specified	serialnum model
Parameters that must be specified if they are specified in the previous line	port portname domain domainnickname devnum lusedevnums wwn
No conditions	name scsi lun

Table 4-161 Specification Conditions for AddLUSE Command Parameters

Specification Condition	Parameter
Parameters for which the same values as the previous line must be specified	serialnum model luseoption
No conditions	Devnums

Table 4-162 Specification Conditions for Parameters (AddVirtualVolume Command)

Specification Condition	Parameter
Parameters for which the same values as the previous line must be specified	serialnum model capacitytype
Parameters that must be specified if they are specified in the previous line	clprNumber poolid
No conditions	capacity devnum threshold

Specification Condition	Parameter

	Notes:
⚠	• For the `AddVirtualVolume` command, you can specify the `groupoption`, `arraygroupname`, and `numoflus` options in addition to the parameters in the above table. However, if you specify the `groupoption`, `arraygroupname`, or `numoflus` options in a command line, commands cannot be executed together. In this case, only the command in that command line is executed.
	• In the same batch file, to include both a command line in which the `devnum` parameter is specified and a command line in which the `devnum` parameter is omitted, first write the command line in which the `devnum` parameter is specified. If you omit the `devnum` parameter of the `AddVirtualVolume` command, the device number of the logical unit is automatically set. Therefore, if a command line in which the `devnum` parameter is omitted is written first, an error might occur because the specified device number might already be in use when the command line in which the `devnum` parameter is specified is executed. Likewise, in the same batch file, if you want to include a command line in which the `arraygroupname` parameter is specified and a command line in which the `arraygroupname` parameter is omitted, first write the command line in which the `arraygroupname` parameter is specified.

Table 4-163 Specification Conditions for Parameters (DeleteHostStorageDomain Command)

Specification Condition	Parameter
Parameters for which the same values as the previous line must be specified	serialnum model deletionoption

Specification Condition	Parameter
Parameters that must be specified if they are specified in the previous line	port
	portname
	domain
	domainnickname

Table 4-164 Specification Conditions for Parameters (DeleteLun Command)

Specification Condition	Parameter
Parameters for which the same values as the previous line must be specified	serialnum
	model
	deletionoption
Parameters that must be specified if they are specified in the previous line	port
	portname
No conditions	domain
	domainnickname
	devnum

Table 4-165 Specification Conditions for Parameters (DeleteLUSE Command)

Specification Condition	Parameter
Parameters for which the same values as the previous line must be specified	serialnum
	model
No conditions	devnum

Table 4-166 Specification Conditions for Parameters (ModifyVirtualVolume Command)

Specification Condition	Parameter
Parameters for which the same values as the previous line must be specified	serialnum
	model
	assign
No conditions	devnums
	poolid
	threshold

Specification Condition	Parameter
⚠	*Note:* For the `devnums` parameter of the `ModifyVirtualVolume` command, you can specify multiple HDP volume device numbers. To specify five or more device numbers, write them separately on multiple command lines. If you specify five or more device numbers on one command line and then perform batch processing, an error might occur with the error message `KAIC90084-E` that has the response value `413 Request Entity Too Large`.

Examples of Batch File Creation

Following is an example of a batch file created according to the input rules from Batch File Format and Input Rules to Conditions for Parameters to Process Commands Together.

```
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
```

Executing Batch Function of Commands

You can 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 Device Manager server

* Options other than -i or --input

Do not specify these items with the batch option because an error can occur:

* The -i or --input option

* Commands and command parameters

* Help

⚠ *Note:* For details about displaying help information when specifying the batch option, see Batch Help Information for Device Manager CLI.

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 Examples of Batch File Creation 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=USP@10.208.116.108
  description=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
  hihsmCapacityInGB=77
  onDemandCapacityInGB=0
  totalFreeSpaceInGB=2,383
  largestFreeSpaceInGB=778
  capacityInKB=6,878,866,064
  freeCapacityInKB=5,114,357,504
  allocatedCapacityInKB=1,683,100,560
  hihsmCapacityInKB=81,408,000
  onDemandCapacityInKB=0
  totalFreeSpaceInKB=2,499,089,616
  largestFreeSpaceInKB=816,324,096
  multipathSupport=1
  securityStatus=2
  sequenceNumber=14053
  displayArrayFamily=USP
  displayArrayType=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
configUpdateStatus=-1
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
distributedMode=-1
List of 4 Path elements:
  An instance of Path
    objectID=PATH.USP.14053.0.0.816
    devNum=816
    displayDevNum=03:30
    portID=0
    portName=CL1-A
    domainID=0
    scsiID=15
    LUN=100
    wwnSecurityValidity=true
  An instance of Path
    objectID=PATH.USP.14053.0.0.817
    devNum=817
    displayDevNum=03:31
    portID=0
    portName=CL1-A
    domainID=0
    scsiID=15
    LUN=101
    wwnSecurityValidity=true
  An instance of Path
    objectID=PATH.USP.14053.4.0.816
    devNum=816
    displayDevNum=03:30
    portID=4
    portName=CL1-B
    domainID=0
```

```
     scsiID=15
     LUN=102
     wwnSecurityValidity=true
 An instance of Path
     objectID=PATH.USP.14053.4.0.817
     devNum=817
     displayDevNum=03:31
     portID=4
     portName=CL1-B
     domainID=0
     scsiID=15
     LUN=103
     wwnSecurityValidity=true
```

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 applied to the storage subsystem.

⚠️ *Note:* The command processing during batch functionality execution is not performed in the order described in the batch file. All lines need to be checked to determine which command lines in the batch file were applied.

3. Delete the command lines applied to the storage subsystem from the batch file.

4. Execute the batch functionality again.

Managing Mainframe Hosts

Device Manager linked with Mainframe Agent can use the Web Client to display the following information that is 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, set up the mainframe host and Device Manager environments.

⚠️ *Note:* You cannot view mainframe hosts from the Web Client. The mainframe volume information obtained from Mainframe Agent is displayed in the Mainframe-Unspecified group in Web Client. For details about this group, see the Device Manager online Help.

Setting Up the Mainframe Host Environment

Use the following procedure to set up the mainframe host environment. For details about installing and operating the Mainframe Agent, see the *Hitachi Device Manager Mainframe Agent User's Guide.*

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, see the *Hitachi Device Manager Mainframe Agent User's Guide*.

⚠️ *Note:* When specifying the host name that Mainframe Agent will use for reporting to Device Manager, do not use 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 avoid specifying 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. The 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.

Setting Up the Device Manager Environment

Setting up a Device Manager environment ensures that the Web Client displays mainframe volume information and logical DKC serial numbers of storage subsystems.

Registering the Mainframe Host in Device Manager

To use the AddHost command to register the mainframe host:

1. Execute the AddHost command, specifying the following parameters:
   - hostname: Use the host name that you specified when setting up the mainframe host environment.
   - hosttype: Specify 2.

⚠   *Note:* To prevent errors, do not specify the wwnlist parameter.

---

2. Record the objectID value that is output by the AddHost command. It is required for subsequent procedures and operations.

3. Check the results of the AddHost command: Verify that the specified information is correctly output to the name and hosttype parameters.

Notes on executing the AddHost command:

- Information registered in Mainframe Agent cannot be acquired if the host name specified during mainframe host environment setup, and the host name specified during Device Manager environment setup, do not match.

- 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 necessary information for communication is described in Registering the Mainframe Agent Running on the Mainframe Host).

Steps to take 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 it is not registered, register it using the AddHost command. If the mainframe host has been registered incorrectly, use the ModifyHost command to correct the registered information. For details, see Changing Mainframe Host Information.

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
  hostID=1
  capacityInKB=0
  hostType=2
  statusOfDBUpdating=-1
```

Registering the Mainframe Agent Running on the Mainframe Host

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. Specify the following parameters:

   – url: In this parameter, specify the IP address and port number.

   If the mainframe host is in an IPv4 environment: Specify the IP address of the mainframe host on which Mainframe Agent is installed, and the port number used by Mainframe Agent.

   If the mainframe host is in an IPv6 environment: Specify the IP address (by enclosing it in square brackets ([and])) and port number of the IBM HTTP Server. For details about how to set up an IPv6 environment for the IBM HTTP Server, see the *Hitachi Device Manager Mainframe Agent User's Guide*.

   – name: Specify the character string MainframeAgent, which indicates Mainframe Agent. Note that this parameter is case-sensitive.

   – linkedid: Specify the object ID of the mainframe host output when the mainframe host was registered using the AddHost command.

2. Check the results of the AddURLLink command: Verify 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 Deleting Mainframe Agent Information Registered in the Server.

Steps to take 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 [Deleting Mainframe Agent Information Registered in the Server](#).

Command format (for an IPv4 environment):

```
HiCommandCLI AddURLLink "url=http://mainframe-host-IP-address:port-number"
"name=MainframeAgent" "linkedid=mainframe-host-object-ID"
```

Command format (for an IPv6 environment):

```
HiCommandCLI AddURLLink "url=http://IBM-HTTP-Server-IP-address#:port-number"
"name=MainframeAgent" "linkedid=mainframe-host-object-ID"
```

Enclose the IP address in square brackets ([and]).

Example of executing the command (for an IPv4 environment):

```
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
  createdByUser=-1
```

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, so use the Web Client to check this information.

When you execute the command, specify the objectid parameter. In this parameter, specify the object ID of the mainframe host output when the mainframe host was registered using the AddHost command.

Steps to take 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 Registering the Mainframe Host in Device Manager and Registering the Mainframe Agent Running on the Mainframe Host.

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
  hostID=1
  capacityInKB=0
  hostType=2
  sysplexID=RSDPLEX
  statusOfDBUpdating=-1
```

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 is the only means of refreshing the information. When you execute the command, specify the objectid parameter. In the parameter, specify the object ID of the mainframe host output when the mainframe host was registered using the AddHost command.

Steps to take if an error occurs during the execution of the AddHostRefresh command:

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 are registered correctly, use the AddHostRefresh command to acquire the information again. If they are registered incorrectly, register them correctly using the procedures described in Registering the Mainframe Host in Device Manager and Registering the Mainframe Agent Running on the Mainframe Host.

   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
     hostID=1
     capacityInKB=0
     hostType=2
     sysplexID=RSDPLEX
     statusOfDBUpdating=-1
   ```

Acquiring Mainframe Agent Information Registered in the Server

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
  createdByUser=-1
```

Changing Mainframe Agent Information Registered in the Server

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
  createdByUser=-1
```

Deleting Mainframe Agent Information Registered in the Server

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)
```

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.

To acquire the object ID of a mainframe host:

1. Execute the GetHost command with no object ID specified to acquire a list of all hosts registered in Device Manager.

2. From the list of displayed hosts, locate the name of your target mainframe host.

3. Acquire the object ID based on the mainframe host information you located at 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
  hostID=1
  capacityInKB=0
  hostType=2
  sysplexID=RSDPLEX
  statusOfDBUpdating=-1
```

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.

Notes:

- 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.

- 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
  hostID=1
  capacityInKB=0
  hostType=2
  sysplexID=RSDPLEX
  statusOfDBUpdating=-1
```

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)
```

5

Device Manager Properties File (CLI)

This chapter describes how to specify options and parameters by using the Device Manager CLI properties file. It also describes how to change certain properties by entering commands on the command line. For information regarding the Device Manager CLIEX properties file, see Device Manager Properties File (CLIEX).

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CLI Properties File Overview

You can use the 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. It can also contain the log file output and debugging level settings. The Device Manager CLI properties file is named HiCommandCLI.properties and resides in the directory or folder where Device Manager CLI is installed.

If command options and parameters have been specified in the properties file, the options and parameters can be omitted from the command line. 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)

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

Notes:

- 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.
- 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	*user ID*
-p or --password	password	*password*
	password2	*encoded-password*
-s or --secure	secure	no argument
-i or --input	input	*filename*
-o or --output	output	*filename*
-f or --format#	format#	csv or xml
-t or --messagetrace	messagetrace	no argument
# This option and property can be specified only when the GetStorageArray command is used.		

Encoding the Password in the Properties File or Password File

Specify a password in the properties file (`HiCommandCLI.properties`) or password file, to omit entering the password when using Device Manager CLI. You can specify a plain text password for the properties file or password file. However, we recommend that you use the `hdvmaccount` command to encode the password for better security.

Environment Settings for Encoding a Password

To use Device Manager CLI with the encoded password, install JRE version 1.4.2 or later on the management client. Typically, if the settings described in Java Environment Settings have been configured, other settings are not required. If either of the conditions below is satisfied, install JRE on the management client that executes Device Manager CLI, and then add the path for the installed JRE to the environment variable PATH.

- JRE version 1.4.1 is being used

- The same JRE that the Device Manager server uses is being used

  When using Device Manager CLI on the same machine as the Device Manager server, install another instance of JRE in addition to the instance that the Device Manager server uses.

There are two levels for encoding passwords, NORMAL and HIGH. For details about how to change the level to HIGH in order to generate a safer and more secure character string, see the *Hitachi Device Manager Server Configuration and Operation Guide*.

How to Use the hdvmaccount Command

This section describes the hdvmaccount command, which encodes a password and outputs it to the properties file or password file. The hdvmaccount command is stored in the same folder or directory as HiCommandCLI.

Execute the hdvmaccount command using the user account used to log in to the OS on which Device Manager CLI is executed. If you execute Device Manager CLI by using a user account different from the one that was used to execute the hdvmaccount command, an error might occur.

The format of the hdvmaccount command is as follows:

```
hdvmaccount { -u user-ID [ -f password-file-name ] | help }
```

-u

Specify the Device Manager user ID that executes Device Manager CLI. If a user ID has been set for the user property in the properties file, specify the same user ID for the -u option. To change the user ID that executes Device Manager CLI, you first need to change the setting for the user property in the properties file. In addition, if an encoded password is already set for the password2 property, delete that value.

`-f`

Specify this option if you want to output the encoded password to a file. Use an absolute path to specify the file name. If you specify the `-f` option, the path to the file is set for the `password2` property in the properties file. If you omit the `-f` option, the character string of the encoded password is set.

`help`

Displays help for the `hdvmaccount` command.

When the `hdvmaccount` command is executed, a message appears prompting you to enter the password. If you enter the password twice, that password is encoded and then the `password2` property in the properties file is automatically set.

If a password has been set for the `password` or `password2` property in the properties file, enter that password when you execute the `hdvmaccount` command. If the character string that you enter matches the password that has been set, a message appears prompting you to enter the password to encode. After the password is encoded, the existing property is deleted and the `password2` property is reset.

After the command completes, you do not need to specify the password when using Device Manager CLI. After executing the `hdvmaccount` command, use the `GetServerInfo` or `GetStorageArray` command to make sure that the password is correctly set.

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

Setting Up the Device Manager CLI Execution Environment

This section describes how to set up the Device Manager CLI execution environment as shown in the sample properties file in .

Specifying the Log File

The default file name of the log file used by Device Manager CLI is HiCommandCLI.log. This file is created in the 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.

Specifying the Log Level

You can use the HiCommandCLI.diaglevel property to specify the level of log information to be output to the log 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.

Message Trace Output

The recording of the request messages sent to the 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

Specifying the URL

The Device Manager server URL can be specified on the command line or it 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. For details about specifying the URL, see Table 3-1.

Output Format of Execution Results

Command results are output in the standard format specified for the Device Manager CLI. The results of the GetStorageArray command can be output to either CSV format (see Outputting Execution Results in CSV Format) or XML format (see Outputting Execution Results in XML Format).

Outputting Execution Results in CSV Format

To output the execution results of the GetStorageArray command to a CSV format, specify csv for the -f or --format options. The -f or --format option can be specified only when the GetStorageArray command is used. Some parameters cannot be used when specifying the -f or --format option as one of the parameters in the GetStorageArray command, as outlined in the following table.

Table 5-2   Parameters that Cannot be Specified in the GetStorageArray Command When CSV Output Is Specified

subtarget parameter value	Parameter that cannot be specified	Section where described[#]
ArrayGroup	arraygroupsubinfo lusubinfo	GetStorageArray (subtarget=ArrayGroup)
HostStorageDomain	hsdsubinfo	GetStorageArray (subtarget=HostStorageDomain)
JournalPool	poolsubinfo	GetStorageArray (subtarget=JournalPool)
LDEV	ldevsubinfo	GetStorageArray (subtarget=LDEV)
LogicalUnit	lusubinfo ldevsubinfo pathsubinfo	GetStorageArray (subtarget=LogicalUnit)

subtarget parameter value	Parameter that cannot be specified	Section where described[#]
MFReplicationInfo	mfreplicationsubinfo	GetStorageArray (subtarget=MFReplicationInfo)
Path	pathsubinfo	GetStorageArray (subtarget=Path)
Pool	poolsubinfo arraygroupsubinfo	GetStorageArray (subtarget=Pool)
Port	portsubinfo wwngroupsubinfo lungroupsubinfo pathsubinfo	GetStorageArray (subtarget=Port)
PortController	controllersubinfo	GetStorageArray (subtarget=PortController)
ReplicationInfo	replicationsubinfo	GetStorageArray (subtarget=ReplicationInfo)
# For details about a specific GetStorageArray command parameter, see the indicated section.		

Figure 5-2 shows the output image of an execution result in CSV format.

Legend: StorageArray.*attr-name*: Item name
attr-value: Value
[CRLF]: Control symbol that indicates the linefeed code
[EOF]: Control symbol that indicates the EOF (end of file) code

Figure 5-2 Example Execution Result in CSV Format

The execution result is output in UTF-8 encoding. To use the execution result in application software, such as spreadsheet software, you need to convert the encoding to the one supported by that application software.

- Item names and values output in the execution result are enclosed in double quotation marks (").

- Two successive commas in the execution result indicate that the corresponding item between the two commas has no value.

- In the first line of the execution result, item names and a linefeed code ([CRLF]) are output (see Figure 5-2 (1)). An item name is output even if the item has no value.

- In the second line and below of the execution result, values and a linefeed code are output (see Figure 5-2 (2)). A linefeed is output also in the last line of data. An EOF (end of file) code follows after the last line of data (see

(3)).

Notes:

- Items output in the execution result differ depending on the parameters specified by the Device Manager CLI command.
- When using different versions of Device Manager CLI, the order and number of items output as the execution result might differ even if the specified parameters are the same.

Outputting Execution Results in XML Format

To output the execution results of the GetStorageArray command to XML format, specify xml for the -f or --format option. (These format options can only be specified when using the GetStorageArray command.) Figure 5-3 shows the output image of an execution result in XML format.

To output a DOCTYPE declaration and a subsequent line return character in the output results, specify a DTD in the properties file. For details, see Specifying a DTD.

```
<?xml version="1.0" encoding="UTF-8"?>[CRLF]                                    (1)
<!DOCTYPE DvMCLIResult SYSTEM "CLI-DTD-URL.dtd">[CRLF]                         (2)
<DvMCLIResult version="version"><CommandResult command="GetStorageArray">
<StorageArray attr-name="attr-value" attr-name="attr-value" ... >            (3)
</StorageArray> ... </CommandResult></DvMCLIResult>
```

Legend: *attr-name*: Item name
         attr-value: Value
         [CRLF]: Control symbol that indicates the linefeed code

Figure 5-3 Example Execution Result in XML Format

When an execution result is output in XML format, an XML declaration, a DOCTYPE declaration, and XML elements are output.

- XML declaration (see Figure 5-3 (1))

   In the first line of the execution result, an XML declaration and a linefeed code ([CRLF]) are output.

Note: In Device Manager CLI, the execution result is output in UTF-8 encoding, according to the XML1.0 Specifications recommended by W3C.

- DOCTYPE declaration (see Figure 5-3 (2))

   In the second line of the execution result, a DOCTYPE declaration and a linefeed code are output. In the DOCTYPE declaration, the URI (Uniform Resource Identifier) of the DTD (Document Type Definition) specified in the

properties file is output.

> *Note:* To output a DOCTYPE declaration and an immediately subsequent linefeed code in the execution results, you need to specify a DTD in the properties file. For details about specifying a DTD, see Specifying a DTD.

- XML elements (see Figure 5-3 (3))

  In the third line of the execution result, XML elements are output.

  DvMCLIResult, a root element of XML-format output, indicates the execution result of Device Manager CLI. The Device Manager CLI version is output as the version attribute of the DvMCLIResult element.

  The CommandResult element indicates the execution result of the Device Manager CLI command.

Specifying a DTD

To use a DTD when you output the execution results of the GetStorageArray command in XML format, specify the URI of the DTD in the dtd property of the properties file (HiCommandCLI.properties). The following shows an example that specifies D:/dtd/cli.dtd as the URI of the DTD.

```
dtd=D:/dtd/cli.dtd
```

> *Notes:*
> - Device Manager CLI does not check whether the specified DTD URI is a well-formed URI, nor does it perform any error processing.
> - You must create the DTD to be used by Device Manager CLI. For details about creating a DTD, see Using a DTD with Device Manager CLI.
> - You cannot specify a DTD from the command line.

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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 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 a 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="6.4" />
  <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="6.4" />
  <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 a saved file containing the preceding message, you can create multiple LUNs using one command, as follows: **HicommandCLI -t -i xmlcommand.txt**

Using the Message Trace Log File to Create XML Files

When message tracing is enabled, each execution of the application writes over the message tracing file with the request and response of that execution, so the file never has more than one request and one response. The request and response are identified by labels, and each label has a timestamp. The request includes the HTTP header values set by the application, and it 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 parsing. Even if the application does not correctly interpret or handle the response, the message trace contains a record of the response.

Following is an example of downloading the CLI from the Device Manager server to a PC, and using the message trace log file to create XML files:

1. Follow the instructions in <u>Downloading CLI and CLIEX from the Device Manager Server</u> to download a copy of the CLI 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 enable message trace. In the following example, "messagetrace=true" in order to view the XML in the message trace log file:
   ```
   C:\HiCmdCLI>type HiCommandCLI.properties
   HiCommandCLI.serverurl=http://193.36.40.55:2001/service
   user=system

   messagetrace=true
   ```
5. Copy **HiCommandCLI.bat do.bat** so that instead of always typing HiCommandCLI then the command, you only type "do" then the command.

6. At the CLI prompt, type: **do GetDebugLevel**. Following is sample output:

```
RESPONSE:
An instance of DebugLevel
  value=1 [Basic Information]
  description=Information
```

⚠️ *Note:* The XML for this command is now in the MessageTrace.log file.

7. View the contents of the MessageTrace.log file. Following is sample output:

```
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="6.4" />
  <Request>
    <Logging>
      <Get target="DebugLevel" />
    </Logging>
  </Request>
</HiCommandServerMessage>
```

8. 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="6.4" />
  <Request>
    <Logging>
      <Get target="DebugLevel" />
    </Logging>
  </Request>
</HiCommandServerMessage>
```

9. 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="6.4" />
  <Response>
    <EchoCommand name="GetDebugLevel" status="COMPLETED" result="0"
resultSource="Logging.GetDebugLevel" messageID="458434230" />
    <ResultList>
      <DebugLevel value="1" description="Information" />
    </ResultList>
```

```
    </Response>
</HiCommandServerMessage>
```

10. Use this procedure to create XML .inp files for other CLI commands.

System Requirements and Set Up (CLIEX)

This chapter describes system requirements and specifications for operating Device Manager CLIEX.

System Requirements

The following requirements must be satisfied when using Device Manager CLIEX:

- **Storage Subsystem**

  Device Manager CLIEX supports the following storage subsystems:
  - Lightning 9900
  - Lightning 9900V
  - Hitachi USP
  - Universal Storage Platform V/VM

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

⚠️ *Note:* Before adding a storage subsystem to Device Manager using Device Manager CLI (or other clients), check that the storage subsystem has been configured to be operated by Device Manager.

- Device Manager 6.4
  - Device Manager Server

    The Device Manager server must be installed and configured for full operation, in advance. For details, see the *Hitachi Storage Command Suite Server Installation Guide* and *Hitachi Device Manager Server Configuration and Operation Guide*.
  - Web Client

    Verify that the Web Client recognizes the target storage subsystem that you request for processing in Device Manager CLIEX. The Web Client is used for downloading CLI and creating command devices for a storage subsystem. For details, see the Device Manager online Help.
  - Device Manager CLI

    Check that Device Manager CLI has been installed on a client that uses Device Manager CLIEX. For details about requirements for Device Manager CLI, see Requirements for CLI Operations.

⚠️ *Note:* To prevent contention with other management tools, verify 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 Device Manager CLIEX Operation.

- **Platforms for Device Manager CLIEX**
  - Windows Server 2003 (x86) SP2
  - Windows Server 2003 R2 (x86) SP2
  - Solaris 8, 9 or 10 (SPARC edition only)

⚠ ***Note:*** The Device Manager CLIEX runs in the usual global environment (global zone) only. If a non-global zone has been created, install the Device Manager CLIEX in the global zone.

  - AIX 5L Version 5.3 (POWER only)

⚠ ***Notes:***
- Install Service Pack 5300-03.
- Install C Set ++ Runtime for AIX 5.0 version 8 or later.

- **Related programs**
  - RaidManager/Lib (01-12-03/04)
  - Xerces version 2.6.0

⚠ ***Note:*** RaidManager/Lib and Xerces are automatically installed during installation of Device Manager CLIEX.

Device Manager CLIEX Installation and Uninstallation

When you install Device Manager CLIEX, download the Device Manager CLIEX installer from the Device Manager server. For details about downloading the installer, see Downloading CLI and CLIEX from the Device Manager Server.

If the 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:

  Following is a sample command execution when Device Manager CLIEX has been installed in C:\HiCommand.

  ```
  C:\HiCommand\bin> hdvmcliex version
  ```

  results:

  ```
  Device Manager CLIEX version "6.4.0-00"
  ```

- In Solaris or AIX:

  ```
  # /opt/HDVMCLIEX/bin_/hdvmcliex version
  ```

  Example of execution results:

  ```
  Device Manager CLIEX version "6.4.0-00"
  ```

Installing Device Manager CLIEX in Windows

There are three types of Device Manager CLIEX installation in Windows:

- **New installation**

  Device Manager CLIEX is being installed for the first time.

- **Update installation** (updating an earlier version)

  The installed version of Device Manager CLIEX is earlier than 6.4 and is being updated by being overwritten with version 6.4.

- **Re-installation** (installation for restoration)

  The installed version of Device Manager CLIEX is 6.4 and is being restored by being overwritten with the same version (6.4).

⚠️

Notes:

- During an overwrite installation, the existing property file hdvmcliex.properties and the related DTD file HDVMCLIEXProp.dtd are automatically renamed to hdvmcliex.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 hdvmcliex.properties.old to hdvmcliex.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 Device Manager CLIEX on the system drive, 13 MB or more of free disk space is required on the system drive. To install 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.

- Make sure that the setting for automatically generating short file and folder names (8.3 format) is enabled. In addition, when performing an installation, use the Windows account created when the setting was enabled. If the above conditions are not satisfied, an attempt to install Device Manager CLIEX might fail or Device Manager CLIEX might not work properly. Also, do not change the setting for automatically generating short names even after the installation has completed.

  To check whether the user was created while the setting for automatically generating short file and folder names was disabled, execute the following command:

  ```
  dir /x /a- "Windows-system-drive:\Documents and Settings\Windows-
  account-name" | find "Local Settings"
  ```

  One of the following examples shows the command execution results when the setting for automatically generating short file and folder names was enabled, and the other shows the results when the setting was disabled. If LOCALS~1 is displayed, the user was created while this setting was enabled.

  If the user was created while the setting was enabled:

  ```
  2008/01/01  18:26          <DIR>              LOCALS~1        Local
  Settings
  ```

  If the user was created while the setting was disabled:

  ```
  2008/01/01  18:26          <DIR>                              Local
  Settings
  ```

New Installation

To install Device Manager CLIEX for the first time:

1. Uncompress the downloaded file and then start the 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.

⚠️ *Notes:*
- Specify an absolute path within 64 bytes.
- Do not specify a path separator (\) at the end of a folder path.
- The following characters can be specified for paths:

  A to Z, a to z, 0 to 9, ., _, (,), and space characters
- Do not specify two or more consecutive space characters.
- Do not specify folder names that end in a period or space.
- 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.

Update Installation (Updating an Earlier Version)

To perform an overwrite installation that updates Device Manager CLIEX:

1. After uncompressing the downloaded file, execute the installer for 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.

Re-installation (installation for restoration)

To perform an overwrite installation that restores Device Manager CLIEX:

1. After uncompressing the downloaded file, execute the installer for 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.

3. A dialog box prompts you whether to execute installation for restoring. 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.

Installing Device Manager CLIEX in Solaris or AIX

There are three types of Device Manager CLIEX installations in Solaris:

- **New installation**

  Device Manager CLIEX is installed for the first time.

- **Update installation** (updating an earlier version)

  The installed version of Device Manager CLIEX is earlier than 6.4 and is being updated by being overwritten with version 6.4.

- **Re-installation** (installation for restoration)

  The installed version of Device Manager CLIEX is 6.4 and is being restored by being overwritten with the same version (6.4).

⚠️ *Notes:*

- To prevent an abnormal installation in a Solaris 10 system, do not specify the system's zone settings.

- During an overwrite installation, the existing property file hdvmcliex.properties and its DTD file HDVMCLIEXProp.dtd are automatically renamed to hdvmcliex.properties.old and HDVMCLIEXProp.dtd.old and kept as backup files. To use the previous property and DTD files after overwrite installation, rename hdvmcliex.properties.old to hdvmcliex.properties and rename HDVMCLIEXProp.dtd.old to HDVMCLIEXProp.dtd.

- To install 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.

To install Device Manager CLIEX (applies to new and overwrite installations):

1. After decompressing the downloaded file, execute the installer for Device Manager CLIEX in the extracted file. Execute the following command:

```
# cd directory-for-decompressing-downloaded-file/CLIEXINST
# ./install.sh
```

2. If RaidManager/Lib is:

   – not installed, a message prompting for installation displays. To start installation, enter the directory to which RaidManager/Lib will be installed. If 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.

   – 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. Review it and agree to the license. (If you do not agree, installation is canceled.)

Device Manager CLIEX is installed in /opt/HDVMCLIEX.

Uninstalling Device Manager CLIEX in Windows

To uninstall 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 confirmation of the uninstallation displays. Click **Yes** to start uninstallation.

3. When uninstallation completes, the Uninstall Complete dialog box displays. Click **Finish** to finish the uninstallation.

Uninstalling Device Manager CLIEX in Solaris

To install Device Manager CLIEX in Solaris or AIX:

1. Log in to the Solaris or AIX system as root.

2. Execute the following command: # /opt/HDVMCLIEX/.uninstall.sh

⚠️ **Notes:**

- To prevent an abnormal uninstallation in a Solaris 10 system, do not specify the system's zone settings.
- RaidManager/Lib is not uninstalled.

Device Manager CLIEX Environment Settings

Before you start operating Device Manager CLIEX, you must set the following environments:

- **Command device creation**

  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 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 Device Manager online Help. For details about management tools, see the manual for management tools of each storage subsystem.

⚠ *Note:* Device Manager CLIEX does not support remote command devices.

- **Partition creation** (Windows only)

  After the command device is created, you must create a primary partition for it. For details about the procedure, see Creating a Partition (for Windows).

⚠ *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 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 Device Manager Properties File (CLIEX).

- Setting of the `MANPATH` environment variable (in Solaris or AIX)

  To use the man command to view information about Device Manager CLIEX commands, set MANPATH as follows:

```
MANPATH=/opt/HDVMCLIEX/man:$MANPATH
```

⚠ *Note:* For details about Device Manager CLIEX commands in Windows, see Help (*Device-Manager-CLIEX-installation-folder*\help\HDVMCLIEX.HLP).

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, click the **Next** button.

   The Select Partition Type dialog box displays.

6. In the Select Partition Type dialog box, choose **Primary Partition**, and then click the **Next** button.

   The Specify Partition Size dialog box displays.

7. In the Specify Partition Size dialog box, leave the default settings, and then click 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 click the **Next** button.

   The Format Partition dialog box displays.

9. In the Format Partition dialog box, choose **Do not format this partition**, and then click 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. Click the **Finish** button.

Device Manager CLIEX Operations

In an environment using 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 Device Manager CLI.

For CLIEX operation, be sure to use the following procedure, as it is the official operating procedure for Device Manager CLIEX:

Notes:

- For an example of executing commands, see Example of Executing Device Manager CLIEX Commands.
- Before performing CLIEX operations, verify that no other users have access to the target storage subsystem.

1. Check that the target storage subsystem is under the management of Device Manager.

   The dedicated lock function of Device Manager CLI is only valid for a storage subsystem that is under the management of Device Manager. Check that the storage subsystem that you request for processing in Device Manager CLIEX is under the management of Device Manager. If it is not, add it to Device Manager.

2. Obtain the dedicated lock for the target storage subsystem through the Device Manager CLI. For details about obtaining the dedicated lock, see AddArrayReservation.

Notes:

- For the serialnum parameter of the AddArrayReservation command, specify the dkcSerialNumber value displayed in the execution results of the Device Manager CLIEX GetStorageArray command.
- If you operate 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 ModifyArrayReservation.

   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 GetArrayReservation.

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 Device Manager CLIEX to the Device Manager server as follows:

   – For Universal Storage Platform V/VM, Hitachi USP, and Lightning 9900V

   a. Refresh the storage subsystem to update configuration information. For details about how to refresh the storage subsystem, refer to AddStorageArray.

   b. Use Device Manager CLI to cancel the dedicated lock for the storage subsystem. For details on how to cancel the dedicated lock, refer to DeleteArrayReservation.

   – For Lightning 9900

   The configuration information of the storage subsystem that has been modified through Device Manager CLIEX is applied on the Device Manager server by restarting SVP. To apply the modification, perform the following operations:

   a. Use Device Manager CLI to cancel the dedicated lock for the storage subsystem. For details about how to cancel a dedicated lock, refer to DeleteArrayReservation.

   b. Open the Maintenance window of the SVP. On the menu bar, choose **Renew,** and then **Renew Status**.

   c. Restart SVP.

   d. Refresh the storage subsystem. For details about how to refresh the storage subsystem, refer to AddStorageArray.

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

☐ CLIEX Return Responses

☐ Displaying CLIEX Help

☐ List of CLIEX Commands and Supported Storage Subsystems

☐ Guidelines for Executing Certain CLIEX Commands

CLIEX Command Syntax

Device Manager CLIEX sends requests to and receives responses from the command device of the storage subsystem. Execute Device Manager CLIEX from the command line, and specify the command device of the target storage subsystem.

Device Manager CLIEX Execution

When you want to execute Device Manager CLIEX, move to the bin directory under the directory where Device Manager CLIEX is installed, then execute the following command:

- **Windows**: Following is an example command execution when Device Manager CLIEX has been installed in C:\HiCommand: C:\HiCommand\bin> hdvmcliex.bat

- **Solaris or AIX**: # ./hdvmcliex

Note: If you execute hdvmcliex.bat or hdvmcliex without specifying any command line options, the usage for all of the commands is displayed.

Command Line Format

The general format for the command line is as follows:

```
hdvmcliex storage-array [option] command [parameter]

  storage-array: { -c command-device-file-name | --cmddev command-device-file-name | -a
alias-name | -- array alias-name }
```

The following table describes the CLIEX command syntax.

Table 7-1   CLIEX Command Syntax

Command Component	Description
storage-array	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 -c and a word expression is --cmddev. For details about storage-array options, refer to Table 7-2.
option	Options control the behavior of 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 -x and a word expression is --xmlout. For details about options, see Table 7-2 and Table 7-3.
command	The actual command mnemonic used to obtain information on the storage subsystem and request LUN management. For example, GetStorageArray or AddLun. For a complete list of CLIEX commands, see Command Descriptions (CLIEX).

Command Component	Description
parameter	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, port=10. If the parameter value includes spaces or delimiters, be sure to enclose the parameter value in double quotes. For example, nickname="Our Newest Array".

CLIEX Storage-Array Options

The following table lists and describes the CLIEX storage-array options.

Table 7-2   CLIEX Storage-Array Options

Storage-Array Option	Option Argument	Description
-c or --cmddev	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 devFile. In Windows, this value is not case sensitive. In Solaris and AIX, this value is case sensitive.
-a or --array	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 aliasName. This is case sensitive.

CLIEX Command Options

The following table 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: ▪ dec: Decimal notation ▪ colon: 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 <u>Device Manager Properties File (CLIEX)</u>.

Sample output resulting from command execution is shown below.

Output Example of AddLun Command (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="6.4">
  <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>
```

Example of Executing Device Manager CLIEX Commands

In the following example, the AddLun command is used to illustrate the execution of Device Manager CLIEX commands. In this example, the AddLun command adds a LUN (port number: 19, LUN: 100, device number: 417) to a Hitachi USP storage subsystem (alias name: ARRAY1).

To add a LUN to a storage subsystem:

1. Use the GetStorageArray command to make sure that 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:

```
hdvmcliex -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)
```

CLIEX Return Responses

Device Manager CLIEX returns the return values for the execution results at the end of the process. The following table shows return values and their descriptions.

Table 7-4   CLIEX Return Responses

Return Value	Description
0	hdvmcliex ends normally.
1	hdvmcliex found errors within its process (for example, parameter error).
2	hdvmcliex found errors in calling CCI Manager Lib.

Displaying CLIEX Help

Device Manager CLIEX provides two help modes:

- Basic Help Information for Device Manager CLIEX

  Displays the CLIEX command format, a list of commands, and a list of options.

- Command Help Information for Device Manager CLIEX

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

Basic CLIEX Help Information

To display basic help information, launch CLIEX with no related parameters, as shown here:

```
USAGE: hdvmcliex { 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, USP_V)
        DeleteHostStorageDomain (9900V, USP, USP_V)
        ModifyPort
        AddLun
        DeleteLun
        AddLunGroup (9900 only)
        DeleteLunGroup (9900 only)
        ModifyLunGroup (9900 only)
        AddWWNForLunGroup (9900 only)
        DeleteWWNForLunGroup (9900 only)
        AddWWNForHostStorageDomain (9900V, USP, USP_V)
        DeleteWWNForHostStorageDomain (9900V, USP, USP_V)
        Help
        Version
FOR COMMAND-SPECIFIC HELP, TYPE: "hdvmcliex [ 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,
                        "hdvmcliex.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

Command Specific CLIEX Help

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.

```
# hdvmcliex help command-name
```

Enter as follows to display help for the AddLun command:

```
# hdvmcliex 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, USP_V) 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

List of CLIEX Commands and Supported Storage Subsystems

Table 7-5 and Table 7-6 list the commands provided by Device Manager CLIEX and the storage subsystems for which these commands are supported:

- Commands for acquiring storage subsystem information (Table 7-5)

- Commands for managing storage subsystems (Table 7-6)

- **Y:** You can use the command for the storage subsystem.

- **N:** You cannot use the command for the storage subsystem.

Table 7-5   Commands for Acquiring Storage Subsystem Information

Command Name	Description	USP V/VM	Hitachi USP	Lightning 9900V	Lightning 9900
GetStorageArray	Obtains information about the storage subsystem.	Y	Y	Y	Y
GetStorageArray (subtarget=HostStorageDomain)	Obtains information about the host storage domain.	Y	Y	Y	N
GetStorageArray (subtarget=LDEV)	Obtains information about LDEVs.	Y	Y	Y	Y
GetStorageArray (subtarget=LogicalUnit)	Obtains information about LUs.	Y	Y	Y	Y
GetStorageArray (subtarget=Path)	Obtains information about paths.	Y	Y	Y	Y
GetStorageArray (subtarget=Port)	Obtains information about ports.	Y	Y	Y	Y

Table 7-6   Commands for Managing Storage Subsystems

Command Name	Description	USP V/VM	Hitachi USP	Lightning 9900V	Lightning 9900
AddHostStorageDomain	Adds the host storage domain.	Y	Y	Y	N
DeleteHostStorageDomain	Deletes the host storage domain.	Y	Y	Y	N
ModifyPort	Modifies the port settings.	Y	Y	Y	Y
AddLun	Adds a path from the host to the volume.	Y	Y	Y	Y
DeleteLun	Deletes a path from the host to the volume.	Y	Y	Y	Y
AddLunGroup	Adds a LUN to the LUN group.	N	N	N	Y
DeleteLunGroup	Deletes a LUN from the LUN group.	N	N	N	Y
ModifyLunGroup	Modifies the LUN group definition.	N	N	N	Y

Command Name	Description	USP V/VM	Hitachi USP	Lightning 9900V	Lightning 9900
AddWWNForLunGroup	Allocates a WWN for the LUN group.	N	N	N	Y
DeleteWWNForLunGroup	Deletes the WWN allocation from the LUN group.	N	N	N	Y
AddWWNForHostStorageDomain	Allocates a WWN to the host storage domain.	Y	Y	Y	N
DeleteWWNForHostStorageDomain	Deletes the WWN allocation from the host storage domain.	Y	Y	Y	N

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Guidelines for Executing Certain CLIEX Commands

Please review the following guidelines when executing Device Manager CLIEX commands.

Table 7-7   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 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 VerifyProp 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 AddArrayReservation and DeleteArrayReservation commands to lock and unlock the target storage subsystem as described in Device Manager CLIEX Operation. If you execute the Device Manager CLIEX commands without applying the dedicated lock, contention for access from other clients or the host may occur.
Refreshing the storage subsystem (Universal Storage Platform V/VM, Hitachi USP, and Lightning 9900V)	When using the 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 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 Device Manager server, and the actual configuration of the storage subsystem.
Rebooting SVP and refreshing the storage subsystem (Lightning 9900)	When you use 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 Device Manager CLIEX commands on Solaris or AIX, the user of the client that executes the commands must have superuser privileges. In addition, Device Manager CLIEX does not link to the user management of Device Manager. You can request any storage subsystem for processing if the storage subsystem is defined in the property file. Therefore, users of 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, 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.

Item	Description
Port numbers for Device Manager CLIEX	The port numbers for the storage subsystem used by Device Manager CLIEX and those managed by the Device Manager server are not the same. If you need to manage LUNs through Device Manager CLIEX, use 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 Device Manager CLIEX, you can request the resource allocated to each SLPR for processing, by creating a command device for each of them.
Universal Storage Platform V/VM operations	For Universal Storage Platform V/VM, Device Manager CLIEX operates at the logical DKC level. It can only operate when the logical DKC number is 0. Therefore, operations in an environment to which a command device whose logical DKC number is 1 or more is connected are not guaranteed. Because the logical DKC number cannot be added to the LDEV number (devnum), specification and display of devnum is limited to the range from 0 to 65,279 (00:00 to FE:FF). Because the Device Manager CLI dedicated lock function locks all devices, while the lock is in place, operations cannot be performed from elsewhere on the other (non-targeted) logical DKCs.

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Command Descriptions (CLIEX)

8

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
- ☐ Commands for Managing Storage Subsystems

Commands for Acquiring Storage Subsystem Information

This section explains the commands for acquiring storage subsystem configuration information.

GetStorageArray

The GetStorageArray command obtains information about storage subsystem disk controllers. This command does not use any parameters.

Format

```
hdvmcliex 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	For Universal Storage Platform V/VM: serial number of the logical DKC
	For Hitachi USP, Lightning 9900V, and Lightning 9900: serial number of the DKC
dkcSerialNumber	Serial number of the DKC
vendorName	Vendor name
controllerVersion	Microcode version for the DKC
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 subtarget parameter has been specified.	
#2 If the storage subsystem contains a LUSE consisting of external volumes, the result output by the GetStorageArray 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 GetStorageArray (subtarget=LogicalUnit).	

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 Universal Storage Platform V/VM, Hitachi USP, and Lightning 9900V.

Format

```
hdvmcliex storage-array [option] GetStorageArray subtarget=HostStorageDomain [port={port-
number|port-name} [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 or port name 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. ▪ 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.

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Table 8-3   Output Items for GetStorageArray (subtarget=HostStorageDomain)

Output item	Description
portID[#]	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.
# 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)

Command Descriptions (CLIEX)

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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

```
hdvmcliex 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 --devnumfmt in Table 8-3. If this parameter is specified, the devNum output item is also displayed in the format specified. Note that if a different format is specified by the --devnumfmt option, that format takes precedence.
		When specifying this parameter, do not specify the ldevfilter parameter.
Ldevfilter	Optional	A filter for selecting specific LDEVs
		The values that can be specified are ALL, ASSIGNED, and FREE. If it is omitted, information for all LDEVs is obtained.
		▪ ALL: Obtains information about all LDEVs.
		▪ ASSIGNED: Obtains information about LDEVs to which a path is allocated.
		▪ FREE: Obtains information about LDEVs to which no path is allocated.
		When specifying this parameter, do not specify the devnum parameter.

When this command is executed, information about the specified LDEV is output. For details about the output items, see Table 8-6.

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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	Indicates whether the target is a cache volume 1 is displayed if it is, and 0 is displayed otherwise.
isCVSVolume	Indicates 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 Copy-on-Write Snapshot V-VOL on Universal Storage Platform V/VM or Hitachi USP, or an external volume on Lightning 9900V.

Note 3: "-1" is displayed if the target is an external volume, a Copy-on-Write Snapshot V-VOL on Universal Storage Platform V/VM or Hitachi USP, or an external volume on Lightning 9900V.

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

```
hdvmcliex 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.
		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 for the devnum parameter. Note that if a different format is specified for the --devnumfmt option, that format takes precedence.
		When specifying this parameter, do not specify the lufilter parameter.

Parameter Name	Specification Level	Description
Lufilter	Optional	A filter for selecting specific LUs
		The values that can be specified are ALL, ASSIGNED and FREE. If it is omitted, information for all LUs is obtained.
		• ALL: Obtains information about all LUs.
		• ASSIGNED: Obtains information about LUs to which a path is allocated.
		• FREE: Obtains information about LUs to which no path is allocated.
		When specifying this parameter, do not specify the devnum parameter.
Lusubinfo	Optional	Specific information about the LU
		The values that can be specified are LDEV and Path. If you specify multiple values at the same time, separate values by commas.
		• LDEV: Obtains information about the LDEV of the LU.
		• Path: 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	Indicates whether the target is being used by Volume Migration
	1 is displayed if it is, and 0 is displayed otherwise.
isExternalVolume	Indicates whether the target is an external volume
	1 is displayed if it is, and 0 is displayed otherwise.

Output Item	Description
isGuardVolume	Indicates whether the target is used for OpenLDEVGuard
	1 is displayed if it is, and 0 is displayed otherwise.
isLocalReplicationVolume	Indicates whether the target is a ShadowImage volume or a Copy-on-Write Snapshot volume
	1 is displayed if it is either of them, and 0 is displayed otherwise.(*Note 3* and *Note 4*)
isRemoteReplicationVolume	Indicates whether the target is a TrueCopy volume or a Universal Replicator volume
	1 is displayed if it is either of them, and 0 is displayed otherwise.
isProvisionalVolume	Indicates whether the target is an HDP volume that is assigned to a pool.
	1 is displayed if it is, and 0 is displayed otherwise. (*Note 5*)
isUnspecifiedVirtualVolume	Indicates whether the target is an HDP volume or Copy-on-Write Snapshot volume that is not assigned to a pool.
	1 is displayed if it is not, and 0 is displayed otherwise. (*Note 6*)
LDEV information	LDEV information
	This is displayed when an LDEV is specified for the lusubinfo 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 hsdsubinfo parameter. For details about the output items, refer to Table 8-4.

Note 1: "-" is displayed if the target is an external volume, a Copy-on-Write Snapshot V-VOL on Universal Storage Platform V/VM or Hitachi USP, or an external volume on Lightning 9900V.

Note 2: "-1" is displayed if the target is an external volume, a Copy-on-Write Snapshot V-VOL on Universal Storage Platform V/VM or Hitachi USP, or an external volume on Lightning 9900V.

Note 3: "0" is displayed if the target is a Copy-on-Write Snapshot POOL volume.

Note 4: "0" is displayed if the target is a Copy-on-Write Snapshot V-VOL on Universal Storage Platform V/VM that is not associated with a pool.

Note 5: Because this output item indicates only whether the target is an HDP volume, 0 is displayed if the target is an HDP pool volume.

Note 6: "0" i is displayed if the target is Hitachi USP, Lightning 9900V, or Lightning 9900.

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

```
hdvmcliex storage-array [option] GetStorageArray subtarget=Path [port={port-number|port-
name} [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 or port name of the path
		If it is omitted, information is obtained for all ports.
domainid	Optional	For Universal Storage Platform V/VM, Hitachi USP, and Lightning 9900V, 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 port parameter. 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 domainid 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 port and domainid parameter. If port and domainid are not specified, information specified for lun is ignored, resulting in obtaining path information of all the ports. If port and domainid are specified and lun is omitted, the specified host storage domains of the specified port or path information of the LUN group is obtained.
pathsubinfo[#]	Optional	Specific information about the port
		The value that can be specified is WWN. If WWN is specified, information about the WWN of the specified path is obtained.
# 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 WWN allocated to the path This is displayed when a WWN is specified for the pathsubinfo parameter.

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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

```
hdvmcliex storage-array [option] GetStorageArray subtarget=Port [port={port-number|port-name}] [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 or port name 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 HostStorageDomain and LUNGroup.
		▪ HostStorageDomain: Obtains information about the host storage domain of the specified port. Specify it for Universal Storage Platform V/VM, Hitachi USP, and Lightning 9900V.
		▪ LUNGroup: Obtains information about the LUN group of the specified port. Specify it for Lightning 9900.
lungroupsubinfo	Optional (for 9900)	Specific information about the host storage domain or LUN group
		The value that can be specified is Path. If Path is specified, information about the path of the specified port is obtained.
		If this parameter is specified, make sure that you specify LUNGroup for the portsubinfo parameter.
pathsubinfo	Optional (for 9900)	Specific information about the path
		The value that can be specified is WWN. If WWN is specified, information about the WWN of the specified path is obtained.
		If this parameter is specified, make sure that you specify Path for the lungroupsubinfo 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 true is displayed if LUN security is enabled, and false is displayed otherwise.
channelSpeed	Channel speed
portRole	Attribute of the port (such as Target)
worldWidePortname	WWN of the port
LUN group information	LUN group information This is displayed when a LUNGroup is specified for the portsubinfo 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 HostStorageDomain is specified for the portsubinfo 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 Path is specified for the lungroupsubinfo parameter. For details about the output items, refer to Table 8-4.

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.

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 Universal Storage Platform V/VM, Hitachi USP, and Lightning 9900V.

Format

```
hdvmcliex storage-array [option] AddHostStorageDomain port={port-number|port-name}
domain=host-storage-domain-ID name=host-storage-domain-nickname

  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 or port name of the host storage domain to be added **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	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 0x prefix. **Note:** The execution results are output in decimal.
Name	Required	Domain name of the host storage domain to be added Specify the name for the host group to be created in the storage subsystem. Note that the maximum number of characters for a domain name is 16 bytes for Universal Storage Platform V/VM and Hitachi USP and 8 bytes for Lightning 9900V. **Note:** If you use the HostScan command to register a host in Device Manager, specify the host name that uses the host storage domain for the name parameter. For details about the HostScan command, see HostScan.

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.

DeleteHostStorageDomain

The DeleteHostStorageDomain command deletes the specified host storage domain. For details about the parameters, see .

> *Notes:*
> - This command can be used with Universal Storage Platform V/VM, Hitachi USP, and Lightning 9900V.
> - This command cannot delete the host storage domain containing the path for the command device being used.

Format

```
hdvmcliex storage-array [option] DeleteHostStorageDomain port={port-number|port-name}
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 or port name 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.

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

```
hdvmcliex storage-array [option] ModifyPort port={port-number|port-name}
[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 or port name
Topology	Optional	New topology value for the port The values that can be specified are as follows: ▪ Fabric(on),FC-AL ▪ Fabric(off),FC-AL ▪ Fabric(on),Point-to-Point ▪ Fabric(off),Point-to-Point The specified value is not case-sensitive, and needs to be enclosed in double quotation marks.
Lunsec	Optional	LUN security settings The values that can be specified are true and false. ▪ true: Enables LUN security (ON). ▪ false: Disables LUN security (OFF).
Domain	Optional (for Universal Storage Platform V/VM, Hitachi USP, and Lightning 9900V)	Domain ID for the host storage domain When specifying the hostmode parameter for Universal Storage Platform V/VM, Hitachi USP, and Lightning 9900V, make sure that you specify this parameter as well.

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Parameter Name	Specification Level	Description
Hostmode	Optional	New host mode When changing the host mode for Universal Storage Platform V/VM, Hitachi USP, and Lightning 9900V, make sure that you specify the domain parameter as well.(***Note 1***) The values that can be specified are as follows.(***Note 2***) For Universal Storage Platform V/VM: ▪ Standard ▪ OPEN-VMS ▪ HP ▪ Solaris ▪ Netware ▪ Windows ▪ Tru64 ▪ AIX For Hitachi USP, Lightning 9900V, and Lightning 9900: ▪ 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.

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 Copy-on-Write Snapshot POOL volume. Make sure in advance that you check whether the volume to which the LUN is assigned is a Copy-on-Write Snapshot POOL volume, by using a tool such as Web Client and management tool for the storage subsystem.
- For Universal Storage Platform V/VM, Hitachi USP, and Lightning 9900V, 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

```
hdvmcliex storage-array [option] AddLun port={port-number|port-name} lun=LUN {devnum=LDEV-number|lusedevnums=LDEV-number...}
```

Format for Universal Storage Platform V/VM, Hitachi USP, and Lightning 9900V

```
hdvmcliex storage-array [option] AddLun port={port-number|port-name} 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 or port name for the path to be added
Domain	Required (for Universal Storage Platform V/VM, Hitachi USP, and Lightning 9900V)	Domain ID for the host storage domain of the path to be added
Lun	Required	LUN allocated to the path to be added

Parameter Name	Specification Level	Description
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 DKC to which the LUN is added (refer to Table 8-1) and information about the added LUN (refer to Table 8-4) is output.

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

```
hdvmcliex storage-array [option] DeleteLun port={port-number|port-name} devnum=LDEV-number
```

Format for Universal Storage Platform V/VM, Hitachi USP, and Lightning 9900V

```
hdvmcliex storage-array [option] DeleteLun port={port-number|port-name} 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 or port name 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 --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.
Domain	Required (for Universal Storage Platform V/VM, Hitachi USP, and Lightning 9900V)	Domain ID of the host storage domain of the path to be deleted

Nothing is output as the execution results for this command.

AddLunGroup

The AddLunGroup command adds the specified LUN to an existing LUN group. It can be used only with Lightning 9900. Note that a new LUN group can also be created for the specified LUN. For details about the parameters, see Table 8-19.

Format

```
hdvmcliex storage-array [option] AddLunGroup port={port-number|port-name} 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 or port name 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 is output about the:

- DKC 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)

- Path allocated to the LUN group (refer to Table 8-4)

DeleteLunGroup

The DeleteLunGroup command deletes the specified LUN group. For details about the parameters, see .

⚠️ **Notes:**

- This command can be used with Lightning 9900 only.
- To delete a LUN group containing the LUN of the command device being used, verify 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

```
hdvmcliex storage-array [option] DeleteLunGroup port={port-number|port-name}
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 or port name 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.

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

```
hdvmcliex storage-array [option] ModifyLunGroup port={port-number|port-name}
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 or port name 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. ▪ ADD: Adds a LUN to the LUN group. ▪ DEL: Deletes a LUN from the LUN group.

When this command is executed, information about the DKC 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.

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

```
hdvmcliex storage-array [option] AddWWNForLunGroup port={port-number|port-name}
{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	Specification Level	Description
Port	Required	Port number or port name 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 lungroupid parameter.
Lungroupid	Required	Number of the LUN group to which the WWN is to be allocated
		When specifying this parameter, do not specify the nickname parameter.
WWN	Required	The WWN to be allocated to the LUN group

When this command is executed, information about the DKC 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.

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

```
hdvmcliex storage-array [option] DeleteWWNForLunGroup port={port-number|port-name}
{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 or port name 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 lungroupid 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 nickname parameter.
WWN	Required	The WWN to be deleted from the LUN group

Nothing is output as the execution results for this command.

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 Universal Storage Platform V/VM, Hitachi USP, and Lightning 9900V.

Format

```
hdvmcliex storage-array [option] AddWWNForHostStorageDomain port={port-number|port-name}
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 or port name 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 **Note:** If you use the HostScan command to register a host in Device Manager, the WWN that you specify in the wwn parameter must be the WWN used by that host only. For details about the HostScan command, see HostScan.

When this command is executed, information about the DKC 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.

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 Universal Storage Platform V/VM, Hitachi USP, and Lightning 9900V.
> - 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

```
hdvmcliex storage-array [option] DeleteWWNForHostStorageDomain port={port-number|port-name}
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 or port name 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.

Device Manager Properties File (CLIEX)

This chapter explains the configuration of the Device Manager CLIEX properties file and log file, and how to create a new properties file.

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Configuration of a Properties File

In 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="6.4">
    <ARRAY
        aliasName="ARRAY0"
        productName="RAID400"
        serialNumber="15143"
        vendorName="HITACHI ">
        <CMDDEV
            devFile="/dev/rdsk/c3t2d8s2"
            devNum="233"/>
    </ARRAY>
    <ARRAY
        aliasName="ARRAY1"
        productName="RAID450"
        serialNumber="35002"
        vendorName="HITACHI ">
        <CMDDEV
            devFile="/dev/rdsk/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 Device Manager CLIEX.

  The serial number that you specify in the ARRAY element depends on the storage subsystem. The following indicates the serial number that you specify for each storage subsystem:

  – For Universal Storage Platform V/VM storage subsystems, specify the serial number of the logical DKC.

  – For Hitachi USP, Lightning 9900V, and Lightning 9900 storage subsystems, specify the serial number of the DKC.

- 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 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 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 raw device files located under the /dev/rdsk directory (for example, cXtYdZs2) are used to identify each command device.

  In AIX, the raw device file name (example: `rhdisk0`) obtained by Object Data Manager (ODM) is supported as the command device identifier.

- 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	For Universal Storage Platform V/VM storage subsystems: serial number of the logical DKC of the storage subsystem For Hitachi USP, Lightning 9900V, and Lightning 9900 storage subsystems: serial number of the DKC 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 or AIX, 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

Element	Attribute	Description	Modification by User
<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

Creating a Properties File

Device Manager CLIEX default properties file is hdvmcliex.properties. Edit the default properties file so that it is suitable for the environment of the client that uses Device Manager CLIEX, or create a new properties file.

Property files can be found in the following locations:

- Windows:

  Device-Manager-CLIEX-installation-folder\config\hdvmcliex.properties

- Solaris or AIX:

  /opt/HDVMCLIEX/config/hdvmcliex.properties

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.

Executing the MakeProp Command

The MakeProp command detects the storage subsystem and command device that are connected to the client that uses 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/rdsk directory. When this command detects a command device, this command defines the raw device file name (/dev/rdsk/*device-file-name*) in the properties file.

In AIX, Object Data Manager (ODM) searches for a command device and, when it detects one, defines its raw device file name (`/dev/rhdisk0`, for example) in the properties file. ODM acquires information about Fibre Channel devices.

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.

- Even if an error occurs during search processing, the MakeProp command only outputs warning log data and continues processing. If a warning is output, make sure that the command device is recognized. If the command device is not recognized, re-create it. If other programs are accessing the command device, stop them, and then re-execute the MakeProp command.

- The MakeProp command does not reference any property file when it is executed. A log is output based on the default settings.

Format

```
hdvmcliex [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 (hdvmcliex.properties.sample) 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.

The information output as the ARRAY element depends on the storage subsystem. The following indicates the information that is output:

- For Universal Storage Platform V/VM storage subsystems

  Information is output for each logical DKC serial number.

- For Hitachi USP, Lightning 9900V, and Lightning 9900 storage subsystems

  Information is output for each DKC serial number.

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, RAID500, or RAID600 is output.
serialNumber	For Universal Storage Platform V/VM storage subsystems: serial number of the logical DKC of the detected storage subsystem
	For Hitachi USP, Lightning 9900V, and Lightning 9900 storage subsystems: serial number of the DKC of the detected storage subsystem
vendorName	Vendor name of the detected storage subsystem. HITACHI is output
devFile	In Solaris or AIX, 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

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 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

```
hdvmcliex 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 VerifyProp command verifies the default properties file (hdvmcliex.properties).
		The following characters cannot be used for a property file name.
		\ / : ; , * ? " < > |

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 Device Manager CLIEX log file (hdvmcliex.log). The log file can be found in the following locations:

- Windows:

    Device-Manager-CLIEX-installation-folder\logs\hdvmcliex.log

- Solaris or AIX:

    /opt/HDVMCLIEX/logs/hdvmcliex.log

The 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, Device Manager CLIEX backs up the existing log file (hdvmcliex.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: ▪ 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: ▪ 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: ▪ true: Outputs error-level logs to the standard error output (default setting). ▪ false: Does not output error-level logs to the standard error output.

Attribute	Description
syslog	Determines whether to output system logs of the client OS You can specify either of the following values: ▪ `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 .

Example log output:

```
2006/01/30 14:20:29:960 hdvmcliex 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 "hdvmcliex" 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

10

Troubleshooting

This chapter describes appropriate actions to take if there is a problem with Device Manager CLI or CLIEX. This chapter covers the following topics:

⚠️ ***Note:*** Always review the Device Manager Release Notes. Make sure that the storage subsystems to be managed are done so by a single Device Manager server.

Troubleshooting Device Manager CLI

Table 10-1   Troubleshooting Information for Device Manager CLI

Problem	Description and Recommended Action
Device Manager CLI. The error message says: C:\HiCommand>HiCommandCLI help GetStorageArray The name specified is not recognized as an internal or external command, operable program or batch file	CAUSE: The most likely problem is that there is no java.exe file in your path. SOLUTION: Either update your path to include the directory holding the java.exe supplied by the Java JDK™ or JRE software, or edit the HiCommandCLI.bat file or HiCommandCLI.sh to specify the full path to your java.exe file.
HiCommandCLI.bat or HiCommandCLI.sh script does not run. The error message says: C:\HiCommand>HiCommandCLI help GetStorageArray Exception in thread "main" Java.lang.NoClassDefFoundError:	CAUSE: The HiCommandCLI.jar file may have been moved or renamed. SOLUTION: Make sure that the HiCommandCLI.jar file has not been moved or renamed, and that you are executing from the directory where the HiCommandCLI.bat (or HiCommandCLI.sh, on UNIX systems) and HiCommandCLI.jar files reside.
An attempt to create a copy pair fails. The error message says: [KAIC07774-E] Failed to create a pair. This HORCM instance could not be started.	CAUSE: The LU is allocated to CL1-A (for Hitachi USP, Lightning 9900V, and Lightning 9900), CTL0-A (for Hitachi AMS/WMS, Thunder 9500V, and Thunder 9200), or LUN0. SOLUTION: Assign another port to the LU or assign a LUN other than LUN0, and re-create the copy pair.
	CAUSE: The host used for creating the copy pair recognizes CL1-A (for Hitachi USP, Lightning 9900V, and Lightning 9900), CTL0-A (for Hitachi AMS/WMS, Thunder 9500V, and Thunder 9200), or LUN0. SOLUTION: Assign another port to the LU or assign a LUN other than LUN0, and re-create the copy pair.
The following error message is displayed and the operation of Device Manager CLI is stopped: An unspecified error was encountered in CLI.	SOLUTION: Collect the following information, and then contact your Hitachi Data Systems representative. ▪ CLI log file ▪ CLI property file ▪ Contents entered on the command line ▪ An executed batch file if a batch was executed. ▪ Device Manager server log.
Text is omitted from the displayed error message.	CAUSE: A maximum of 256 characters can be displayed for the main body of an error message. SOLUTION: Check the omitted contents in the CLI log file.
An error message that includes the following character is displayed when a command of Device Manager CLI is executed: user group	CAUSE: The settings related to the resource group might not be correct. SOLUTION: Check the settings related to the resource group, and then re-execute the command.

Problem	Description and Recommended Action
The following message is displayed when a Device Manager CLI command is executed: [KAIC07472-E] Subsystem information is not consistent. Perform a refresh of the subsystem, and then try again.	CAUSE: The configuration in the Device Manager database is inconsistent with the configuration of the actual storage subsystem information. SOLUTION: Use the AddStorageArray command to refresh the storage subsystem information. Verify that the value of statusOfDBInconsistency indicated below An instance of StorageArray in the command execution results is 0, and then re-execute the command.
The following message is displayed when a Device Manager CLI command is executed: [KAIC90084-E] HTTP Response: "HTTP/1.0 401 Unauthorized"	CAUSE: Authenticate failed in the Device Manager. SOLUTION: Make sure that the user ID and password that you specified when executing the command are correct. If you are using the function for linking to an external authentication server, take the action specified below. For details on the exauth.properties property file, and the hcmdsldapuser and hcmdsradiussecret commands, see the *Hitachi Device Manager Server Configuration and Operation Guide*. If the external authentication server is an LDAP server: 1. Check the external authentication server settings or network status in order to make sure you can use the host, port, and protocol that are specified in exauth.properties to access the external authentication server. 2. Use the hcmdsldapuser command to make sure that the information about the server identification names that are specified for the auth.server.name attributes of exauth.properties has been registered. 3. If you use StartTLS for communication, check the SSL settings. When the external authentication server is a RADIUS server: 1. Check the external authentication server settings or network status in order to make sure you can use the host, port, and protocol that are specified in exauth.properties to access the external authentication server. 2. Use the hcmdsradiussecret command to make sure that the information about the server identification names that are specified for the auth.server.name attributes of exauth.properties has been registered. When the external authentication server is Kerberos: Check the external authentication server settings and network status to make sure you can use the host and port specified in exauth.properties to access the external authentication server. If you cannot resolve the problem even after taking these actions, collect maintenance information for Device Manager and Hitachi Storage Command Suite Common Component, and then contact the Support Center.

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Problem	Description and Recommended Action
The following message is displayed when a Device Manager CLI command is executed: [KAIC90084-E] HTTP Response: "HTTP/1.1 413 Request Entity Too Large"	If the command is executed from the command line: CAUSE: The size of requests to the Device Manager server is too large because too many operation targets are specified on a single command line. SOLUTION: Execute the command by dividing it into multiple instances. If the command is executed by using the batch functionality: CAUSE: On a single command line, five or more HDP volume device numbers are specified for the devnums parameter of the ModifyVirtualVolume command. SOLUTION: Follow the procedure in When an Error Occurs During Batch Functionality Execution. However, if you want to re-execute the batch functionality by specifying five or more device numbers, write them on separate command lines.
An error occurs if SSL communication is used in AIX.	CAUSE: The settings of JRE do not allow using JSSE. SOLUTION: Add the following line to the JRE-installation-directory/lib/security/java.security file: ssl.SocketFactory.provider=com.sun.net.ssl.internal.ssl.SSLSocketFactoryImpl
If an attempt to refresh the host that centrally manages copy pairs is performed, the following message is displayed and the attempt fails: [KAIC07792-E] An attempt to acquire pair volume information on the host "host-name" has failed. Error details: "error-detail".	CAUSE: In Windows, if the configuration definition file in the system folder (the folder represented by the environment variable %windir%) satisfies both of the following conditions, an error occurs during a host refresh operation: ▪ The HORCM_MON parameter is not defined. ▪ The HORCM_CMD parameter is defined. SOLUTION: Take one of the following actions, and then re-execute the command. ▪ Define the HORCM_MON parameter in the configuration definition file. ▪ Change the configuration definition file name to a name other than horcminstance-number.conf. ▪ Delete the configuration definition file.

Troubleshooting Device Manager CLIEX Problems

If a 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 Device Manager CLIEX, see Table 10-3.

- To call our Support Center, see Hitachi Data Systems Support Center.

Table 10-2   Files to be Collected for Troubleshooting

Directory	File	Explanation
Windows: *Device-Manager-CLIEX-installation-folder*\logs (**Note 1**) Solaris or AIX: /opt/HDVMCLIEX/logs (**Note 1**)	hdvmcliex.log	Device Manager CLIEX log file
	hdvmcliex.log.bak	Backup of Device Manager CLIEX log file
Windows: *Device-Manager-CLIEX-installation-folder*\config (**Note 1**) Solaris or AIX: /opt/HDVMCLIEX/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: *Device-Manager-CLIEX-installation-folder*\lib\log (**Note 1**) Solaris or AIX: /opt/HDVMCLIEX/lib/.log (**Note 1**)	hse.log	CCI/Lib log file
	hse.log.bak	Backup of CCI/Lib log file
Windows: *system-folder*\System32\config	CLIEXAppEvent.EVT (Application) CLIEXSysEvent.EVT (System)	Event log application and system log file
Solaris or AIX: /var/adm (**Note 2**)	messages	OS system log file
Windows: Directly under the Windows system drive (example: C:\) Solaris or AIX: /tmp	dvmcliex_installLog.log	Installation log file for Device Manager CLIEX
	dvmcliex_uninstallLog.log	Uninstallation log file for Device Manager CLIEX

Directory	File	Explanation

--	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 or AIX:
		  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
Device Manager CLIEX does not run when the operating system is Solaris or AIX. The error message says: The command device has failed. [EL_ATTCMD] Can't attach to the Command device.	CAUSE: The /usr/lib/RMLIB directory or a symbolic link to that directory might not have been created, even though RaidManager/Lib has already been installed. SOLUTION: Create a symbolic link to the /usr/lib/RMLIB directory.
	CAUSE: RaidManager/Lib has not been installed. SOLUTION: Install RaidManager/Lib.
The following error message is displayed when the operating system is AIX: Could not load program hdvmcliex: Symbol resolution failed for hdvmcliex because: Symbol _Getctype__FPCc (number 258)....	CAUSE: C Set ++ Runtime for AIX 5.0 version 8 or later has not been installed as a required program. SOLUTION: Install C Set ++ Runtime for AIX 5.0 version 8 or later as a required program.
The following error message is displayed: The command device has failed. [EL_CMDRJE] An order of the control command rejected.	CAUSE: The operation target is a mainframe volume. SOLUTION: Device Manager CLIEX does not support operations for mainframe volumes. To operate mainframe volumes, use SVP or Storage Navigator.
	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. SOLUTION: Use Web Client or Device Manager CLI.
	CAUSE: One or more operation targets are a port, host group, WWN, or path connected to a high-speed port controller. SOLUTION: Using the Device Manager CLI, check whether the port controllers connected to the operation targets are set to high-speed mode. Device Manager CLIEX does not support operations on high-speed ports. Use the Device Manager CLI for such operations.

Problem	Description and Recommended Action
When the operating system is Windows, the following error message is displayed: The command device has failed. [EL_CMDIOE] Control command I/O error, or rejected.	CAUSE: The command device is set as a dynamic disk. 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).
When the operating system is Windows and the MakeProp or VerifyProp command is executed, the following message is output to the log: KAIC45021 The GUID "\\?\Volume{GUID}" is not available as a command device.	CAUSE: The drive letter may have not been assigned when a partition was created for the command device. SOLUTION: Assign a drive letter to the partition.

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 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

Using a DTD with Device Manager CLI

To use a Document Type Definition (DTD), you must create a DTD using the following contents:

```
<!ELEMENT DvMCLIResult (CommandResult)>
<!ELEMENT CommandResult (StorageArray)*>
<!ELEMENT StorageArray (ArrayGroup | CommParameters | Component | HostStorageDomain |
JournalPool | LDEV | LogicalDKC | LogicalUnit | Path | PDEV | Pool | Port | PortController
| ReplicationInfo | MFReplicationInfo | ExternalStorage)*>
<!ELEMENT ArrayGroup (FreeSpace | LogicalUnit | PDEV | RelatedDistributedArrayGroup |
ExternalPathInfo)*>
<!ELEMENT HostStorageDomain (FreeLUN | Path | WWN | ISCSIName)*>
<!ELEMENT JournalPool (LogicalUnit | PairedJournalPool | ReplicationInfo)*>
<!ELEMENT LDEV (VolumeConnection | ObjectLabel)*>
<!ELEMENT LogicalUnit (LDEV | Path | VolumeConnection)*>
<!ELEMENT MFReplicationInfo (LDEV)*>
<!ELEMENT Path (HostInfo | LogicalGroup | WWN | WWNGroup | ISCSIName)*>
<!ELEMENT Pool (LogicalUnit | PairedPool | ReplicationInfo | ArrayGroup)*>
<!ELEMENT Port (HostStorageDomain | LUNGroup | WWN | WWNGroup | ISCSIName)*>
<!ELEMENT PortController (IPAddress | PairedPortController)*>
<!ELEMENT ReplicationInfo (LogicalUnit)*>
<!ELEMENT WWNGroup (WWN)*>
<!ELEMENT CommParameters EMPTY>
<!ELEMENT Component EMPTY>
<!ELEMENT FreeLUN EMPTY>
<!ELEMENT FreeSpace EMPTY>
<!ELEMENT HostInfo EMPTY>
<!ELEMENT IPAddress EMPTY>
<!ELEMENT ISCSIName EMPTY>
<!ELEMENT LogicalDKC EMPTY>
<!ELEMENT LogicalGroup EMPTY>
<!ELEMENT LUNGroup EMPTY>
<!ELEMENT PairedJournalPool EMPTY>
<!ELEMENT PairedPool EMPTY>
<!ELEMENT PairedPortController EMPTY>
<!ELEMENT PDEV EMPTY>
<!ELEMENT VolumeConnection EMPTY>
<!ELEMENT WWN EMPTY>
<!ELEMENT ObjectLabel EMPTY>
<!ELEMENT RelatedDistributedArrayGroup EMPTY>
<!ELEMENT ExternalPathInfo EMPTY>
<!ELEMENT ExternalStorage EMPTY>

<!ATTLIST DvMCLIResult version CDATA #IMPLIED>

<!ATTLIST CommandResult command CDATA #IMPLIED>
```

```
<!ATTLIST StorageArray objectID CDATA #IMPLIED>
<!ATTLIST StorageArray name CDATA #IMPLIED>
<!ATTLIST StorageArray description CDATA #IMPLIED>
<!ATTLIST StorageArray serialNumber CDATA #IMPLIED>
<!ATTLIST StorageArray arrayFamily CDATA #IMPLIED>
<!ATTLIST StorageArray arrayType CDATA #IMPLIED>
<!ATTLIST StorageArray microcodeVersion CDATA #IMPLIED>
<!ATTLIST StorageArray agentVersion CDATA #IMPLIED>
<!ATTLIST StorageArray productName CDATA #IMPLIED>
<!ATTLIST StorageArray controllerVersion CDATA #IMPLIED>
<!ATTLIST StorageArray numberOfControllers CDATA #IMPLIED>
<!ATTLIST StorageArray capacityInGB CDATA #IMPLIED>
<!ATTLIST StorageArray cacheInMB CDATA #IMPLIED>
<!ATTLIST StorageArray sharedMemoryInMB CDATA #IMPLIED>
<!ATTLIST StorageArray numberOfSpareDrives CDATA #IMPLIED>
<!ATTLIST StorageArray freeCapacityInGB CDATA #IMPLIED>
<!ATTLIST StorageArray allocatedCapacityInGB CDATA #IMPLIED>
<!ATTLIST StorageArray hihsmCapacityInGB CDATA #IMPLIED>
<!ATTLIST StorageArray onDemandCapacityInGB CDATA #IMPLIED>
<!ATTLIST StorageArray totalFreeSpaceInGB CDATA #IMPLIED>
<!ATTLIST StorageArray largestFreeSpaceInGB CDATA #IMPLIED>
<!ATTLIST StorageArray capacityInKB CDATA #IMPLIED>
<!ATTLIST StorageArray freeCapacityInKB CDATA #IMPLIED>
<!ATTLIST StorageArray allocatedCapacityInKB CDATA #IMPLIED>
<!ATTLIST StorageArray hihsmCapacityInKB CDATA #IMPLIED>
<!ATTLIST StorageArray onDemandCapacityInKB CDATA #IMPLIED>
<!ATTLIST StorageArray totalFreeSpaceInKB CDATA #IMPLIED>
<!ATTLIST StorageArray largestFreeSpaceInKB CDATA #IMPLIED>
<!ATTLIST StorageArray multipathSupport CDATA #IMPLIED>
<!ATTLIST StorageArray securityStatus CDATA #IMPLIED>
<!ATTLIST StorageArray sequenceNumber CDATA #IMPLIED>
<!ATTLIST StorageArray displayArrayFamily CDATA #IMPLIED>
<!ATTLIST StorageArray displayArrayType CDATA #IMPLIED>
<!ATTLIST StorageArray numberOfLUs CDATA #IMPLIED>
<!ATTLIST StorageArray numberOfAllocatedLUs CDATA #IMPLIED>
<!ATTLIST StorageArray numberOfUnallocatedLUs CDATA #IMPLIED>
<!ATTLIST StorageArray slprStatus CDATA #IMPLIED>
<!ATTLIST StorageArray openTotalCapacity CDATA #IMPLIED>
<!ATTLIST StorageArray openAllocatedCapacity CDATA #IMPLIED>
<!ATTLIST StorageArray openFreeCapacity CDATA #IMPLIED>
<!ATTLIST StorageArray openHiHsmCapacity CDATA #IMPLIED>
<!ATTLIST StorageArray openOnDemandCapacity CDATA #IMPLIED>
<!ATTLIST StorageArray imTotalCapacity CDATA #IMPLIED>
<!ATTLIST StorageArray imAllocatedCapacity CDATA #IMPLIED>
<!ATTLIST StorageArray imFreeCapacity CDATA #IMPLIED>
<!ATTLIST StorageArray imHiHsmCapacity CDATA #IMPLIED>
<!ATTLIST StorageArray imOnDemandCapacity CDATA #IMPLIED>
<!ATTLIST StorageArray mfTotalCapacity CDATA #IMPLIED>
<!ATTLIST StorageArray mfHiHsmCapacity CDATA #IMPLIED>
<!ATTLIST StorageArray mfOnDemandCapacity CDATA #IMPLIED>
<!ATTLIST StorageArray mfAllocatedCapacity CDATA #IMPLIED>
<!ATTLIST StorageArray mfUnallocatedCapacity CDATA #IMPLIED>
<!ATTLIST StorageArray numberOfOpenAllocatedLUs CDATA #IMPLIED>
<!ATTLIST StorageArray numberOfOpenUnallocatedLUs CDATA #IMPLIED>
<!ATTLIST StorageArray numberOfImAllocatedLUs CDATA #IMPLIED>
<!ATTLIST StorageArray numberOfImUnallocatedLUs CDATA #IMPLIED>
<!ATTLIST StorageArray numberOfMfLDEVs CDATA #IMPLIED>
<!ATTLIST StorageArray numberOfAllocatedMfLDEVs CDATA #IMPLIED>
<!ATTLIST StorageArray numberOfUnallocatedMfLDEVs CDATA #IMPLIED>
<!ATTLIST StorageArray productCode CDATA #IMPLIED>
<!ATTLIST StorageArray lastRefreshed CDATA #IMPLIED>
<!ATTLIST StorageArray autoFormatLU CDATA #IMPLIED>
<!ATTLIST StorageArray statusOfDBInconsistency CDATA #IMPLIED>
<!ATTLIST StorageArray configUpdateStatus CDATA #IMPLIED>
<!ATTLIST StorageArray openAllocatedActualCapacity CDATA #IMPLIED>
```

```
<!ATTLIST StorageArray openUnallocatedCapacity CDATA #IMPLIED>
<!ATTLIST StorageArray openUnallocatedActualCapacity CDATA #IMPLIED>
<!ATTLIST StorageArray openReservedCapacity CDATA #IMPLIED>
<!ATTLIST StorageArray openReservedActualCapacity CDATA #IMPLIED>
<!ATTLIST StorageArray numberOfReservedLUs CDATA #IMPLIED>
<!ATTLIST StorageArray numberOfOpenReservedLUs CDATA #IMPLIED>
<!ATTLIST StorageArray numberOfImReservedLUs CDATA #IMPLIED>
<!ATTLIST StorageArray distributedMode CDATA #IMPLIED>

<!ATTLIST ArrayGroup objectID CDATA #IMPLIED>
<!ATTLIST ArrayGroup name CDATA #IMPLIED>
<!ATTLIST ArrayGroup chassis CDATA #IMPLIED>
<!ATTLIST ArrayGroup number CDATA #IMPLIED>
<!ATTLIST ArrayGroup displayName CDATA #IMPLIED>
<!ATTLIST ArrayGroup raidType CDATA #IMPLIED>
<!ATTLIST ArrayGroup emulation CDATA #IMPLIED>
<!ATTLIST ArrayGroup diskType CDATA #IMPLIED>
<!ATTLIST ArrayGroup diskSize CDATA #IMPLIED>
<!ATTLIST ArrayGroup diskSizeInKB CDATA #IMPLIED>
<!ATTLIST ArrayGroup controllerID CDATA #IMPLIED>
<!ATTLIST ArrayGroup totalCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup allocatedCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup freeCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup hiHsmCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup onDemandCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup totalFreeSpace CDATA #IMPLIED>
<!ATTLIST ArrayGroup largestFreeSpace CDATA #IMPLIED>
<!ATTLIST ArrayGroup substance CDATA #IMPLIED>
<!ATTLIST ArrayGroup slprNumber CDATA #IMPLIED>
<!ATTLIST ArrayGroup clprNumber CDATA #IMPLIED>
<!ATTLIST ArrayGroup cuInfo CDATA #IMPLIED>
<!ATTLIST ArrayGroup openTotalCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup openAllocatedCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup openFreeCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup openHiHsmCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup openOnDemandCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup imTotalCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup imAllocatedCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup imFreeCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup imHiHsmCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup imOnDemandCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup mfTotalCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup mfHiHsmCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup mfOnDemandCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup mfAllocatedCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup mfUnallocatedCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup openAllocatedActualCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup openUnallocatedCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup openUnallocatedActualCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup openReservedCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup openReservedActualCapacity CDATA #IMPLIED>
<!ATTLIST ArrayGroup type CDATA #IMPLIED>
<!ATTLIST ArrayGroup volumeType CDATA #IMPLIED>
<!ATTLIST ArrayGroup encrypted CDATA #IMPLIED>
<!ATTLIST ArrayGroup protectionLevel CDATA #IMPLIED>
<!ATTLIST ArrayGroup dpPoolID CDATA #IMPLIED>

<!ATTLIST CommParameters userID CDATA #IMPLIED>
<!ATTLIST CommParameters ipAddress CDATA #IMPLIED>
<!ATTLIST CommParameters ipAddress2 CDATA #IMPLIED>
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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
DAMP	Disk Array Management Program
DEVN	Device Number
DKA	Disk Adapter
DKC	Disk Controller
DMP	Dynamic Multipathing
DST	Daylight Saving Time
DTD	Document Type Definition
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 Transfer Protocol
HTTPS	HyperText Transfer Protocol Secure
ID	Identifier
IP	Internet Protocol
Java RMI	Java Remote Method Invocation
JRE	Java Runtime Environment
JSSE	Java Secure Socket Extension
JWS	Java Web Start
LDEV	Logical Device
LU	Logical Unit
LUN	Logical Unit Number
LUSE	Logical Unit Size Expansion

Hitachi Device Manager Command Line Interface (CLI) User's Guide

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
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
USP	Universal Storage Platform
VDS	Virtual Disk Service
VOLSER	Volume Serial number
V-VOL	virtual volume
VxVM	VERITAS Volume Manager
WMS	Workgroup Modular Storage
WWN	WorldWide Name
XML	Extensible Markup Language

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