



**Hitachi TagmaStore®  
Adaptable Modular Storage  
and Workgroup Modular Storage  
Storage Navigator Modular  
Command Line Interface (CLI) User's Guide**



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## Changes in this Revision

- Reorganized Table 1-1 for clarity (Table 2.1)
- Updated the operating environments for PC and Sun server/workstation. (see section 2.2)
- Revised the screen shot in the section about setting TCP/IP port numbers. (see section 4.1.6)
- Added a new section about setting and deleting the account information file. (see section 4.17)
- Added the new commands `auerralertop`, `auaccountenv`, `auauditlog`, `aumvolmigration`, and `auaccount` to the command list (see section 4.1.4)
- Revised screen shot in the section about setting TCPIP port numbers (section see 4.1.6)
- Revised screen shots and added information in the section about shutting down and rebooting the NNC (see section 4.11.4)

- Added a new section about the `auerralertopt` command, which references or sets the monitoring errors options. (see section 4.15.5)
- Added a new section about the `auaccountenv` command, which sets or deletes the account information file. (section 4.17)
- Added a new heading about password protection (section 5.2.1)
- Added a new section about executing a command from the script when using specific environment variables. (section 5.3)
- Added an index for usability.
- Added a new list of acronyms.

# Preface

This document provides instructions for installing and using the Storage Navigator Modular Program with the command line interface.

This document assumes the following:

- The user is familiar with the operating system and web browser software on the system hosting the Storage Navigator Modular software.
- The user has a background has a background in data processing and understands storage subsystems and their basic functions.
- The user is familiar with the AMS/WMS subsystem and has read and understands the manuals for the subsystem.

## **Notes:**

- In this document, the term “Storage Navigator” refers to the Storage Navigator command line interface, unless otherwise noted.
- In this document, instructions with a “CAUTION” label indicate that failure to follow the instructions could result in damage to the subsystem or potential loss of data.
- The Storage Navigator Modular screens shown in this document were captured on a Windows® system with the Internet Explorer web browser. The Storage Navigator Modular screens may display differently on other operating systems and browsers.
- For further information, please contact your Hitachi Data Systems account team, or visit the Hitachi Data Systems worldwide web site at <http://www.hds.com>.

**Notice:** The use of the Storage Navigator Modular program and all other Hitachi Data Systems products is governed by the terms of your agreement(s) with Hitachi Data Systems.

## Software Version

This document revision applies to Hitachi TagmaStore® Adaptable Modular Storage and Workgroup Modular Storage Products version 7.1 and higher.

## Comparing the Web, GUI, and CLI Versions of Storage Navigator Modular

Storage Navigator Modular software has three separate versions for managing Hitachi TagmaStore® Adaptable Modular Storage and Workgroup Modular Storage: the Web version (described in this user guide), a graphical user interface (GUI) version, and a command line interface (CLI) version. Here is an overview:

Application	User Interface	Configuration	Comparisons	User Guide
Storage Navigator Modular for Web	Web browser	<ul style="list-style-type: none"> <li>▪ Operating system: Windows®</li> <li>▪ Network: One or more storage subsystems, a Web server and Web client computer are connected through a LAN.</li> <li>▪ Installation: The application is installed on the Web server. The Java™ runtime environment (for running Java applets in a browser) is installed on the Web client computer.</li> <li>▪ Operation: User runs the program from a Web browser on the client computer.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Used with HiCommand Device Manager software to help centrally manage storage subsystems.</li> <li>▪ May also be used without HiCommand software.</li> <li>▪ Requires a Web server.</li> </ul>	<i>Storage Navigator Modular for Web User's Guide (MK-95DF719)</i>
Storage Navigator Modular Graphical User Interface (GUI)	Traditional graphical user interface (GUI)	<ul style="list-style-type: none"> <li>▪ Operating system: Windows, or UNIX®/Linux®</li> <li>▪ Network: Storage subsystems connect to the host computer through a LAN.</li> </ul>	GUI appearance is similar to Web version.	<i>Storage Navigator Modular Graphical User Interface (GUI) User's Guide (MK-95DF711)</i>
Storage Navigator Modular Command Line Interface (CLI)	Command line interface (CLI)	<ul style="list-style-type: none"> <li>▪ Installation and operation: Program is installed on and run from the host computer.</li> </ul>	For users who prefer the command line interface or want to run scripts.	<i>Storage Navigator Modular Command Line Interface (CLI) User's Guide (MK-95DF712)</i>

## Conventions for Storage Capacity Values

Storage capacity values for hard disk drives (HDDs) are calculated based on the following values:

- 1 KB (kilobyte) = 1,000 bytes
- 1 MB (megabyte) = 1,000<sup>2</sup> bytes
- 1 GB (gigabyte) = 1,000<sup>3</sup> bytes
- 1 TB (terabyte) = 1,000<sup>4</sup> bytes

Storage capacity values for logical units (LUs) are calculated based on the following values:

- 1 KB (kilobyte) = 1,024 bytes
- 1 MB (megabyte) = 1,024<sup>2</sup> bytes
- 1 GB (gigabyte) = 1,024<sup>3</sup> bytes
- 1 TB (terabyte) = 1,024<sup>4</sup> bytes

## Referenced Documents

- *Hitachi TagmaStore<sup>®</sup> AMS and WMS LUN Management User's Guide, MK95DF703.*
- *Hitachi TagmaStore<sup>®</sup> AMS and WMS SNMP Agent User's Guide, MK-95DF705*
- *Hitachi TagmaStore<sup>®</sup> AMS and WMS Password Protection User's Guide, MK-95DF704*
- *Hitachi TagmaStore<sup>®</sup> AMS and WMS Error Codes, MK-95DF788*

## Comments

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

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

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# Chapter 1 Overview of TagmaStore® AMS and WMS

## 1.1 Overview of TagmaStore® AMS and WMS

The TagmaStore® Adaptable Modular Storage (AMS) and Workgroup Modular Storage (WMS) provide scalable, cost-effective modular storage for Microsoft Exchange Server and other business applications. You can use the AMS or WMS to implement storage consolidation, first SAN deployment, backup, or data archiving.

The AMS and WMS enable you to meet compliance requirements, protect your data, and reduce recovery times, while benefiting from flexible storage solutions that allow you to manage your data growth. The centralized storage infrastructure allows you to reduce the complexity and cost of your storage management. Fully redundant and hot-swappable components let you to keep applications online, while within-system volume replication and incremental copy functions allow for frequent backups. The available RAID-6 architecture gives you high availability and rapid RAID group rebuild, while the Hi-Track “call home” service and remote maintenance functions provide the security of 24/7 support from expert service professionals.

You can partition and dedicate cache to maximize the performance of high-I/O operations. You can leverage the AMS or WMS together with the enterprise-class TagmaStore® Universal Storage Platform (USP) or Network Storage Controller (NSC) to implement a tiered storage solution to manage the data lifecycle. Simple SAN and SAN Starter solutions allow easy deployment. SAN-attached servers can use diskless boot, and Network Attached Storage (NAS) applications allow for high-capacity storage.



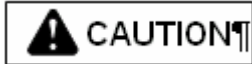
## Chapter 2 Storage Navigator Specifications and Requirements

Storage Navigator Modular for Command Line Interface consists of commands used for the command line interface. With Storage Navigator, you can display the display status and set up the configuration of an array subsystem. You can use these commands in a prompt state by selecting a command with the function appropriate for your purpose. This chapter includes the following:

- Notes on Using Storage Navigator (see section 2.1)
- Operating Environments (see section 2.2)
- Connecting (see section 2.3)
- Installing (see section 2.5)
- Updating (see section 2.6)
- Uninstalling (see section 2.7)

## 2.1 Notes on Using Storage Navigator

When using Storage Navigator, consider the following:



- The “ERROR INF function species an error information transfer mode to the RS232C port. When using Storage Navigator on a “RS232C connection,” the “ERROR INF” must be set to “OFF”, which suspends the error information transfer, in the system parameter setting function of the array subsystem. (RS232 is available for the 9200 only).
- The “ERROR INF” is set to “OFF” when shipped from the factory. because it might cause the Storage Navigator to fail to connect to the array subsystem or cause functions of the Storage Navigator to end abnormally.
- Not all of the functions executed by Storage Navigator, are available while the array subsystem is online with a host. For details, see Chapter 3.
- When high I/O load exists, functions that are available while online might cause a command time-out in the host or a recovering fault in Storage Navigator. It is recommended that these functions be executed while offline.
- When Storage Navigator is installed in the host that is connected to the array subsystem, I/O load from a host might cause a command time-out on the host side or an abnormal termination on the Manager side. It is recommended that the Storage Navigator be installed in the host that is not connected to the array subsystem.
- At least one logical unit must be configured in the array subsystem, to make all of the Storage Navigator functions available. If a logical unit is not defined in the array subsystem, some functions cannot be executed.
- Storage Navigator can control up to 1,024 array subsystems. Configurations (setting of RAID groups, logical units, etc.) can only be done on one array subsystem at a time. Error Alert monitoring must be stopped to configure array subsystems.
- When the PC enters the suspension state (low power mode) while Storage Navigator is running, Storage Navigator may not operate correctly after the PC is released from the suspension state.
- When you operate Storage Navigator, disable power management by Windows® so that the PC will not enter the suspension state.
- When connecting Storage Navigator to the subsystem via the RS232C interface, interface RS232C is only available for the 9200. Do not execute anything other than the Error monitoring function online. Executing another function online might cause a command timeout on the host side and terminate other running applications abnormally.

- Storage Navigator may hang up in the following cases:
  - The communication with the connected array subsystem fails due to controller blockage, array subsystem failure, or disconnected LAN connection, etc., or in case that the array subsystem receives a Reset/LIP from the host.
  - Another application is running at the same time, and the CPU use rate is high.

If Storage Navigator hangs up, manually terminate it and check the array subsystem status and the RS232C or LAN connection status. Then, boot up Storage Navigator once again. Start Storage Navigator when you have finished other applications.
- When Storage Navigator connects to the disk array subsystem via a LAN, it uses the TCP/IP port number of 2000. The TCP/IP port number of the disk array subsystem is set to 2000 by default. Check this number in the Web window when the disk array subsystem cannot be connected.
- Storage Navigator support for dynamic disks is not available at this time under certain operating conditions. For information about dynamic disks, please contact your Hitachi Data Systems technical representative.
- If Storage Navigator is used with other programs for one array subsystem, the following restrictions apply.

**Table 2.1 Restrictions on Using Multiple Programs for Single Array**

Program Name	Concurrent Use Supported	Concurrent Use Not Supported
Storage Navigator	<ul style="list-style-type: none"> <li>▪ Storage Navigator (<b>Note</b>)</li> <li>▪ SNMP Agent</li> <li>▪ DAMP Web Server</li> </ul>	<ul style="list-style-type: none"> <li>▪ DAMP GUI</li> <li>▪ DAMP for Web</li> </ul>
DAMP GUI	<ul style="list-style-type: none"> <li>▪ SNMP Agent</li> <li>▪ DAMP Web Server</li> </ul>	<ul style="list-style-type: none"> <li>▪ Storage Navigator</li> <li>▪ DAMP GUI</li> <li>▪ DAMP for Web</li> </ul>
DAMP (Web)	<ul style="list-style-type: none"> <li>▪ SNMP Agent</li> <li>▪ DAMP Web Server</li> </ul>	<ul style="list-style-type: none"> <li>▪ Storage Navigator</li> <li>▪ DAMP GUI</li> <li>▪ DAMP for Web</li> </ul>
SNMP Agent	<ul style="list-style-type: none"> <li>▪ Storage Navigator</li> <li>▪ DAMP GUI</li> <li>▪ DAMP for Web</li> <li>▪ SNMP Agent</li> <li>▪ DAMP Web Server</li> </ul>	
DAMP Web Server	<ul style="list-style-type: none"> <li>▪ Storage Navigator</li> <li>▪ DAMP GUI</li> <li>▪ DAMP for Web</li> <li>▪ SNMP Agent</li> <li>▪ DAMP Web Server</li> </ul>	

**Note:** You can have two concurrent instances of Storage Navigator, provided that they are not connected to the same array system. If one instance terminates forcibly, that may affect the other instance.

Additionally, if one Storage Navigator terminates forcibly while using two Storage Navigators simultaneously, another Storage Navigator may terminate abnormally. Return the Storage Navigator that terminated abnormally to operational status.

If you run a combination of programs when concurrent use is not allowed, or if a program with a usage restriction placed on it has been started, start another program of the combination after terminating the running program. To operate other programs, refer to their respective user's guides provided with the program products.

- When connecting the disk array subsystem to Storage Navigator via a LAN, depending on the LAN environment, the disk array subsystem may not be connected due to data transfer time-out. When Storage Navigator cannot connect with the disk array subsystem, verify that the connection is correct by using the ping command, etc. If the response to the ping command is normal, the LAN environment may affect the data transfer. The length of data to be transferred can be changed with the "lanconf.inf" file in the directory in which Storage Navigator is installed. The default setting is "32768". Change the setting to "16384" or "8192" in this order or to a multiple of 1024, and then retry. The new setting becomes effective during the next operation (restarting Storage Navigator is not required). Storage Navigator operation may take extensive time depending on the setting. If the connection cannot be made after the settings are changed, review the LAN environment.
- If any array subsystem failure is detected, contact your Hitachi Customer Engineer.
- Do not use the reserved words discrete for each OS and device names that indicate the input/output destinations as a file name when a file is output. Windows includes "con", "pm", "aux", etc. and Unix® includes "/dev\*", etc. For example, when con.txt is specified as an output file name, the content to be output to a file is displayed in a window.
- When a command is executed through utilization of a network with telnet, etc., a window may be closed by pressing the **Enter** key, depending on the **alive time** of the window. Set the **alive time** to be more than ten minutes.
- When operating the command for the disk array subsystem, which indicates that the Account Authentication function is valid, it terminates abnormally if it does not respond with the confirmation message within the session time-out (20 minutes) before executing the command. When the confirmation message is displayed, check the content and respond to that message. If it terminates abnormally by the session time-out, after logging in again and reissue the command.

## 2.2 Operating System Environments

Storage Navigator is operated by connecting to the array subsystem via a LAN or RS232C. When an array subsystem is connected to a LAN or a host, in which Storage Navigator is installed, it must be connected to the network and must operate normally. (A host can be personal computer, Sun™ server/ workstation, SGI® server/workstation, HP® server/workstation, or IBM® server/workstation) When an array subsystem is connected to an RS232C interface, an RS232C port of the machine must operate normally. The RS232C interface is only available for the 9200.

**Note:** Storage Navigator support for dynamic disks is not available at this time under certain operating conditions. For information about dynamic disks, contact your Hitachi Data Systems technical representative.

- PC:
  - Windows® 98, Windows NT®, Windows® 2000, Windows® XP, Windows Server™ 2003, or Windows Server™ 2003 (R2)
  - CPU: Pentium®
  - Memory: 16 MB or more is recommended.
  - Disk capacity: 10.5 MB maximum
  - Network adapter
- Sun server/workstation:
  - Solaris™ 2.6, 7, 8, 9, 10
  - CPU: UltraSPARC or more is recommended.
  - Memory: 16 MB
  - Disk capacity: product version 19.5 MB maximum
  - Network adapter
- SGI server/workstation:
  - IRIX® 6.5
  - CPU: R10000 or more is recommended.
  - Memory: 16 MB
  - Disk capacity: product version 32.5 MB maximum
  - Network adapter
- HP server/workstation:
  - HP-UX 10.20, 11.0, 11i, 11i v2.0
  - CPU: PA8000 or more is recommended. (HP-UX 11i v2.0 operates in Itanium® 2 environment.)
  - Memory: 16 MB
  - Disk capacity: product version 21 MB maximum
  - Network adapter

- IBM server/workstation:
  - AIX® 4.3.3, 5.1, 5.2
  - CPU: PowerPC/RS64 II or more is recommended.
  - Memory: 16 MB
  - Disk capacity: product version 24.5 MB maximum
  - Network adapter
  - Premise program: install the patch of IY33524 if needed after VisualAge C++ Runtime 6.0.0.0. Download from the IBM Web site.
- Red Hat® Linux®:
  - Red Hat Linux 7.3, 8.0, AS2.1
  - Kernel version:
    - Red Hat Linux 7.3: 2.4.18-3
    - Red Hat Linux 8.0: 2.4.18-14
    - Red Hat Linux AS2.1: 2.4.9-e.27
  - glibc version:
    - Red Hat Linux 7.3: 2.2.5-34
    - Red Hat Linux 8.0: 3.2-4.80.6
    - Red Hat Linux AS2.1: 2.3.4-26
  - CPU: Pentium-II, III, IV (233 MHz or more is recommended.)
  - Memory: 128 MB (192 MB or more is recommended.)
  - Disk capacity: 12.5 MB (A free capacity of 100 MB or more is required.)
  - Network adapter
  -
- RS232C connection: (RS232C is only available for the 9200)
  - Serial port:
    - Baud rate: 9600
    - Data bit: 8
    - Parity: none
    - Stop bit: 1
    - Flow control: none
  - Serial cable (9 pin, cross) for RS232C connection: 1 cable/controller

## 2.3 Connecting Interfaces

LAN connection:

- When the array subsystem and the machine are connected directly, use 10BaseT/100BaseT cable (cross) or twisted pair cable (cross).
- When the array subsystem and machine are connected through a hub or a switch, use 10BaseT/100BaseT cable or twisted pair cable. 9200 supports 10BaseT only.
- TCP/IP Port Number:
  - When connecting the disk array subsystem and a LAN, Storage Navigator uses port number 2000. When changing the port number, add “df-damp-snm port number/TCP” to the services file of the OS. When the port number of the disk array subsystem is set as 2000, the disk array subsystem can be connected to the LAN. This connection takes time, even if another port number is registered in the services file.

## 2.4 Connecting the Interface

This section provides examples of connections between a workstation in which Storage Navigator and an array subsystem are installed. These connections include:

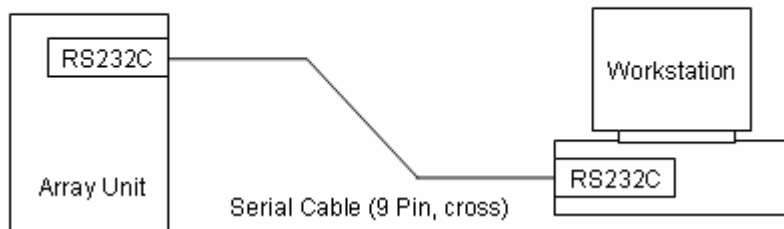
- RS232C Connection
- LAN by a Hub or Switch
- LAN Direct Attachment

The following diagram is an example of a connection between a workstation in which Storage Navigator and an array subsystem are installed.

### 2.4.1 RS232C Connection

#### RS232C Connection

- RS232C connection



**Note:** In the dual system where two RS232C ports are in the workstation, connect the RS232C to controller 0 and controller 1.

Figure 2.1 Connecting the RS232C to Controller 0 and Controller 1

## 2.4.2 LAN by a Hub or Switch

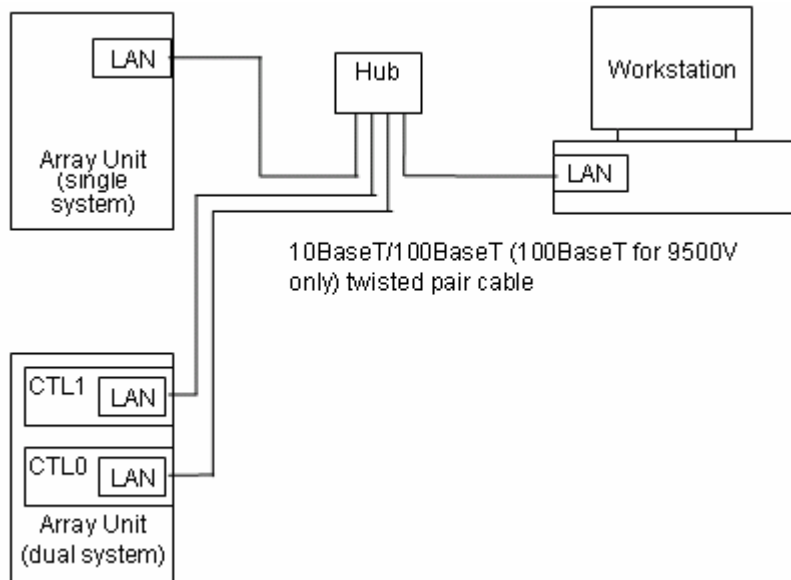


Figure 2.2 Connecting the LAN by a Hub or Switch

**Note:** If an array subsystem is already connected with a LAN, a workstation is connected to the same network as the array subsystem.

## 2.4.3 LAN Direct Attachment

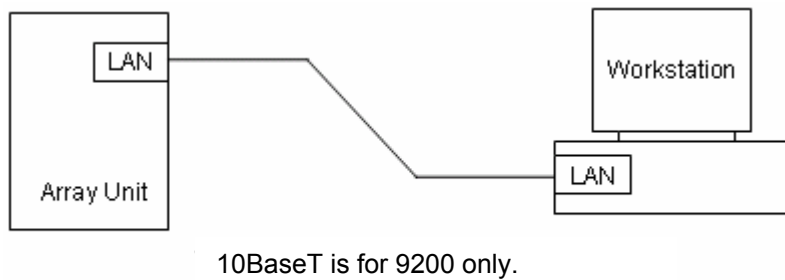


Figure 2.3 Using a LAN for Direct Attachment

## 2.5 Installing

When Resource Manager 9500V/9520V (referred to as the DAMP hereafter) is installed, Storage Navigator cannot perform updating installation from DAMP. Error monitoring options set up by DAMP, which is set up again. However, the registration information on subsystem can be copied.

The following sections describe how to change the registration information on a subsystem. Perform the following before registering the subsystem by Storage Navigator. After Storage Navigator registers the subsystem, the registration information on the subsystem cannot be overridden.

1. The **utlprm.inf** file, in the directory where DAMP is installed, is copied to the directory to which it is installed in Storage Navigator.
2. When specifying the equipment type of Storage Navigator, it is the `auunitadd` command, and only a unit name is specified and performed.

This section provides instructions for installing Navigator to the following systems:

- Windows
- Solaris
- IRIX
- HP-UX
- AIX
- Red Hat Linux

## 2.5.1 Windows

1. Start the PC, then boot up Windows.
2. Execute the SNM-xxxx-W-CLI.exe in the stonavm\_win directory of the provided CD-R. (The portion xxxx of file names varies with the version of the Storage Navigator, etc.) By default, the files will be installed in \program files\Storage Navigator Modular CLI\
3. Execute the startsnm.bat file, which is a Windows batch file that is used to start the Storage Navigator. The following environment parameters must be set correctly in startmgr.bat:

```
set STONAVM_HOME=.
set LANG=en
```

Use the 'set' command to verify the correct setting of the environment parameters on the workstation.

A prompt window will be displayed and Navigator commands can be executed from this window.

**Note:** When executing commands from locations other than a directory in which Storage Navigator has been installed, edit the STONAVM\_HOME environment variable of the startsnm.bat file in the developed file. Set up the install directory of the Storage Navigator in the STONAVM\_HOME environment variable. However, if the LANG environment variable is not specified, the Storage Navigator operates in English language mode.

### **Example:**

If Storage Navigator has been installed in C:\ Storage Navigator Modular CLI:

```
set STONAVM_HOME=C:\Storage Navigator Modular CLI
set LANG=en
command.com
```

## 2.5.2 Solaris

1. Start the Sun server/workstation.
2. Create a new directory (e.g., `/usr/stonavm`) for installing the Storage Navigator. Copy the `SNM-xxxx-S-CLI.tar` file in the `stonavm_sol` directory of the provided CD-R to the directory created in the hard disk. (The portion `xxxx` of file names varies with the version of the Storage Navigator, etc.)
3. The `SNM-xxxx-S-CLI.tar` file is a Tar format file. Expand the file referring to the following example. If the directory described below is present, create another directory.

**Example:**

```
tar xvf SNM-xxxx-S-CLI.tar
```

When setting `/usr/stonavm` for the install directory, the following file structure is developed.

```
/usr/stonavm/      : Command and message files of Navigator
└── /lib/          : Common library used when running Navigator
```

4. Add a path to the common library with the `LD_LIBRARY_PATH` environment variable. Example when setting `DFHOME` for the install directory:

If the `LD_LIBRARY_PATH` environment variable is not yet defined (example uses C shell commands):

```
% setenv LD_LIBRARY_PATH ${DFHOME}/lib
```

If the `LD_LIBRARY_PATH` environment variable is already defined (example uses C shell commands):

```
% setenv LD_LIBRARY_PATH $LD_LIBRARY_PATH:${DFHOME}/lib
```

5. Set up a path to the directory, in which Storage Navigator has been installed, in the `STONAVM_HOME` environment variable.

**Example:**

When setting `DFHOME` for the install directory (example uses C shell commands):

```
% setenv STONAVM_HOME ${DFHOME}
```

It is recommended that statements 4 and 5 be defined in the initial setting file (for C shell: `.log in`) of the login shell for users who access the Storage Navigator.

6. Log in again.

### 2.5.3 IRIX

1. Start the SGI server/workstation.
2. Create a new directory (e.g., `/usr/stonavm`) for installing the Storage Navigator. Copy the `SNM-xxxx-I-CLI.tar` file in the `stonavm_iris` directory of the provided CD-R to the directory created in the hard disk. (The portion `xxxx` of file names varies with the version of the Storage Navigator, etc.)
3. The `SNM-xxxx-I-CLI.tar` file is a Tar format file. Expand the file referring to the example. If the directory described below is present, create another directory.

**Example:**

```
tar xvf SNM-xxxx-I-CLI.tar
```

When setting `/usr/stonavm` for the install directory, the following file structure is developed.

```
/usr/stonavm/      : Command and message files of Navigator
|
|
└── /lib/         : Common library used when running Navigator
```

4. If the `LD_LIBRARY_PATH` environment variable is not yet defined (example uses C shell commands):

```
% setenv LD_LIBRARY_PATH ${DFHOME}/lib
```

If the `LD_LIBRARY_PATH` environment variable is already defined (example uses C shell commands):

```
% setenv LD_LIBRARY_PATH $LD_LIBRARY_PATH:${DFHOME}/lib
```

5. Set up a path to the directory, in which the Storage Navigator has been installed, in the `STONAVM_HOME` environment variable.

**Example:**

When setting `DFHOME` for the install directory (example uses C shell commands):

```
% setenv STONAVM_HOME ${DFHOME}
```

It is recommended that statements 4 and 5 be defined in the initial setting file (for C shell: `.log in`) of the login shell for users who access Storage Navigator.

6. Log in again.

## 2.5.4 HP-UX

1. Start the HP server/workstation.
2. Create a new directory (example: `/usr/stonavm`) for installing Storage Navigator. Copy the `SNM-xxxx-H-CLI.tar` file in the `stonavm_hpux` directory of the provided CD-R to the directory created in the hard disk. (The portion `xxxx` of file names varies with the version of the Storage Navigator, etc.)
3. The `SNM-xxxx-H-CLI.tar` file is a Tar format file. Expand the file referring to the following example. If the directory described below is present, create another directory.

**Example:**

```
tar xvf StorageNavigatorModular-xxxx-H-CLI.tar
```

When setting `/usr/stonavm` for the install directory, the following file structure is developed.

```
/usr/stonavm/      : Command and message files of Navigator
└── /lib/          : Common library used when running Navigator
```

4. Add a path to the common library to the `SHLIB_PATH` environment variable. Example when setting `DFHOME` for the install directory:

If the `SHLIB_PATH` environment variable is not yet defined (example uses C shell commands):

```
% setenv SHLIB_PATH ${DFHOME}/lib
```

If the `SHLIB_PATH` environment variable is already defined (example uses C shell commands):

```
% setenv SHLIB_PATH $SHLIB_PATH:${DFHOME}/lib
```

5. Set up a path to the directory, in which Storage Navigator has been installed, in the `STONAVM_HOME` environment variable.

**Example:**

When setting `DFHOME` for the install directory (example uses C shell commands):

```
% setenv STONAVM_HOME ${DFHOME}
```

It is recommended that statements 4 and 5 be defined in the initial setting file (for C shell: `.log in`) of the login shell for users who access Storage Navigator.

6. Log in again.

## 2.5.5 AIX

1. Start the IBM server/workstation.
2. Create a new directory (e.g., `/usr/stonavm`) for installing Storage Navigator. Copy the `SNM-xxxx-A-CLI.tar` file in the `stonavm_aix` directory of the provided CD-R to the directory created in the hard disk. (The portion `xxxx` of file names varies with the version of the Storage Navigator, etc.)
3. The `SNM-xxxx-A-CLI.tar` file is a Tar format file. Expand the file referring to the following example. If the directory described below is present, create another directory.

**Example:**

```
tar xvf SNM-xxxx-A-CLI.tar
```

When setting `/usr/stonavm` for the install directory, the following file structure is developed.

```
/usr/stonavm/      : Command and message files of Navigator
└── /lib/          : Common library used when running Navigator
```

4. Add a path to the common library to the `LIBPATH` environment variable.  
Example when setting `DFHOME` for the install directory:

If the `LIBPATH` environment variable is not yet defined (example uses C shell commands):

```
% setenv LIBPATH ${DFHOME}/lib
```

If the `LIBPATH` environment variable is already defined (example uses C shell commands):

```
% setenv LIBPATH $LIBPATH:${DFHOME}/lib
```

5. Set up a path to the directory, in which Storage Navigator has been installed, in the `STONAVM_HOME` environment variable.

**Example:**

When setting `DFHOME` for the install directory (example uses C shell commands):

```
% setenv STONAVM_HOME ${DFHOME}
```

It is recommended that statements 4 and 5 be defined in the initial setting file (for C shell: `.log in`) of the login shell for users who access Storage Navigator.

6. Log in again.

## 2.5.6 Red Hat Linux

1. Start the PC.
2. Create a new directory (e.g., `/usr/stonavm`) for installing the Storage Navigator. Copy the `SNM-xxxx-L-CLI.tar` file in the `stonavm_linux` directory of the provided CD-R to the directory created in the hard disk. (The portion `xxxx` of file names varies with the version of the Storage Navigator, etc.)
3. The `SNM-xxxx-L-CLI.tar` file is a Tar format file. Expand the file referring to the following example. If the directory described below is present, create another directory.

**Example:**

```
tar xvf SNM-xxxx-L-CLI.tar
```

When setting `/usr/stonavm` for the install directory, the following file structure is developed.

```
/usr/stonavm/      : Command and message files of Navigator
└── /lib/         : Common library used when running Navigator
```

4. Add a path to the common library to the `LD_LIBRARY_PATH` environment variable. If the `LD_LIBRARY_PATH` environment variable is not yet defined (this example uses C shell commands):

```
% setenv LD_LIBRARY_PATH ${DFHOME}/lib
```

If the `LD_LIBRARY_PATH` environment variable is already defined (this example uses C shell commands):

```
% setenv LD_LIBRARY_PATH $LD_LIBRARY_PATH:${DFHOME}/lib
```

5. Set up a path to the directory, in which the Storage Navigator has been installed, in the `STONAVM_HOME` environment variable.

**Example:**

When setting `DFHOME` for the install directory (this example uses C shell commands):

```
% setenv STONAVM_HOME ${DFHOME}
```

It is recommended that statements 4 and 5 be defined in the initial setting file (for C shell: `.log in`) of the login shell for users who access Storage Navigator.

6. Log in again.

## 2.6 Updating

This section provides instructions for updating Storage Navigator on the following systems:

- Windows
- Solaris
- IRIX
- HP-UX
- AIX
- Red Hat Linux

**Note:** If you update, make sure to terminate Storage Navigator before starting operations.

### 2.6.1 Windows

- Execute the SNM-xxxx-W-CLI.exe in the stonavm\_win directory of the provided CD-R. (The portion xxxx of file names varies with the version of the Storage Navigator, etc.)

The new version of Storage Navigator will be installed. Windows does not need to be restarted.

### 2.6.2 Solaris

1. Copy the SNM-xxxx-S-CLI.tar file in the stonavm\_sol directory of the provided CD-R to the hard disk.
2. The SNM-xxxx-S-CLI.tar file is a Tar type file. Open the file as described in the following example. (The xxxx portion of the file name varies with the version of Storage Navigator.)

**Example:**

```
tar xvf SNM-xxxx-S-CLI.tar
```

The updated new version of Navigator will be installed. Solaris does not need to be restarted.

### 2.6.3 IRIX

1. Copy the SNM-xxxx-I-CLI.tar file in the stonavm\_irix directory of the provided CD-R to the hard disk.
2. The SNM-xxxx-I-CLI.tar file is a Tar type file. Open the file as described in the following example. (The xxxx portion of the file name varies with the version of Storage Navigator.)

**Example:**

```
tar xvf SNM-xxxx-I-CLI.tar
```

The new version of Storage Navigator will be installed. IRIX does not need to be restarted.

## 2.6.4 HP-UX

1. Copy the SNM-xxxx-H-CLI.tar file in the stonavm\_hpux directory of the provided CD-R to the hard disk.
2. The SNM-xxxx-H-CLI.tar file is a Tar type file. Open the file as described in the following example. (The xxxx portion of the file name varies with the version of Storage Navigator.)

**Example:**

```
tar xvf SNM-xxxx-H-CLI.tar
```

The new version of Storage Navigator will be installed. HP-UX does not need to be restarted.

## 2.6.5 AIX

1. Copy the SNM-xxxx-A-CLI.tar file in the stonavm\_aix directory of the provided CD-R to the hard disk.
2. Execute the `slibclean` command. You must have root permission to execute the `slibclean` command. If this command is executed without root permission, delete the library file `libdau.a`.
3. The SNM-xxxx-A-CLI.tar file is a Tar type file. Open the file as described in the following example. (The xxxx portion of the file name varies with the version of Storage Navigator.)

**Example:**

```
tar xvf SNM-xxxx-A-CLI.tar
```

The new version of Storage Navigator will be installed. AIX does not need to be restarted.

## 2.6.6 Red Hat Linux

1. Copy the SNM-xxxx-L-CLI.tar file in the stonavm\_linux directory of the provided CD-R to the hard disk.
2. The SNM-xxxx-L-CLI.tar file is a Tar type file. Open the file as described in the following example. (The xxxx portion of the file name varies with the version of Storage Navigator, etc.)

**Example:**

```
tar xvf SNM-xxxx-L-CLI.tar
```

The new version of Storage Navigator will be installed. Red Hat Linux does not need to be restarted.

## 2.7 Uninstalling

This section provides instructions for uninstalling Storage Navigator on the following systems:

- Windows
- Solaris, IRIX, HP-UX, AIX, and Red Hat Linux

### 2.7.1 Windows

1. Delete the Storage Navigator using the **Add and Delete Application** icon in the Control Panel.
2. Delete the directory generated in the hard disk for installing the Storage Navigator.

### 2.7.2 Solaris, IRIX, HP-UX, AIX, and Red Hat Linux

1. Delete the directory and all its files generated in the hard disk for installing the Storage Navigator.
2. Delete the statement of a path to the common library from the set contents of the environment variable.
3. Delete the reference to the `STONAVM_HOME` environment variable.

## Chapter 3 Command List

### 3.1 Command List

Table 3.1 lists the Storage Navigator commands. There are two types of Storage Navigator commands: the standard command that is used in standard mode and the administration command that is used in administration mode.

When executing an administration command, a password must be set and entered. This password is for the workstation from which the commands are executed and is stored in a password file on this workstation. The administration commands that require password entry are shown with symbols “O” marked in the password column of Table 3.1. These commands are optional. The array subsystem is online. (The commands that can be used during online are shown with the symbol “O” in the Online Use Column in Table 3.1).

Additionally, when the optional Password Protection function is installed on the array subsystem, some commands cannot be executed unless a user ID and password is provided. These user IDs and passwords are stored on the array subsystem. The commands that require login, if a user ID has been registered, are shown with symbols “O” marked in the login column of Table 3.1.

**Note:** Do not operate while online except while Monitoring errors because your connection may time out.

**Table 3.1 Storage Navigator Commands**

Classification	Function	Command	Online Use	Password	Login
Array subsystem registration	Displaying array subsystem information	auunitref	O	x	x
	Automatic Registering	auunitaddauto	O	x	x
	Adding array subsystem information	auunitadd	O	x	x
	Changing array subsystem information	auunitchg	O	x	x
	Deleting array subsystem information	auunitdel	O	x	x
	Setting password in Administration Mode	aupasswd	O	O	X
Array subsystem management by user ID (Password Protection Feature)	Setting user ID	auuidadd	O	O	O
	Changing user ID	auuidchg	O	O	O
	Deleting user ID	auuiddel	O	O	O
	Changing password	aupwdchg	O	O	O
	Logging into array subsystem	aulogin	O	O	x
	Logging out from array subsystem	aulogout	O	O	O
	Checking login	auchkuid	O	x	O

Classification	Function	Command	Online Use	Password	Login
Array subsystem status	Displaying microprogram revision	aurev	0	x	x
	Displaying drive configuration information	audrive	0	x	x
	Displaying cache configuration information (See <b>Note 3</b> .)	aucache	0	x	x
	Displaying status of power supply/fan/battery (See <b>Note 3</b> .)	ausupply	0	x	x
	Displaying parts information (See <b>Note 3</b> .)	auparts	0	x	x
	Displaying current IP address	aucrlan	0	x	x
	Displaying the information messages	auinfomsg	0	x	0
	Displaying/setting array subsystem ID or controller ID	auunitid	0	0	x
	Displaying the Equipment Information	auunitinfo	0	x	x
RAID/LU	Displaying RAID group	auref	0	x	x
	Setting up RAID group	auregadd	0	0	0
	Expanding RAID group	auregexp	0	0	0
	Deleting RAID group	auregdel	x	0	0
	Displaying LU	aluref	0	x	x
	Setting up LU	aluregadd	0	0	0
	Formatting LU	alureformat	0	0	0
	Displaying progress of LU formatting	alureformatst	0	0	x
	Displaying/setting quick format option	alurequickfmopt	0	0	0
	Expanding LU	aluregexp	0	0	0
	Deleting LU	aluregdel	x	0	0
	Changing default controller of LU	alurechg	0	0	0
	Invalidation LU	alureinvalidate	0	0	0
	Reallocation LU	alureallocate	0	0	0
	Restoration LU	alurerestoration	0	0	0
	Displaying/Starting/Skipping/Canceling the Parity Correction Online	alurecorrect	0	0	0
Displaying/Setting the Mapping Guard Information	aumapguard	0	0	0	
Displaying/Setting LU Cache Partition	alurecachept	x	0	0	

Classification	Function	Command	Online Use	Password	Login
System parameters	Displaying/setting System Parameters (AMS/WMS)	ausystemparam	0	0	0
	Displaying/setting System Parameters Online (9500V)	auonsysprm	0	0	0
	Displaying/setting System Parameters (9200/9500V)	ausysparam	x	0	0
	Displaying/setting RTC	aurtc	x	0	0
	Displaying/setting target information (See <b>Note 1.</b> )	autarget	0	0	0
	Displaying/setting LAN information (See <b>Note 2.</b> )	aulan	0	0	0
	Displaying/setting SCSI transfer rate (See <b>Note 1.</b> )	ausync	0	0	0
	Displaying/setting port option	auportop	0	0	0
	Displaying/setting target Information Online	auontarget	0	0	0
	Displaying/Setting the Boot Option (See <b>Note 1.</b> )	aubootopt	x	0	0
	Displaying/Setting Time Zone	autimezone	0	0	0
	Displaying/Setting the IP Address of Maintenance Port	aumaintelan	0	0	0
	Referencing/setting LAN information online	auonlan	0	0	0
	Setting Up the Configuration	Displaying/setting fibre channel information	aufibre1	x	0
Spare HDU setup		auspare	0	0	0
Displaying/setting Fee-Based option		auopt	0	0	0
Displaying/setting drive restoration control information		audrecopt	x	0	0
Displaying/setting online verify information		auonlineverify	x	0	0
Displaying/setting Command device information		aucmddev	0	0	0
Rebooting array subsystem		aureboot	x	0	0
Displaying/setting Mode Select Parameters		aumodeselect	0	0	0
Displaying/Setting LU Pre-fetch Information		aulupre	0	0	0
Forcibly Releasing the Hi-Copy Pair		auhicopy	0	0	0

Classification	Function	Command	Online Use	Password	Login
Setting Up the Configuration (continued)	Displaying/Setting the DM-LU	audmlu	O	O	O
	Displaying/Setting the iSCSI Port Information	auiscsi	O	O	O
	Displaying/Setting the iSNS Information	auisns	O	O	O
	Displaying/Setting the CHAP User Information	auchapuser	O	O	O
	Displaying/Starting Ping	auping	O	O	O
	Displaying/Setting the Backend Diagnosis Information	aubackenddiag	O	O	O
Save Configuration Information in File and Set up Configuration Information from File	Save system parameters in file	ausyspout	O	x	X
	Save the RAID/LU configuration information and component conditions in file	auconfigout	O	x	X
	System parameters setup from file	ausyspset	O	O	O
	RAID/LU configuration setup from file	auconfigset	O	O	O
	Import/Export the System Constituent Information	auconstitute	O	x	O
Host Group (Host Storage Domain) information	Displaying/setting host information	auhgwwn	O	O	O
	Displaying/setting host group option	ahgopt	O	O	O
	Displaying/setting mapping information	ahgmap	O	O	O
	Displaying/setting/changing/deleting host group	ahgdef	O	O	O
	Save host group information in file	ahgout	O	x	O
	Host group information setup from file	ahgset	O	O	O
Target Information	Displaying/Setting the Initiator Information	autargetini	O	O	O
	Displaying/Setting Target Options	autargetopt	O	O	O
	Displaying/Setting Mapping Information	autargetmap	O	O	O
	Displaying/Setting the Target Information	autargetdef	O	O	O
Microprogram replacement	Downloading/replacing microprogram	aumicro	O	O	O
NNC parameters	Displaying/Setting NNC LAN Information	aunnclan	O	O	O
	Displaying/Setting NAS System LU	aunassyslu	O	x	O
	Displaying/Setting NAS User LU	aunasuserlu	O	x	O
	Displaying/Shutdown/Booting/Rebooting NNC	aunnc	x	O	O
Displaying Statistics Information	Displaying Statistics Information	austatistics	O	x	X

Classification	Function	Command	Online Use	Password	Login
Obtaining performance information	Outputting performance information file	auperform	0	x	x
	Displaying/setting the collection state of performance statistics information	aupfmstatiscfg	0	0	x
Monitoring errors	Setting up E-Mail reports	aumail	0	x	x
	Setting additional information on E-Mail	auunitmsg	0	x	x
	Setting the starting of application	auextprog	0	x	x
	Monitoring errors	auerroralert	0	x	x
	Displaying/setting the monitoring errors options	auerralertopt	0	x	x
Tuning parameters	System tuning parameters	ausystuning	x	0	0
	LU tuning parameters	aulutuning	0	0	0
	Displaying/Setting Prefetch Tuning Parameters	autuningprefetch	0	0	0
	Displaying/Setting Multi Stream Tuning Parameters	autuningmultistr eam	0	0	0
Account authentication	Setting/Deleting the Account Information For Script	auaccountenv	0	x	x
Help	Displaying command help	auman	0	x	x

**Note 1:** Set items do not become effective until the array subsystem is restarted.

**Note 2:** Set items do not become effective until the array subsystem is restarted. However, when connecting the WMS100, AMS200, or AMS500, restarting is not necessary.

**Note 3:** The `auparts` command includes the function of the `aucache` command and the `ausupply` command. The `aucache` command and the `ausupply` command cannot be used by 9580V.

For commands that require login, if the display (`-refer`) is specified by the option, the commands can be executed without logging in.

**Table 3.2 Storage Navigator Commands per Equipment Type**

Command	9200	9500V	AMS/WMS	Command	9200	9500V	AMS/WMS
auunitref				aubootopt	x	x	
auunitaddauto				autimezone	x	x	
auunitadd				aumaintelan	x	x	
auunitchg				auonlan	x	x	
auunitdel				auspare			
aupasswd				auopt			
aurev			x	audrecopt			
audrive				auonlineverify			
aucache			x	aucmddev			
ausupply			x	aureboot			
aparts	x			aumodeselect		x	X
aucrlan			x	aulupre			X
auinfomsg				auhicopy	x		X
auunitid	x		x	audmlu	x	x	
auunitinfo	x	x		auiscsi	x	x	
aurgref				ausns	x	x	
aurgadd				auchapuser	x	x	
aurgexp			x	auping	x	x	
aurgdel				aubackenddiag			✖
auluref				auconfigout			X
aluuadd				ausyspset			X
auformat				auconfigset			X
auformatst				auconstitute	x	x	
auquickfmopt	x			auhgwwn	x		
aluuexp			x	auhgopt	x		
aludel				auhgmap	x		
aluchg				auhgdef	x		
aluinvalidate	x		x	ahgout	x		X
alureallocate	x		x	ahgset	x		X
alurestoration	x		x	autargetdef	x	x	
alucorrect				autargetini	x	x	
aumapguard	x			autargetopt	x	x	
alucachept	x	x		autargetmap	x	x	

Command	9200	9500V	AMS/WMS	Command	9200	9500V	AMS/WMS
ausystemparam	x	x		aumicro			
auonsysprm	x		x	aunnclan	x	x	
ausysparam			x	aunassyslu	x	x	
aurtc				aunasuserlu	x	x	
autarget		x	x	aunnc	x	x	
aulan				austatistics			
ausync		x	x	auperform			
auportop				aupfmstatisfcg	x		
auontarget		x	x	aumail			
auunitmsg				alutuning	x		X
auextprog				autuningprefetch	x	x	
auerroralert				autuningmultistream	x	x	
ausystuning	x			auaccountenv	x	x	
auerralertopt				auman			



## Chapter 4 Command Specifications

When changing the TCP/IP port number of the disk array subsystem when the AMS500/AMS200/ and/or WMS100 disk array subsystem with the microprogram version of 0726/E or later (9500V/9520V with microprogram version x65B/H or later) is connected via a LAN, register the changed port number as “df-damp-snm port number/TCP” in the services file of the OS on which Storage Navigator is installed before starting Storage Navigator. If it is not registered, the disk array subsystem may not be able to be connected to the LAN.

This chapter contains the following Storage Navigator command information:

- Command Format (see section 4.1)
- Registering an Array subsystem (see section 4.2)
- Displaying Array subsystem Status (see section 4.3)
- RAID/LU (see section 4.4)
- System Parameters (see section 4.5)
- Setting Up the Configuration (see section 4.6)
- Configuration File Output and Configuration Setting by File (see section 4.7)
- Host Storage Domain (Host Group) Information (see section 4.8)
- Target Information (see section 4.9)
- Downloading/Replacing the Microprogram (see section 4.10)
- NNC Parameters (see section 4.11)
- Displaying Statistical Information (see section 4.12)
- Outputting the Performance Information File (see section 4.13)
- Displaying/Setting the Collection State of Performance Statistics Information (see section 4.14)
- Monitoring Errors (see section 4.15)
- Tuning Parameters (see section 4.16)
- Setting/Deleting the Account Information File (see section 4.17)

## 4.1 Command Format

The command format of the Storage Navigator is specified with a command name and succeeding options as shown in Figure 4.1. When specifying multiple options, the order in which options are specified does not matter. In addition, options may be omitted depending on the type of commands.

```
Command Option1 Option2 Option3 ....
```

**Figure 4.1 Storage Navigator Command Format**

Storage Navigator commands are classified mainly into the standard command and the administrator commands. The following describes specifications of each type of command.

### 4.1.1 Standard Command

The standard command is used mainly for displaying information. Figure 4.2 and Figure 4.3 show the formats of the standard command. When executing a standard command, the execution result will be displayed following its execution. If an error is detected in specification of options or while processing, you are notified of an error message.

```
%Command Option1 Option2 Option3  
Result  
%
```

**Figure 4.2 Standard Command Format(Normal Termination)**

```
%Command Option1 Option2 Option3  
Error message  
%
```

**Figure 4.3 Format of Standard Command (error is detected)**

## 4.1.2 Administration Command

The administration command is used to set up a configuration for the array subsystem. Taking into consideration the integrity and security of data, this command prompts you to enter a password when executing it, and is executed, if the password can be authenticated. When option `-refer` is specified, for example in command `aufibre1` a password is not required.

Figure 4.4 and Figure 4.5 show the formats of the administration command. When entering an administrator command, this command prompts you to enter a password following the entry. When you enter a preset password, the command executes. When performing operations associated with data configurations, such as the deletion of a RAID group or logical unit, commands prompt you to confirm whether or not to execute the function before entering a password (see Figure 4.5).

```
Command Option1 Option2 Option3 ....
Password: (Enter an already-set password)
%
```

**Figure 4.4** Format 1 of Administration Command

```
%Command Option1 Option2 Option3 ....
Are you executing? (y/n [n])
Password: (Enter an already-set password)
%
```

**Figure 4.5** Format 2 of Administration Command

## 4.1.3 Displaying Command Syntax

When you want to reference the syntax of a command, specify the `-help` option in the command, then the Usage information displays, as shown in Figure 4.6. The descriptions displayed in **Usage** are the same as those described in **Format** of each command.

The portion `x.xx` varies with the version of the Storage Navigator, etc.

```
% auunitadd -help
Storage Navigator Modular
Version x.xx
Copyright (C) 2005, 2007, Hitachi, Ltd.
Usage:
  Single system
    auunitadd [ -unit unit_name ] [ -group group_name ]
              [ -RS232C | -LAN ]
              -ctl0 device | address [ -ignore ]
  Dual system
    auunitadd [ -unit unit_name ] [ -group group_name ]
              [ -RS232C | -LAN ]
              -ctl0 device | address [ -ctl1 device | address ] [ -ignore ]
%
```

**Figure 4.6** Example of Displaying Command Syntax

#### 4.1.4 Command List

A command list displays when the auhelp.bat file is activated.

DF500 Support Commands	
Command	Function
auunitref	-- Displaying the Registration Information
auunitaddauto	-- Automatic Registering
auunitadd	-- Registering
auunitchg	-- Changing Registration Information
auunitdel	-- Deleting the Registration Information
apasswd	-- Setting a Password in Administration Mode
aurev	-- Displaying a Microprogram Revision
audrive	-- Displaying Drive Configuration Information
aucache	-- Displaying the Cache Configuration Information
ausupply	-- Displaying the Status of Power Supply/Fan/Battery/Loop/ENC
aucrlan	-- Displaying the Current IP Address
auinfomsg	-- Displaying the Information Messages
auref	-- Referencing a RAID Group
argref	-- Referencing a RAID Group
argadd	-- Setting Up a RAID Group
argexp	-- Expanding a RAID Group
argdel	-- Deleting the RAID Group
aluref	-- Referencing an LU
aluadd	-- Setting Up an LU
auformat	-- Formatting the LU
auformatst	-- Displaying the Progress of LU Formatting
aluexp	-- Expanding an LU
aludel	-- Deleting the LU
aluchg	-- Changing the Default Controller of LU
alucorrect	-- Referencing/Starting/Skipping/Canceling the Parity Correction Online
ausysparam	-- Referencing/Setting System Parameters
aurtc	-- Referencing/Setting the RTC
autarget	-- Referencing/Setting Target Information
aulan	-- Referencing/Setting LAN Information
ausync	-- Referencing/Setting the SCSI Transfer Rate
auptop	-- Referencing/Setting the Port Option and Controller Identifier
auontarget	-- Setting the Target Information Online
aufibre1	-- Referencing/Setting the Fibre Channel Information
auspare	-- Referencing/Setting the Spare HDU
auopt	-- Referencing/Setting the Fee-Basis Option
audrecopt	-- Referencing/Setting the Drive Restoration Control Information
auonlineverify	-- Referencing/Setting the Online Verify Information
aucmddev	-- Referencing/Setting the Command Device Information
aureboot	-- Rebooting
aumodeselect	-- Referencing/Setting the Mode Select Parameters
alupre	-- Referencing/Setting LU Pre-fetch Information
aubackenddiag	-- Referencing/Setting the Backend Diagnosis Information
ausyspout	-- File Output of the System Parameters
auconfigout	-- File Output of the Status of RAID/LU and Constituent Parts Configuration
ausyspset	-- Setting the System Parameter with a File
auconfigset	-- Setting the RAID/LU Definition with a File
aumicro	-- Downloading/Replacing Microprogram
austatistics	-- Displaying Statistical Information
aperform	-- Outputting Performance Information File
aumail	-- Setting Up E-Mail Reports
auunitmsg	-- Setting Additional Information on E-Mail
auextprog	-- Setting the Starting of Application
auerroalert	-- Monitoring Errors
auerroalertopt	-- Referencing/Setting the Monitoring Error Options
aman	-- Referencing the Manual of CLI Commands
auuidadd	-- Setting the User ID
auuidchg	-- Changing the User ID
auuiddel	-- Deleting the User ID
aupwdchg	-- Changing the Password
aulogin	-- Logging In and Forcibly Logging In to the Array Unit
aulogout	-- Logging Out from the Array Unit
auchkuid	-- Confirming the Login
ausnmp	-- Setting the SNMP Environment Information and Outputting Its File
amluref	-- Referencing the Unified LU
alumrg	-- Unifying LUs

aucludiv	--	Separating LU
auturbolu	--	Setting the Cache Residency LU
aumrcfluc	--	Displaying the ShadowImage Pair Information
aumrcfdev	--	Referencing/Setting the MRCF-Lite Information
aurmtpath	--	Referencing/Setting the Remote Path Information
DF600 Support Commands		
Command		Function
-----		
auunitref	--	Displaying the Registration Information
auunitaddauto	--	Automatic Registering
auunitadd	--	Registering
auunitchg	--	Changing Registration Information
auunitdel	--	Deleting the Registration Information
aupasswd	--	Setting a Password in Administration Mode
aurev	--	Displaying a Microprogram Revision
audrive	--	Displaying Drive Configuration Information
aucache	--	Displaying the Cache Configuration Information
ausupply	--	Displaying the Status of Power Supply/Fan/Battery/Loop/ENC
auparts	--	Displaying the Status of Controller/Cache/Power
aucrlan	--	Displaying the Current IP Address
auinfomsg	--	Displaying the Information Messages
auunitid	--	Referencing/Setting the Equipment ID or Controller ID
aurgref	--	Referencing a RAID Group
aurgadd	--	Setting Up a RAID Group
aurgexp	--	Expanding a RAID Group
aurgdel	--	Deleting the RAID Group
auluref	--	Referencing an LU
aluadd	--	Setting Up an LU
auformat	--	Formatting the LU
auformatst	--	Displaying the Progress of LU Formatting
auquickfmopt	--	Referencing/Setting the Quick Format Option
alulexp	--	Expanding an LU
aluldel	--	Deleting the LU
aluluchg	--	Changing the Default Controller of LU
alulinvalidate	--	Invalidating an LU
alureallocate	--	Reassigning an LU
alurestoration	--	Restoring an LU
alulcorrect	--	Referencing/Starting/Skipping/Canceling the Parity Correction
aumapguard	--	Referencing/Setting the Mapping Guard Information
auonsysprm	--	Referencing/Setting System Parameters Online
ausysparam	--	Referencing/Setting System Parameters
aurtc	--	Referencing/Setting the RTC
aulan	--	Referencing/Setting LAN Information
auptop	--	Referencing/Setting the Port Option and Controller Identifier
aufibre1	--	Referencing/Setting the Fibre Channel Information
auspare	--	Referencing/Setting the Spare HDU
auopt	--	Referencing/Setting the Fee-Basis Option
audrecopt	--	Referencing/Setting the Drive Restoration Control Information
auonlineverify	--	Referencing/Setting the Online Verify Information
aucmddev	--	Referencing/Setting the Command Device Information
aureboot	--	Rebooting
alupre	--	Referencing/Setting LU Pre-fetch Information
ahicopy	--	Releasing the Hi-Copy Pair Forcibly
aubackendiag	--	Referencing/Setting the Backend Diagnosis Information
ausyspout	--	File Output of the System Parameters
auconfigout	--	File Output of the Status of RAID/LU and Constituent Parts
ausyspset	--	Setting the System Parameter with a File
auconfigset	--	Setting the RAID/LU Definition with a File
ahgwn	--	Referencing/Setting Host Information
ahgopt	--	Referencing/Setting Host Group Options
ahgmap	--	Referencing/Setting Mapping Information
ahgdef	--	Referencing/Registration/Changing/Deleting Host Group
ahgout	--	File Output of the Host Group Information
ahgset	--	Setting the Host Group Information with a File
aumicro	--	Downloading/Replacing Microprogram
austatistics	--	Displaying Statistical Information

auperform	--	Outputting Performance Information File
aupfmstaticfg	--	Referencing/Setting the Collection State of Performance Statistics Information
aumail	--	Setting Up E-Mail Reports
auunitmsg	--	Setting Additional Information on E-Mail
auextprog	--	Setting the Starting of Application
auererroralert	--	Monitoring Errors
auererroralertopt	--	Referencing/Setting the Monitoring Error Options
ausystuning	--	Referencing/Setting System Tuning Parameters
aulutuning	--	Referencing/Setting LU Tuning Parameters
auman	--	Referencing the Manual of CLI Commands
auuidadd	--	Setting the User ID
auuidchg	--	Changing the User ID
auuiddel	--	Deleting the User ID
aupwdchg	--	Changing the Password
aulogin	--	Logging In and Forcibly Logging In to the Array Unit
aulogout	--	Logging Out from the Array Unit
auchkuid	--	Confirming the Login
ausnmp	--	Setting the SNMP Environment Information and Outputting Its File
aumluref	--	Referencing the Unified LU
aulumrg	--	Unifying Lus
aumludiv	--	Separating LU
aturbolu	--	Setting the Cache Residency LU
aluguard	--	Referencing/Setting the access level of LU and expiration lock
apool	--	Referencing/Setting Data Pool Information
apair	--	Referencing Pair Information
aувvol	--	Creating/Deleting Snapshot Image
aumrcfluc	--	Displaying the ShadowImage Pair Information
aурmtpath	--	Referencing/Setting the Remote Path Information

#### DF700 Support Commands

Command	Function
-----	
auunitref	-- Displaying the Registration Information
auunitaddauto	-- Automatic Registering
auunitadd	-- Registering
auunitchg	-- Changing Registration Information
auunitdel	-- Deleting the Registration Information
apasswd	-- Setting a Password in Administration Mode
adrive	-- Displaying Drive Configuration Information
aparts	-- Displaying the Status of Controller/Cache/Power Supply/Fan/Battery/Loop/ENC/NNC Parts
auinfomsg	-- Displaying the Information Messages
auunitinfo	-- Displaying the Equipment Information
aurgref	-- Referencing a RAID Group
aurgadd	-- Setting Up a RAID Group
aurgdel	-- Deleting the RAID Group
aluref	-- Referencing an LU
aluadd	-- Setting Up an LU
auformat	-- Formatting the LU
auformatst	-- Displaying the Progress of LU Formatting
auquickfmopt	-- Referencing/Setting the Quick Format Option
aludel	-- Deleting the LU
aluchg	-- Changing the Default Controller of LU
alucorrect	-- Referencing/Starting/Skipping/Canceling the Parity Correction Online
aumapguard	-- Referencing/Setting the Mapping Guard Information
alucachept	-- Referencing/Setting LU Cache Partition
ausystemparam	-- Referencing/Setting System Parameters
aурtc	-- Referencing/Setting the RTC
aulan	-- Referencing/Setting LAN Information
аурtop	-- Referencing/Setting the Port Option and Controller Identifier
аbootopt	-- Referencing/Setting the Boot Option
autimezone	-- Referencing/Setting Time Zone
aumaintelan	-- Referencing/Setting the IP Address of Maintenance Port
аonlan	-- Referencing/Setting LAN Information Online
аufibre1	-- Referencing/Setting the Fibre Channel Information

auspare	--	Referencing/Setting the Spare HDU
auopt	--	Referencing/Setting the Fee-Basis Option
audrecopt	--	Referencing/Setting the Drive Restoration Control Information
auonlineverify	--	Referencing/Setting the Online Verify Information
aucmddev	--	Referencing/Setting the Command Device Information
aureboot	--	Rebooting
audmlu	--	Referencing/Setting the DM-LU Information
auiscsi	--	Referencing/Setting the iSCSI Port Information
aisns	--	Referencing/Setting the iSNS Information
auchapuser	--	Referencing/Setting the CHAP User Information
aping	--	Referencing/Sending Ping
aubackenddiag	--	Referencing/Setting the Backend Diagnosis Information
auconstitute	--	Import/Export the System Constituent Information
auhgwn	--	Referencing/Setting Host Information
auhgopt	--	Referencing/Setting Host Group Options
auhgmap	--	Referencing/Setting Mapping Information
auhgdef	--	Referencing/Registration/Changing/Deleting Host Group
autargetdef	--	Referencing/Setting iSCSI Target Information
autargetini	--	Referencing/Setting the Initiator Information
autargetopt	--	Referencing/Setting iSCSI Target Options
autargetmap	--	Referencing/Setting iSCSI Target Mapping Information
aumicro	--	Downloading/Replacing Microprogram
aunnclan	--	Referencing/Setting NNC LAN Information
aunassyslu	--	Referencing/Setting NAS System LU
aunasuserlu	--	Referencing/Setting NAS User LU
aunnc	--	Referencing/Shutdown/Booting/Rebooting NNC
austatistics	--	Displaying Statistical Information
auperform	--	Outputting Performance Information File
aupfmstatiscfg	--	Referencing/Setting the Collection State of Performance Statistics
Information		
aumail	--	Setting Up E-Mail Reports
auunitmsg	--	Setting Additional Information on E-Mail
auextprog	--	Setting the Starting of Application
auerroralert	--	Monitoring Errors
auerralertopt	--	Referencing/Setting the Monitoring Error Options
ausystuning	--	Referencing/Setting System Tuning Parameters
autuningprefetch	--	Referencing/Setting Prefetch Tuning Parameters
autuningmultistream	--	Referencing/Setting Multi Stream Tuning Parameters
auman	--	Referencing the Manual of CLI Commands
auuidadd	--	Setting the User ID
auuidchg	--	Changing the User ID
auuiddel	--	Deleting the User ID
aupwdchg	--	Changing the Password
aulogin	--	Logging In and Forcibly Logging In to the Array Unit
aulogout	--	Logging Out from the Array Unit
auchkuid	--	Confirming the Login
ausnmp	--	Setting the SNMP Environment Information and Outputting Its File
aumluref	--	Referencing the Unified LU
aulumrg	--	Unifying LUs
aumludiv	--	Separating LU
aucachept	--	Referencing/Setting Cache Partition
auturbolu	--	Setting the Cache Residency LU
auluguard	--	Referencing/Setting the access level of LU and expiration lock
aupool	--	Referencing/Setting Data Pool Information
aupair	--	Referencing Pair Information
auvvol	--	Creating/Deleting Snapshot Image
aumrcfluc	--	Displaying the ShadowImage Pair Information
aurmtpath	--	Referencing/Setting the Remote Path Information
autruecopy	--	Referencing TrueCopy Pair Information
autruecopyopt	--	Referencing/Setting TrueCopy Option
auauditlog	--	Referencing/Setting the Audit Log Information and Export/Initialize
the Internal Log		
aumvolmigration	--	Referencing/Setting the Reserve LU Information and
Referencing/Creating/Changing/Canceling/Splitting the Volume Migration Pair		
auaccount	--	Referencing/Setting the Account Information
auaccountenv	--	Setting/Deleting the Account Information For Script

## 4.1.5 Command Help

When a Storage Navigator command is activated by an `auman` command, commentaries of each command described in this manual displays.

A format of `auman` is shown in the following example:

- **Command name**

```
auman [ -en | -jp ] command_name
```

- **Options**

Options	Description
-en   -jp	Specifies the locale of the manual when the specification is omitted. If the environment variable "LANG" indicates Japanese, the manual is displayed in Japanese. If the environment variable indicates the other locale, the manual is displayed in English.  -en: Displays the manual in English -jp: Displays the manual in Japanese
command_name	Specifies the command name that the manual displays.

- **Examples**

The following example is displayed in `auunitref` command help.

**Example:**

```
% auman -en auunitref
Copyright (C) 2005, 2007, Hitachi, Ltd.

Command name

    auunitref    Displaying the Registration Information

Format
    auunitref [ -unit unit_name ]

Description
    This command displays the registration information of an array unit that
    is registered in the Storage Navigator Modular.
    Omitting the array unit name displays a list of information registered
    in the Storage Navigator Modular.
    Specifying an array unit name displays information about the specified
    array unit.

Options
    -unit unit_name
        Specify the name of an array unit whose registration
        information is to be referred.
        Specify the name in less than or equal to 16 characters using
        alphanumeric characters, special symbols "-(minus)",
        "_ (underline)", "." (period)", "@", or " (space)".
        Space in front and in the rear of the character string is
        removed.

%
```

## 4.1.6 Setting TCP/IP Port Numbers

An example of editing the services file (when using Windows® 2000):

Set the port number in a range of 1024 to 49151.

1. Open the services file using a text editor, such as Notepad, etc.
2. Add a port number to be used by Storage Navigator. Refer to the following example, and then overwrite and save it.

When adding the port number to the last line, start a new line.

```
# Copyright (c) 1993-1999 Microsoft Corp.
#
# This file contains port numbers for well-known services defined by IANA
#
# Format:
#
# <service name> <port number>/<protocol> [aliases...] [#<comment>]
#
echo          7/tcp
echo          7/udp
:
:
knetd        2053/tcp          #Kerberos de-multiplexor
man          9535/tcp          #Remote Man Server
df-damp-snm  23456/tcp
```

## 4.2 Registering an Array Subsystem

### 4.2.1 Displaying Registration Information

- **Command name**

auunitref

- **Format**

auunitref [ -unit unit\_name ]

- **Description**

This command displays the registration information of an array subsystem that is registered in the Storage Navigator. Omitting the array subsystem name, displays a list of information registered in the Storage Navigator. When an array subsystem name is specified, information is displayed about the specified array subsystem.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem whose registration information is to be displayed. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "(period)", "@," or " (space)". Space in front and in the rear of the character string is removed.

- **Examples**

The following example displays all registered information.

**Example:**

```
% auunitref
Name          Group          Type          Construction Connection Type Error Mon
itoring IP Address/Host Name/Device Name
df500a0      hsp1          DF500        Single        232C          Disable
COM1
df500a1      hsp1          DF500        Dual          TCP/IP (LAN) Enable
192.168.2.100 192.168.2.101
df500a2      hsp1          DF500        Dual          TCP/IP (LAN) Enable
192.168.2.102 192.168.2.103
df600        hsp2          DF600        Dual          TCP/IP (LAN) Enable
192.168.3.100 192.168.3.101
%
```

The following example displays the registration information of array subsystem df600.

**Example:**

```
% auunitref -unit df600
Name          Group          Type          Construction Connection Type Error Mon
itoring IP Address/Host Name/Device Name
df600        hsp2          DF600        Dual          TCP/IP (LAN) Enable
192.168.3.100 192.168.3.101
%
```

## 4.2.2 Automatic Registering

- **Command name**

auunitaddauto

- **Format**

auunitaddauto -ip from\_address to\_address

- **Description**

This command searches for disk array subsystems connected via the TCP/IP within an extent of the specified IP addresses and registers the disk array subsystems that have been found. When the search is completed, a list of the subsystems that have been found is displayed. Select the disk array subsystem(s) to be registered from the list. To select each disk array subsystem, specify it with a number given in the list. You can specify the one or more number(s). When you specify the two or more numbers, partition the numbers, which are given in the list, with the space(s). When you specify the numbers with a range, specify the range with its boundaries putting a hyphen between them.

The name to be registered is given as “the subsystem model name\_serial number”. (E.g., when the subsystem model name is DF700M and the serial number is 75010123, the name to be registered is “DF700M\_75010123”.)

- **Options**

Options	Description
-ip from_address to_address	Specifies an IP address of the disk array subsystem to be searched. <b>from_address:</b> Start IP address <b>to_address:</b> End IP address. Only an address of the fourth byte is effective. Specify addresses of the first to third bytes as the same ones as the beginning address.

- **Examples**

Disk array subsystems whose IP addresses are within a range of 192.168.1.1 to 192.168.1.255 are registered.

**Example:**

```
% auunitaddauto -ip 192.168.1.1 192.168.1.255
Searching... 192.168.1.255   Detected Count : 4
The subsystem of the following was discovered.
No.  Name                Controller0    Controller1    Type    Construction Seri
al No.
  1  DF700M_75001000    192.168.1.1    192.168.1.2    DF700M  Dual        7500
1000
  2  DF700S_73001000    192.168.1.10                                DF700S  Single     7300
1000
  3  DF600_65010026     192.168.1.20    192.168.1.21    DF600   Dual        6501
0026
  4  DF600_65010069     192.168.1.100   192.168.1.101   DF600H  Dual        6501
0029
Are you sure you want to register the discovered subsystem? (y/n [y]): y
Please specify the number of the subsystem to register. : 2
DF700S_73001000 has been registered.
The subsystems have been registered successfully.
%
```

### 4.2.3 Registering

- **Command name**

auunitadd

- **Format**

**Single system:**

```
auunitadd [ -unit unit_name ] [ -group group_name ]
          [ -RS232C | -LAN ]
          -ctl0 device | address [ -ignore ]
```

**Dual system:**

```
auunitadd [ -unit unit_name ] [ -group group_name ]
          [ -RS232C | -LAN ]
          -ctl0 device | address [ -ctl1 device | address ] [
-ignore ]
```

- **Description**

This command registers an array subsystem into the Storage Navigator. Registration information consists of an array subsystem name, a group name, and a connection interface.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem for which registration information will be set up. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_", ".", "@", or " ". Space in front and in the rear of the character string is removed. Cannot specify spaces only. If this option is omitted, the name to be registered is given as "an array unit model name_serial number" (e.g., DF700M_75010123).
-group group_name	Specifies the name of a group in which multiple array subsystems are managed all together. If this option is omitted, array subsystems are not managed in a group all together. The maximum number of groups registered is 200. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_".
-RS232C   -LAN	Specifies the connection interface (RS232C or LAN) to an array subsystem. If this option is omitted, the connection interface to be registered is given as LAN.
-ctl0 device   address	Specifies the device or address used to connect to Controller 0. If "LAN" is selected, specify an "IP address" or "host name". If "RS232C" is selected, specify a "device name". Specify a host name with up to 15 one-byte coded characters. Specify a device name with a RS232C port name or a device file name. (Example: Windows-COM1, Solaris™-/dev/ttya)
-ctl1 device   address	Specifies the device or address used to connect to Controller 1. If "LAN" is selected, specify an "IP address" or "host name". If "RS232C" is selected, specify a "device name". Specify a host name with up to 15 one-byte coded characters. Specify a device name with a RS232C port name or a device file name. (Example: Windows-COM1, Solaris-ttya)
-ignore	An array unit is not monitored for errors. If this option is omitted, a registered array unit is monitored for errors.

**Note:** For a dual controller disk array subsystem, only one controller can be used in the LAN connection mode. Specify **Controller 0 IP Address/Host Name/Device Name** or **Controller 1 IP Address/Host Name/Device Name**.

When registering the array subsystem in the dual system, verify that you have selected the correct controller for the connection before specifying **Controller 0 IP Address/Host Name/Device Name** and **Controller 1 IP Address/Host Name/Device Name**. If you specify the wrong controller, depending on the specified contents, the controller configuration can be set to the opposite controller side.

- **Examples**

The following example registers a 9500V with a single system configuration and a LAN connection interface by array subsystem df600a1.

**Example 1:**

```
% auunitadd -unit df600a1 -LAN -ctl0 192.168.1.100
Unit df600a1 has been registered.
%
```

**Example 2:**

```
% auunitadd -unit df600a2 -LAN -ctl0 192.168.1.100 -ctl1 192.168.1.101
Unit df600a2 has been registered.
%
```

## 4.2.4 Changing Registration Information

- **Command name**

auunitchg

- **Format**

```
auunitchg -unit unit_name
          [ -newunit unit_name ] [ -group group_name ]
          [ -RS232C | -LAN ]
          [ -ctl0 device | address ] [ -ctl1 device | address ]
          [ -watch | -ignore ] [ -f ]
```

- **Description**

This command changes the registration information (array subsystem name, group name, and connection interface) of an already-registered array subsystem. However, omitted items will not be changed.

- **Options**

Options	Description
-unit unit_name	Specifies the name of a registered array subsystem. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_", ".", "@", or " ". Space in front and in the rear of the character string is removed.
-newunit unit_name	Specifies the array subsystem name to change. Specify a new array subsystem name in less than or equal to 16 characters using

	alphanumeric characters, special symbols “- (minus),” “_ (underline),” “.” (period),” “@,” or “ (space)”. Space in front and in the rear of the character string is removed. Cannot specify spaces only.
-group group_name	Specifies the group name to change. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “- (minus),” or “_ (underline)”.
-RS232C   -LAN	Specifies the connection interface (RS232C or LAN) of an array subsystem to change
-ctl0 device   address	Specifies the device or address to change, which is used to connect to Controller 0 If “LAN” is selected, specify an “IP address” or “host name”. If “RS232C” is selected, specify a “device name”. Specify a host name with up to 15 one-byte coded characters. Specify a device name with a RS232C port name or a device file name. (Example: Windows-COM1, Solaris-/dev/ttya)
-ctl1 device   address	Specifies the device or address to change, which is used to connect to Controller 1. Specify in the same way as for Controller 0.
-watch	Specifies that an array subsystem is monitored for errors name.
-ignore	Specifies that an array subsystem is not monitored for errors.
-f	The confirmation message at command execution is omitted.

### ■ Examples

The following example shows the procedure for changing registration information. The user executes the display (`-refer`) command to display the registration information of array subsystem `df600a1`, then executes the `auunitchg` command to change the information. After changing the information, the user executes the display (`-refer`) command again to check whether the changes have been made.

#### Example:

```
% auunitref -unit df600a1
Name          Group          Type      Construction Connection Type Error Mon
itoring IP Address/Host Name/Device Name
df600a1      hsp             DF600    Dual          TCP/IP (LAN)  Enable
           192.168.3.100  192.168.3.102
%
% auunitchg -unit df600a1 -LAN -ctl0 192.168.1.101
Are you sure you want to update the unit information? (y/n [n]): y
Unit information is updated.
%
% auunitref -unit df600a1
Name          Group          Type      Construction Connection Type Error Mon
itoring IP Address/Host Name/Device Name
df600a1      hsp             DF600    Dual          TCP/IP (LAN)  Enable
           192.168.3.101  192.168.3.102
%
```

If a specified array subsystem name is not yet registered, the following message is displayed.

#### Example:

```
% auunitchg -unit df600b1
DMEA001003 : The specified subsystem name is not registered.
%
```

## 4.2.5 Deleting Registration Information

- **Command name**

auunitdel

- **Format**

auunitdel -unit unit\_name . . . [ -f ]

- **Description**

This command deletes the registration information of an already-registered array subsystem.

- **Options**

Options	Description
-unit unit_name . . .	Specifies the name of the registered array subsystem whose registration information is to be deleted.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “-” (minus), “_” (underline), “.” (period), “@,” or “ (space)”. Space in front and in the rear of the character string is removed. Cannot specify spaces only. Single or multiple array unit names can be specified.  Single specification: Specifying a single array unit name. Example: -unit df700a1  Multiple specifications: Specifying multiple array unit names. Example: -unit df700a1 df600
-f	Omits the confirmation message when the command is executed

- **Examples**

The following example deletes registration information of already-registered array subsystem df600a1.

**Example:**

```
% auunitdel -unit df600a1
Are you sure you want to delete the specified subsystem? (y/n [n]): y
The df600a1 has been deleted.
The subsystems have been deleted successfully.
%
```

The following example checks the information registered about an array subsystem name that has been deleted.

**Example:**

```
% auunitdel -unit df600a1
DMEA001003: The specified subsystem name is not registered.
%
```

## 4.2.6 Setting a Password in Administration Mode

- **Command name**

aupasswd

- **Format**

aupasswd

- **Description**

This command sets a new password used in administration mode to execute administration commands. This command also changes a previously set password.

When setting a new password, enter the new password twice. When changing the password, enter an already-set password, and then enter a new password.

Specify the password in less than or equal to 12 characters using alphanumeric characters or symbols.

- **Examples**

The following example sets a new password used in administration mode.

**Example:**

```
% aupasswd
New password: (Enters a password to be set newly.)
Retype new password: (Enters the same password as above.)
%
```

The following example changes a password used in administration mode.

**Example:**

```
% aupasswd
Old password: (Enters an already-set password.)
New password: (Enters a new password.)
Retype new password: (Enters the same password as above.)
%
```

## 4.3 Displaying Array Subsystem Status

### 4.3.1 Displaying a Microprogram Revision

- **Command name**

aurev

- **Format**

**9200:**

```
aurev -unit unit_name [ -ctl0 | -ctl1 ]
```

**9500V:**

```
aurev -unit unit_name
```

- **Description**

This command displays the microprogram revision of a specified unit.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem for which to display the microprogram revision. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “- (minus),” “_ (underline),” “.” (period),” “@,” or “ (space)”. Space in front and in the rear of the character string is removed.
-ctl0   -ctl1	Specifies the controller number of a specified array subsystem.

- **Examples**

The following example displays the microprogram revision of array subsystem df600a1.

**Example:**

```
% aurev -unit df600a1
Serial Number: nnnnnnnn
Microprogram Revision: 0650nn
%
```

### 4.3.2 Displaying Drive Configuration Information

- **Command name**

audrive

- **Format**

audrive -unit unit\_name -status [ -uno unit\_no -hno hdu\_no ]

audrive -unit unit\_name -vender

- **Description**

This command displays the status and type of drives in a specified array subsystem.

If an HDU on which data restoration is in progress is specified, a process of restoring is displayed.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array unit for which to display drive configuration information.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “- (minus)”, “_ (underline)”, “.” (period), “@”, or “(space)”. Space in front and in the rear of the character string is removed.
-status   -vender	The drive information is displayed.  - <b>status</b> : The drive condition is displayed.  When recovery is in progress, “(nn%)” is displayed to indicate the progress rate of recovery.  When no recovery is performed, “(0%)” is displayed. When recovery terminates normally or recovery is terminated forcibly, “(100%)” or “Normal” is displayed.  When recovery terminates abnormally, “(nn% Aborted)” is displayed to indicate the progress rate of the recovery already processed until an abnormal termination and the resulting abnormal termination.  - <b>vender</b> : The vendor ID, product ID, and revision of the mounted drive are displayed.  For the 9500V and the AMS/WMS, the storage capacity of drives is displayed.
-uno unit_no -hno hdu_no	Displays the operating status of the drive at a specified position.

- **Examples**

The following example displays the status of drives in array subsystem df600a1.

**Example:**

```
% audrive -unit df600a1 -status
Unit No.  HDU No.  Type      Physics  Status
0          0        Data      Mounted  Normal
0          1        Data      Mounted  Normal
0          2        Data      Mounted  Normal
          :
          :
0          12       Data      Mounted  Normal
0          13       Spare     Mounted  Standby
1          0        Undefined Mounted  Out of RG
1          1        Undefined Mounted  Out of RG
          :
          :
1          13       Undefined Mounted  Out of RG
1          14       Undefined Mounted  Out of RG
          :
          :
%
```

The following example displays the status of drive HDU No. 7 in UNIT No. 0 of array subsystem df500a1.

**Example:**

```
% audrive -unit df500a1 -status -uno 0 -hno 7
Unit No.  HDU No.  Type      Physics  Status
0          7        Data      Mounted  Reconst (75%)
%
```

The following example displays the drive information of array subsystem df500a1.

**Example:**

```
% audrive -unit df500a1 -vendor
Unit No.  HDU No.  Vendor    Product   Revision  Capacity
0          0        HITACHI  DK328-43 D0D4      18GB
0          1        HITACHI  DK328-43 D0D4      18GB
0          2        HITACHI  DK328-43 D0D4      18GB
          :
          :
0          8        HITACHI  DK328-43 D0D4      18GB
0          9        HITACHI  DK328-43 D0D4      18GB
1          0        HITACHI  DK328-43 D0D4      18GB
1          1        HITACHI  DK328-43 D0D4      18GB
          :
          :
%
```

The following example displays the drive information of array subsystem df600a1.

**Example:**

```
% audrive -unit df600a1 -vendor
Unit No.  HDU No.  Vendor  Product      Revision  Capacity  Serial No.  Type
0          0        HITACHI DK32DJ-72FC K0K0      72GB      30xxxxxxx  FC
0          1        HITACHI DK32DJ-72FC K0K0      72GB      30xxxxxxx  FC
0          2        HITACHI DK32DJ-72FC K0K0      72GB      30xxxxxxx  FC
:
:
0          12       HITACHI DK32DJ-72FC K0K0      72GB      30xxxxxxx  FC
0          13       HITACHI DK32DJ-72FC K0K0      72GB      30xxxxxxx  FC
1          0        HITACHI DK32DJ-72FC K0K0      72GB      30xxxxxxx  FC
1          1        HITACHI DK32DJ-72FC K0K0      72GB      30xxxxxxx  FC
:
:
```

The following example displays the drive information of an array subsystem df700a1.

**Example:**

```
% audrive -unit df700a1 -vendor
Unit  HDU  Capacity  Drive Type  Vendor ID  Product ID      Revision  Serial No.
0     0    146GB    FC          SEAGATE    DKS2C-J146FC    4Cxx     3HYxxxxxx
0     1    146GB    FC          SEAGATE    DKS2C-J146FC    4Cxx     3HYxxxxxx
:
:
1     0    250GB    SATA       HITACHI    HDS722525VLSA80 A60A     Cxxxxxxx
1     1    250GB    SATA       HITACHI    HDS722525VLSA80 A60A     Cxxxxxxx
:
:
```

### 4.3.3 Displaying Cache Configuration Information

- **Command name**

aucache

- **Format**

**9200/9570V:**

aucache -unit unit\_name

- **Description**

This command displays the status and capacity of cache memory.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem to display cache configuration information. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_" (underline), ".", "@", or " (space)". Space in front and in the rear of the character string is removed.

- **Examples**

The following example displays the cache memory configuration information of array subsystem df600a1.

**Example:**

```
% aucache -unit df600a1
CTL  Slot  Status  Size (MB)
  0    0   Normal    512
  0    1   Normal    512
  1    0   Normal    512
  1    1   Normal    512
%
```

### 4.3.4 Displaying Power Supply/Fan/Battery/Loop/ENC Status

- **Command name**

ausupply

- **Format**

**9200/9570V:**

ausupply -unit unit\_name

- **Description**

This command displays the status of AC power supplies, fans, batteries, battery backup circuits, loop, and ENC. Use the `auparts` command, when you display the status of Power Supply/Fan/Battery/Loop/ENC to 9580V/AMS/WMS.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem for which to display information. Specify the name in less than or equal to 16 characters using alphanumeric characters and special symbols "-", "_", ".", "@", or " ". Space in front and in the rear of the character string is removed.

- **Examples of using commands**

This example displays the status of power supplies, batteries, fans, backup circuits, loop, and ENC of array subsystem df600a1 individually.

**Example:**

```
% ausupply -unit df600a1
AC PS Information
Unit AC Status
  0 0 Normal
  0 1 Normal
  :
  :
 13 1 Nothing

FAN Information
Unit FAN Status
  0 0 Normal
  0 1 Normal
  :
  :
 13 1 Nothing

Battery Information
No. Status
  0 Normal

Battery Backup Information
No. Status
  0 Normal
  1 Normal
```

```

Loop Information
  Path  Loop  Status
    0    0   Normal
    :
    1    1   Normal

ENC Information
Unit  ENC  Status
  0    0   Normal
  0    1   Normal
  :
  :
  13   1   Nothing
%
```

### 4.3.5 Displaying Controller/Cache/Power Supply/Fan/Battery/Loop/ENC Status

- **Command name**

`auparts`

- **Format**

**9580V/AMS/WMS:**

`auparts -unit unit_name`

- **Description**

This command displays the status of controller, cache, AC power supplies, fans, batteries, battery backup circuits, loop, ENC, host connectors, and unit type. When the NNC is connected, the status of NNC components (NNC, NNC Base, DIMM, PS, fan, Extension Slot and host connector) is also displayed.

- **Options**

Options	Description
<code>-unit unit_name</code>	Specifies the name of an array subsystem for which to display information. Specify the name in less than or equal to 16 characters using alphanumeric characters and special symbols "-", "_", ".", "@", or " ". Space in front and in the rear of the character string is removed.

- **Examples**

This example displays the status of controller, cache, AC power supplies, fans, batteries, battery backup circuits, loop, and ENC of an array subsystem `df600h`.

**Example:**

```
% auparts -unit df600h
Controller Information
  CTL  Status
    0  Normal
    1  Normal

Cache Information
  CTL  Slot  Status  Size (MB)
    0    0  Normal   1024
  :

AC Information
  Unit AC  Status
  CTU  0  Normal
  CTU  1  Normal
    0  0  Normal
    0  1  Normal
  :

FAN Information
  Unit FAN  Status
  CTU  0  Normal
  CTU  1  Normal
    0  0  Normal
    0  1  Normal
  :

Battery Information
  No.  Status
    0  Normal
    1  Normal

Battery Backup Information
  No.  Status
    0  Normal
    1  Normal

Loop Information
  Path Loop  Status
    0    0  Normal
    0    1  Normal
  :

ENC Information
  Unit ENC  Type  Status
    0    0  SENC Normal
    0    1  SENC Normal
  :

Unit Information
  Unit  Type
    0   FC
    1   AT
  :

%
```

This example displays the status of controller, cache, AC power supplies, fans, batteries, battery backup circuits, loop, ENC, and NNC type1 components of an array subsystem df700 individually.

```

% auparts -unit df700
Controller
  CTL  Status
    0  Normal
    1  Normal

Cache
  CTL  Slot  Capacity(MB)  Status
    0   0    1024        Normal
    0   1     ---        Nothing
    1   0    1024        Normal
    1   1     ---        Nothing

Battery Backup
  CTL  Status
    0  Normal
    1  Normal

Battery
  Battery  Status
    0      Normal
    1      Normal

Fan
  Unit  Fan  Status
    0   0   Normal
    0   1   Normal

AC
  Unit  AC  Status
    0   0   Normal
    0   1   Normal

ENC
  Unit  ENC  Type  Status

Loop
  Path  Loop  Status
    0   0   Normal
    0   1   Normal
    1   0   Normal
    1   1   Normal

Unit
  Unit  Type
    0   FC

NNC
  NNC  Status
    0  Normal
    2  Normal

NNCO
  DIMM
    B0      Normal
    A0      Normal
    B1      Normal
    A1      Normal
  PS      Normal
  Fan      Normal
  Host Connector  Normal

```

```

NNC2                Status
  DIMM
    B0              Normal
    A0              Normal
    B1              Normal
    A1              Normal
  PS                Normal
  Fan               Normal
  Host Connector   Normal
%

```

This example individually displays the status of controller, cache, AC power supplies, fans, batteries, battery backup circuits, loop, ENC, and NNC type2 components of an array subsystem (df700m).

```

% auparts -unit df700m
Controller
  CTL  Status
    0  Normal
    1  Normal

Cache
  CTL    Slot  Capacity(MB)  Status
    0     0      1024      Normal
    0     1       ---      Nothing
    1     0      1024      Normal
    1     1       ---      Nothing

Battery Backup
  CTL  Status
    0  Normal
    1  Normal

Battery
  Battery  Status
    0      Normal
    1      Normal

Fan
  Unit    Fan  Status
    0     0   Normal
    0     1   Normal

AC
  Unit  AC  Status
    0   0   Normal
    0   1   Normal

ENC
  Unit  ENC  Type  Status

Loop
  Path  Loop  Status
    0   0   Normal
    0   1   Normal
    1   0   Normal
    1   1   Normal

Unit
  Unit  Type
    0   FC

```

```

NNC
  NNC   Status
    0   Normal
    2   Normal

NNC0
  NNC Base      Status
    Normal
  DIMM
    A0          Normal
    B0          Normal
    C0          Normal
    D0          Normal
  PS
    0           Normal
  Fan
    0           Normal
    1           Normal
    2           Normal

  Extension Slot
    3           Normal

NNC2
  NNC Base      Status
    Normal
  DIMM
    A0          Normal
    B0          Normal
    C0          Normal
    D0          Normal
  PS
    0           Normal
    1           Normal
  Fan
    0           Normal
    1           Normal
    2           Normal

  Extension Slot
    3           Normal

Extension Card
  NNC   Extension Slot   Extension Card      Status
    0           3         PCI-Express Card    Normal
    2           3         PCI-Express Card    Normal
%
```

### 4.3.6 Displaying the Current IP Address

- **Command name**

```
aucrlan
```

- **Format**

**9200/9500V:**

```
aucrlan -unit unit_name
```

- **Description**

This command displays the enabled LAN information of the array subsystem.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem for which to display LAN information. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-" (minus), "_" (underline), "." (period), "@", or " (space)". Space in front and in the rear of the character string is removed.

- **Examples**

The following example displays the enabled LAN information of array subsystem df600a1.

**Example:**

```
% aucrlan -unit df600a1
CTL  IP Address      Subnet Mask      Default Gateway
0    125.0.9.98       255.255.255.0   125.0.9.5
1    125.0.9.99       255.255.255.0   125.0.9.5
%
```

### 4.3.7 Displaying Information Messages

- **Command name**

auinfomsg

- **Format**

auinfomsg -unit unit\_name

- **Description**

This command displays the information messages of the specified array subsystem.

- **Options**

Options	Description
-unit unit_name	Specifies the name of the array subsystem in which to display the information messages. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-" (minus), "_" (underline), "." (period), "@", or " (space)". Space in front and in the rear of the character string is removed.

- **Examples**

The following example obtains and displays the information messages on array subsystem df500a1.

**Example:**

```

% auinfomsg -unit df500a1
Controller 0/1 Common
06/27/2001 21:18:37 C0 I12203 LU format completed(LU-03)
06/27/2001 21:18:36 C0 I12204 LU format completed(LU-04)
06/27/2001 21:18:36 C0 I12201 LU format completed(LU-01)
06/27/2001 21:18:35 C0 I12202 LU format completed(LU-02)
06/27/2001 21:18:37 C0 I12200 LU format completed(LU-00)
06/27/2001 21:17:34 C0 I12404 LU format start (LU-00)
06/27/2001 21:17:34 C0 I12403 LU format start (LU-03)
06/27/2001 21:17:33 C0 I12402 LU format start (LU-02)
06/27/2001 21:17:33 C0 I12401 LU format start (LU-01)
06/27/2001 21:17:33 C0 I12400 LU format start (LU-00)
06/27/2001 21:15:30 C0 I11000 All RAID group initialized
06/27/2001 21:13:17 C0 I12100 LU deleted(LU-00)
06/27/2001 21:12:57 C0 I12100 LU deleted(LU-00)
06/27/2001 21:12:16 C0 I12100 LU deleted(LU-00)
06/27/2001 21:11:20 C0 I12100 LU deleted(LU-00)
06/27/2001 21:10:45 C0 I12100 LU deleted(LU-00)
06/27/2001 21:10:04 C0 I12100 LU deleted(LU-00)
06/27/2001 21:06:02 C0 I10000 Subsystem is ready

Controller 0
06/27/2001 21:03:55 C0 RBE301 Flash program update end
06/27/2001 21:03:55 C0 RBE300 Flash program update start

Controller 1
%

```

When there is no information, only the header will be displayed.

### 4.3.8 Displaying/Setting Array Equipment ID or Controller ID

- **Command name**

auunitid

- **Format**

- **9500V:**

```
auunitid -unit unit_name -refer
auunitid -unit unit_name -set
          [ -EquipmentID string ]
          [ -ControllerIDFlag ctl_no enable | disable ]
          [ -ControllerID ctl_no string ]
```

- **Description**

This command displays or sets the equipment ID or controller ID.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem for which to display or set the array equipment ID or the controller ID. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_" (underline), "." (period), "@," or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays the array equipment ID or the controller ID.
-set	Sets the array equipment ID or the controller ID.
-EquipmentID string	Sets the array equipment ID. <b>string:</b> The array equipment ID (up to four numerals).
-ControllerIDFlag ctl_no enable   disable	Specifies whether to set the controller ID flag effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>enable:</b> Enables the controller ID <b>disable:</b> Disables the controller ID
-ControllerID ctl_no string	Specifies the controller ID. <b>ctl_no:</b> Controller number (0, 1) <b>string:</b> Controller ID (up to eight characters) If you want to enter NULL characters, enter "".

- **Examples**

The following example displays the controller ID flag and controller ID of an array subsystem df600a1.

**Example:**

```
% auunitid -unit df600a1 -refer
Password:
Equipment ID
    nnnn
CTL0
    ControllerIdentifier = disable(DF600-00 C0)
CTL1
    ControllerIdentifier = disable(DF600-00 C1)
%
```

### 4.3.9 Displaying Equipment Information

- **Command name**

auunitinfo

- **Format**

**AMS/WMS:**

auunitinfo -unit unit\_name

- **Description**

This command displays the equipment type, serial number, micro program revision, and LAN information of the array unit.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array unit for which to display the equipment information. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "- (minus)", "_ (underline)", "." (period)", "@", or " (space)". Space in front and in the rear of the character string is removed.

- **Examples**

The following example displays the equipment information of an array unit df700a1.

**Example:**

```
% auunitinfo -unit df700a1
Array Unit Type      : DF700M
Construction         : Dual
Serial Number        : 75010026
Microprogram Revision : 0710/A-M
CTL IP Address       Subnet Mask      Default Gateway
  0 192.168.0.1       255.255.255.0    192.168.0.100
  1 192.168.0.2       255.255.255.0    192.168.0.100
%
```

## 4.4 RAID/LU

### 4.4.1 Displaying a RAID Group

- **Command name**

aurgref

- **Format**

**9200 and 9500V:**

```
aurgref -unit unit_name [ -m | -g ]
```

**WMS100, AMS200, and AMS500:**

```
aurgref -unit unit_name [ -m | -g ] [ -detail rg_no ]
```

- **Description**

This command displays the definition list of the RAID groups that are set to the array subsystem.

- **Options**

Options	Description
-unit unit_name	Specifies the name of the array subsystem to display the definition of the RAID group. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_", ".", "@", or " ". Space in front and in the rear of the character string is removed.
-m   -g	Specifies this option when expressing the residual capacity in Mbytes or Gbytes. When the specification is omitted, the capacity is expressed in blocks. <b>-m:</b> Mbytes <b>-g:</b> Gbytes
-detail rg_no	Specifies the RAID group number to be detail displayed.

- **Examples**

The following example displays the definition of the RAID group of array subsystem df600a1.

**Example:**

```
% aurgref -unit df600a1 -g
RAID RAID Start Location Number of HDU Number of Free Capacity
Group Level [Unit No. HDU No.] in parity group parity group [Gbyte] Type
0 5 0 5 5 1 214.6 FC
%
```

The following example displays the definition of the RAID group of array unit df700a1.

**Example:**

```
% aurgref -unit df700a1 -g
RAID RAID Parity Total Capacity Free Capacity
Group Level Groups Type [Gbyte] [Gbyte]
  7 5( 3D+1P) 1 FC 400.3 400.3(100.0%)
 10 0( 4D) 1 FC 533.8 533.8(100.0%)
 20 1+0( 2D+2D) 1 AT 457.7 457.7(100.0%)
%
```

The following example displays the definition of RAID group 7 of array unit df700a1.

**Example:**

```
% aurgref -unit df700a1 -g -detail 7
RAID Group : 7
RAID Level : 5(3D+1P)
Parity Groups : 1
Type : FC
Total Capacity : 400.3 Gbyte
Free Capacity : 400.3 Gbyte (100.0%)
Drive Configuration
  Parity Group Unit HDU Capacity
          0 0 0 146GB
          0 0 1 146GB
          0 0 2 146GB
          0 0 3 146GB
Assignment Information
  No. Capacity[Gbyte] Assignment Status
  0 0.0 LUN0
  1 0.0 LUN1
  2 0.0 LUN2
  3 0.0 LUN3
  4 0.0 LUN4
  5 400.3 Free
%
```

## 4.4.2 Setting Up a RAID Group

- **Command name**

aurgadd

- **Format**

- **9200 and 9500V:**

```
aurgadd -unit unit_name -rg rg_no
        -RAID0 | -RAID1 | -RAID5 | -RAID10
        -uno unit_no -hno hdu_no -hnum hdu_num -pnum pty_num
```

- **WMS100, AMS200, and AMS500:**

```
aurgadd -unit unit_name -rg rg_no
        -RAID0 | -RAID1 | -RAID5 | -RAID10 | -RAID6
        -drive auto
        -hnum hdu_num
        -pnum pty_num
        -drvcapa 36 | 72 | 146 | 250 | 300 | 400 | 500
        -type FC | SATA
```

```
aurgadd -unit unit_name -rg rg_no
        -RAID0 | -RAID1 | -RAID5 | -RAID10 | -RAID6
        -drive unit_no.hdu_no ...
        -pnum pty_num
```

```
aurgadd -unit unit_name -availablelist -type FC | SATA
```

- **Description**

This command sets up a RAID group in a specified array unit.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array unit in which to set up a RAID group. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "(period)", "@", or " (space)". Space in front and in the rear of the character string is removed.
-rg rg_no	Specifies the RAID group number.
-RAID0   -RAID1   -RAID5     -RAID10   -RAID6	Specifies the RAID level.
-hnum hdu_num	Specifies the number of HDUs in the parity group of the RAID group.
-pnum pty_num	Specifies the number of parity groups of the RAID group.
-uno unit_no	Specifies the Unit number of the top drive in a RAID group.
-hno hdu_no	Specifies the HDU number of the top drive in a RAID group.

Options	Description
-drive auto   unit_no.hdu_no ...	Specifies the drives that compose the RAID group. <b>auto:</b> The Unit number and HDU numbers are set automatically. <b>unit_no.hdu_no:</b> Specify the Unit number and HDU number punctuating them with a period. When doing that, enter the Unit number and HDU number using numerals or hyphen(s) (-). Example: -drive 0.1 2.3 3.1 Example: -drive 1.0-2.2 2.8
-type FC   SATA	<b>When setting the RAID group:</b> Specify the drive types that compose the RAID group. Specify this option only when setting the drives automatically. <b>When a list of the usable drives is displayed:</b> Specify the drives type to be displayed in the list of the usable drives.
-drvcapa 36   72   146   250   300   400   500	Specifies the drive capacity that composes the RAID group. Specify this option only when setting the drives automatically.
-availablelist	The drives list in which the RAID group can be set is displayed.

- **Examples**

The following example sets up the RAID group of array unit df500a1. Set the RAID group number to 2, RAID level to RAID5, starting drive Unit number to 0, HDU number to 0, number of HDUs in the parity group to 5, number of parity groups to 1.

**Example:**

```
% aurgadd -unit df500a1 -rg 2 -RAID5 -uno 0 -hno 0 -hnum 5 -pnum 1
Password:
%
```

The following example sets up the RAID group of array unit df700a1. Set the RAID group number to 10, RAID level to RAID5, number of HDUs in the parity group to 5, number of parity groups to 1, drive capacity to 146 GB, drive type to FC, and drive selection to auto.

**Example:**

```
% aurgadd -unit df700a1 -rg 10 -RAID5 -hnum 5 -pnum 1 -drvcapa 146 -type FC -drive
auto
Password:
The drive will be selected automatically.
Are you sure you want to add a RAID group? (y/n [n]): y
The RAID Group has been set successfully.
%
```

The following example sets up the RAID group of array unit df700a1. Set the RAID group number to 11, RAID level to RAID5, number of parity groups to 1, and drive type to FC. The drive to be used displays the drive list that can be used and chooses the drive from them.

**Example:**

```
% aurgadd -unit df700a1 -availablelist -type FC
Password:
Available Drives
  Drive Type : FC
  Unit  HDU  Capacity
    0    7   146GB
    0    8   146GB
    0    9   146GB
    1    0   146GB
    1    1   146GB
    1    2   146GB
    1    3   146GB
    1    4   146GB
% aurgadd -unit df700a1 -rg 11 -RAID5 -pnum 1 -drive 0.7 0.8 0.9
Password:
Are you sure you want to add a RAID group? (y/n [n]): y
The RAID Group has been set successfully.
%
```

### 4.4.3 Expanding a RAID Group

- **Command name**

aurgexp

- **Format**

**9200 and 9500V:**

aurgexp -unit unit\_name -rg rg\_no -pnum pty\_num

- **Description**

This command expands the already-defined size of a RAID group.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem in which a RAID group whose size to expand has been defined.  Specifies the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "@", or " (space)". Space in front and in the rear of the character string is removed.
-rg rg_no	Specifies the RAID group number of a RAID group that is to be expanded.
-pnum pty_num	Specifies the number of parity groups after expansion.

- **Examples**

The following example expands the number of parity groups of RAID group 0 (from 1 to 3), which have been set in array subsystem df500a1.

**Example:**

```
% aurgref -unit df500a1
RAID   RAID   Start Location   Number of HDU   Number of   Free Capacity
Group  Level   [Unit No. HDU No.] in parity group parity group   [block]
    0     5         0         5             5           1   10000000
%
% aurgexp -unit df500a1 -rg 0 -pnum 3
Password:
%
% aurgref -unit df500a1
RAID   RAID   Start Location   Number of HDU   Number of   Free Capacity
Group  Level   [Unit No. HDU No.] in parity group parity group   [block]
    0     5         0         5             5           3   30000000
%
```

#### 4.4.4 Deleting a RAID Group

- **Command name**

aurgdel

- **Format**

**9200 and 9500V:**

```
aurgdel -unit unit_name -rg rg_no [ -f ]
```

**WMS100, AMS200, and AMS500:**

```
aurgdel -unit unit_name -rg rg_no . . . [ -f ]
```

**9200, 9500V, WMS100, AMS200, and AMS500:**

```
aurgdel -unit unit_name -ALL [ -f ]
```

- **Description**

This command deletes the specified RAID group or all RAID groups in an array subsystem.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem in which the RAID group to be deleted is defined. Specify less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "(period)", "@", or " (space)". Space in front and in the rear of the character string is removed.
-rg rg_no . . .	Specifies the RAID group number of a RAID group that is to be deleted. For the AMS/WMS, multiple RAID group numbers can be specified. The RAID groups are deleted in the order that you specify them.
-ALL	Deletes all RAID groups.
-f	Omits the confirmation message when the command is executed.

- **Examples**

The following example deletes RAID group 1, 2, and 5 that are defined in array subsystem df700a1.

**Example:**

```
% aurgdel -unit df700a1 -rg 1 2 5
Password:
The specified RAID group(s) will be deleted.
Logical units exit in the RAID group. This operation will destroy RAID groups,
logical units, and the data in those logical units.
Are you sure you want to delete the RAID group(s)? (y/n [n]): y
If you delete the RAID groups, logical units will be deleted. You will not be able
to recover your data. Please make sure to perform a backup of all important data
before this RAID group delete operation.
When you delete your RAID group, the data becomes unusable. Systems or applications
that use this subsystem will terminate abnormally. Please make sure to stop
host access to the subsystem before performing this RAID group delete operation.
Are you sure you want to delete the RAID group(s)? (y/n [n]): y
The specified RAID group(s) will be deleted.
Are you sure you want to execute? (y/n [n]): y
The RAID group 1 has been deleted.
The RAID group 2 has been deleted.
The RAID group 5 has been deleted.
The RAID group(s) has been deleted successfully.
%
```

#### 4.4.5 Displaying an LU

- **Command name**

auluref

- **Format**

**9200 and 9500V:**

```
auluref -unit unit_name [ -m | -g ] [ -last ] [ -lu lun . . . ]
```

**WMS100, AMS200, and AMS500:**

```
auluref -unit unit_name [ -m | -g ] [ -lu lun . . . ]
```

- **Description**

This command displays already-defined LU information (capacity, current controller No., default controller No., RAID group No. of a RAID group and its RAID level and status).

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem for which to display the LU information. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_", ".", "@", or " ". Space in front and in the rear of the character string is removed.
-m   -g	Expresses the LU capacity in Mbytes or Gbytes. When the specification is omitted, the capacity is expressed in blocks. <b>-m:</b> Mbytes <b>-g:</b> Gbytes
-last	Displays the last defined LU.

Options	Description
-lu lun . . .	<p>Specifies an LU number to display the LU information. If omitted, all LU information that is already defined will be displayed. Single or multiple LU numbers can be specified.</p> <p><b>Single specification:</b> Specify a single LU number. Example: -lu 3</p> <p><b>Multiple specification:</b> Specify multiple LU numbers. Example: -lu 0 1 2 3 4 5 8 -lu 0-5 8</p>

- **Examples**

The following example displays information about LU 0 in array subsystem df600a1.

**Example:**

```
% auluref -unit df600a1 -lu 0 -m
      Capacity          RAID  RAID
LU   [Mbyte] C-CTL D-CTL Group Level Type Status
0    35.0    0     0     0     5 FC Normal
%
```

The following example displays information about all LUs in array subsystem df700a1.

**Example:**

```
% auluref -unit df700a1 -m
      Capacity          RAID  RAID
LU   [Mbyte] C-CTL D-CTL Group Level Type Status
0    35.0    0     0     0     5( 3D+1P) FC Normal
1    35.0    0     0     1     5( 3D+1P) FC Normal
%
```

#### 4.4.6 Setting Up an LU

- **Command name**

auluadd

- **Format**

**9200 and 9500V**

Dual System:

```
auluadd -unit unit_name [ -lu lun ] -rg rg_no -size num [ -m |
-g ] | rest
          -ctl0 | -ctl1
```

Single system:

```
auluadd -unit unit_name [ -lu lun ] -rg rg_no -size num [ -m |
-g ] | rest
```

## WMS100, AMS200, and AMS500

### Dual System:

```

aluuadd -unit unit_name [ -lu lun ] -rg rg_no -size num [ -m |
-g ] | rest
        -ct10 | -ct11
        [ -stripesize 64 | 256 | 512 ]
        [ -cachept pt_no ]
        [ -paircachept pt_no | auto ]
        [ -createarea area_no ]

```

### Single system:

```

aluuadd -unit unit_name [ -lu lun ] -rg rg_no -size num [ -m |
-g ] | rest
        [ -stripesize 64 | 256 | 512 ]
        [ -cachept pt_no ]
        [ -paircachept pt_no | auto ]
        [ -createarea area_no ]
aluuadd -unit unit_name -availablelist -rg rg_no

```

- **Description**

This command sets up an LU.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem for which an LU is to be added. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_", ".", "@", or " ". Space in front and in the rear of the character string is removed.
-lu lun	Specifies the LU number of an LU to be added. If omitted, the Storage Navigator Modular will automatically apply an LU number.
-rg rg_no	Specifies the RAID group number of a RAID group for which an LU is to be added
-size num [ -m   -g ]   rest	Specifies the capacity (number of blocks) of an LU. When specifying the capacity in Mbytes, add "m" or "M" to the command option. When specifying the capacity in Gbytes, add "g" or "G" to the command option. If "rest" is specified for the capacity, all remaining capacity of the RAID group will be assigned.
-ct10   -ct11	Specifies the default controller number of an LU. Specify this option when the array subsystem is a dual system.
-stripesize 64   256   512	Specify the stripe size. If this option is omitted, the Storage Navigator defaults to 64.
-cachept pt_no	Specifies the cache partition. If this option is omitted, the Storage Navigator Modular will automatically assign the partition 0 or 1. <b>pt_no:</b> Partition number

Options	Description
-paircachept pt_no   auto	Specifies the pair cache partition. If this option is omitted, the array unit will automatically determine the pair cache partition. <b>pt_no</b> : Pair cache partition number <b>auto</b> : The array unit will automatically determine the pair cache partition number.
-createarea area_no	Specifies the free domain number of the RAID group in which the LU is to be set. Specify the number of the list displayed by the -availablelist option for the domain number. When the specification is omitted, an area having the largest capacity is specified.
-availablelist	The free domain of the RAID group in which the LU is to be set is displayed.

■ **Example**

The following example adds LU 3 to RAID group 2 in an array subsystem with a dual system configuration (df500a1). The capacity will be 1,024,000, and the default controller is 0.

**Example:**

```
% aлуadd -unit df500a1 -lu 3 -size 1024000 -ct10 -rg 2
Password:
Are you sure you want to set the logical unit? (y/n [n]): y
The logical unit has been set successfully.
%
```

The following example adds LU 100 to RAID group 10 in array unit df700a1 with a dual system configuration. The capacity shall be 80 GB, the default controller is 0, and the cache partition is partition 0. The domain number of the RAID group to be set. LU displays the free domain number of the RAID group list that can be used and selects from this list.

**Example:**

```
% aлуadd -unit df700a1 -availablelist -rg 10
Password:
Area to Use
RAID Group : 10
No. Capacity
0 400.3 GByte
1 300.0 GByte
2 100.0 GByte
% aлуadd -unit df700a1 -lu 100 -size 80g -ct10 -rg 10 -cachept 0 -createarea 1
Password:
Are you sure you want to set the logical unit? (y/n [n]): y
The logical unit has been set successfully.
%
```

## 4.4.7 Formatting the LU

- **Command name**

auformat

- **Format**

**9200:**

```
auformat -unit unit_name -online | -offline | -N | -I | -Im
        -lu lun ... [ -f ]
```

**9500V:**

```
auformat -unit unit_name -online | -offline | -N | -I | -Im | -
quick
        -lu lun ... [ -f ]
```

**AMS200, and AMS500:**

```
auformat -unit unit_name -lu lun ... [ -f ]
```

- **Description**

This command formats a specified LU.

If multiple LUs are specified, LUs are formatted in the ascending order of LUNs regardless of the formatting method.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem in which an LU to be formatted is defined. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_", ".", "@", or " ". Space in front and in the rear of the character string is removed.
-online   -offline   -N   -I   -Im   -quick	Specifies the formatting method. <b>-N:</b> Formats in the Normal mode per LU. Formatting is executed from the current controller that controls the LU. When registering the unit information, the current controller that controls the LU that is to be formatted must be registered. <b>-online   -I:</b> Formats in the Immediate mode per LU. Formatting is executed from the current controller that controls the LU. It can format during the read/write command execution from a host. When registering the unit information, the current controller that controls the LU to be formatted must be registered. <b>-offline   -Im:</b> Formats up to six LUs concurrently in the Immediate mode. If this mode is specified, LUs are formatted from a controller that are connected regardless of the current controller that controls the LUs. When two or more logical units are chosen, the commands from a host are rejected during the format execution. Generally, the format with this option takes shorter time than the format with '-online' or '-I' option. <b>-quick:</b> Formats up to six LUs concurrently in the quick mode. The read/write commands from a host are accepted during the format execution. The command execution from a host is

	lower than the format with '-offline' or '-lm' option. When formatting in quick mode, set the priority mode by auquickfmtree command.
-f	Omits the confirmation message when the command is executed.
-lu lun ...	Specifies the LU number, which is to be formatted. Single or multiple LU numbers can be specified. <b>Single specification:</b> Specify a single LU Number Example: -lu 3 <b>Multiple specification:</b> Specify multiple LU Numbers Example: -lu 0 1 2 3 4 5 8 -lu 0-5 8

- **Examples**

This example formats LU 3 in array subsystem df500a1 in Normal mode.

**Example:**

```
% auformat -unit df500a1 -N -lu 3
Password:
The logical unit(s) will be formatted.
The logical unit(s) has already been formatted.
Are you sure you want to format the logical unit(s)? (y/n [n]): y
If you format the logical unit(s), you will not be able to recover your data. Please make sure to perform backup of all important data before this operation. When you format your logical unit, the data becomes unusable. Systems or applications that use this subsystem will terminate abnormally. Please make sure to stop host access to the subsystem before performing this operation.
Are you sure you want to format the logical unit(s)? (y/n [n]): y
The logical unit(s) will be formatted.
Are you sure you want to execute? (y/n [n]): y
LU3 format start
LU3 format end: Completed Successfully
%
```

The following example formats LUs 4 to 7 in array subsystem df500a1 in Immediate mode. The confirmation messages is omitted using the -f option.

**Example:**

```
% auformat -unit df500a1 -I -lu 4-7 -f
Password:
LU4 format start
LU4 format end: Completed Successfully
LU5 format start
LU5 format end: Completed Successfully
LU6 format start
LU6 format end: Completed Successfully
LU7 format start
LU7 format end: Completed Successfully
%
```

The following example formats LU 255 in array subsystem df700a1.

**Example:**

```
% auformat -unit df700a1 -lu 255
Password:
Are you sure you want to format the logical unit(s)? (y/n [n]): y
The format was started.
%
```

## 4.4.8 Displaying LU Formatting Progress

- **Command name**

auformatst

- **Format**

auformatst -unit unit\_name -lu lun

- **Description**

This command displays the progress of formatting LUs, which was specified to format in Immediate mode and quick mode.

When a specified LU is formatting, the progress of formatting is displayed in a percentage. When the LU is not formatting, such as immediately after an LU has been setup, its size has been expanded, or when the formatting has been completed, the following progress will be displayed:

- “100%” is displayed when the LU is in normal status.
- “0%” is displayed when the LU is in a status other than above.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem in which the LUs are defined. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “-” (minus), “_” (underline), “.” (period), “@”, or “ ” (space)”. Space in front and in the rear of the character string is removed.
-lu lun	Specifies the LU number of an LU for which the progress is checked.

- **Examples**

The following example confirms the progress of the operation after LU 4 is formatted in array subsystem df600a1 in Immediate mode.

- **Example:**

```
% auformat -unit df600a1 -lu 4 -I -f
Password:
LU4 format start
LU4 format end: Completed Successfully
%
% auformatst -unit df600a1 -lu 4
df600a1 LU 4 17 %
% auformatst -unit df600a1 -lu 4
df600a1 LU 4 50 %
% auformatst -unit df600a1 -lu 4
df600a1 LU 4 81 %
% auformatst -unit df600a1 -lu 4
df600a1 LU 4 94 %
% auformatst -unit df600a1 -lu 4
df600a1 LU 4 100 %
%
```

#### 4.4.9 Displaying/Setting the Quick Format Option

- **Command name**

auquickfmtree

- **Format**

**9500V, WMS100, AMS200, and AMS500:**

```
auquickfmtree -unit unit_name -refer
auquickfmtree -unit unit_name -set
                [ -priority normal | host | format ]
                [ -formatdata default | 0 ]
```

- **Description**

This command displays or sets the quick format option.

- **Options**

Options	Description
-unit unit_name	Specifies the name of the array subsystem for which to display or set the quick format option. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-" (minus), "_" (underline), "." (period), "@" or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays the quick format option.
-set	Sets the quick format option.
-priority normal   host   format	Specifies a priority mode. <b>normal</b> normal mode <b>host:</b> host priority mode <b>format:</b> format priority mode
-formatdata default   0	Specifies a format data. <b>default:</b> default data <b>0:</b> 0 data

- **Examples**

The following example displays the quick format option of array subsystem df600a1.

**Example:**

```
% auquickfmtree -unit df600a1 -refer
Priority Mode      : Normal
Format Data       : Default
%
```

The following example sets the quick format option to array subsystem df600a1, then displays the information.

**Example:**

```
% auquickfmtopt -unit df600a1 -set -priority host
Password:
Are you sure you want to set the quick format option? (y/n[n]): y
The quick format option has been set successfully.
%
% auquickfmtopt -unit df600a1 -refer
Priority Mode      : Host
Format Data       : Default
%
```

The following example sets the quick format data to array subsystem df600a1.

**Example:**

```
% auquickfmtopt -unit df600a1 -set -formatdata 0
Password:
Are you sure you want to set the quick format option? (y/n [n]): y
The quick format option has been set successfully.
%
```

The following example sets the quick format priority mode and quick format data to array subsystem df600a1.

**Example:**

```
% auquickfmtopt -unit df600a1 -set -priority host -formatdata 0
Password:
Are you sure you want to set the quick format option? (y/n [n]): y
The quick format option has been set successfully.
%
```

The following example sets the quick format option to array subsystem df700a1.

**Example:**

```
% auquickfmtopt -unit df700a1 -set -priority format
Password:
Are you sure you want to set the format option? (y/n [n]): y
This setting of the format priority mode may affect the host access. In some cases,
performance deterioration or time-out occurs.
Do you want to continue processing? (y/n [n]): y
The format option has been set successfully.
%
```

The following example sets the quick format option to array subsystem df700a1.

**Example:**

```
% auquickfmtopt -unit df700a1 -set -priority host
Password:
Are you sure you want to set the format option? (y/n [n]): y
The format option has been set successfully.
%
```

#### 4.4.10 Expanding an LU

- **Command name**

auluexp

- **Format**

**9200 and 9500V:**

```
auluexp -unit unit_name -lu lun -incr num[ -m | -g ] | rest
```

- **Description**

This command expands the size of an LU. Note that only the last LU in each RAID group can be expanded.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem in which the LU, whose size is to be expanded, is defined. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "@", or " (space)". Space in front and in the rear of the character string is removed.
-lu lun	Specifies the LU number of an LU of which the size is to be expanded.
-incr num [ -m   -g ]   rest	Specifies the increment (in the number of blocks) of the size to expand. When specifying it in Mbytes, add "m" or "M" to the command option. When specifying it in Gbytes, add "g" or "G" to the command option. If "rest" is specified for the increment, all remaining capacity of the RAID group to which LU belongs is assigned.

- **Examples**

The following example expands the capacity of LU 3 in array subsystem df500a1 by an increment of 3,072 blocks.

**Example:**

```
% auluexp -unit df500a1 -lu 3 -incr 3072
Password:
%
```

The following example assigns to LU 3 in array subsystem df500a1, all the remaining capacity of the RAID group to which this LU belongs.

**Example:**

```
% auluexp -unit df500a1 -lu 3 -incr rest
Password:
%
```

#### 4.4.11 Deleting an LU

- **Command name**

auludel

- **Format**

**9200 and 9500V:**

```
auludel -unit unit_name -last [ -f ]
```

**WMS100, AMS200, and AMS500:**

```
auludel -unit unit_name -lu lun ... [ -f ]
```

- **Description**

This command deletes the last defined LU for the 9200 and the 9500V. For the WMS100, AMS200, and AMS500, it deletes the specified LU.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem in which the LUs are defined. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "(period)", "@", or "(space)". Space in front and in the rear of the character string is removed.
-last	Specifies this option when displaying the last defined LU.
-lu lun ...	Specifies the LU number which is to be deleted. The LUs are deleted in order that you specify them. Single or multiple LU numbers can be specified. <b>Single specification:</b> Specifying a single LU number. <b>Example:</b> -lu 3 <b>Multiple specifications:</b> Specifying multiple LU numbers. <b>Example:</b> -lu 0 1 2 3 4 5 8 -lu 0-5 8
-f	The confirmation message at command execution is omitted.

- **Example**

The following example deletes the last LU in array subsystem df500a1.

**Example:**

```
% auludel -unit df500a1 -last
Password:
The last defined logical unit xxx will be deleted.
The last defined logical unit xxx has been formatted.
Are you sure you want to delete logical unit xxx? (y/n [n]): y
If you delete the logical unit, you will not be able to recover your data, Please make sure to perform backup of all important data before this operation.
When you delete your logical unit, the data becomes unusable. Systems or applications that use this subsystem will terminate abnormally. Please make sure to stop host access to the subsystem before performing this operation.
Are you sure you want to delete the logical unit? (y/n [n]): y
The last defined logical unit xxx will be deleted.
Are you sure you want to execute? (y/n [n]): y
The last defined logical unit xxx has been deleted.
%
```

The following example deletes LUs 10, 11, and 12 in array unit df700a1.

**Example:**

```
% auludel -unit df700a1 -lu 10 11 12
Password:
The specified logical unit(s) will be deleted.
The specified logical unit(s) has already been formatted.
Are you sure you want to delete the specified logical unit(s)? (y/n [n]): y
If you delete the logical unit(s), you will not be able to recover your data, Please make sure to perform backup of all important data before this operation.
When you delete your logical unit, the data becomes unusable. Systems or applications that use this subsystem will terminate abnormally. Please make sure to stop host access to the subsystem before performing this operation.
Are you sure you want to delete the logical unit(s)? (y/n [n]): y
The specified logical unit(s) will be deleted.
The logical unit 10 has been deleted.
The logical unit 11 has been deleted.
The logical unit 12 has been deleted.
The logical unit(s) has been deleted successfully.
%
```

## 4.4.12 Changing the Default Controller of an LU

- **Command name**

auluchg

- **Format**

auluchg -unit unit\_name -lu lun

- **Description**

This command changes the default controller of a connected LU to another controller.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem in which LUs have been defined. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_", ".", "@", or " ". Space in front and in the rear of the character string is removed.
-lu lun	Specifies the LU number of an LU for which the default controller is to be changed.

- **Examples**

The following example changes the default controller connected to LU 2 in array subsystem df600a1.

**Example:**

```
% auluchg -unit df600a1 -lu 2
Password:
Are you sure you want to change the default controller in charge of LU? (y/n [n]): y
The default controller in charge of LU has been set successfully.
%
```

### 4.4.13 Invalidating an LU

- **Command name**

`alulnvalidate`

- **Format**

**9500V:**

`alulnvalidate -unit unit_name -lu lun`

- **Description**

This command invalidates the LU. The invalidated LU cannot be used by a host. However, its data can be restored through restoration of the LU because the data is not invalidated. The invalidated LU can be reused when the LU is reassigned.

- **Options**

Options	Description
<code>-unit unit_name</code>	Specifies the name of an array subsystem defined as being correlated with the LU to be invalidated. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “- (minus),” “_ (underline),” “.” (period), “@,” or “ (space)”. Space in front and in the rear of the character string is removed.
<code>-lu lun</code>	Specifies the number of the LU to be invalidated.

- **Examples**

In the following example, the LU2 correlated with disk array subsystem df600 is invalidated.

**Example:**

```
% alulnvalidate -unit df600 -lu 2
Password:
This logical unit has already been formatted.
Are you sure you want to invalidate logical unit 2? (y/n [n]): y
The setting ended normally.
%
```

#### 4.4.14 Reassigning an LU

- **Command name**

aulureallocate

- **Format**

**9500V:**

```
aulureallocate -unit unit_name -lu lun
               -size num [ m | g ] | all [ -nlu new_lun ]
```

- **Description**

This command makes the invalidated LU usable by assigning a part or all of its area. When a part of the LU is assigned, the rest of the area is set as a new LU. The new LU is placed in a state in which it is invalidated. Both LUs are unformatted after the reassignment is executed.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem defined as being correlated with the LU to be reassigned. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "- (minus)," "_ (underline)," "." (period)," "@," or " space)". Space in front and in the rear of the character string is removed.
-lu lun	Specifies a number of the LU to be reassigned.
-size num [ m   g ]   all	Specifies a capacity (number of blocks) of the LU to be reassigned. When specifying it in Mbytes, add "m" or "M" to the command option. When specifying it in Gbytes, add "g" or "G" to the command option. When a character string, "all" is specified for the capacity, the whole capacity of the invalidated LU is assigned.
-nlu new_lun	Specifies a number of the LU to be generated through an assignment of the residual capacity, after the reassignment is executed. When the specification of an LU number is omitted, Storage Navigator Modular determines the number as the least one of numbers of unused LUs automatically. When the <b>-size</b> is specified as "all," however, this option cannot be specified.

- **Examples**

In the following example, the LU2 correlated with disk array subsystem df600 is reassigned.

**Example:**

```
% aulureallocate -unit df600 -lu 2 -size 100m -nlu 10
Password:
Are you sure you want to reallocate logical unit 2?
New logical unit 10 is created in remained area. (y/n [n]): y
After it performs, the reallocated area cannot be brought back to the original logical
unit any more.
Do you want to continue processing? (y/n [n]): y
The setting ended normally.
%
```

## 4.4.15 Restoring an LU

- **Command name**

aulurestoration

- **Format**

**9500V**

aulurestoration -unit unit\_name -lu lun

- **Description**

This command restores the invalidated LU.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem defined as being correlated with the LU to be restored.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_" (underline), "." (period), "@", or " (space)". Space in front and in the rear of the character string is removed.
-lu lun	Specifies a number of the LU to be restored.

- **Examples**

In the following example, the invalidated LU2 correlated with disk array subsystem df600 is restored.

**Example:**

```
% aulurestoration -unit df600 -lu 2
Password:
Are you sure you want to restore logical unit 2? (y/n [n]): y
The setting ended normally.
%
```

#### 4.4.16 Displaying/Starting/Skipping/Canceling the Parity Correction Online

- **Command name**

aulucorrect

- **Format**

**9200 and 9500V:**

```
aulucorrect -unit unit_name -refer
[ -status [ uncorrected ] [ aborted ] [ correcting ]
[ waiting ] [ skipped ] ]
```

**WMS100, AMS200, and AMS500:**

```
aulucorrect -unit unit_name -refer
[ -status [ uncorrected ] [ aborted ] [ correcting ]
[ waiting ] [ skipped ]
[ uncorre_drvdetach ] [ waiting_drvreconst ] ]
```

**9200, 9500V, WMS100, AMS200, and AMS500:**

```
aulucorrect -unit unit_name -start [ -luorder lun ... ]
aulucorrect -unit unit_name -skip [ -lu lun ... ]
aulucorrect -unit unit_name -cancel -lu lun ...
aulucorrect -unit unit_name -lucorrectlist
```

- **Description**

This command refers to LU correction by using parity, starts, skips, or aborting the correction.

- **Options**

Options	Description
-unit unit_name	Specifies the array subsystem name of the LU to be corrected by using parity, starts, skips, or an abort.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “- (minus),” “_ (underline),” “.” (period),” “@,” or “ (space)”. Space in front and in the rear of the character string is removed.
-refer	Displays the status of the LU correction by using parity.
-status [ uncorrected ] [ aborted ] [ correcting ] [ waiting ] [ skipped ] [ uncorre_drvdetach ] [ waiting_drvreconst ]	Specifies the status of the LU to which you wish to refer. When the specification is omitted, all the statuses are displayed. One or more of the statuses can be specified.  <b>uncorrected:</b> Uncorrected <b>aborted:</b> Correction Aborted <b>correcting:</b> Parity Correcting <b>waiting:</b> Waiting Parity Correction <b>skipped:</b> Correction Skipped <b>uncorre_drvdetach:</b> Uncorrected and Drive Detached <b>waiting_drvreconst:</b> Waiting Drive Reconstruction

Options	Description
-start	This option starts correcting the LU(s) by using parity. When at least one LU, that has not been corrected, exists in addition to the specified LU(s), a confirmation message is displayed. The specified LU(s) are corrected in the order that they were specified, and then the remaining LU(s), which were not corrected or specified, are corrected.
-skip	This option skips correction of the LU(s) by means of parity. When at least one LU, for which the correction has not been made, exists besides the specified LU(s), a confirmation message is displayed. The correction is made for the specified LU(s), and then for remaining LU(s) for which the correction has not been made. When the specification of LU(s) is omitted, the correction is made for all LUs for which the correction has not been made.
-cancel	This option cancels correction of an LU by using parity. Execution is not possible when the LU, for which the correction has not been made, exists.
-luorder lun ...	<p>Specifies number(s) of LU(s) for which correction by parity is to be started, in the order you wish to correct them. One or more LU number(s) can be specified.</p> <p><b>Single specifications:</b> Specify a single LU number.  <i>Example:</i> -luorder 3</p> <p><b>Multiple specifications:</b> Specify multiple LU numbers.  <i>Example:</i> -luorder 0 1 2 3 4 5 8  -luorder 0-5 8</p>
-lu lun ...	<p>Specifies number(s) of LU(s) for which correction by parity is to be skipped or aborted. One or more LU number(s) can be specified.</p> <p><b>Single specification:</b> Specify a single LU number.  <i>Example:</i> -lu 3</p> <p><b>Multiple specification:</b> Specify multiple LU numbers.  <i>Example:</i> -lu 0 1 2 3 4 5 8  -lu 0-5 8</p>
-lucorrectlist	<p>This option displays the list of LU(s) that needs parity correction. The state of LU which needs parity correction is as follows.</p> <p>Uncorrected  Uncorrected and Drive Detached</p>

- **Examples**

The following example displays the parity correction statuses of array subsystem df600.

**Example:**

```
% aulucorrect -unit df600 -refer
Password:
Uncorrected
  LUN
    1

Correction Aborted
  LUN

Correction Skipped
  LUN

Parity Correcting
  LUN  Progress

Waiting Parity Correction
  LUN  Waiting Order  Progress

%
```

The following example starts the parity correction of array subsystem df600.

**Example:**

```
% aulucorrect -unit df600 -start
Password:
There are no uncorrected logical units.

%
```

#### 4.4.17 Displaying/Setting the Mapping Guard Information

- **Command name**

amapguard

- **Format**

**9500V, WMS100, AMS200, and AMS500:**

```
aumapguard -unit unit_name -refer [ -lu lun ... ]
aumapguard -unit unit_name -set -lu lun ... -guard enable |
disable
```

- **Description**

This command displays or sets the mapping guard information.

Mapping guard is a function to protect the mapping setting against erroneous operation. Users cannot perform a mapping operation on Storage Navigator to the LU to which mapping guard is set to protect.

- Options

Options	Description
-unit unit_name	Specifies the name of an array subsystem for which to display or set the mapping guard information.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "@", or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays the mapping guard information.
-set	Sets the mapping guard information.
-lu lun ...	Sets the mapping guard information. Specify the LU numbers to display the mapping guard information. Make sure that you enter the LU number using numerals or a hyphen(s) (-). Single or multiple LU numbers can be specified.  <b>When the -refer option is specified:</b> If the specification is omitted, all the mapping guard information is displayed.  <b>Single specification:</b> Specifying a single LU number. <b>Example:</b> -lu 3  <b>Multiple specifications:</b> Specifying multiple LU numbers. <b>Example:</b> -lu 0 1 2 3 4 5 8 -lu 0-5 8
-guard enable   disable	Specifies whether to set the mapping guard effective or ineffective.  <b>enable:</b> Enables the mapping guard. <b>disable:</b> Disables the mapping guard.

- Examples

The following example displays the mapping guard information of array subsystem df600.

**Example:**

```
% aumapguard -unit df600 -refer
Password:
  LUN Mapping Guard      Status
    0 Disable            Normal
    1 Disable            Unformat
    2 Enable             Normal
    3 Disable            Undefined
  :
%
```

The following example sets the mapping guard information of LU100 of array subsystem df600.

**Example:**

```
% aumapguard -unit df600 -set -lu 100 -guard enable
Password:
Are you sure you want to change the mapping guard? (y/n [n]): y
The mapping guard has been successfully changed.
%
```

#### 4.4.18 Displaying/Setting the LU Cache Partition

- **Command name**

aulucachept

- **Format**

**WMS100, AMS200, and AMS500:**

```
aulucachept -unit unit_name -refer [ -lu lun ... ]
```

```
aulucachept -unit unit_name -set -lu lun ... -pt pt_no
aulucachept -unit unit_name -set -lu lun ... -pairpt pt_no |
auto
```

- **Description**

This command displays or sets the LU cache partition.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem for which to display or set the LU cache partition. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "@", or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays the LU cache partition.
-set	Sets the LU cache partition.
-pt pt_no	Specifies the partition. pt_no: Partition number
-pairpt pt_no   auto	Specifies the pair cache partition. pt_no: Pair cache partition number auto: The array unit makes the decision automatically.
-lu lun ...	Specifies the LU number, which is to be displayed or to be set. Single or multiple LU numbers can be specified. <b>Single specification:</b> Specifying a single LU number. <b>Example:</b> -lu 3 <b>Multiple specifications:</b> Specifying multiple LU numbers. <b>Example:</b> -lu 0 1 2 3 4 5 8 -lu 0-5 8

- **Examples**

The following example displays the LU cache partition information of array subsystem df700a1 (Storage Navigator: Less than 3.00 version).

**Example 1:**

```
% aulucachept -unit df700a1 -refer
LUN  Cache Partition
512  0
:
:
%
```

The following example displays the LU cache partition information of array subsystem df700a1 (Storage Navigator: Version 3.00 or later).

**Example 2:**

```
% aulucachept -unit df700a1 -refer
LUN  Cache      Pair Cache  Current
      Partition  Partition  Partition
512  0            0          0
:
:
%
```

## 4.5 System Parameters

### 4.5.1 Displaying/Setting System Parameters (WMS100, AMS200, and AMS500)

- **Command name**

ausystemparam

- **Format**

**WMS100, AMS200, and AMS500**

```
ausystemparam -unit unit_name -refer
```

```
ausystemparam -unit unit_name -set
[ -LuCacheWarning enable | disable ]
[ -WriteUniqueResponse enable | disable ]
[ -AutoReconst enable | disable ]
[ -ForcedWriteThrough enable | disable ]
[ -LUCangeDisable enable | disable ]
[ -ShadowImageIOSwitch enable | disable ]
[ -SyncCacheExec enable | disable ]
[ -DriveDetach enable | disable ]
[ -ProcessorFailures reset | shutdown ]
[ -WebTitle string ]
[ -WriteVerifyExecution ctl_no on | off ]
```

- **Description**

This command displays the contents of the system parameters or sets the parameters.

- **Options**

**For the WMS100, AMS200, and AMS500**

Options	Description
-unit unit_name	Specifies the name of an array subsystem in which the system parameters are to be displayed or to be set. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "(period)", "@", or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays system parameters.
-set	Sets system parameters.
-LuCacheWarning enable   disable	Specifies whether or not to report a warning when the Cache Residency LU function is set effective. <b>enable:</b> Reports warning. <b>disable:</b> Does not report warning.
-WriteUniqueResponse enable   disable	Specifies whether to set the Write Unique Response Mode effective or ineffective. <b>enable:</b> Enables the Write Unique Response Mode. <b>disable:</b> Disables the Write Unique Response Mode.

Options	Description
-AutoReconst enable   disable	Specifies whether to set the Auto Reconstruction Mode effective or ineffective. <b>enable:</b> Enables the Auto Reconstruction Mode. <b>disable:</b> Disables the Auto Reconstruction Mode.
-ForcedWriteThrough enable   disable	Specifies whether to set the Forced Write Through Mode effective or ineffective. <b>enable:</b> Enables the Forced Write Through Mode. <b>disable:</b> Disables the Forced Write Through Mode.
-LUChangeDisable enable   disable	Specifies whether to set the LU Ownership Change Disable Mode effective or ineffective. <b>enable:</b> Enables the LU Ownership Change Disable Mode. <b>disable:</b> Disables the LU Ownership Change Disable Mode.
-ShadowImageIOSwitch enable   disable	Specifies whether to set the ShadowImage I/O Switch Mode effective or ineffective. <b>enable:</b> Enables the ShadowImage I/O Switch Mode. <b>disable:</b> Disables the ShadowImage I/O Switch Mode.
-SyncCacheExec enable   disable	Specifies whether to set the Synchronize Cache Execution Mode effective or ineffective. <b>enable:</b> Enables the Synchronize Cache Execution Mode. <b>disable:</b> Disables the Synchronize Cache Execution Mode.
-DriveDetach enable   disable	Specifies whether to set the drive blockage mode effective or ineffective. <b>enable:</b> Enables the drive blockage mode. <b>disable:</b> Disables the drive blockage mode.
-ProcessorFailures reset   shutdown	Specifies action when a processor failure occurs. <b>reset:</b> Resets the failure and restarts the controller. <b>shutdown:</b> Shuts down the array unit.
-WebTitle string	If the home page of the array unit is displayed with the browser, this option specifies a character string displayed on the title bar of the browser. Enter up to 32 one-byte coded alphanumeric characters or characters (except for the ' (single quotation mark), " (double quotation mark), and \ (backslash) symbols) other than numeric.
-WriteVerifyExecution ctl_no on   off	Specifies the execution of the write and verify operation. <b>ctl_no:</b> Controller number (0, 1). <b>on:</b> Executes write and verify operation. <b>off:</b> Does not execute write and verify operation.

- **Examples**

The following example displays the system parameters of array subsystem df700a1.

**Example:**

```
% ausystemparam -unit df700a1 -refer
Password:
---- Common Parameter ----
Option
  Turbo LU Warning = OFF
  Write Unique Response Mode = OFF
  Auto Reconstruction Mode = OFF
  Forced Write Through Mode = OFF
  LU Ownership Change Disable Mode = OFF
  ShadowImage I/O Switch Mode = OFF
  Synchronize Cache Execution Mode = OFF
  Drive Detach Mode = OFF
Operation if the Processor failures Occurs = Reset the Fault
Web Title
  Web Title = ""
---- CTL0 Parameter ----
Write & Verify Execution Mode = ON
---- CTL1 Parameter ----
Write & Verify Execution Mode = ON
%
```

## 4.5.2 Displaying/Setting System Parameters Online (9500V)

- **Command name**

auonsysprm

- **Format**

**9500V:**

```
auonsysprm -unit unit_name -refer auonsysprm -unit unit_name -
set[ -PROCOM enable | disable ]
[ -ReportStatus enable | disable ]
[ -LuCacheWarning enable | disable ]
[ -NX enable | disable ]
[ -AutoReconst enable | disable ]
[ -ForcedWriteThrough enable | disable ]
[ -LUChanging1 enable | disable ]
[ -MultiStream enable | disable ]
[ -MultiStreamWrite enable | disable ]
[ -MultiStreamRead enable | disable ]
[ -HiSpeedSeqWrite enable | disable ]
[ -ShadowImageIOSwitch enable | disable ]
[ -SyncCacheAllExec enable | disable ]
[ -SyncCacheInvalid enable | disable ]
[ -DriveDetach enable | disable ]
[ -ProcessorFailures reset | shutdown ]
[ -inquiryCommandQueue on | off ]
[ -WebTitle string ]
[ -Rs232cOutflow ctl_no off | normal | hitrack ]
[ -WriteVerifyExecution ctl_no on | off ]
```

- **Description**

This command displays the contents of system parameters or sets the parameters online.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem in which the system parameters are to be displayed or set. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "- (minus)," "_" (underline)," "." (period)," "@" , or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays the system parameters.
-set	Sets the system parameters.
-PROCOM enable   disable	Specifies whether to set the PROCOM mode effective or ineffective. <b>enable:</b> Enables the PROCOM mode. <b>disable:</b> Disables the PROCOM mode.

Options	Description
-ReportStatus enable   disable	Specifies whether to set the warning status reporting mode effective or ineffective. <b>enable:</b> Enables the warning status report. <b>disable:</b> Disables the warning status report.
-LuCacheWarning enable   disable	Specifies whether or not to report a warning when the turbo LU function is set effective. <b>enable:</b> Reports the warning. <b>disable:</b> Does not report the warning.
-NX enable   disable	Specifies whether to set the NX host connection mode effective or ineffective. <b>enable:</b> Enables the NX host connection mode. <b>disable:</b> Disables the NX host connection mode.
-AutoReconst enable   disable	Specifies whether to set the auto reconstruction mode effective or ineffective. <b>enable:</b> Enables the auto reconstruction mode <b>disable:</b> Disables the auto reconstruction mode
-ForcedWriteThrough enable   disable	Specifies whether to set the forced write through mode effective or ineffective. <b>enable:</b> Enables the forced write through mode. <b>disable:</b> Disables the forced write through mode.
-LUChanging1 enable   disable	Specifies whether to set the Changing Logical Unit Mode 1 effective or ineffective. <b>enable:</b> Enables the Changing Logical Unit Mode 1. <b>disable:</b> Disables the Changing Logical Unit Mode 1.
-MultiStream enable   disable	Specifies whether to set the Multiple Stream Mode effective or ineffective. <b>enable:</b> Enables the Multiple Stream Mode. <b>disable:</b> Disables the Multiple Stream Mode.
-MultiStreamWrite enable   disable	Specifies whether to set the Multiple Stream Write Mode effective or ineffective. <b>enable:</b> Enables the Multiple Stream Write Mode. <b>disable:</b> Disables the Multiple Stream Write Mode.
-MultiStreamRead enable   disable	Specifies whether to set the Multiple Stream Read Mode effective or ineffective. <b>enable:</b> Enables the Multiple Stream Read Mode. <b>disable:</b> Disables the Multiple Stream Read Mode.
-HiSpeedSeqWrite enable   disable	Specifies whether to set the High-speed Sequential Write Mode effective or ineffective. <b>enable:</b> Enables the High-speed Sequential Write Mode. <b>disable:</b> Disables the High-speed Sequential Write Mode.
-ShadowImage IOSwitch enable   disable	Specifies whether to set the ShadowImage I/O Switch Mode effective or ineffective. <b>enable:</b> Enables the ShadowImage I/O Switch Mode. <b>disable:</b> Disables the ShadowImage I/O Switch Mode.
-SyncCacheAllExec enable   disable	Specifies whether to set the Synchronize Cache All Execution Mode effective or ineffective. <b>enable:</b> Enables the Synchronize Cache All Execution Mode. <b>disable:</b> Disables the Synchronize Cache All Execution Mode.
-SyncCacheInvalid enable   disable	Specifies whether to set the Synchronize Cache Invalid Mode effective or ineffective. <b>enable:</b> Enables the Synchronize Cache Invalid Mode. <b>disable:</b> Disables the Synchronize Cache Invalid Mode.

Options	Description
-DriveDetach enable   disable	Specifies whether to set the drive blockage mode effective or ineffective. <b>enable:</b> Enables the drive blockage mode. <b>disable:</b> Disables the drive blockage mode.
-ProcessorFailures reset   shutdown	Specifies the action when a processor failure occurs. <b>reset:</b> Resets the failure and restarts the controller. <b>shutdown:</b> Shuts down the array subsystem.
-inquiryCommandQueue on   off	Specifies the execution of command queuing of INQUIRY response information. <b>on:</b> Executes command queuing. <b>off:</b> Suppresses command queuing.
-WebTitle string	If the home page of the array subsystem is displayed with the browser, this option specifies that a character string be displayed on the title bar of the browser. Enter up to 32 one-byte coded alphanumeric characters or characters (except for the ' (single quotation mark), " (double quotation mark), and \ (backslash) symbols) other than numeric.
-Rs232cOutflow ctl_no off   normal   hitrack	Sets the mode of sending out error information onto RS232C. <b>ctl_no:</b> Controller number (0, 1). <b>off:</b> Does not send out information. <b>normal:</b> Sends out information. <b>hitrack:</b> Sends out information in the HITRACK mode.
-WriteVerifyExecution ctl_no on   off	Specifies execution of the write & verify operation. <b>ctl_no:</b> Controller number (0, 1). <b>on:</b> Executes the write & verify operation. <b>off:</b> Does not execute the write & verify operation.

- **Examples**

The following example displays the system parameters of array subsystem df600a1.

**Example:**

```
% auonsysprm -unit df600a1 -refer
Password:
---- Common Parameter ----
Option
  PROCOM mode enable = OFF
  Report status (normal / warning) = OFF
  Turbo LU Warning = OFF
  NX Mode = OFF
  Auto Reconstruction Mode = OFF
  Forced Write Through Mode = OFF
  Changing Logical Unit Mode 1 = OFF
  Multiple Stream Mode = OFF
  Multiple Stream Mode (Write) = OFF
  Multiple Stream Mode (Read) = OFF
  High-speed Sequential Write Mode = OFF
  ShadowImage I/O Switch Mode = OFF
  Synchronize Cache All Execution Mode = OFF
  Synchronize Cache Invalid Mode = OFF
  Drive Detach Mode = OFF
Operation if the Processor failures Occurs = Reset a Fault
INQUIRY Information
  Command Queuing = OFF
Web Title
  Web Title = ""
---- CTL0 Parameter ----
RS232C Error Information Outflow Mode = OFF
Write & Verify Execution Mode = ON
---- CTL1 Parameter ----
RS232C Error Information Outflow Mode = OFF
Write & Verify Execution Mode = ON
%
```

### 4.5.3 Displaying/Setting System Parameters Online (9200 and 9500V)

- **Command name**

ausysparam

- **Format**

**9200 and 9500V:**

auonsysprm -unit unit\_name -refer

**9200 (SCSI):**

```
ausysparam -unit unit_name -set
  [ -SystemStartup Single | DualIDTake | DualNotIDTake |
    HotIDTake | HotNotIDTake ]
  [ -TakingID port_no ctl_no ]
  [ -DataShare used | notUsed ]
  [ -HostConnection ctl_no port_no
    standard | OpenVMS | TRESPASS | WolfPack
|
    IBM7135 | NCR ]
  [ -SerialNumber string ]
  [ -DelayPlannedShutdown time ]
  [ -VxVM ctl_no port_no enable | disable ]
  [ -DriveDetach enable | disable ]
  [ -OdeMapper ctl_no port_no enable | disable ]
  [ -ReportInquiry ctl_no port_no enable | disable ]
  [ -MultipathController enable | disable ]
  [ -PROCUM enable | disable ]
  [ -ReportStatus enable | disable ]
  [ -MultipathArrayUnit enable | disable ]
  [ -LuCacheWarning enable | disable ]
  [ -NX enable | disable ]
  [ -AutoReconst enable | disable ]
  [ -ForcedWriteThrough enable | disable ]
  [ -LUCanging1 enable | disable ]
  [ -MultiStream enable | disable ]
  [ -UASuppress ctl_no port_no enable | disable ]
  [ -HISUP ctl_no port_no enable | disable ]
  [ -CCHS ctl_no port_no enable | disable ]
  [ -InquiryStandard ctl_no port_no enable | disable ]
  [ -ProdidDF400 ctl_no port_no enable | disable ]
  [ -SUNCluster ctl_no port_no enable | disable ]
  [ -PRSV ctl_no port_no enable | disable ]
  [ -DataStriping 16 | 32 | 64 ]
  [ -LuSizeReport auto | not ]
  [ -ProcessorFailures reset | shutdown ]
```

```

[ -inquiryCommandQueue on | off ]
[ -inquiryAnsiVersion 2 | 3 ]
[ -inquiryVendor string ]
[ -inquiryProduct string ]
[ -inquiryRomMicro string ]
[ -inquiryRamMicro string ]
[ -WebTitle string ]
[ -CacheMode off | random ]
[ -PortTypeOption ctl_no port_no
    ResetLipSignal | ResetLipProcess |
    TargetReset | Reserve enable | disable ]
[ -PseudoResponse ctl_no busy | notReady ]
[ -SaveDataPointer ctl_no port_no
    nothing | data | cmd | datacmd ]
[ -ControllerIdentifier ctl_no enable | disable ]
[ -ControllerID ctl_no string ]
[ -Rs232cOutflow ctl_no off | normal | hitrack ]
[ -WriteVerifyExecution ctl_no on | off ]
[ -dhcp ctl_no enable | disable ]
[ -IPAddress ctl_no inet_addr ]
[ -SubnetMask ctl_no netmask ]
[ -DefaultGateway ctl_no gateway ]
[ -setSM ctl_no port_no tid ]
[ -rmSM ctl_no port_no tid ]
[ -setMS ctl_no port_no tid lu ]
[ -rmMS ctl_no port_no tid lu ]
[ -setMM ctl_no port_no tid hlu lu ]
[ -rmMM ctl_no port_no tid hlu lu ]
[ -sync ctl_no port_no standard | async |
N5 | N10 | N20 | N40 | W10 | W20 | W40 | W80 ]
[ -fd on | off ]

```

### 9200 (Fibre version):

```

ausysparam -unit unit_name -set[ -SystemStartup Single |
DualIDTake | DualNotIDTake |
    HotIDTake | HotNotIDTake ]
[ -TakingID Port_no ctl_no ]
[ -DataShare used | notUsed ]
[ -HostConnection ctl_no port_no
    standard | OpenVMS | TRESPASS | WolfPack
]

[ -SerialNumber string ]
[ -DelayPlannedShutdown time ]
[ -VxVM ctl_no port_no enable | disable ]
[ -DriveDetach enable | disable ]
[ -HPUX ctl_no port_no enable | disable ]
[ -ReportInquiry ctl_no port_no enable | disable ]
[ -MultipathController enable | disable ]
[ -PROCOM enable | disable ]
[ -ReportStatus enable | disable ]

```

```

[ -MultipathArrayUnit enable | disable ]
[ -LuCacheWarning enable | disable ]
[ -NX enable | disable ]
[ -AutoReconst enable | disable ]
[ -ForcedWriteThrough enable | disable ]

[ -LUCanging1 enable | disable ]
[ -MultiStream enable | disable ]
[ -RAID3 enable | disable ]
[ -UASuppress ctl_no port_no enable | disable ]
[ -HISUP ctl_no port_no enable | disable ]
[ -CCHS ctl_no port_no enable | disable ]
[ -InquiryStandard ctl_no port_no enable | disable ]
[ -ProdidDF400 ctl_no port_no enable | disable ]
[ -HPUX2 ctl_no port_no enable | disable ]
[ -HbaWwnReport ctl_no port_no enable | disable ]
[ -NACA ctl_no port_no enable | disable ]
[ -SUNcluster ctl_no port_no enable | disable ]
[ -PRSV ctl_no port_no enable | disable ]
[ -ftSRV1 ctl_no port_no enable | disable ]
[ -ftSRV2 ctl_no port_no enable | disable ]
[ -SRCReadReject ctl_no port_no enable | disable ]
[ -LinkSeparation enable | disable ]
[ -DataStriping 16 | 32 | 64 ]
[ -ProcessorFailures reset | shutdown ]
[ -inquiryCommandQueue on | off ]
[ -inquiryVendor string ]
[ -inquiryProduct string ]
[ -inquiryRomMicro string ]
[ -inquiryRamMicro string ]
[ -WebTitle string ]
[ -CacheMode off | random ]
[ -PortTypeOption ctl_no port_no
                        ResetLipSignal | ResetLipProcess |
                        LipPortAllReset | TargetReset |
                        Reserve | LUReset | TPRLO
                        enable | disable ]
[ -ControllerIdentifer ctl_no enable | disable ]
[ -ControllerID ctl_no string ]
[ -Rs232cOutflow ctl_no off | normal | hitrack ]
[ -WriteVerifyExecution ctl_no on | off ]
[ -dhcp ctl_no enable | disable ]
[ -IPAddress ctl_no inet_addr ]
[ -SubnetMask ctl_no netmask ]
[ -DefaultGateway ctl_no gateway ]
[ -setMM ctl_no port_no hlu lu ]
[ -rmMM ctl_no port_no hlu lu ]
[ -fd on | off ]

```

**9500V:**

```
ausysparam -unit unit_name -set
[ -SystemStartup Single | DualIDTake | DualNotIDTake |
  HotIDTake | HotNotIDTake ]
[ -TakingID port_no ctl_no ]
[ -DataShare used | notUsed ]
[ -DelayPlannedShutdown time ]
[ -DriveDetach enable | disable ]
[ -PROCUM enable | disable ]
[ -ReportStatus enable | disable ]
[ -LuCacheWarning enable | disable ]
[ -NX enable | disable ]
[ -AutoReconst enable | disable ]
[ -ForcedWriteThrough enable | disable ]
[ -LUChanging1 enable | disable ]
[ -MultiStream enable | disable ]
  [ -MultiStreamWrite enable | disable ]
[ -MultiStreamRead enable | disable ]
  [ -HiSpeedSeqWrite enable | disable ]
[ -ShadowImageIOSwitch enable | disable ]
[ -SyncCacheAllExec enable | disable ]
[ -SyncCacheInvalid enable | disable ]
[ -ProcessorFailures reset | shutdown ]
[ -inquiryCommandQueue on | off ]
[ -inquiryVendor string ]
[ -inquiryProduct string ]
[ -inquiryRomMicro string ]
[ -inquiryRamMicro string ]
[ -WebTitle string ]
[ -Rs232cOutflow ctl_no off | normal | hitrack ]
[ -WriteVerifyExecution ctl_no on | off ]
[ -dhcp ctl_no enable | disable ]
[ -IPAddress ctl_no inet_addr ]
[ -SubnetMask ctl_no netmask ]
[ -DefaultGateway ctl_no gateway ]
```

- **Description**

This command displays the contents of system parameters or sets the parameters.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array unit in which the system parameters are to be displayed or set.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "@", or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays the system parameters.
-set	Sets the system parameters.
-SystemStartup Single   DualIDTake   DualNotIDTake   HotIDTake   HotNotIDTake	Specifies the configuration of an array unit. <b>Single:</b> Single <b>DualIDTake:</b> Dual active ( taking over SCSI ID). <b>DualNotIDTake:</b> Dual active (without taking over SCSI ID). <b>HotIDTake:</b> Hot standby ( taking over SCSI ID). <b>HotNotIDTake:</b> Hot standby (without taking over SCSI ID).
-TakingID port_no ctl_no	Specifies the default controller of each port. When a dual active configuration used, the SCSI ID take over. <b>port_no:</b> Port number (A, B, C, D). <b>ctl_no:</b> Controller number (0, 1).
-DataShare used   notUsed	Specifies the data share mode. <b>used:</b> Uses the data share mode. <b>notUsed:</b> Does not use the data share mode.
-DelayPlannedShutdown time	Specifies the time in minutes to delay the execution of the planned shutdown, when the main switch has turned off. The applicable range is from 0 to 60 minutes in units of 1 minute. The default value is 0.
-DriveDetach enable   disable	Specifies whether to set the drive blockage mode effective or ineffective. <b>enable:</b> Enables the drive blockage mode. <b>disable:</b> Disables the drive blockage mode.
-PROCOM enable   disable	Specifies whether to set the PROCOM mode effective or ineffective. <b>enable:</b> Enables the PROCOM mode. <b>disable:</b> Disables the PROCOM mode.
-ReportStatus enable   disable	Specifies whether to set the warning status reporting mode effective or ineffective. <b>enable:</b> Enables the warning status report. <b>disable:</b> Disables the warning status report.
-LuCacheWarning enable   disable	Specifies whether or not to report a warning when the turbo LU function is set effective. <b>enable:</b> Reports warning. <b>disable:</b> Does not report warning.

Options	Description
-NX enable   disable	Specifies whether to set the NX host connection mode effective or ineffective. <b>enable:</b> Enables the NX host connection mode. <b>disable:</b> Disables the NX host connection mode.
-AutoReconst enable   disable	Specifies whether to set the auto reconstruction mode effective or ineffective. <b>enable:</b> Enables the auto reconstruction mode. <b>disable:</b> Disables the auto reconstruction mode.
-ForcedWriteThrough enable   disable	Specifies whether to set the forced write through mode effective or ineffective. <b>enable:</b> Enables the forced write through mode. <b>disable:</b> Disables the forced write through mode.
-LUChanging1 enable   disable	Specifies whether to set the Changing Logical Unit Mode 1 effective or ineffective. <b>enable:</b> Enables the Changing Logical Unit Mode 1. <b>disable:</b> Disables the Changing Logical Unit Mode 1.
-MultiStream enable   disable	Specifies whether to set the Multiple Stream Mode effective or ineffective. <b>enable:</b> Enables the Multiple Stream Mode. <b>disable:</b> Disables the Multiple Stream Mode.
-ProcessorFailures reset   shutdown	Specifies the action when a processor failure occurs. <b>reset:</b> Resets the failure and restarts the controller. <b>shutdown:</b> Shuts down the array unit.
-inquiryCommandQueue on   off	Specifies the execution of the command queuing of INQUIRY response information. <b>on:</b> Executes command queuing. <b>off:</b> Suppresses command queuing.
-inquiryVendor string	Specifies the vendor name of Inquiry response information in less than or equal to 8 characters. If you want to enter NULL characters, enter "".
-inquiryProduct string	Specifies the product type of Inquiry response information in less than or equal to 16 characters. If you want to enter NULL characters, enter "".
-inquiryRomMicro string	Specifies the ROM microprogram version of inquiry response information in less than or equal to 2 characters. If you want to enter NULL characters, enter "".
-inquiryRamMicro string	Specifies the RAM microprogram version of inquiry response information in less than or equal to 2 characters. If you want to enter NULL characters, enter "".
-WebTitle string	If the home page of the array unit is displayed with the browser, this option specifies that a character string be displayed on the title bar of the browser. Enter up to 32 one-byte coded alphanumeric characters or characters (except for the ' (single quotation mark), " (double quotation mark), and \ (backslash) symbols) other than numeric.
-Rs232cOutflow ctl_no off   normal   hitrack	Sets the mode of sending out error information onto RS232C. <b>ctl_no:</b> Controller number (0, 1) <b>off:</b> Does not send out information. <b>normal:</b> Sends out information. <b>hitrack:</b> Sends out information in the HITRACK mode.

Options	Description
-WriteVerifyExecution ctl_no on   off	Specifies the execution of the write & verify operation. <b>ctl_no:</b> Controller number (0, 1) <b>on:</b> Executes write & verify operation. <b>off:</b> Does not execute write & verify operation.
-dhcp ctl_no enable   disable	Specifies whether the DHCP mode is enable or disable. <b>ctl_no:</b> Controller number (0, 1) <b>enable:</b> Enables the DHCP mode. <b>disable:</b> Disables the DHCP mode.
-IPAddress ctl_no inet_addr	Specifies the IP address. <b>ctl_no:</b> Controller number (0, 1) <b>inet_addr:</b> IP address (format xxx.xxx.xxx.xxx)
-SubnetMask ctl_no netmask	Specifies the subnet mask. <b>ctl_no:</b> Controller number (0, 1) <b>netmask:</b> Subnet mask (format xxx.xxx.xxx.xxx)
-DefaultGateway ctl_no gateway	Specifies the default gateway. <b>ctl_no:</b> Controller number (0, 1) <b>gateway:</b> Default gateway (format xxx.xxx.xxx.xxx)

**Note:** If LAN configuration information (such as an IP Address) is modified, an error message (Interface Error) may be displayed without displaying a restart completion message when restarting an array unit. When modifying LAN configuration information, manually restart an array unit.

#### ■ 9200 Options

Options	Description
-HostConnection ctl_no port_no standard   OpenVMS   TRESPASS   WolfPack   IBM7135   NCR	Specifies the mode to be emulated. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>standard:</b> Open system emulation mode <b>OpenVMS:</b> Open VMS mode <b>TRESPASS:</b> TRESPASS mode <b>WolfPack:</b> WolfPack mode <b>IBM7135:</b> IBM7135 I/O path switching emulation mode <b>NCR:</b> NCR I/O path switching emulation mode
-SerialNumber string	Specifies the last four digits of the manufacturing serial number of an array unit with numeric characters. <b>The number is reflected on the fiber version of WWN. Do not set any value except for the last four digits of the manufacturing serial number.</b> The default setting is the last four digits of the manufacturing serial number of an array unit.

Options	Description
-VxVM ctl_no port_no enable   disable	Specifies whether to set the VxVM mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1). <b>port_no:</b> Port number (A, B). <b>enable:</b> Enables the VxVM mode. <b>disable:</b> Disables the VxVM mode.
-HPUX ctl_no port_no enable   disable	Specifies whether to set the HP connection mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1). <b>port_no:</b> Port number (A, B). <b>enable:</b> Enables the HP connection mode. <b>disable:</b> Disables the HP connection mode.
-HPUX2 ctl_no port_no enable   disable	Specifies whether to set the HP connection mode 2 effective or ineffective. <b>ctl_no:</b> Controller number (0, 1). <b>port_no:</b> Port number (A, B). <b>enable:</b> Enables the HP connection mode 2. <b>disable:</b> Disables the HP connection mode 2.
-OdeMapper ctl_no port_no enable   disable	Specifies whether to set the ODE Mapper mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1). <b>port_no:</b> Port number (A, B). <b>enable:</b> Enables the ODE Mapper mode. <b>disable:</b> Disables the ODE Mapper mode.
-ReportInquiry ctl_no port_no enable   disable	Specifies whether to set the Inquiry Page: 83 reporting mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1). <b>port_no:</b> Port number (A, B). <b>enable:</b> Enables the report of Inquiry Page: 83. <b>disable:</b> Disables the report of Inquiry Page: 83.
-RAID3 enable   disable	Specifies whether to set the RAID3 mode effective or ineffective. <b>enable:</b> Enables the RAID3 mode. <b>disable:</b> Disables the RAID3 mode.
-MultipathController enable   disable	Specifies whether or not to perform sequential judgment for each controller. <b>enable:</b> Sequential decision at the controller unit. <b>disable:</b> Sequential decision at the port unit.
-MultipathArrayUnit enable   disable	Specifies whether or not to perform sequential judgment for each array unit. <b>enable:</b> Sequential decision at array unit. <b>disable:</b> Sequential decision at port unit.
-UASuppress ctl_no port_no enable   disable	Specifies whether or not to suppress a unit attention (06/2A00). <b>ctl_no:</b> Controller number (0, 1). <b>port_no:</b> Port number (A, B). <b>enable:</b> Suppress the unit attention. <b>disable:</b> Does not suppress the unit attention.

Options	Description
-HISUP ctl_no port_no enable   disable	Specifies whether to set the HISUP mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1). <b>port_no:</b> Port number (A, B). <b>enable:</b> Enables the HISUP mode. <b>disable:</b> Disables the HISUP mode.
-CCHS ctl_no port_no enable   disable	Specifies whether to set the CCHS convert mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1). <b>port_no:</b> Port number (A, B). <b>enable:</b> Enables the CCHS convert mode. <b>disable:</b> Disables the CCHS convert mode.
-InquiryStandard ctl_no port_no enable   disable	Specifies whether to set the Standard INQUIRY data expand mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1). <b>port_no:</b> Port number (A, B). <b>enable:</b> Enables the Standard INQUIRY data expand mode. <b>disable:</b> Disables the Standard INQUIRY data expand mode.
-ProdidDF400 ctl_no port_no enable   disable	Specifies whether to set the Product ID DF400 mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1). <b>port_no:</b> Port number (A, B). <b>enable:</b> Enables the Product ID DF400 mode. <b>disable:</b> Disables the Product ID DF400 mode.
-HbaWwnReport ctl_no port_no enable   disable	Specifies whether to set the HBA WWN Report mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1). <b>port_no:</b> Port number (A, B). <b>enable:</b> Enables the HBA WWN Report mode. <b>disable:</b> Disables the HBA WWN Report mode.
-NACA ctl_no port_no enable   disable	Specifies whether to set the NACA mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1). <b>port_no:</b> Port number (A, B). <b>enable:</b> Enables the NACA mode. <b>disable:</b> Disables the NACA mode.
-SUNCluster ctl_no port_no enable   disable	Specifies whether to set the SUN Cluster Connection mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1). <b>port_no:</b> Port number (A, B). <b>enable:</b> Enables the SUN Cluster Connection mode. <b>disable:</b> Disables the SUN Cluster Connection mode.
-PRSV ctl_no port_no enable   disable	Specifies whether to set the Persistent RSV Cluster mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1). <b>port_no:</b> Port number (A, B). <b>enable:</b> Enables the Persistent RSV Cluster mode. <b>disable:</b> Disables the Persistent RSV Cluster mode.

Options	Description
-ftSRV1 ctl_no port_no enable   disable	Specifies whether to set the ftServer Connection mode 1 effective or ineffective. <b>ctl_no:</b> Controller number (0, 1). <b>port_no:</b> Port number (A, B). <b>enable:</b> Enables the ftServer Connection mode 1. <b>disable:</b> Disables the ftServer Connection mode 1.
-ftSRV2 ctl_no port_no enable   disable	Specifies whether to set the ftServer Connection mode 2 effective or ineffective. <b>ctl_no:</b> Controller number (0, 1). <b>port_no:</b> Port number (A, B). <b>enable:</b> Enables the ftServer Connection mode 2. <b>disable:</b> Disables the ftServer Connection mode 2.
-SRCReadReject ctl_no port_no enable   disable	Specifies whether to set the SRC Read Command Reject mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1). <b>port_no:</b> Port number (A, B). <b>enable:</b> Enables the SRC Read Command Reject mode. <b>disable:</b> Disables the SRC Read Command Reject mode.
-LinkSeparation enable   disable	Specifies whether to set the Link Separation effective or ineffective. <b>enable:</b> Enables the Link Separation. <b>disable:</b> Disables the Link Separation.
-DataStriping 16   32   64	Specifies the data striping size. <b>16:</b> 16 k byte <b>32:</b> 32 k byte <b>64:</b> 64 k byte
-LuSizeReport auto   not	Specifies the LU size to be reported to the host. Valid for the SCSI version only. <b>auto:</b> The LU size is automatically determined by the array unit. <b>not:</b> The LU size to be reported will be the fixed value that has been set by the user.
-inquiryAnsiVersion 2   3	Sets the ANSI version of standard INQUIRY data. <b>2:</b> SCSI2 <b>3:</b> SCSI3
-CacheMode off   random   sequential   randseq	Specifies the method of allocating the cache memory. <b>off:</b> Uses cache memory by the common allocation method. <b>random:</b> Uses cache memory by allocating to the buffer for random read only. <b>sequential:</b> Uses cache memory by allocating to the buffer for sequential read only. <b>randseq:</b> Uses cache memory by allocating to the buffers for both random read and sequential read only.

Options	Description
<pre>-PortTypeOption   ctl_no port_no   ResetLipSignal     ResetLipProcess     LipPortAllReset     TargetReset     Reserve     LUReset     TPRLO   enable   disable</pre>	<p>For the Fibre Channel version of array units, sets the options for individual ports.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A, B)</p> <p><b>ResetLipSignal:</b> Sets ResetLip (signal).</p> <p><b>ResetLipProcess:</b> Sets ResetLip (processing).</p> <p><b>LipPortAllReset:</b> Sets the resetting of all ports by an LIP.</p> <p><b>TargetReset:</b> Enables the Target rest.</p> <p><b>Reserve:</b> Enables the Reserve.</p> <p><b>LUReset:</b> Enables the LU reset.</p> <p><b>TPRLO:</b> Sets Third Party Process Logout Mode.</p> <p><b>enable:</b> Enables the settings described above.</p> <p><b>disable:</b> Disables the settings described above.</p>
<pre>-PseudoResponse   ctl_no   busy   notReady</pre>	<p>Sets the response mode for the duration from power on until the controller gets ready (for the SCSI version).</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>busy:</b> Responds with Busy.</p> <p><b>notReady:</b> Respond with Not Ready.</p>
<pre>-SaveDataPointer   ctl_no port_no   nothing   data   cmd     datacmd</pre>	<p>Specifies the request for the controller to report a Save Data Pointer to the host.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A)</p> <p><b>nothing:</b> Does not report.</p> <p><b>data:</b> Reports after transferring data.</p> <p><b>cmd:</b> Reports after receiving a command.</p> <p><b>datacmd:</b> Reports after transferring data and after receiving a command.</p>
<pre>-ControllerIdentifier   ctl_no   enable   disable</pre>	<p>Specifies whether the controller identifier is valid or invalid.</p> <p><b>ctl_no:</b> 0, 1</p> <p><b>enable:</b> Sets the controller identifier valid.</p> <p><b>disable:</b> Sets the controller identifier invalid.</p>
<pre>-ControllerID   ctl_no string</pre>	<p>Specifies the controller ID.</p> <p><b>ctl_no:</b> 0, 1</p> <p><b>string:</b> Controller ID (less than or equal to eight characters).</p>
<pre>-setSM   ctl_no port_no   tid</pre>	<p>Sets the target ID by S-TID, M-LUN modes.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A)</p> <p><b>tid:</b> Target ID</p>
<pre>-rmSM   ctl_no port_no   tid</pre>	<p>Deletes the target ID by S-TID, M-LUN modes.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A)</p> <p><b>tid:</b> Target ID</p>

Options	Description
<pre>-setMS   ctl_no port_no   tid lu</pre>	<p>Sets the target ID by M-TID, S-LUN modes.</p> <p><b>ctl_no:</b> Controller number (0, 1)  <b>port_no:</b> Port number (A)  <b>tid:</b> Target ID  <b>lu:</b> LU number</p>
<pre>-rmMS   ctl_no port_no   tid lu</pre>	<p>Deletes the target ID by M-TID, S-LUN modes.</p> <p><b>ctl_no:</b> Controller number (0, 1)  <b>port_no:</b> Port number (A)  <b>tid:</b> Target ID  <b>lu:</b> LU number</p>
<pre>-setMM   ctl_no port_no   tid hlu lu</pre>	<p>Sets the target ID by M-TID, M-LUN modes (for SCSI version).</p> <p><b>ctl_no:</b> Controller number (0, 1)  <b>port_no:</b> Port number (A)  <b>tid:</b> Target ID  <b>hlu:</b> LU number recognized by the host  <b>lu:</b> LU number</p>
<pre>-rmMM   ctl_no port_no   tid hlu lu</pre>	<p>Deletes the target ID by M-TID, M-LUN modes (for SCSI version).</p> <p><b>ctl_no:</b> Controller number (0, 1)  <b>port_no:</b> Port number (A)  <b>tid:</b> Target ID  <b>hlu:</b> LU number recognized by the host  <b>lu:</b> LU number</p>
<pre>-setMM   ctl_no port_no   hlu lu</pre>	<p>Sets the target ID by M-TID, M-LUN modes (for Fibre version).</p> <p><b>ctl_no:</b> Controller number (0, 1)  <b>port_no:</b> Port number (A, B)  <b>hlu:</b> LU number recognized by the host  <b>lu:</b> LU number</p>
<pre>-rmMM   ctl_no port_no   hlu lu</pre>	<p>Deletes the target ID by M-TID, M-LUN modes (for Fibre version).</p> <p><b>ctl_no:</b> Controller number (0, 1)  <b>port_no:</b> Port number (A, B)  <b>hlu:</b> LU number recognized by the host  <b>lu:</b> LU number</p>

Options	Description
<pre>-sync   ctl_no port_no   standard   async     N5   N10   N20   N40     W10   W20   W40   W80</pre>	<p>Specifies the SCSI transfer rate of a port.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A)</p> <p><b>standard:</b> Sets to a value to match the transfer rate of an interface board mounted.</p> <p><b>async:</b> Transfers in the mode in which synchronous transfer is not used.</p> <p><b>N5:</b> Sets the maximum transfer rate to Narrow 5 [MB/s].</p> <p><b>N10:</b> Sets the maximum transfer rate to Narrow 10 [MB/s].</p> <p><b>N20:</b> Sets the maximum transfer rate to Narrow 20 [MB/s].</p> <p><b>N40:</b> Sets the maximum transfer rate to Narrow 40 [MB/s].</p> <p><b>W10:</b> Sets the maximum transfer rate to Wide 10 [MB/s].</p> <p><b>W20:</b> Sets the maximum transfer rate to Wide 20 [MB/s].</p> <p><b>W40:</b> Sets the maximum transfer rate to Wide 40 [MB/s].</p> <p><b>W80:</b> Sets the maximum transfer rate to Wide 80 [MB/s].</p>
<pre>-fd on   off</pre>	<p>Specifies whether or not to make a backup copy to the FD. The system parameter information is already saved in the backup FD in an array unit. When the settings are modified, the information must be saved again. You must specify <code>on</code>.</p> <p><b>on:</b> Makes a backup copy.</p> <p><b>off:</b> Does not make a backup copy.</p>

#### 9500V Only Options

Options	Description
<pre>-MultiStreamWrite   enable   disable</pre>	<p>Specifies whether to set the Multiple Stream Write Mode effective or ineffective.</p> <p><b>enable:</b> Enables the Multiple Stream Write Mode.</p> <p><b>disable:</b> Disables the Multiple Stream Write Mode.</p>
<pre>-MultiStreamRead   enable   disable</pre>	<p>Specifies whether to set the Multiple Stream Read Mode effective or ineffective.</p> <p><b>enable:</b> Enables the Multiple Stream Read Mode.</p> <p><b>disable:</b> Disables the Multiple Stream Read Mode.</p>
<pre>-HiSpeedSeqWrite   enable   disable</pre>	<p>Specifies whether to set the High-speed Sequential Write Mode effective or ineffective.</p> <p><b>enable:</b> Enables the High-speed Sequential Write Mode.</p> <p><b>disable:</b> Disables the High-speed Sequential Write Mode.</p>
<pre>-ShadowImageIOSwitch   enable   disable</pre>	<p>Specifies whether to set the ShadowImage I/O Switch Mode effective or ineffective.</p> <p><b>enable:</b> Enables the ShadowImage I/O Switch Mode.</p> <p><b>disable:</b> Disables the ShadowImage I/O Switch Mode.</p>
<pre>-SyncCacheAllExec   enable   disable</pre>	<p>Specifies whether to set the Synchronize Cache All Execution Mode effective or ineffective.</p> <p><b>enable:</b> Enables the Synchronize Cache All Execution Mode.</p> <p><b>disable:</b> Disables the Synchronize Cache All Execution Mode.</p>
<pre>-SyncCacheInvalid   enable   disable</pre>	<p>Specifies whether to set the Synchronize Cache Invalid Mode effective or ineffective.</p> <p><b>enable:</b> Enables the Synchronize Cache Invalid Mode.</p> <p><b>disable:</b> Disables the Synchronize Cache Invalid Mode.</p>

## ■ Examples

The following example displays the system parameters of array unit df600a1.

### **Example:**

```
% ausysparam -unit df600a1 -refer
Password:
System parameter list.

DF Name : df600a1
Date : 2004/04/20 13:00:00
Micro Program Revision : 0658
Array Unit Type : DF600
Serial Number : nnnnnnnn

---- Common Parameter ----
System Startup Attribute = Dual Active Mode
  SCSI ID/Port ID Take-over Mode = ---
  Data Share Mode = Used
Delay Planned Shutdown = 0
Option 1
  Drive Detach mode enable = OFF
Option 2
  PROCOM mode enable = OFF
  Report status (normal / warning) = OFF
  Turbo LU Warning = OFF
  NX Mode = OFF
  Auto Reconstruction Mode = OFF
  Forced Write Through Mode = OFF
  Changing Logical Unit Mode 1 = OFF
  Multiple Stream Mode = OFF
  Multiple Stream Mode (Write) = OFF
  Multiple Stream Mode (Read) = OFF
  High-speed Sequential Write Mode = OFF
  ShadowImage I/O Switch Mode = OFF
  Synchronize Cache All Execution Mode = OFF
  Synchronize Cache Invalid Mode = OFF
Operation if the Processor failures Occurs = Reset a Fault
INQUIRY Information
  Command Queuing = ON
  Vendor ID = HITACHI
  Product ID = DF600F
  ROM Microprogram Version =
  RAM Microprogram Version =
Web Title
  Web Title = ""
---- CTL0 Parameter ----
RS232C Error Information Outflow Mode = OFF
Write & Verify Execution Mode = ON
LAN Const
  DHCP = OFF
  IP Address = 0.0.0.0
  Subnet Mask = 0.0.0.0
  Default Gateway = 0.0.0.0
  Ether Address = 00:00:87:B4:62:4C
---- CTL1 Parameter ----
RS232C Error Information Outflow Mode = OFF
Write & Verify Execution Mode = ON
LAN Const
```

```
DHCP = OFF
IP Address = 0.0.0.0
Subnet Mask = 0.0.0.0
Default Gateway = 0.0.0.0
Ether Address = 00:00:87:B4:62:1C
%
```

The following example sets a system parameter, to suppress the mode that sends error information to the RS232C interface, for array unit df500a1.

**Example:**

```
% ausysparam -unit df500a1 -set -Rs232cOutflow off
Password:
When executing the command, the subsystem stops accepting access from the host.
Do you want to continue? (y/n [n]): y
In order to complete the setting, it is necessary to reboot the subsystem.
Host will be unable to access the subsystem while restarting. Host applications
that use the subsystem will terminate abnormally. Please stop host access before
you restart the subsystem.
Also, if you are logging in, the login status will be canceled when restarting b
egins.
Do you agree with restarting? (y/n [n]): y
Are you sure you want to execute? (y/n [n]): y
Now restarting the subsystem. Start Time hh:mm:ss
The subsystem restarted successfully.
%
```

**Notes:**

- When setting all the system parameters in Windows, you cannot set them on a command prompt due to the limitation of the number of characters. Create the contents of the settings in a bat file, and then execute the appropriate command.
- It may take time for an array unit to respond, depending on the condition of the array unit. If it does not respond after 10 minutes or more, check the condition of the array unit.

#### 4.5.4 Displaying and Setting the RTC Spell out RTC and put RTC in parenthesis

- **Command name**

```
aurtc
```

- **Format**

```
aurtc -unit unit_name -refer
aurtc -unit unit_name -set -auto [ -f ]
aurtc -unit unit_name -set -manual -date yyyy/mm/dd -time
HH:MM:SS [ -f ]
```

- **Description**

This command displays and sets the RTC.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem in the RTC to be displayed or set. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “- (minus),” “_ (underline),” “.” (period),” “@,” or “ (space)”. Space in front and in the rear of the character string is removed.
-refer	Displays RTC.
-set	Sets the RTC.
-auto	Sets the date and time of the machine that Storage Navigator Modular is running on RTC.
-manual	Sets the date and time specified by -date and -time options to RTC.
-date yyyy/mm/dd	Specifies the date to be set. <b>yyyy:</b> in A.D. (1900 to 2089) (For AMS200/AMS500, 2000 to 2099) <b>mm:</b> month (01 to 12) <b>dd:</b> day (01 to 31)
-time HH:MM:SS	Specifies the time to be set. <b>HH:</b> hour (00 to 23) <b>MM:</b> minute (00 to 59) <b>SS:</b> second (00 to 59)
-f	Omits the confirmation message when the command is executed.

- **Examples**

The following example displays the RTC of array subsystem df500a1.

**Example:**

```
% aurtc -unit df500a1 -refer
Password:
Date 2001/05/10    Time 18:14:28
%
```

The following example automatically sets the RTC of array subsystem df500a1.

**Example:**

```
% aurtc -unit df500a1 -set -auto
Password:
The RTC has been set successfully.
%
```

By specifying the date and time, the following example sets the RTC of array unit df500a1, which does not support restarting.

**Example:**

```
% aurtc -unit df500a1 -set -manual -date 2002/05/22 -time 12:34:56
When executing the command, the subsystem stops accepting access from the host.
Do you want to continue? (y/n [n]): y
Password:
The RTC has been set successfully.
Restart the subsystem to apply the setting.
%
```

#### 4.5.5 Displaying/Setting Target Information

- **Command name**

autarget

- **Format**

**9200:**

autarget -unit unit\_name -refer

**9200 (Fibre version):**

```
autarget -unit unit_name -set | -rm -mode MM
        -ctl0 | -ctl1 -port A | B -hlu lun -lu lun [ -fd on |
off ]
```

**9200 (SCSI version):**

```
autarget -unit unit_name -set | -rm -mode SM
        -ctl0 | -ctl1 -port A -tid n [ -fd on | off ]

autarget -unit unit_name -set | -rm -mode MS
        -ctl0 | -ctl1 -port A -tid n -lu lun [ -fd on | off ]

autarget -unit unit_name -set | -rm -mode MM
        -ctl0 | -ctl1 -port A -tid n -hlu lun -lu lun [ -fd on |
off ]
```

**9200:**

```
autarget -unit unit_name -file filename [ -fd on | off ]
```

- **Description**

This command displays or sets target ID information.

■ Options

Options	Description
-unit unit_name	Specifies the name of an array subsystem for which to display and set target ID information.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “- (minus),” “_ (underline),” “.” (period),” “@,” or “ (space)”. Space in front and in the rear of the character string is removed.
-refer	Displays target ID information.
-set	Adds target ID information.
-rm	Deletes target ID information.
-mode SM   MS   MM	Specifies individual types of a target ID and a LUN configuration. <b>SM:</b> Single target ID and multi-LUN (Sets the target ID for a port. The host uses a LUN shared by the port for the same LUN). <b>MS:</b> Multi-target ID and single LUN. (Sets the port and target ID for a LUN. The host uses a set target ID as LUN="0".) <b>MM:</b> LU mapping (Sets the port, target ID, and H-LUN for a LUN by mapping. The host uses a set configuration).
-ctl0   -ctl1	Specifies the controller number.
-port A   B	Specifies the port number.
-tid n	Specifies the target ID for the SCSI version. This option cannot be specified to the fibre version.
-hlu lun	Specifies the LUN recognized from the host.
-lu lun	Specifies the internal LUN in the array subsystem.
-file filename	Specifies the configuration file of the target ID.  If this option is specified, Storage Navigator Modular reads a target ID configuration file and sets the information according to the contents.
-fd on   off	Specifies whether or not to make a backup copy of the FD.  Target ID information has been saved in the backup FD in the array subsystem as system parameter information. When changing settings, target ID information needs to be saved again. You must specify on. <b>on:</b> Makes a backup copy. <b>off:</b> Does not make a backup copy.

- **Examples**

The following example displays the target ID information in array subsystem (SCSI version) df500a1. [S-TID, M-LUN]

**Example:**

```

Example:
% autarget -unit df500a1 -refer
Password:
Current target ID mode
  CTL0 S-TID, M-LUN
  CTL1 S-TID, M-LUN
CTL  PORT  T-ID  H-LUN  LUN
  0    A    0    --    --
  0    B    1    --    --
  1    A    2    --    --
  1    B    3    --    --
Reserved target ID mode
  CTL0 S-TID, M-LUN
  CTL1 S-TID, M-LUN
CTL  PORT  T-ID  H-LUN  LUN
  0    A    0    --    --
  0    B    0    --    --
  1    A    0    --    --
  1    B    0    --    --
%

```

The following example displays the target ID information in array unit (SCSI version) df500b1. [M-TID, S-LUN]

**Example:**

```

% autarget -unit df500b1 -refer
Password:
Current target ID mode
  CTL0 M-TID, S-LUN
  CTL0 M-TID, S-LUN
CTL  PORT  T-ID  H-LUN  LUN
  0    A    0    --    0
  0    A    1    --    1
  0    B    2    --    2
  0    B    3    --    3
  1    A    0    --    4
  1    A    1    --    5
  1    B    2    --    6
  1    B    3    --    7
Reserved target ID mode
  CTL0 M-TID, S-LUN
  CTL1 M-TID, S-LUN
CTL  PORT  T-ID  H-LUN  LUN
  0    A    0    --    0
  0    A    2    --    1
  0    B    4    --    2
  0    B    6    --    3
  1    A    1    --    4
  1    A    3    --    5
  1    B    5    --    6
  1    B    7    --    7
%

```

The following example displays the target ID information in array unit (SCSI version) df500c1. [LU mapping]

**Example:**

```
% autarget -unit df500c1 -refer
Password:
Current target ID mode
  CTL0 M-TID, M-LUN
  CTL1 M-TID, M-LUN

CTL  PORT  T-ID  H-LUN  LUN
  0    A    0    0    0
  0    B    1    2    4
  1    A    2    0    1
  1    B    3    2    5
Reserved target ID mode
  CTL0 M-TID, M-LUN
  CTL1 M-TID, M-LUN

CTL  PORT  T-ID  H-LUN  LUN
  0    A    0    1    2
  0    B    1    3    6
  1    A    2    1    3
  1    B    3    3    7
%
```

The following example displays the target ID information in array unit (Fibre version) df500a1. [LU mapping]

**Example:**

```
% autarget -unit df500a1 -refer
Password:
Current target ID mode
  CTL0 M-TID, M-LUN
  CTL1 M-TID, M-LUN

CTL  PORT  T-ID  H-LUN  LUN
  0    A    --    0    0
  0    B    --    2    4
  1    A    --    0    1
  1    B    --    2    5
Reserved target ID mode
  CTL0 M-TID, M-LUN
  CTL1 M-TID, M-LUN

CTL  PORT  T-ID  H-LUN  LUN
  0    A    --    1    2
  0    B    --    3    6
  1    A    --    1    3
  1    B    --    3    7
%
```

The following example sets the target ID information in array unit (SCSI version) df500a1. The setting is for the target ID of Controller 0, for Port A to 0 with a single target ID and multi-LUN configuration.

**Example:**

```
% autarget -unit df500a1 -set -mode SM -ctl0 -port A -tid 0 -fd on
Password:
Target ID has been set successfully.
Restart the subsystem to apply the setting.
%
```

The following example sets the target ID information in array unit (SCSI version) df500a2, which supports restarting. The setting is for the target ID of Controller 0, for Port A to 0 with a single target ID and multi-LUN configuration.

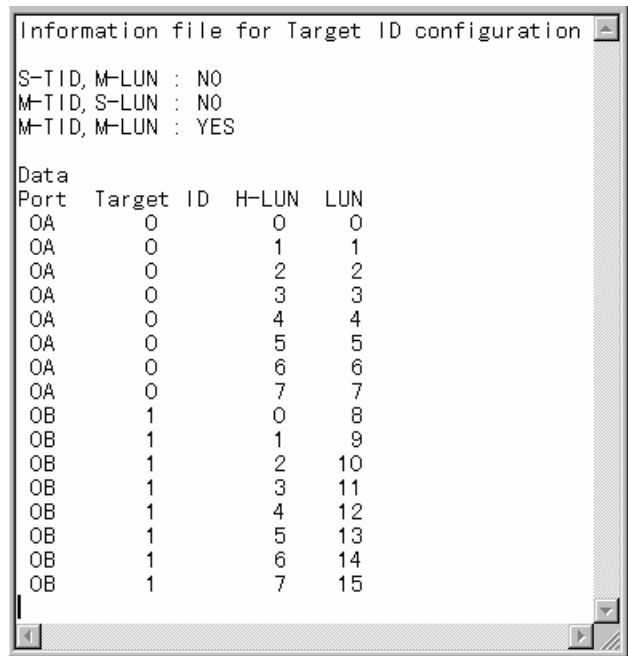
**Example:**

```
% autarget -unit df500a2 -set -mode SM -ctl0 -port A -tid 0 -fd on
Password:
In order to complete the setting, it is necessary to reboot the subsystem.
When not restarting, the setting will be registered, but it will not become effective on the subsystem.
Do you restart the subsystem? (y/n [n]): y
Host will be unable to access the subsystem while restarting.
Host applications that use the subsystem will terminate abnormally. Please stop host access before you restart the subsystem.
Also, if you are logging in, the login status will be canceled when restarting begins.
Do you agree with restarting? (y/n [n]): y
Are you sure you want to execute? (y/n [n]): y
Now restarting the subsystem. Start Time hh:mm:ss
The subsystem restarted successfully.
%
```

**Note:** It may take time for an array unit to respond, depending on the condition of the array unit. If the array unit does not respond after 10 minutes or more, check the condition of the array unit.

The following example shows the format of the target ID configuration file when set by file input. Enter the **Target ID** by specifying **Yes** or **No**. Enter necessary data for **Port**, **Target ID**, **H-LUN**, and **LUN**. Enter blank spaces between the items. If tabs are used, they are regarded as an input error and will be ignored.

**Example 1:** LU Mapping Mode.



**Example 2:** Single Target ID and Multi-LUN Mode.

```
Information file for Target ID configuration
S-TID, M-LUN : YES
M-TID, S-LUN : NO
M-TID, M-LUN : NO

Data
Port Target ID H-LUN LUN
OA      0
OB      1
1A      2
1B      3
```

**Note:** When Storage Navigator is connected to an array unit with the Fibre Channel connection, set '--' for the **Target ID**.

## 4.5.6 Displaying/Setting LAN Information

- **Command name**

aulan

- **Format**

**9200, 9500V, WMS100, AMS200, and AMS500:**

```
aulan -unit unit_name -refer
```

**9200:**

```
aulan -unit unit_name -set -ctl0 | -ctl1  
[ -addr inet_addr ] [ -mask netmask ] [ -gate gateway ]  
[ -dhcp enable | disable ] [ -fd on | off ]
```

**9500V:**

```
aulan -unit unit_name -set -ctl0 | -ctl1  
[ -addr inet_addr ] [ -mask netmask ] [ -gate gateway ]  
[ -nego auto | 10mh | 10mf | 100mh | 100mf ]  
[ -dhcp enable | disable ] ]
```

**AMS200 and AMS500:**

```
aulan -unit unit_name -set  
-ctl0 | -ctl1 [ -addr inet_addr ]  
[ -mask netmask ]  
[ -gate gateway ]  
[ -dhcp enable | disable ]  
[ -mipchg ]  
aulan -unit unit_name -set  
[ -mipchgmode enable | disable ]  
[ -ctl0 | -ctl1 [ -addr inet_addr ]  
[ -mask netmask ]  
[ -gate gateway ]  
[ -dhcp enable | disable ] ]
```

- **Description**

This command displays or sets LAN information of the array subsystem.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem for which to display or set LAN information. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_", ".", "@", or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays the LAN information.
-set	Sets the LAN information.
-ctl0   -ctl1	Specifies the controller.
-addr inet_addr	Specifies the IP addresses.
-mask netmask	Specifies the subnet masks.
-gate gateway	Specifies the individual default gateways.
-nego auto   10mh   10mf   100mh   100mf	Specify the negotiations. <b>auto:</b> The disk array unit makes the decision automatically. <b>10mh:</b> 10 Mbps/Half <b>10mf:</b> 10 Mbps/Full <b>100mh:</b> 100 Mbps/Half <b>100mf:</b> 100 Mbps/Full
-dhcp enable   disable	Specifies whether to set the DHCP mode to enable or disable.
-fd on   off	Specifies whether or not to make a backup copy of the FD. LAN information has been saved in the backup FD in the array subsystem as system parameter information. When changing settings, LAN information needs to be saved again; specify "on". <b>on:</b> Makes a backup copy. <b>off:</b> Does not make a backup copy.
-mipchg	Specify this option when you want the IP addresses of the maintenance port to change automatically.
-mipchgmode enable   disable	Specify whether to set the Maintenance Port IP Address Automatic Change Mode to enable or disable. <b>enable:</b> Enables the Maintenance Port IP Address Automatic Change Mode. <b>disable:</b> Disables the Maintenance Port IP Address Automatic Change Mode.

- **Examples**

The following example displays the LAN information of array subsystem df500a1.

**Example:**

```

% aulan -unit df500a1 -refer
Password:
CTL IP Address Subnet mask Default Gateway Ethernet address DHCP
0 125.0.9.98 255.255.255.0 125.0.9.15 00:00:87:50:78:AF OFF
1 125.0.9.99 255.255.255.0 125.0.9.15 00:00:87:50:78:9F OFF
%

```

The following example sets LAN information for the Controller 0 side of array subsystem df500a1.

**WARNING:** This operation will require stopping I/O from the host and rebooting.

**WARNING:** If you are using TrueCopy or TrueCopy Extended Distance (TagmaStore only), change the pair status to PSUS before you reboot.

**WARNING:** If you are using NAS, you must also stop the clusters between the NAS units. When restarting the subsystem, you must restart the clusters. (TagmaStore only)

**Example:**

```

% aulan -unit df500a1 -set -ctl0
-addr 192.168.100.100 -mask 255.255.255.0 -gate 192.168.100.5
Password:
Are you sure you want to set the LAN information? (y/n[n]): y
In order to complete the setting, it is necessary to reboot the subsystem.
When not restarting, the setting will be registered, but it will not become effective on the subsystem.
Do you restart the subsystem? (y/n [n]): y
Host will be unable to access the subsystem while restarting.
Host applications that use the subsystem will terminate abnormally. Please stop host access before you restart the subsystem.
Also, if you are logging in, the login status will be canceled when restarting begins.
Do you agree with restarting? (y/n[n]): y
Now restarting the subsystem. Start Time hh:mm:ss
The subsystem restarted successfully.
%

```

**Notes:**

- To validate the LAN information, restart the array unit. The previous settings remain valid until restarting. The array unit cannot access the host until the reboot is completed and the system restarts. Therefore, verify that the host has stopped accessing data before beginning the restart process.
- If LAN configuration information is modified, an error message (Interface Error) may be displayed without displaying a restart completion message, when restarting is initiated. When an error message is displayed after the LAN configuration information is modified and a restarting is directed to be done, execute the `auunitchg` command. Make a change in the information that has been registered.
- It may take time for an array unit to respond, depending on the condition of the array unit. If it does not respond after 10 minutes or more, check the condition of the array unit.

## 4.5.7 Displaying/Setting the SCSI Transfer Rate

- **Command name**

`ausync`

- **Format**

**9200:**

```
ausync -unit unit_name -refer
ausync -unit unit_name -set -ctl0 | -ctl1 -port A
        -sync standard | async | N5 | N10 | N20 | N40 | W10 | W20 |
W40 | W80
        [ -fd on|off ]
```

- **Description**

This command displays or sets the SCSI transfer rate of each port. When setting the SCSI transfer rate, only one command entry can be set per port.

- **Options**

Options	Description
<code>-unit unit_name</code>	Specifies the name of an array subsystem in which the SCSI transfer rate is to be displayed or set.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “- (minus),” “_ (underline),” “.” (period),” “@,” or “ (space)”. Space in front and in the rear of the character string is removed.
<code>-refer</code>	Displays SCSI transfer rate information.
<code>-set</code>	Sets SCSI transfer rate information.
<code>-ctl0   -ctl1</code>	Specifies the controller for which to set the information.
<code>-port A   B</code>	Specifies the port for which to set information.
<code>-sync standard   async   N5   N10   N13   N20   N33   N40   W10   W20   W26   W40   W66   W80</code>	Specifies the transfer rate of a port.  When connecting the 9200, do not specify <b>N13</b> , <b>W26</b> , <b>N33</b> , and <b>W66</b> , because they are all not supported.  <b>standard:</b> Sets the transfer rate to match that of a mounted interface board. <b>async:</b> Transfers in a mode in which synchronous transfer is not used. <b>N5, W10:</b> Maximum transfer rate: Narrow 5 [MB/s], Wide 10 [MB/s] <b>N10, W20:</b> Maximum transfer rate: Narrow 10 [MB/s], Wide 20 [MB/s] <b>N20, W40:</b> Maximum transfer rate: Narrow 20 [MB/s], Wide 40 [MB/s] <b>N40, W80:</b> Maximum transfer rate: Narrow 40 [MB/s], Wide 80 [MB/s]
<code>-fd on   off</code>	Specifies whether or not to make a backup copy of the FD.  The SCSI transfer rate information is saved in the backup FD in the array subsystem as the system parameter information. When changing the settings, the SCSI transfer rate information needs to be saved again, so make sure to specify “on”.  <b>on:</b> Makes a backup copy. <b>off:</b> Does not make a backup copy.

- **Examples**

The following example displays the SCSI transfer rate information of array unit df500a1.

**Example:**

```
% ausync -unit df500a1 -refer
Password:
CTL Port I/F board type Velocity
0 A differential standard
%
```

The following example sets the SCSI transfer rate information for port A on the Controller 0 side of array unit df500a1.

**Example:**

```
% ausync -unit df500a1 -set -ct10 -port A -sync standard -fd on
Password:
The SYNC CONTROL has been set successfully.
Restart the subsystem to apply the setting.
%
```

The following example sets SCSI transfer rate information for port A on the Controller 0 side of array unit df500a2, and supports remote restarting.

**Example:**

```
% ausync -unit df500a2 -set -ct10 -port A -sync standard -fd on
Password:
In order to complete the setting, it is necessary to reboot the subsystem.
When not restarting, the setting will be registered, but it will not become effective on the subsystem.
Do you restart the subsystem? (y/n [n]): y
Host will be unable to access the subsystem while restarting.
Host applications that use the subsystem will terminate abnormally. Please stop host access before you restart the subsystem.
Also, if you are logging in, the login status will be canceled when restarting begins.
Do you agree with restarting? (y/n [n]): y
Are you sure you want to execute? (y/n [n]): y
Now restarting the subsystem. Start Time hh:mm:ss
The subsystem restarted successfully.
%
```

**Note:** It may take time for an array unit to respond, depending on the condition of the array unit. If it does not respond after 10 minutes or more, check the condition of the array unit.

## 4.5.8 Displaying/Setting the Port Option and Controller Identifier

- **Command name**

auportop

- **Format**

**For 9200, 9500V, WMS100, AMS200, and AMS500:**

```
auportop -unit unit_name -refer
```

**9200 SCSI version:**

```
auportop -unit unit_name -set
        [ -HostConnection ctl_no port_no
                standard | OpenVMS | TRESPASS | WolfPack
        |
                IBM7135 | NCR ]
[ -VxVM ctl_no port_no enable | disable ]
[ -OdeMapper ctl_no port_no enable | disable ]
[ -ReportInquiry ctl_no port_no enable | disable ]
[ -UASuppress ctl_no port_no enable | disable ]
[ -HISUP ctl_no port_no enable | disable ]
[ -CCHS ctl_no port_no enable | disable ]
[ -InquiryStandard ctl_no port_no enable | disable ]
[ -ProdidDF400 ctl_no port_no enable | disable ]
[ -SUNCluster ctl_no port_no enable | disable ]
[ -PRSV ctl_no port_no enable | disable ]
[ -PortTypeOption ctl_no port_no
        ResetLipSignal | ResetLipProcess |
        TargetReset | Reserve enable | disable ]
[ -ControllerID ctl_no string ]
[ -fd on | off ]
```

**9200 Fibre version:**

```

auportop  -unit unit_name  -set
          [ -HostConnection ctl_no port_no
            standard | OpenVMS | TRESPASS |
WolfPack |
          [ -VxVM ctl_no port_no enable | disable ]
          [ -HPUX ctl_no port_no enable | disable ]
          [ -ReportInquiry ctl_no port_no enable | disable ]
          [ -UASuppress ctl_no port_no enable | disable ]
          [ -HISUP ctl_no port_no enable | disable ]
          [ -CCHS ctl_no port_no enable | disable ]
          [ -InquiryStandard ctl_no port_no enable | disable ]
          [ -HPUX2 ctl_no port_no enable | disable ]
          [ -ProdidDF400 ctl_no port_no enable | disable ]
          [ -HbaWwnReport ctl_no port_no enable | disable ]
          [ -NACA ctl_no port_no enable | disable ]
          [ -SUNcluster ctl_no port_no enable | disable ]
          [ -PRSV ctl_no port_no enable | disable ]
          [ -ftSRV1 ctl_no port_no enable | disable ]
          [ -ftSRV2 ctl_no port_no enable | disable ]
          [ -SRCReadReject ctl_no port_no enable | disable ]
          [ -PortTypeOption ctl_no port_no
            ResetLipSignal | ResetLipProcess |
            LipPortAllReset | TargetReset |
            Reserve | LUReset | TPRLO
            enable | disable ]
          [ -ControllerID ctl_no string ]
          [ -fd on | off ]

```

**9500V:**

```

auportop  -unit unit_name  -set
          [ -PortTypeOption ctl_no port_no
            ResetLipSignal | ResetLipProcess |
            LipPortAllReset| ReadFrameMin128
            enable | disable ]

```

**WMS100, AMS200, and AMS500:**

```

auportop  -unit unit_name  -set
          [ -PortTypeOption ctl_no port_no
            ResetLipSignal | ResetLipProcess |
            LipPortAllReset|
            enable | disable ]

```

- **Description**

This command displays or sets the port option and controller identifier.

The setting is allowed only if the target ID mode of an array subsystem is set to [M-TID, M-LUN] (mapping). Additions to mapping information can be set for target IDs that are not set (9200).

This command displays or sets the port option (9500V, WMS100, AMS200, and AMS500).

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem in which the port option and controller identifier are to be displayed or set.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_", ".", "@", or " ". Space in front and in the rear of the character string is removed.
-refer	Displays the port option and controller identifier.
-set	Sets the port option and controller identifier.

- **Options for 9200 only**

Options	Description
-HostConnection ctl_no port_no standard   OpenVMS   TRESPASS   WolfPack   IBM7135   NCR	Specifies the mode to be emulated.  <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B) <b>standard</b> : Open system emulation mode <b>OpenVMS</b> : Open VMS mode <b>TRESPASS</b> : TRESPASS mode <b>WolfPack</b> : WolfPack mode <b>IBM7135</b> : IBM7135 mode <b>NCR</b> : NCR mode
-VxVM ctl_no port_no enable   disable	Specifies whether to set the VxVM mode effective or ineffective.  <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B) <b>enable</b> : Enables the VxVM mode <b>disable</b> : Disables the VxVM mode
-OdeMapper ctl_no port_no enable   disable	Specifies whether to set the ODE Mapper mode effective or ineffective.  <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A) <b>enable</b> : Enables the ODE Mapper mode <b>disable</b> : Disables the ODE Mapper mode

Options	Description
<pre>-HPUX   ctl_no port_no   enable   disable</pre>	<p>Specifies whether to set the HP connection mode effective or ineffective.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A, B)</p> <p><b>enable:</b> Enables the HP connection mode</p> <p><b>disable:</b> Disables the HP connection mode</p>
<pre>-ReportInquiry   ctl_no port_no   enable   disable</pre>	<p>Specifies whether to set the Inquiry Page: 83 reporting mode effective or ineffective.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A, B)</p> <p><b>enable:</b> Enables the report of Inquiry Page: 83</p> <p><b>disable:</b> Disables the report of Inquiry Page: 83</p>
<pre>-UASuppress   ctl_no port_no   enable   disable</pre>	<p>Specifies whether or not to suppress a unit attention (06/2A00).</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A, B)</p> <p><b>enable:</b> Suppress the unit attention</p> <p><b>disable:</b> Does not suppress the unit attention</p>
<pre>-HISUP   ctl_no port_no   enable   disable</pre>	<p>Specifies whether to set the HISUP mode effective or ineffective.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A, B)</p> <p><b>enable:</b> Enables the HISUP mode</p> <p><b>disable:</b> Disables the HISUP mode</p>
<pre>-CCHS   ctl_no port_no   enable   disable</pre>	<p>Specifies whether to set the CCHS convert mode effective or ineffective.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A, B)</p> <p><b>enable:</b> Enables the CCHS convert mode</p> <p><b>disable:</b> Disables the CCHS convert mode</p>
<pre>-InquiryStandard   ctl_no port_no   enable   disable</pre>	<p>Specifies whether to set the Standard INQUIRY data expand mode effective or ineffective.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A, B)</p> <p><b>enable:</b> Enables the Standard INQUIRY data expand mode</p> <p><b>disable:</b> Disables the Standard INQUIRY data expand mode</p>
<pre>-HPUX2   ctl_no port_no   enable   disable</pre>	<p>Specifies whether to set the HP connection mode 2 effective or ineffective.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A, B)</p> <p><b>enable:</b> Enables the HP connection mode 2</p> <p><b>disable:</b> Disables the HP connection mode 2</p>

Options	Description
-HbaWwnReport ctl_no port_no enable   disable	Specifies whether to set the HBA WWN Report mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>enable:</b> Enables the HBA WWN Report mode <b>disable:</b> Disables the HBA WWN Report mode
-NACA ctl_no port_no enable   disable	Specifies whether to set the NACA mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>enable:</b> Enables the NACA mode <b>disable:</b> Disables the NACA mode
-SUNCluster ctl_no port_no enable   disable	Specifies whether to set the SUN Cluster Connection mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>enable:</b> Enables the SUN Cluster Connection mode <b>disable:</b> Disables the SUN Cluster Connection mode
-PRSV ctl_no port_no enable   disable	Specifies whether to set the Persistent RSV Cluster mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>enable:</b> Enables the Persistent RSV Cluster mode <b>disable:</b> Disables the Persistent RSV Cluster mode
-ftSRV1 ctl_no port_no enable   disable	Specifies whether to set the ftServer Connection mode 1 effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>enable:</b> Enables the ftServer Connection mode 1 <b>disable:</b> Disables the ftServer Connection mode 1
-ftSRV2 ctl_no port_no enable   disable	Specifies whether to set the ftServer Connection mode 2 effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>enable:</b> Enables the ftServer Connection mode 2 <b>disable:</b> Disables the ftServer Connection mode 2
-SRCReadReject ctl_no port_no enable   disable	Specifies whether to set the SRC Read Command Reject mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>enable:</b> Enables the SRC Read Command Reject mode <b>disable:</b> Disables the SRC Read Command Reject mode

Options	Description
<pre>-PortTypeOption   ctl_no port_no   ResetLipSignal     ResetLipProcess     LipPortAllReset     ReadFrameMin128     TargetReset     Reserve     LUReset     TPRLO   ReadFrameMin128     enable   disable</pre>	<p>Sets the options for the individual ports for the Fibre Channel version of array subsystems.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A, B, C, D)</p> <p><b>ResetLipSignal:</b> Sets ResetLip (signal)</p> <p><b>ResetLipProcess:</b> Sets ResetLip (processing)</p> <p><b>LipPortAllReset:</b> Sets the resetting of all ports by an LIP</p> <p><b>TargetReset:</b> Enables the Target rest</p> <p><b>Reserve:</b> Enables the Reserve</p> <p><b>LUReset:</b> Enables the LU reset</p> <p><b>TPRLO:</b> Sets Third Party Process Logout Mode</p> <p><b>ReadFrameMin128:</b> Sets Read Frame Min 128 Byte Mode</p> <p><b>enable:</b> Enables the settings described above</p> <p><b>disable:</b> Disables the settings described above</p>
<pre>-ControllerID   ctl_no string</pre>	<p>Specifies the controller ID.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>string:</b> Controller ID (up to eight characters)</p>
<pre>-fd on   off</pre>	<p>Specifies whether or not to make a backup copy to the FD. System parameter information is already saved in the backup FD in an array subsystem. When settings are modified, the information must be saved again; be certain to specify "on".</p> <p><b>on:</b> Makes a backup copy</p> <p><b>off:</b> Does not make a backup copy</p>

■ **Options for 9500V, WMS100, AMS200, and AMS500 only**

Options	Description
<pre>-PortTypeOption   ctl_no port_no   ResetLipSignal     ResetLipProcess     LipPortAllReset     ReadFrameMin128   enable   disable</pre>	<p>Sets the options for the individual ports for the Fibre Channel version of the array units.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A, B, C, D)</p> <p><b>ResetLipSignal:</b> Sets ResetLip (signal).</p> <p><b>ResetLipProcess:</b> Sets ResetLip (processing).</p> <p><b>LipPortAllReset:</b> Sets the resetting of all ports by an LIP.</p> <p><b>ReadFrameMin128:</b> Sets Read Frame Min 128 Byte Mode. (9500V)</p> <p><b>enable:</b> Enables the settings described above.</p> <p><b>disable:</b> Disables the settings described above.</p>

- **Examples**

The following example displays the port option and controller identifier of array subsystem df600a1.

**Example:**

```
% auportop -unit df600a1 -refer
Password:
Port Option
Reset/LIP Mode (Signal)
  Port 0A = OFF
  Port 0B = OFF
  Port 1A = OFF
  Port 1B = OFF
Reset/LIP Mode (Process)
  Port 0A = OFF
  Port 0B = OFF
  Port 1A = OFF
  Port 1B = OFF
LIP Port ALL Reset Mode
  Port 0A = OFF
  Port 0B = OFF
  Port 1A = OFF
  Port 1B = OFF
Read Frame Min 128 Byte Mode
  Port 0A = OFF
  Port 0B = OFF
  Port 1A = OFF
  Port 1B = OFF
%
```

The following example sets the unit attention option “UA(06/2A00) suppress mode” by the port option for port A on the controller 0 side of array subsystem df500a1.

**Example:**

```
% auportop -unit df500a1 -set -UASuppress 0 A enable
Password:
%
```

## 4.5.9 Setting Target Information Online

- **Command name**

auontarget

- **Format**

**9200**

SCSI version:

```
auontarget -unit unit_name -add ctl_no port_no tid hlu lu [ -fd
on | off ]
auontarget -unit unit_name -chg ctl_no port_no tid hlu lu [ -fd
on | off ]
auontarget -unit unit_name -rm ctl_no port_no tid hlu lu [ -fd
on | off]
```

Fibre version:

```
auontarget -unit unit_name -add ctl_no port_no hlu lu [ -fd on |
off ]
auontarget -unit unit_name -chg ctl_no port_no hlu lu [ -fd on |
off ]
auontarget -unit unit_name -rm ctl_no port_no hlu lu [ -fd on |
off ]
```

- **Description**

This command sets mapping information online.

The setting is allowed only if the target ID mode of an array subsystem is set to [M-TID, M-LUN] (mapping). Additions to mapping information can only be set for target IDs that are previously set.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem in which the mapping information is to be displayed or set. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_", ".", "@", or " (space)". Space in front and in the rear of the character string is removed.
-add ctl_no port_no tid hlu lu	Adds the mapping information. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>tid:</b> Target ID (Fibre version is unnecessary) <b>hlu:</b> LU number recognized by the host <b>lu:</b> LU number of the array subsystem

Options	Description
-chg ctl_no port_no tid hlu lu	Changes the mapping information. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B) <b>tid</b> : Target ID (Fibre version is unnecessary) <b>hlu</b> : LU number recognized by the host <b>lu</b> : LU number of the array subsystem
-rm ctl_no port_no tid hlu lu	Deletes the mapping information. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B) <b>tid</b> : Target ID (Fibre version is unnecessary) <b>hlu</b> : LU number recognized by the host <b>lu</b> : LU number of the array subsystem
-fd on   off	Specifies whether or not to make a backup copy of the FD. The mapping information is saved in the backup FD in the array subsystem as the system parameters information. When changing the settings, the mapping information needs to be saved again. Specify "on". <b>on</b> : Makes a backup copy <b>off</b> : Does not make a backup copy

- **Examples**

The following example sets up an LU with an internal LUN 3 of array subsystem df500a1, as Controller 0, Port A, target ID 1, and Host LUN 2.

**Example:**

```
% auontarget -unit df500a1 -add 0 A 1 2 3
Password:
%
```

The following example changes the setup of an LU with an internal LUN 0 of array subsystem df500a1, to Controller 0, Port A, target ID 1, and Host LUN 3.

**Example:**

```
% auontarget -unit df500a1 -chg 0 A 1 3 0
Password:
%
```

The following example deletes the setup, as Controller 0, Port A, target ID 1, and Host LUN 2 of an LU with an internal LUN 0 of array subsystem df500a1.

**Example:**

```
% auontarget -unit df500a1 -rm 0 A 1 2 0
Password:
%
```

## 4.5.10 Displaying/Setting the Boot Option

- **Command name**

aubootopt

- **Format**

**WMS100, AMS200, and AMS500:**

```
aubootopt -unit unit_name -refer
```

```
aubootopt -unit unit_name -set
[ -SystemStartup      Single | Dual ]
[ -DelayPlannedShutdown  time ]
[ -DriveDetach        enable | disable ]
[ -inquiryVendor      string ]
[ -inquiryProduct     string ]
[ -inquiryRomMicro    string ]
[ -inquiryRamMicro    string ]
```

- **Description**

This command displays or sets the boot option of the array unit.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array unit for which to display or set the boot option. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "(period)", "@", or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays the boot option.
-set	Sets the boot option.
-SystemStartup Single   Dual	Specifies the configuration of an array unit. <b>Single:</b> Single <b>Dual:</b> Dual
-DelayPlannedShutdown time	Specifies the time in minutes to delay the execution of the planned shutdown when the main switch has turned off. The applicable range is from 0 to 60 minutes in unit of 1 minute. The default value is 0.
-DriveDetach enable   disable	Specifies whether to set the drive blockage mode effective or ineffective. <b>enable:</b> Enables the drive blockage mode. <b>disable:</b> Disables the drive blockage mode.
-inquiryVendor string	Specifies the vendor name of Inquiry response information in less than or equal to 8 characters. If you want to enter NULL characters, enter "".
-inquiryProduct string	Specifies the product type of Inquiry response information in less than or equal to 16 characters. If you want to enter NULL characters, enter "".

Options	Description
-inquiryRomMicro string	Specifies the ROM microprogram version of Inquiry response information in less than or equal to 2 characters. If you want to enter NULL characters, enter "".
-inquiryRamMicro string	Specifies the RAM microprogram version of Inquiry response information in less than or equal to 2 characters. If you want to enter NULL characters, enter "".

- **Examples**

The following example displays the boot option of array unit df700a1.

**Example:**

```
% aubootopt -unit df700a1 -refer
Password:
System Startup Attribute = Dual Active Mode
Delay Planned Shutdown[min.] = 0
Drive Detach Mode = OFF
Vendor ID = HITACHI
Product ID = DF600F
ROM Microprogram Version =
RAM Microprogram Version =
%
```

#### 4.5.11 Displaying/Setting Time Zone

- **Command name**

autimezone

- **Format**

**WMS100, AMS200, and AMS500:**

```
autimezone -unit unit_name -refer
```

```
autimezone -unit unit_name -set
          [ -timezone num ] [ -dst used | notused ]
          [ -ntp1 address ] [ -ntp2 address ]
```

```
autimezone -unit unit_name -availablelist -timezone
```

- **Description**

This command displays or sets the time zone/NTP server.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array unit for which to display or set the time zone/NTP server. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_" (underline), "." (period), "@", or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays the time zone/NTP server IP address.
-set	Sets the time zone/NTP server IP address.

Options	Description
-availablelist	A list of time zone numbers, each of which is eligible for the time zone is displayed.
-timezone num	Specifies the time zone number by selecting it from the list of time zones that can be specified.
-dst used   notused	Specifies whether to use the daylight saving time or not. <b>used:</b> Use daylight savings time. <b>notused:</b> Does not use daylight savings time.
-ntp1 address	Specifies NTP server1 IP address. To cancel the specification, enter "".
-ntp2 address	Specifies NTP server2 IP address. To cancel the specification, enter "".

- **Examples**

The following example displays the time zone of array unit df700 and NTP server IP address.

**Example:**

```
% autimezone -unit df700 -refer
Password:
Time Zone           : (GMT-12:00) International Date Line West
Daylight Saving Time : ---
NTP Server
  Server1 : 125.0.9.98
  Server1 : 125.0.9.99
%
```

The following example sets the NTP server IP address of array unit df700.

**Example:**

```
% autimezone -unit df700 -set -ntp1 192.168.100.100
Password:
Are you sure you want to set the time zone/NTP server? (y/n [n]): y
The time zone/NTP server have been set successfully.
Restart NNC to apply the NNC setting in case that NNC is equipped.
%
```

The following example displays the eligibility for the time zone of array unit df700.

**Example:**

```
% autimezone -unit df700 -availablelist -timezone
Password:
Available Time Zone
No.  DST      Time Zone
  1  Disable (GMT-12:00) International Date Line West
  2  Disable (GMT-11:00) Midway Island/ Samoa
  3  Disable (GMT-10:00) Hawaii
  4  Enable  (GMT-09:00) Alaska
  5  Enable  (GMT-08:00) Pacific Time (US & Canada); Tijuana
  6  Disable (GMT-07:00) Arizona
  7  Enable  (GMT-07:00) Chihuahua/ La Paz/ Mazatlan
  8  Enable  (GMT-07:00) Mountain Time (US & Canada)
  9  Enable  (GMT-06:00) Central Time (US & Canada)
 10  Disable (GMT-06:00) Central America
  :
%
```

## 4.5.12 Displaying/Setting the IP Address of Maintenance Port

- **Command name**

aumaintelan

- **Format**

**WMS100, AMS200, and AMS500:**

```
aumaintelan -unit unit_name -refer
aumaintelan -unit unit_name -set -addr ip_addr
aumaintelan -unit unit_name -availablelist
```

- **Description**

This command displays or sets the IP address of maintenance port.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array unit for which to display or set the IP address of the maintenance port. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", "." (period), "@", or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays the IP addresses of the maintenance port.
-set	Sets the IP address of the maintenance port.
-availablelist	Displays a list of IP addresses that can be assigned to the maintenance port of CTL0.
-addr ip_addr	Specifies an IP address of the CTL0. Specify the same host address as the one that has been assigned. (Host address: YYY of the XXX.XXX.XXX.YYY)

- **Examples**

The following example displays the IP addresses of the maintenance port of array unit df700.

**Example:**

```
% aumaintelan -unit df700 -refer
Password:
Maintenance Port  Current      Setting      Result
CTL0              10.0.0.16    10.0.0.16    Normal
CTL1              10.0.0.17    10.0.0.17    Normal
NNC0              10.0.0.10    10.0.0.10    Normal
NNC2              10.0.0.12    10.0.0.12    Normal
%
```

The following example displays the available IP addresses of the maintenance port of array unit df700.

**Example:**

```
% aumaintelan -unit df700 -availablelist
Password:
Available IP Address(CTL0)
10.0.0.16
192.168.0.16
192.168.233.16
172.23.211.16
10.197.181.16
%
```

The following example sets the IP addresses of the maintenance port of array unit df700.

**Example:**

```
% aumaintelan -unit df700 -set -addr 192.168.233.16
Password:
The IP address of maintenance port is set up.
  CTL0 : 192.168.233.16
  CTL1 : 192.168.233.17
  NNC0 : 192.168.233.10
  NNC2 : 192.168.233.12
Are you sure? (y/n [n]): y
The IP address of maintenance port has been set successfully.
%
```

### 4.5.13 Referencing/Setting LAN Information

- **Command name**

auonlan

- **Format**

**AMS200, and AMS500:**

```
auonlan -unit unit_name -refer

auonlan -unit unit_name -set
    [ -ctl0_addr inet_addr ] [ -ctl0_mask netmask ]
    [ -ctl0_gate gateway ]
    [ -ctl0_nego auto | 10mh | 10mf | 100mh | 100mf ]
    [ -ctl1_addr inet_addr ] [ -ctl1_mask netmask ]
    [ -ctl1_gate gateway ]
    [ -ctl1_nego auto | 10mh | 10mf | 100mh | 100mf ]
    [ -mipchgmode enable | disable ]
```

- **Description**

This command references and sets LAN information online.

LAN information cannot be set when it accesses the user port and the maintenance port of the controller to be set with Web, etc. Execute it after you have stopped accessing the controller to be set.

- **Options**

Options	Description
-unit unit_name	Specify the name of the array unit to reference and to set LAN information. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-" (minus), "_" (underline), "." (period), "@" , or " (space)". Space in front and in the rear of the character string is removed.
-refer	References LAN information.
-set	Sets LAN information.
-ctl0_addr inet_addr	Specifies the IP address of Controller 0. <b>inet_addr:</b> IP address
-ctl0_mask netmask	Specify the subnet mask of Controller 0. <b>netmask:</b> Subnet mask
-ctl0_gate gateway	Specify individual default gateway of Controller 0. <b>gateway:</b> Default gateway
-ctl0_nego auto   10mh   10mf   100mh   100mf	Specify the negotiations of Controller 0. <b>auto:</b> The disk array unit makes the decision automatically. <b>10mh:</b> 10 Mbps/Half <b>10mf:</b> 10 Mbps/Full <b>100mh:</b> 100 Mbps/Half <b>100mf:</b> 100 Mbps/Full

Options	Description
-ctl1_addr inet_addr	Specifies the IP address of Controller 1. <b>inet_addr:</b> IP address
-ctl1_mask netmask	Specify the subnet mask of Controller 1. <b>netmask:</b> Subnet mask
-ctl1_gate gateway	Specify individual default gateway of Controller 1. <b>gateway:</b> Default gateway
-ctl1_nego auto   10mh   10mf   100mh   100mf	Specify the negotiations of Controller 1. <b>auto:</b> The disk array unit makes the decision automatically. <b>10mh:</b> 10 Mbps/Half <b>10mf:</b> 10 Mbps/Full <b>100mh:</b> 100 Mbps/Half <b>100mf:</b> 100 Mbps/Full
-mipchgmode enable   disable	Specify whether to set the Maintenance Port IP Address Automatic Change Mode to enable or disable. <b>enable:</b> Enables the Maintenance Port IP Address Automatic Change Mode. <b>disable:</b> Disables the Maintenance Port IP Address Automatic Change Mode.

- **Examples**

The following example references the LAN information of an array unit.

**Example:**

```
% auonlan -unit df700 -refer
Password:
Current
  CTL IP Address      Subnet Mask      Default Gateway  Result
  0 125.0.9.98        255.255.255.0   125.0.9.15      Normal
  1 125.0.9.99        255.255.255.0   125.0.9.15      Normal
Setting
  CTL IP Address      Subnet Mask      Default Gateway
  0 125.0.9.100       255.255.255.0   125.0.9.15
  1 125.0.9.101       255.255.255.0   125.0.9.15
Maintenance Port IP Address Automatic Change Mode : ON
%
```

The following example sets LAN information for the Controller 0 side of array unit df700.

**Example:**

```
% auonlan -unit df700 -set -ct10_addr 192.168.100.100 -ct10_mask 255.255.255.0
-ct10_gate 192.168.100.5 -mipchgmode enable
Password:
Are you sure you want to set the LAN information? (y/n [n]): y
```

```
Your maintenance IP address will change accordingly.
CTL0 - IP:10.0.0.16 SM:255.255.255.0 GW:N/A
CTL1 - IP:10.0.0.17 SM:255.255.255.0 GW:N/A
Do you want to continue processing? (y/n [n]): y
The LAN information has been set successfully.
When the IP address is changed, the subsystem cannot be connected.
Please change the IP address of connection using auunitchg command.
When the other information is changed, this client cannot be connected to the ne
twork.
Please confirm the LAN environment.
%
```

**Note:** The following message is displayed when the LAN information is set. It accesses the user port and the maintenance port of the controller to be set with Web, etc.

DMEA0011BD: The process cannot be performed because the User LAN port of the subsystem is being used by other applications. Refer to the [netstat.inf] file in the directory where the Storage Navigator is installed. Close the applications using the User LAN port of the subsystem, and then try again.

The usage condition of the LAN port is output to netstat.inf. In the netstat.inf file, "Local address" means the IP address of the controller, "Foreign Address" means IP address of PC connecting with the subsystem, "State" means the status of the TCP connection. Regardless of "Status" in the netstat.inf file, stop the all application currently connecting from "Foreign address", and execute it again.

## 4.6 Setting Up the Configuration

### 4.6.1 Displaying/Setting Fibre Channel Information

- **Command name**

```
aufibre1
```

- **Format**

**9200, 9500V, WMS100, AMS200, and AMS500:**

```
aufibre1 -unit unit_name -refer
```

**9200:**

```
aufibre1 -unit unit_name -set  
[ -topo ctl_no loop | ptop ]  
[ -rate ctl_no 1 | 2 ]  
[ -portaddr ctl_no port_no port_address ]  
[ -lus ctl_no port_no on | off ]  
[ -luschk ctl_no port_no inqc | allc ]  
[ -perm ctl_no port_no node_name port_name ]  
[ -permlu ctl_no port_no node_name port_name lun... ]  
[ -permluall ctl_no port_no node_name port_name ]  
[ -file ctl_no port_no filename ]
```

**9500V:**

```
aufibre1 -unit unit_name -set  
[ -topo ctl_no loop | ptop ]  
[ -rate ctl_no 1 | 2 | auto ]  
[ -portaddr ctl_no port_no port_address ]
```

**WMS100, AMS200, and AMS500:**

```
aufibre1 -unit unit_name -set  
[ -topo ctl_no port_no loop | ptop ]  
[ -rate ctl_no port_no 1 | 2 | 4 | auto ]  
[ -portaddr ctl_no port_no port_address ]
```

**9200:**

```
aufibre1 -unit unit_name -set  
[ -perm ctl_no port_no node_name port_name ]  
[ -permlu ctl_no port_no node_name port_name lun... ]  
[ -permluall ctl_no port_no node_name port_name ]
```

- **Description**

This command displays or sets the fibre channel information.

■ Options

Options	Description
-unit unit_name	Specifies the name of an array subsystem for which to display, set, and delete fibre channel information.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "@", or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays the fibre channel information.
-set	Sets the fibre channel information.
-rm	Deletes the port security information and LUN security information.
-topo ctl_no port_no loop   ptop	Specifies the topology of the specified port. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B, C, D) <b>loop</b> : Loop <b>ptop</b> : Point-to-Point
-rate ctl_no port_no 1   2   4   auto	Specifies the fibre channel transfer rate of the specified port <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B, C, D) <b>1</b> : 1 (G bps) <b>2</b> : 2 (G bps) <b>4</b> : 4 (G bps)(WMS100, AMS200, and AMS500 only) <b>auto</b> : The fibre channel transfer rate will be automatically defined by the array unit (9500V/WMS100, AMS200, and AMS500 only).
-portaddr ctl_no port_no port-address	Specifies the port address of the specified port. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B, C, D) <b>port-address</b> : Port address (6 hexadecimal characters)
-lus ctl_no port_no on   off	Specifies whether the LUN security of the specified port is enabled or disabled. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B) <b>on</b> : Enables the LUN Security <b>off</b> : Disables the LUN Security
-luschk ctl_no port_no inqc   allc	Specifies the LUN security check level of the specified port. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B) <b>inqc</b> : Check using the INQUIRY SCSI command <b>allc</b> : Check using all commands

Options	Description
<pre>-perm   ctl_no port_no   node_name   port_name</pre>	<p><b>When the -set option is specified:</b></p> <p>Specify the host information (node name and port name) that can be accessed by the specified port.</p> <p><b>When the -rm option is specified:</b></p> <p>Specifies the host information to be deleted from the host information (node name and port name) that can be accessed by the specified port.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A, B)</p> <p><b>node_name:</b> Node name of the host (16 hexadecimal characters)</p> <p><b>port_name:</b> Port name of the host (16 hexadecimal characters)</p>
<pre>-permlu   ctl_no port_no   node_name   port_name lun..</pre>	<p><b>When the -set option is specified:</b></p> <p>When using the LUN security function at a specified port, it specifies LUs, to which the host is permitted access, into host information registered with the -perm option (multiple LUs can be specified).</p> <p>Host information and LUN security are not allowed to be registered at the same time.</p> <p><b>When the -rm option is specified:</b></p> <p>Specify the LUNs whose access permission is to be deleted from the LUN security set by the specified port. (Multiple LUs can be specified.)</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A, B)</p> <p><b>node_name:</b> Node name of the host (16 hexadecimal characters)</p> <p><b>port_name:</b> Port name of the host (16 hexadecimal characters)</p> <p><b>lun..:</b> LU number</p>
<pre>-permluall   ctl_no port_no   node_name   port_name</pre>	<p><b>When the -set option is specified:</b></p> <p>When using the LUN security function at a specified port, it specifies the host information that is already registered with the -perm option, which specifies permission to access to all LUs.</p> <p>Host information and LUN security are not allowed to be registered at the same time.</p> <p><b>When the -rm option is specified:</b></p> <p>Specify the host information whose access permission is to be deleted from the LUN security set by the specified port.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A, B)</p> <p><b>node_name:</b> Node name of the host (16 hexadecimal characters)</p> <p><b>port_name:</b> Port name of the host (16 hexadecimal characters)</p>
<pre>-file   ctl_no port_no   filename</pre>	<p>When setting host security by file input, this option specifies the host permission information file.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A, B)</p> <p><b>filename:</b> File name which to input</p>

- **Examples**

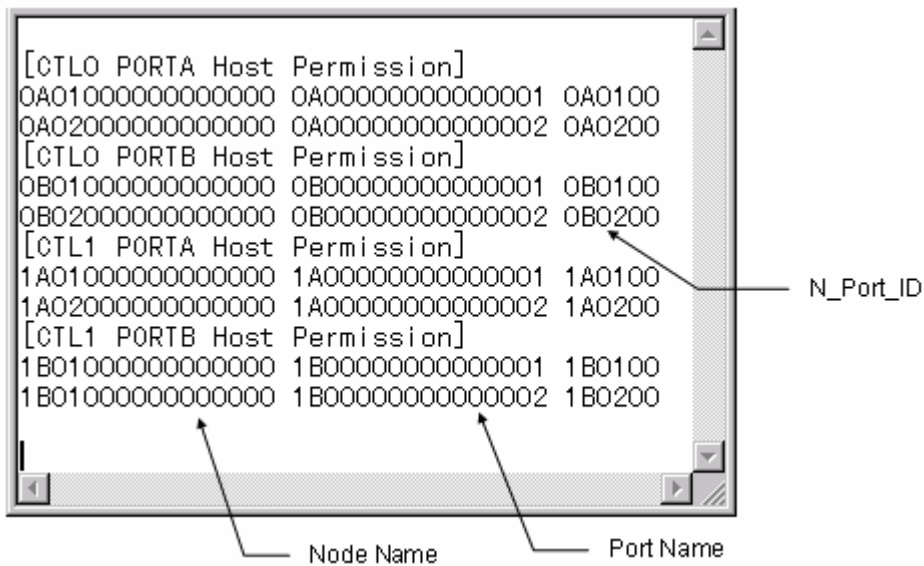
The following example sets the topology of Port A of controller 0 of array subsystem df500a1 to loop.

**Example:**

```
% aufibre1 -unit df500a1 -set -topo 0 A loop
Password:
When setting starts, the subsystem stops accepting access to the port from the host.
Before setting, stop access to the port from the host.
Do you want to continue processing? (y/n [n]): y
The fibre channel information has been set successfully.
%
```

The following figure displays the file format to use when specifying the “File” parameter. Enter the necessary items for each port with a blank character between items. If tabs are used, the settings of the line, including the “tab”, are ignored because it is regarded as an input error.

**Example:**



- **Node Name:** Describes 8 bytes of data hexadecimal (with 16 characters).
- **Port Name:** Describes 8 bytes of data hexadecimal (with 16 characters).
- **N\_Port\_ID:** Describes 3 bytes of data hexadecimal (with 6 characters). Concerning the host identification information, this data can be omitted. When the data is omitted, it is assumed to be 0X000000.

When a line begins with “;”, the line is regarded as a comment line.

## 4.6.2 Displaying/Setting the Spare HDU

- **Command name**

auspare

- **Format**

**9200 and 9500V:**

```
auspare -unit unit_name -set -uno unit_no -hno hdu_no
```

```
auspare -unit unit_name -rm -uno unit_no -hno hdu_no
```

**WMS100, AMS200, and AMS500:**

```
auspare -unit unit_name -refer
```

```
auspare -unit unit_name -set -drive unit_no.hdu_no ...
```

```
auspare -unit unit_name -rm -drive unit_no.hdu_no ...
```

```
auspare -unit unit_name -availablelist
```

- **Description**

This command displays or sets a spare HDU. An HDU cannot be set as a spare when the HDU is not installed.

HDUs that can be set as a spare drive are data disk drives, for a RAID group that has not been defined, excluding HDUs 0 and 1 in Unit 0 (9200) and HDUs 0 to 4 in Unit 0 (9500V).

- **Options**

Options	Description
-unit unit_name	Specifies the name of the array subsystem to set or cancel the spare HDU. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_", ".", "@", or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays the spare HDU.
-set	Sets the spare HDU.
-rm	Cancel the spare HDU
-availablelist	A list of drives, each of which is eligible for a spare HDU is displayed.
-uno unit_no	Specifies the unit number of the spare HDU.
-hno hdu_no	Specifies the HDU number of the spare HDU.
-drive unit_no.hdu_no ...	Specifies the unit number and HDU number and punctuates them with a period to be set or canceled. Single or multiple drive numbers can be specified. <b>unit_no:</b> Unit number <b>hdu_no:</b> HDU number <b>Single specification:</b> Specifying a single drive number. <b>Example:</b> -drive 1.0 <b>Multiple specifications:</b> Specifying multiple drives numbers. <b>Example:</b> -drive 1.0 2.3 3.1 -drive 1.0-2.2 2.8

- **Examples**

The following example sets the HDU in Unit number 0 position 9 as the spare HDU of array subsystem name df500a1.

**Example:**

```
% auspare -unit df500a1 -set -uno 0 -hno 9
Password:
Do you want to set this drive as a spare? (y/n[n]): y
The setting ended normally.
%
```

The following example displays the setting of the spare HDU in array subsystem df500a1 by using the `audrive` command. Spare HDUs will be indicated as “Spare” in “Type” column.

**Example:**

```
% audrive -unit df500a1 -status -uno 0 -hno 9
Unit No.  HDU No.  Type  Physics  Status
0          9          Spare Mounted Standby
%
```

The following example lists drives, each of which is eligible for a spare HDU of array unit name df700a1.

**Example:**

```
% auspare -unit df700a1 -availablelist
Password:
Available Drives
Unit  HDU  Capacity  Drive Type  Status
1     13   146GB    FC          Undefined
1     14   146GB    FC          Undefined
%
```

The following example sets the HDU in Unit number 1 position 14 as the spare HDU of array unit name df700a1.

**Example:**

```
% auspare -unit df700a1 -set -drive 1.14
Password:
Are you sure you want to set the spare drive? (y/n[n]): y
The drive of the unit number 1 and the HDU number 14 was set as a spare.
The spare drives have been set successfully.
%
```

The following example displays the setting of the spare HDU in array unit df700a1 by using the `auspare` command. Spare HDUs will be indicated as “Spare” in “Type” column.

**Example:**

```
% auspare -unit df700a1 -refer
Password:
Unit HDU Type  Capacity Drive Type Status          Vendor
Product                Revision Serial No.
1  14 Spare 146GB    FC          Standby          SEAGATE
DKS2C-J146FC          xxxx      3HYxxxxx
```

### 4.6.3 Displaying/Setting the Fee-based Option

- **Command name**

auopt

- **Format**

**9200, 9500V, WMS100, AMS200, and AMS500:**

```
auopt -unit unit_name -refer
```

**9200**

**Key-FD:**

```
auopt -unit unit_name -lock off | on -keyfd fd_path
```

**Key-code:**

```
auopt -unit unit_name -lock off | on -keycode key_code
```

**9500, WMS100, AMS200, and AMS500:**

```
auopt -unit unit_name -lock off | on -keycode key_code
```

```
auopt -unit unit_name -lock off -licensefile license_file_path
```

**9200, 9500V, WMS100, AMS200, and AMS500:**

```
auopt -unit unit_name -option option_name -st enable | disable
```

- **Description**

This command locks or unlocks the specified fee-based option. Unlocking or locking can be carried out by using the key FD, the key code, or the license key supplied.

The fee-based option can be enabled or disabled after it is unlocked (installed).

- **Options**

Options	Description
-unit unit_name	Specifies the name of the array subsystem to set up or display the fee-based option. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "- (minus)," _ (underline)," . (period)," @," or " (space)". Space in front and in the rear of the character string is removed.
-refer	An unlocked fee-based option is displayed.
-lock off   on	Specifies the fee-based option to be unlocked (installed) or locked (uninstalled). <b>off:</b> Unlocks (installs) the fee-based option <b>on:</b> Locks (uninstalls) the fee-based option
-keyfd fd_path	Specifies the directory of the key FD when unlocking or locking the fee-based option. <b>fd-path:</b> Directory in which the key FD exists
-keycode key_code	Specifies the key code when unlocking or locking the fee-based option. <b>key-code:</b> Key code
-licensefile license_file_path	Set to use the license key file when unlocking the fee-based option. <b>license_file_path:</b> The path of the license key file.

Options	Description
-option option-name	Specifies the name of the fee-based option when enabling or disabling the use of unlocked fee-basis option. For the name of the option, refer to the manual for each fee-based option.
-st enable   disable	Specifies whether to set the fee-based option effective or ineffective. <b>enable:</b> Enables the use of the fee-based option <b>disable:</b> Disables the use of the fee-based option

#### ■ Examples

The following example displays the status of the unlocked (installed) fee-based option of array subsystem df500a1.

##### **Example:**

```
% auopt -unit df500a1 -refer
Password:
Option name      Status
SNMP             Enable
%
```

The following example unlocks (installs) the SNMP fee-basis option that requires rebooting array subsystem df500a1 by using the key FD.

**WARNING:** This operation will require stopping I/O from the host and rebooting.

**WARNING:** If you are using TrueCopy or TrueCopy Extended Distance (TagmaStore only), change the pair status to PSUS before you reboot.

**WARNING:** If you are using a NAS, you must also stop the clusters between NAS units. When restarting the subsystem, you must restart the clusters (TagmaStore only).

##### **Example:**

```
% auopt -unit df500a1 -lock off -keyfd a :
Password:
Are you sure you want to unlock the option? (y/n [n]): y
The option is unlocked.
In order to complete the setting, it is necessary to reboot the subsystem.
Host will be unable to access the subsystem while restarting. Host applications
that use the subsystem will terminate abnormally. Please stop host access before
you restart the subsystem.
Also, if you are logging in, the login status will be canceled when restarting b
egins.
Do you agree with restarting? (y/n [n]): y
Are you sure you want to execute? (y/n [n]): y
Now restarting the subsystem. Start Time hh:mm:ss
The subsystem restarted successfully.
%
```

The following example enables the SNMP fee-based option that requires rebooting array subsystem df500a1.

**Example:**

```
% auopt -unit df500a1 -option SNMP -st enable
Password:
Are you sure you want to enable the option? (y/n [n]): y
The option has been set successfully.
In order to complete the setting, it is necessary to reboot the subsystem.
Host will be unable to access the subsystem while restarting. Host applications
that use the subsystem will terminate abnormally. Please stop host access before
you restart the subsystem.
Also, if you are logging in, the login status will be canceled when restarting b
egins.
Do you agree with restarting? (y/n [n]): y
Are you sure you want to execute? (y/n [n]): y
Now restarting the subsystem. Start Time hh:mm:ss
The subsystem restarted successfully.
%
```

**Note:** It may take time for an array subsystem to respond, depending on the condition of the array subsystem. If it does not respond after 10 minutes or more, check the condition of the array subsystem.

The following example unlocks the LUN Security fee-based option that does not require rebooting array subsystem df500a1 by using the key FD.

**Example:**

```
% auopt -unit df500a1 -lock off -keyfd a :
Password:
Are you sure you want to unlock the option? (y/n [n]): y
The option is unlocked.
%
```

The following example installs the LUN Manager fee-based option that does not require rebooting array subsystem df700a1 by using the license key file.

**Example:**

```
% auopt -unit df700a1 -lock off -licensefile d:\xxxxxxx.xxx
Password:
No. Option Name
  1 LUN-MANAGER
Please specify the number of the option to install. When you install all options,
input 'all'. Input 'q', then break. (number/all/q[all]): 1
Are you sure you want to install the option? (y/n [n]): y

Option Name          Result
LUN-MANAGER          Unlock

The process was completed.
%
```

## 4.6.4 Displaying/Setting Drive Restoration Control Information

- **Command name**

audrecopt

- **Format**

**9200, 9500V, WMS100, AMS200, and AMS500:**

```
audrecopt -unit unit_name -refer
```

**9200 and 9500V:**

```
audrecopt -unit unit_name -set
[ -restor back | normal | priority ] [ -auto enable | disable ] [
-sparing rwv | rw | not ] [ -interval interval_time ] [ -size n ]
```

**WMS100, AMS200, and AMS500:**

```
audrecopt -unit unit_name -set
[ -restor back | normal | priority ] [ -auto enable | disable ]
[ -sparing rwv | rw | not ] [ -interval interval_time ] [ -size n
][ -spare variable | fixed ] [ -allunitnocopyback enable | disable ]
```

- **Description**

This command displays or sets the drive restoration control information.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem in which the drive restoration control information is to be displayed or set.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "(period)", "@", or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays drive restoration control information.
-set	Sets drive restoration control information.
-restor back   normal   priority	Specifies the drive restoration mode.  <b>back:</b> Executes restoration during the interval of the host command process.  <b>normal:</b> Prioritizes the command from the host and executes restoration every certain interval after the host command terminates.  <b>priority:</b> Executes restoration every certain interval with higher priority than that of the command from the host.
-auto enable   disable	Specifies whether or not to automatically start the copy from the spare drive (copy-back)

Options	Description
-sparing rwv   rw   not	Specifies the operating mode of dynamic sparing. <b>rwv:</b> When the count of either the Read/Write errors or the online verify errors exceed a predetermined threshold value, dynamic sparing starts. <b>rw:</b> When the count of Read/Write errors exceed a predetermined threshold value, dynamic sparing starts. <b>not:</b> Dynamic sparing will not start even if the count of Read/Write errors or online verify errors exceed a predetermined threshold value.
-interval interval_time	Specifies the interval for executing restoration. Specify the time using a value from 0 to 255 in units of 10 ms. The default value is 10, which executes restoration at an interval of 100 ms.
-size n	Specifies the unit of restored data per single operation in the restoration process. Specify a value of a multiple of 32 between 32 and 65,504 in units of 512 bytes. The default value is 32, which restores 16 k bytes of data in a single operation. However, when the micro program version of the 9500V is x6x5 or later, or AMS/WMS, the value of the range of 128 to 65,408 is specified by a multiple of 128. Specifying 128 restores 64 k bytes of data in a single operation.
-spare variable   fixed	Specifies the operating mode of the spare drive. <b>variable:</b> Active spare mode (Non-copyback) <b>fixed:</b> Fixed spare mode (Copyback)
-allunitnocopyback enable   disable	Specify whether to set the Applying No Copy Back Mode on All the Units effective or ineffective. <b>enable:</b> Enables the Applying No Copy Back Mode on All the Units. <b>disable:</b> Disables the Applying No Copy Back Mode on All the Units.

- **Examples**

The following example displays the drive restoration control information of array subsystem df600a1.

**Example:**

```
% audrecopt -unit df600a1 -refer
Password:
Drive Restoration Mode      : Interleave (Normal)
Drive Restoration          : Automatically
Dynamic Sparing            : Executing (Read/Write & Online Verify)
Interval Time [10ms]      : 0
Processing Unit Size [blocks] : 128
%
```

The following example sets the drive restoration control information for array unit df600a1.

**Example:**

```
% audrecopt -unit df600a1 -set -restor normal
Password:
%
% audrecopt -unit df600a1 -refer
Password:
Drive Restoration Mode      : Interleave(Normal)
Drive Restoration          : Automatically
Dynamic Sparing            : Execution(Read/Write & Online Verify)
Interval Time [10ms]       : 0
Processing Unit Size [blocks] : 128
%
```

The following example displays the drive restoration control information of array unit df700a1.

**Example:**

```
% audrecopt -unit df700a1 -refer
Password:
Drive Restoration Mode      : Interleave(Normal)
Drive Restoration          : Automatically
Dynamic Sparing            : Executing(Read/Write & Online Verify)
Interval Time [10ms]       : 0
Processing Unit Size [blocks] : 128
Spare Drive Operation Mode  : Variable
Applying No Copy Back Mode on All the Units : Disable
%
```

## 4.6.5 Displaying/Setting Online Verify Information

- **Command name**

auonlineverify

- **Format**

**9200, 9500V, AMS200, and AMS500:**

```
auonlineverify -unit unit_name -refer
```

**9200:**

```
auonlineverify -unit unit_name -set
                [ -verify enable | disable ] [ -time time ]
```

**9500V, AMS200, and AMS500:**

```
auonlineverify -unit unit_name -set
                [ -verify enable | disable ]
                [ -skipverify on | off ]
```

- **Description**

This command displays or sets online verify information

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem to display and set online verify information. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "(period)", "@", or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays the online verify information.
-set	Sets the online verify information.
-verify enable   disable	Specifies whether or not to perform an online verify test.
-time time	Specifies the idling time (0 to 30 seconds). If "0" is specified, the idling time will be set to 10 seconds.
-skipverify on   off	<b>on:</b> Enables skip verify. <b>off:</b> Disables skip verify.

- **Examples**

The following example displays the online verify information of array subsystem df600a1.

**Example:**

```
% auonlineverify -unit df600a1 -refer
Password:
Online verify test : Yes
Skip Verify       : OFF
%
```

The following example sets the online verify information to array subsystem df500a1, then displays the information.

**Example:**

```
% auonlineverify -unit df500a1 -set -verify enable -time 5
Password:
%
% auonlineverify -unit df500a1 -refer
Password:
Online verify test : Yes
Idling time [sec] : 5
%
```

#### 4.6.6 Displaying/Setting Command Device Information

- **Command name**

aucmddev

- **Format**

**9200, 9500V, AMS200, and AMS500:**

```
aucmddev -unit unit_name -refer
```

```
aucmddev -unit unit_name -rm -dev n [ -dev n ]
```

**When the command device is not set:**

**9200:**

```
aucmddev -unit unit_name -set [ -id string ] -dev n lu [ -dev n lu]
```

**9500V, AMS200 and AMS500:**

```
aucmddev -unit unit_name -set -dev n lu [ enable | disable ]
[ -dev n lu [ enable | disable ] ]
```

– **When the command device has previously been set:**

**9200:**

```
aucmddev -unit unit_name -set -dev n lu
```

**9500V, AMS200, and AMS500:**

```
aucmddev -unit unit_name -set -dev n lu [ enable | disable ]
aucmddev -unit unit_name -chg -dev n enable | disable
[ -dev n lu [ enable | disable ] ]
```

**AMS200 and AMS500:**

```
aucmddev -unit unit_name -availablelist
```

- **Description**

This command displays or sets the command device and the serial ID.

- Options

Options	Description
-unit unit_name	Specifies the name of an array subsystem in which the command device information is to be displayed or set. Specify the name in less than or equal to 16 characters using alphanumerics, special symbols “-” (minus), “_” (underline), “.” (period), “@,” or “ ” (space)”. Space in front and in the rear of the character string is removed.
-refer	Displays the command device and the serial ID.
-set	Sets the command device and the serial ID.
-rm	Deletes the command device.
-chg	Changes the protection function of RAID Manager (CCI).
-availablelist	Displays a list of logical unit numbers, which are eligible for the command device.
-id string	Specifies the serial ID in 4 characters using numeric characters (0000 to 9999).
-dev n lu [ enable   disable ]	Specifies the parameter of the command device. When the specification of enable or disable is omitted, the protection function of RAID Manager (CCI) is set ineffective. <b>n</b> : Command device number (1 or 2) <b>lu</b> : Logical unit number <b>enable</b> : Enables the protection function of RAID Manager (CCI) <b>disable</b> : Disables the protection function of RAID Manager (CCI)
-dev n	Specifies the command device number to be deleted. <b>n</b> : Command device number (1 or 2)

- Examples

The following example displays command device set-up information for array subsystem df500a1.

**Example:**

```
% aucmddev -unit df500a1 -refer
Password:
Serial ID
  0123

Command device  LUN
1                1
2                10
%
```

The following example sets up array subsystem df500a1 as command device 1, with its logical number set to 0.

**Example:**

```
% aucmddev -unit df500a1 -set -dev 1 0
Password:
%
```

## 4.6.7 Rebooting

- **Command name**

aureboot

- **Format**

aureboot -unit unit\_name

- **Description**

This command reboots the subsystem.

- **Options**

Options	Description
-unit unit_name	Specifies the name of the array subsystem that is to be rebooted. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "@", or " (space)". Space in front and in the rear of the character string is removed.

- **Examples**

The following example reboots array subsystem df500a1.

**WARNING:** This operation will require stopping I/O from the host and rebooting.

**WARNING:** If you are using TrueCopy or TrueCopy Extended Distance (TagmaStore only), change the pair status to PSUS before you reboot.

**WARNING:** If you are using a NAS, you must also stop the clusters between NAS units. When restarting the subsystem, you must restart the clusters. (TagmaStore only)

**Example:**

```
% aureboot -unit df500a1
Password:
Do you want to restart the subsystem? (y/n [n]): y
Host will be unable to access the subsystem while restarting. Host applications
that use the subsystem will terminate abnormally. Please stop host access before
you restart the subsystem.
Also, if you are logging in, the login status will be canceled when restarting b
egins.
Do you agree with restarting? (y/n [n]): y
Are you sure you want to execute? (y/n [n]): y
Now restarting the subsystem. Start Time hh:mm:ss
The subsystem restarted successfully.
%
```

The following example reboots array subsystem df500a1 whose status is stopping under pseudo-plan.

**Example:**

```
% aureboot -unit df500a1
Password:
The subsystem has stopped under pseudo-plan.
Do you want to restart the subsystem? (y/n [n]): y
Now restarting the subsystem. Start Time hh:mm:ss
The subsystem restarted successfully.
%
```

**Note:** It may take time for an array subsystem to respond, depending on the condition of the array subsystem. If it does not respond after 10 minutes or more, check the condition of the array subsystem.

## 4.6.8 Displaying/Setting the Mode Select Parameters

- **Command name**

aumodeselect

- **Format**

```
aumodeselect -unit unit_name -refer -page0A -lu lun
aumodeselect -unit unit_name -set -page0A -lu lun
-QErr 1 | 0
```

- **Description**

This command displays or sets the Mode Select parameters.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem to display and set the Mode Select parameters. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “-” (minus), “_” (underline), “.” (period), “@,” or “(space)”. Space in front and in the rear of the character string is removed.
-refer	Displays the Mode Select parameters.
-set	Sets the Mode Select parameters.
-page0A	Specifies the page 0A.
-lu lun	Specifies the LU number of an LU to set the Mode Select parameters.
-QErr 1   0	Specifies the Queue Error Management parameter. <b>1:</b> set “1” to the Queue Error Management parameter. <b>0:</b> set “0” to the Queue Error Management parameter.

- **Examples**

The following example displays the mode select parameters for array subsystem df500a1.

**Example:**

```
% aumodeselect -unit df500a1 -refer -page0A -lu 0
Password:
Mode Select Parameter Page 0A
  LUN : 0
      Queue Error Management : 0
%
```

The following example sets the mode select parameters for array subsystem df500a1.

**Example:**

```
% aumodeselect -unit df500a1 -set -page0A -lu 0 -QErr 1
Password:
Are you sure you want to set the Page 0A configuration? (y/n [y]): y
The Page 0A configuration has been set successfully.
%
```

## 4.6.9 Displaying/Setting LU Pre-fetch Information

- **Command name**

aulupre

- **Format**

**9200 and 9500V:**

aulupre -unit unit\_name -refer

aulupre -unit unit\_name -lu lun -stag num | default

- **Description**

This command displays or sets the LU pre-fetch information.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem to display and set the LU pre-fetch information. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “-” (minus), “_” (underline), “.” (period), “@,” or “(space)”. Space in front and in the rear of the character string is removed.
-refer	Displays the LU pre-fetch information.
-set	Sets the Mode Select parameters.
-lu lun	Specifies the LU number of an LU whose pre-fetch information is to be set.
-stag num   default	Specifies the pre-fetch staging size. <b>num:</b> Specifies the number of sub blocks (1 to 65535). <b>default:</b> Sets the default size.

- **Examples**

The following example displays the LU pre-fetch information for array subsystem df600a1.

**Example:**

```
% aulupre -unit df600a1 -refer
Password:
  LUN      Staging Size
    0             512
    1             512
%
```

The following example sets the LU pre-fetch information for array subsystem df600a1.

**Example:**

```
% aulupre -unit df600a1 -lu 0 -stag 512
Password:
%
```

#### 4.6.10 Releasing/Splitting the Hi-Copy Pair Information

- **Command name**

auhicopy

- **Format**

**9500V:**

```
auhicopy -unit unit_name -refer [ -lu lun . . . ]
auhicopy -unit unit_name -split -lu lun
```

- **Description**

This command displays or splits the Hi-Copy information.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem for which to display or split the Hi-Copy information. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “- (minus),” “_ (underline),” “.” (period),” “@,” or “ (space)”. Space in front and in the rear of the character string is removed.
-refer	Displays the Hi-Copy pair information.
-split	Splits the Hi-Copy pair.
-lu lun . . .	Specifies the LU number to display the Hi-Copy pair information. When doing that, enter the LU number using numerals or a hyphen(s) (-). If the specification is omitted, all the pair information is displayed. Single or multiple LU numbers can be specified. <b>Single specification:</b> Specifying a single LU number. <i>Example:</i> -lu 3 <b>Multiple specification:</b> Specifying multiple LU numbers. <i>Example:</i> -lu 0 1 2 3 4 5 8 -lu 0-5 8
-lu lun	Specifies the LU number to split the Hi-Copy pair.

- **Examples**

The following example displays the Hi-Copy information for array subsystem df600a1.

**Example:**

```
auhicopy -unit df600a1 -refer
```

Pair	Rate of	Remote Information				
LUN	Attribute	Status	Difference	Type	Serial No.	LDEV No.
100	S-VOL	RD	---	0450	22222222	0001
200	P-VOL	R/W	60%	0450	11111111	021F
300	S-VOL	ERR	30%	0450	01234567	FFFF

%

The following example sets the Hi-Copy pair and shows LU 100 is connected in array subsystem df600a1.

**Example:**

```
% auhicopy -unit df600a1 -split -lu 100
Password:
Are you sure you want to split the pair of logical unit 100? (y/n [n]): y
If you split the pair, all the area of LU will be copied when you create it again.
Do you want to continue processing? (y/n [n]): y
The setting ended normally.
%
```

#### 4.6.11 Displaying/Setting the DM-LU Information

- **Command name**

audmlu

- **Format**

**AMS200 and AMS500:**

```
audmlu -unit unit_name -refer
audmlu -unit unit_name -set -lu lun
audmlu -unit unit_name -rm -lu lun
audmlu -unit unit_name -availablelist
```

- **Description**

This command displays or sets the DM-LU information.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem for which to display or set the DM-LU information. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "(period)", "@," or "(space)". Space in front and in the rear of the character string is removed.
-refer	Displays the DM-LU pair information.
-set	Sets the DM-LU information.
-rm	Deletes the DM-LU information.
-availablelist	Displays a list of logical unit numbers that eligible for the DM-LU.
-lu lun	Specifies the LU number of an LU whose DM-LU information is to be set or deleted.

- **Examples**

The following example displays the DM-LU information for array subsystem df700a1.

**Example:**

```
% audmlu -unit df700a1
Password:
  LUN Capacity   RAID Group RAID Level D-CTL C-CTL Type Status
   0  5.0Gbyte         0      5 (4D+1P)    0     0  FC  Normal
%
```

## 4.6.12 Displaying/Setting the iSCSI Port Information

- **Command name**

`aiscsi`

- **Format**

**AMS200 and AMS500:**

```
aiscsi -unit unit_name -refer
```

```
aiscsi -unit unit_name -set ctl_no port_no
      [ -addr inet_addr ]
      [ -mask netmask ]
      [ -gate gateway ]
      [ -portnum port_num ]
      [ -timer time ]
```

- **Description**

This command displays or sets the iSCSI information.

- **Options**

Options	Description
<code>-unit unit_name</code>	Specifies the name of the array subsystem to display or set the iSCSI port information. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "(period)", "@," or "(space)". Space in front and in the rear of the character string is removed.
<code>-refer</code>	Displays the iSCSI port information.
<code>-set ctl_no port_no</code>	Specifies the iSCSI port information. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B)
<code>-addr inet_addr</code>	Specifies the IP address of the iSCSI port. <b>inet_addr:</b> IP address
<code>-mask netmask</code>	Specifies the subnet mask. <b>netmask:</b> Subnet mask
<code>-gate gateway</code>	Specifies an individual default gateway. <b>gateway:</b> Default gateway
<code>-portnum port_num</code>	Specifies the port number for TCP/IP communication. <b>port_num:</b> Port number
<code>-timer time</code>	Specifies the Keep Alive Timer. <b>time:</b> Keep Alive Timer (second)

- **Examples**

The following example displays the iSCSI port information for array unit df700.

**Example:**

```
% aiscsi -unit df700 -refer
Password:
LAN Information
  Port 0A
    IP Address   : 125.0.9.98
    Subnet Mask  : 255.255.255.0
    Default Gateway : 0.0.0.0
    Port Number  : 3260
    Keep Alive Timer [sec.] : 60
    MTU         : 1500
    Ethernet Address : 00:07:E9:E3:DD:CE
    Result      : Normal
  Port 0B
    :
%
```

The following example sets the iSCSI port information for port 0B of array unit df700.

**Example:**

```
% aiscsi -unit df700 -set 0 B -addr 125.1.9.98
Password:
Are you sure you want to set the iSCSI port information? (y/n [n]): y
When setting except Keep Alive Timer starts, the subsystem stops access to all
ports on the controller side with setting port from the host.
Before setting, stop access to all ports on the controller side with setting
port from the host.
Do you want to continue processing? (y/n [n]): y
The iSCSI port information has been set successfully.
%
```

#### 4.6.13 Displaying/Setting the iSNS Information iSNS information

- **Command name**

`auisns`

- **Format**

**AMS200 and AMS500:**

`auisns -unit unit_name -refer`

```
auisns -unit unit_name -set ctl_no port_no
      [ -server used | notused ]
      [ -addr inet_addr ]
      [ -portnum port_num ]
```

- **Description**

This command displays or sets the iSNS information.

- **Options**

Options	Description
<code>-unit unit_name</code>	Specifies the name of the array subsystem to display or set the iSNS port information. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_", ".", "@", or " ". Space in front and in the rear of the character string is removed.
<code>-refer</code>	Displays the iSNS information.
<code>-set ctl_no port_no</code>	Specifies the iSNS information. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B)
<code>-server used   notused</code>	Specifies whether or not to use the iSNS server. <b>used:</b> Use the iSNS server. <b>notused:</b> Does not use the iSNS server.
<code>-addr inet_addr</code>	Specifies the IP address of iSNS server. <b>inet_addr:</b> IP address
<code>-portnum port_num</code>	Specifies the port number to be used for TCP/IP communication. <b>port_num:</b> Port number

- **Examples**

The following example displays the iSNS information for array unit df700.

**Example:**

```
% auisns -unit df700 -refer
Password:
Port 0A
  Server Use      : Used
  IP Address     : 192.168.10.15
  Port Number    : 3205
Port 0B
  :
%
```

#### 4.6.14 Displaying/Setting the CHAP User Information

- **Command name**

auchapuser

- **Format**

**AMS200 and AMS500:**

```
auchapuser -unit unit_name -refer
[ ctl_no port_no [ -user user_name | -userfile file_name ] ]
```

```
auchapuser -unit unit_name -add ctl_no port_no
-user user_name | -userfile file_name
[ -tno target_no ... | -talias target_alias ... ]
```

```
auchapuser -unit unit_name -chg ctl_no port_no
-user user_name | -userfile file_name
[ -newuser new_user_name | -newuserfile file_name ]
[ -secret ]
```

```
auchapuser -unit unit_name -rm ctl_no port_no
-user user_name | -userfile file_name
```

```
auchapuser -unit unit_name -assign ctl_no port_no
-user user_name | -userfile file_name
-tno target_no ... | -talias target_alias ...
```

```
auchapuser -unit unit_name -release ctl_no port_no
-user user_name | -userfile file_name
-tno target_no ... | -talias target_alias ... | -all
```

```
auchapuser -unit unit_name -availablelist ctl_no port_no
-user user_name | -userfile file_name
```

- **Description**

This command displays or sets the CHAP user information.

■ Options

Options	Description
-unit unit_name	Specifies the name of the array unit to display or set the CHAP user information. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", "." (period), "@", or " (space)". Space in front and in the rear of the character string is removed.
-refer [ ctl_no port_no ]	Displays the CHAP user information. The CHAP user information list is displayed after it is sorted by the CHAP user name. <b>When the ctl_no port_no is not specified:</b> CHAP user name of the all ports is displayed. <b>When the ctl_no port_no is specified:</b> CHAP user name of the specified port is displayed. When the -user or -userfile option specified, the target that has been assigned to the specified CHAP user is also displayed.
-add ctl_no port_no	Sets the CHAP user information. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B)
-chg ctl_no port_no	Changes the CHAP user information. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B)
-rm ctl_no port_no	Deletes the CHAP user information. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B)
-assign ctl_no port_no	Assigns the CHAP user to the target. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B)
-release ctl_no port_no	Releases the target from the CHAP user. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B)
-availablelist ctl_no port_no	A list of targets that can be assigned to the specified controller number, port number, and CHAP user is displayed. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B)
-user user_name	Specifies the CHAP user name. <b>user_name:</b> CHAP user name ( <b>Note 1</b> )
-userfile file_name	Specifies the file (path) name when setting the CHAP user name using a file. <b>file_name:</b> File(path) name
-tno target_no ...	Specifies the target number. Single or multiple target numbers can be specified. <b>Single specification:</b> Specifying a single target number. <b>Example:</b> -tno 3 <b>Multiple specification:</b> Specifying multiple target numbers. <b>Example:</b> -tno 0 1 2 3 4 5 8 -tno 0-5 8

Options	Description
	<b>target_no:</b> Target number
-talias target_alias ...	Specifies the target alias. Space in front and in the rear of the character string is removed. Cannot specify spaces only. Single or multiple target numbers can be specified. <b>Single specification:</b> Specifying a single target alias. <i>Example:</i> -talias solaris <b>Multiple specification:</b> Specifying multiple target aliases. <i>Example:</i> -talias irix01 solaris win001 target_alias: Target alias ( <b>Note 2</b> )
-newuser new_user_name	Specifies CHAP user name to be changed. new_user_name: CHAP user name ( <b>Note 1</b> )
-newuserfile file_name	Specifies the file (path) name when changing the CHAP user name using a file. file_name: File(path) name
-secret	Specifies this option when changing Secret. ( <b>Note 3</b> )
-all	Specifies this option when releasing all targets that have been assigned to the specified CHAP user.

**Note 1:** For CHAP user name, less than or equal to 256 ASCII characters (alphabetic characters and following symbols) can be used. (. - + @ \_ = : / [ ] , ~ (space)).

**Note 2:** For target alias, less than or equal to 32 ASCII characters (alphabetic characters, numerals, and symbols) can be used. The following symbols cannot be used. (\,/,;, , ,;;,\*;?, "<, >, |, ')

**Note 3:** For Secret, enter the Secret from 12 through 32 alphanumeric characters. The following symbols can be used. (. - + @ \_ = : / [ ] ~ (space))

**Note 4:** At the Windows 98 MS-DOS Prompt, the input buffer is up to 128 characters by default. Use the option, -userfile or -newuserfile, when a long CHAP User name is specified. The first line of the specified file is set for CHAP User name, and the second line and the following are invalid.

- **Examples:**

The following example displays the CHAP information for array unit df700.

**Example:**

```
% auchapuser -unit df700 -refer
Port 0A
  User Name
    mng001
    mainte001
Port 0B
  :
%
```

## 4.6.15 Displaying/Setting the Ping

- **Command name**

auping

- **Format**

**AMS200 and AMS500:**

```
auping -unit unit_name -refer
```

```
auping -unit unit_name -start ctl_no port_no  
-addr inet_addr
```

- **Description**

This command sends the ping and displays the result.

- **Options**

Options	Description
-unit unit_name	Specifies the name of the array unit for which to send a ping and display the result. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_", ".", "@", or " ". Space in front and in the rear of the character string is removed.
-refer	Displays the result of Ping execution.
-start ctl_no port_no	Sends the Ping from the specified port. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B)
-addr inet_addr	Specifies the IP address. <b>inet_addr:</b> IP address

- **Examples**

The following example issues a ping to array unit df700.

**Example:**

```
% auping -unit df700 -start 0 A -addr 192.168.15.207  
Password:  
Are you sure you want to start the ping test? (y/n [n]): y  
When starting the ping test, the access to the specified controller from the host  
may be delayed.  
Do you want to continue processing? (y/n [n]): y  
The ping test has been started.  
Please check a result as -refer option.  
%
```

The following example displays the result of array unit df700.

**Example:**

```
% auping -unit df700 -refer
Password:
Port  Destination IP Address  Success Count  Status
0A   192.168.15.207           0/ 5( 0%)     Complete
0B   ---                       ---           Not Executing
1A   ---                       ---           Not Executing
1B   ---                       ---           Not Executing
%
```

#### 4.6.16 Referencing/Setting the Backend Diagnosis Information

- **Command name**

aubackenddiag

- **Format**

```
aubackenddiag -unit unit_name -refer
```

```
aubackenddiag -unit unit_name -set -autodiagthres num
```

- **Description**

This command refers to or sets the backend diagnosis information.

- **Options**

Options	Description
-unit unit_name	Specify the name of the array unit to reference and set the backend diagnosis information. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “- (minus),” “_ (underline),” “.” (period),” “@,” or “ (space)”. Space in front and in the rear of the character string is removed.
-refer	References the backend diagnosis information.
-set	Sets the backend diagnosis information.
-autodiagthres num	Specify the auto diagnosis threshold.

- **Examples**

The following example references the backend diagnosis information of array unit df700.

**Example:**

```
% aubackenddiag -unit df700 -refer
Password:
Auto Diagnosis Threshold : 10
%
```

The following example sets the backend diagnosis information of array unit df700.

**Example:**

```
% aubackenddiag -unit df700 -set -autodiagthres 255
Password:
Are you sure you want to set the backend diagnosis information? (y/n [n]): y
The backend diagnosis information has been set successfully.
%
```

## 4.7 Configuration File Output and Configuration Setting by File

This section explains how to save the array subsystem configuration information to a text file, or to set the array subsystem configuration using a text file. The configuration information that is saved to the text file is the status of the system parameters and the constituent parts of the RAID/LU and the array subsystem. The configuration to be set is the system parameters and RAID/LU. The status of the constituent parts of the array subsystem cannot be set.

The configuration information is handled with separate text files for the system parameters and for RAID/LU.

The copying of configuration between array subsystems can be carried out, by saving a text file of the configuration from an array subsystem, and then by using the saved text file to set another array subsystem.

Editing a text file to set an array subsystem can be done, but it is recommended that this function be used only for the configuration of the same array subsystem. To change the configuration, it is recommended that you use the configuration procedures.

### 4.7.1 File Output of Configuration—System Parameters

- **Command name**

`ausyspout`

- **Format**

**9200 and 9500V:**

`ausyspout -unit unit_name -file file_name`

- **Description**

This command outputs the contents of the system parameters, which are set in the array subsystem in a specified file, in text format.

- **Options**

Options	Description
<code>-unit unit_name</code>	Specifies the name of an array subsystem whose system parameters are to be output into the file. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_", ".", "@", or " ". Space in front and in the rear of the character string is removed.
<code>-file file_name</code>	Specifies the name the file (path) to output the system parameters.

## ■ Examples

The following example outputs the setting information of the system parameters of array subsystem df500a1 to file: sysprm.txt to the directory where the Storage Navigator is installed.

### **Example:**

```
% ausyspout -unit df500a1 -file sysprm.txt  
%
```

The format of the output file consists of the following items. The layout of the output file is shown in Figure 4.7.

- File header
- Registration name with the Storage Navigator of the array subsystem.
- Output time (time of the machine where the Storage Navigator is installed).
- Microprogram revision
- Array subsystem type
- Common controller parameters
- Controller 0 parameters
- Controller 1 parameters
- Direction for FD backup

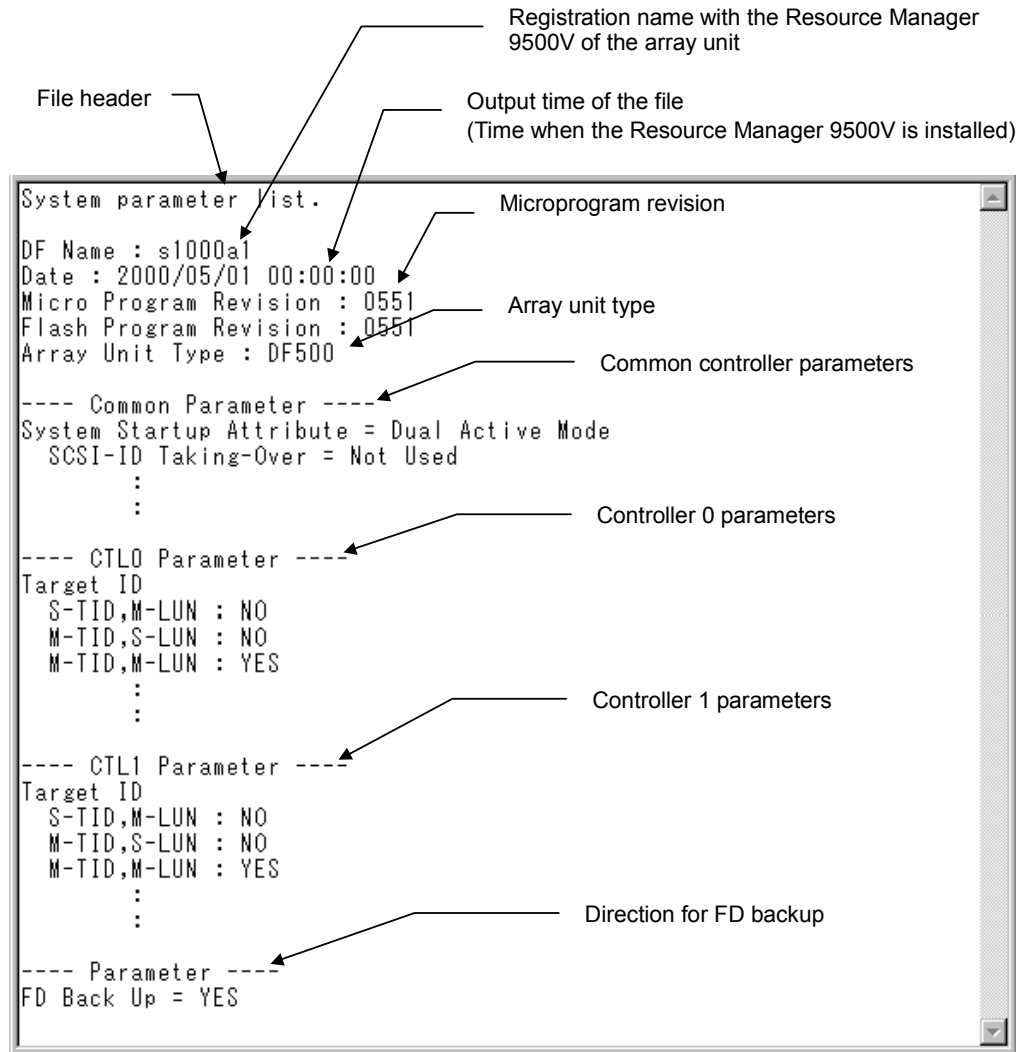


Figure 4.7 Format of System Parameter Output File

- **Common Controller Parameters**

The common system parameters of the array subsystem are output. An output example of the system parameters of 9200 is shown in Figure 4.8.

```

---- Common Parameter ----
System Startup Attribute = Dual Active Mode
SCSI ID/Port ID Take-over Mode = ---
Default Controller
  Port A = ---
  Port B = ---
Data Share Mode = Used
Host Connection Mode 1
  Port 0A = Standard Mode
  Port 0B = Standard Mode
  Port 1A = Standard Mode
  Port 1B = Standard Mode
Host Connection Mode 2
  Port 0A
    VxYM DMP mode enable = OFF
    ODE Mapper mode enable = OFF
    HP Connection mode enable = ---
    Report inquiry page 83H = ON
    UA(06/2A00) suppress mode enable = OFF
    HISUP mode enable = OFF
    CCHS convert mode enable = OFF
  Port 0B
    VxYM DMP mode enable = OFF
    ODE Mapper mode enable = OFF
    HP Connection mode enable = ---
    Report inquiry page 83H = ON
    UA(06/2A00) suppress mode enable = OFF
    HISUP mode enable = OFF
    CCHS convert mode enable = OFF
  Port 1A
    VxYM DMP mode enable = OFF
    ODE Mapper mode enable = OFF
    HP Connection mode enable = ---
    Report inquiry page 83H = ON
    UA(06/2A00) suppress mode enable = OFF
    HISUP mode enable = OFF
    CCHS convert mode enable = OFF
  Port 1B
    VxYM DMP mode enable = OFF
    ODE Mapper mode enable = OFF
    HP Connection mode enable = ---
    Report inquiry page 83H = ON
    UA(06/2A00) suppress mode enable = OFF
    HISUP mode enable = OFF
    CCHS convert mode enable = OFF
Serial Number =
Option 1
  Drive Detach mode enable = OFF
Option 2
  Multipath(Controller) = OFF
  PROCOM mode enable = OFF
  Report status (normal / warning) = OFF
  Multipath (Array Unit) = OFF
  Turbo LU Warning = OFF
Data Striping Size = 64KB
Operation if the Processor failures Occurs = Reset a Fault
INQUIRY Information
  Command Queuing = ON
  ANSI Version = ---
  Vendor ID =
  Product ID =
  ROM Microprogram Version =
  RAM Microprogram Version =
Web Title
  Web Title = ""
Cache Mode = All OFF

```

**Figure 4.8** Output Example of Common Parameters

The common parameters are shown in Table 4.1.

**Table 4.1 Common Parameters**

No.	Parameter	Option	9200	9500V
1	System Startup Attribute	-SystemStartup	0	0
	Single Mode	Single	0	0
	Dual Active Mode	DualIDTake	0	0
	Hot Standby Mode	DualNotIDTake	0	0
	SCSI ID/Port ID Take-over Mode			
	Used	HotIDTake	0	0
	Not Used	HotNotIDTake	0	0
	Default Controller	-TakingID	0	0
	Data Share Mode	-DataShare	0	0
2	Spare Disk	-SpareDisk	x	x
	One spare disk is valid	one	x	x
	Two spare disk is valid	two	x	x
	Spare disk not mounted	not	x	x
3	Host Connection Mode 1	-HostConnenction	0	x
	Standard Mode	standard	0	x
	Open VMS Mode	OpenVMS	0	x
	TRESSPASS Mode	TRESSPASS	0	x
	Wolfpack Mode	WolfPack	0	x
	IBM7135 I/O path switch emulation Mode	IBM7135	0	x
	NCR I/O path switch emulation Mode	NCR	0	x

No.	Parameter	Option	9200	9500V
4	Host Connection Mode 2			
	VxVM DMP mode enable	-VxVM	O	x
	ODE Mapper mode enable	-OdeMappar	O	x
	HP Connection mode enable	-HP-UX	O	x
	Report inquiry page 83H	-ReportInquiry	O	x
	UA (06/2A00) suppress mode enable	-UASuppress	O	x
	HISUP mode enable	-HISUP	O	x
	CCHS convert mode enable	-CCHS	O	x
	Standard INQUIRY data expand mode	-InquiryStandard	O	x
	HP Connection mode 2 enable	-HPUX2	O	x
	HBA WWN Report mode	-HbaWwnReport	O	x
	NACA mode	-NACA	O	x
	SUN Cluster Connection Mode	-SUNCluster	O	x
	Persistent RSV Cluster Mode	-PRSV	O	x
	ftServer Connection Mode 1	-ftSRV1	O	x
ftServer Connection Mode 2	-ftSRV2	O	x	
SRC Read Command Reject Mode	-SRCReadReject	O	x	
5	Serial Number	-SerialNumber	O	x
	Delay Planned Shutdown	-DelayPlannedShutdown	O	O
6	Drive Capacity (ROW LAST LBA)	-DriveCapacity	x	x
7	Option 1			
	VxVM DMP mode enable	-VxVM	x	x
	CLAM mode enable	-CLAM	O	x
	SUN Solaris2.5.1 mode enable	-Solaris	O	x
	Drive Detach mode enable	-DriveDetach	O	O
	MP5400 mode enable	-MP5400	x	x
	ODE Mapper mode enable	-OdeMappar	x	x
	HP Connection mode enable	-HPUX	x	x

No.	Parameter	Option	9200	9500V
8	Option 2			
	Multi path OController)	-MultipathController	O	x
	Report inquiry page 83H	-ReportInquiry	x	x
	PROCOM mode enable	-PROCOM	O	O
	Report status Onormal/warning)	-ReportStatus	O	O
	Multi path OArray subsystem)	-MultipathArrayUnit	O	x
	Turbo LU Warning	-LuCacheWarning	O	O
	NX mode enable	-NX	O	O
	Auto Reconstruction mode enable	-AutoReconst	O	O
	Forced Write Through mode enable	-ForcedWriteThrough	O	O
	Changing Logical Unit Mode 1	-LUChanging1	O	O
	Multiple Stream Mode	-MultiStream	O	O
	Multiple Stream Write Mode	-MultiStreamWrite	x	O
	Multiple Stream Read Mode	-MultiStreamRead	x	O
	High-speed Sequential Write Mode	-HiSpeedSeqWrite	x	O
	ShadowImage I/O Switch Mode	-ShadowImage IOSwitch	x	O
	Synchronize Cache All Execution Mode	-SyncCacheAllExec	x	O
	Synchronize Cache Invalid	-SyncCacheInvalid	x	O
	RAID3 Mode	-RAID3	O	x
	UA O06/2A00) suppress mode enable	-UASuppress	x	x
SGI mode enable	-SGI	x	x	
Port-ID Taking-over enable	-PortIdTaking	x	x	
9	Data Striping Size	-DataStriping	O	x
10	Buzzer	-Buzzer	x	x
11	LU size Report to the Host	-LuSizeReport	O	x
12	SCSI Reset/LIP Mode for all Ports	-ScsiResetLip	x	x
13	Operation if the Processor failures Occurs	-ProcessorFailures	O	O

No.	Parameter	Option	9200	9500V
14	INQUIRY Information			
	Command Queuing	-inquiryCommandQueue	0	0
	ANSI Version	-inquiryAnsiVersion	0	x
	Vendor ID	-inquiryVendor	0	0
	Product ID	-inquiryProduct	0	0
	ROM Microprogram Version	-inquiryRomMicro	0	0
	RAM Microprogram Version	-inquiryRammicro	0	0
15	Cache Mode	-CacheMode	0	x
	All OFF	off	0	x
	Random mode	random	0	x
	Sequential mode	sequential	0	x
	Random & Sequential mode	randseq	0	x
16	Web Title	-WebTitle	0	0
17	Host Connection Mode			
	Link Separation	-LinkSeparation	0	x

Depending on the array subsystem that is connected, there are items that may not require setting; these items will not be saved in the file. If the value of an item in the parameters is given as “---”, it is an item that is not supported in the configuration of the array subsystem.

- **Controller Parameters**

The parameters of the controller in the system parameters of the array subsystem are listed.

```
---- CTL0 Parameter ----
Target ID
S-TID,M-LUN : NO
M-TID,S-LUN : NO
M-TID,M-LUN : YES

Data
Port Target ID H-LUN LUN
0A      0      0      0
0B      0      1      1
Port Type
Port Option
Reset/LIP Mode(Signal)
Port A = OFF
Port B = OFF
Reset/LIP Mode(Process)
Port A = OFF
Port B = OFF
LIP Port All Reset Mode
Port A = OFF
Port B = OFF
Target Reset (Bus Device Reset) Mode
Port A = OFF
Port B = OFF
Reserve Mode
Port A = OFF
Port B = OFF
Logical Unit Reset Mode
Port A = OFF
Port B = OFF
Third Party Process Logout Mode
Port A = OFF
Port B = OFF
ROM Pseudo-response command processing = ---
Save Data pointer response
Port A = ---
Port B = ---
Controller Identifier = Disable
RS232C Error Information Outflow Mode = OFF
Write & Verify Execution Mode = ON
LAN Const
DHCP = OFF
IP Address = 0.0.0.0
Subnet Mask = 0.0.0.0
Default Gateway = 0.0.0.0
Ether Address = 00:00:00:00:00:00
SCSI transfer rate
Port A = ---
Port A = ---
```

Figure 4.9 Output Example of Controller Parameters

The parameters of controller are the items shown in Table 4.2.

**Table 4.2 Parameters of Controller**

No.	Parameter	Option	9200	9500V
1	Target ID	-setSM	0	x
		-rmSM	0	x
		-setMS	0	x
		-rmMS	0	x
		-setMM	0	x
		-rmMM	0	x
2	Port Type	-PortType	x	x
		-PortTypeResetLip	x	x
3	ROM Pseudo-response command processing	-PseudoResponse	0	x
4	Save Data Pointer resource	-SaveDataPointer	0	x
5	Controller Identifier	-ControllerIdentifier	0	x
		-ControllerID	0	x
6	RS232C Error Information Outflow Mode	-Rs232cOutflow	0	0
7	Write & Verify Execution Mode	-WriteVerifyExecution	0	0
8	LAN Const	-ConnectLAN	x	x
		-dhcp	0	0
		-IPAddress	0	0
		-SubnetMask	0	0
		-DefaultGateway	0	0
9	SCSI transfer rate	-sync	0	x

Depending on the array subsystem that is connected, there are items that may not need to be set; these items will not be saved in the file. If the value of an item in the parameters is given as “---”, it is an item that is not supported in the configuration of the array subsystem.

■ **Parameters for Backup Use in the System Parameter Information**

The specification of whether the system parameter information is backed up from the FDD of the array subsystem to FD is shown. The indication is always shown as “YES”.



**Figure 4.10 Output Example for FD Backup Specification**

## 4.7.2 Configuration File Output—Status of RAID/LU and Constituent Parts

- **Command name**

`auconfigout`

- **Format**

**9200 and 9500V:**

`auconfigout -unit unit_name -file file_name`

- **Description**

This command outputs the current RAID/LU configuration and constituent parts status set in an array subsystem to the specified file in a text format.

- **Options**

Options	Description
<code>-unit unit_name</code>	Specifies the name of the array subsystem that outputs the RAID/LU configuration and constituent parts status file.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “- (minus),” “_ (underline),” “.” (period), “@,” or “ (space)”. Space in front and in the rear of the character string is removed.
<code>-file file_name</code>	Specifies the name of a file (path) into which to output configuration information

- **Examples**

The following example outputs RAID/LU configuration information of array subsystem `df600a1`, by the `config.txt` file, into a directory in which the Storage Navigator has been installed.

**Example:**

```
% auconfigout -unit df600a1 -file config.txt
%
```

The format of the output file consists of the following items. The layout of the output file is shown in Figure 4.11.

Figure 4.11 is the layout of the output file for the 9200.

- File header
- Registration name at the Storage Navigator of the array subsystem.
- Output time (time of the machine where the Storage Navigator is installed).
- Microprogram revision
- Array subsystem type
- RAID/LU configuration
- Status of constituent parts

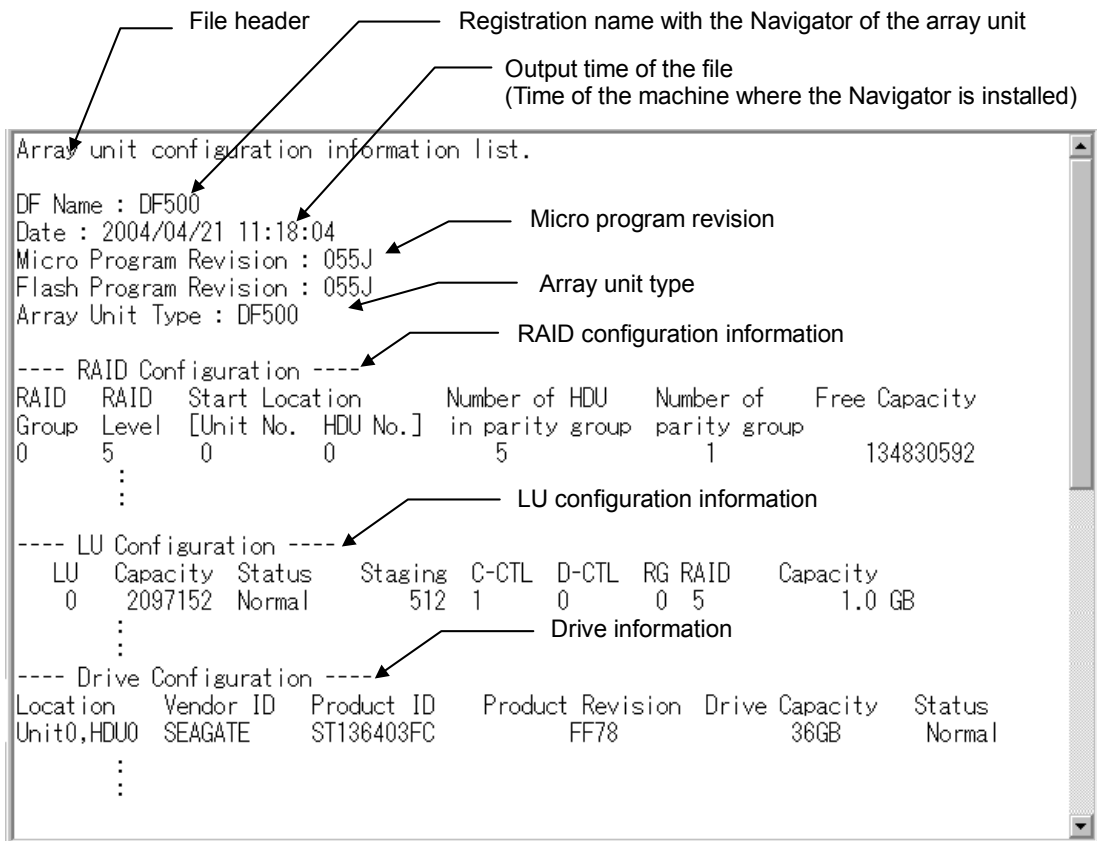


Figure 4.11 RAID/LU Configuration Information Output File Format

```

---- Cache Information ----
      Controller 0
Slot  Capacity  Status
0      256      Normal
      :
      :
---- Fan Information ----
Location  Status
0         Normal
      :
      :
---- Battery Information ----
Location  Status
0         Normal
      :
      :
---- AC Power Information ----
Location  Status
Unit0,AC0 Normal
      :
      :
---- Battery Backup Information ----
Location  Status
0         Normal
      :
      :
---- Loop Information ----
Location  Status
0         Normal
      :
      :
---- ENC Information ----
Location  Status
Unit0,ENC0 Normal
      :
      :

```

Cache information

Fan information

Battery information

AC power information

Battery backup information

Loop information

Enclosure information

Figure 4.11 RAID/LU Configuration Information Output File Format File (continued)

■ **Format of RAID configuration information**

The function outputs the RAID configuration of the array subsystem. RAID groups which have not been created are displayed as “-” in the “Level” column.

For 9200 and 9500V:

**Example:**

```

---- RAID Configuration ----
RAID  RAID  Start Location  Number of HDU  Number of  Remains
Group Level [Unit No. HDU No.] in parity group parity group
0      5      0      0      5      1      278747136
1      5      0      5      5      1      278747136
      :
      :
18     -
19     -

```

– **RAID Group:** RAID group number

- **RAID Level:** RAID level  
When no RAID is set, “-” is displayed. No other information is displayed.
- **Start Location:**  
**Unit No.:** Starting unit number of the RAID group.  
**HDU No.:** Starting HDU number of the RAID group.
- **Number of HDU in parity group:** The number of HDUs in the parity group of the RAID group.
- **Number of parity group:** The number of parity groups in the RAID group.
- **Free Capacity:** The capacity [Block] that can be defined by the LU of the RAID group.

■ **Formatting LU configuration information**

The LU configuration of the array subsystem is listed. Information is displayed up to the created LU numbers.

**Example:**

```

---- LU Configuration ----
LU  Capacity  Status  Staging  C-CTL  D-CTL  RG RAID  Capacity
0   2097152  Unformat  512  0      0      0  5      1.0 GB
1   204800   Normal   512  0      0      0  5      100.0 MB
2   204800   Normal   512  0      0      0  5      100.0 MB
3   2097152  Unformat  512  0      0      0  5      1.0 GB
4   2097152  Unformat  512  0      0      0  5      1.0 GB
After 5, not define.

```

- **LU:** LU number
- **Capacity:** LU capacity (in units of block)
- **Status:** Status of the LU  
**Normal:** Normal status in which the LU is defined and formatted.  
**Unformat:** Status in which the LU is defined but not formatted.  
**Detached:** Status in which the LU is blocked.  
**Regressed:** Status in which the LU is regressed.  
**Invalidated(Normal):** Status in which the LU is invalidated (formatted).  
**Invalidated(Unformat):** Status in which the LU is invalidated (not formatted).  
**Invalidated(Regression):** Status in which the LU is invalidated (regression).
- **Staging Size:** Pre-read data amount (in units of block).
- **C-CTL:** The number of the controller currently in use.
- **D-CTL:** Default number of the controller controlling the LU.
- **RG:** The number of the RAID group that creates the LU.
- **RAID:** The RAID level of the RAID group that creates the LU.
- **Capacity:** LU capacity (in units of MB or GB).

- **Format for drive information**

The information and status of the drive of the array subsystem are listed.

For the 9200:

**Example:**

```

---- Drive Configuration ----
Location  Vendor ID  Product ID  Product Revision  Drive Capacity  Status
Unit0,HDU0  SEAGATE    ST136403FC    0004              36GB           Normal
Unit0,HDU1  SEAGATE    ST136403FC    0004              36GB           Normal
Unit0,HDU2  SEAGATE    ST136403FC    0004              36GB           Normal
:
:
Unit9,HDU7  Nothing
Unit9,HDU8  Nothing
Unit9,HDU9  Nothing

```

- **Location:** The installation location of the drive.
- **Vendor ID:** The vendor ID of the drive.
- **Product ID:** The product ID of the drive.
- **Product Revision:** Firmwave revision of the drive.
- **Drive Capacity:** The capacity of the drive.
- **Status:** The status of the drive.
- **Normal:** Normal (RAID, LU defined)
- **Detached:** Detached
- **Standby:** Normal (LU undefined)
- **Undefine:** Normal (RAID undefined)
- **Recon.:** Reconfiguring (copying from collection or backup)

“Nothing” is shown after **Location** for the location of a HDU not installed.

- **Format for cache information**

The configuration information and status of the cache of the array subsystem are listed.

**Example:**

```

---- Cache Information ----
          Controller 0              Controller 1
Slot  Capacity  Status  Capacity  Status
0      256     Normal    256     Normal
1      256     Normal    256     Normal
2       None    Nothing    None    Nothing
3       None    Nothing    None    Nothing

```

- **Slot:** The installation location of the cache.
- **Capacity:** The capacity [MB] of the cache of the controller.
- **Status:** The status of the cache of controller 0.
- **Normal:** Normal
- **Detached:** Detached
- **Nothing:** Not installed
- **---**: Slot not supported

- **Format for fan information**

The status of the fan of the array subsystem is output.

**Example:**

```
---- Fan Information ----
Location  Status
0         Normal
```

- **Location:** The installation location of the fan.
- **Status:** The status of the fan.  
**Normal:** Normal  
**Alarm:** Abnormal

- **Format for battery information**

The status of the battery of the array subsystem is output.

**Example:**

```
---- Battery Information ----
Location  Status
0         Normal
```

- **Location:** The installation location of the battery.
- **Status:** The status of the battery.  
**Normal:** Normal  
**Alarm:** Abnormal

- **Format for AC power information connected with 9200 and 9500V:**

The status of the AC power supply of the array subsystem is output.

For the 9200 and 9500V:

**Example:**

```
---- AC Power Information ----
Location  Status
Unit0,AC0 Normal
Unit0,AC1 Normal
Unit1,AC0 Nothing
Unit1,AC1 Nothing
      :
      :
```

- **Location:** The installation location of the AC power supply.
- **Status:** The status of the AC power supply.  
**Normal:** Normal  
**Alarm:** Abnormal

- **Format for battery backup status information connected with 9200 and 9500V:**  
The status of the battery backup circuit of the array subsystem is output.

**Example:**

```

---- Battery Backup Information ----
Location  Status
0         Normal
1         Normal

```

- **Location:** The installation location of the battery backup circuit.
- **Status:** The status of the battery backup circuit.  
**Normal:** Normal  
**Alarm:** Abnormal

- **Format for loop information connected with 9200 and 9500V:**  
The status of the loop of the array subsystem is output.

**Example:**

```

---- Loop Information ----
Path  Loop  Status
0     0   Normal
0     1   Normal
1     0   Normal
1     1   Normal

```

- **Location:** The installation location of the loop.
- **Status:** The status of the loop.  
**Normal:** Normal  
**Alarm:** Abnormal  
**Nothing:** Not installed

- **Format for enclosure information connected with 9200 and 9500V:**  
The status of the enclosure of the array subsystem is output.

**Example:**

```

---- ENC Information ----
Location  Status
Unit0,ENC0 Normal
Unit0,ENC1 Normal
Unit1,ENC0 Nothing
Unit1,ENC1 Nothing
      ⋮

```

- **Location:** The installation location of the enclosure.
- **Status:** The status of the enclosure.  
**Normal:** Normal  
**Alarm:** Abnormal

### 4.7.3 Setting System Parameters with a File

- **Command name**

`ausyspset`

- **Format**

- **9200 and 9500V:**

```
ausyspset -unit unit_name -file file_name
```

- **Description**

This command sets the contents of the system parameters, which are described in a file, to the array subsystem.

If you set the file that was output under the condition in which any fee-based optional feature is in an unlocked (installed) status, the setting may terminate abnormally. Use a file that was output under the condition in which all fee-based optional features are in a locked (de-installed) status.

The files have a standard format. The format of the files is the same as those that are output from an array subsystem.

For setting items for backup in system parameter information, the set system parameters must be saved into the backup FD in an array subsystem. Make sure to specify “Yes” (9200).

For connection with a dual system, setting will not be carried out if one of the controllers is detached. Confirm that the array subsystem is not in a warning status before using it.

When executing the command, the array subsystem is disabled to execute commands from both the host and the Storage Navigator. In addition, to make the set system parameters effective, restart the array subsystem. The previous settings remain effective until the unit restarts.

After the setting is finished, restart the array subsystem. Make sure that the unit has started, and connect the unit to the host and the Storage Navigator. When an array subsystem is restarted, the unit is not ready to accept access from the host until restarting is complete. After verifying that the host has stopped accessing, restart the unit.

For the file format and the contents of the settings in the files, see the following individually. When specifying individual items of a file, enter a blank space after “=”.

For the file format, refer to section 4.7.1. For setting items, refer to section 4.5.1 (9200 and 9500V) and to section 4.7.1.

- Options

Options	Description
-unit unit_name	Specifies the name of the array subsystem to be set with the configuration information for the system parameters.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “- (minus),” “_ (underline),” “.” (period), “@,” or “ (space)”. Space in front and in the rear of the character string is removed.
-file file_name	Specifies the name of the file (path) to input the configuration information.

- Examples

The following example sets array subsystem df500a1 according to the configuration system parameters described in sysprm.txt.

**Example:**

```
% ausyspset -unit df500a1 -file sysprm.txt
Password:
When executing the command, the subsystem stops accepting access from the host.
Do you want to continue? (y/n [n]): y
In order to complete the setting, it is necessary to reboot the subsystem.
Host will be unable to access the subsystem while restarting. Host applications
that use the subsystem will terminate abnormally. Please stop host access before
you restart the subsystem.
Also, if you are logging in, the login status will be canceled when restarting b
egins.
Do you agree with restarting? (y/n [n]): y
Are you sure you want to execute? (y/n [n]): y
Now restarting the subsystem. Start Time hh:mm:ss
The subsystem restarted successfully.
%
```

**Note:** It may take time for an array subsystem to respond, depending on the condition of the array subsystem. If it does not respond after 10 minutes or more, check the condition of the array subsystem.

#### 4.7.4 Setting RAID/LU Definition with a File

- Command name

```
auconfigset
```

- Format

**9200 and 9500V:**

```
auconfigset -unit unit_name -file file_name
```

- Description

This command sets the RAID/LU setting information described in the file to the array subsystem.

When setting the RAID/LU, all of the current RAID/LU will be deleted. If the user data is required, perform the setting after taking a backup.

The files have a standard format. The format of the files is the same as those that are output from an array subsystem. For the file format, refer to section 4.7.2.

The items to be set in the files are the “RAID configuration information,” “LU configuration information,” and the “drive information” of the output files. The output files include items about the status of configuration components, but the items are ignored at the time of setting. The contents of the set items are described below.

**RAID configuration information:** Sets up an RAID configuration.

Specify the RAID level, RAID group No., and the RAID size.

For RAID groups that are not set up, enter “-” for “Level.” Other items are not set.

**LU configuration information:** Sets up the LU configuration.

Specify the LU number, the LU capacity, the amount of data pre-read, the number of the current controller controlling an LU, the number of the default controller controlling an LU, the RAID group number, the RAID level, and the status of an LU.

When formatting, specify “Normal” for the LU status. If other status is specified, formatting is not executed.

If all capacity contained in an RAID group is allocated to one LU in the group, specify “All” for “Capacity”.

Although “0” or “1” is specified for the number of the current controller controlling an LU, the current controller number is set to the same as the number of the default controller controlling an LU.

When setting up LUs less than the maximum, specify “After nn, not define” (nn: the last LU No. + 1) at the end.

**Drive information:** Sets up configuration information for the HDUs that are installed in the array subsystem. “Drive information” specifies the drive capacity. Other parameters are not set, but they are listed. Where no HDUs are installed, “Nothing” is specified. If a capacity larger than the total capacity of installed HDUs is specified, it is processed as an error and the HDU configuration cannot be set up.

- **Options**

Options	Description
-unit <code>unit_name</code>	Specifies the name of the array subsystem to be set with the RAID/LU configuration. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “- (minus),” “_ (underline),” “.” (period), “@,” or “ (space)”. Space in front and in the rear of the character string is removed.
-file <code>file_name</code>	Specifies the name of the file (path) to input the configuration information.

- **Examples**

The following example sets array subsystem df500a1 according to the RAID/LU configuration described in config.txt.

**Example:**

```
% auconfigset -unit df500a1 -file config.txt
Password:
The new RAID/LU configuration will be set in the subsystem.
When this process starts, all of the current RAID/LU configuration will be deleted.
If you delete the logical unit(s), you will not be able to recover your data. Please make sure to perform backup of all important data before this operation.
When you delete your logical unit, the data becomes unusable. Systems or applications that use this subsystem will terminate abnormally. Please make sure to stop host access to the subsystem before performing this operation.
Are you sure you want to set new RAID/LU configuration? (y/n [n]): y
The new RAID/LU configuration will be set in the subsystem.
Are you sure you want to execute? (y/n [n]): y
The RAID configuration setting has started.
The RAID configuration setting is complete.
The LU configuration setting has started.
The LU configuration setting is complete.
The LU format setting is complete.
The RAID/LU configuration have been set successfully.
%
```

## 4.7.5 Import/Export System Constituent Information

- **Command name**

auconstitute

- **Format**

**AMS200 and AMS500:**

```
auconstitute -unit unit_name -export
              -config      file_name |
              -sysp        file_name |
              -hg           file_name |
              -bootopt     file_name |
              -parts       file_name |
              -sysluuserlu file_name |
auconstitute -unit unit_name -export
              -config      file_name |
              -sysp        file_name |
              -bootopt     file_name |
              -parts       file_name |
              -sysluuserlu file_name |
              -port        file_name |
              -lan         file_name

auconstitute -unit unit_name -import
              -config      file_name |
              -sysp        file_name |
              -hg           file_name [ -portop ] [ -opt ] [ -map ] [
-wwn ] |
              -bootopt     file_name |
              -sysluuserlu file_name |
auconstitute -unit unit_name -import
              -config      file_name |
              -sysp        file_name |
              -bootopt     file_name |
              -sysluuserlu file_name |
              -port        file_name
                          [ -portop ] [ -opt ] [ -map ] [ -wwn ]
                          [ -iscsiportop ] [ -targetopt ] [ -
targetmap ]
                          [ -initiator ] [ -iscsi ] [ -isns ] |
              -chapuser   file_name |
              -lan         file_name
```

- **Description**

This command outputs the system constituent information of the array unit to a specified file, in a text format.

This command sets the system constituent information described in a file to the array unit.

- **Options**

Options	Description
-unit unit_name	Specifies the name of the array unit that exports or imports the system constituent information. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_" (underline), "." (period), "@", or " (space)". Space in front and in the rear of the character string is removed.
-export	Exports the system constituent information.
-import	Imports the system constituent information.
-config file_name	Specifies the name of a file (path) to output/set the configuration information.
-sysp file_name	Specifies the name of the file (path) to output/set the system parameters.
-hg file_name	Specifies the name the file (path) to output/set the port information.
-portop	Specify when setting up the port option of the host group.
-opt	Specify when setting up the host group option.
-map	Specify when setting up the mapping information of the host group.
-wwn	Specify when setting up the host information.
-bootopt file_name	Specify the name of the file (path) to output/set the boot option.
-parts file_name	Specify the name of the file (path) to output the parts information.
-sysluuserlu file_name	Specify the name of the file (path) to output/set the system LU/user LU.
-port file_name	Specify the name of the file (path) to output/set the port information.
-iscsiportop	Specify when setting up the port option of the iSCSI port.
-targetopt	Specify when setting up the target option.
-targetmap	Specify when setting up the mapping information of the target.
-initiator	Specify when setting up the initiator information.
-iscsi	Specify when setting up the iSCSI port information.
-isns	Specify when setting up the iSNS information.
-chapuser file_name	Specify the name the file (path) to set the CHAP user information.
-lan file_name	Specify the name the file (path) to output/set the LAN information.

The format of the CHAP User information setting file is shown in Table 4.3.

**Table 4.3 CHAP User Information Setting File Format**

File Contents	Descriptions
User name,secret,Target No. or alias ...	The lines are invalid until <CHAP User> appears.
<CHAP User>,,	The valid lines are from <CHAP User> to <END>.
<Port 0A>,,	The line specifies the port. (<Port ALL> specifies all ports)
hitachi-0,abcdefghij00,alias0	The first row is CHAP User, and the second row is Secret.
hitachi-1,abcdefghij01,alias1	The third row and the following are aliases of Target to assign.
#hitachi-1,abcdefghij01,alias1	The line with the first character of # is a comment line. (Invalid line)
hitachi-2,abcdefghij02,3	The Target number can be specified as the alias of Target.
<Port 0B>,,	
<Add CHAP User>,,	If <Add CHAP User> is specified, CHAP User is added.
hitachi-0,abcdefghij00,alias0	If noting is specified, all CHAP Users are deleted , and then added.
hitachi-1,abcdefghij01,alias0,alias01,alias02	Two or more Targets can be specified.
<Port 1A>,,	
<Port 1B>,,	
<END>,,	The line of <END> and the following are all invalid lines.

■ **Examples**

The following example outputs RAID/LU constituent information of array unit df700a1, by the config.txt file, into the directory in which Storage Navigator has been installed.

**Example:**

```

% auconstitute -unit df700a1 -export -config config.txt
Are you sure you want to output the RAID/LU configuration to the file? (y/n [n])
: y
The RAID/LU configuration have been outputted to the file.
%
```

The following example sets array unit df700a1 according to the RAID/LU constituent described in the config.txt file.

**Example:**

```
% auconstitute -unit df700a1 -import -config config.txt
Password:
The new RAID/LU configuration will be set in the subsystem.
When this process starts, all of the current RAID/LU configuration will be deleted.
Do you want to continue processing? (y/n [n]): y
If you delete the logical unit(s), you will not be able to recover your data. Please make sure to perform backup of all important data before this operation.
When you delete your logical unit, the data becomes unusable. Systems or applications that use this subsystem will terminate abnormally. Please make sure to stop host access to the subsystem before performing this operation.
Are you sure you want to set new RAID/LU configuration? (y/n [n]): y
The new RAID/LU configuration will be set in the subsystem.
Are you sure you want to execute? (y/n [n]): y.
The RAID configuration setting has started.
The RAID configuration setting is complete.
The LU configuration setting has started.
The LU configuration setting is complete.
The LU format has started.
The RAID/LU configuration has been set successfully.
%
```

## 4.8 Host Storage Domain (Host Group) Information

This section includes the following:

- Displaying/Setting Host Information
- Displaying/Setting Host Storage Domain (Host Group) Options
- Displaying/Setting Mapping Information
- Displaying/Registering/Changing/Deleting Host Storage Domain (Host Group)
- File Output and File Input of Host Storage Domain (Host Group) Information

### 4.8.1 Displaying/Setting Host Information

- **Command name**

auhgwwn

- **Format**

**9500V**

**When the LUN Management of the fee-based option is effective:**

```
auhgwwn -unit unit_name -refer
        [ -login ctl_no port_no ]
        [ -permhg ctl_no port_no -gno group_no | -gname group_name
        ]
```

```
auhgwwn -unit unit_name -set
        [ -hgs ctl_no port_no on | off ]
        [ -permhg ctl_no port_no node_name port_name
          -gno group_no | -gname group_name ]
        [ -wname wwn_name ] ]
```

**When specifying the node name and port name:**

```
auhgwwn -unit unit_name -assign
        -permhg ctl_no port_no node_name port_name
        -gno group_no | -gname group_name
```

```
auhgwwn -unit unit_name -rm
        [ -perm ctl_no port_no node_name port_name ]
        [ -permhg ctl_no port_no node_name port_name
          -gno group_no | -gname group_name ]
```

```
auhgwwn -unit unit_name -chg
        -rename ctl_no port_no node_name port_name
        -gno group_no | -gname group_name
        -newwname new_wwn_name
```

### When specifying the wwn name:

```
auhgwwn -unit unit_name -assign
        -permhg ctl_no port_no -wname wwn_name
        -gno group_no | -gname group_name

auhgwwn -unit unit_name -rm
        [ -perm ctl_no port_no -wname wwn_name ]
        [ -permhg ctl_no port_no -wname wwn_name
          -gno group_no | -gname group_name ]

auhgwwn -unit unit_name -chg
        -rename ctl_no port_no -wname wwn_name
        -gno group_no | -gname group_name
        -newwwname new_wwn_name
```

### When the LUN Security of the fee-based option is effective:

```
auhgwwn -unit unit_name -refer

auhgwwn -unit unit_name -set
        [ -lus ctl_no port_no on | off ]
        [ -luschk ctl_no port_no inqc | allc ]
        [ -perm      ctl_no port_no node_name port_name ]
        [ -permlu    ctl_no port_no node_name port_name lun... ]
        [ -permluall ctl_no port_no node_name port_name ]

auhgwwn -unit unit_name -rm
        [ -perm      ctl_no port_no node_name port_name ]
        [ -permlu    ctl_no port_no node_name port_name lun... ]
        [ -permluall ctl_no port_no node_name port_name ]
```

### AMS200 and AMS500:

```
auhgwwn -unit unit_name -refer
        [ -login ctl_no port_no ]
        [ -permhg ctl_no port_no -gno group_no | -gname group_name ]

auhgwwn -unit unit_name -set
        [ -hgs ctl_no port_no on | off ]
        [ -permhg ctl_no port_no port_name
          -gno group_no | -gname group_name [ -wname wwn_name ] ]
```

When specifying the port name.

```
auhgwwn -unit unit_name -assign
        -permhg ctl_no port_no port_name
        -gno group_no | -gname group_name

auhgwwn -unit unit_name -rm
        [ -perm  ctl_no port_no port_name ]
        [ -permhg ctl_no port_no port_name
          -gno group_no | -gname group_name ]

auhgwwn -unit unit_name -chg
        -rename ctl_no port_no port_name
        -gno group_no | -gname group_name
        -newwwname new_wwn_name
```

When specifying the wwn name.

```

auhgwwn -unit unit_name -assign
        -permhg ctl_no port_no -wname wwn_name
        -gno group_no | -gname group_name

auhgwwn -unit unit_name -rm
        [ -perm  ctl_no port_no -wname wwn_name ]
        [ -permhg ctl_no port_no -wname wwn_name
        -gno group_no | -gname group_name ]

auhgwwn -unit unit_name -chg
        -rename ctl_no port_no -wname wwn_name
        -gno group_no | -gname group_name
        -newwwname new_wwn_name

```

- **Description**

This command displays or sets the host information.

- **Options**

**Common**

Options	Description
-unit unit_name	Specifies the name of the array subsystem to display, set, delete, assign, or change the host information.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "- (minus)," "_" (underline)," "." (period)," "@" , or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays all already-set host information.
-set	Sets the host information.
-rm	Deletes the host information.
-chg	Changes the host information.
-assign	Assigns the host information to the specified host group.
-login ctl_no port_no	Displays the host information that is logged in on the specified port. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D)

Options	Description
-permhg ctl_no port_no	<p><b>When the -refer option is specified:</b> Displays the host information that has been and can be assigned to the specified host group. Specification of the <b>-gno</b> or <b>-gname</b> option is indispensable.</p> <p><b>When the -set option is specified:</b> Specify the host information to be assigned to the specified host group. Specification of the <b>-wname</b> option is indispensable. Specification of the <b>-gno</b> or <b>-gname</b> option is indispensable.</p> <p><b>When the -assign option is specified:</b> Specify the host information, which can be assigned to the host group, from that logged in on the specified port. Specification of the <b>-wname</b> option is indispensable. Specification of the <b>-gno</b> or <b>-gname</b> option is indispensable.</p> <p><b>When the -rm option is specified:</b> Specify the host information to be deleted from the one that has been assigned to the specified host group. Specification of the <b>-wname</b> option is indispensable. Specification of the <b>-gno</b> or <b>-gname</b> option is indispensable.</p> <p><b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D)</p>
-hgs ctl_no port_no on   off	<p>Specifies whether to validate or invalidate the host group security of the specified port.</p> <p><b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>on:</b> Enables the host group security <b>off:</b> Disables the host group security</p>
-perm ctl_no port_no	<p>Specifies the host information to be deleted from that logged in on the specified port. Specification of the <b>-wname</b> option is indispensable.</p> <p><b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D)</p>
-rename ctl_no port_no	<p>Specifies the host information whose WWN name is to be changed from the one that has been assigned to the specified host group. Specification of the <b>-gno</b> or <b>-gname</b> option is indispensable. Specification of the <b>-wname</b> and <b>-newwname</b> option is indispensable.</p> <p><b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D)</p>
-wname wwn_name	<p>Specifies a WWN name of the host. Space in front and in the rear of the character string is removed. Cannot specify spaces only.</p> <p><b>wwn_name:</b> WWN name (<i>Note</i>)</p>
-gno group_no	<p>Specifies a host group number.</p> <p><b>group_no:</b> Host group number</p>
-gname group_name	<p>Specifies a host group name.</p> <p><b>group_name:</b> Host group name (<i>Note</i>)</p>
-newwname new_wwn_name	<p>Specifies the changed WWN name.</p> <p><b>new_wwn_name:</b> WWN name (<i>Note</i>)</p>

**Note:** No more than 16 ASCII characters can be used when the Micro program revision is x6x9/M or later. No more than 8 ASCII characters can be used when the Micro program revision is x6x9/M or earlier. Allowable ASCII characters include alpha, numeric, and the following symbols: !, #, \$, %, &, ', +, -, ., =, @, ^, \_, {, }, -, (, ), [, ], (space).

9500V

Options	Description
<p>-perm ctl_no port_no node_name port_name</p>	<p>When the -set option is specified: Specifies the host information to be assigned to the specified host group. Specification of the -gno or -gname option is indispensable.</p> <p>When the -assign option is specified: Specify the host information which can be assigned to the host group from that logged in on the specified port. Specification of the -gno or -gname option is indispensable.</p> <p>When the -rm option is specified: Specify the host information to be deleted from the one that has been assigned to the specified host group. Specification of the -gno or -gname option is indispensable.</p> <p><b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>node_name:</b> Node name of the host (16 hexadecimal characters) <b>port_name:</b> Port name of the host (16 hexadecimal characters)</p>
<p>-perm ctl_no port_no node_name port_name</p>	<p>Specifies the host information to be deleted from that logged in on the specified port.</p> <p><b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>node_name:</b> Node name of the host (16 hexadecimal characters) <b>port_name:</b> Port name of the host (16 hexadecimal characters)</p>
<p>-rename ctl_no port_no node_name port_name</p>	<p>Specifies the host information whose WWN name is to be changed from the one that has been assigned to the specified host group. Specification of the -gno or -gname option is indispensable. Specification of the -newwwname option is indispensable.</p> <p><b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>node_name:</b> Node name of the host (16 hexadecimal characters) <b>port_name:</b> Port name of the host (16 hexadecimal characters)</p>
<p>-lus ctl_no port_no on   off</p>	<p>Specifies whether the LUN Security of the specified port is enabled or disabled.</p> <p><b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>on:</b> Enables the LUN Security. <b>off:</b> Disables the LUN Security.</p>
<p>-luschk ctl_no port_no inqc   allc</p>	<p>Specifies the LUN Security check level of the specified port.</p> <p><b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>inqc:</b> Check with an INQUIRY SCSI command. <b>allc:</b> Check with all the SCSI commands.</p>

Options	Description
<pre>-perm   ctl_no   port_no   node_name   port_name</pre>	<p>When the -set option is specified: Specifies host information (node name and port name) that can be accessed by the specified port.</p> <p>When the -rm option is specified: Specifies the host information to be deleted from the host information (node name and port name) that can be accessed by the specified port.</p> <p><b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>node_name:</b> Node name of the host (16 hexadecimal characters) <b>port_name:</b> Port name of the host (16 hexadecimal characters)</p>
<pre>-permlu   ctl_no   port_no   node_name   port_name lun..</pre>	<p>When the -set option is specified: When using the LUN security function at a specified port, this option specifies LUs that the host is permitted to access. Host information registered with the -perm option (multiple LUs can be specified) can be specified. Host information and LUN security are not allowed to be registered at the same time.</p> <p>When the -rm option is specified: Specify the LUNs, whose access permission is to be deleted from the LUN security, set by the specified port. (Multiple LUs can be specified.)</p> <p><b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>node_name:</b> Node name of the host (16 hexadecimal characters) <b>port_name:</b> Port name of the host (16 hexadecimal characters) <b>lun..:</b> LU number</p>
<pre>-permluall   ctl_no   port_no   node_name   port_name</pre>	<p>When the -set option is specified: When using the LUN security function at a specified port, specifies host information that is already registered with the -perm option, which specifies permission to access to all LUs. Host information and LUN security are not allowed to be registered at the same time.</p> <p>When the -rm option is specified: Specify the host information, whose access permission is to be deleted from the LUN security, set by the specified port.</p> <p><b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>node_name:</b> Node name of the host (16 hexadecimal characters) <b>port_name:</b> Port name of the host (16 hexadecimal characters)</p>

## AMS200 and AMS500

Options	Description
<pre>-permhg   ctl_no   port_no  port_name</pre>	<p>When the <code>-set</code> option is specified:</p> <p>Specifies the host information to be assigned to the specified host group. Specification of the <code>-gno</code> or <code>-gname</code> option is indispensable.</p> <p>When the <code>-assign</code> option is specified:</p> <p>Specify the host information which can be assigned to the host group from that logged in on the specified port. Specification of the <code>-gno</code> or <code>-gname</code> option is indispensable.</p> <p>When the <code>-rm</code> option is specified:</p> <p>Specify the host information to be deleted from that which has been assigned to the specified host group. Specification of the <code>-gno</code> or <code>-gname</code> option is indispensable.</p> <p><b>ctl_no:</b> Controller number (0, 1)  <b>port_no:</b> Port number (A, B, C, D)  <b>port_name:</b> Port name of the host (16 hexadecimal characters)</p>
<pre>-perm   ctl_no   port_no   port_name</pre>	<p>Specifies the host information to be deleted from that logged in on the specified port.</p> <p><b>ctl_no:</b> Controller number (0, 1)  <b>port_no:</b> Port number (A, B, C, D)  <b>port_name:</b> Port name of the host (16 hexadecimal characters)</p>
<pre>-rename   ctl_no   port_no   port_name</pre>	<p>Specifies the host information whose WWN name is to be changed from the one that has been assigned to the specified host group. Specification of the <code>-gno</code> or <code>-gname</code> option is indispensable. Specification of the <code>-newwwname</code> option is indispensable.</p> <p><b>ctl_no:</b> Controller number (0, 1)  <b>port_no:</b> Port number (A, B, C, D)  <b>port_name:</b> Port name of the host (16 hexadecimal characters)</p>

### ■ Examples

The following example displays the host information of array unit df600 when LUN Security is effective.

#### **Example:**

```
% auhgwwn -unit df600 -refer
Password:
Security Information
Port  LUN Security      Node name          Port name
  0A  on  (INQUIRY)  AAAAAAAAAAAAA0A00  0AAAAAAAAAAAAA00
      25 30 50 60 63
  0B  on  (INQUIRY)  AAAAAAAAAAAAA1A00  1AAAAAAAAAAAAA00
      6 12 34 43
  1A  off
  1B  off
%
```

## 4.8.2 Displaying/Setting Host Group Options

- **Command name**

auhgopt

- **Format**

**9500V, AMS200, and AMS500:**

auhgopt -unit unit\_name -refer

**9500V**

**When specifying per host group option:**

```
auhgopt -unit unit_name -set
[ -HostConnection    ctl_no port_no  group_no
                        standard | OpenVMS | TRESPASS | WolfPack ]
[ -SPC2              ctl_no port_no group_no enable | disable ]
[ -SameNodeName      ctl_no port_no group_no enable | disable ]
    [ -TruCluster      ctl_no port_no group_no enable | disable ]
[ -pathswAPG         ctl_no port_no group_no enable | disable ]
[ -pathswAP          ctl_no port_no group_no enable | disable ]
[ -pathswAA          ctl_no port_no group_no enable | disable ]
[ -PIDNoRep          ctl_no port_no group_no enable | disable ]
[ -PIDConv           ctl_no port_no group_no enable | disable ]
[ -NoRSVConf         ctl_no port_no group_no enable | disable ]
[ -ftSRV2            ctl_no port_no group_no enable | disable ]
[ -SRCReadReject     ctl_no port_no group_no enable | disable ]
[ -UASuppress        ctl_no port_no group_no enable | disable ]
[ -HISUP             ctl_no port_no group_no enable | disable ]
[ -CCHS              ctl_no port_no group_no enable | disable ]
[ -HPUX2             ctl_no port_no group_no enable | disable ]
[ -ProdidDF400       ctl_no port_no group_no enable | disable ]
[ -NACA              ctl_no port_no group_no enable | disable ]
[ -SUNcluster        ctl_no port_no group_no enable | disable ]
[ -PRSV              ctl_no port_no group_no enable | disable ]
[ -TargetReset       ctl_no port_no group_no enable | disable ]
[ -Reserve           ctl_no port_no group_no enable | disable ]
[ -LURreset          ctl_no port_no group_no enable | disable ]
[ -TPRLO             ctl_no port_no group_no enable | disable ]
```

### When specifying per host group:

```
auhgopt  -unit unit_name -set ctl_no port_no
          -gno group_no | -gname group_name
          [ -HostConnection standard | OpenVMS | TRESPASS |
WolfPack ]
          [ -SPC2 enable | disable ]
          [ -SameNodeName enable | disable ]
          [ -TruCluster enable | disable ]
          [ -pathswAPG enable | disable ]
          [ -pathswAP enable | disable ]
          [ -pathswAA enable | disable ]
          [ -PIDNoRep enable | disable ]
          [ -PIDConv enable | disable ]
          [ -NoRSVConf enable | disable ]
            [ -ftSRV2 enable | disable ]
          [ -SRCReadReject enable | disable ]
          [ -UASuppress enable | disable ]
          [ -HISUP enable | disable ]
          [ -CCHS enable | disable ]
          [ -HPUX2 enable | disable ]
          [ -ProdidDF400 enable | disable ]
          [ -NACA enable | disable ]
          [ -SUNCluster enable | disable ]
          [ -PRSV enable | disable ]
          [ -TargetReset enable | disable ]
          [ -Reserve enable | disable ]
          [ -LURreset enable | disable ]
          [ -TPRLO enable | disable ]
```

## AMS200 and AMS500

### When specifying per host group option:

```
auhgopt -unit unit_name -set
  [ -HostConnection ctl_no port_no group_no
    standard | OpenVMS | TRESPASS | WolfPack ]
  [ -HP ctl_no port_no group_no enable | disable ]
  [ -PSUReadReject ctl_no port_no group_no enable | disable ]
  [ -UASuppress ctl_no port_no group_no enable | disable ]
  [ -HISUPOff ctl_no port_no group_no enable | disable ]
  [ -NACA ctl_no port_no group_no enable | disable ]
  [ -ResetPropagation ctl_no port_no group_no enable | disable ]
  [ -UniqueReserve1 ctl_no port_no group_no enable | disable ]
  [ -ASLReportAPG ctl_no port_no group_no enable | disable ]
  [ -ASLReportAP ctl_no port_no group_no enable | disable ]
  [ -ASLReportAA ctl_no port_no group_no enable | disable ]
  [ -PIDNoRep ctl_no port_no group_no enable | disable ]
  [ -PIDConv ctl_no port_no group_no enable | disable ]
  [ -TruCluster ctl_no port_no group_no enable | disable ]
  [ -SerialResponse ctl_no port_no group_no enable | disable ]
  [ -SameNodeName ctl_no port_no group_no enable | disable ]
  [ -CCHS ctl_no port_no group_no enable | disable ]
  [ -SPC2 ctl_no port_no group_no enable | disable ]
```

### When specifying per host group:

```
auhgopt -unit unit_name -set ctl_no port_no
-gno group_no | -gname group_name
  [ -HostConnection standard | OpenVMS | TRESPASS | WolfPack ]
  [ -HP enable | disable ]
  [ -PSUReadReject enable | disable ]
  [ -UASuppress enable | disable ]
  [ -NACA enable | disable ]
  [ -HISUPOff enable | disable ]
  [ -ResetPropagation enable | disable ]
  [ -UniqueReserve1 enable | disable ]
  [ -ASLReportAPG enable | disable ]
  [ -ASLReportAP enable | disable ]
  [ -ASLReportAA enable | disable ]
  [ -PIDNoRep enable | disable ]
  [ -PIDConv enable | disable ]
  [ -TruCluster enable | disable ]
  [ -SerialResponse enable | disable ]
  [ -SameNodeName enable | disable ]
  [ -CCHS enable | disable ]
  [ -SPC2 enable | disable ]
```

- **Description**

This command displays or sets the Host Group options.

- **Options**

**Common**

Options	Description
-unit unit_name	Specifies the name of an array subsystem in which the host storage domain (host group) options are to be displayed or set>.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_", ".", "@", or " ". Space in front and in the rear of the character string is removed.
-refer	Displays the host storage domain (host group) options.

- **Option for 9500V, AMS200 and AMS500**

Options	Description
-set	Sets the host group options.
-HostConnection ctl_no port_no group_no standard   OpenVMS   TRESPASS   WolfPack	Specifies the mode to be emulated. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B, C, D) <b>group_no</b> : Host Group number <b>standard</b> : Open system emulation mode <b>OpenVMS</b> : Open VMS mode <b>TRESPASS</b> : TRESPASS mode <b>WolfPack</b> : WolfPack mode
-SPC2 ctl_no port_no group_no enable   disable	Specifies whether to set the SPC-2 Mode effective or ineffective. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B, C, D) <b>group_no</b> : Host Group number <b>enable</b> : Enables the SPC-2 Mode. <b>disable</b> : Disables the SPC-2 Mode.
-SameNodeName ctl_no port_no group_no enable   disable	Specifies whether to set the Same Node Name mode effective or ineffective. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B, C, D) <b>group_no</b> : Host Group number <b>enable</b> : Enables the Same Node Name mode. <b>disable</b> : Disables the Same Node Name mode.
-TruCluster ctl_no port_no group_no enable   disable	Specifies whether to set the Tru Cluster Connection mode effective or ineffective. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B, C, D) <b>group_no</b> : Host Group number <b>enable</b> : Enables the Tru Cluster Connection mode. <b>disable</b> : Disables the Tru Cluster Connection mode.

Options	Description
-PIDNoRep ctl_no port_no group_no enable   disable	Specifies whether to set the Port-ID No Report mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the Port-ID No Report mode. <b>disable:</b> Disables the Port-ID No Report mode.
-PIDConv ctl_no port_no group_no enable   disable	Specifies whether to set the Port-ID Conversion mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the Port-ID Conversion mode. <b>disable:</b> Disables the Port-ID Conversion mode.
-UASuppress ctl_no port_no group_no enable   disable	Specifies whether or not to suppress a unit attention (06/2A00). <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Suppress the unit attention. <b>disable:</b> Does not suppress the unit attention.
-CCHS ctl_no port_no group_no enable   disable	Specifies whether to set the CCHS convert mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the CCHS convert mode. <b>disable:</b> Disables the CCHS convert mode.
-NACA ctl_no port_no group_no enable   disable	Specifies whether to set the NACA mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the NACA mode. <b>disable:</b> Disables the NACA mode.
-pathswAPG ctl_no port_no group_no enable   disable	Specifies whether to set the Path Switch mode (Active/Passive Group) effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the Path Switch mode (Active/Passive Group). <b>disable:</b> Disables the Path Switch mode (Active/Passive Group).
-pathswAP ctl_no port_no group_no enable   disable	Specifies whether to set the Path Switch mode (Active/Passive) effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the Path Switch mode (Active/Passive). <b>disable:</b> Disables the Path Switch mode (Active/Passive).

Options	Description
-pathswAA ctl_no port_no group_no enable   disable	Specifies whether to set the Path Switch mode (Active/Active) effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the Path Switch mode (Active/Active). <b>disable:</b> Disables the Path Switch mode (Active/Active).
-NoRSVConf ctl_no port_no group_no enable   disable	Specifies whether to set the No_RSV_Conf mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the No_RSV_Conf mode. <b>disable:</b> Disables the No_RSV_Conf mode.
-ftSRV2 ctl_no port_no group_no enable   disable	Specifies whether to set the ftServer Connection mode 2 effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the ftServer Connection mode 2. <b>disable:</b> Disables the ftServer Connection mode 2.
-SRCReadReject ctl_no port_no group_no enable   disable	Specifies whether to set the SRC Read Command Reject mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the SRC Read Command Reject mode. <b>disable:</b> Disables the SRC Read Command Reject mode.
-HISUP ctl_no port_no group_no enable   disable	Specifies whether to set the HISUP mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the HISUP mode. <b>disable:</b> Disables the HISUP mode.
-HPUX2 ctl_no port_no group_no enable   disable	Specifies whether to set the HP connection mode 2 effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the HP connection mode 2. <b>disable:</b> Disables the HP connection mode 2.
-ProdidDF400 ctl_no port_no group_no enable   disable	Specifies whether to set the Product ID DF400 mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the Product ID DF400 mode. <b>disable:</b> Disables the Product ID DF400 mode.

Options	Description
<pre>-SUNCluster   ctl_no port_no   group_no   enable   disable</pre>	<p>Specifies whether to set the SUN Cluster Connection mode effective or ineffective.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A, B, C, D)</p> <p><b>group_no:</b> Host Group number</p> <p><b>enable:</b> Enables the SUN Cluster Connection mode.</p> <p><b>disable:</b> Disables the SUN Cluster Connection mode.</p>
<pre>-PRSV   ctl_no port_no   group_no   enable   disable</pre>	<p>Specifies whether to set the Persistent RSV Cluster mode effective or ineffective.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A, B, C, D)</p> <p><b>group_no:</b> Host Group number</p> <p><b>enable:</b> Enables the Persistent RSV Cluster mode.</p> <p><b>disable:</b> Disables the Persistent RSV Cluster mode.</p>
<pre>-TargetReset   ctl_no port_no   group_no   enable   disable</pre>	<p>Specifies whether to set the Target reset mode effective or ineffective.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A, B, C, D)</p> <p><b>group_no:</b> Host Group number</p> <p><b>enable:</b> Enables the Target reset mode.</p> <p><b>disable:</b> Disables the Target reset mode.</p>
<pre>-Reserve   ctl_no port_no   group_no   enable   disable</pre>	<p>Specifies whether to set the Reserve mode effective or ineffective.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A, B, C, D)</p> <p><b>group_no:</b> Host Group number</p> <p><b>enable:</b> Enables the Reserve mode.</p> <p><b>disable:</b> Disables the Reserve mode.</p>
<pre>-LUReset   ctl_no port_no   group_no   enable   disable</pre>	<p>Specifies whether to set the LU reset mode effective or ineffective.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p><b>port_no:</b> Port number (A, B, C, D)</p> <p><b>group_no:</b> Host Group number</p> <p><b>enable:</b> Enables the LU reset mode.</p> <p><b>disable:</b> Disables the LU reset mode.</p>

■ Option for AMS200 and AMS500

Options	Description
-TPRLO ctl_no port_no group_no enable   disable	Specifies whether to set the Third Party Process Logout mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the Third Party Process Logout mode. <b>disable:</b> Disables the Third Party Process Logout mode.
-HP ctl_no port_no group_no enable   disable	Specifies whether to set the HP-UX Mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the HP-UX Mode. <b>disable:</b> Disables the HP-UX Mode.
-PSUEReadReject ctl_no port_no group_no enable   disable	Specifies whether to set the PSUE Read Reject Mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the PSUE Read Reject Mode. <b>disable:</b> Disables the PSUE Read Reject Mode.
-HISUPOff ctl_no port_no group_no enable   disable	Specifies whether to set the HISUP OFF Mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the HISUP OFF Mode. <b>disable:</b> Disables the HISUP OFF Mode.
-ResetPropagation ctl_no port_no group_no enable   disable	Specifies whether to set the Reset Propagation Mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the Reset Propagation Mode. <b>disable:</b> Disables the Reset Propagation Mode.
-UniqueReserve1 ctl_no port_no group_no enable   disable	Specifies whether to set the Unique Reserve Mode 1 effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the Unique Reserve Mode 1. <b>disable:</b> Disables the Unique Reserve Mode 1.

Options	Description
-ASLReportAPG ctl_no port_no group_no enable   disable	Specifies whether to set the ASL Report Mode (Active/Passive Group) effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the ASL Report Mode (Active/Passive Group). <b>disable:</b> Disables the ASL Report Mode (Active/Passive Group).
-ASLReportAP ctl_no port_no group_no enable   disable	Specifies whether to set the ASL Report Mode (Active/Passive) effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the ASL Report Mode (Active/Passive). <b>disable:</b> Disables the ASL Report Mode (Active/Passive).
-ASLReportAA ctl_no port_no group_no enable   disable	Specifies whether to set the ASL Report Mode (Active/Active) effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the ASL Report Mode (Active/Active). <b>disable:</b> Disables the ASL Report Mode (Active/Active).
-SerialResponse ctl_no port_no group_no enable   disable	Specifies whether to set the Product Serial Response Mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the Product Serial Response Mode. <b>disable:</b> Disables the Product Serial Response Mode.
-SPC2 ctl_no port_no group_no enable   disable	Specifies whether to set the SPC-2 Mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D) <b>group_no:</b> Host Group number <b>enable:</b> Enables the SPC-2 Mode. <b>disable:</b> Disables the SPC-2 Mode.

- Option for 9500V, AMS200, and AMS500

Options	Description
-set ctl_no port_no	Sets the host group options. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D)
-gno group_no	Specifies a host group number. <b>group_no:</b> Host group number
-gname group_name	Specifies a host group name. <b>group_name:</b> Host group name

Options	Description
	No more than 16 ASCII characters can be used when the Micro program revision is x6x9/M or later. No more than 8 ASCII characters can be used when the Micro program revision is x6x9/M or earlier. Allowable ASCII characters include alpha, numeric, and the following symbols: !, #, \$, %, &, ', +, -, ., =, @, ^, _ , {, }, ~, (, ), [, ], (space)
-HostConnection standard   OpenVMS   TRESPASS   WolfPack	Specifies the mode to be emulated. <b>standard:</b> Open system emulation mode <b>OpenVMS:</b> Open VMS mode <b>TRESPASS:</b> TRESPASS mode <b>WolfPack:</b> WolfPack mode
-SPC2 enable   disable	Specifies whether to set the SPC-2 Mode effective or ineffective. <b>enable:</b> Enables the SPC-2 Mode. <b>disable:</b> Disables the SPC-2 Mode.
-SameNodeName enable   disable	Specifies whether to set the Same Node Name mode effective or ineffective. <b>enable:</b> Enables the Same Node Name mode. <b>disable:</b> Disables the Same Node Name mode
-TruCluster enable   disable	Specifies whether to set the Tru Cluster Connection mode effective or ineffective. <b>enable:</b> Enables the Tru Cluster Connection mode. <b>disable:</b> Disables the Tru Cluster Connection mode.
-PIDNoRep enable   disable	Specifies whether to set the Port-ID No Report mode effective or ineffective. <b>enable:</b> Enables the Port-ID No Report mode. <b>disable:</b> Disables the Port-ID No Report mode.
-PIDConv enable   disable	Specifies whether to set the Port-ID Conversion mode effective or ineffective. <b>enable:</b> Enables the Port-ID Conversion mode. <b>disable:</b> Disables the Port-ID Conversion mode.
-UASuppress enable   disable	Specifies whether or not to suppress a unit attention (06/2A00). <b>enable:</b> Suppress the unit attention. <b>disable:</b> Does not suppress the unit attention.
-CCHS enable   disable	Specifies whether to set the CCHS convert mode effective or ineffective. <b>enable:</b> Enables the CCHS convert mode. <b>disable:</b> Disables the CCHS convert mode.
-NACA enable   disable	Specifies whether to set the NACA mode effective or ineffective. <b>enable:</b> Enables the NACA mode. <b>disable:</b> Disables the NACA mode.

■ Option for 9500V

Options	Description
-pathswAPG enable   disable	Specifies whether to set the Path Switch mode (Active/Passive Group) effective or ineffective. <b>enable:</b> Enables the Path Switch mode (Active/Passive Group). <b>disable:</b> Disables the Path Switch mode (Active/Passive Group).
-pathswAP enable   disable	Specifies whether to set the Path Switch mode (Active/Passive) effective or ineffective. <b>enable:</b> Enables the Path Switch mode (Active/Passive). <b>disable:</b> Disables the Path Switch mode (Active/Passive).
-pathswAA enable   disable	Specifies whether to set the Path Switch mode (Active/Active) effective or ineffective. <b>enable:</b> Enables the Path Switch mode (Active/Active). <b>disable:</b> Disables the Path Switch mode (Active/Active).
-NoRSVConf enable   disable	Specifies whether to set the No_RSV_Conf mode effective or ineffective. <b>enable:</b> Enables the No_RSV_Conf mode. <b>disable:</b> Disables the No_RSV_Conf mode.
-ftSRV2 enable   disable	Specifies whether to set the ftServer Connection mode 2 effective or ineffective. <b>enable:</b> Enables the ftServer Connection mode 2. <b>disable:</b> Disables the ftServer Connection mode 2.
-SRCReadReject enable   disable	Specifies whether to set the SRC Read Command Reject mode effective or ineffective. <b>enable:</b> Enables the SRC Read Command Reject mode. <b>disable:</b> Disables the SRC Read Command Reject mode.
-HISUP enable   disable	Specifies whether to set the HISUP mode effective or ineffective. <b>enable:</b> Enables the HISUP mode. <b>disable:</b> Disables the HISUP mode.
-HPUX2 enable   disable	Specifies whether to set the HP connection mode 2 effective or ineffective. <b>enable:</b> Enables the HP connection mode 2. <b>disable:</b> Disables the HP connection mode 2.
-ProdidDF400 enable   disable	Specifies whether to set the Product ID DF400 mode effective or ineffective. <b>enable:</b> Enables the Product ID DF400 mode. <b>disable:</b> Disables the Product ID DF400 mode.
-SUNCluster enable   disable	Specifies whether to set the SUN Cluster Connection mode effective or ineffective. <b>enable:</b> Enables the SUN Cluster Connection mode. <b>disable:</b> Disables the SUN Cluster Connection mode.
-PRSV enable   disable	Specifies whether to set the Persistent RSV Cluster mode effective or ineffective. <b>enable:</b> Enables the Persistent RSV Cluster mode. <b>disable:</b> Disables the Persistent RSV Cluster mode.
-TargetReset enable   disable	Specifies whether to set the Target reset mode effective or ineffective. <b>enable:</b> Enables the Target reset mode. <b>disable:</b> Disables the Target reset mode.

Options	Description
-Reserve enable   disable	Specifies whether to set the Reserve mode effective or ineffective. <b>enable:</b> Enables the Reserve mode. <b>disable:</b> Disables the Reserve mode.
-LUReset enable   disable	Specifies whether to set the LU reset mode effective or ineffective. <b>enable:</b> Enables the LU reset mode. <b>disable:</b> Disables the LU reset mode.
-TPRLO enable   disable	Specifies whether to set the Third Party Process Logout mode effective or ineffective. <b>enable:</b> Enables the Third Party Process Logout mode. <b>disable:</b> Disables the Third Party Process Logout mode.

- Option for AMS200 and AMS500

Options	Description
-HP enable   disable	Specifies whether to set the HP-UX Mode effective or ineffective. <b>enable:</b> Enables the HP-UX Mode. <b>disable:</b> Disables the HP-UX Mode.
-PSUEReadReject enable   disable	Specifies whether to set the PSUE Read Reject Mode effective or ineffective. <b>enable:</b> Enables the PSUE Read Reject Mode. <b>disable:</b> Disables the PSUE Read Reject Mode.
-HISUPOff enable   disable	Specifies whether to set the HISUP OFF Mode effective or ineffective. <b>enable:</b> Enables the HISUP OFF Mode. <b>disable:</b> Disables the HISUP OFF Mode.
-ResetPropagation enable   disable	Specifies whether to set the Reset Propagation Mode effective or ineffective. <b>enable:</b> Enables the Reset Propagation Mode. <b>disable:</b> Disables the Reset Propagation Mode.
-UniqueReserve1 enable   disable	Specifies whether to set the Unique Reserve Mode 1 effective or ineffective. <b>enable:</b> Enables the Unique Reserve Mode 1. <b>disable:</b> Disables the Unique Reserve Mode 1.
-ASLReportAPG enable   disable	Specifies whether to set the ASL Report Mode (Active/Passive Group) effective or ineffective. <b>enable:</b> Enables the ASL Report Mode (Active/Passive Group). <b>disable:</b> Disables the ASL Report Mode (Active/Passive Group).
-ASLReportAP enable   disable	Specifies whether to set the ASL Report Mode (Active/Passive) effective or ineffective. <b>enable:</b> Enables the ASL Report Mode (Active/Passive). <b>disable:</b> Disables the ASL Report Mode (Active/Passive).
-ASLReportAA enable   disable	Specifies whether to set the ASL Report Mode (Active/Active) effective or ineffective. <b>enable:</b> Enables the ASL Report Mode (Active/Active). <b>disable:</b> Disables the ASL Report Mode (Active/Active).

Options	Description
-SerialResponse enable   disable	Specifies whether to set the Product Serial Response Mode effective or ineffective. <b>enable:</b> Enables the Product Serial Response Mode. <b>disable:</b> Disables the Product Serial Response Mode.
-SPC2 enable   disable	Specifies whether to set the SPC-2 Mode effective or ineffective. <b>enable:</b> Enables the SPC-2 Mode. <b>disable:</b> Disables the SPC-2 Mode.

- **Example**

The following example displays the host group options of array unit df600.

**Example:**

```
% auhgopt -unit df600 -refer
Port 0A, Group 0
  Host connection mode 1 = standard
  Host connection mode 2
    SPC-2 Mode = OFF
    Same Node Name Mode = OFF
    Tru Cluster Connection Mode = OFF
    Path Switch Mode(Active/Passive Group) = OFF
    Path Switch Mode(Active/Passive) = OFF
    Path Switch Mode(Active/Active) = OFF
    Port-ID No Report Mode = OFF
    Port-ID Conversion Mode = OFF
    No_RSV_Conf Mode = OFF
    ftServer Connection Mode 2 = OFF
    SRC Read Command Reject Mode = OFF
    UA(06/2A00) suppress Mode = OFF
    HISUP Mode = OFF
    CCHS Mode = OFF
    HP Connection Mode 2 = OFF
    Product ID DF400 Mode = OFF
    NACA Mode = OFF
    SUN Cluster Connection Mode = OFF
    Persistent RSV Cluster Mode = OFF
    Target Reset (Bus Device Reset) Mode = OFF
    Reserve Mode = OFF
    Logical Unit Reset Mode = OFF
    Third Party Process Logout Mode = OFF
Port 0B, Group 0
  :
Port 1A, Group 0
  :
Port 1B, Group 0
  :
%
```

- **Example**

The following example displays the host group options of array unit df700.

**Example:**

```
% auhgopt -unit df700 -refer
Port 0A, Group 0
  Host connection mode 1 = standard
  Host connection mode 2
    HP-UX Mode = OFF
    PSUE Read Reject Mode = OFF
    UA(06/2A00) suppress Mode = OFF
    NACA Mode = OFF
    HISUP OFF Mode = ON
    Reset Propagation Mode = OFF
    Unique Reserve Mode 1 = OFF
    ASL Report Mode(Active/Passive Group) = OFF
    ASL Report Mode(Active/Passive) = OFF
    ASL Report Mode(Active/Active) = OFF
    Port-ID No Report Mode = OFF
    Port-ID Conversion Mode = OFF
    Tru Cluster Mode = OFF
    Product Serial Response Mode = OFF
    Same Node Name Mode = OFF
    CCHS Mode = OFF
    SPC-2 Mode = OFF

Port 0B, Group 0
:
Port 1A, Group 0
:
Port 1B, Group 0
:
%
```

### 4.8.3 Displaying/Setting Mapping Information

- **Command name**

auhgmap

- **Format**

**9500V, AMS200, and AMS500:**

auhgmap -unit unit\_name -refer

**When specifying host group number:**

auhgmap -unit unit\_name -add ctl\_no port\_no group\_no hlu lu

auhgmap -unit unit\_name -chg ctl\_no port\_no group\_no hlu lu

auhgmap -unit unit\_name -rm ctl\_no port\_no group\_no hlu lu

**When specifying host group number or name:**

auhgmap -unit unit\_name -add ctl\_no port\_no  
-gno group\_no | -gname group\_name -hlu hlu -lu lu

auhgmap -unit unit\_name -chg ctl\_no port\_no  
-gno group\_no | -gname group\_name -hlu hlu -lu lu

auhgmap -unit unit\_name -rm ctl\_no port\_no  
-gno group\_no | -gname group\_name -hlu hlu -lu lu

auhgmap -unit unit\_name -MappingMode on | off

**AMS200 and AMS500:**

auhgmap -unit unit\_name -availablelist ctl\_no port\_no  
-gno group\_no | -gname group\_name -hlu | -lu

- **Description**

This command sets mapping information.

- **Options**

**Common**

Options	Description
-unit unit_name	Specifies the name of an array subsystem in which the mapping information to be displayed or set. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "(period)", "@", or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays the mapping information.
-MappingMode on   off	Specifies whether to set the Mapping mode effective or ineffective. <b>on:</b> Enables the Mapping mode <b>off:</b> Disables the Mapping mode
-availablelist ctl_no port_no	A list of LUNs or H-LUNs, each of which is eligible for the mapping is displayed within the specified controller number, a port number, and a host group.

Options	Description
-hlu	Specify when displaying a list of H-LUNs, each of which is eligible for the mapping.
-lu	Specify when displaying a list of LUNs, each of which is eligible for the mapping.

### Specifying the host group number

Options	Description
-add ctl_no port_no group_no hlu lu	Adds the mapping information. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B, C, D) <b>group_no</b> : Host Group number <b>hlu</b> : LU number recognized by the host <b>lu</b> : LU number of the array subsystem
-chg ctl_no port_no group_no hlu lu	Changes the mapping information. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B, C, D) <b>group_no</b> : Host Group number <b>hlu</b> : LU number recognized by the host <b>lu</b> : LU number of the array subsystem
-rm ctl_no port_no group_no hlu lu	Deletes the mapping information. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B, C, D) <b>group_no</b> : Host Group number <b>hlu</b> : LU number recognized by the host <b>lu</b> : LU number of the array subsystem

### Specifying host group number or host group name

Options	Description
-add ctl_no port_no	Adds the mapping information. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B, C, D)
-chg ctl_no port_no	Changes the mapping information. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B, C, D)
-rm ctl_no port_no	Deletes the mapping information. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B, C, D)
-gno group_no	Specifies a host group number. <b>group_no</b> : Host group number

Options	Description
-gname group_name	Specifies a host group name. <b>group_name:</b> Host group name No more than 16 ASCII characters can be used when the Micro program revision is x6x9/M or later. No more than 8 ASCII characters can be used when the Micro program revision is x6x9/M or earlier. Allowable ASCII characters include alpha, numeric, and the following symbols: !, #, \$, %, &, ', +, -, ., =, @, ^, _ , {, }, ~, (, ), [, ], (space)
-hlu hlu	Specifies a LUN to be recognized by a host.
-lu lu	Specifies an internal LUN of the disk array subsystem.

- **Examples**

The following example displays mapping information of array subsystem df600.

**Example:**

```
% auhgmap -unit df600 -refer
Password:
Mapping mode = ON
Port Group H-LUN LUN
 0A      0    10 123
%
```

#### 4.8.4 Displaying/Registering/Changing/Deleting Host Storage Domain (Host Group)

- **Command name**

auhgdef

- **Format**

**9500V, AMS200, and AMS500:**

```
auhgdef -unit unit_name -refer
auhgdef -unit unit_name -add
ctl_no port_no [ -gno group_no ] -gname group_name
auhgdef -unit unit_name -chg
ctl_no port_no
-gno group_no | -gname group_name
-newgname group_name
auhgdef -unit unit_name -rm
ctl_no port_no
-gno group_no ... | -gname group_name ...
auhgdef -unit unit_name -init
ctl_no port_no
```

- **Description**

This command can perform the following: display a list, newly register, change a name, or delete the host group (s).

■ Options

Options	Description
-unit unit_name	Specifies the name of the array subsystem for which to display, register, change, or delete the host group (s). Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “-” (minus), “_” (underline), “.” (period), “@,” or “(space)”. Space in front and in the rear of the character string is removed.
-refer	Displays a list of the host groups which have been registered and whose host group security has been allocated to valid ports.
-add ctl_no port_no	Registers host groups which are permitted to access the specified port and their names. They cannot be registered in the host groups which have been registered. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D)
-chg ctl_no port_no	Changes the host group name that has been registered in the specified port. Specify the object host group using a host group number and host group name. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D)
-rm ctl_no port_no	Deletes the host group registered in the specified port. Specify the object host group using a host group number and host group name. Two or more command options can be specified. However, the two methods of specification cannot be used at the same time. The Host Group 0 cannot be deleted. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D)
-init ctl_no port_no	Initialize the Host Group 0 of the specified port. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B, C, D)
-gno group_no ...	<b>When the -add option is specified:</b> Specify the host group number to be registered. Only a single host group number can be specified; the specification for the host group number can be omitted. When the specification is omitted, the least one of unregistered host group numbers is assigned. <b>When the -chg option is specified:</b> Specify the number of the host group whose name is to be changed. Only a single host group number can be specified. <b>When the -rm option is specified:</b> Specify the host group number to be deleted. One or more host group number (s) can be specified; the Host Group 0 cannot be deleted. <b>Single specification:</b> Specifying a single host group number <i>Example:</i> -gno 3 <b>Multiple specification:</b> Specifying multiple host group numbers <i>Example:</i> -gno 1 2 3 4 5 8 -gno 1-5 8  When specifying the range using a hyphen (“-”), undefined host group number cannot be included within the range to be specified. <b>group_no:</b> host group number (0 to 127)

Options	Description
-gname group_name ...	<p><b>When the -add option is specified:</b> Specify the host group name to be registered. Only a single host group name can be specified.</p> <p><b>When the -chg option is specified:</b> Specify the host group name to be changed. Only a single host group name can be specified.</p> <p><b>When the -rm option is specified:</b> Specify the host group name to be deleted. One or more host group name can be specified.</p> <p><b>Single specification:</b> Specifying a single host group name  <i>Example:</i> -gname solaris</p> <p><b>Multiple specification:</b> Specifying multiple host group name  <i>Example:</i> -gname irix01 solaris win001</p> <p>group_name: host group name (<b>Note</b>)</p>
-newgname group_name	<p>Specify a host group name to be validated after the change when the -chg option is specified.</p> <p>group_name: host group name (<b>Note</b>)</p>

**Note:** No more than 16 ASCII characters can be used when the Micro program revision is x6x9/M or later. No more than 8 ASCII characters can be used when the Micro program revision is x6x9/M or earlier. Allowable ASCII characters include alpha, numeric, and the following symbols: !, #, \$, %, &, ', +, -, ., =, @, ^, \_ , {, }, ~, (, ), [, ], (space)

- **Example**

The following example displays host group information of array subsystem df600.

**Example:**

```
% auhgdef -unit df600 -refer
Password:
Port 0A
  Group HostGroupName
    0 HG0A-000
Port 0B
  Group HostGroupName
    0 HG0B-000
Port 1A
  Group HostGroupName
    0 HG1A-000
Port 1B
  Group HostGroupName
    0 HG1B-000
%
```

## 4.8.5 File Output of Host Storage Information

- **Command name**

auhgout

- **Format**

**9500V:**

```
auhgout -unit unit_name -file file_name
```

- **Description**

This command outputs the contents of the setting for the Host Storage Domain (Host Group) information set in the array subsystem in a specified file, in a text format.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem whose host storage domain (host group) information are to be output into the file. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "@", or " (space)". Space in front and in the rear of the character string is removed.
-file file_name	Specifies the name the file (path) to output the host storage domain (host group) information.

- **Example**

The following example outputs the Host Storage Domain (Host Group) information of the array subsystem df600a1 in file: hgprm.txt into the directory where the Storage Navigator is installed.

**Example:**

```
% auhgout -unit df600a1 -file hgprm.txt
%
```

The format of the output file consists of the following items. The outline of the layout of the output file is shown in Figure 4.12.

```

Configuration Information list.

DF Name : df600
Date : 2002/08/28 12:42:02
Micro Program Revision : 0651aa
Array Unit Type : DF600
Serial Number : 65010026

---- CommonInformation ----
MappingMode = ON

---- CTL0 ----
---- PortA ----
---- PortOption ----
Reset/LIP Mode(Signal) = ON
Reset/LIP Mode(Process) = ON
LIP Port All Reset Mode = ON

---- HostGroupList ----
---- HostGroupInformation ----
HostGroupNumber = 0

---- HostGroupOption ----
Host Connection Mode 1 = Standard Mode
Host Connection Mode 2
ftServer Connection Mode 2 = OFF
SRC Read Command Reject Mode = OFF
UA(06/2A00) suppress mode enable = ON
HISUP mode enable = ON
CCHS convert mode enable = ON
HP Connection mode2 enable = ON
Product ID DF400 mode = ON
NACA Mode = ON
SUN Cluster Connection Mode = ON
Persistent RSV Cluster Mode = ON
Target Reset (Bus Device Reset) Mode = ON
Reserve Mode = ON
Logical Unit Reset Mode = ON
Third Party Process Logout Mode = ON

---- LuMapping ----
  H-LUN    LUN
    6      0
   15    255
-- HostGroupInformationEnd
-- HostGroupListEnd

---- FibreSecurityInformation ----
Security = ON
SecurityCheckLevel = AllCommand
---- PermissionList ----
NodeName/PortName = 1111111111111111 200000E069402A08
LUN = 0-15,17-143
-- PermissionListEnd

```

**Figure 4.12 Host Storage Domain (Host Group) Information Output File Format**

## 4.8.6 Setting Host Group Information with a File

- **Command name**

auhgset

- **Format**

**9500V:**

```
auhgset -unit unit_name -file file_name [ -portop ] [ -opt ] [ -map ] [ -wnn ]
```

- **Description**

This command sets the Host Storage Domain (port option, host group option, mapping information, and host information) described in a file to the array subsystem. All information is set up when input classification is omitted.

- **Options**

Options	Description
-unit unit_name	Specifies the name of the array subsystem to be set with the host storage domain (host group) information for the file. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "(period)", "@," or " (space)". Space in front and in the rear of the character string is removed.
-file file_name	Specifies the name of the file (path) to input the host storage domain (host group) information.
-portop	Specified when setting up the port option.
-opt	Specified when setting up the host group option.
-map	Specified when setting up the mapping information.
-wnn	Specified when setting up the host information.

- **Example**

The following example sets array subsystem df600a1 according to the host group information described in text file: hgprm.txt.

**Example:**

```
% auhgset -unit df600a1 -file hgprm.txt
Password:
Are you sure you want to set the port and host group information? (y/n/[n]): y
When setting starts, the subsystem stops accepting access to the subsystem or th
e host group from the host.
Before setting, stop access to the subsystem or the host group from the host.
Do you want to continue processing? (y/n/[n]): y
The port and host group information has been set successfully.
%
```

## 4.9 Target Information

### 4.9.1 Displaying/Setting iSCSI Target Information

- **Command name**

autargetdef

- **Format**

**AMS200 and AMS500:**

```
autargetdef -unit unit_name -refer
```

```
autargetdef -unit unit_name -add ctl_no port_no  
[ -tno target_no ] -talias target_alias  
-iname iscsi_name | -inamefile file_name  
-authmethod [ CHAP ] [ None ]  
[ -mutual enable | disable ]  
[ -tuser target_user_name | -tuserfile file_name ]
```

```
autargetdef -unit unit_name -chg ctl_no port_no  
-tno target_no | -talias target_alias  
[ -newtalias target_alias ]  
[ -iname iscsi_name | -inamefile file_name ]  
[ -authmethod [ CHAP ] [ None ] ]  
[ -authflag enable | disable ]  
[ -tuser target_user_name | -tuserfile file_name ]  
[ -tsecret ]
```

```
autargetdef -unit unit_name -rm ctl_no port_no  
-tno target_no ... | -talias target_alias ...
```

```
autargetdef -unit unit_name -init ctl_no port_no
```

- **Description**

This command displays or sets the iSCSI target information.

- **Options**

Options	Description
-unit unit_name	Specifies the name of the array unit for which to display or set the target information. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-" (minus), "_" (underline), "." (period), "@", or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays the target information.
-add ctl_no	Adds the target information.

Options	Description
port_no	ctl_no: Controller number (0, 1) port_no: Port number (A, B)
-chg ctl_no port_no	Changes the target information. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B)
-rm ctl_no port_no	Deletes the target information. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B)
-init ctl_no port_no	Initializes the Target 0. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B)
-tno target_no	<b>When the -add option is specified:</b> Specify the target number. When the specification is omitted, Storage Navigator Modular assigns the minimum number. <b>When the -chg option is specified:</b> Specify the target number. <b>target_no:</b> Target number
-tno target_no ...	Specify the target number. Single or multiple target numbers can be specified. <b>Single specification:</b> Specifying a single target number. <b>Example:</b> -tno 3 <b>Multiple specification:</b> Specifying multiple target numbers. <b>Example:</b> -tno 1 2 3 4 5 8 -tno 1-5 8 <b>target_no:</b> Target number
-talias target_alias	Specify the target alias. Space in front and in the rear of the character string is removed. Cannot specify spaces only. <b>target_alias:</b> Target alias ( <b>Note 1</b> )
-talias target_alias ...	Specify the target alias. Space in front and in the rear of the character string is removed. Cannot specify spaces only. Single or multiple target aliases can be specified. <b>Single specification:</b> Specifying a single target alias. <b>Example:</b> -talias solaris <b>Multiple specification:</b> Specifying multiple target aliases. <b>Example:</b> -talias irix01 solaris win001 <b>target_alias:</b> Target alias ( <b>Note 1</b> )
-iname iscsi_name	Specifies the iSCSI name. <b>iscsi_name:</b> iSCSI name ( <b>Note 2</b> )
-iname file_name	Specify the file (path) name when setting the iSCSI name using a file. <b>file_name:</b> File (path) name
-authmethod [ CHAP ] [ None ]	Specifies the authentication method. Specify one or more parameters from <b>CHAP</b> or <b>None</b> . <b>CHAP:</b> CHAP <b>none:</b> Does not authenticate.

Options	Description
-mutual enable   disable	Specifies whether to set the mutual effective or ineffective. <b>enable:</b> Enables the mutual. <b>disable:</b> Disables the mutual.
-tuser target_user_name	Specifies the target user name. Space in front and in the rear of the character string is removed. Cannot specify spaces only. <b>target_user_name:</b> Target user name ( <b>Note 3</b> )
-tuserfile file_name	Specifies the file (path) name when setting the target user name using a file. <b>file_name:</b> File (path) name
-newtalias target_alias	Specifies the target alias to be changed. Space in front and in the rear of the character string is removed. Cannot specify spaces only. <b>target_alias:</b> Target alias ( <b>Note 1</b> )
-tsecret	Specify this option when changing Secret of the target. ( <b>Note 4</b> )

**Note 1:** For target alias, no more than 32 ASCII characters may be used..

**Note 2:** For iSCSI name, less than or equal to 223 ASCII characters (alphabetic characters, period (.), hyphen (-), and colon (:)) can be used.

**Note 3:** For target user name, no more than 256 ASCII characters may be used. Allowable ASCII characters include alpha, numeric, and the following symbols: !, #, \$, %, &, ', +, -, ., =, @, ^, \_ , {, }, ~, (, ), [, ], (space).

**Note 4:** For Secret, 12 to 32 ASCII characters may be used. Allowable ASCII characters include alpha, numeric, and the following symbols: !, #, \$, %, &, ', +, -, ., =, @, ^, \_ , {, }, ~, (, ), [, ], (space).

**Note 5:** At the Windows 98 MS-DOS Prompt, the input buffer is up to 128 characters by default. Use the options, **-inamefile** and **-tuserfile**, when a long iSCSI name or target user name is specified. The first line of the specified file is set for iSCSI name or target user name, and the second line and the following are invalid.

- **Example**

The following example displays the target information of array unit df700.

**Example:**

```
% autargetdef -unit df700 -refer
Port 0A
      Authentication      Mutual
Target      Method        CHAP Algorithm  Authentication  User Name
      iSCSI Name
000:T000    CHAP          MD5            Disable        iqn.1994-0
4.jp.co.hitachi:rsd.d70.t.00000.0a000
      iqn.1994-04.jp.co.hitachi:rsd.d70.t.00000.0a000
Port 0B
:
Port 1A
:
Port 1B
:
%
```

## 4.9.2 Displaying/Setting Initiator Information

- **Command name**

```
autargetini
```

- **Format**

- **AMS200 and AMS500:**

```
autargetini -unit unit_name -refer  
[ ctl_no port_no -tno target_no | -talias target_alias ]  
[ ctl_no port_no -login ]
```

```
autargetini -unit unit_name -set ctl_no port_no  
-tgs on | off
```

```
autargetini -unit unit_name -add ctl_no port_no  
-tno target_no | -talias target_alias  
[ -iname iscsi_name | -inamefile file_name ]  
[ -ininame initiator_name ]
```

```
autargetini -unit unit_name -chg ctl_no port_no  
-iname iscsi_name | -inamefile file_name |  
-ininame initiator_name  
[ -newiname new_iscsi_name | -newinamefile file_name ]  
[ -newininame new_initiator_name ]
```

```
autargetini -unit unit_name -rm ctl_no port_no  
-tno target_no | -talias target_alias ]  
-iname iscsi_name | -inamefile file_name |  
-ininame initiator_name
```

```
autargetini -unit unit_name -availablelist ctl_no port_no  
-tno target_no | -talias target_alias
```

- **Description**

This command displays or sets the initiator information.

■ Options

Options	Description
-unit unit_name	Specifies the name of the array unit for which to display or to set the initiator information. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", "." (period), "@", or " (space)". Space in front and in the rear of the character string is removed.
-refer [ ctl_no port_no ]	Displays the initiator information. The initiator information list is sorted by the iSCSI name. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B)
-set ctl_no port_no	Sets the target security. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B)
-add ctl_no port_no	Sets the initiator information. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B)
-chg ctl_no port_no	Changes the initiator information. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B)
-rm ctl_no port_no	Deletes the initiator information. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B)
-availablelist ctl_no port_no	Displays the eligible initiator information. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B)
-tno target_no	Specifies the target number. <b>target_no</b> : Target number
-talias target_alias	Specifies the target alias. Space in front and in the rear of the character string is removed. Cannot specify spaces only. <b>target_alias</b> : Target alias ( <b>Note 1</b> )
-login	Specify this option when displaying initiator information that is logged in on the specified port.
-tgs on   off	Specify whether to validate or invalidate the target security. <b>on</b> : Enables the target security. <b>off</b> : Disables the target security.
-iname iscsi_name	Specifies the iSCSI name. <b>iscsi_name</b> : iSCSI name ( <b>Note 2</b> )
-inamefile file_name	Specifies the file (path) name when setting the iSCSI name using a file. <b>file_name</b> : File (path) name
-ininame initiator_name	Specifies the initiator name. Space in front and in the rear of the character string is removed. Cannot specify spaces only. <b>initiator_name</b> : Initiator name ( <b>Note 3</b> )

Options	Description
-newiname new_iscsi_name	Specifies the iSCSI name to be changed. <b>new_iscsi_name:</b> iSCSI name ( <b>Note 2</b> )
-newinamefile file_name	Specifies the file (path) name when changing the iSCSI name using a file. <b>file_name:</b> File (path) name
-newininame new_initiator_name	Specifies the initiator name to be changed. Space in front and in the rear of the character string is removed. Cannot specify spaces only. <b>new_initiator_name:</b> Initiator name ( <b>Note 3</b> )

**Note 1:** For target alias, no more than 32 ASCII characters may be used. Allowable ASCII characters include alpha, numeric, and the following symbols: !, #, \$, %, &, ', +, -, ., =, @, ^, \_, {, }, ~, (, ), [, ], (space).

**Note 2:** For iSCSI name, less than or equal to 223 ASCII characters (alphabetic characters, period (.), hyphen (-), and colon (:)) can be used.

**Note 3:** For initiator name, no more than 32 ASCII characters may be used. Allowable ASCII characters include alpha, numeric, and the following symbols: !, #, \$, %, &, ', +, -, ., =, @, ^, \_, {, }, ~, (, ), [, ], (space).

**Note 4:** At the Windows 98 MS-DOS Prompt, the input buffer is up to 128 characters by default. Use the option, **-inamefile** or **-newinamefile**, when a long iSCSI name is specified. The first line of the specified file is set for iSCSI name, and the second line and the following are invalid.

#### ■ Example

The following example displays the initiator information of array unit df700.

#### **Example:**

```
% autargetini -unit df700 -refer
Port 0A Target Security ON
  Detected Initiator
    iSCSI Name
    iqn.2005-08.jp.co.hitachi:111.xxx.x.xxxxxx.xx.xxx
    :
  Assigned Initiator
    Target      Name          iSCSI Name
    000:TG000   windows-00001  iqn.2005-08.jp.co.hitachi:444.xxx.x.xxxxxx.xx.xxx
    :
  Assignable Initiator
    iSCSI Name
    iqn.2005-08.jp.co.hitachi:555.xxx.x.xxxxxx.xx.xxx
    :
Port 0B Target Security OFF
  :
Port 1A Target Security OFF
  :
Port 1B Target Security OFF
  :
%
```

### 4.9.3 Displaying/Setting iSCSI Target Options

- **Command name**

autargetopt

- **Format**

**AMS200 and AMS500:**

autargetopt -unit unit\_name -refer

When specifying per target option.

```
autargetopt -unit unit_name -set
  [ -HostConnection ctl_no port_no group_no
    standard | OpenVMS | TRESPASS | WolfPack ]
  [ -HP                ctl_no port_no group_no enable | disable ]
  [ -PSUReadReject    ctl_no port_no group_no enable | disable ]
  [ -UASuppress       ctl_no port_no group_no enable | disable ]
  [ -NACA              ctl_no port_no group_no enable | disable ]
  [ -HISUPOff         ctl_no port_no group_no enable | disable ]
  [ -ResetPropagation  ctl_no port_no group_no enable |
disable ]
  [ -UniqueReserve1   ctl_no port_no group_no enable | disable ]
  [ -ASLReportAPG     ctl_no port_no group_no enable | disable ]
  [ -ASLReportAP      ctl_no port_no group_no enable | disable ]
  [ -ASLReportAA      ctl_no port_no group_no enable | disable ]
  [ -PIDNoRep         ctl_no port_no group_no enable | disable ]
  [ -PIDConv          ctl_no port_no group_no enable | disable ]
  [ -TruCluster       ctl_no port_no group_no enable | disable ]
  [ -SerialResponse   ctl_no port_no group_no enable | disable ]
  [ -SameNodeName     ctl_no port_no group_no enable | disable ]
  [ -CCHS             ctl_no port_no group_no enable | disable ]
  [ -SPC2             ctl_no port_no group_no enable | disable ]
```

When specifying per host target.

```
autargetopt -unit unit_name -set ctl_no port_no
  -tno group_no | -talias target_alias [ -HostConnection
standard | OpenVMS | TRESPASS | WolfPack ]
  [ -HP                enable | disable ]
  [ -PSUReadReject     enable | disable ]
  [ -UASuppress        enable | disable ]
  [ -NACA              enable | disable ]
  [ -HISUPOff         enable | disable ]
  [ -ResetPropagation  enable | disable ]
  [ -UniqueReserve1   enable | disable ]
  [ -ASLReportAPG     enable | disable ]
  [ -ASLReportAP      enable | disable ]
  [ -ASLReportAA      enable | disable ]
  [ -PIDNoRep         enable | disable ]
  [ -PIDConv          enable | disable ]
  [ -TruCluster       enable | disable ]
  [ -SerialResponse   enable | disable ]
  [ -SameNodeName     enable | disable ]
  [ -CCHS             enable | disable ]
  [ -SPC2             enable | disable ]
```

- **Description**

This command displays or sets the iSCSI information.

- **Options**

**Common**

Options	Description
-unit unit_name	Specifies the name of the array unit in which the iSCSI target options are to be displayed or set.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", "." (period), "@", or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays the iSCSI target options.

**When Specifying per Option**

Options	Description
-set	Sets the iSCSI target options.
-HostConnection ctl_no port_no target_no standard   OpenVMS   TRESPASS   WolfPack	Specifies the mode to be emulated. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>target_no:</b> Target number <b>standard:</b> Open system emulation mode <b>OpenVMS:</b> Open VMS mode <b>TRESPASS:</b> TRESPASS mode <b>WolfPack:</b> WolfPack mode
-HP ctl_no port_no target_no enable   disable	Specifies whether to set the HP-UX mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>target_no:</b> Target number <b>enable:</b> Enables the HP-UX mode. <b>disable:</b> Disables the HP-UX mode.
-PSUEReadReject ctl_no port_no target_no enable   disable	Specifies whether to set the PSUE Read Reject mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>target_no:</b> Target number <b>enable:</b> Enables the PSUE Read Reject mode. <b>disable:</b> Disables the PSUE Read Reject mode.
-UASuppress ctl_no port_no target_no enable   disable	Specifies whether or not to suppress a unit attention (06/2A00). <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>target_no:</b> Target number <b>enable:</b> Suppress the unit attention. <b>disable:</b> Does not suppress the unit attention.

Options	Description
-NACA ctl_no port_no target_no enable   disable	Specifies whether to set the NACA mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>target_no:</b> Target number <b>enable:</b> Enables the NACA mode. <b>disable:</b> Disables the NACA mode.
-HISUPOff ctl_no port_no target_no enable   disable	Specifies whether to set the HISUP OFF mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>target_no:</b> Target number <b>enable:</b> Enables the HISUP OFF mode. <b>disable:</b> Disables the HISUP OFF mode.
-ResetPropagation ctl_no port_no target_no enable   disable	Specifies whether to set the Reset Propagation mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>target_no:</b> Target number <b>enable:</b> Enables the Reset Propagation mode. <b>disable:</b> Disables the Reset Propagation mode.
-UniqueReserve1 ctl_no port_no target_no enable   disable	Specifies whether to set the Unique Reserve mode 1 effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>target_no:</b> Target number <b>enable:</b> Enables the Unique Reserve mode 1. <b>disable:</b> Disables the Unique Reserve mode 1.
-ASLReportAPG ctl_no port_no target_no enable   disable	Specifies whether to set the ASL Report mode (Active/Passive Group) effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>target_no:</b> Target number <b>enable:</b> Enables the ASL Report mode (Active/Passive Group). <b>disable:</b> Disables the ASL Report mode (Active/Passive Group).
-ASLReportAP ctl_no port_no target_no enable   disable	Specifies whether to set the ASL Report mode (Active/Passive) effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>target_no:</b> Target number <b>enable:</b> Enables the ASL Report mode (Active/Passive). <b>disable:</b> Disables the ASL Report mode (Active/Passive).
-ASLReportAA ctl_no port_no target_no enable   disable	Specifies whether to set the ASL Report mode (Active/Active) effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>target_no:</b> Target number <b>enable:</b> Enables the ASL Report mode (Active/Active). <b>disable:</b> Disables the ASL Report mode (Active/Active).

Options	Description
-PIDNoRep ctl_no port_no target_no enable   disable	Specifies whether to set the Port-ID No Report mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>target_no:</b> Target number <b>enable:</b> Enables the Port-ID No Report mode. <b>disable:</b> Disables the Port-ID No Report mode.
-PIDConv ctl_no port_no target_no enable   disable	Specifies whether to set the Port-ID Conversion mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>target_no:</b> Target number <b>enable:</b> Enables the Port-ID Conversion mode. <b>disable:</b> Disables the Port-ID Conversion mode.
-TruCluster ctl_no port_no target_no enable   disable	Specifies whether to set the Tru Cluster Connection mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>target_no:</b> Target number <b>enable:</b> Enables the Tru Cluster Connection mode. <b>disable:</b> Disables the Tru Cluster Connection mode.
-SerialResponse ctl_no port_no target_no enable   disable	Specifies whether to set the Product Serial Response mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>target_no:</b> Target number <b>enable:</b> Enables the Product Serial Response mode. <b>disable:</b> Disables the Product Serial Response mode.
-SameNodeName ctl_no port_no target_no enable   disable	Specifies whether to set the Same Node Name mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>target_no:</b> Target number <b>enable:</b> Enables the Same Node Name mode. <b>disable:</b> Disables the Same Node Name mode.
-CCHS ctl_no port_no target_no enable   disable	Specifies whether to set the CCHS convert mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>target_no:</b> Target number <b>enable:</b> Enables the CCHS convert mode. <b>disable:</b> Disables the CCHS convert mode.
-SPC2 ctl_no port_no target_no enable   disable	Specifies whether to set the SPC-2 mode effective or ineffective. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>target_no:</b> Target number <b>enable:</b> Enables the SPC-2 mode. <b>disable:</b> Disables the SPC-2 mode.

## When Specifying per Target

Options	Description
-set ctl_no port_no	Sets the target options. <b>ctl_no</b> : Controller number (0, 1) <b>port_no</b> : Port number (A, B)
-tno target_no	Specifies a target number. <b>target_no</b> : Target number
-talias target_alias	Specifies the target alias. Space in front and in the rear of the character string is removed. Cannot specify spaces only. <b>target_alias</b> : Target alias ( <b>Note 1</b> )
-HostConnection standard   OpenVMS   TRESPASS   WolfPack	Specifies the mode to be emulated. <b>standard</b> : Open system emulation mode <b>OpenVMS</b> : Open VMS mode <b>TRESPASS</b> : TRESPASS mode <b>WolfPack</b> : WolfPack mode
-HP enable   disable	Specifies whether to set the HP-UX mode effective or ineffective. <b>enable</b> : Enables the HP-UX mode. <b>disable</b> : Disables the HP-UX mode.
-PSUEReadReject enable   disable	Specifies whether to set the PSUE Read Reject mode effective or ineffective. <b>enable</b> : Enables the PSUE Read Reject mode. <b>disable</b> : Disables the PSUE Read Reject mode.
-UASuppress enable   disable	Specifies whether or not to suppress a unit attention (06/2A00). <b>enable</b> : Suppress the unit attention. <b>disable</b> : Does not suppress the unit attention.
-NACA enable   disable	Specifies whether to set the NACA mode effective or ineffective. <b>enable</b> : Enables the NACA mode. <b>disable</b> : Disables the NACA mode.
-HISUPOff enable   disable	Specifies whether to set the HISUP OFF mode effective or ineffective. <b>enable</b> : Enables the HISUP OFF mode. <b>disable</b> : Disables the HISUP OFF mode.
-ResetPropagation enable   disable	Specifies whether to set the Reset Propagation mode effective or ineffective. <b>enable</b> : Enables the Reset Propagation mode. <b>disable</b> : Disables the Reset Propagation mode.
-UniqueReserve1 enable   disable	Specifies whether to set the Unique Reserve mode 1 effective or ineffective. <b>enable</b> : Enables the Unique Reserve mode 1. <b>disable</b> : Disables the Unique Reserve mode 1.
-ASLReportAPG enable   disable	Specifies whether to set the ASL Report mode (Active/Passive Group) effective or ineffective. <b>enable</b> : Enables the ASL Report mode (Active/Passive Group). <b>disable</b> : Disables the ASL Report mode (Active/Passive Group).

Options	Description
-ASLReportAP enable   disable	Specifies whether to set the ASL Report mode (Active/Passive) effective or ineffective. <b>enable:</b> Enables the ASL Report mode (Active/Passive). <b>disable:</b> Disables the ASL Report mode (Active/Passive).
-ASLReportAA enable   disable	Specifies whether to set the ASL Report mode (Active/Active) effective or ineffective. <b>enable:</b> Enables the ASL Report mode (Active/Active). <b>disable:</b> Disables the ASL Report mode (Active/Active).
-PIDNoRep enable   disable	Specifies whether to set the Port-ID No Report mode effective or ineffective. <b>enable:</b> Enables the Port-ID No Report mode. <b>disable:</b> Disables the Port-ID No Report mode.
-PIDConv enable   disable	Specifies whether to set the Port-ID Conversion mode effective or ineffective. <b>enable:</b> Enables the Port-ID Conversion mode. <b>disable:</b> Disables the Port-ID Conversion mode.
-TruCluster enable   disable	Specifies whether to set the Tru Cluster Connection mode effective or ineffective. <b>enable:</b> Enables the Tru Cluster Connection mode. <b>disable:</b> Disables the Tru Cluster Connection mode.
-SerialResponse enable   disable	Specifies whether to set the Product Serial Response mode effective or ineffective. <b>enable:</b> Enables the Product Serial Response mode. <b>disable:</b> Disables the Product Serial Response mode.
-SameNodeName enable   disable	Specifies whether to set the Same Node Name mode effective or ineffective. <b>enable:</b> Enables the Same Node Name mode. <b>disable:</b> Disables the Same Node Name mode.
-CCHS enable   disable	Specifies whether to set the CCHS convert mode effective or ineffective. <b>enable:</b> Enables the CCHS convert mode. <b>disable:</b> Disables the CCHS convert mode.
-SPC2 enable   disable	Specifies whether to set the SPC-2 mode effective or ineffective. <b>enable:</b> Enables the SPC-2 mode. <b>disable:</b> Disables the SPC-2 mode.

**Note 1:** For target alias, no more than 32 ASCII characters may be used. Allowable ASCII characters include alpha, numeric, and the following symbols: !, #, \$, %, &, ', +, -, ., =, @, ^, \_ , {, }, ~, (, ), [, ], (space).

- **Example**

The following example displays the target options of array unit df700.

**Example:**

```
% autargetopt -unit df700 -refer
Port 0A Target  000:T000
  Host connection mode 1 = standard
  Host connection mode 2
    HP-UX Mode = OFF
    PSUE Read Reject Mode = OFF
    UA(06/2A00) suppress Mode = OFF
    NACA Mode = OFF
    HISUP OFF Mode = ON
    Reset Propagation Mode = OFF
    Unique Reserve Mode 1 = OFF
    ASL Report Mode(Active/Passive Group) = OFF
    ASL Report Mode(Active/Passive) = OFF
    ASL Report Mode(Active/Active) = OFF
    Port-ID No Report Mode = OFF
    Port-ID Conversion Mode = OFF
    Tru Cluster Mode = OFF
    Product Serial Response Mode = OFF
    Same Node Name Mode = OFF
    CCHS Mode = OFF
    SPC-2 Mode = OFF

Port 0B Target  000:T000
:
:
Port 1A Target  000:T000
:
:
Port 1B Target  000:T000
:
:
%
```

## 4.9.4 Displaying/Setting iSCSI Target Mapping Information

- **Command name**

autargetmap

- **Format**

**AMS200 and AMS500:**

```
autargetmap -unit unit_name -refer
```

When specifying target number.

```
autargetmap -unit unit_name -add ctl_no port_no target_no hlu lu
```

```
autargetmap -unit unit_name -chg ctl_no port_no target_no hlu lu
```

```
autargetmap -unit unit_name -rm  ctl_no port_no target_no hlu lu
```

When specifying target number or target alias.

```
autargetmap -unit unit_name -add ctl_no port_no
             -tno target_no | -talias target_alias -hlu hlu -lu lu
```

```
autargetmap -unit unit_name -chg ctl_no port_no
             -tno target_no | -talias target_alias -hlu hlu -lu lu
```

```
autargetmap -unit unit_name -rm  ctl_no port_no
             -tno target_no | -talias target_alias -hlu hlu -lu lu
```

```
autargetmap -unit unit_name -MappingMode on | off
```

```
autargetmap -unit unit_name -availablelist ctl_no port_no
             -tno target_no | -talias target_alias -hlu | -lu
```

- **Description**

This command displays or sets the iSCSI target mapping information.

- **Options**

Options	Description
-unit unit_name	Specifies the name of the array unit in which the mapping information to be displayed or set.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “- (minus)”, “_ (underline)”, “.” (period), “@”, or “ (space)”. Space in front and in the rear of the character string is removed.
-refer	Displays the mapping information.
-MappingMode on   off	Specifies whether to set the Mapping mode effective or ineffective. <b>on:</b> Enables the Mapping mode. <b>off:</b> Disables the Mapping mode.

Options	Description
-availablelist ctl_no port_no	A list of LUNs or H-LUNs, each of which is eligible for the mapping is displayed within the specified controller number, a port number, and a target.
-hlu	Specify when displaying a list of H-LUNs, each of which is eligible for the mapping.
-lu	Specify when displaying a list of LUNs, each of which is eligible for the mapping.

### When Specifying the Target Number

Options	Description
-add ctl_no port_no target_no hlu lu	Adds the mapping information. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>target_no:</b> Target number <b>hlu:</b> LU number recognized by the host <b>lu:</b> LU number of the array unit
-chg ctl_no port_no target_no hlu lu	Changes the mapping information. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>target_no:</b> Target number <b>hlu:</b> LU number recognized by the host <b>lu:</b> LU number of the array unit
-rm ctl_no port_no target_no hlu lu	Deletes the mapping information. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B) <b>target_no:</b> Target number <b>hlu:</b> LU number recognized by the host <b>lu:</b> LU number of the array unit

### When Specifying the Target Number or Target Alias

Options	Description
-add ctl_no port_no	Adds the mapping information. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B)
-chg ctl_no port_no	Changes the mapping information. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B)
-rm ctl_no port_no	Deletes the mapping information. <b>ctl_no:</b> Controller number (0, 1) <b>port_no:</b> Port number (A, B)
-tno	Specifies the target number.

Options	Description
target_no	<b>target_no:</b> Target number
-talias target_alias	Specifies the target alias. Space in front and in the rear of the character string is removed. Cannot specify spaces only. <b>target_name:</b> Target alias ( <b>Note 1</b> )
-hlu hlu	Specifies a LUN to be recognized by a host.
-lu lu	Specifies an internal LUN of the disk array subsystem.

**Note 1:** For target alias, no more than 32 ASCII characters may be used. Allowable ASCII characters include alpha, numeric, and the following symbols: !, #, \$, %, &, ', +, -, ., =, @, ^, \_ , {, }, ~, (, ), [, ], (space).

- **Example**

The following example displays mapping information of array unit df700.

**Example:**

```
% autargetmap -unit df700 -refer
Mapping mode = ON
Port  Target          H-LUN  LUN
 0A  000:T000          0      0
 0A  000:T000          1     100
  :
 0B  000:T000          0      0
 0B  000:T000          1     100
  :
%
```

## 4.10 Downloading/Replacing the Microprogram

- **Command name**

aumicro

- **Format**

**9200 and 9500V:**

```
aumicro -unit unit_name -read -fpath disk01
```

```
aumicro -unit unit_name -read -path disk01 disk02 disk03 ...
```

**AMS200 and AMS500:**

```
aumicro -unit unit_name -read -fpath maicro_path
```

```
aumicro -unit unit_name -downloadrev
```

**9200, 9500V, AMS200, and AMS500:**

```
aumicro -revision
```

```
aumicro -unit unit_name -download -time time -check on | off
```

```
aumicro -unit unit_name -change -ctl0 | -ctl1
```

```
aumicro -clean
```

- **Description**

This command downloads a microprogram into the array subsystem. Additionally, it replaces the current microprogram with a downloaded microprogram.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem whose microprogram to download and replace. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-" (minus), or "_" (underline).
-read	Reads a microprogram onto the Storage Navigator Modular.
-path disk01 disk02 disk03 ...	Specify sequentially the path names to individual directories in which each file of a microprogram to be downloaded is stored.
-fpath disk01	Specifies the path name of the directory which stored a disk 01 file of microprogram to download.
-fpath maicro_path	Specifies the path name of the directory which stored a file of microprogram to download.
-revision	Displays the revision of a microprogram which has been read onto the Storage Navigator Modular.
-download	Downloads a microprogram into an array unit.
-time time	Specifies the time interval (0 to 60 seconds) at which to download a microprogram.
-check on   off	Specifies whether or not to check the revision of a microprogram.
-downloadrev	Displays the revision of a microprogram which has been downloaded into an array unit.

Options	Description
-change	Replaces a microprogram.
-ctl0   -ctl1	Specifies the controller whose microprogram is to be replaced.
-clean	Deletes the microprogram which has been read onto the Storage Navigator Modular.

**Note:** The time interval can be specified from 0 second, however, values over 3 seconds are recommended if execution is carried out while ON.

#### ■ Examples

The following example downloads a microprogram into array subsystem df600h and afterward performs the microprogram replacement.

This example checks the revision of a microprogram of array subsystem df600h when downloading it.

**Example:**

```
% aurev -unit df600a1
Serial Number : 01234567
Microprogram Revision : 1654
%
```

This example first reads in a microprogram to be downloaded. The microprogram is stored in several floppy disks or CD-R. This example shows that the contents of the floppy disk are stored in directories disk01, disk02, disk03, disk04, disk05, and disk06.

**Example:**

```
% aumicro -unit df600h -read -fpath C:\DA Manager CLI\micro\disk01
Password:
Are you sure you want to read the micro program? (y/n [n]): y
Reading the file ended normally.
%
```

This example checks the revision of the read-in microprogram.

**Example:**

```
% aumicro -revision
Password:
New Revision : 1654
%
```

This example downloads the read-in microprogram into array subsystem df600h. It sets the time interval to 3 seconds, and specifies the checking of the microprogram revision. While downloading, the number of files that are already downloaded: mmm, and the total number of files to be downloaded: nnn are will be displayed.

**Example:**

```
% aumicro -unit df600h -download -time 3 -check on
Password:
Are you sure you want to download the micro program to the subsystem? (y/n [n]): y
When micro program replacement starts, the controller stops accepting any access
from the host until the replacement completes.
If you press the 'y' key, access from the host will be again possible right after
you press the return key on the message that will be displayed when replacement
is completed.
If you press the 'n' key, access from the host will be possible as soon as the
micro program replacement completes and pressing the return key on the message
will have no action. (y/n[n]): y
df600h: mmm/nnn done.
The download has completed.
%
```

This example replaces the current microprogram with the downloaded microprogram. Replacing takes place in the order of controller 0 and then controller 1.

**WARNING:** This operation will interrupt I/O from the host and may require rebooting the subsystem.

**WARNING:** If you are using TrueCopy or TrueCopy Extended Distance and you are required to reboot, change the pair status to PSUS before you reboot.

**Example:**

```
% aumicro -unit df600h -change -ctl0
Password:
It exchanges the micro program of Controller 0.
This process will cause controller to stop communicating with all attached Hosts.
Are you sure? (y/n [n]): y
Now exchanging the micro program. Start Time MM:MM:SS Time Required 2 - 15min.
The access from the host will be accepted if you press the return key and if you
have pressed the option 'y' key on the message that was displayed in download.
If you have pressed the 'n' key on the message, the controller is already accept
ing accesses from host and pressing the return key will have no action.
The micro program is exchanged successfully.
%
% aumicro -unit df600h -change -ctl1
Password:
It exchanges the micro program of Controller 1.
This process will cause controller to stop communicating with all attached Hosts.
Are you sure? (y/n [n]): y
Now exchanging the micro program. Start Time MM:MM:SS Time Required 2 - 15min.
The access from the host will be accepted if you press the return key and if you
have pressed the option 'y' key on the message that was displayed in download.
If you have pressed the 'n' key on the message, the controller is already accept
ing accesses from host and pressing the return key will have no action.
The micro program is exchanged successfully.
%
```

**Note:** It may take time for an array subsystem to respond, depending on the condition of the array subsystem. If it does not respond after 15 minutes or more, check the condition of the array subsystem.

When downloading and replacing the microprogram has completed, the read-in microprogram in the Storage Navigator will be removed.

**Example:**

```
% aumicro -clean
Password:
Are you sure you want to delete the micro program? (y/n [n]): y
%
```

**Notes:**

- When the microprograms are replaced, if the microprogram of only one of the controllers is replaced, the array unit is placed in a warning state. When the microprogram of the other controller is replaced, the array unit recovers from the warning state. When replacing the microprograms, replace the microprograms for both controllers.
- If the microprograms are read during a microprograms download, errors will occur during the download processing. When you read microprograms, perform after the download.

## 4.11 NNC Parameters

Figure 4.13 displays an example of a connection of the host computer, in which the Storage Navigator is installed, and the disk array subsystem to which the NNC option has been added.

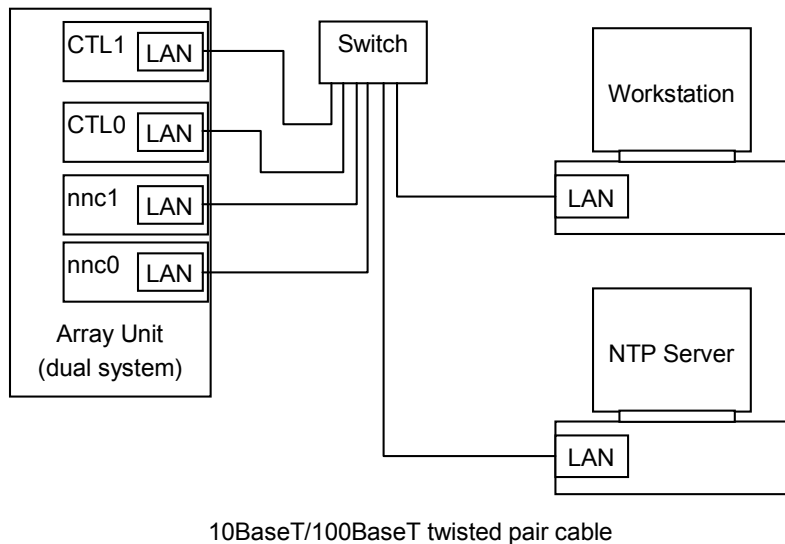


Figure 4.13 Disk Array Subsystem to which NNC Option Added (management ports)

### 4.11.1 Displaying/Setting NNC LAN Information

- **Command name**

aunnclan

- **Format**

**9200 and 9500V:**

```
aunnclan -unit unit_name -refer
aunnclan -unit unit_name -set -nnc nnc_no
          [ -addr inet_addr ]
          [ -mask netmask ]
          [ -mtu num ]
          [ -nego auto | 100mh | 100mf | 1000m ]
```

- **Description**

This command displays or sets the NNC LAN information.

- Options

Options	Description
-unit unit_name	Specifies the name of the array unit for which to display or set the NNC LAN information.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_", ".", "@", or " ". Space in front and in the rear of the character string is removed.
-refer	Displays the NNC LAN information.
-set	Sets the NNC LAN information.
-nnc nnc_no	Specifies the NNC number.
-addr inet_addr	Specifies the IP addresses.
-mask netmask	Specifies the subnet masks.
-mtu num	Specifies the MTU.
-nego auto   1000m   100mf   100mh	Specifies the negotiations. <b>auto</b> : The disk array unit makes the decision automatically. <b>100mh</b> : 100 Mbps/Half <b>100mf</b> : 100 Mbps/Full <b>1000m</b> : 1000 Mbps/Full

- Examples

The following example displays the NNC LAN information of array unit df700.

**Example:**

```
% annclan -unit df700 -refer
Password:
Current
  NNC IP Address      Subnet Mask      MTU Negotiation      Result
  0 125.0.9.98        255.255.255.0    16100 Auto           Normal
  2 125.0.9.99        255.255.255.0    16100 Auto           Normal
Setting
  NNC IP Address      Subnet Mask      MTU Negotiation
  0 125.0.9.98        255.255.255.0    16100 Auto
  2 125.0.9.99        255.255.255.0    16100 Auto
%
```

The following example sets the NNC LAN information of an array unit df700.

**Example:**

```
% annclan -unit df700 -set -nnc 0 -addr 192.168.100.100
Password:
Are you sure you want to set the LAN information of management NNC port? (y/n [n ]): y
This setting after the clustering is built may affect the provided service.
Please note the service is deleted when the service is provided in network interface for management.
When setting completes, the clustering is stopped. Then please contact the system manager.
Do you want to continue? (y/n [n]): y
The LAN information of management NNC port has been set successfully.
%
```

## 4.11.2 Displaying/Setting NAS System LU

- **Command name**

aunassyslu

- **Format**

**9200 and 9500V:**

```
aunassyslu -unit unit_name -refer
```

When connecting NNCType1.

```
aunassyslu -unit unit_name -set -nnc nnc_no
[ -sys0 lun ] [ -sys1 lun ] [ -dump0 lun ] [ -dump1 lun ]
[ -cmddev lun ] [ -dumpwk lun ] [ -syscom lun ]
[ -backup lun ] [ -backup2 lun ]
```

```
aunassyslu -unit unit_name -rm -nnc nnc_no
[ -sys0 ] [ -sys1 ] [ -dump0 ] [ -dump1 ]
[ -cmddev ] [ -dumpwk ] [ -syscom ]
[ -backup ] [ -backup2 ]
```

```
aunassyslu -unit unit_name -availablelist -nnc nnc_no
-sys0 | -sys1 | -dump0 | -dump1 |
-cmddev | -dumpwk | -syscom | -backup | -backup2
```

When connecting NNCType2.

```
aunassyslu -unit unit_name -set -nnc nnc_no
[ -sys0 lun ] [ -sys1 lun ] [ -dump0 lun ] [ -dump1 lun ]
[ -cmddev lun ] [ -cmddev2 lun ] [ -syscom lun ]
[ -backup lun ] [ -backup2 lun ]
```

```
aunassyslu -unit unit_name -rm -nnc nnc_no
[ -sys0 ] [ -sys1 ] [ -dump0 ] [ -dump1 ]
[ -cmddev ] [ -cmddev2 ] [ -syscom ]
[ -backup ] [ -backup2 ]
```

```
aunassyslu -unit unit_name -availablelist -nnc nnc_no
-sys0 | -sys1 | -dump0 | -dump1 |
-cmddev | -cmddev2 | -syscom | -backup | -backup2
```

- **Description**

This command displays or sets the NAS system information.

- **Options**

Options	Description
-unit unit_name	Specifies the name of the array unit for which to display or set the NAS system LU. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "(period)", "@", or " (space)". Space in front and in the rear of the character string is removed.

Options	Description
-refer	Displays the NAS system LU.
-set	Sets the NAS system LU.
-rm	Releases the NAS system LU.
-availablelist	Displays a list of LUNs that can be assigned to the NAS system LU.
-nnc nnc_no	Specifies the NNC numbers separating them with a slash (/). <b>Example:</b> -nnc 0/2
-sys0 lun	Specifies an LU number to be assigned to the system disk (CTL0).
-sys1 lun	Specifies an LU number to be assigned to the system disk (CTL1).
-dump0 lun	Specifies an LU number to be assigned to the volume (CTL0) for storing a dump.
-dump1 lun	Specifies an LU number to be assigned to the volume (CTL1) for storing a dump.
-cmddev lun	Specifies an LU number to be assigned to the command device.
-cmddev2 lun	Specify an LU number to be assigned to the command device (Secondary).
-dumpwk lun	Specifies an LU number to be assigned to the work area for storing a result of the dump edition.
-syscom lun	Specifies an LU number to be assigned to the common volume of the NAS system.
-backup lun	Specifies an LU number to be assigned to a volume for backing up the common volume.
-backup2 lun	Specifies an LU number to be assigned to a volume for backing up 2 the common volume.
-sys0	<b>When the -rm option is specified:</b> Releases the system disk (CTL0). <b>When the -availablelist option is specified:</b> Displays a list of LUNs that can be assigned to the system disk (CTL0).
-sys1	<b>When the -rm option is specified:</b> Releases the system disk (CTL1). <b>When the -availablelist option is specified:</b> Displays a list of LUNs that can be assigned to the system disk (CTL1).
-dump0	<b>When the -rm option is specified:</b> Releases the volume (CTL0) for storing a dump. <b>When the -availablelist option is specified:</b> Displays a list of LUNs that can be assigned to the volume (CTL0) for storing a dump.
-dump1	<b>When the -rm option is specified:</b> Releases the volume (CTL 1) for storing a dump. <b>When the -availablelist option is specified:</b> Displays a list of LUNs that can be assigned to the volume (CTL 1) for storing a dump.
-cmddev	<b>When the -rm option is specified:</b> Releases the command device. <b>When the -availablelist option is specified:</b> Displays a list of LUNs that can be assigned to the command device.

Options	Description
-cmddev2	<p><b>When the -rm option is specified:</b> Releases the command device (Secondary).</p> <p><b>When the -availablelist option is specified:</b> Displays a list of LUNs that can be assigned to the command device(Secondary).</p>
-dumpwk	<p><b>When the -rm option is specified:</b> Releases the work area for storing a result of the dump edition.</p> <p><b>When the -availablelist option is specified:</b> Displays a list of LUNs that can be assigned to the work area for storing a result of the dump edition.</p>
-syscom	<p><b>When the -rm option is specified:</b> Releases the common volume of the NAS system.</p> <p><b>When the -availablelist option is specified:</b> Displays a list of LUNs that can be assigned to the common volume of the NAS system.</p>

Options	Description
-backup	<p><b>When the -rm option is specified:</b> Releases a volume for backing up the common volume.</p> <p><b>When the -availablelist option is specified:</b> Displays a list of LUNs that can be assigned to a volume for backing up the common volume.</p>
-backup2	<p><b>When the -rm option is specified:</b> Releases a volume for backing up 2 the common volume.</p> <p><b>When the -availablelist option is specified:</b> Displays a list of LUNs that can be assigned to a volume for backing up 2 the common volume.</p>

■ **Examples**

The following example displays the NAS system LU of array unit df700.

**Example:**

```
% aunassyslu -unit df700 -refer
NNC0/2
  System Disk(CTL0)           : 0
  System Disk(CTL1)           : 100
  Volume for Dump(CTL0)       : 1
  Volume for Dump(CTL1)       : 101
  Command Device              : 5
  Working Area for Dump       : 6
  System Common Volume        : 8
  Backup Volume for Common    : 9
  Backup Volume for Common 2  : 10
%
```

The following example sets the NAS system LU of an array unit df700.

**Example:**

```
% aunassyslu -unit df700 -set -nnc 0/2 -sys0 0 -dump0 1 -sys1 100 -dump1 101 -cmddev 5
-dumpwk 6 -syscom 8 -backup 9 -backup2 10
Password:
Are you sure you want to set the system LU? (y/n [n]): y
The system LU has been set successfully.
%
```

The following example displays the NAS system LU of an array unit df700.

**Example:**

```
% aunassyslu -unit df700 -availablelist -nnc 0/2 -sys0
Password:
Available Logical Units
  LUN Capacity  RAID Group RAID Level  D-CTL C-CTL Type Status
  0  11.0 Gbyte   0  5( 4D+1P)  0    0 FC  Normal
  22 20.0 Gbyte   0  5( 4D+1P)  0    0 FC  Normal
  :
  :
%
```

### 4.11.3 Displaying/Setting NAS User LU

- **Command name**

aunasuserlu

- **Format**

- **9200 and 9500V:**

aunasuserlu -unit unit\_name -refer

aunasuserlu -unit unit\_name -add -nnc nnc\_no hlu lu

aunasuserlu -unit unit\_name -chg -nnc nnc\_no hlu lu

aunasuserlu -unit unit\_name -rm -nnc nnc\_no hlu lu

aunasuserlu -unit unit\_name -availablelist -nnc nnc\_no -hlu | -lu

- **Description**

This command displays or sets the NAS user LU.

- **Options**

Options	Description
-unit unit_name	Specifies the name of the array unit for which to display or set the NAS user LU. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-" (minus), "_" (underline), "." (period), "@," or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays the NAS user LU.
-add	Sets the NAS user LU.
-chg	Changes the NAS user LU.
-rm	Deletes the NAS user LU.
-availablelist	Displays a list of H-LUNs or LUNs that can be assigned to the NAS user LU.
-nnc nnc_no hlu lu	<p><b>When the -add option is specified:</b> Specify the H-LUN and LU to be set.</p> <p><b>When the -chg option is specified:</b> Specify the H-LUN and LU to be changed.</p> <p><b>When the -rm option is specified:</b> Specify the H-LUN and LU to be deleted.</p> <p><b>nnc_no:</b> Specify the NNC numbers separating them with a slash (/). <i>Example:</i> -nnc 0/2</p> <p><b>hlu:</b> Specify a LUN to be recognized by a host.</p> <p><b>lu:</b> Specify an internal LUN of the disk array subsystem.</p>
-hlu	Displays a list of H-LUNs that can be assigned to the NAS user LU.
-lu	Displays a list of LUNs that can be assigned to the NAS user LU.

- **Examples**

The following example displays the NAS user LU of array unit df700.

**Example:**

```
% aunasuserlu -unit df700 -refer
NNC0/2
  H-LUN    LUN
    0      20
    :
%
```

The following example sets the NAS user LU of an array unit df700.

**Example:**

```
% aunasuserlu -unit df700 -add -nnc 0/2 0 100
Password:
Are you sure you want to add the user LU? (y/n [n]): y
The user LU has been set successfully.
%
```

The following example changes the NAS user LU of array unit df700.

**Example:**

```
% aunasuserlu -unit df700 -chg -nnc 0/2 0 100
Password:
Are you sure you want to change the user LU? (y/n [n]): y
The user LU has been changed successfully.
%
```

The following example deletes the NAS user LU of array unit df700.

**Example:**

```
% aunasuserlu -unit df700 -rm -nnc 0/2 0 100
Password:
Are you sure you want to release the user LU? (y/n [n]): y
The user LU has been released successfully.
%
```

The following example displays the NAS host user LU of array unit df700.

**Example:**

```
% aunasuserlu -unit df700 -availablelist -nnc 0/2 -hlu
Password:
Available H-LUN
   8    9    10    11    12    13    14    15
   :
 248  249  250  251  252  253  254  255
%
```

The following example displays the NAS user LU of array unit df700.

**Example:**

```
% aunasuserlu -unit df700 -availablelist -nnc 0/2 -lu
Password:
Available Logical Units
  LUN Capacity   RAID Group RAID Level  D-CTL C-CTL Type Status
    22  20.0 Gbyte         0    5( 4D+1P)    0    0 FC   Normal
  :
%
```

#### 4.11.4 Displaying/Shutdown/Booting/Rebooting NNC

- **Command name**

aunnc

- **Format**

**9200 and 9500V:**

aunnc -unit unit\_name -refer

aunnc -unit unit\_name -shutdown -nnc nnc\_no

aunnc -unit unit\_name -boot -nnc nnc\_no

aunnc -unit unit\_name -reboot -nnc nnc\_no

- **Description**

This command displays the status of the NNC or Shutdown/Booting/Rebooting the NNC.

- **Options**

Options	Description
-unit unit_name	Specifies the name of the array unit for which to display the status of the NNC or shutdown/booting/rebooting the NNC. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “-” (minus), “_” (underline), “.” (period), “@,” or “(space)”. Space in front and in the rear of the character string is removed.
-refer	Displays the status of the NNC.
-shutdown	Shut downs the NNC.
-boot	Boots the NNC.
-reboot	Reboots the NNC.
-nnc nnc_no	Specifies the NNC number.

- **Examples**

The following example displays the status of the NNC of an array unit df700.

**Example:**

```
% aunnc -unit df700 -refer
NNC Status
  0 ACTIVE
  2 WARN
%
```

– Status of NAS OS

**ACTIVE:** NAS OS is active and the Node is in operation.

**BOOT:** NAS OS is in boot process.

**DISUSE:** The controller is blocked.

**DOWN:** NAS OS is abnormally stopped.

**DUMP:** A NAS Dump is being collected.

**HUNGUP:** NAS OS is hung-up.

**INACTIVE:** NAS OS is in operation and the Node is stopped.

**INST:** NAS OS is in installation process.

**NEW:** NAS OS is not installed.

**SHUTDOWN:** NAS OS is in shutdown process.

**STOP:** NAS OS is normally stopped.

**WARN:** NAS Manager is not installed, or NAS OS is in operation and the status of the Node is unknown.

**Note:** When you shutdown or reboot the NNC, just after the subsystem power ON or cluster start from the NAS Manager Modular, you must shutdown or reboot the NCC after the following confirmation.

- The cluster status is “ACTIVE”, and the resource group status is “Online” or “Offline”.

When shutting down or rebooting the NCC and the NNC is not in the above situation, it is possible that the cluster setting and resource group setting cannot execute normally. (Example: When executing the cluster stop from the NAS Manager Modular that is connected to NNC, which has not shut down or rebooted the NNC, it is possible that the cluster stop is not finished.) In this case, reboot the NNC, which has not shutdown or rebooted the NNC from Storage Navigator.

The following example stops the NNC of an array unit df700.

**Example:**

```
% aunnc -unit df700 -shutdown -nnc 0
Password:
Are you sure want to shut down the NNC? (y/n [n]): y
Please confirm the status of the cluster and resource group after the cluster has
started.
```

```
If you execute this operation when the cluster and resource group are not available, it is possible to not set the cluster and resource group after that.
Do you want to continue processing? (y/n [n]): y
While NAS OS is active, this setting may affect the provided service.
Do you want to continue processing? (y/n [n]): y
After the clustering, this setting may affect the provided service.
Do you want to continue processing? (y/n [n]): y
The shutdown of NNC0 has been required.
%
```

**Note:** There is no difference between boot and reboot operations. Do not specify anything for the boot option.

The following example boots the NNC of array unit df700.

**Example:**

```
% aunnc -unit df700 -boot -nnc 0
Password:
Are you sure want to boot the NNC0? (y/n [n]): y
The boot of NNC0 has been required.
%
```

The following example reboots the NNC of array unit df700.

**Example:**

```
% aunnc -unit df700 -reboot -nnc 0
Password:
Are you sure want to reboot the NNC0? (y/n [n]): y
Please confirm the status of the cluster and resource group after the cluster has started.
If you execute this operation when the cluster and resource group are not available, it is possible to not set the cluster and resource group after that.
Do you want to continue processing? (y/n [n]): y
While NAS OS is active, this setting may affect the provided service.
Do you want to continue processing? (y/n [n]): y
After the clustering, this setting may affect the provided service.
Do you want to continue processing? (y/n [n]): y
The reboot of NNC0 has been required.
%
```

## 4.12 Displaying Statistical Information

- **Command name**

`austatistics`

- **Format**

**9200 and 9500V:**

`austatistics -unit unit_name -memory | -drive`

**AMS200 and AMS500:**

`austatistics -unit unit_name`

- **Description**

This command displays the statistical information that has been accumulated in the array subsystem. The following items will be displayed:

- Controller use condition
- Number of host commands received
- Command execution condition
- Cache load condition

- **Options**

Options	Description
<code>-unit unit_name</code>	Specifies the name of an array subsystem in which the statistical information is to be displayed.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "@", or " (space)". Space in front and in the rear of the character string is removed.
<code>-memory   -drive</code>	Specifies the location of the statistical information to be displayed.  <b>-memory:</b> The statistical information (the current information) in the current memory will be displayed.  <b>-drive:</b> The statistical information stored in the system drive (the information at the time of array subsystem activation) will be displayed.

- **Examples**

The following example displays the statistical information of array subsystem df600a1.

**Example:**

```
% austatistics -unit df600a1 -memory
Controller
  Array Time
    Controller Acting Time (Integrated) [minute(s)] :      4676
    Controller Acting Time (Work)       [m second]  : 256969390
  CTL0
    Power On Times      :          22
  CTL1
    Power On Times      :          22

Host Commands
  CTL   LU      READ      WRITE
  0     0       2677      3261
  0     1       2752      2835
  :     :         :         :
  :     :         :         :
  1    511        0         0

Execution
  CTL   LU  Reads      Writes      Sequential  Sequential  Prefetch  Write Through
         Cache Hits  Cache Hits  Reads      Writes      Stagings  Operation
  0     0   1067      2904      384         424        31229    0
  0     1   969       2651      387         386        30291    0
  :     :         :         :         :         :         :
  :     :         :         :         :         :         :

Cache Load
  Number of Inflow Threshold Reached
  CTL0 :          0
  CTL1 :          0
%
```

## 4.13 Outputting the Performance Information File

- **Command name**

auperform

- **Format**

- **9200:**

```
auperform -unit unit_name -manual [ -cat ] [ -lu lun ... ]
          [-path path_name ]
```

```
auperform -unit unit_name -auto time [ -count nn ] [ -cat ] [
-lu lun ... ]
          [-path path_name ]
```

- **9500V:**

```
auperform -unit unit_name -manual [ -cat ] [ -lu lun ... ]
          [-path path_name ]
```

```
auperform -unit unit_name -manual -pfmststis
          [ -cat ]
          [ -portinfo ]
          [ -rginfo [ rg_no ... ] ]
          [ -luinfo [ lun lun ... ] ]
          [ -cacheinfo ]
          [ -rginfo [ rg_no ... ] ]
          [ -processorinfo ]
          [ -driveinfo [ unit_no.hdu_no ... ] ]
          [ -driveoprinfo [ unit_no.hdu_no ... ] ]
          [ -backendinfo [ path_no.loop_no ... ] ]
          [ -path path_name ]
```

```
auperform -unit unit_name -auto time [ -count nn ] [ -cat ] [
-lu lun ... ]
          [-path path_name ]
```

```
auperform -unit unit_name -auto time -pfmststis
          [ -count nn ]
          [ -cat ]
          [ -portinfo ]
          [ -rginfo [ rg_no ... ] ]
          [ -luinfo [ lun lun ... ] ]
          [ -cacheinfo ]
          [ -rginfo [ rg_no ... ] ]
          [ -processorinfo ]
          [ -driveinfo [ unit_no.hdu_no ... ] ]
          [ -driveoprinfo [ unit_no.hdu_no ... ] ]
          [ -backendinfo [ path_no.loop_no ... ] ]
          [ -path path_name ]
```

## AMS200 and AMS500:

```
auperform -unit unit_name -manual -pfmtsttis
  [ -cat ]
  [ -portinfo ctl_no [ A ] [ B ] [ C ] [ D ] ]
  [ -rginfo ctl_no [ rg_no ... ] ]
  [ -luinfo ctl_no [ lun ... ] ]
  [ -cacheinfo ctl_no ]
  [ -processorinfo ctl_no ]
  [ -driveinfo ctl_no [ unit_no.hdu_no ... ] ]
  [ -driveoprinfo ctl_no [ unit_no.hdu_no ... ] ]
  [ -backendinfo ctl_no [ path_no.loop_no ... ] ]
  [ -path path_name ]

auperform -unit unit_name -auto time -pfmtsttis
  [ -count n ]
  [ -cat ]
  [ -portinfo ctl_no [ A ] [ B ] [ C ] [ D ] ]
  [ -rginfo ctl_no [ rg_no ... ] ]
  [ -luinfo ctl_no [ lun ... ] ]
  [ -cacheinfo ctl_no ]
  [ -processorinfo ctl_no ]
  [ -driveinfo ctl_no [ unit_no.hdu_no ... ] ]
  [ -driveoprinfo ctl_no [ unit_no.hdu_no ... ] ]
  [ -backendinfo ctl_no [ path_no.loop_no ... ] ]
  [ -path path_name ]
```

### ■ Description

This command acquires the command operational condition and performance statistics information in an array subsystem, and outputs their respective information in a text-file format into the current or specified directory.

When displaying an output file, a warning message may be reported depending on the editor. However, the contents will be displayed correctly.

The following information will be acquired.

When the **-pfmtstis** option is absent:

- Number of Read commands received (Read CMD Count).
- Number of the cache-hit Read commands received within the Read command (Read CMD Hit Count).
- Rate of cache-hitting within the received Read command (Rate/Read Hit).
- Number of Write commands received (Write CMD Count).
- Number Write commands that had been cache-hit within the received Write command (Write CMD Hit Count).
- Rate of cache-hitting within the received Write command (Rate/Write Hit).

When the **-pfmtstis** option is present:

In addition to the above information, the following performance statistics information is acquired.

- Received number of Read/Write commands per second (IO Rate).

- Received number of Read commands per second (Read Rate).
- Received number of Write commands per second (Write Rate).
- Transfer size of Read/Write commands per second (Trans. Rate).
- Transfer size of Read commands per second (Read Trans. Rate).
- Transfer size of Write commands per second (Write Trans. Rate).
- Transfer size of Read commands (Read Trans. Size).
- Transfer size of Write commands (WriteTrans. Size).
- Rate of cache usage capacity within the cache capacity (Cache Write Pending Rate).
- Number of Online Verify commands per second (Online Verify Rate).
- Number of Online Verify commands (Online Verify CMD Count).
- Operation rate of the processor (Usage).
- Operation rate of the drive (HDU Operating Rate).
- Tag count (Tag Count).
- Clean cache usage rate (Cache Clean Queue Usage Rate).
- Middle cache usage rate (Cache Middle Queue Usage Rate).
- Physical cache usage rate (Cache Physical Queue Usage Rate).
- Total cache usage rate (Cache Total Queue Usage Rate).
- Received number of Initiator Control commands per second (CTL CMD Rate)
- Received number of Initiator Data commands per second (Data CMD Rate)
- Transfer size of Initiator Control commands per second (CTL CMD Trans. Rate)
- Transfer size of Initiator Data commands per second (Data CMD Trans. Rate)
- Response time of Initiator Control commands (CTL CMD Time)
- Response time of Initiator Data commands (Data CMD Time)
- Max response time of Initiator Control commands (CTL CMD Max Time)
- Max response time of Initiator Data commands (Data CMD Max Time)
- Received number of Initiator Control commands (CTL CMD Count)
- Received number of Initiator Data commands (Data CMD Count)
- Transfer size of Initiator Control commands (CTL CMD Trans. Size)
- Transfer size of Initiator Data commands (Data CMD Trans. Size)

The output file names are as follows:

When the **-pfmstatis** option is absent:

When the **-cat** option is present: “pfms.txt” for a single configuration, “pfmd.txt” for a dual configuration.

When the **-cat** option is absent:

**For acquiring manually:** “pfmsXXXXX.txt” for a single configuration, and “pfmdXXXXX.txt” for a dual configuration.

**For acquiring automatically:** “pfmsXXXXX.txt” for a single configuration, and “pfmdXXXXX.txt” for a dual configuration .(“XXXXX” is a number from 00000 to 19999.)

When the -pfmstatus option is present:

When the -cat option is present: “pfm.txt”

When the -cat option is absent:

**For acquiring manually:** “pfmXXXXX.txt”

**For acquiring automatically:** “pfmXXXXX.txt”  
 (“XXXXX” is a number from 00000 to 19999.)

■ **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem in which the performance information is to be acquired.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “- (minus),” “_ (underline),” “.” (period),” “@,” or “ (space)”. Space in front and in the rear of the character string is removed.
-manual	Acquires performance information manually.
-auto time	Automatically acquires performance information at time intervals (1 to 1439 minutes) specified for this option.
-count nn	If automatic acquisition is specified, specify the number of times acquisition is repeated (1 to 2000).
-cat	Specify this option when outputting files making them concatenated as one file.
-path path_name	Specifies the directory in which the performance information is to be acquired. If omitted, the information is output into the current directory.

**9200 and 9500V**

Options	Description
-lu lun ...	When outputting performance information of an optional logical unit, specify the logical unit number to be output.  When doing that, enter the logical unit number using numerals or a hyphen(s) (-). If the specification is omitted, the information about all logical units is output. Single or multiple logical unit numbers can be specified.  <b>Single specification:</b> Specifying a single logical unit number. <i>Example:</i> -lu 3  <b>Multiple specification:</b> Specifying multiple logical unit numbers. <i>Example:</i> -lu 0 1 2 3 4 5 8 -lu 0-5 8

**9500V, AMS200, and AMS500**

Options	Description
-pfmstatus	Specify this option when outputting the performance statistics information.

## 9500V

Options	Description
-portinfo	Specify this option when outputting the performance statistics information of port.
-rginfo [ rg_no ... ]	<p>When outputting performance statistics information of a RAID group, specify the RAID group number to be output. Enter the RAID group number using numerals or hyphen(s) (-).</p> <p>If the specification of the RAID group number is omitted, information about all RAID group is output. Single or multiple RAID group numbers can be specified.</p> <p><b>Single specification:</b> Specifying a single RAID group number  <i>Example:</i> -rginfo 3</p> <p><b>Multiple specification:</b> Specifying multiple RAID group numbers  <i>Example:</i> -rginfo 0 1 2 3 4 5 8            -rginfo 0-5 8</p>
-luinfo [ lun ... ]	<p>When outputting performance statistics information of logical unit, specify the logical unit number to be output.</p> <p>When doing that, enter the logical unit number using numerals or a hyphen(s) (-).</p> <p>If the specification of logical unit number is omitted, the information about all logical units is output. Single or multiple logical unit numbers can be specified.</p> <p><b>Single specification:</b> Specifying a single logical number  <i>Example:</i> -luinfo 3</p> <p><b>Multiple specification:</b> Specifying multiple logical unit numbers  <i>Example:</i> -luinfo 0 1 2 3 4 5 8            -luinfo 0-5 8</p>
-cacheinfo	Specify this option when outputting the performance statistics information of cache.
-processorinfo	Specify this option when outputting the performance statistics information of processor.
-driveinfo [ unit_no.hdu_no ... ]	<p>When outputting statistical information on drive performance, specify the Unit number and HDU number and punctuate them with a period. Enter the Unit number and HDU number using numerals or hyphen(s) (-).</p> <p>If the specification of the Unit number and the HDU number is omitted, information about all the drives is output. Single or multiple RAID group numbers can be specified.</p> <p><b>Single specification:</b> Specifying a single drive number  <i>Example:</i> -driveinfo 1.0</p> <p><b>Multiple specification:</b> Specifying multiple drives numbers.  <i>Example:</i> -driveinfo 1.0 2.3 3.1            -driveinfo 1.0-2.2 2.8</p>
-driveoprinfo [ unit_no.hdu_no ... ]	<p>When outputting statistical information on drive operation performance, specify the Unit number and HDU number and punctuate them with a period. Enter the Unit number and HDU number using numerals or hyphen(s) (-).</p> <p>If the specification of the Unit number and the HDU number is omitted, information about all the drives operation is output. Single or multiple Unit numbers and HDU numbers can be specified. Single or multiple Unit numbers and HDU numbers can be specified.</p> <p><b>Single specification:</b> Specifying a single drive number  <i>Example:</i> -driveoprinfo 1.0</p> <p><b>Multiple specification:</b> Specifying multiple drives numbers  <i>Example:</i> -driveoprinfo 1.0 2.3 3.1            -driveoprinfo 1.0-2.2 2.8</p>

9500V

Options	Description
<pre>-backendinfo   [ path_no.loop_no ... ]</pre>	<p>When outputting statistical information on back-end performance, specify the path number and loop number and punctuate them with a period. Enter the path number and loop number using numerals or hyphen(s) (-).</p> <p>If the specification of path number and loop number is omitted, information about all the back-end is output. Single or multiple Unit numbers and HDU numbers can be specified.</p> <p><b>Single specification:</b> Specifying a single path number and loop number  <i>Example:</i> -backendinfo 0.0</p> <p><b>Multiple specification:</b> Specifying multiple path numbers and loop numbers  <i>Example:</i> -backendinfo 0.0 1.0            -backendinfo 0.0-1.0</p>

AMS200 and AMS500

Options	Description
<pre>-portinfo ctl_no   [ A ] [ B ] [ C ] [ D ]</pre>	<p>Specify this option when outputting the performance statistics information of port. If the specification of port number is omitted, the information about all ports is output.</p> <p>ctl_no: Controller number (0, 1)</p>
<pre>-rginfo ctl_no [ rg_no ... ]</pre>	<p>When outputting performance statistics information of RAID group, specify the RAID group number to be output.</p> <p>ctl_no: Controller number (0, 1)</p> <p>When doing that, enter the RAID group number using numerals or hyphen(s) (-). If the specification of RAID group number is omitted, the information about all defined RAID group is output. Single or multiple RAID group numbers can be specified.</p> <p>Single specification: Specifying a single RAID group number.  <i>Example:</i> -rginfo 0 3</p> <p>Multiple specification: Specifying multiple RAID group numbers.  <i>Example:</i> -rginfo 0 0 1 2 3 4 5 8            -rginfo 0 0-5 8</p>
<pre>-luinfo ctl_no [ lun ... ]</pre>	<p>When outputting performance statistics information of logical unit, specify the logical unit number to be output.</p> <p>ctl_no: Controller number (0, 1)</p> <p>When doing that, enter the logical unit number using numerals or a hyphen(s) (-). If the specification of logical unit number is omitted, the information about all defined logical units is output. Single or multiple logical unit numbers can be specified.</p> <p>Single specification: Specifying a single logical unit number.  <i>Example:</i> -luinfo 0 3</p> <p>Multiple specification: Specifying multiple logical unit numbers.  <i>Example:</i> -luinfo 0 0 1 2 3 4 5 8            -luinfo 0 0-5 8</p>
<pre>-cacheinfo ctl_no</pre>	<p>Specify this option when outputting the performance statistics information of cache.</p> <p>ctl_no: Controller number (0, 1)</p>
<pre>-processorinfo ctl_no</pre>	<p>Specify this option when outputting the performance statistics information of processor.</p> <p>ctl_no: Controller number (0, 1)</p>

Options	Description
<pre>-driveinfo ctl_no  [ unit_no.hdu_no ... ]</pre>	<p>When outputting statistical information on the drive performance, specify the Unit number and HDU number, punctuating them with a period.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p>When doing that, enter the Unit number and HDU number using numerals or hyphen(s) (-). If the specification of Unit number and HDU number is omitted, the information about all the drives is output.</p> <p>Single or multiple Unit numbers and HDU numbers can be specified.</p> <p><b>Single specification:</b> Specifying a single drive number.</p> <p style="text-align: center;"><i>Example:</i> -driveinfo 0 1.0</p> <p><b>Multiple specification:</b> Specifying multiple drives numbers.</p> <p style="text-align: center;"><i>Example:</i> -driveinfo 0 1.0 2.3 3.1 -driveinfo 0 1.0-2.2 2.8</p>
<pre>-driveoprinfo ctl_no  [ unit_no.hdu_no ... ]</pre>	<p>When outputting statistical information on the drive operation performance, specify the Unit number and HDU number, punctuating them with a period.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p>When doing that, enter the Unit number and HDU number using numerals or hyphen(s) (-). If the specification of Unit number and HDU number is omitted, the information about all the drives operation is output.</p> <p>Single or multiple Unit numbers and HDU numbers can be specified.</p> <p><b>Single specification:</b> Specifying a single drive number.</p> <p style="text-align: center;"><i>Example:</i> -driveoprinfo 0 1.0</p> <p><b>Multiple specification:</b> Specifying multiple drives numbers.</p> <p style="text-align: center;"><i>Example:</i> -driveoprinfo 0 1.0 2.3 3.1 -driveoprinfo 0 1.0-2.2 2.8</p>
<pre>-backendinfo ctl_no  [ path_no.loop_no ... ]</pre>	<p>When outputting statistical information on the back-end performance, specify the path number and loop number, punctuating them with a period.</p> <p><b>ctl_no:</b> Controller number (0, 1)</p> <p>When doing that, enter the path number and loop number using numerals or hyphen(s) (-). If the specification of path number and loop number is omitted, the information about all the back-end is output.</p> <p>Single or multiple path numbers and loop numbers can be specified.</p> <p><b>Single specification:</b> Specifying a single path number and loop number.</p> <p style="text-align: center;"><i>Example:</i> -backendinfo 0 0.0</p> <p><b>Multiple specification:</b> Specifying multiple path numbers and loop numbers.</p> <p style="text-align: center;"><i>Example:</i> -backendinfo 0 0.0 1.0 -backendinfo 0 0.0-1.0</p>

**Note 1:** When the **-pfmstatics** option is present and the **-portinfo**, **-luinfo**, **-cacheinfo**, **-rginfo**, **-processorinfo**, **-driveinfo**, **-driveoprinfo**, and **-backendinfo** options are absent, all information of the port, logical unit, cache, RAID group, processor, drive, drive operation, and back-end is output. (For the AMS200 and AMS500, defined RAID group and logical unit are output.)

**Note 2:** When the `-pfmstatus` option is specified the whole information is output to files once, the size of the output data is 500 KB and 1,600 kB for 9530V/9570V and 9580/9585V respectively. When the `-pfmstatus` option is not specified the whole information is output to files once, the size of the output data is 110 kB and 450 kB for the 9530V/9570V and 9580/9585V respectively. The data size varies in proportion to the number of times of outputs specified. To output the whole information to files 20,000 times using the 9580/9585V, a disk capacity of approximately 32 GB is required when the `-pfmstatus` option is specified.

### ■ Examples

The following example acquires the performance information of array subsystem `df600a1` only once at an interval of 10 minutes.

#### **Example:**

```
% auperform -unit df600a1 -auto 10
Day yy mm hh:mm:ss yyyy Output File Name : pfm00000.txt Output Count = 1/1Turn...
The performance information file(s) has been outputted successfully.
%
```

#### **Example (of file output):**

```
No.1 ← Output number
2002/08/20 13:47:33 - 2002/08/20 13:48:33 ← Information getting time
  LU CTL      Read CMD Count  Read CMD Hit Count  Rate  Write CMD Count  Write CMD Hit Count  Rate
  0  0          0              0         0      0              0              0
  1  0          0              0         0      0              0              0
  2  0          0              0         0      0              0              0
  :
  :
  509 0          0              0         0      0              0              0
  510 0          0              0         0      0              0              0
  511 0          0              0         0      0              0              0
TOTAL 0          0              0         0      0              0              0
  LU CTL      Read CMD Count  Read CMD Hit Count  Rate  Write CMD Count  Write CMD Hit Count  Rate
  0  1          0              0         0      0              0              0
  1  1          0              0         0      0              0              0
  2  1          0              0         0      0              0              0
  :
  :
  509 1          0              0         0      0              0              0
  510 1          0              0         0      0              0              0
  511 1          0              0         0      0              0              0
TOTAL 1          0              0         0      0              0              0
```

- **No.:** Output number
- **Information getting time:** Time and date information is obtained.
- **LU:** Logical unit number
- **CTL:** Controller number
- **Read CMD Count:** Number of received Read commands.
- **Read CMD Hit Count:** Number of cache-hit Read commands to received Read commands.
- **Rate:** Rate (%) of cache-hit Read commands to received Read commands.
- **Write CMD Count:** Number of received Write commands.
- **Write CMD Hit Count:** Number of cache-hit Write commands to received Write commands.

- **Rate:** Rate (%) of cache-hit Write commands to received Write commands.
- **Total:** Entire controller

Generally, when the subsystem is structured so that the load on each controller and the load on each disk are leveled, its performance is improved. The higher the cache-hit rate, the higher the performance becomes.

**Example of file output:**

```

No.1 ← Output number
2005/01/31 11:57:48 - 2005/01/31 11:57:59 ← Information getting time
----- Port Information -----
CTL Port      IO Rate(IOPS)      Read Rate(IOPS)      Write Rate(IOPS) Read Hit(%) write Hit(%)      Trans. Rate(MB/S) Read Trans. Rate(MB/S) write Trans. Rate(MB/S)
0 0 A          0          0          0          0          0          0          0          0
0 0 B          0          0          0          0          0          0          0          0
0 1 A          0          0          0          0          0          0          0          0
0 1 B          0          0          0          0          0          0          0          0
CTL Port      Read CMD Count      Write CMD Count      Read CMD Hit Count      write CMD Hit Count      Read Trans. Size(MB) write Trans. Size(MB)
0 0 A          0          0          0          0          0          0
0 0 B          0          0          0          0          0          0
0 1 A          0          0          0          0          0          0
0 1 B          0          0          0          0          0          0
----- RG Information -----
CTL RG      IO Rate(IOPS)      Read Rate(IOPS)      Write Rate(IOPS) Read Hit(%) write Hit(%)      Trans. Rate(MB/S) Read Trans. Rate(MB/S) write Trans. Rate(MB/S)
0 0 0          0          0          0          0          0          0          0          0
0 0 1          0          0          0          0          0          0          0          0
0 1 0          0          0          0          0          0          0          0          0
0 1 1          0          0          0          0          0          0          0          0
CTL RG      Read CMD Count      Write CMD Count      Read CMD Hit Count      write CMD Hit Count      Read Trans. Size(MB) write Trans. Size(MB)
0 0 0          0          0          0          0          0          0
0 0 1          0          0          0          0          0          0
0 1 0          0          0          0          0          0          0
0 1 1          0          0          0          0          0          0
----- LU Information -----
CTL LU      IO Rate(IOPS)      Read Rate(IOPS)      Write Rate(IOPS) Read Hit(%) write Hit(%)      Trans. Rate(MB/S) Read Trans. Rate(MB/S) write Trans. Rate(MB/S)
0 0 0          0          0          0          0          0          0          0          0
0 0 1          0          0          0          0          0          0          0          0
0 1 0          0          0          0          0          0          0          0          0
0 1 1          0          0          0          0          0          0          0          0
CTL LU      Read CMD Count      Write CMD Count      Read CMD Hit Count      write CMD Hit Count      Read Trans. Size(MB) write Trans. Size(MB)
0 0 0          0          0          0          0          0          0
0 0 1          0          0          0          0          0          0
0 1 0          0          0          0          0          0          0
0 1 1          0          0          0          0          0          0
CTL LU      Read CMD Hit Count2      Read CMD Hit Time(microsec.)      Read CMD Hit Max Time(microsec.)
0 0 0          0          0          0
0 0 1          0          0          0
0 1 0          0          0          0
0 1 1          0          0          0
CTL LU      write CMD Hit Count2      write CMD Hit Time(microsec.)      write CMD Hit Max Time(microsec.)
0 0 0          0          0          0
0 0 1          0          0          0
0 1 0          0          0          0
0 1 1          0          0          0
CTL LU      Read CMD Miss Count      Read CMD Miss Time(microsec.)      Read CMD Miss Max Time(microsec.)
0 0 0          0          0          0
0 0 1          0          0          0
0 1 0          0          0          0
0 1 1          0          0          0
CTL LU      write CMD Miss Count      write CMD Miss Time(microsec.)      write CMD Miss Max Time(microsec.)
0 0 0          0          0          0
0 0 1          0          0          0
0 1 0          0          0          0
0 1 1          0          0          0
CTL LU      Read CMD Job Count      Read CMD Job Time(microsec.)      Read CMD Job Max Time(microsec.)
0 0 0          0          0          0
0 0 1          0          0          0
0 1 0          0          0          0
0 1 1          0          0          0
CTL LU      write CMD Job Count      write CMD Job Time(microsec.)      write CMD Job Max Time(microsec.)
0 0 0          0          0          0
0 0 1          0          0          0
0 1 0          0          0          0
0 1 1          0          0          0
CTL LU      Read Hit Delay CMD Count(<300ms)      Read Hit Delay CMD Count(300-499ms)      Read Hit Delay CMD Count(500-999ms)      Read Hit Delay CMD Count(1000ms-)
0 0 0          0          0          0          0
0 0 1          0          0          0          0
0 1 0          0          0          0          0
0 1 1          0          0          0          0
CTL LU      write Hit Delay CMD Count(<300ms)      write Hit Delay CMD Count(300-499ms)      write Hit Delay CMD Count(500-999ms)      write Hit Delay CMD Count(1000ms-)
0 0 0          0          0          0          0
0 0 1          0          0          0          0
0 1 0          0          0          0          0
0 1 1          0          0          0          0
CTL LU      Read Miss Delay CMD Count(<300ms)      Read Miss Delay CMD Count(300-499ms)      Read Miss Delay CMD Count(500-999ms)      Read Miss Delay CMD Count(1000ms-)
0 0 0          0          0          0          0
0 0 1          0          0          0          0
0 1 0          0          0          0          0
0 1 1          0          0          0          0
CTL LU      write Miss Delay CMD Count(<300ms)      write Miss Delay CMD Count(300-499ms)      write Miss Delay CMD Count(500-999ms)      write Miss Delay CMD Count(1000ms-)
0 0 0          0          0          0          0
0 0 1          0          0          0          0
0 1 0          0          0          0          0
0 1 1          0          0          0          0
CTL LU      Read Job Delay CMD Count(<300ms)      Read Job Delay CMD Count(300-499ms)      Read Job Delay CMD Count(500-999ms)      Read Job Delay CMD Count(1000ms-)
0 0 0          0          0          0          0
0 0 1          0          0          0          0
0 1 0          0          0          0          0
0 1 1          0          0          0          0
CTL LU      write Job Delay CMD Count(<300ms)      write Job Delay CMD Count(300-499ms)      write Job Delay CMD Count(500-999ms)      write Job Delay CMD Count(1000ms-)
0 0 0          0          0          0          0
0 0 1          0          0          0          0
0 1 0          0          0          0          0
0 1 1          0          0          0          0
CTL LU      Tag Count
0 0          0
0 1          0
0 2          0

```

```

---- Cache Information ----
CTL Write Pending Rate(%)
0
1
0
CTL Clean Queue Usage Rate(%) Middle Queue Usage Rate(%) Physical Queue Usage Rate(%) Total Queue Usage Rate(%)
0
1
0
CTL Partition Write Pending Rate(%)
0
1
0
CTL Partition Clean Queue Usage Rate(%) Middle Queue Usage Rate(%) Physical Queue Usage Rate(%)
0
1
0
---- Processor Information ----
CTL Usage(%)
0
1
CTL Host-Cache Bus Usage Rate(%) Drive-Cache Bus Usage Rate(%) Processor-Cache Bus Usage Rate(%)
0
1
0
CTL Cache(DRR) Bus Usage Rate(%) Dual Bus Usage Rate(%) Total Bus Usage Rate(%)
0
1
0
---- Drive Information ----
CTL Unit HDU IO Rate(IOPS) Read Rate(IOPS) Write Rate(IOPS) Trans. Rate(MB/S) Read Trans. Rate(MB/S) Write Trans. Rate(MB/S) online Verify Rate(IOPS)
0 0 0 0 0 0 0 0
0 0 1 0 0 0 0 0
0 0 2 0 0 0 0 0
CTL Unit HDU Read CMD Count Write CMD Count Read Trans. Size Write Trans. Size online verify CMD Count
0 0 0 0 0 0 0
0 0 1 0 0 0 13
0 0 2 0 0 0 13
---- Drive Operate Information ----
CTL Unit HDU operating Rate(%) Tag Count Unload Time(min.)
0 0 0 0 2 0
0 0 1 0 1 0
0 0 2 0 2 0
---- Backend Information ----
CTL Path Loop IO Rate(IOPS) Read Rate(IOPS) Write Rate(IOPS) Trans. Rate(MB/S) Read Trans. Rate(MB/S) Write Trans. Rate(MB/S) online Verify Rate(IOPS)
0 0 0 0 0 0 0 0
0 0 1 0 0 0 0 4
0 0 1 0 0 0 0 0
0 1 0 0 0 0 0 2
0 1 1 0 0 0 0 0
CTL Path Loop Read CMD Count Write CMD Count Read Trans. Size Write Trans. Size online verify CMD Count
0 0 0 0 0 0 39
0 0 1 0 0 0 0
0 0 1 0 0 0 26
0 1 1 0 0 0 0

```

- **No.:** Output number
- **Information getting time:** Time and date information is acquired.
- **CTL:** Controller number
- **Port:** Port number
- **IO Rate (IOPS):** Number of Read/Write commands received per second.
- **Read Rate (IOPS):** Number of Read commands received per second.
- **Write Rate (IOPS):** Number of Write commands received per second.
- **Read Hit (%):** Rate of the number of the Read commands, which could cache-hitting, out of the Read commands received in the specified period.
- **Write Hit (%):** Rate of the number of the Write commands, which could write data immediately to the cache, out of the Write commands received in the specified period.
- **Trans. Rate (MB/S):** Transfer size of Read/Write commands per second.
- **Read Trans. Rate (MB/S):** Transfer size of Read commands per second.
- **Write Trans. Rate (MB/S):** Transfer size of Write commands per second.
- **Read CMD Count:** Received number of Read commands.
- **Write CMD Count:** Received number of Write command.
- **Read CMD Hit Count:** Number of the Read commands that had been cache-hit within the received Read command.
- **Write CMD Hit Count:** Number of the Write commands, which could write data immediately to the cache.
- **Read Trans. Size (MB):** Transfer size of Read commands.
- **Write Trans. Size (MB):** Transfer size of Write commands.
- **RG:** RAID group number
- **LU:** Logical unit number
- **Read CMD Hit Count2:** Number of the Hit Read Special Path commands out of the read commands that made cache hits.

- **Read CMD Hit Time(microsec.):** The average response time of the Hit Read Special Path command.
- **Read CMD Hit Max Time(microsec.):** The maximum response time of the Hit Read Special Path command.
- **Write CMD Hit Count2:** Number of the Write Special Path commands out of the Write commands, which could write data immediately to the cache.
- **Write CMD Hit Time(microsec.):** The average response time of the Write Special Path command.
- **Write CMD Hit Max Time(microsec.):** The maximum response time of the Write Special Path command.
- **Read CMD Miss Count:** The number of the Miss Read Special Path commands out of the Read commands that made no cache hits.
- **Read CMD Miss Time(microsec.):** The average response time of the Miss Read Special Path command.
- **Read CMD Miss Max Time(microsec.):** The maximum response time of the Miss Read Special Path command.
- **Write CMD Miss Count:** The number of the Random Write Special Path commands that could complete the high-speed process up to the parity generation that is an extended process of the Write command.
- **Write CMD Miss Time(microsec.):** The average response time of the Random Write Special Path command.
- **Write CMD Miss Max Time(microsec.):** The maximum response time of the Random Write Special Path command.
- **Read CMD Job Count:** The number of the Read commands that could not perform the high-speed process.
- **Read CMD Job Time(microsec.):** The average response time of the Read command job.
- **Read CMD Job Max Time(microsec.):** The maximum response time of the Read command job.
- **Write CMD Job Count:** The number of the Write commands that could not perform the high-speed process.
- **Write CMD Job Time(microsec.):** The average response time of the Write command job.
- **Write CMD Job Max Time(microsec.):** The maximum response time of the Write command job.
- **Read Hit Delay CMD Count(<300ms):** The number of commands, whose response time is less than 300 ms, out of the Hit Read Special Path commands.
- **Read Hit Delay CMD Count(300-499ms):** The number of commands, whose response time is in a range of 300 ms to 499 ms, out of the Hit Read Special Path commands.
- **Read Hit Delay CMD Count(500-999ms):** The number of commands, whose response time is in a range of 500 ms to 999 ms, out of the Hit Read Special Path commands.
- **Read Hit Delay CMD Count(1000ms-):** The number of commands, whose response time is 1000 ms or more, out of the Hit Read Special Path commands.

- **Write Hit Delay CMD Count(<300ms):** The number of commands, whose response time is less than 300 ms, out of the Write Special Path commands.
- **Write Hit Delay CMD Count(300-499ms):** The number of commands, whose response time is in a range of 300 ms to 499 ms, out of the Write Special Path commands.
- **Write Hit Delay CMD Count(500-999ms):** The number of commands, whose response time is in a range of 500 ms to 999 ms, out of the Write Special Path commands.
- **Write Hit Delay CMD Count(1000ms-):** The number of commands, whose response time is 1000 ms or more, out of the Write Special Path commands.
- **Read Miss Delay CMD Count(<300ms):** The number of commands, whose response time is less than 300 ms, out of the Miss Read Special Path commands.
- **Read Miss Delay CMD Count(300-499ms):** The number of commands, whose response time is in a range of 300 ms to 499 ms, out of the Miss Read Special Path commands.
- **Read Miss Delay CMD Count(500-999ms):** The number of commands, whose response time is in a range of 500 ms to 999 ms, out of the Miss Read Special Path commands.
- **Read Miss Delay CMD Count(1000ms-):** The number of commands, whose response time is 1000 ms or more, out of the Miss Read Special Path commands.
- **Write Miss Delay CMD Count(<300ms):** The number of commands, whose response time is less than 300 ms, out of the Random Write Special Path commands.
- **Write Miss Delay CMD Count(300-499ms):** The number of commands, whose response time is in a range of 300 ms to 499 ms, out of the Random Write Special Path commands.
- **Write Miss Delay CMD Count(500-999ms):** The number of commands, whose response time is in a range of 500 ms to 999 ms, out of the Random Write Special Path commands.
- **Write Miss Delay CMD Count(1000ms-):** The number of commands, whose response time is 1000 ms or more, out of the Random Write Special Path commands.
- **Read Job Delay CMD Count(<300ms):** The number of commands, whose response time is less than 300 ms, out of the Read command job.
- **Read Job Delay CMD Count(300-499ms):** The number of commands, whose response time is in a range of 300 ms to 499 ms, out of the Read command job.
- **Read Job Delay CMD Count(500-999ms):** The number of commands, whose response time is in a range of 500 ms to 999 ms, out of the Read command job.
- **Read Job Delay CMD Count(1000ms-):** The number of commands, whose response time is 1000 ms or more, out of the Read command job.
- **Write Job Delay CMD Count(<300ms):** The number of commands, whose response time is less than 300 ms, out of the Write command job.
- **Write Job Delay CMD Count(300-499ms):** The number of commands, whose response time is in a range of 300 ms to 499 ms, out of the Write command job.

- **Write Job Delay CMD Count(500-999ms):** The number of commands, whose response time is in a range of 500 ms to 999 ms, out of the Write command job.
- **Write Job Delay CMD Count(1000ms-):** The number of commands, whose response time is 1000 ms or more, out of the Write command job.
- **Tag Count:** The maximum number of tags in the specified period.
- **Cache Write Pending Rate (%):** Rate of cache usage capacity (middle+physical) within the cache capacity.
- **Cache Clean Queue Usage Rate (%):** Rate of clean cache usage
- **Cache Middle Queue Usage Rate (%):** Rate of middle cache usage
- **Cache Physical Queue Usage Rate (%):** Rate of physical cache usage
- **Cache Total Queue Usage Rate (%):** Rate of total cache usage
- **Partition:** Partition number
- **Usage (%):** Operation rate of the processor.
- **Host-Cache Bus Usage Rate (%):** The use rate of the bus between the host and the cache.
- **Drive-Cache Bus Usage Rate (%):** The use rate of the bus between the drive and the cache
- **Processor-Cache Bus Usage Rate (%):** The use rate of the bus between the processor and the cache
- **Cache (DRR) Bus Usage Rate (%):** The use rate of the bus between the parity generation circuit (DRR) and the cache.
- **Dual Bus Usage Rate (%):** The use rate of the bus between the controllers.
- **Total Bus Usage Rate (%):** The total use rate of the cache bus.
- **Unit:** Unit number
- **HDU:** HDU number
- **Online Verify. Rate (IOPS):** Number of Online Verify commands per second.
- **Online Verify CMD Count:** Number of Online Verify commands.
- **Operating Rate (%):** Operation rate of the drive.
- **Tag Count:** Number of Tag
- **Unload Time (min.):** Unload time of the drive.
- **Path:** Path number
- **Loop:** Loop number

## 4.14 Displaying/Setting the Collection State of Performance Statistics Information

- **Command name**

aupfmstatiscfg

- **Format**

**9500V, AMS200, and AMS500:**

```
aupfmstatiscfg -unit unit_name -refer
```

```
aupfmstatiscfg -unit unit_name -set
```

```
[ -port      start | stop ]
```

```
[ -rglu      start | stop ]
```

```
[ -cache     start | stop ]
```

```
[ -processor start | stop ]
```

```
[ -drive     start | stop ]
```

```
[ -driveopr  start | stop ]
```

```
[ -backend   start | stop ]
```

- **Description**

This command refers to or sets the collection state of performance statistics information.

- **Options**

Options	Description
-unit unit_name	Specifies the name of the array subsystem to which the collection state of performance statistics information is referred or set.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-" (minus), "_" (underline), "." (period), "@", or " (space)". Space in front and in the rear of the character string is removed.
-refer	Refers to the collection state of performance statistics information.
-set	Sets the collection state of performance statistics information.
-port start   stop	Specifies whether to start or stop collection of information for port. <b>start:</b> Starts collecting information for port <b>stop:</b> Stops collecting information for port
-rglu start   stop	Specifies whether to start or stop collection of information for RAID group and Logical Unit. <b>start:</b> Starts collecting information for RAID group and Logical Unit <b>stop:</b> Stops collecting information for RAID group and Logical Unit.
-cache start   stop	Specifies whether to start or stop collection of information for cache. <b>start:</b> Starts collecting cache capacity and its amount used <b>stop:</b> Stops collecting cache capacity and its amount used
-processor start   stop	Specifies whether to start or stop collection of information for processor. <b>start:</b> Starts collecting information for processor <b>stop:</b> Stops collecting information for processor.

Options	Description
-drive start   stop	Specifies whether to start or stop collection of information for drives, <b>start:</b> Starts collecting information for drives <b>stop:</b> Stops collecting information for drives
-driveopr start   stop	Specifies whether to start or stop collection of information for drive operatings, <b>start:</b> Starts collecting information for drive operatings <b>stop:</b> Stops collecting information for drive operatings
-backend start   stop	Specifies whether to start or stop collection of information for back-end, <b>start:</b> Starts collecting information for back-end <b>stop:</b> Stops collecting information for back-end.

- **Examples**

The following example displays the collection state of performance statistics information of array subsystem df600a1.

**Example:**

```
% aupfmstatiscfg -unit df600a1 -refer
Password:
Port Information                : Stop
RAID Group/Logical Unit Information : Stop
Cache Information              : Stop
Processor Information          : Stop
Drive Information              : Stop
Drive Operating Information     : Stop
Back-end Information           : Stop
%
```

The following example illustrates starting the capacity of cache and usage rate, then stopping it.

**Example:**

```
% aupfmstatiscfg -unit df600a1 -set -cache start
Password:
When performance statistics is collected, access from the host is influenced.
Do you want to continue processing? (y/n [n]): y
The collection state of performance statistics information has been set successfully.
%

% aupfmstatiscfg -unit df600a1 -set -cache stop
Password:
The collection state of performance statistics information has been set successfully.
%
```

## 4.15 Monitoring Errors

### 4.15.1 Setting Up E-mail Reports

- **Command name**

aumail

- **Format**

aumail -refer

aumail -set [ -domain domain\_name ] [ -srv mail\_server\_addr ]  
[ -from from\_addr ] [ -add to\_addr ] [ -rm to\_addr ]

aumail -test

- **Description**

This command sets the E-Mail information that is transmitted when an error is detected while monitoring errors.

- **Options**

Options	Description
-refer	Displays the E-mail information set currently.
-set	Sets E-Mail information. Specify one or more options among "-domain," "-srv," "-from," "-add" and "-rm".
-domain domain_name	Specifies the domain name. Specify the domain name in less than or equal to 39 alphanumeric characters or codes.
-srv mail_server_addr	Specifies the IP address or host name of the mail server. Specify the host name in less than or equal to 99 alphanumeric characters.
-from from_addr	Specifies the mail address of an E-mail sender. Specify it the mail address in less than or equal to 99 alphanumeric characters or codes.
-add to_addr	Adds the mail address of an E-mail receiver. Specify the mail address in less than or equal to 99 alphanumeric characters or codes. Up to 20 addresses can be set as receivers.
-rm to_addr	Deletes the mail address of an E-mail receiver.
-test	Tests sending an E-mail

- **Examples**

The following example displays the contents of an E-mail information setup.

**Example:**

```

% aumail -refer
Domain Name      : abc.hitachi.co.jp
Mail Server Address : server1.abc.hitachi.co.jp
From Address     : sender1@str.hitachi.co.jp
Send to Address  : receiver1@abc.hitachi.co.jp
%

```

The following example sets the E-mail information.

**Example:**

```

% aumail -set -domain abc.hitachi.co.jp -srv server1.abc.hitachi.co.jp
-from sender2@abc.hitachi.co.jp -add receiver2@abc.hitachi.co.jp
%

```

The following example adds a receiver address.

**Example:**

```

% aumail -set -add receiver3@abc.hitachi.co.jp
%

```

If an error is detected on the array subsystem while error monitoring is executed, the following error information will be reported by E-mail. Usually, the subject is appended before E-mail is transmitted.

■ **E-Mail Title**

To determine the failure of the array subsystem from the E-mail title, the E-mail has a format of attaching the failure part on the title (subject). The title format is shown below. Table 4.4 shows a list of titles (subjects).

**Table 4.4 List of E-mail Subjects**

No.	Subject	Meaning
1	Disk	A drive blockade occurred (for 9200).
2	FC Disk	An FC drive blockade occurred (for 9500V).
3	SATA Drive	A SATA drive blockade occurred.
4	DC Power	A DC power supply failure occurred.
5	Battery	A battery voltage error occurred.
6	Fan	A fan failure occurred.
7	Controller	A controller blockade occurred. (This occurs only in the dual controller configuration.)
8	AC Power	An AC power supply error occurred.
9	Cache Memory	A cache failure occurred.
10	Cache Backup Circuit	A backup circuit failure occurred.
11	ENC	An enclosure error occurred.
12	SENC	An SENC error occurred.
13	Loop	A loop error occurred.

No.	Subject	Meaning
14	Path	Path blockage occurred.
15	Host Connector	A host connector error occurred (for AMS200/AMS500)
16	NNC	An NNC blockade occurred (for AMS200/AMS500)
17	Warning	The array subsystem entered the warning state.
18	Array connection	A failure occurred in the connection with the array subsystem. A power OFF or a failure occurred in the array subsystem.

■ **E-mail Message Text**

The E-mail reports a failed section with a message text. The format of the message text is shown below. A list of message texts is shown in Table 4.5 and Table 4.7.

Day, Mon.dd hh:mm:ss yyyy/DF name/message text

**Day:** Day of the week      **hh:mm:ss:** Hours, minutes, and seconds

**Mon:** Month                      **yyyy:** Year

**dd:** Date

**Table 4.5 List of E-mail Message Texts (AMS200 and AMS500)**

No.	Message Text	Meaning
1	ARRAY Alert Started.	The error monitoring is started.
2	ARRAY FC Drive Detached. ARRAY Detached FC Drive Position Unit No.X HDU No.Y.	An FC drive blockade occurred. (The blocked drive is indicated with a set of a Unit No. and an HDU No.)
3	ARRAY SATA Drive Detached. ARRAY Detached SATA Drive Position Unit No.X HDU No.Y.	An SATA drive blockade occurred. (The blocked drive is indicated with a set of a Unit No. and an HDU No.)
4	ARRAY Battery Alarm. Position Battery No.X.	A battery voltage error occurred.
5	ARRAY Fan Alarm. Position Unit No.XX Fan No.X.	A fan failure occurred.
6	ARRAY CONTROLLER Detached. Position CONTROLLER No.X.	A controller blockade occurred. (This occurs only in the dual controller configuration.)
7	ARRAY AC Power Supply Failure. Position Unit No.XX AC Power No.X.	An AC power supply error occurs.
8	ARRAY Cache Memory Alarm.	A cache failure occurred.
9	ARRAY Cache Backup Circuit Alarm.	A backup circuit failure occurred.
10	ARRAY ENC Alarm. Position Unit No.XX ENC No.X.	An enclosure error occurred.
11	ARRAY SENC Alarm. Position Unit No.XX SENC No.X.	An SENC error occurred.
12	ARRAY Loop Alarm.	A loop error occurred.
13	ARRAY Path Alarm.	A path blockage occurred.

No.	Message Text	Meaning
14	ARRAY Host Connector Alarm. Position CONTROLLER No.X.	A host connector error occurred.
15	ARRAY Warning.	The array unit entered the warning state.
16	ARRAY Storage Storage Navigator Modular Interface error occurred	A failure occurred in the connection with the array unit. A power OFF or a failure occurred in the array unit.
17	ARRAY NNC Detached. Position NNC No.X.	An NNC blockade occurred.
18	ARRAY NNC Warning. Position NNC No.X.	An NNC partial blockade occurred.

**Table 4.6 List of E-mail Message Texts (9200 and 9500V)**

No.	Message Text	Meaning
1	ARRAY Alert Started.	The error monitoring is started.
2	ARRAY Drive Detached. ARRAY Detached Drive Position Port No.X Row No.Y	A drive blockade occurred. (9200: The blocked drive is indicated with a set of a Port No. and a Row No.)
3	ARRAY FC Drive Detached. ARRAY Detached FC Drive Position Unit No.X HDU No.Y.	An FC drive blockade occurred (for 9500V). (The blocked drive is indicated with a set of a Unit No. and an HDU No.)
4	ARRAY SATA Drive Detached. ARRAY Detached SATA Drive Position Unit No.X HDU No.Y.	An SATA drive blockade occurred (for 9500V). (The blocked drive is indicated with a set of a Unit No. and an HDU No.)
5	ARRAY Battery Alarm.	A battery voltage error occurred.
6	ARRAY Fan Alarm.	A fan failure occurred.
7	ARRAY CONTROLLER Detached.	A controller blockade occurred. (This occurs only in the dual controller configuration.)
8	ARRAY AC Power Supply Failure.	An AC power supply error occurs.
9	ARRAY Cache Memory Alarm.	A cache failure occurred.
10	ARRAY Cache Backup Circuit Alarm.	A backup circuit failure occurred.
11	ARRAY ENC Alarm.	An enclosure error occurred.
12	ARRAY SENC Alarm.	An SENC error occurred.
13	ARRAY Loop Alarm.	A loop error occurred.
14	ARRAY Path Alarm.	A path blockage occurred.
15	ARRAY Warning.	The array unit entered the warning state.
16	ARRAY Storage Navigator Modular Interface error occurred	A failure occurred in the connection with the array unit. A power OFF or a failure occurred in the array unit.

## 4.15.2 Setting Additional Information on E-Mail

- **Command name**

auunitmsg

- **Format**

```
auunitmsg -unit unit_name -refer
auunitmsg -unit unit_name -set string
auunitmsg -unit unit_name -rm
auunitmsg -unit unit_name -test
```

- **Description**

This command sets the additional information on E-mail.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem in which the additional information is to be set up. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-" (minus), "_" (underline), "." (period), "@" or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays the E-Mail additional information set currently.
-set string	Sets the E-Mail additional information. Specify the information in less than or equal to 64 alphanumeric characters. If you want to enter NULL characters, enter "".
-rm	Deletes the E-Mail additional information.
-test	Performs a test of originating an E-mail.

The information set on E-mail is added to the E-mail attribute and the format is as follows:

```
Day, Mon.dd hh:mm:ss yyyy/DF name/additional information/message text
```

### 4.15.3 Setting Application Starting

- **Command name**

auextprog

- **Format**

auextprog -refer

auextprog -set command

auextprog -test

- **Description**

This command sets up an external program that is executed when an error is detected while monitoring errors.

- **Options**

Options	Description
-refer	Displays (displays) the external program setup.
-set command	Sets up an external program that is executed when an error is detected, while monitoring errors.
-test	Starts an external program specified by the -set option.

- **Examples**

The following example sets up the application “go” to be executed.

**Example:**

```
% auextprog -set go
%
```

The following example displays the application setup to be executed.

**Example:**

```
% auextprog -refer
Application Name : go
%
```

#### 4.15.4 Monitoring Errors

- **Command name**

`auerroralert`

- **Format**

```
auerroralert [ -time uptime ] [ -mail ] [ -prog every | once ] [
-nodisp ]
```

- **Description**

This command monitors an array subsystem subject to monitoring (an array subsystem registered by specifying the `-watch` option) for errors. While monitoring errors, the word “Executing” indicates that the monitoring is in execution, and information on failures that are detected by the error monitor are displayed. The contents of failure information displayed are the same as those of messages output to a log file. The word “Executing” indicates that the monitoring is in execution and is displayed repeatedly on the same line. The time for which monitoring is in execution is updated and will be displayed.

To stop monitoring for errors, forcibly terminate the process (e.g., press the `Ctrl (c)` keys).

For the AMS200 and AMS500, a failure that occurs in a different part is treated as if it is a different failure, though the model of the part is the same.

- **Options**

Options	Description
<code>-time uptime</code>	Specifies the time interval at which to monitor errors. Specify a value: from 1 to 720 (minutes). If omitted, the error is monitored only once.
<code>-mail</code>	Originates an E-Mail when an error is detected.
<code>-prog every   once</code>	Executes an external program when an error is detected. <b>every:</b> After error monitoring is started, a specified application is executed when an error is detected. If the same error is detected while monitoring errors, the application is no longer started from the second detection onward. <b>once:</b> After error monitoring is started, a specified application is executed when an error is detected for the first time. If errors are detected continuously, the application will not start. After the specified application executes the first time, in order to start the application again when an error is detected, terminate the error monitoring and then restart again.
<code>-nodisp</code>	A window display of the monitoring result is suppressed.

- **Examples**

The following example monitors errors at an interval of 10 minutes. During error monitoring, a battery failure was detected in array subsystem `df500a1`.

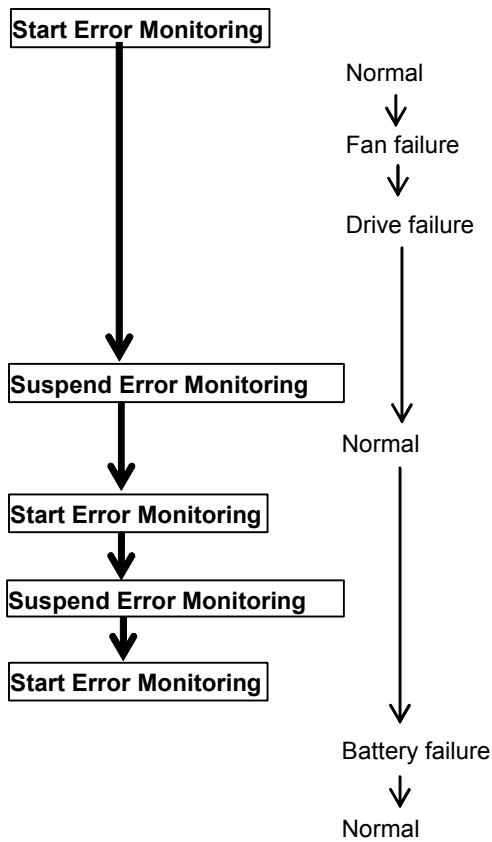
**Example:**

```
% auerroralert -time 1
Mon, May 01 10:10:00 2000 Executing.
Mon, May 01 10:30:00 2000/df500a1/ARRAY Battery Alarm.
Mon, May 01 10:40:00 2000 Executing.
```

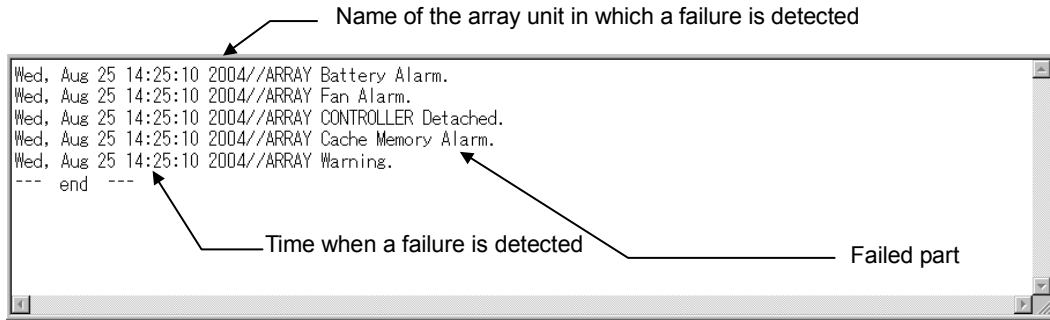
When a failure is detected in the array subsystem and error monitoring is executed, the function outputs the failure information to a log file.

The log file is output with file name: errlog.txt and in a text file format, onto a path setup by the STONAVM\_HOME environmental variable. The file format is shown in the following example.

**Example:**



**Example:**



The output size of a log file is up to 520k bytes. When the log information exceeds the limit, the log file is renamed to “errlog.txt.pre” and a log file “errlog.txt” is newly created.

The string “--- end ---” comes at the end of log information output. If the log information surpasses its limit again, the existing log file “errlog.txt” is replaced with “errlog.pre.txt” and then a new log file “errlog.txt” is created again.

**Note:** The failure detection time is a time of the clock on a personal computer or Sun server/workstation in which the Storage Navigator has been installed.

The log information to be output reports the failure part using a message text. The format of message text is shown below. A list of message texts is shown in Table 4.7 and Table 4.8.

Day, Mon. dd hh:mm:ss yyyy/DF name/message text

- Day:** Day of the week      **Mon:** Month
- dd:** Date      **hh:mm:ss:** Hours, minutes, and seconds
- yyyy:** Year

**Table 4.7 Message Text and Meaning (AMS200 and AMS500)**

No.	Message Text	Meaning
1	ARRAY Alert Started.	The error monitoring is started.
2	ARRAY FC Drive Detached. ARRAY Detached FC Drive Position Unit No.X HDU No.Y.	An FC drive blockade occurred. (The blocked drive is indicated with a set of a Unit No. and an HDU No.)
3	ARRAY SATA Drive Detached. ARRAY Detached SATA Drive Position Unit No.X HDU No.Y.	A SATA drive blockade occurred. (The blocked drive is indicated with a set of a Unit No. and an HDU No.)
4	ARRAY Battery Alarm. Position Battery No.X.	A battery voltage error occurred.
5	ARRAY Fan Alarm. Position Unit No.X Fan No.X.	A fan failure occurred.
6	ARRAY CONTROLLER Detached. Position CONTROLLER No.X.	A controller blockade occurred. (This occurs only in the dual controller configuration.)

No.	Message Text	Meaning
7	ARRAY AC Power Supply Failure. Position Unit No.X AC Power No.X.	An AC power supply error occurs.
8	ARRAY Cache Memory Alarm.	A cache failure occurred.
9	ARRAY Cache Backup Circuit Alarm.	A backup circuit failure occurred.
10	ARRAY ENC Alarm. Position Unit No.X ENC No.X.	An enclosure error occurs.
11	ARRAY SENC Alarm. Position Unit No.X SENC No.X.	An SENC error occurred.
12	ARRAY Loop Alarm.	A loop error occurs.
13	ARRAY Path Alarm.	A path blockade occurred.
14	ARRAY Host Connector Alarm. Position CONTROLLER No.XX. Host Connector No.X.	A host connector error occurs.
15	ARRAY Warning.	The array unit entered the warning state.
16	ARRAY Storage Navigator Modular Interface error occurred.	A failure occurred in the connection with the array unit. A power OFF or a failure occurred in the array unit.
17	ARRAY NNC Detached. Position NNC No.X.	An NNC blockade occurred.
18	ARRAY NNC Warning. Position NNC No.X.	An NNC partial blockade occurred.

**Table 4.8 Message Text and Meaning (9200 and 9500V)**

No.	Message Text	Meaning
1	ARRAY Alert Started.	The error monitoring is started.
2	ARRAY Drive Detached. ARRAY Detached Drive Position Unit No.X HDU No.Y.	A drive blockade occurred (for 9200). (The blocked drive is indicated with a set of a Unit No. and a HDU No.)
3	ARRAY FC Drive Detached. ARRAY Detached FC Drive Position Unit No.X HDU No.Y.	An FC drive blockade occurred (for 9500V). (The blocked drive is indicated with a set of a Unit No. and an HDU No.)
4	ARRAY SATA Drive Detached. ARRAY Detached SATA Drive Position Unit No.X HDU No.Y.	A SATA drive blockade occurred (for 9500V). (The blocked drive is indicated with a set of a Unit No. and an HDU No.)
5	ARRAY Battery Alarm.	A battery voltage error occurred.
6	ARRAY Fan Alarm.	A fan failure occurred.
7	ARRAY CONTROLLER Detached.	A controller blockade occurred. (This occurs only in the dual controller configuration.)
8	ARRAY AC Power Supply Failure.	An AC power supply error occurs.
9	ARRAY Cache Memory Alarm.	A cache failure occurred.
10	ARRAY Cache Backup Circuit Alarm.	A backup circuit failure occurred.
11	ARRAY ENC Alarm.	An enclosure error occurred.
12	ARRAY SENC Alarm.	An SENC error occurred.
13	ARRAY Loop Alarm.	A loop error occurred.
14	ARRAY Path Alarm.	A path blockage occurred.
15	ARRAY Warning.	The array unit entered the warning state.
16	ARRAY Storage Navigator Modular Interface error occurred.	A failure occurred in the connection with the array unit. A power OFF and a failure occurred in the array unit.

#### 4.15.5 Referencing/Setting the Monitoring Errors Options

- **Command name**

`auerralertopt`

- **Format**

`auerralertopt -refer -account`

When the monitoring account is not set or changed.

```
auerralertopt -set -account enable
                -uid user_id | -uidfile file_name | -askuid
                [ -passwdfile file_name ]
```

When setting the monitoring account to enable.

```
auerralertopt -set -account enable
```

When setting the monitoring account to disable.

```
auerralertopt -set -account disable
```

```
auerralertopt -test -account [ -unit unit_name ... ]
```

- **Description**

This command references or sets the monitoring error options.

■ Options

Options	Description
-refer	Displays the monitoring error options.
-set	Sets the monitoring error options.
-test	Tests the monitoring error options.
-account	When the -refer option is specified: Displays the monitoring account information. When the -test option is specified: Authentication tests by the monitoring account.
-account enable   disable	Specify whether to set the monitoring account effective or ineffective. <b>enable:</b> Enables the monitoring account. <b>disable:</b> Disables the monitoring account.
-uid user_id	Specify the user ID. <b>user_id:</b> User ID (See <b>Note 1</b> )
-uidfile file_name	Specify the file (path) name when setting the user ID using a file. <b>file_name:</b> File (path) name
-passwdfile file_name	Specify the file (path) name when setting the password using a file. <b>file_name:</b> File (path) name
-askuid	Specify this option when entering the user ID for a request.
-unit unit_name	Specify the name of the array unit for which to test. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "- (minus)", "_ (underline)", "." (period), "@", or " (space)". Space in front and in the rear of the character string is removed. If omitted, all array unit subject to monitoring will be tested. Single or multiple array unit names can be specified. Single specification: Specifying a single array unit name. Example: -unit df700a1 Multiple specification: Specifying multiple array unit names. Example: -unit df700a1 df700a2

**Note 1:** For User ID, less than or equal to 256 ASCII characters (alphabetic characters, numerals, and the following symbols) can be used:

(!, #, \$, %, &, ', \*, +, -, ., /, =, ?, @, ^, \_ , ` , { , } , ~ , (space))

- **Examples**

The following example displays the monitoring errors account information.

**Example:**

```
% auerralertopt -refer -account
Monitoring Account : Enable
USER id : user-acc
%
```

The following example sets the monitoring errors account information.

**Example:**

```
% auerralertopt -set -account -uid User001
Are you sure you want to set the account for monitoring unit? (y/n [n]): y
Please input the password.
Password :
The account for monitoring unit has been set successfully.
%
```

The following example tests the monitoring errors account information.

**Example:**

```
% auerralertopt -test -account
Unit Name      Type      Result
df700          DF700M   OK
df600          DF600    OK
df700m         DF700M   OK
%
```

## 4.16 Tuning Parameters

The tuning parameters include system, LU, prefetch, and multi stream parameters.

### 4.16.1 Displaying/Setting System Tuning Parameters

- **Command name**

```
ausystuning
```

- **Format**

- **9500V:**

```
ausystuning -unit unit_name -refer
```

When setting the Multi Streaming

```
ausystuning -unit unit_name -set  
[ -mspfcount num ]  
[ -msnextpf on | off ]  
[ -mspfsize 64 | 128 | 256 | 512 | 1024 | 2048 | 3072 |  
4096 | 5120 | 6144 | 7168 | 8192 | 9216 | 10240 ]
```

```
ausystuning -unit unit_name -default MultiStreaming
```

When setting the other configurations

```
ausystuning -unit unit_name -set  
[ -dtystart num ]  
[ -dtystop num ]  
[ -rndbufsize0 enable | disable ]  
[ -rndbuf num ]  
ausystuning -unit unit_name -default
```

- **AMS200 and AMS500:**

```
ausystuning -unit unit_name -refer
```

```
ausystuning -unit unit_name -set  
[ -dtystart num ]  
[ -dtystop num ]  
[ -cachecontrol FIFO | LRU ]  
[ -detailedtrace on | off ]
```

- **Description**

This command refers to or sets the system tuning parameters.

■ Options

Options	Description
-unit unit_name	Specifies the name of an array subsystem to which the system tuning parameters is referred or set. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_", ".", "@", or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays the system tuning parameters that has been set and reserved.
-set	Sets the system tuning parameters.
-mspfcount num	Specifies the condition to make a pre-fetch in the multi-streaming (1 to 10). The setting can be made only when the Multiple Stream mode is validated.
-msnextpf on   off	Specifies the time when the next pre-fetch of the multi-streaming is to be made. The setting can be made only when the Multiple Stream mode is validated. <b>on:</b> Starts the next pre-fetch when the reading is done up to the specified percentage. <b>off:</b> The next pre-fetch is not started as long as a read hit is made.
-mspfsize 64   128   256   512   1024   2048   3072   4096   5120   6144   7168   8192   9216   10240	Specifies an amount of data to be pre-fetched in the multi-streaming. The setting can be made only when the Multiple Stream mode is validated.
-dtystart num	Specifies a time to de-stage dirty data (0 to 50).
-dtystop num	Specifies a time to stop the de-staging of dirty data (0 to 50).
-rndbufsize0 enable   disable	Set whether to validate or invalidate the specification of the random simple buffer size as 0%. When this option is specified, the subsystem must be restarted to validate the setting. <b>enable:</b> Enables the specification of the random simple buffer size as 0%. <b>disable:</b> Disables the specification of the random simple buffer size as 0%.
-rndbuf num	Specifies the random simple buffer size (0 to 100). When this option is specified, the subsystem must be restarted to validate the setting.
-cachecontrol FIFO   LRU	Specifies a cache control mode. <b>FIFO:</b> First-in First-out <b>LRU:</b> Least Recently Used
-detailedtrace on   off	Specifies whether to set the detailed trace mode effective or ineffective. <b>on:</b> Enables the detailed trace mode. <b>off:</b> Disables the detailed trace mode.
-default MultiStreaming	Return the parameter for tuning the performance of multi-streaming to the default value. The setting can be made only when the Multiple Stream mode is validated.
-default	Returns the parameter for performance tuning to their default value.

**Note:** Validation or invalidation of the Multiple Stream Mode is set with the online system parameter (auonsysprm) or the system parameter (ausysparam). (9500V)

- **Examples**

The following example displays the system tuning parameters of array subsystem df600a1.

**Example:**

```
% ausystuning -unit df600a1 -refer
Password:
Dirty Data Opportunity [%] : 10
Dirty Data Stop Opportunity [%] : 0
Specifying Random Simple Buffer Size 0%
  Current Value : disable
  New Value    : disable
Random Simple Buffer Size [%]
  Current Value : 0
  New Value     : 0
%
```

The following example displays the system tuning parameters of array unit df700a1.

**Example:**

```
% ausystuning -unit df700a1 -refer
Password:
Dirty Data Opportunity [%]      : 10
Dirty Data Stop Opportunity [%] : 0
Cache Control Mode             : FIFO
Detailed Trace Mode            : ON
%
```

## 4.16.2 Displaying/Setting LU Tuning Parameters

- **Command name**

```
aulutuning
```

- **Format**

**9500V:**

```
aulutuning -unit unit_name -refer
```

```
aulutuning -unit unit_name -set -lu lun ...
-pfdata disable | num
```

```
aulutuning -unit unit_name -default [ -lu lun ]
```

- **Description**

This command refers to or sets the LU tuning parameters.

- **Options**

Options	Description
-unit unit_name	Specifies the name of an array subsystem to which the LU tuning parameters is referred or set.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols “-” (minus), “_” (underline), “.” (period), “@,” or “(space)”. Space in front and in the rear of the character string is removed.
-refer	Displays the LU tuning parameters.
-set	Sets the LU tuning parameters.
-default	Returns the parameter for tuning the performance to the default value.
-lu lun	Specifies number(s) of LU(s) to set the LU tuning parameters. One or more LU number(s) can be specified. However, only a single logical unit can be specified when the <b>-default</b> has been specified. Single or multiple LU numbers can be specified.  <b>Single specification:</b> Specify a single LU number. <i>Example:</i> -lu 3  <b>Multiple specification:</b> Specify multiple LU numbers. <i>Example:</i> lu 0 1 2 3 4 5 8 -lu 0-5 8
-pfdata disable   num	Specifies the time to start the pre-fetch.  <b>disable:</b> The pre-fetch is not started.  <b>num:</b> Specify the condition to start the next pre-fetch, that is, a percentage of data to be pre-fetched that has been read (0 to 100).

- **Examples**

The following example displays the LU tuning parameters of an array subsystem df600a1.

**Example:**

```
% aulutuning -unit df600a1 -refer
Password:
LU 0
  Prefetch Starting Opportunity [%] : 50
LU 1
  Prefetch Starting Opportunity [%] : 50
  :
  :
%
```

### 4.16.3 Displaying/Setting Prefetch Tuning Parameters

- **Command name**

autuningprefetch

- **Format**

**AMS200 and AMS500:**

```
autuningprefetch -unit unit_name -refer
```

When the multi stream of LU is effective.

```
autuningprefetch -unit unit_name -set
                    [ -seqcount num ]
                    [ -fixedsize num ]
                    [ -basesize num ]
                    [ -lu lun ... ]
```

When the multi stream of LU is ineffective.

```
autuningprefetch -unit unit_name -set
                    [ -multistreamread enable | disable ]
                    [ -multistreamwrite enable | disable ]
                    [ -multistreamnext on | off ]
                    [ -seqcount num ]
                    [ -criteria fixed | base ]
                    [ -size num -lu lun ... ]
```

```
autuningprefetch -unit unit_name -default
```

- **Description**

This command refers to or sets the performance tuning parameters (enable/disable of the multi-stream mode (read/write), decided sequential number, criteria for the pre-fetch, and size of data to be pre-fetched per logical unit).

■ Options

Options	Description
-unit unit_name	Specifies the name of the array unit to which the performance tuning parameters is referred or set. Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ".", "(period)", "@", or " (space)". Space in front and in the rear of the character string is removed.
-refer	Displays the performance tuning parameters.
-set	Sets the performance tuning parameters.
-default	Returns the performance tuning parameters to the default value.
-multistreamread enable   disable	Sets whether to validate or invalidate the specification of the multi-stream read. <b>enable:</b> Enables the specification of the multi-stream read. <b>disable:</b> Disables the specification of the multi-stream read.
ltistreamwrite enable   disable	Sets whether to validate or invalidate the specification of the multi-stream write. <b>enable:</b> Enables the specification of the multi-stream write. <b>disable:</b> Disables the specification of the multi-stream write.
-multistreamnext on   off	Specifies whether or not to do the following pre-fetch in the multi-stream mode. The specification can be made only when the multi-stream mode (read) is valid. <b>on:</b> When a reading is done up to the preset extent out of the data pre-fetched, the following pre-fetch is done. <b>off:</b> No pre-fetch is done as long as the pre-fetched data makes a hit.
-seqcount num	Specifies the decided sequential number (0 to 10).
-criteria fixed   base	Specifies the criteria for the pre-fetch. <b>fixed:</b> Use the fixed size of data to be pre-fetched as the criteria. <b>base:</b> Use the base size of data to be pre-fetched as the criteria. The specification can be made only when the multi-stream mode (read) is invalid.
-size num	Specifies the size of data to be pre-fetched for an LU (1 to 65535 (kB)). Specify the fixed size of data to be pre-fetched when the pre-fetch criteria is fixed or the basic size of data to be pre-fetched when the criteria is base.
-lu lun ...	Specifies the number of an LU. Single or multiple LU numbers can be specified. <b>Single specification:</b> Specifying a single LU number. <b>Example:</b> -lu 3 <b>Multiple specification:</b> Specifying multiple LU numbers. <b>Example:</b> -lu 0 1 2 3 4 5 8 -lu 0-5 8
-fixedsize num	Specifies the fixed size of data to be pre-fetch (1 to 65535 (kB)).
-basesize num	Specifies the base size of data to be pre-fetch (1 to 65535 (kB)).

- **Examples**

The following example displays the pre-fetch tuning parameters of array subsystem df700a1.

**Example:**

```
% autuningprefetch -unit df700a1 -refer
Password:
Prefetch Size
  LUN  Fixed   Base   RAID Level
    0   256KB  128KB  5( 4D+1P)
    1   256KB  128KB  5( 4D+1P)
  :
  :
%
```

#### 4.16.4 Displaying/Setting Multi-Stream Tuning Parameters

- **Command name**

autuningmultistream

- **Format**

**AMS200 and AMS500:**

autuningmultistream -unit unit\_name -refer

```
autuningmultistream -unit unit_name -set
                        -scope system | lu
                        [ -lu lun ... ]
                        [ -read enable | disable ]
                        [ -write enable | disable ]
                        [ -next enable | disable ]
                        [ -criteria fixed | base ]
```

autuningmultistream -unit unit\_name -default

- **Description**

This command displays or sets the multi stream tuning parameters (enable/disable of the read/write mode, following pre-fetch, and criteria for the pre-fetch).

- **Options**

Options	Description
-unit unit_name	Specifies the name of the array unit to which the multi stream tuning parameters is referred or set.  Specify the name in less than or equal to 16 characters using alphanumeric characters, special symbols "-", "_ (underline)", ". (period)", "@", or " (space)". Space in front and in the rear of the character string is removed.
-refer	References the multi stream tuning parameters.
-set	Sets the multi stream tuning parameters.

Options	Description
-default	Returns the multi stream tuning parameters to the default value.
-scope system   lu	Specifies the scope. <b>system:</b> system <b>lu:</b> logical unit
-lu lun ...	Specifies a number of an LU. Single or multiple LU numbers can be specified. <b>Single specification:</b> Specifying a single LU number. <b>Example:</b> -lu 3 <b>Multiple specification:</b> Specifying multiple LU numbers. <b>Example:</b> -lu 0 1 2 3 4 5 8 -lu 0-5 8
-read enable   disable	Sets whether to validate or invalidate the specification of the read mode. <b>enable:</b> Enables the specification of the read mode. <b>disable:</b> Disables the specification of the read mode.
-write enable   disable	Sets whether to validate or invalidate the specification of the write mode. <b>enable:</b> Enables the specification of the write mode. <b>disable:</b> Disables the specification of the write mode.
-next enable   disable	Specifies whether or not to do the following pre-fetch. <b>When the scope is the system:</b> The specification can be made only when the read mode is valid. <b>When the scope is the logical unit:</b> The specification can be made only when the read mode of all specified LU is valid. <b>enable:</b> When a reading is done up to the preset extent out of the data pre-fetched, the following pre-fetch is done. <b>disable:</b> No pre-fetch is done as long as the pre-fetched data makes a hit.
-criteria fixed   base	Specifies the criteria for the pre-fetch. <b>fixed:</b> Use the fixed size of data to be pre-fetched as the criteria. <b>base:</b> Use the base size of data to be pre-fetched as the criteria. <b>When the scope is the system:</b> The specification can be made only when the read mode is invalid. <b>When the scope is the logical unit:</b> The specification can be made only when the read mode of all specified LU is invalid.

### ■ Examples

The following example displays the multi-stream tuning parameters of array subsystem df700a1.

**Example:**

```
% autuninmultistream -unit df700a1 -refer
Password:
Scope : System
Mode/Prefetch Information
  LUN  Mode      Prefetch Next  Prefetch Criteria
  ALL  Normal     Disable       Base
%
```

## 4.17 Setting/Deleting the Account Information For Script

- **Command name**

`auaccountenv`

- **Format**

**AMS200 and AMS500:**

```
auaccountenv -set -uid user_id | -uidfile file_name | -askuid
               [ -passwdfile file_name ]
```

```
auaccountenv -rm
```

- **Description**

This command sets or deletes the account information.

When executing this command for an array unit whose Account Authentication function is valid, the input request at the time of the command execution can make the input unnecessary by executing this command. However, to make the input unnecessary, it is required to set the STONAVM\_ACT environment variable to “on” before actually executing the command with the prerequisite that this command is executed.

- **Options**

Options	Description
<code>-set</code>	Sets the account information.
<code>-rm</code>	Deletes the account information.
<code>-uid user_id</code>	Specify the user ID. <b>user_id:</b> User ID (See <i>Note 1</i> )
<code>-uidfile file_name</code>	Specify the file (path) name when setting the user ID using a file. <b>file_name:</b> file (path) name
<code>-askuid</code>	Specify this option when entering the user ID for a request.
<code>-passwdfile file_name</code>	Specify the file (path) name when setting the password using a file. <b>file_name:</b> file (path) name

**Note 1:** For User ID, no more than 256 ASCII characters may be used. Allowable ASCII characters include alpha, numeric, and the following symbols: !, #, \$, %, &, ', \*, +, -, ., /, =, ?, @, ^, \_ , {, |, }, ~, (space).

Some characters may not be used in the command line. When using “!”, “#”, “\$”, “&”, “'”, “\*”, “?”, “`”, “{”, “|”, or “~” for the `-uid` option, set the file by using the `-uidfile` option. Use of an illegal character such as “!”, “#”, “\$”, “&”, “'”, “\*”, “?”, “`”, “{”, “|”, or “~”, may cause the command to terminate abnormally or an illegal user ID may be set.

- **Examples**

The following example sets the account information.

**Example:**

```
% auaccountenv -set -uid User001
Are you sure you want to set the account information? (y/n [n]): y
Please input password.
Password:
The account information has been set successfully.
%
```

The following example sets the account information.

**Example:**

```
% auaccountenv -set -uid User001 -passwdfile pass.txt
Are you sure you want to set the account information? (y/n [n]): y
The account information has been set successfully.
Are you sure you want to delete the password file? (y/n [n]): y
The password file has been deleted successfully.
%
```

The following example deletes the account information.

**Example:**

```
% auaccountenv -rm
Are you sure you want to delete the account information? (y/n [n]): y
The account information has been deleted successfully.
%
```



## Chapter 5 Storage Navigator Operation Procedures

The following section describes basic operation procedures of Storage Navigator after installation.

- Executing Commands by Setting Administrator Mode (see section 5.1)
- Executing Commands Using a User ID (see section 5.2)
- Command Executing from the Script when Account Authentication is Valid (see section 5.3)

## 5.1 Executing Commands by Setting Administrator Mode

### 1. Setting a password.

When performing operations, such as setting up the configuration of an array subsystem on the Storage Navigator, as an administrator of the array subsystem, a password is required. Therefore, you must first set an administrator password. To set a password, use the `aupasswd` command. Once the password is set, it will be saved in the workstation, so the password does not need to be set every time you perform the operation.

**Note:** Changing a password at regular intervals is recommended. The `aupasswd` command is also used to change a password.

### 2. Registering an array subsystem.

Register the array subsystem that you want to operate in the Storage Navigator. Use the `auunitadd` command to register an array subsystem. When registering, give a unique unit name (up to 16 alphanumeric characters) to one array subsystem, and register information such as the unit type (9200, 9500V, AMS200, and AMS500), a configuration (Single, Dual), and a connection interface (LAN, RS232C). The name of the array subsystem registered here will be used by each command of the Storage Navigator as a key word to specify an array subsystem. Once the information of the array subsystem is registered, it will be kept under control of the Storage Navigator, so the array subsystem information does not need to be registered at every operation.

Additionally, use the `auunitchg` command to change the registered contents. When the registered information no longer needs to be controlled by the Storage Navigator, use the `auunitdel` command to delete the information.

### 3. Operations with various commands.

After an array subsystem is placed under control of the Storage Navigator by registering the unit, perform operations on the array subsystem such as displaying, setting, and monitoring by use of various Storage Navigator commands.

## 5.2 Executing Commands using a User ID

### 5.2.1 Password Protection

#### 1. Setting the user ID.

Register the user ID of a user who manages an array subsystem that has been registered in the Storage Navigator. Use an `auuidadd` command to set up a user ID.

**Note:** Once a user ID is registered, commands cannot be executed on the relevant array subsystems without entering the user ID (login: `aulogin`).

#### 2. Logging into an array subsystem.

Log into an array subsystem with a registered user ID using the `aulogin` command. When forcibly logging into an array subsystem, to which another user has already logged in, use the `aulogin` command with the `-discon` option appended.

#### 3. Operations with Various Commands

After an array subsystem is placed under control of the Storage Navigator by registering the array subsystem, perform operations on the array subsystem such as displaying, setting, and monitoring by use of various Storage Navigator commands. When executing commands after you have logged in, you are not prompted to enter the user ID or password.

#### 4. Logging out from an array subsystem.

Log out from an array subsystem to which you have logged in using the `aulogout` command.

### 5.3 Command Executing from the Script when Account Authentication is Valid

When executing a command from the script, if Account Authentication is valid, it cannot be executed because there are input requests for the user ID and password and for checking the command. A command can be executed from the script using the following environment variable.

STONAVM\_ACT=on

The input request for the user ID and password of Account Authentication is executed with the user ID and password set with the `auaccountenv` command by setting the `STONAVM_ACT` environment variable to “on”.

STONAVM\_RSP\_PASS=on

All the input requests for checking a command are responded with “y” by setting the `STONAVM_RSP_PASS` environment variable to “on”.

1. Setting the environment variable

Set the `STONAVM_ACT` environment variable and the `STONAVM_RSP_PASS` environment variable to “on”.

When making the environment variable valid by the limitation in the script to be executed, it is defined at the head of the script.

2. Setting the user ID and password of Account Authentication with the `auaccountenv` command

Set the user ID and password that is registered with Account Authentication.

The registration of the user ID who has the roll authority corresponding to the command to be executed in the script is required.

3. Creating and executing the script

The script of the command to make it execute is created, and the execution authority is given to the script. The created script is executed.

As a result, the command in the script is executed.

4. Deleting the user ID and password of set Account Authentication

Even if the script is executed, the user ID and password of set Account Authentication are valid. If unnecessary, delete the user ID and password of set Account Authentication after executing the script.

**Example of script for Windows:**

<pre>set STONAVM_HOME=. set STONAVM_ACT=on set STONAVM_RSP_PASS=on % % auluadd -unit array01 -lu 0 -rg 0 -size 100352 -ctl0</pre>	<p><i>Specify the installed path.</i></p> <p><i>Set STONAVM_ACT to variable.</i></p> <p><i>Set STONAVM_RSP_PASS to variable.</i></p> <p><i>Add LU0.</i></p>
---	---

## Chapter 6 Examples of Using Commands

The following is an example of how to set up a RAID group and logical unit after connecting to an array subsystem.

**Example:**

```
% aupasswd Register a password.
New password : Enter the password.
Retype new password : Enter the password again.
%
% auunitadd -unit array01 -DF600 -dual -LAN -ctl0 125.0.9.98 -ctl1 125.0.9.99
Registers a DF600 array unit with a dual configuration by unit name array01.
The connection interface is LAN connection for both unit.
% auunitref Check whether the registration has completed.
Name Group Type Construction Connection Type Error Mon
itoring IP Address/Host Name/Device Name
array01 125.0.9.98 125.0.9.99 DF600 Dual TCP/IP (LAN) Enable
%
% aurgadd -unit array01 -rg 0 -RAID5 -uno 0 -hno 0 -hnum 5 -pnum 1
Adds a RAID group with a RAID5 level.
Password: Enter an already-registered password.
%
% aurgref -unit array01 Check whether the RAID group has been configured.
RAID RAID Start Location Number of HDU Number of Free Capacity
Group Level [Unit No. HDU No.] in parity group parity group [block] Type
0 5 0 0 5 1 52777792 FC
%
% auluadd -unit array01 -lu 0 -rg 0 -size 100352 -ctl0 Adds LU0.
Password: Enter an already-registered password.
%
% auluref -unit array01 Check whether the LU has been configured.
Capacity RAID RAID
LU [block] C-CTL D-CTL Group Level Type Status
0 102400 0 0 0 5 FC Unformat
%
```



# Acronyms and Abbreviations

Acronym	Meaning
AMS	Adaptable Modular Storage
CCI	command control interface
CHAP	challenge handshake authentication protocol
CLI	command line interface
CTL	controller
CU	controller unit
DAMP	Disk Array Management Program
DHCP	dynamic host configuration protocol
DM-LU	differential management logical unit
FC	fibre channel
GUI	graphical user interface
HBA	host bus adapter
H-LUN	host logical unit
IOPS	input output operations per second
IOS	internet work operating system
LD	logical device
LDEV	logical device
LIP	loop initialization primitive
LRU	least recently used
LUN	logical unit number

NNC	network node controller
NSC	network storage controller
NTP	network time protocol
PFUS	pool full status
PSUE	pair suspended-error status
P-VOL	primary volume
RAID	redundant array of independent disks
RC	reference code
RTC	real-time clock
SAN	storage-area network
SATA	serial ATA
SCSI	small computer system interface
S-VOL	secondary volume
TID	target identifier
UL	Underwriters' Laboratories
USP	Universal Storage Platform
VxVM	Veritas Volume Manager

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