

# ETERNUS Web GUI User's Guide (Operation)

FUJITSU Storage  
ETERNUS DX60 S3/DX100 S3/DX200 S3,  
ETERNUS DX500 S3/DX600 S3,  
ETERNUS DX8100 S3/DX8700 S3/DX8900 S3  
Disk Storage Systems,  
ETERNUS AF250/AF650, ETERNUS DX200F  
All-Flash Arrays

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# Preface

This manual provides operational information about Web GUI for the FUJITSU Storage ETERNUS DX60 S3/DX100 S3/DX200 S3, ETERNUS DX500 S3/DX600 S3, ETERNUS DX8100 S3/DX8700 S3/DX8900 S3 Disk Storage Systems and Web GUI for the FUJITSU Storage ETERNUS AF250/AF650, ETERNUS DX200F All-Flash Arrays (hereinafter referred to as "ETERNUS Web GUI"). It should be used for reference when monitoring the FUJITSU Storage ETERNUS DX60 S3/DX100 S3/DX200 S3, ETERNUS DX500 S3/DX600 S3, ETERNUS DX8100 S3/DX8700 S3/DX8900 S3 Disk Storage Systems, and the FUJITSU Storage ETERNUS AF250/AF650, ETERNUS DX200F All-Flash Arrays (hereinafter referred to as "ETERNUS DX/AF" or "storage system"). Knowledge of UNIX or Windows® system management is required.

This manual is written for controller firmware versions V10L60 and later. (V10L61 and later in a Unified Storage environment.) Some of the functions herein may not be supported for firmware versions V10L5x and earlier.

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## Structure of This Manual

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This manual consists of the following eight chapters and three appendices.

- Chapter 1 Screen Operations  
This chapter describes operation screens for ETERNUS Web GUI.
- Chapter 2 System Status  
This chapter describes system status.
- Chapter 3 Component Status  
This chapter describes component status in the ETERNUS DX/AF storage systems.
- Chapter 4 Volume Status  
This chapter describes volume status.
- Chapter 5 Connectivity Status  
This chapter describes connection status between the host and the ETERNUS DX/AF storage systems.
- Chapter 6 RAID Group Status  
This chapter describes RAID group status.

- Chapter 7 Thin Provisioning Pool Status  
This chapter describes Thin Provisioning Pool status.
- Chapter 8 Advanced Copy Status  
This chapter describes Advanced Copy status.

The following contents are described as appendices:

- Status List
- Error Code
- Setting Procedures for Replacing HBAs

## Latest Information

The information in this manual is subject to change without notice for functionality expansion and improvement of the ETERNUS DX/AF storage systems. The latest version of this manual and the latest information of the ETERNUS DX/AF storage systems are released in the following web-site. Access the following address if needed.

<http://www.fujitsu.com/global/support/products/computing/storage/disk/manuals/>

## Related Manuals

Related manuals (\*1) for this manual are listed below.

- FUJITSU Storage ETERNUS DX60 S3 Disk Storage Systems Overview
- FUJITSU Storage ETERNUS DX60 S3 Disk Storage Systems Site Planning Guide
- FUJITSU Storage ETERNUS DX60 S3 Disk Storage Systems Design Guide (Basic)
- FUJITSU Storage ETERNUS DX60 S3 Disk Storage Systems Configuration Guide (Basic)
- FUJITSU Storage ETERNUS DX60 S3 Disk Storage Systems Operation Guide (Basic)
- FUJITSU Storage ETERNUS DX100 S3/DX200 S3 Disk Storage Systems Overview
- FUJITSU Storage ETERNUS DX100 S3/DX200 S3 Disk Storage Systems Site Planning Guide
- FUJITSU Storage ETERNUS DX100 S3/DX200 S3 Disk Storage Systems Design Guide (Basic)
- FUJITSU Storage ETERNUS DX100 S3/DX200 S3 Disk Storage Systems Configuration Guide (Basic)
- FUJITSU Storage ETERNUS DX100 S3/DX200 S3 Disk Storage Systems Operation Guide (Basic)
- FUJITSU Storage ETERNUS DX500 S3/DX600 S3 Disk Storage Systems Overview
- FUJITSU Storage ETERNUS DX500 S3/DX600 S3 Disk Storage Systems Site Planning Guide
- FUJITSU Storage ETERNUS DX500 S3/DX600 S3 Disk Storage Systems Design Guide (Basic)
- FUJITSU Storage ETERNUS DX500 S3/DX600 S3 Disk Storage Systems Configuration Guide (Basic)
- FUJITSU Storage ETERNUS DX500 S3/DX600 S3 Disk Storage Systems Operation Guide (Basic)
- FUJITSU Storage ETERNUS AF250 All-Flash Arrays Overview
- FUJITSU Storage ETERNUS AF250 All-Flash Arrays Site Planning Guide
- FUJITSU Storage ETERNUS AF250 All-Flash Arrays Design Guide (Basic)
- FUJITSU Storage ETERNUS AF250 All-Flash Arrays Configuration Guide (Basic)
- FUJITSU Storage ETERNUS AF250 All-Flash Arrays Operation Guide (Basic)

- FUJITSU Storage ETERNUS AF650 All-Flash Arrays Overview
- FUJITSU Storage ETERNUS AF650 All-Flash Arrays Site Planning Guide
- FUJITSU Storage ETERNUS AF650 All-Flash Arrays Design Guide (Basic)
- FUJITSU Storage ETERNUS AF650 All-Flash Arrays Configuration Guide (Basic)
- FUJITSU Storage ETERNUS AF650 All-Flash Arrays Operation Guide (Basic)
- FUJITSU Storage ETERNUS DX200F All-Flash Arrays Overview
- FUJITSU Storage ETERNUS DX200F All-Flash Arrays Site Planning Guide
- FUJITSU Storage ETERNUS DX200F All-Flash Arrays Design Guide (Basic)
- FUJITSU Storage ETERNUS DX200F All-Flash Arrays Configuration Guide (Basic)
- FUJITSU Storage ETERNUS DX200F All-Flash Arrays Operation Guide (Basic)
- FUJITSU Storage ETERNUS DX100 S3/DX200 S3, ETERNUS DX500 S3/DX600 S3 Disk Storage Systems Configuration Guide (NAS)
- FUJITSU Storage ETERNUS DX, ETERNUS AF Configuration Guide -Server Connection-
- FUJITSU Storage ETERNUS DX, ETERNUS AF Configuration Guide (Web GUI)  
ETERNUS DX60 S3/DX100 S3/DX200 S3, ETERNUS DX500 S3/DX600 S3,  
ETERNUS DX8100 S3/DX8700 S3/DX8900 S3 Disk Storage Systems,  
ETERNUS AF250/AF650, ETERNUS DX200F All-Flash Arrays
- ETERNUS Web GUI User's Guide (Settings)  
FUJITSU Storage ETERNUS DX60 S3/DX100 S3/DX200 S3, ETERNUS DX500 S3/DX600 S3,  
ETERNUS DX8100 S3/DX8700 S3/DX8900 S3 Disk Storage Systems,  
ETERNUS AF250/AF650, ETERNUS DX200F All-Flash Arrays
- ETERNUS CLI User's Guide  
FUJITSU Storage ETERNUS DX60 S3/DX100 S3/DX200 S3, ETERNUS DX500 S3/DX600 S3,  
ETERNUS DX8100 S3/DX8700 S3/DX8900 S3 Disk Storage Systems,  
ETERNUS AF250/AF650, ETERNUS DX200F All-Flash Arrays
- FUJITSU Storage ETERNUS SF KM V2.5 Overview
- FUJITSU Storage ETERNUS SF KM V2.5 Scenarios
- FUJITSU Storage ETERNUS SF KM V2.5 Planning
- FUJITSU Storage ETERNUS SF KM V2.5 Administering
- FUJITSU Storage ETERNUS SF KM V2.5 Reference
- FUJITSU Storage ETERNUS SF KM V2.5 Glossary
- FUJITSU Storage ETERNUS SF KM V2.5 Installation and Configuration Guide
- FUJITSU Storage ETERNUS SF KM V2.5 Installation Guide (Windows)
- FUJITSU Storage ETERNUS SF KM V2.5 Installation Guide (Linux)
- FUJITSU Storage ETERNUS SF KM V2.5 Replication Environment Setup Guide (Windows)
- FUJITSU Storage ETERNUS SF KM V2.5 Replication Environment Setup Guide (Linux)
- FUJITSU Storage ETERNUS SF Storage Cruiser Operation Guide
- ETERNUS vCenter Plug-in 3.0.0 User's Guide

\*1: Download the required manuals for your system environment.

## The Structures and Contents of ETERNUS Web GUI Manuals

The ETERNUS Web GUI manual is composed of the following three manuals.

- FUJITSU Storage ETERNUS DX, ETERNUS AF Configuration Guide (Web GUI)
- ETERNUS Web GUI User's Guide (Settings)
- ETERNUS Web GUI User's Guide (Operation)

The following table describes the contents of each manual.

Manual name	Contents
FUJITSU Storage ETERNUS DX, ETERNUS AF Configuration Guide (Web GUI)	<p>This manual describes the installation and the environmental settings for the ETERNUS DX/AF storage systems. For basic settings that are not described in this manual, refer to the following manuals.</p> <ul style="list-style-type: none"> <li>• "FUJITSU Storage ETERNUS DX60 S3 Disk Storage Systems Configuration Guide (Basic)"</li> <li>• "FUJITSU Storage ETERNUS DX100 S3/DX200 S3 Disk Storage Systems Configuration Guide (Basic)"</li> <li>• "FUJITSU Storage ETERNUS DX500 S3/DX600 S3 Disk Storage Systems Configuration Guide (Basic)"</li> <li>• "FUJITSU Storage ETERNUS AF250 All-Flash Arrays Configuration Guide (Basic)"</li> <li>• "FUJITSU Storage ETERNUS AF650 All-Flash Arrays Configuration Guide (Basic)"</li> <li>• "FUJITSU Storage ETERNUS DX200F All-Flash Arrays Configuration Guide (Basic)"</li> </ul>
ETERNUS Web GUI User's Guide (Settings)	<p>This manual describes the procedures, setup parameters, input conditions, and the default values for ETERNUS Web GUI. Refer to this manual for functions and advanced settings that are not described in "FUJITSU Storage ETERNUS DX, ETERNUS AF Configuration Guide (Web GUI)".</p>
ETERNUS Web GUI User's Guide (Operation)	<p>This manual describes the monitoring information of the system status for the ETERNUS DX/AF storage systems. This manual also describes how to check the results of the ETERNUS Web GUI configuration.</p>

## Acknowledgments

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# Naming Conventions

## Product names

- The following abbreviations are used for Microsoft® Windows Server®.

Product name	Abbreviation
Microsoft® Windows Server® 2008 Datacenter	Windows Server 2008
Microsoft® Windows Server® 2008 Enterprise	
Microsoft® Windows Server® 2008 Standard	
Microsoft® Windows Server® 2008 for Itanium-Based Systems	
Microsoft® Windows Server® 2008 HPC Edition	
Microsoft® Windows Server® 2008 R2 Datacenter	Windows Server 2008 R2
Microsoft® Windows Server® 2008 R2 Enterprise	
Microsoft® Windows Server® 2008 R2 Standard	
Microsoft® Windows Server® 2008 R2 for Itanium-Based Systems	
Microsoft® Windows Server® 2008 R2 HPC Edition	
Microsoft® Windows Server® 2012 Datacenter	Windows Server 2012
Microsoft® Windows Server® 2012 Standard	
Microsoft® Windows Server® 2012 Essentials	
Microsoft® Windows Server® 2012 Foundation	
Microsoft® Windows Server® 2012 R2 Datacenter	Windows Server 2012 R2
Microsoft® Windows Server® 2012 R2 Standard	
Microsoft® Windows Server® 2012 R2 Essentials	
Microsoft® Windows Server® 2016 Datacenter	Windows Server 2016
Microsoft® Windows Server® 2016 Standard	

- Oracle Solaris might be described as Solaris, Solaris Operating System, or Solaris OS.
- Trademark symbols such as ™ and ® are omitted in this document.



## ETERNUS storage system models

The following naming conventions describe ETERNUS storage system models in this manual.

ETERNUS storage system models	Naming conventions
ETERNUS DX60 S3/DX100 S3/DX200 S3 Disk Storage Systems, ETERNUS DX500 S3/DX600 S3 Disk Storage Systems, ETERNUS DX8100 S3/DX8700 S3/DX8900 S3 Disk Storage Systems, ETERNUS DX200F All-Flash Arrays	storage system
	ETERNUS DX
	ETERNUS DX storage systems
ETERNUS DX60 S3/DX100 S3/DX200 S3 Disk Storage Systems, ETERNUS DX500 S3/DX600 S3 Disk Storage Systems, ETERNUS DX8100 S3/DX8700 S3/DX8900 S3 Disk Storage Systems, ETERNUS AF250/AF650, ETERNUS DX200F All-Flash Arrays	storage system
	ETERNUS DX/AF
	ETERNUS DX/AF storage systems
ETERNUS DX60 S3/DX100 S3/DX200 S3 Disk Storage Systems, ETERNUS DX500 S3/DX600 S3 Disk Storage Systems, ETERNUS DX8100 S3/DX8700 S3/DX8900 S3 Disk Storage Systems	ETERNUS DX S3 series
ETERNUS DX60 S3/DX100 S3/DX200 S3 Disk Storage Systems	ETERNUS DX60 S3/DX100 S3/DX200 S3
ETERNUS DX100 S3/DX200 S3 Disk Storage Systems	ETERNUS DX100 S3/DX200 S3
ETERNUS DX500 S3/DX600 S3 Disk Storage Systems	ETERNUS DX500 S3/DX600 S3
ETERNUS DX8100 S3/DX8700 S3/DX8900 S3 Disk Storage Systems	ETERNUS DX8100 S3/DX8700 S3/DX8900 S3
ETERNUS DX60 S3 Disk Storage Systems	ETERNUS DX60 S3
ETERNUS DX100 S3 Disk Storage Systems	ETERNUS DX100 S3
ETERNUS DX200 S3 Disk Storage Systems	ETERNUS DX200 S3
ETERNUS DX500 S3 Disk Storage Systems	ETERNUS DX500 S3
ETERNUS DX600 S3 Disk Storage Systems	ETERNUS DX600 S3
ETERNUS DX8100 S3 Disk Storage Systems	ETERNUS DX8100 S3
ETERNUS DX8700 S3 Disk Storage Systems	ETERNUS DX8700 S3
ETERNUS DX8900 S3 Disk Storage Systems	ETERNUS DX8900 S3
ETERNUS AF250/AF650 All-Flash Arrays	ETERNUS AF
	ETERNUS AF250/AF650
ETERNUS AF250 All-Flash Arrays	ETERNUS AF250
ETERNUS AF650 All-Flash Arrays	ETERNUS AF650
ETERNUS DX200F All-Flash Arrays	ETERNUS DX200F
ETERNUS DX60 S3/DX100 S3/DX200 S3, ETERNUS DX500 S3/DX600 S3, ETERNUS DX8100 S3/DX8700 S3/DX8900 S3, ETERNUS AF250/AF650, ETERNUS DX200F, ETERNUS DX90 S2, ETERNUS DX410 S2/DX440 S2, ETERNUS DX8100 S2/DX8700 S2, ETERNUS DX90, ETERNUS DX410/DX440, ETERNUS DX8100/DX8400/DX8700, ETERNUS4000/ETERNUS8000, ETERNUS6000	ETERNUS storage system
ETERNUS DX410/DX440 Disk Storage Systems	ETERNUS DX400 series
ETERNUS DX8100/DX8400/DX8700 Disk Storage Systems	ETERNUS DX8000 series

## Units in this manual

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Except as otherwise noted, the following units are used in this manual:

- Drive capacity assume that 1KB = 1000 bytes, 1MB = 1000KB, 1GB = 1000MB, and 1TB = 1000GB (example: "600GB drive").
- Other capacities (such as for RAID Groups and volumes) assume that 1KB = 1024 bytes, 1MB = 1024KB, 1GB = 1024MB, and 1TB = 1024GB.

Note that the screen shots in this manual were captured during development of the software and the actual screens may be different.

Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation.

# Notes for ETERNUS Web GUI

## Notes for Using ETERNUS Web GUI

Note the following points when using ETERNUS Web GUI:

- If the PC and the ETERNUS DX/AF belong to a different network and the transfer rate setting for each network does not match, the retransmission of packets occurs more frequently and the operation screen for ETERNUS Web GUI may take more time to be displayed.  
By setting the same transfer rate for each network, the time to display the operation screen can be reduced.

Note the following items when setting the transfer rate.

- Set the same transfer rate for each network (or adjust to the lowest of the transfer rates)
- When the transfer rate for the ETERNUS DX/AF is not "Auto-negotiation", the same transfer rate must also be set for the network switches
- Do not use the standard buttons of each browser (for example, the [Back] button, the [Forward] button, and the [Refresh] button), the [F5] (refresh) key, or the [Back Space] (back) key.
- If the message "Lock was relinquished to another user or expired by timeout." appears after the operation is started, the ETERNUS Web GUI operation is suspended due to an update by another user or a timeout. Click the [OK] button to return to the previous screen and then restart the function.
- If the confirmation message "Do you wish to forcibly acquire the lock?" appears after the operation is started, another user is updating data. If the [OK] button is clicked, the data update of the other user may fail.
- If the warning message "The login authority was lost." appears after the operation is started, the login state of ETERNUS Web GUI for the current user is lost. Click the [OK] button to return to the login screen. Log in again to continue using ETERNUS Web GUI.

## Operating Environment

The following PC environment is required to use ETERNUS Web GUI.

Confirmed operating environment		Version
Web browser	Microsoft Internet Explorer	7.0, 8.0, 9.0, 10.0 (desktop version), 11.0 (desktop version)
	Mozilla Firefox	3.6.x, ESR 10.0.x, ESR 17.0.x, ESR 24.0.x
Display resolution	<ul style="list-style-type: none"><li>• 1024 × 768 or more</li><li>• 24-bit color or more is recommended</li></ul>	-

 **Caution**

- Note the following points:
  - Set "Do not use proxy server" as the proxy setting
  - Configure the temporary file (cache) setting of pages so that the pages are updated every time the browser is started  
For example, when using Internet Explorer 7.0, select "Every time I start Internet Explorer".
  - Enable the JavaScript setting
  - When Auto Reading of pages is available, enable the setting
- Furthermore, when using ETERNUS Web GUI with Microsoft Internet Explorer 7.0, note the following points:
  - [Automatic prompting for file downloads] and [Allow websites to open windows without address or status bars] must be enabled. Click the [Custom Level] button under the Internet Options-Security tab and select the radio buttons for both of these items.
  - [Show friendly HTTP error messages] must be disabled. Click the Internet Options-Advanced tab and clear the [Show friendly HTTP error messages] checkbox.
- Furthermore, when using ETERNUS Web GUI with Microsoft Internet Explorer 8.0, note the following points:
  - [Automatic prompting for file downloads] and [Allow websites to open windows without address or status bars] must be enabled. Click the [Custom Level] button under the Internet Options-Security tab and select the radio buttons for both of these items.
  - The SmartScreen Filter function must be disabled. If the SmartScreen Filter function is enabled, click the [Custom Level] button under the Internet Options-Security tab and disable [Use SmartScreen Filter].
  - Set the following items for [Compatibility View Settings] under the Tools menu.
    - If an address for the ETERNUS DX/AF is displayed in the [Websites you've added to Compatibility View:] field, select and then delete the address
    - Clear the [Display intranet sites in Compatibility View] checkbox
    - Clear the [Display all websites in Compatibility View] checkbox
- Furthermore, when using ETERNUS Web GUI with Microsoft Internet Explorer 9.0, Microsoft Internet Explorer 10.0 (desktop version), or Microsoft Internet Explorer 11.0 (desktop version), note the following points:
  - [Allow websites to open windows without address or status bars] must be enabled. Click the [Custom Level] button under the Internet Options-Security tab and select the [Allow websites to open windows without address or status bars] radio button.
  - The SmartScreen Filter function must be disabled. If the SmartScreen Filter function is enabled, click the [Custom Level] button under the Internet Options-Security tab and disable [Use SmartScreen Filter].
  - Set the following items for [Compatibility View Settings] under the Tools menu.
    - If an address for the ETERNUS DX/AF is displayed in the [Websites you've added to Compatibility View:] field, select and then delete the address
    - Clear the [Display intranet sites in Compatibility View] checkbox
    - Clear the [Display all websites in Compatibility View] checkbox (if this item is displayed)
  - When using SSL (https), scroll to Security on the Internet Options-Advanced tab and clear the [Do not save encrypted pages to disk] checkbox.

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# Chapter 1

## Screen Operations

This chapter describes the ETERNUS Web GUI screen operations.

Click the [?] icon or the [Help] link for a detailed explanation of the functions used during operation. An explanation (help) screen of the function is displayed.

### Caution

- Be sure to log out after all necessary operations are completed.
- If the operation screen is not updated when accessing ETERNUS Web GUI, close the web browser, and log in again.

## 1.1 Overview

Overview screen appears immediately after logging in to ETERNUS Web GUI. The status of the ETERNUS DX/AF storage systems and the usage of RAID groups, Thin Provisioning Pools (TPP), and Snap Data Pools (SDP) can be checked in this screen.

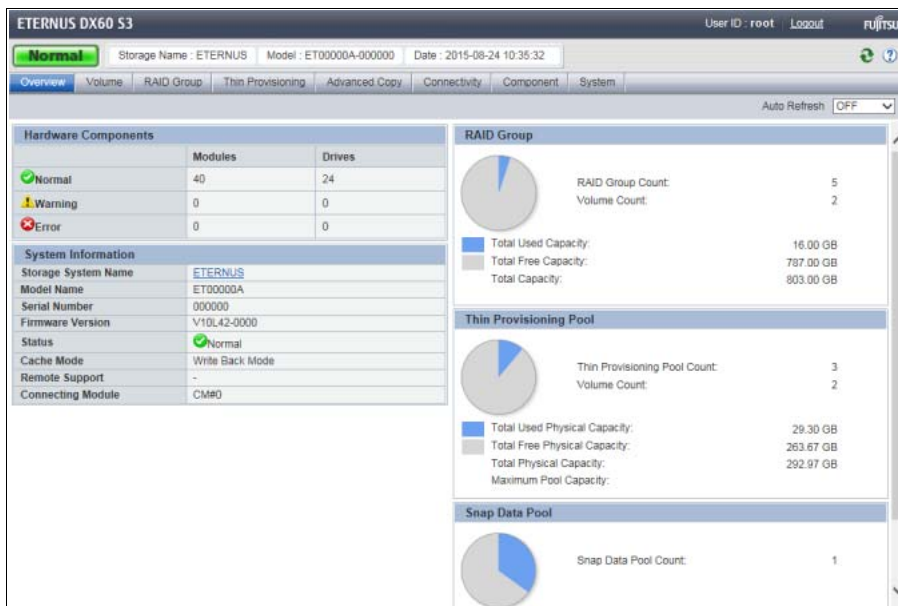
### Caution

- The [Initial Setup] screen is displayed for the first login after installation of the ETERNUS DX/AF is complete.
- If the system message "Currently Network Configuration is set to factory default." is displayed, the network environment settings for the MNT port must be performed. Use the [Setup Network Environment] function in the [Network] screen under the [System] navigation. Some functions are not available if the network environment settings are incomplete.
- If the system message "Configuration was applied to storage system." is displayed, the ETERNUS DX/AF must be rebooted. Any setting processes cannot be performed until the applied configuration information is enabled by rebooting the storage system.
- If the system message ""Expand Volume Mode" was updated. Please restart the storage system to update "Expand Volume Mode" effectively." is displayed, the ETERNUS DX/AF must be rebooted. The number of volumes and copy sessions is not increased until the ETERNUS DX/AF is rebooted and the new "Expand Volume Mode" is specified.
- When the application schedule for controller firmware is being reserved, a message to that effect as well as "Firmware Version", "Application Start Date", and "Apply Mode" are displayed. When the application mode is "Update & Reboot", the ETERNUS DX/AF is automatically rebooted after the controller firmware is applied.
- If the message which indicates that the controller firmware application has been reserved disappears before the reserved date, the reservation may be canceled automatically. In this case, reserve the application schedule for the controller firmware again. Refer to "Apply Controller Firmware" in "ETERNUS Web GUI User's Guide (Settings)" for details.

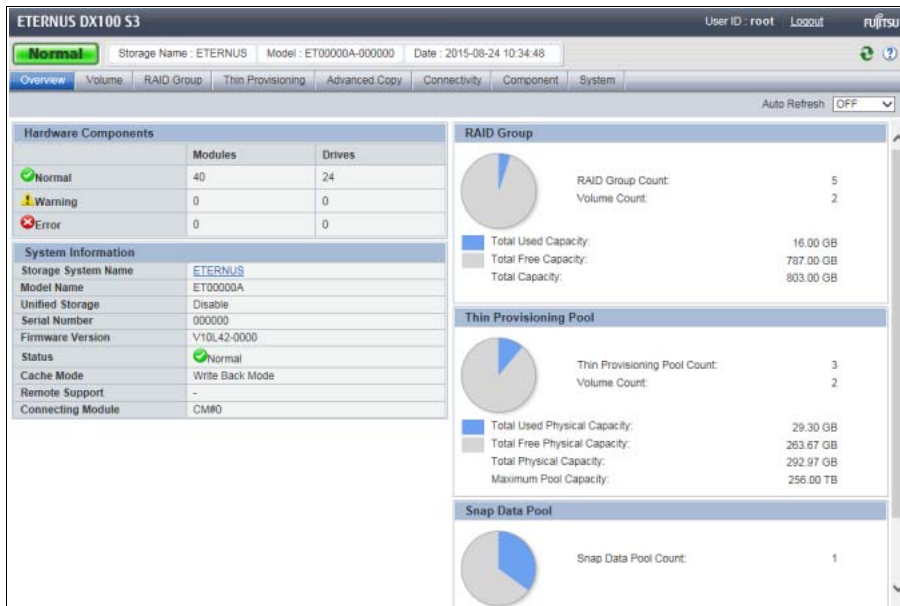
**Note**

- If the system message "Unified Storage license has been registered." is displayed, the unified upgrade must be performed. Note that "Maintenance Operation" policy is required to perform the unified upgrade.
- TPP usage is displayed only when the Thin Provisioning function is enabled.
- SDP usage is displayed when one of the following conditions applies:
  - Advanced Copy function license has been registered
  - "Enable" is displayed for the "Unified Storage" field

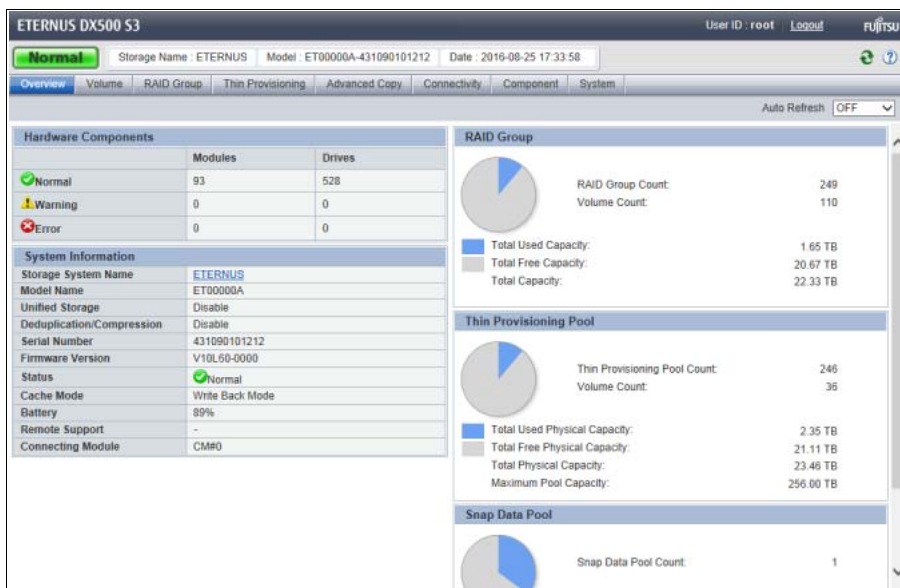
■ For the ETERNUS DX60 S3



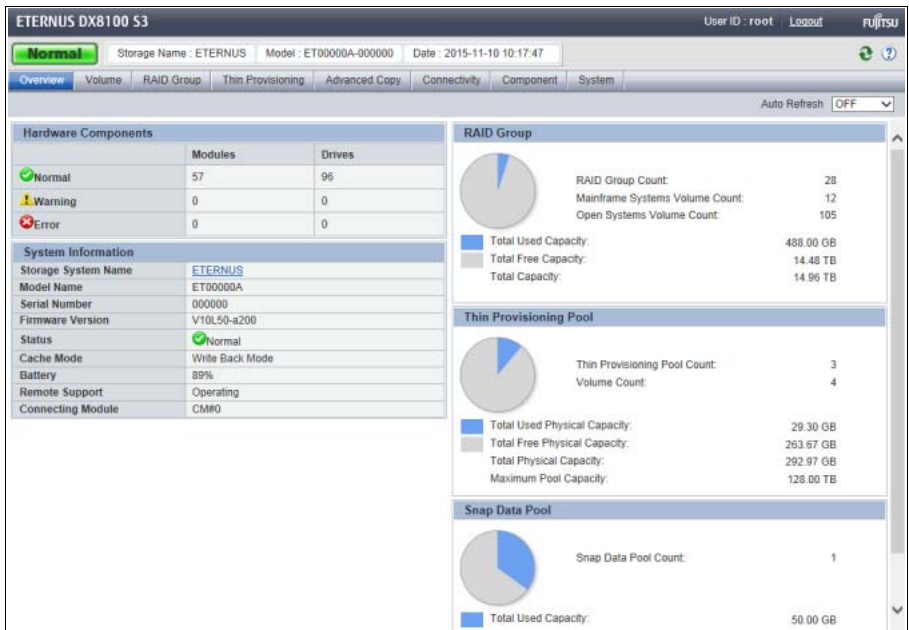
■ For the ETERNUS DX100 S3



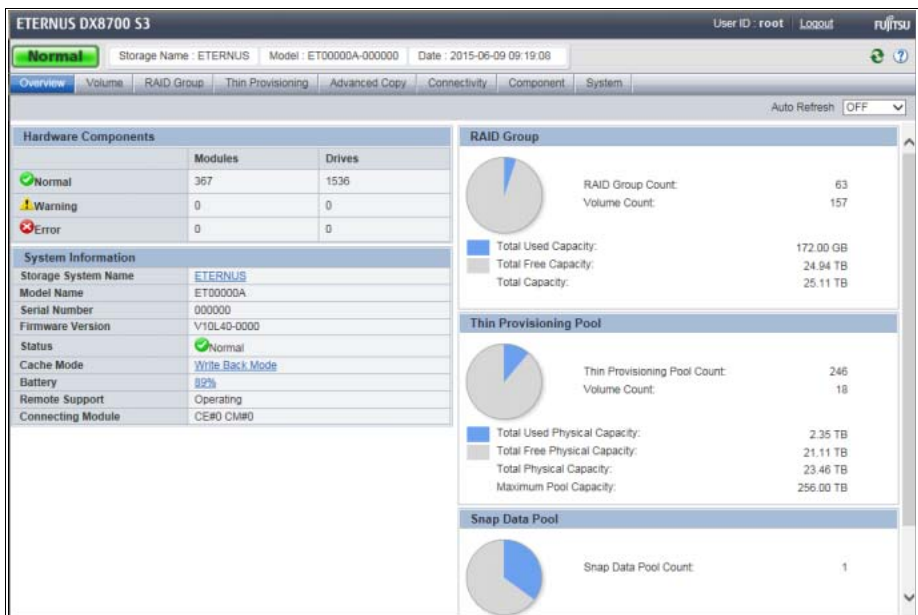
■ For the ETERNUS DX200 S3, the ETERNUS DX500 S3/DX600 S3, the ETERNUS AF250/AF650, and the ETERNUS DX200F



■ For the ETERNUS DX8100 S3



■ For the ETERNUS DX8700 S3/DX8900 S3



## Auto Refresh

The [Overview] screen is refreshed at the specified update interval.

Select the update interval to refresh the [Overview] screen from "OFF", "60 sec.", "120 sec.", or "180 sec.". The initial state is "OFF".

The monitoring time is reset to "0" when the update interval is changed or the [🔄] icon is clicked. If the specified interval is a value other than "OFF", the new update interval is applied after the monitoring time is reset.




The update interval works while the user is logged in to ETERNUS Web GUI even when other functions are started from the [Overview] screen. The update interval returns to the initial state ("OFF") when the Master CM is switched or when the user logs out of ETERNUS Web GUI.

### Caution

Auto refresh is available only for the [Overview] screen. Screens other than [Overview] are refreshed when the [🔄] icon is clicked or a screen is redisplayed.

## System Messages

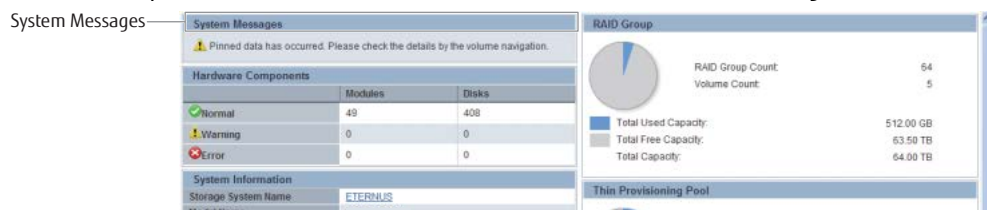
A system message is displayed.

-  Message  
When any information from the ETERNUS DX/AF exists, an information message is displayed.
-  Message  
When an event causes warning status, a warning message is displayed.  
If a warning message is generated, the LCD message is displayed.  
If an Advanced Copy path in warning status exists, a message is displayed.
-  Message  
When an event causes error status, an error message is displayed.  
If an error message is generated, the LCD message is displayed.  
If an Advanced Copy path in error status exists, a message is displayed.

### Note

An "LCD message" is a message to notify if a failure or warning status occurs. It is displayed when the Master CM is used to operate the ETERNUS DX (or when a user logs in to the ETERNUS DX8700 S3/DX8900 S3 by specifying the Master IP address (\*1) via a web browser).














\*1: Refer to "Setup Network Environment" in "ETERNUS Web GUI User's Guide (Settings)" for details.





## ■ Hardware Components

The number of components for each status is displayed.

-  Normal
  - Modules  
The number of components (\*1) in normal status ("" or "") is displayed.
  - Drives  
The number of drives in normal status ("" or "") is displayed.
-  Warning
  - Modules  
The number of components (\*1) in warning status ("" or "") is displayed.
  - Drives  
The number of drives in warning status ("" or "") is displayed.
-  Error
  - Modules  
The number of components (\*1) in error status ("") is displayed.
  - Drives  
The number of drives in error status ("") is displayed.

\*1: The number of components that can be maintained. The number of components does not include the number of drives.

## ■ System Information

The information of the ETERNUS DX/AF is displayed.

- Storage System Name  
The name for the ETERNUS DX/AF is displayed.  
When logged in with a user account that can display detailed component information (\*1), a link is displayed on the storage system name.  
Click this link to display the [Storage] screen in the [Component] navigation.  
\*1: A user account with the "Status Display" policy or the "Maintenance Operation" policy can display detailed component information. When logged in with a user account that has a "Monitor", "Admin", "StorageAdmin", "SecurityAdmin", or "Maintainer" default role, a link is displayed on the storage system name.
- Model Name  
The model name of the ETERNUS DX/AF is displayed.
- Unified Storage  
The support status of the unified storage function is displayed.  
If the Unified Storage function is enabled, the ETERNUS DX can be used as a Unified Storage system (a SAN and NAS system).  
For the ETERNUS DX60 S3 and the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3, this item is not displayed.  
For the ETERNUS AF250/AF650 and the ETERNUS DX200F, "Disable" is displayed.

### Note

When upgrading a SAN system to a Unified Storage system, after the unified firmware is applied to the active and inactive controllers, this item is changed to "Enable".

- **Deduplication/Compression**  
Whether the Deduplication/Compression function is enabled or disabled is displayed.  
For the ETERNUS DX60 S3/DX100 S3 and the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3, this item is not displayed.
- **Serial Number**  
The serial number of the ETERNUS DX/AF is displayed.
- **Firmware Version**  
The current controller firmware version is displayed.
  - VxxLyy-zzzz (Vxx: Version, Lyy: Level, zzzz: Release number)
- **Status**  
The detailed general status of the ETERNUS DX/AF is displayed. If the storage system is in normal status, "✔" is displayed. Refer to "[A.1.1 Storage System General Status \(Detail\)](#)" (page 405) for details.
- **Cache Mode**  
The current cache mode and the factor of the mode are displayed. The normal status is "Write Back Mode".  
For the ETERNUS DX8700 S3/DX8900 S3, click this item to display the [Controller Enclosure] screen. Refer to "[3.2 Controller Enclosure](#)" (page 81) for details.
  - **Write Back Mode**  
When a Write request is issued from the host, "Write Complete" is displayed after writing to the cache area is complete.
  - **Write Through Mode**  
When a Write request is issued from the host, "Write Complete" is displayed after writing to the cache area and the drives is complete.  
In the Write Through Mode, "Write Through (factors)" is displayed. When there are multiple factors, all the factors are separated with a "/" (slash) and displayed.  
The factors of the Write Through Mode are described below:
    - **Write Through (Pinned Data)**  
A large amount of pinned data (\*1) occurred in the ETERNUS DX/AF.
    - **Write Through (Battery)**  
The battery charge level is low.
    - **Write Through (Maintenance)**  
One of the following functions is currently being used:
      - Upgrading the controller firmware in hot mode
      - Changing the Controlling CM of the RAID group
      - Adding the Controller Module (\*2)
      - Setting the Deduplication/Compression mode (when enabling)
      - Setting the exclusive read cache size
    - **Write Through (1CM)**  
The ETERNUS DX/AF operated with 1CM. (\*3)
      - \*1: "Pinned data" is the data left in the cache memory due to unsuccessful write-back to the volume from the cache memory.
      - \*2: When reassigning the Controlling CM for the RAID group using all normal CMs including the added CM, the cache mode is temporarily changed to "Write Through Mode" during a configuration.
      - \*3: This mode is displayed when "1CM Write Through" is enabled by using the procedure in "Setup Subsystem Parameters" in "ETERNUS Web GUI User's Guide (Settings)" function and the ETERNUS DX/AF operated with 1CM (only 1CM can be used due to an error such as a CM failure). The "1CM Write Through" setting for the "Setup Subsystem Parameters" function is displayed and can be changed when logged in using a user account with the "Maintenance Operation" policy. The initial state is "Disable".

- **Battery**  
The battery charge level is displayed.  
When the battery charge level is 90% or more, "Full Charge" is displayed. When the battery charge level is less than 90%, "xx%" is displayed.  
For the ETERNUS DX8700 S3/DX8900 S3, the lowest battery charge level among all CEs is displayed. Click this item to display the [Controller Enclosure] screen. Refer to ["3.2 Controller Enclosure" \(page 81\)](#) for details.  
This item is displayed for the ETERNUS DX500 S3/DX600 S3, the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3, and the ETERNUS AF650.
- **Remote Support**  
The Remote Support status (REMCS or AIS Connect) is displayed.
  - Operating  
The Remote Support is operating.
  - Maintenance in Progress  
The ETERNUS DX/AF is under maintenance and the Remote Support is temporarily stopped.  
After the maintenance is complete, Remote Support is automatically resumed.
  - Stopped  
The Remote Support has been stopped.
  - "-"  
The Remote Support setting is not performed.
- **Connecting Module**  
The Controller Module (CM) to which ETERNUS Web GUI is connected is displayed.

## ■ RAID Groups

The usage of RAID groups is displayed.

- **Pie chart**  
The pie chart indicates the total used capacity and the total free capacity in the RAID groups.  
Blue: Total used capacity  
Gray: Total free capacity
- **RAID Group Count**  
The number of RAID groups registered in the ETERNUS DX/AF is displayed.  
The "RAID Group Count" includes the number of RAID groups that configure TPPs, the number of RAID groups that configure FTRPs, the number of RAID groups that are registered as REC Disk Buffers, and the number of RAID groups that are registered as Extreme Cache Pools (EXCPs).
- **Volume Count**  
The number of volumes registered in the ETERNUS DX/AF is displayed.  
The "Volume Count" displays the number of "Standard" type volumes and "Wide Striping Volumes (WSV)".
- **Total Used Capacity**  
The total used capacity of the RAID groups [TB/GB/MB] is displayed. The "Total Used Capacity" is the total capacity of all of the RAID groups that are used. An example of this capacity is space that is used for volumes in the RAID groups. The "Total Used Capacity" includes the capacity of the RAID groups that configure TPPs, the capacity of the RAID groups that configure FTRPs, the capacity of the RAID groups that are registered as REC Disk Buffers, and the capacity of the RAID groups that are registered as EXCPs.
- **Total Free Capacity**  
The total free capacity of the RAID groups [TB/GB/MB] is displayed. The "Total Free Capacity" is a total of unused capacities in the RAID groups. The "Total Free Capacity" includes the capacity of the RAID groups that configure TPPs, the capacity of the RAID groups that configure FTRPs, the capacity of the RAID groups that are registered as REC Disk Buffers, and the capacity of the RAID groups that are registered as EXCPs.

- **Total Capacity**  
The total capacity of the RAID groups [TB/GB/MB] is displayed. The "Total Capacity" is the total capacity of all the RAID groups in the ETERNUS DX/AF. The "Total Capacity" includes the capacity of the RAID groups that configure TPPs, the capacity of the RAID groups that configure FTRPs, the capacity of the RAID groups that are registered as REC Disk Buffers, and the capacity of the RAID groups that are registered as EXCPs.

$$\text{Total Free Capacity} = \text{Total Capacity} - \text{Total Used Capacity}$$

## ■ Thin Provisioning Pool

The usage of TPP is displayed.

- **Pie chart**  
The pie chart indicates the total used physical capacity and the total free physical capacity in the TPPs.  
Blue: Total used physical capacity  
Gray: Total free physical capacity
- **Thin Provisioning Pool Count**  
The number of TPPs registered in the ETERNUS DX/AF is displayed.
- **Volume Count**  
The number of volumes registered in the ETERNUS DX/AF is displayed.  
This value displays the number of "TPV" type volumes.
- **Total Used Physical Capacity**  
The total used physical capacity of the TPPs [PB/TB/GB/MB] is displayed. The "Total Used Physical Capacity" is the total physical capacity of all the TPPs that are used for volumes.
- **Total Free Physical Capacity**  
The total free physical capacity of the TPPs [PB/TB/GB/MB] is displayed. The "Total Free Physical Capacity" is the total unused physical capacity of all the TPPs.
- **Total Physical Capacity**  
The total physical capacity of the TPPs [PB/TB/GB/MB] is displayed. The "Total Physical Capacity" is the total physical capacity of all the TPPs in the ETERNUS DX/AF.

$$\text{Total Free Physical Capacity} = \text{Total Physical Capacity} - \text{Total Used Physical Capacity}$$

- **Maximum Pool Capacity**  
The maximum pool capacity is displayed.  
The maximum pool capacity is the maximum total capacity for TPPs and FTRPs that can be created in the ETERNUS DX/AF.  
The "Maximum Pool Capacity" is specified by using the [Set Thin Provisioning] function. Refer to "Set Thin Provisioning" in "ETERNUS Web GUI User's Guide (Settings)" for details.

## ■ Snap Data Pool

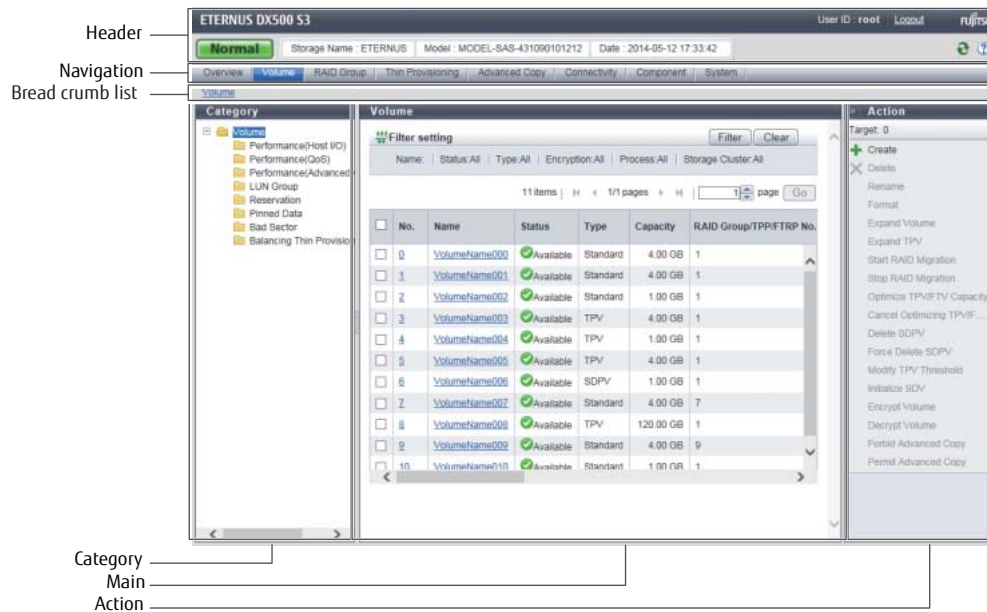
The usage of SDP is displayed.

- Pie chart  
The pie chart indicates the total used capacity and the total free capacity in the SDP.  
Blue: Total used capacity  
Gray: Total free capacity
- Snap Data Pool Count  
The number of SDPs that are registered in the ETERNUS DX/AF is displayed.  
SDP becomes available when creating a Snap Data Pool Volume (SDPV). One SDP is created in the ETERNUS DX/AF.
- Total Used Capacity  
The total used capacity of the SDP [TB/GB/MB] is displayed. The "Total Used Capacity" is the total capacity of the SDP that is used for volumes.
- Total Free Capacity  
The total free capacity of the SDP [TB/GB/MB] is displayed. The "Total Free Capacity" is the total unused capacity of the SDP.
- Total Capacity  
The total capacity of the SDP [TB/GB/MB] is displayed. The "Total Capacity" is the total capacity of the SDP in the ETERNUS DX/AF.

$\text{Total Free Capacity} = \text{Total Capacity} - \text{Total Used Capacity}$
---

## 1.2 Screen Structures

This section describes screen layouts for functions other than Overview screen.



### ■ Header

User ID, [Logout] link, general status, storage system name, model name, date, [Refresh] icon (Refresh), and [Help] icon (Help) are displayed in the header. Only when the maintenance is being performed for the ETERNUS DX/AF, [Maintenance Mode] icon is displayed.

The header is always displayed.

- General status of the ETERNUS DX/AF  
Status of each component in the ETERNUS DX/AF is monitored periodically, and the result is displayed as a general status icon with character strings. Refer to ["A.1 Storage System General Status" \(page 404\)](#) for details about the general status.

### ■ Navigation

Overview, Volume, RAID Group, Thin Provisioning, Advanced Copy, Connectivity, Component, and System tabs are displayed.

Click the tab for the function that is to be used to display a list screen for that function.

The navigation is always displayed.

### ■ Bread crumb list

Bread crumb indicates the location of the current screen on ETERNUS Web GUI.

Click the link to display the list screen of the target item.

■ Category

The subordinate items are displayed for an item that is clicked in the navigation. The category directory is used for switching the contents that are displayed in the Main screen. Click the item for the function that is to be used. The horizontal width of the category area can be changed.

■ Main

A list of items is displayed for an item that is clicked on the navigation or in the category. The filter setting area may also be displayed for some lists.

■ Action

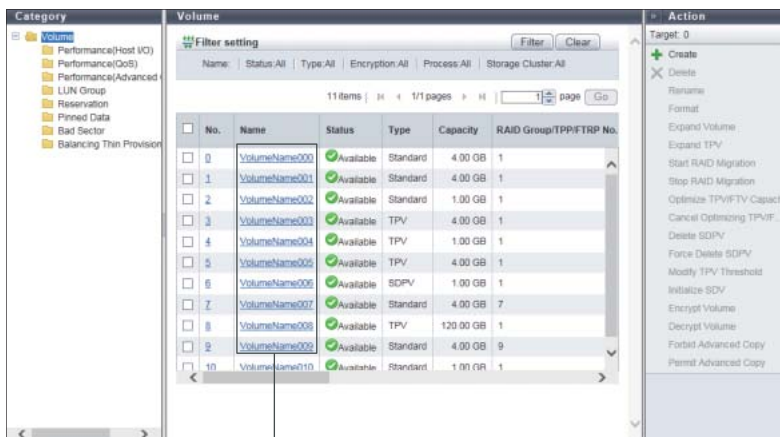
Only the available functions for the selected items from the navigation or in the category are displayed. Click the function that is to be used to display the wizard screen. Click the [>>] button to switch the display of the action area. The number of operation targets that is selected in the Main area is displayed in the "Target:" field. When no selections are made, "0" is displayed.

## 1.3 List Screen/Detailed Screen

There are two types of main screens; a list screen and a detailed screen. The header, bread crumb list, and navigation areas are not included in the screen shots in this section.

### List screen

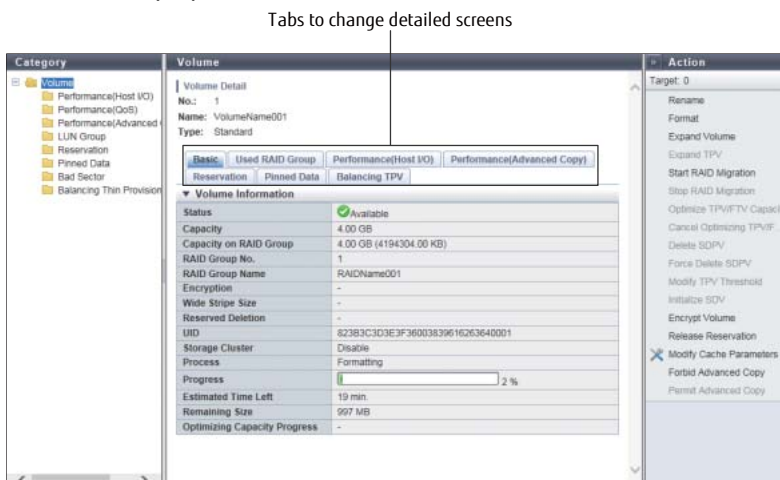
A list of the items that were clicked on the navigation or in the category is displayed. For items with detailed information, links to the detailed screens are displayed.



Links to detailed screen

### Detailed screen

Click the link for each item in the list screen to display a detailed screen. Click the tabs that are displayed to switch the display.



Tabs to change detailed screens

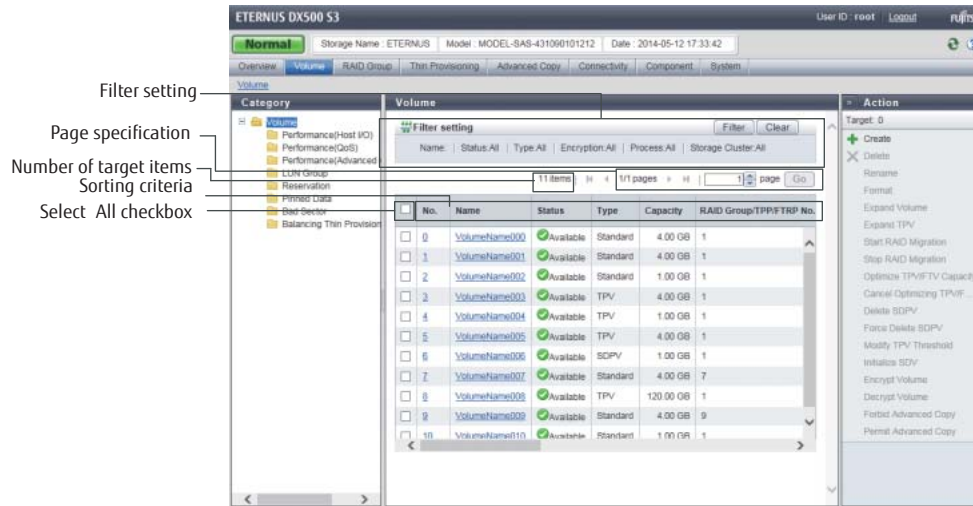
### Note

For some items, the same information may be displayed for the list screen and the detailed screen. From ["Chapter 2 System Status" \(page 35\)](#) onward, only the information for items in the detailed screen that is different from the list screen is described.



## 1.4 Basic Operation

Select the desired item and execute the selected operation.



### Selecting an operation

When an item in the navigation or category is clicked, a list items for the selected item is displayed. Select the checkbox or checkboxes of the listed items for the desired operation. Note that some operations, such as creating new volumes, do not require the item to be selected.

The following operations are available in the list screen:

- **Filter setting**  
Filter setting is a function used to display a list of only the items that meet all the specified conditions. The settings that can be specified vary depending on the function that is selected. No filtering is set by default.
- **Number of target items**  
The number of operation target items that are registered in the ETERNUS DX/AF is displayed.
- **Page specification**  
Page specification is a function used to display the specified page. This setting is available when lists are displayed on multiple pages. The total number of pages and the current page number is displayed.
  - Click the [ << ] button to display the first page.
  - Click the [ < ] button to display the previous page.
  - Click the [ > ] button to display the next page.
  - Click the [ >> ] button to display the last page.

When specifying the page that is to be displayed, input the numeric character in the page specification spin box and click the [Go] button. A list for the specified page is displayed.

- **Sort**  
Sorting is a function that rearranges the order of the display items in ascending order (A - Z or 0 - 9), in descending order (Z - A or 9 - 0), or in a specific order. Click the sorting criteria to change the order. The item that is furthest to the left is displayed in ascending order by default.  
Note that the order of some display items that have specific meanings (such as the concatenation order of volumes) cannot be sorted.

- Select All checkbox  
The "Select All" checkbox is the first item in the left of the item field. Click this checkbox to select all of the checkboxes that are listed. This checkbox is left clear by default.

#### ■ Displaying multiple items

When there are multiple display targets, a display target and a [Show...] link are displayed. Click the [Show...] link to display all of the items and a [Hide...] link. Click the [Hide...] link to return to the default display.

#### ■ Executing an operation


Select the desired operation item from the navigation or category, and then select the function that is to be executed in the Action field.

Only the available functions for the displayed item are displayed in the Action field.

Some functions in the Action field require one target item from the list to be selected, some functions require multiple target items to be selected, and other functions can be performed without selecting any items.

- [Cancel] button  
Deletes the newly added or changed information, and then returns to the previous screen. Or cancels the current operation, and then returns to the previous screen.

#### ■ Updating the screen display

When the [] icon in the global header is clicked or a category, a navigation, or an action is selected, the most recently updated screen is obtained. If a tab is clicked, the screen is not updated. Note that only the [Overview] screen automatically updates periodically according to the specified update interval.

#### Note

The header, bread crumb list, and navigation areas are not included in the screen shots in the following chapters and sections.

# Chapter 2

## System Status

This chapter describes system management.  
System status displays the status information of volumes.  
System status screens can be displayed by clicking the following categories:

Category	System status screen
Storage system name	<a href="#">System (Basic Information)</a>
Network	<a href="#">Network</a>
Remote Support	<a href="#">REMCS</a>
	<a href="#">AIS Connect</a>
Root Certificate	<a href="#">Root Certificate</a>
Key Management	<a href="#">Key Management</a>
Key Group	<a href="#">Key Group</a>
User Settings	<a href="#">Define Role</a>
Eco-mode	<a href="#">Eco-mode</a>
Event/Dump	<a href="#">Event/Dump</a>
Audit Log	<a href="#">Audit Log</a>
Firmware Maintenance	<a href="#">Firmware Maintenance</a>
Storage Migration	<a href="#">Storage Migration</a>
Utility	<a href="#">Utility</a>
System Settings	<a href="#">System Settings</a>

Detailed information of the system settings can be displayed from the following screen:

- [Eco-mode Schedule Detail](#)
- [Path Group Detail Information](#)

## 2.1 System (Basic Information)

This function displays the system information and a list of users who are currently logged in.

### Caution

- If the message "Currently Network Configuration is set to factory default." is displayed in the system message field, the network environment settings for the MNT port must be performed. Use the [Setup Network Environment] function in the [Network] screen under the [System] navigation. Some functions are not available if the network environment settings are incomplete.
- If the message "Configuration was applied to storage system." is displayed in the system message field, the ETERNUS DX/AF must be rebooted. Any setting processes cannot be performed until the applied configuration information is enabled by rebooting the storage system.
- The "Login User" list is displayed only when a user account with the "User Management" policy is used to log in.
- The following login users are displayed:
  - Users who are logged in to the Master CM from ETERNUS Web GUI
  - Users who are logged in to the Slave CM from ETERNUS Web GUI
  - Users who are logged in to the Master CM from ETERNUS CLI or other software (Users who are logged in to the Slave CM from ETERNUS CLI or other software are not displayed.)

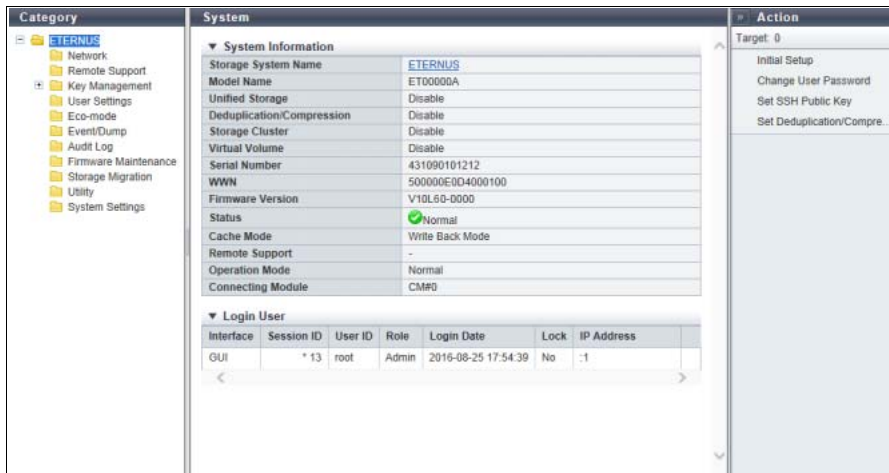
### Note

- If the system message "Unified Storage license has been registered." is displayed, the unified upgrade must be performed. Note that "Maintenance Operation" policy is required to perform the unified upgrade.
- The storage system name is displayed at the top of the [System] navigation category. The "Storage System Name" is specified using the [Modify Storage System Name] function. Refer to "Modify Storage System Name" in "ETERNUS Web GUI User's Guide (Settings)"
- Click the "Storage System Name" in the category again to display the latest information in the screen.

### ■ For the ETERNUS DX8700 S3/DX8900 S3

Interface	Session ID	User ID	Role	Login Date	Lock	IP Address
GUI	*5	root	Admin	2015-06-15 12:58:39	No	*****

■ For the other models



The following items are displayed in the Main area:

● System Information

- Storage System Name  
The name for the ETERNUS DX/AF is displayed.  
By clicking this item, the [Storage] screen in the [Component] navigation is displayed.
- Model Name  
The model name of the ETERNUS DX/AF is displayed.
- Unified Storage  
The support status of the unified storage function is displayed.  
If the Unified Storage function is enabled, the ETERNUS DX can be used as a Unified Storage system (a SAN system and a NAS system).  
For the ETERNUS DX60 S3 and the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3, this item is not displayed.  
For the ETERNUS AF250/AF650 and the ETERNUS DX200F, "Disable" is displayed.

● Note

When upgrading a SAN system to a Unified Storage system, after the unified firmware is applied to the active and inactive controllers, this item is changed to "Enable".

- Deduplication/Compression  
Whether the Deduplication/Compression function is enabled or disabled is displayed.  
For the ETERNUS DX60 S3/DX100 S3 and the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3, this item is not displayed.
- Storage Cluster  
If a license for the Storage Cluster function has already been registered, "Enable" is displayed. If the license is not registered, "Disable" is displayed.  
Note that ETERNUS Web GUI cannot be used to register a Storage Cluster license. To register the license, use ETERNUS SF Storage Cruiser.  
For the ETERNUS DX60 S3, this item is not displayed.

- **Virtual Volume**  
Whether the Virtual Volume function is enabled or disabled is displayed.  
The Virtual Volume function cannot be set with Web GUI. To set the Virtual Volume function, use ETERNUS SF Storage Cruiser.  
For the ETERNUS DX60 S3, this item is not displayed.
- **Serial Number**  
The serial number of the ETERNUS DX/AF is displayed.
- **WWN**  
The WWN of the ETERNUS DX/AF is displayed.
- **Firmware Version**  
The current controller firmware version is displayed.
  - VxxLyy-zzzz (Vxx: Version, Lyy: Level, zzzz: Release number)
- **Status**  
General status (detail) of the ETERNUS DX/AF is displayed. Refer to ["A.1 Storage System General Status" \(page 404\)](#) for details.
- **Cache Mode**  
The current status and the factor of the cache are displayed. The normal status is "Write Back Mode".  
Refer to ["Cache Mode" \(page 26\)](#) in ["1.1 Overview"](#) for details.
  - Write Back Mode
  - Write Through (Pinned Data)
  - Write Through (Battery)
  - Write Through (Maintenance)
  - Write Through (1CM)
- **Remote Support**  
The Remote Support status (REMCS or AIS Connect) is displayed. If the Remote Support is not set, a "-" (hyphen) is displayed.
  - Operating  
The Remote Support is operating.
  - Maintenance in Progress  
The ETERNUS DX/AF is under maintenance and the Remote Support is temporarily stopped.  
After the maintenance is complete, Remote Support is automatically resumed.
  - Stopped  
The Remote Support is stopped.
- **Operation Mode**  
The operation mode is displayed.
  - Normal  
The ETERNUS DX/AF is in operation.
  - Maintenance Mode  
The ETERNUS DX/AF is under maintenance.
- **Connecting Module**  
The CM to which ETERNUS Web GUI is connected is displayed.

- Login User

- Interface

The interface type for users who are logged in is displayed.

- GUI

Users logged in via ETERNUS Web GUI or users logged in via ETERNUS Web GUI from the AIS Connect server

- CLI

Users logged in via ETERNUS CLI or users logged in via ETERNUS CLI from the AIS Connect server

- SOFT

Users logged in from software.

"SOFT" is displayed in the following conditions:

- When users log in from software with the default "Software" role via CLI
- When users log in using SMI-S via software
- When users log in from software using Dynamic LUN Mirroring (DLM) via CLI

- Session ID

An identification number for users who are logged in is displayed. A session ID is obtained for each login and released with each logout. Because the session ID is obtained discretely, the same session ID is not used even if the same user logs in again. ETERNUS Web GUI uses session IDs between 1 - 999 and ETERNUS CLI (including when the interface is "SOFT") uses session IDs from 10001 onwards. In a Unified Storage environment, ETERNUS Web GUI uses session IDs from 10001 onwards for internal processes in the same way as ETERNUS CLI. An "\*" (asterisk) is added on top of the current user's (your) session ID.

- 0 - 65535

- For the current user's (your) session: \* xxxxx (xxxxx: 0 - 65535)

- User ID

The user name (user ID) for a user who is logged in is displayed. When the interface is "SOFT" (SMI-S or DLM), a "-" (hyphen) is displayed. A "-" (hyphen) is also displayed for internal process sessions of ETERNUS Web GUI in a Unified Storage environment.

- Role

The user role for a user who is logged in is displayed. A "-" (hyphen) is displayed for internal process sessions of ETERNUS Web GUI in a Unified Storage environment.

- Monitor

- Admin

- StorageAdmin

- AccountAdmin

- SecurityAdmin

- Maintainer

- Software

- Custom role

- Login Date

The login date and time are displayed.

- YYYY-MM-DD hh:mm:ss (YYYY: Year (2001 - 2037), MM: Month (01 - 12), DD: Date (01 - 31), hh: Hour (00 - 23), mm: Minute (00 - 59), ss: Second (00 - 59))

- Lock

If a logged in user is updating data that is managed by the ETERNUS DX/AF, "Yes" is displayed. If a user is not updating data, "No" is displayed. When "Yes" is displayed for a user, other users with "No" displayed cannot update data.

Note that multiple users cannot update data that is managed by the ETERNUS DX/AF at the same time. The storage system is exclusively used by a user who is updating the data. The exclusion is released when the updating is complete.

- IP Address

The IP address for a user who is logged in is displayed. If an AIS Connect server is used to log in, "AIS Connect Server" is displayed. When the interface is "SOFT" (SMI-S or DLM), a "-" (hyphen) is displayed. A "-" (hyphen) is also displayed for internal process sessions of ETERNUS Web GUI in a Unified Storage environment.

- For IPv4 address

- xxx.xxx.xxx.xxx  
xxx: 0 - 255 (decimal)

- For IPv6 address

- xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx  
xxxx: 0 - ffff (hexadecimal, "a" - "f" are lowercase letters)  
Refer to "[IPv6 Address Notation](#)" ([page 253](#)) for details.



## 2.2 Network

This function displays the network environment of each port in the ETERNUS DX/AF.

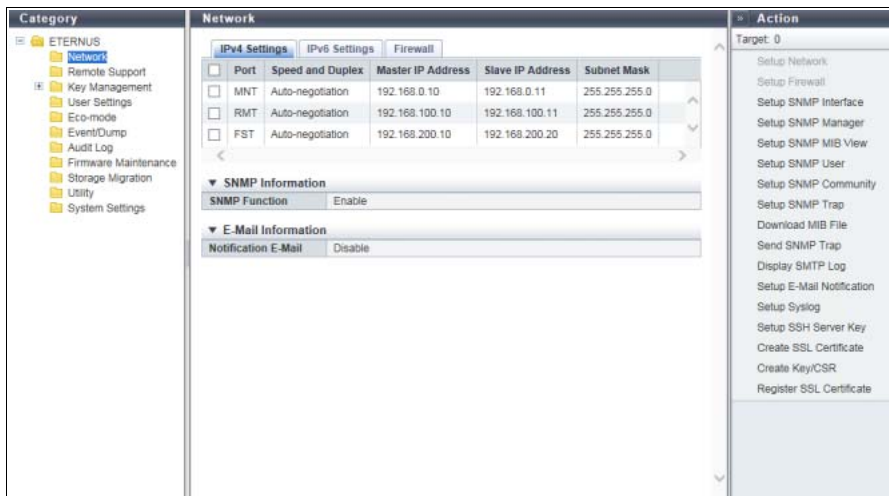
### Caution

- If the message "Currently Network Configuration is set to factory default." is displayed in the system message field, the network environment settings for the MNT port must be performed. Perform the [Setup Network Environment] function in [Action]. Some functions are not available if the network environment settings are incomplete. Refer to "Setup Network Environment" in "ETERNUS Web GUI User's Guide (Settings)" for details.
- Click the [↻] icon to display the latest screen. Note that after changing the firewall setting and returning to this screen, it takes approximately 10 seconds to update the display contents. Wait at least 10 seconds and click the [↻] icon or click [Network] in the category to display the [Network] screen again.

### IPv4 Settings

The network setting information is displayed.

The Simple Network Management Protocol (SNMP) Information and the E-Mail Information are displayed under the network setting information.



The following items are displayed in the Main area:

- Port  
The port type is displayed.
  - For the ETERNUS DX60 S3/DX100 S3/DX200 S3, the ETERNUS AF250, and the ETERNUS DX200F MNT and RMT
  - For the ETERNUS DX500 S3/DX600 S3, the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3, and the ETERNUS AF650 MNT, RMT, and FST

- **Speed and Duplex**  
The transfer speed and the communication method are displayed.
  - Auto-negotiation
  - 1Gbit/s
  - 100Mbit/s Half
  - 100Mbit/s Full
  - 10Mbit/s Half
  - 10Mbit/s Full
- **Master IP Address**  
The IP address of the Master CM, which has been specified to the port, is displayed.  
If not specified, the field is blank.
- **Slave IP Address**  
The IP address of the Slave CM, which has been specified to the port, is displayed.  
This item is not displayed for the 1CM model.  
If not specified, the field is blank.
- **Subnet Mask**  
The Subnet Mask, which has been specified to the port, is displayed.  
If not specified, the field is blank.

● **SNMP Information**

- **SNMP Function**  
Whether the SNMP function is enabled or disabled is displayed.

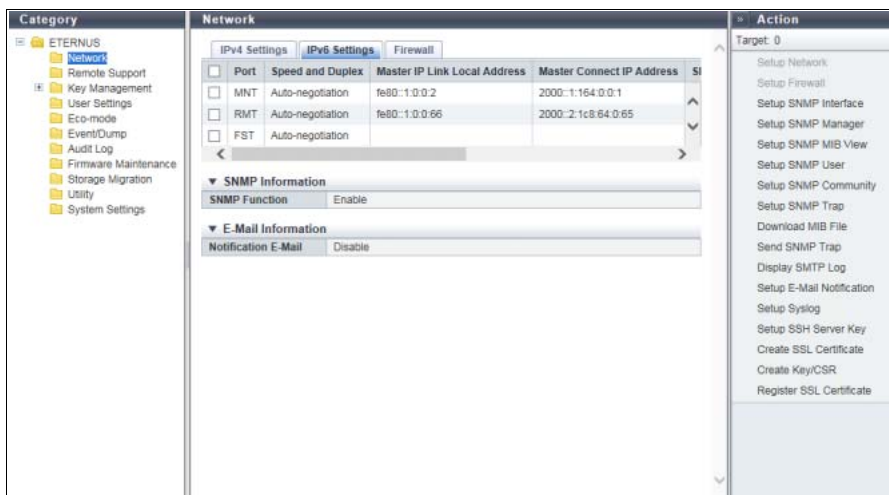
● **E-Mail Information**

- **Notification E-Mail**  
Whether the E-mail notification is enabled or disabled is displayed.

■ **IPv6 Settings**

The network setting information is displayed.

The SNMP Information and the E-Mail Information are displayed under the network setting information.



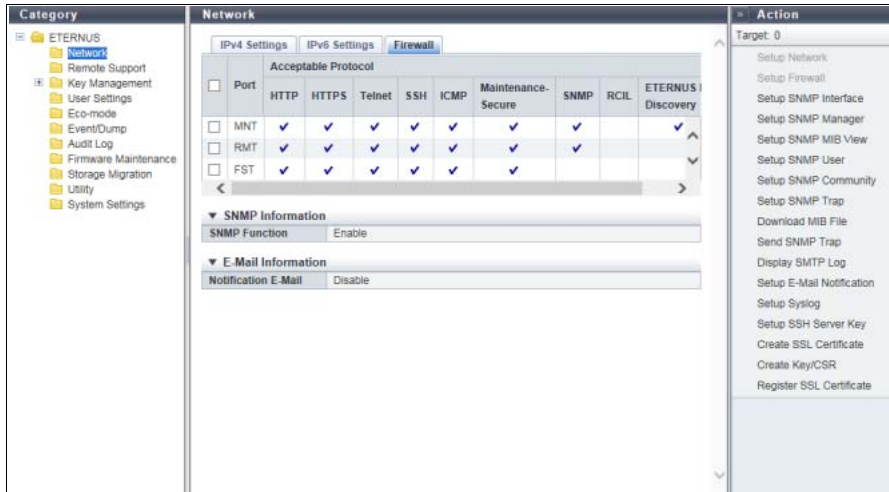
The following items are displayed in the Main area:

- Port  
The port type is displayed.
  - For the ETERNUS DX60 S3/DX100 S3/DX200 S3, the ETERNUS AF250, and the ETERNUS DX200F MNT and RMT
  - For the ETERNUS DX500 S3/DX600 S3, the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3, and the ETERNUS AF650 MNT, RMT, and FST
- Speed and Duplex  
The transfer speed and the communication method are displayed.
  - Auto-negotiation
  - 1Gbit/s
  - 100Mbit/s Half
  - 100Mbit/s Full
  - 10Mbit/s Half
  - 10Mbit/s Full
- Master IP Link Local Address  
The link local address of the Master CM, which has been specified to the port, is displayed. If not specified or when the port type is "FST", the field is blank.
- Master Connect IP Address  
The connect IP address of the Master CM, which has been specified to the port, is displayed. "Master Connect IP Address" corresponds to "Master IP Address" for IPv4. If not specified or when the port type is "FST", the field is blank.
- Slave IP Link Local Address  
The link local address of the Slave CM, which has been specified to the port, is displayed. This item is not displayed for the 1CM model. If not specified or when the port type is "FST", the field is blank.
- Slave Connect IP Address  
The connect IP address of the Slave CM, which has been specified to the port, is displayed. "Slave Connect IP Address" corresponds to "Slave IP Address" for IPv4. This item is not displayed for the 1CM model. If not specified or when the port type is "FST", the field is blank.
- Length of Subnet Prefix  
The prefix length for the connect IP address is displayed between 3 - 128 (unit: bit). "Length of Subnet Prefix" corresponds to "Subnet Mask" for IPv4. If not specified or when the port type is "FST", the field is blank.
- SNMP Information
  - SNMP Function  
Whether the SNMP function is enabled or disabled is displayed.
- E-Mail Information
  - Notification E-Mail  
Whether the E-mail notification is enabled or disabled is displayed.

## ■ Firewall

The Firewall setting information is displayed.

The SNMP Information and the E-Mail Information are displayed under the Firewall setting information.



The following items are displayed in the Main area:

- Port  
The port type is displayed.
  - For the ETERNUS DX60 S3/DX100 S3/DX200 S3, the ETERNUS AF250, and the ETERNUS DX200F MNT and RMT
  - For the ETERNUS DX500 S3/DX600 S3, the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3, and the ETERNUS AF650 MNT, RMT, and FST
- Acceptable Protocol
  - HTTP  
Whether the HTTP connection is enabled or disabled is displayed. (\*1)
  - HTTPS  
Whether the HTTPS connection is enabled or disabled is displayed. (\*1)
  - Telnet  
Whether the Telnet connection is enabled or disabled is displayed. (\*1)
  - SSH  
Whether the Secure SHell (SSH) connection is enabled or disabled is displayed. (\*1)
  - ICMP  
Whether the Internet Control Message Protocol (ICMP) connection is enabled or disabled is displayed. (\*1)
  - Maintenance-Secure  
Whether the Maintenance-Secure connection is enabled or disabled is displayed. (\*1)
  - SNMP  
Whether the SNMP connection is enabled or disabled is displayed. (\*1)

- RCIL  
Whether the Remote Cabinet Interface over LAN (RCIL) connection is enabled or disabled is displayed. (\*1)  
Whether RCIL is enabled or disabled is only displayed for the MNT port. The RMT port and the FST port are always disabled.
- ETERNUS DX Discovery  
Whether the ETERNUS DX Discovery connection is enabled or disabled is displayed. (\*1)  
The ETERNUS DX Discovery is a port to connect ETERNUS DX/AF storage systems in the network by using the Remote Installation function.  
Whether ETERNUS DX Discovery is enabled or disabled is only displayed for the MNT port. The RMT port and the FST port are always disabled.

\*1: When the SNMP connection is enabled, "✓" is displayed. If the SNMP connection is disabled, the field is blank.

- SNMP Information

- SNMP Function  
Whether the SNMP function is enabled or disabled is displayed.

- E-Mail Information

- Notification E-Mail  
Whether the E-mail notification is enabled or disabled is displayed.

## 2.3 Remote Support

This function displays the set state for the Remote Support function (REMCS or AIS Connect).

### Note

- When only REMCS is available, the [REMCS] screen appears. Refer to ["2.3.1 REMCS" \(page 46\)](#) for details.
- When only AIS Connect is available, the [AIS Connect] screen appears. Refer to ["2.3.2 AIS Connect" \(page 49\)](#) for details.
- When both REMCS and AIS Connect are available, setting information for REMCS and AIS Connect are displayed.
  - Click [REMCS] in the category and display the [REMCS] screen to perform the REMCS actions. Refer to ["2.3.1 REMCS" \(page 46\)](#) for details.
  - Click [AIS Connect] in the category and display the [AIS Connect] screen to perform the AIS Connect actions. Refer to ["2.3.2 AIS Connect" \(page 49\)](#) for details.

### 2.3.1 REMCS

This function displays the Remote Support function settings and the operation status in the ETERNUS DX/AF.

### Caution

REMCS and AIS Connect cannot be used at the same time. AIS Connect function can only be used when REMCS is not specified or is stopped. When REMCS is used, suspend the REMCS function, and then enable the AIS Connect function. Refer to "Stop/Restart Remote Support" in "ETERNUS Web GUI User's Guide (Settings)" for details.

REMCS can be specified or restarted when the AIS Connect function is disabled. Refer to "Setup AIS Connect Environment" in "ETERNUS Web GUI User's Guide (Settings)" for details.

## Support Information



The following items are displayed in the Main area:

- Customer Information Setup  
Whether or not the customer information has been specified at the REMCS center is displayed.
- Communication Environment Setup  
Whether or not the communication environment information has been specified at the REMCS center is displayed.
- Support Status  
The Remote Support status is displayed.
  - "-" (hyphen)  
The Remote Support is not operating.
  - Operating  
The Remote Support is operating.
  - Maintenance in Progress  
The ETERNUS DX/AF is under maintenance. When the operation to complete maintenance is performed, the status returns to "Operating".
  - Stopped  
The Remote Support has temporarily been stopped. Use the procedure in "Stop/Restart Remote Support" in "ETERNUS Web GUI User's Guide (Settings)" to restart the Remote Support and return to the "Operating" state.

If the support status is "Operating" or "Maintenance in Progress", one of the messages below appears in parentheses based on the Remote Support operating status.

- Controller Firmware Download in Progress
- Termination of Controller Firmware Download in Progress
- Controller Firmware Upgrade in Progress
- Log Collection in Progress
- Controller Firmware Version  
The current controller firmware version is displayed.
  - VxxLyy-zzzz (Vxx: Version, Lyy: Level, zzzz: Release number)

- Automatic Firmware Upgrade  
Whether the automatic firmware upgrade is enabled or disabled is displayed. This item is not displayed in a Unified Storage environment.
  - "-" (hyphen)  
The Remote Support is not operating.
  - Enable Download schedule  
The automatic firmware upgrade is enabled. Receive controller firmware according to the download schedule.
  - Disable  
The automatic firmware upgrade is disabled.
- Automatic Firmware upgrade (with activation on next power cycle)  
Whether or not to execute the controller firmware application, after controller firmware download has been completed, is displayed. This item is not displayed in a Unified Storage environment.
  - "-" (hyphen)  
The Remote Support is not operating.
  - Enable  
Execute the controller firmware application after controller firmware download is complete. The downloaded controller firmware will be changed to the controller firmware which will be enabled at the next startup.
  - Disable  
Do not execute the controller firmware application after controller firmware download is complete.
- Automatic Log Transmission  
Whether the automatic log transmission is enabled or disabled when an error occurs is displayed.
  - "-" (hyphen)  
The Remote Support is not operating.
  - Enable  
The automatic log transmission is enabled. The internal log of the ETERNUS DX/AF is automatically sent to the REMCS center when an error occurs.
  - Disable  
The automatic log transmission is disabled.
- Periodic Log Transmission  
Whether the periodical log transmission is enabled or disabled is displayed.
  - "-" (hyphen)  
The Remote Support is not operating.
  - Enable Transmission schedule  
The periodical log transmission is enabled. The internal log of the ETERNUS DX/AF is automatically sent to the REMCS center according to the transmission schedule.
  - Disable  
The periodical log transmission is disabled.



## ■ Event Information

In this screen, ten latest pieces of event information are displayed.

Date	Event
2010-01-02 03:04:09	Controller Firmware List AcquisitionV10L20-0001
2010-01-02 03:04:08	Controller Firmware DownloadV10L20-0001
2010-01-02 03:04:07	Controller Firmware Upgrade NotificationV10L20-0001
2010-01-02 03:04:06	Registration (Internet Connection: New)
2010-01-02 03:04:05	Registration (Internet Connection: Update)
2010-01-02 03:04:04	REMCS Environment Settings (Internet Connection)
2010-01-02 03:04:03	Controller Firmware Automatic Download settings
2010-01-02 03:04:02	Periodic Connection
2010-01-02 03:04:01	Start of Maintenance

The following items are displayed in the Main area:

- Date  
The date and time when the Remote Support events occurred, are displayed.
  - YYYY-MM-DD hh:mm:ss (YYYY: Year (AD), MM: Month (01 - 12), DD: Date (01 - 31), hh: Hour (00 - 23), mm: Minute (00 - 59), ss: Second (00 - 59))
- Event  
The Remote Support event is displayed.

### 2.3.2 AIS Connect

This function displays the setting information for AIS Connect.

The AIS Connect function can be used to monitor or control multiple ETERNUS DX/AF storage systems from a remote server (AIS Connect server).

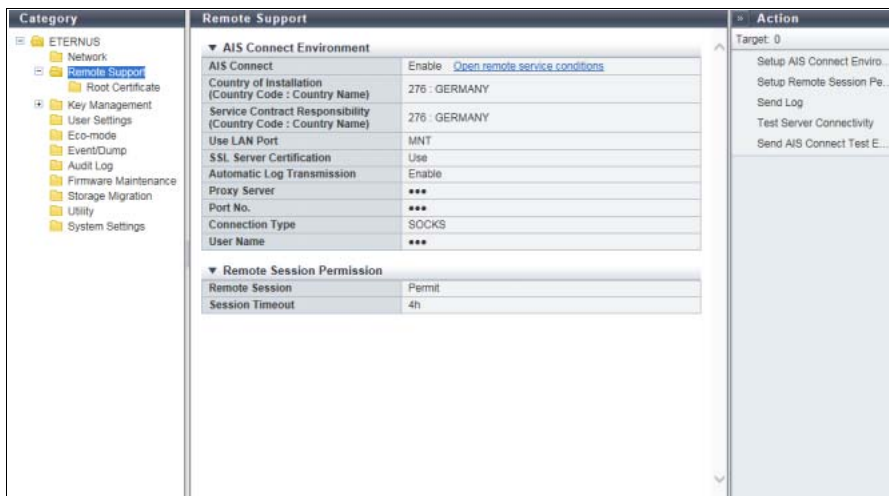
#### ▶ Caution

REMCS and AIS Connect cannot be used at the same time. AIS Connect function can only be used when REMCS is not specified or is stopped. When REMCS is used, suspend the REMCS function, and then enable the AIS Connect function. Refer to "Stop/Restart Remote Support" in "ETERNUS Web GUI User's Guide (Settings)" for details.

REMCS can be specified or restarted when the AIS Connect function is disabled. Refer to "Setup AIS Connect Environment" in "ETERNUS Web GUI User's Guide (Settings)" for details.

#### ● Note

Use ETERNUS CLI to set "Service Contract Responsibility (Country Code : Country Name)". Note that the "Maintenance Operation" policy is required to set this item.



The following items are displayed in the Main area:

- AIS Connect Environment
  - AIS Connect  
Whether the AIS Connect function is enabled or disabled is displayed.  
When "Country of Installation (Country Code : Country Name)" has been set, the [Open remote service conditions] link is displayed. Click this item to display the consent form regarding the handling of personal information.
  - Country of Installation (Country Code : Country Name)  
The shipment destination (storage system location) is displayed in "Country Code : Country Name" format. If not specified, "Not Selected" is displayed.
  - Service Contract Responsibility (Country Code : Country Name)  
The country in which the support office for the ETERNUS DX/AF is located is displayed in "Country Code : Country Name" format.

**Caution**

This item is not displayed when "Service Contract Responsibility (Country Code : Country Name)" is not specified from ETERNUS CLI.

- Use LAN Port  
The LAN port that is used for communication with the AIS Connect server is displayed.
  - MNT
  - RMT
- SSL Server Certification  
Whether the Secure Socket Layer (SSL) server certification is used (Use) or not (Not Use) is displayed.
- Automatic Log Transmission  
Whether the automatic log transmission is enabled or disabled when an error occurs is displayed.  
When "Automatic Log Transmission" is enabled, the ETERNUS DX/AF automatically sends logs to the AIS Connect server when a fail event (error level or warning level) occurs.

- Proxy Server  
The IPv4 address or the Fully Qualified Domain Name (FQDN) of the proxy server is displayed. If the proxy server is not specified, the field is blank.
  - IPv4 address  
xxx.xxx.xxx.xxx  
xxx: 0 - 255 (decimal)
  - FQDN  
Up to 63 alphanumeric characters and symbols
- Port No.  
The port number for the proxy server is displayed. If the proxy server is not specified, the field is blank.
- Connection Type  
The communication method for the proxy server is displayed. If the proxy server is not specified, the field is blank.
  - HTTP
  - SOCKS
- User Name  
The user name for proxy server authentication is displayed. If the proxy server is not specified, the field is blank.
- Remote Session Permission
  - Remote Session  
Whether to permit or forbid a remote session from the AIS Connect server is displayed.
  - Session Timeout  
The timeout value for a remote session connection is displayed. If the timeout limit is not specified, "Unlimited" is displayed.  
If the time exceeds the specified value without a remote session connection, remote session permission is disabled and the set state changes to "Forbid".

### 2.3.3 Root Certificate

---

This function displays the root certificate that is used for SSL communication with the AIS Connect server.

#### Caution

If multiple certificates are included in the root certificate file, up to 6 issuer names and their validity periods are displayed.

#### Note

- The root certificate that is registered in the ETERNUS DX/AF is displayed by default. When the root certificate is updated, only the latest certificate is displayed. For details on how to update the root certificate, refer to "Import Root Certificate" in "ETERNUS Web GUI User's Guide (Settings)".
- The root certificate is only used for authentication with the AIS Connect server.



The following items are displayed in the Main area:

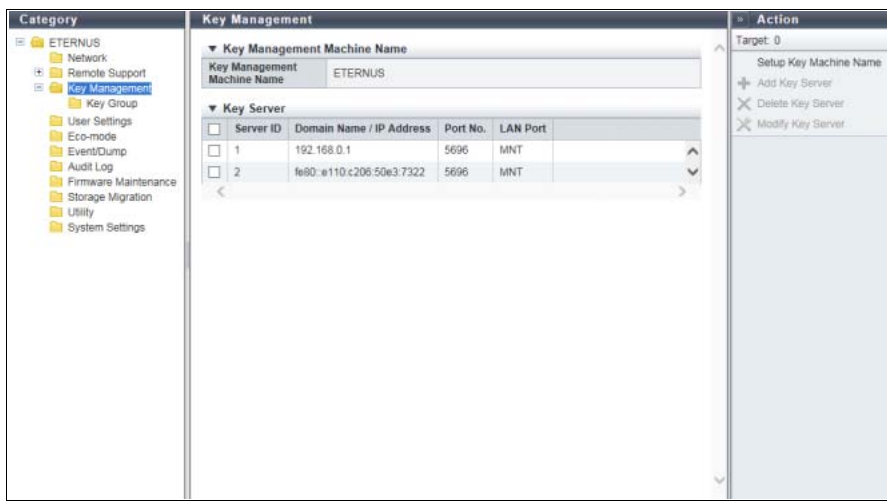
- Trusted Root Certification Authorities
  - Issuer Name  
The issuer name for the root certificate is displayed.
  - Valid From  
The start date and time of the root certificate validity period is displayed.
    - YYYY-MM-DD hh:mm:ss (YYYY: Year (AD), MM: Month (01 - 12), DD: Date (01 - 31), hh: Hour (00 - 23), mm: Minute (00 - 59), ss: Second (00 - 59))
  - Valid To  
The end date and time of the root certificate validity period is displayed.
    - YYYY-MM-DD hh:mm:ss (YYYY: Year (AD), MM: Month (01 - 12), DD: Date (01 - 31), hh: Hour (00 - 23), mm: Minute (00 - 59), ss: Second (00 - 59))

## 2.4 Key Management

This function displays the setting parameters for the key server.  
In this section, the SED authentication key is referred to as "key".

### Caution

The ETERNUS DX60 S3 does not support the key management functions.



The following items are displayed in the Main area:

- Key Management Machine Name
  - Key Management Machine Name  
The name of the device that is connected to the key server is displayed. If the key management device name is not specified, the field is blank.
- Key Server
  - Server ID  
The key server ID is displayed.
  - Domain Name / IP Address  
The domain name (Fully Qualified Domain Name: FQDN) or the IP address for the key server is displayed. Note that the IPv6 address is displayed as an abbreviation. Refer to ["IPv6 Address Notation" \(page 253\)](#) for details.
  - Port No.  
The port number that is used to communicate with the key server is displayed.
  - LAN Port  
The LAN port that is used to communicate with the key server is displayed.
    - MNT
    - RMT

## 2.4.1 Key Group

This function displays the key information that is used for a key group and the SSL/KMIP certificate information.

The key group combines all of the RAID groups that use the same key.

### Note

The RAID groups that are registered in the key group can be checked by using the [SED Key Group] screen. Refer to "SED Key Group" in "ETERNUS Web GUI User's Guide (Settings)" for details.



The following items are displayed in the Main area:

### Key Group

- **Name**  
The key group name is displayed. If no key groups are created, the field is blank.  
The key group name corresponds to "Serial Number", which is managed in the key server.
- **Storage System Group Name**  
The storage system group name is displayed. If no key groups are created, the field is blank.  
The storage system group combines the key management device (Key Management Machine) name that is managed by the user with the key groups. The storage system group name corresponds to "Device Group Name", which is managed in the key server. Note that "ETERNUS\_DX" is specified as the factory default storage system group name when "ETERNUS SF KM" (key management software) is shipped.
- **Key Status**  
The key status is displayed. If no key groups are created, the field is blank.  
Refer to "[A.6 Key Status](#)" (page 412) for details.
- **Security Level**  
The security level for the key group is displayed. If no key groups are created, the field is blank.  
"Security Level" indicates the handling level when application of the SED key to the target RAID group fails. If the key for the relevant RAID group cannot be obtained from the key server due to a communication error and the SEDs that configure the RAID group are changed to hot spares or changed to new SEDs due to failure or maintenance, the ETERNUS DX/AF performs operations according to the selected security level.

- High  
Rebuilding to hot spares for which the key cannot be changed after SED failure is not performed. The RAID group loses its redundancy ("⚠ Exposed", "⚠ Partially Exposed" (only for High Reliability (RAID6)), "⚠ Exposed (Fast)" (only for High Reliability (RAID6-FR)), or "⚠ Partially Exposed (Fast)" (only for High Reliability (RAID6-FR))).

When SED maintenance is being performed, replacing a SED with a new SED for which the key cannot be changed does not complete successfully. If this action is performed, the status of the new SED changes to "❌ Not Exist".

When communication between the key server and the ETERNUS DX/AF returns to normal and the key can be obtained, the SED status changes to normal. Rebuilding to the SED for which the status changed to normal is performed after the key is changed. Note that "Modifying" may be displayed for the key status for few minutes even though the SED key has already changed. After changing the key, maintenance of the SEDs is complete.

- Low  
Rebuilding or maintenance is performed by using the common key if changing of the key in the key server fails due to a network error.

Even if the security level is changed from "High" to "Low", the rebuilding process does not start immediately after the level is changed. Rebuilding processes start after the ETERNUS DX/AF recognizes that changing of the security level and the key is complete.

- Recovery Mode  
The recovery mode for the key group is displayed. If no key groups are created, the field is blank. The recovery mode is a method to recover locked (\*1) RAID groups or SEDs after communication with the key server is resolved. For RAID groups in locked status, "❌ SED Locked" is displayed. For SEDs in locked status, "❌ Not Exist" is displayed.

\*1: A blocked status that occurs when the key of the RAID groups cannot be obtained.

- Automatic  
This mode recovers locked RAID groups or SEDs when the communication error with the key server is resolved.
- Manual  
Use the [Recovery SED] function of ETERNUS Web GUI to recover the locked RAID groups or SEDs when the communication error with the key server is resolved.

- Key Expiration Date  
The key expiration date is displayed. If no key groups are created, the field is blank. When the key has expired, a new key is obtained from the key server and automatically applied in place of the expired key.

Note that the display contents for this item changes as follows:

- When the key status is "Modifying", the expiration date before the key was replaced is displayed.
- When the key status is "Unregistered Server Certificate", "No SSL Certificate", "Network Error", "Not Acquired", or "Key Server Error", a "-" (hyphen) is displayed.
  - YYYY-MM-DD (YYYY: Year (AD), MM: Month (01 - 12), DD: Date (01 - 31))

- Master Server
  - Server ID  
The key server ID for the master server is displayed. If no key group is created or if no master server is specified, the field is blank.
  - Domain Name / IP Address  
The domain name (FQDN) or the IP address of the master server is displayed. If no key groups are created or if no master server is specified, the field is blank.  
Note that the IPv6 address is displayed as an abbreviation. Refer to ["IPv6 Address Notation" \(page 253\)](#) for details.
  - Status  
The master server status is displayed. If no key group is created or if no master server is specified, the field is blank. Refer to ["A.7 Key Server Status" \(page 413\)](#) for details.
- Slave Server
  - Server ID  
The key server ID of the slave server is displayed. If no key group is created or if no slave server is specified, the field is blank.
  - Domain Name / IP Address  
The domain name (FQDN) or the IP address of the slave server is displayed. If no key group is created or if no slave server is specified, the field is blank.  
Note that the IPv6 address is displayed as an abbreviation. Refer to ["IPv6 Address Notation" \(page 253\)](#) for details.
  - Status  
The slave server status is displayed. If no key group is created or if no slave server is specified, the field is blank. Refer to ["A.7 Key Server Status" \(page 413\)](#) for details.
- SSL / KMIP Certificate
  - Issuer Name  
The certificate authority name that issues the SSL / KMIP certificate is displayed. If the certificate is not imported, the field is blank.
  - Subject Name  
The name of the destination to which the SSL / KMIP certificate is issued is displayed. If the certificate is not imported, the field is blank.
  - Valid From  
The start date and time of the SSL / KMIP certificate validity period is displayed. If the certificate is not imported, the field is blank.
    - YYYY-MM-DD hh:mm:ss (YYYY: Year (AD), MM: Month (01 - 12), DD: Date (01 - 31), hh: Hour (00 - 23), mm: Minute (00 - 59), ss: Second (00 - 59))
  - Valid To  
The end date and time of the SSL / KMIP certificate validity period is displayed. If the certificate is not imported, the field is blank.
    - YYYY-MM-DD hh:mm:ss (YYYY: Year (AD), MM: Month (01 - 12), DD: Date (01 - 31), hh: Hour (00 - 23), mm: Minute (00 - 59), ss: Second (00 - 59))
  - Serial Number  
The serial number for the SSL / KMIP certificate is displayed. If the certificate is not imported, the field is blank.  
When created, the serial number is combined with the issuer name, which is a unique number in the certificate authority.



## 2.5 Define Role

The registered custom roles in the ETERNUS DX/AF are displayed.  
A custom role is a role created by the user in combination of policies, in addition to the default roles.



The following items are displayed in the Main area:

- Role  
The custom role name is displayed.

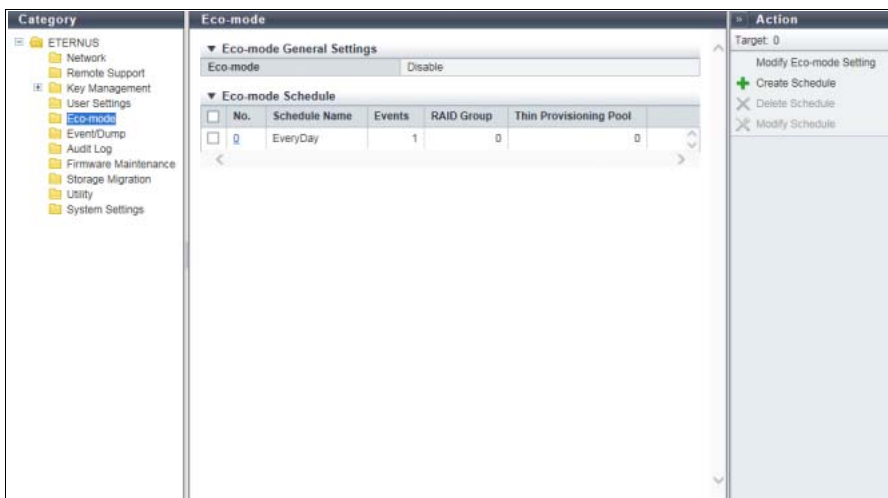
## 2.6 Eco-mode

A list of the Eco-mode setting state and the Eco-mode schedule that is registered in the ETERNUS DX are displayed.

The Eco-mode function schedules the drive operating time in compliance with Massive Arrays of Idle Disks (MAID). This function saves power by stopping the drive motors or turning off the drives power outside of the scheduled operating time period.

### Caution

The ETERNUS AF250/AF650 and the ETERNUS DX200F do not support this function.



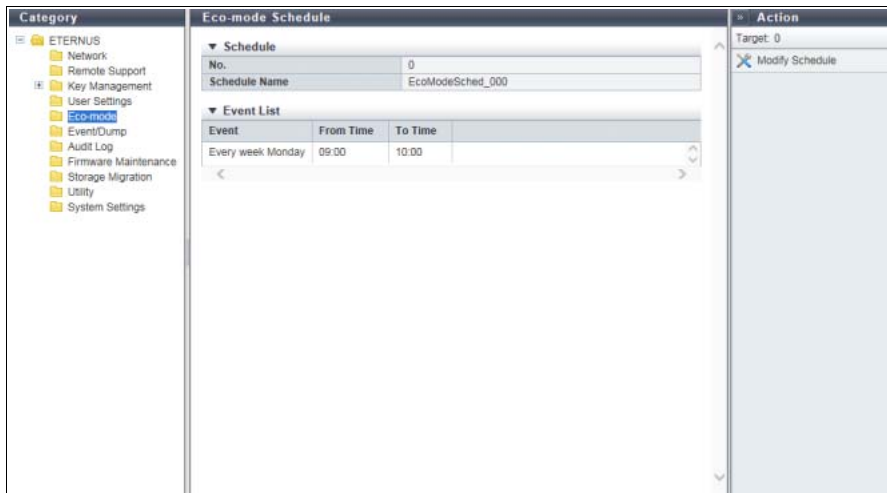
The following items are displayed in the Main area:

- Eco-mode General Settings
  - Eco-mode  
The Eco-mode setting (enabled or disabled) for all of the ETERNUS DX storage systems is displayed.
- Eco-mode Schedule
  - No.  
The schedule number is displayed.  
By clicking this link, the [Eco-mode Schedule] screen is displayed. Refer to ["2.6.1 Eco-mode Schedule Detail" \(page 59\)](#) for display items.  
If the Eco-mode is controlled with the Storage Foundation Software ETERNUS SF, a "-" (hyphen) is displayed.
  - Schedule Name  
The schedule name is displayed.  
If the Eco-mode is controlled with Storage Foundation Software ETERNUS SF, "External" is displayed.
  - Events  
The number of events that are registered in the schedule is displayed.  
If the Eco-mode is controlled with the Storage Foundation Software ETERNUS SF, a "-" (hyphen) is displayed.

- RAID Group  
The number of RAID groups for which the schedule is allocated to is displayed.
- Thin Provisioning Pool  
The number of Thin Provisioning Pools for which the schedule is allocated to is displayed.

## 2.6.1 Eco-mode Schedule Detail

In this screen, the detailed information of an Eco-mode schedule is displayed.



The following items are displayed in the Main area:

- Schedule
  - No.  
The schedule number is displayed.
  - Schedule Name  
The schedule name is displayed.
- Event List
  - Event  
The detailed event information is displayed.
  - From Time  
The time at which the event application is started is displayed.
    - hh:mm (hh: Hour, mm: Minute)
  - To Time  
The time at which the event application is stopped is displayed.
    - hh:mm (hh: Hour, mm: Minute)

## 2.7 Event/Dump

This function records and displays the event history of the ETERNUS DX/AF as an event log.



## 2.8 Audit Log

This function displays the audit log information.

An audit log records not only operations that are performed by a user, but also how the ETERNUS DX/AF operates for these operations. The audit log function that is provided with the ETERNUS DX/AF transfers the following information to external servers; when an operation is performed, who performed the operation, where the operation was performed, the details of the operation, and the results of the operation.

### Caution

When the procedure in "Enable Audit Log" in "ETERNUS Web GUI User's Guide (Settings)" is executed, "Enable" is displayed for "Audit Log" in the "Audit Log Information" field even if an external server is not specified. Specify the external server to which the audit log is sent. Refer to "Setup Audit Log" in "ETERNUS Web GUI User's Guide (Settings)" for details.

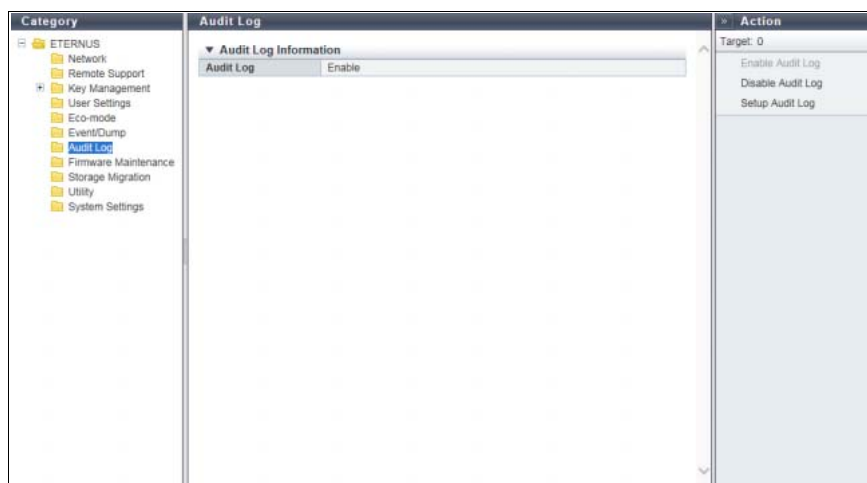
### Note

Except for the functions that are listed below, the audit log collects all of the information for operations (including logging in and logging out) that are performed via ETERNUS Web GUI and ETERNUS CLI (including when the interface is "SOFT" (\*1)).

- Export Cache Parameters
- Export Performance Information
- Send SNMP Trap Test
- Create Key/CSR
- Download Template File for Storage Migration Settings
- Backup Configuration
- Get G-List (\*2)
- All of the display functions (e.g. displaying the volume list or displaying of the RAID group list)

\*1: Refer to ["2.1 System \(Basic Information\)" \(page 36\)](#) for details.

\*2: Operations that can be performed when logged in using a user account with the "Maintenance Operation" policy.



The following items are displayed in the Main area:

- Audit Log  
Whether the audit log function is enabled or disabled is displayed.

## 2.9 Firmware Maintenance

This function performs the maintenance operation for the firmware that is managed in the ETERNUS DX/AF. Firmware maintenance is performed to update the firmware version. The firmware can be applied after being registered in the Bootup and Utility Device (BUD) of the CM.

### Caution

- When the application schedule for the controller firmware is being reserved, the [Apply Controller Firmware] function is not displayed in [Action]. The [Apply Controller Firmware] function is automatically started with the date and time that are displayed in the information field according to the application mode that is used.
- When the application mode is "Update & Reboot", the ETERNUS DX/AF is automatically rebooted after the controller firmware is applied.
- If an application schedule for the controller firmware is not reserved, the [Delete Controller Firmware Schedule] function is not displayed in [Action].
- If the message which indicates that the controller firmware application has been reserved disappears before the reserved date, the reservation may be canceled automatically. In this case, reserve the application schedule for the controller firmware again. Refer to "Apply Controller Firmware" in "ETERNUS Web GUI User's Guide (Settings)" for details.



The following items are displayed in the Main area:

- **Current Firmware Version**  
The current controller firmware version is displayed.
  - VxxLyy-zzzz (Vxx: Version, Lyy: Level, zzzz: Release number)
- **Firmware Version after Restart**  
The controller firmware version after the next power on is displayed.

## 2.10 Storage Migration

This function displays the setting and progress of Storage Migration.

Storage Migration is the function for migrating data by connecting other storage systems (migration source) and the ETERNUS DX/AF (migration destination). Data migration is possible regardless of the server and the OS, and without using server resources.

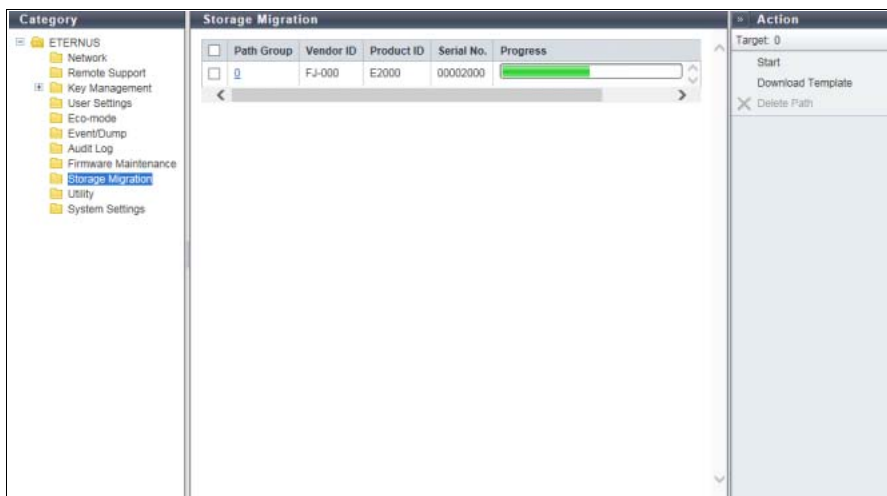
### Caution

- When performing a Storage Migration, confirm that there is no access from the host to the migration source volume.
- The requirements for access from the host to the destination volumes varies depending on the operation mode.
  - For "Migration & Host IO", Storage Migration can be performed even if host access exists in the migration destination volume after a migration is started.
  - For "Migration", "Migration + Quick Compare", or "Quick Compare", perform a Storage Migration without access from the host to the destination volume.
  - For "Migration + Full Compare" or "Full Compare", perform a Storage Migration without access from the host to any volume in the destination storage system.
- The path groups must be deleted after the data migration is complete. If the operation mode is "Migration & Host IO", the ETERNUS DX/AF is in one of the following conditions until the path groups are deleted.
  - The host I/O response is reduced.
  - If the migration path is blocked, the host I/O may stop.
- Do not perform the following operations when there are Storage Migration paths (hereinafter referred to as "path group") established.
  - Configuration of an Advanced Copy destination to the migration destination volume
  - Configuration of an Advanced Copy destination to the migration source volume
  - Formatting of the destination volume
  - RAID diagnosis in the RAID group to which the destination volume belongs
  - Disk diagnosis of the disk drives in the RAID group to which the destination volume belongs
  - CM hot expansion on the destination storage system
  - Memory hot expansion on the destination storage system

- The path groups must be deleted after the data migration is complete. The following operations are not available before path groups are deleted:
  - Hot controller firmware upgrade is being performed in the destination storage system
  - Eco-mode schedule setting of the RAID group to which the destination volume belongs
  - Eco-mode schedule setting of the Thin Provisioning Pool (TPP) to which the destination volume belongs
  - Capacity expansion of the RAID group to which the destination volume belongs
  - RAID migration of the destination volume
  - Encryption of the destination volume
  - Capacity expansion of the destination volume
  - Deletion of the destination volume
  - Port mode modification of the destination FC-Initiator port
  - Port parameter setting of the destination FC-Initiator port
  - Reduction of the CA to which the destination FC-Initiator port belongs

### Note





- To start Storage Migration, refer to "Start Storage Migration" in "ETERNUS Web GUI User's Guide (Settings)".
- A started Storage Migration can be suspended, stopped, and restarted in volume units on the [Path Group Detail Information] screen. Refer to "Suspend Storage Migration", "Stop Storage Migration", or "Restart Storage Migration" in "ETERNUS Web GUI User's Guide (Settings)" for details.







The following items are displayed in the Main area:

- Path Group  
The path group number is displayed. Click this item to display the [Path Group Detail Information] screen. Refer to ["2.10.1 Path Group Detail Information" \(page 65\)](#) for details.  
A path group combines the paths for data migration into a group for each source storage system. The paths from a single source storage system to the local (destination) storage system constitute a path group.
- Vendor ID  
The manufacturer name of the source storage system to which the path is created is displayed. An inconvertible code is displayed as "\*".

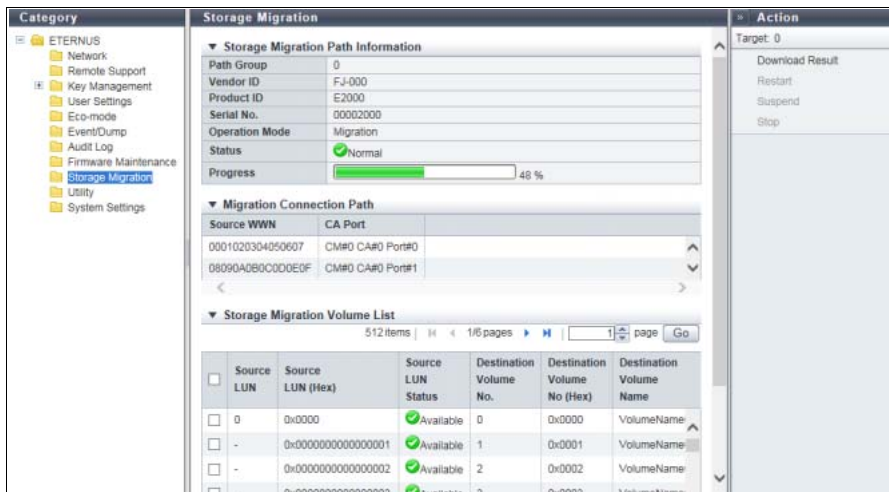


- **Product ID**  
The product name of the source storage system to which the path is created is displayed.  
An inconvertible code is displayed as "\*".
- **Serial Number**  
The serial number of the source storage system to which the path is established is displayed.  
An inconvertible code is displayed as "\*".
- **Progress**  
The progress of Storage Migration for the path group is displayed.
- **Status**  
The general status of Storage Migration for the path group is displayed.
  -  **Complete**  
All Storage Migration operations have completed normally.
  -  **Error**  
There are one or more LUNs that do not exist in the migration source volume, or there are one or more volumes for which Storage Migration failed due to error (displayed in red characters).
  -  **Stop**  
Storage Migration has been stopped or suspended for one or more volumes (all other volumes have completed Storage Migration normally), or Storage Migration of all the volumes has been stopped or suspended.
  -  **Normal**  
Other than above.


The status display priority order is " Error" > " Normal" > " Stop" > " Complete".

### 2.10.1 Path Group Detail Information


In this screen, the detailed information of a path group is displayed.



The following items are displayed in the Main area:

 **Note**





Items displayed in this screen vary depending on whether the previous screen is the [Storage Migration] screen or the [Start Storage Migration] screen. When the previous screen is the [Storage Migration] screen, the progress of Storage Migration is checked. When the previous screen is the [Start Storage Migration] screen, the start status of Storage Migration is checked.





 **Storage Migration Path Information**

- **Path Group**  
The path group number is displayed.
- **Vendor ID**  
The manufacturer name of the source storage system to which the path is created is displayed.  
An inconvertible code is displayed as "\*\*".
- **Product ID**  
The product name of the source storage system to which the path is created is displayed.  
An inconvertible code is displayed as "\*\*".
- **Serial Number**  
The serial number of the source storage system to which the path is established is displayed.  
An inconvertible code is displayed as "\*\*".
- **Operation Mode**  
The operation mode for the path group is displayed.  
When the operation mode setting is omitted, "Migration" is displayed.
  - **Migration**  
Data migration from the source storage system to the destination storage system is performed.
  - **Migration + Quick Compare**  
Data migration from the source storage system to the destination storage system and a data comparison of source LUNs and destination volumes are performed. "Quick Compare" compares data in a part of the volume area. "Migration + Quick Compare" consecutively executes "data migration" and "data comparison" for each volume.
  - **Migration + Full Compare**  
Data migration from the source storage system to the destination storage system and a data comparison of source LUNs and destination volumes are performed. "Full Compare" compares data in entire volume area. "Migration + Full Compare" consecutively executes "data migration" and "data comparison" for each volume.
  - **Quick Compare**  
A data comparison of source LUNs and destination volumes is performed. "Quick Compare" compares data in a part of the volume area.
  - **Full Compare**  
A data comparison of source LUNs and destination volumes is performed. "Full Compare" compares data.
  - **Migration & Host IO**  
Data migration from the source storage system to the destination storage system is performed. Stop the operation only when switching the host connection to the migration destination storage system. This enables continued host access to the migration destination volume during the data migration.

- Status

The general status of Storage Migration for the path group is displayed.  
This item is displayed only when the previous screen is the [Storage Migration] screen.

-  Complete  
All Storage Migration operations have completed normally.
-  Error  
There are one or more LUNs that do not exist in the migration source volume, or there are one or more volumes for which Storage Migration failed due to error (displayed in red characters).
-  Stop  
Storage Migration has been stopped or suspended for one or more volumes (all other volumes have completed Storage Migration normally), or Storage Migration of all the volumes has been stopped or suspended.
-  Normal  
Other than above.

The status display priority order is " Error" > " Normal" > " Stop" > " Complete".

- Progress

The progress of Storage Migration for the path group is displayed.  
This item is displayed only when the previous screen is the [Storage Migration] screen.

- Migration Connection Path

- Source WWN

The WWN for the source FC-CA port is displayed.

- CA Port

The location information (x: CE number, y: CM number, z: CA number, w: Port number) of the destination FC-Initiator is displayed.

- For the ETERNUS DX8700 S3/DX8900 S3  
CE#x CM#y CA#z Port#w
- For the other models  
CM#y CA#z Port#w

- Storage Migration Volume List




- Source LUN

The source LUN is displayed in decimal number.

Source LUNs are displayed with decimal numbers if the source LUNs are specified with decimal numbers when Storage Migration setting files are created. Source LUNs are also displayed with decimal numbers if the source LUNs satisfy the conditions for being specified with decimal numbers. If the source LUNs do not satisfy the conditions for being specified with decimal numbers, a "-" (hyphen) is displayed. Refer to "Download Template File for Storage Migration Settings" in "ETERNUS Web GUI User's Guide (Settings)" for details.

- Source LUN (Hex)

The source LUN is displayed in hexadecimal number.

- Source LUN Status  
The status of the source LUN is displayed.
  -  Available  
The source LUN can be used
  -  Not Available  
The source LUN cannot be used
  -  Not Exist  
The source LUN does not exist
- Destination Volume No.  
The destination volume number is displayed in decimal number.
- Destination Volume Name  
The destination volume name is displayed.
- Destination Volume No. (Hex)  
The destination volume number is displayed in hexadecimal number.
- Capacity  
The destination volume capacity is displayed.
- Migration Status  
The data migration status is displayed.  
This item is displayed only when the previous screen is the [Storage Migration] screen.
  - Initial  
Initial state
  - Waiting  
Awaiting migration
  - Running  
Migrating
  - Normal End  
Normally completed
  - Suspend  
In suspension
  - Stop  
Stopped
  - Error (xxx)  
(xxx) indicates the error factor.
  - "-" (hyphen)  
Does not exist in the source LUN (the LUN status is "Not Exist").

 **Caution**

If "Waiting" is displayed, the data migration does not start automatically. Restart the data migration manually.

- Progress  
The data transfer progress is displayed.  
This item is displayed only when the previous screen is the [Storage Migration] screen.

- Start Time

- End Time

The start and end times of data migration are displayed.

This item is displayed only when the previous screen is the [Storage Migration] screen.

- YYYY-MM-DD hh:mm:ss (YYYY: Year (AD), MM: Month (01 - 12), DD: Date (01 - 31), hh: Hour (00 - 23), mm: Minute (00 - 59), ss: Second (00 - 59))

The start and end times are displayed as shown below depending on the migration status.

Migration status	Start time	End time
Initial	The start time is not displayed.	Blank
Waiting		
Running	The migration start time is displayed.	The migration end time is displayed.
Normal End		
Suspend		The time when migration suspends is displayed.
Stop		The time when migration stops is displayed.
Error (xxx)		The time when migration stops due to error is displayed.

 **Caution**

- When Storage Migration is restarted when its migration status is "Suspend" or "Error", data migration restarts from the point of suspension. In this case, the start time is not changed.
- When Storage Migration is restarted when its migration status is "Stop", data migration of the LUN is started over from scratch. The start time is changed to the migration restart time.

- Error Location

The storage system in which a data migration error occurs is displayed.

If no error is occurred, a "-" (hyphen) is displayed.

This item is displayed only when the previous screen is the [Storage Migration] screen.

- Source  
Migration source storage system
- Destination  
Local (migration destination) storage system

- Result

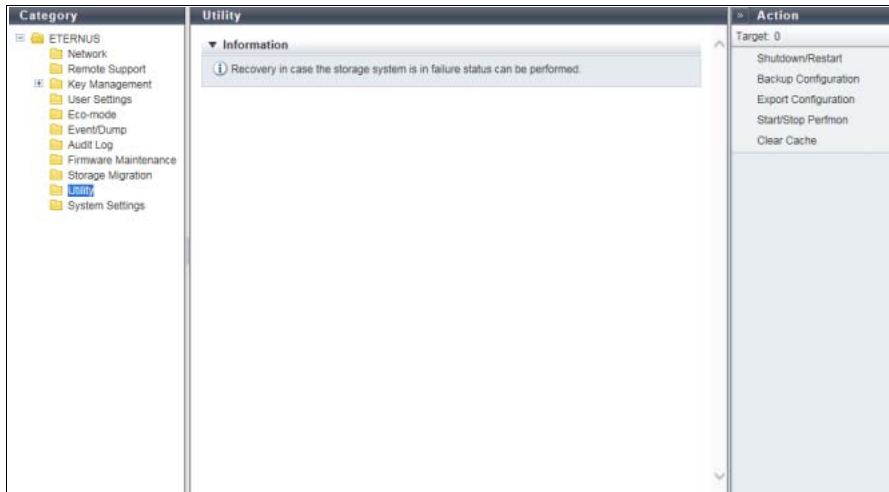
When the source LUN and destination volume are in normal status, the "Result" field is blank.

An error message is displayed when an error is detected in the source LUN or destination volume.

This item is displayed only when the previous screen is the [Start Storage Migration] screen.

## 2.11 Utility

Descriptions on the actions that can be started from the [Utility] screen are displayed.



## 2.12 System Settings

This function displays the system setting information.



The following items are displayed in the Main area:

- Storage System Name  
The name for the ETERNUS DX/AF is displayed.
- Date  
The date and time when the event occurs are displayed.
  - YYYY-MM-DD hh:mm:ss (YYYY: Year (AD), MM: Month (01 - 12), DD: Date (01 - 31), hh: Hour (00 - 23), mm: Minute (00 - 59), ss: Second (00 - 59))
- Box ID  
The Box ID is displayed.  
Box ID is the information to be used for application software to define the remote storage system. The initial Box ID is a device ID that is created by combining device information (series name, model, serial number, etc.).
- Encryption Mode  
The encryption mode setting is displayed.
  - For controller firmware versions "V10L50-3000", "V10L52-3000", and "V10L53" and later
    - Fujitsu Original Encryption
    - AES-128
    - AES-256
    - Disable
  - For controller firmware versions other than the above
    - Fujitsu Original Encryption
    - AES
    - Disable

- SMI-S  
The current SMI-S setting is displayed.
  - Enable
  - Disable

 **Caution**

When enabling or disabling of the SMI-S is being performed, the [Setup SMI-S Environment] action cannot be clicked.

- SMI-S Performance Information  
The setting status for the SMI-S performance information response is displayed.
  - Enable
  - Disable
- SED Authentication Key  
Whether the SED authentication key has been "Registered" or "Not Registered" is displayed.
- Disk Drive Patrol  
Whether the Disk Drive Patrol function is enabled or disabled is displayed.
- Extreme Cache Mode  
The selected Extreme Cache (EXC) mode is displayed.  
For the ETERNUS DX60 S3, the ETERNUS DX8100 S3, the ETERNUS AF250/AF650, and the ETERNUS DX200F, this item is not displayed.
  - Extreme Cache
  - Extreme Cache Pool
  - Not Used
- Extreme Cache Memory Size  
The specified capacity (GB) of the EXC is displayed.  
A "-" (hyphen) is displayed when the Extreme Cache mode is "Not Used".  
For the ETERNUS DX60 S3, the ETERNUS DX8100 S3, the ETERNUS AF250/AF650, and the ETERNUS DX200F, this item is not displayed.  
The following Extreme Cache memory size is displayed according to the Extreme Cache mode.

Model	Extreme Cache Mode	
	Extreme Cache (EXC)	Extreme Cache Pool (EXCP)
ETERNUS DX100 S3/DX200 S3	N/A	The total value of the EXCP memory size for each CM
ETERNUS DX500 S3/DX600 S3	The specified EXC memory size in the ETERNUS DX	
ETERNUS DX8700 S3/DX8900 S3	The total value of the EXC memory size for each CM	



# Chapter 3

## Component Status

Component status displays the status information of volumes.  
Component status screens can be displayed by clicking the following categories:

Category	Component status screen
Storage system name	<a href="#">Storage (Basic Information)</a>
Controller Enclosure	<a href="#">Controller Enclosure</a>
Controller Module	<a href="#">Controller Module</a>
Performance	<a href="#">Performance (CM)</a>
Error Statistics	<a href="#">Port Error Statistics (for the ETERNUS AF250 and the ETERNUS DX200F)</a>
Channel Adapter	<a href="#">Channel Adapter</a>
Performance	<a href="#">Performance (CA)</a>
PCIe Flash Module	<a href="#">PCIe Flash Module</a>
Performance	<a href="#">Performance (PCIe Flash Module)</a>
Bootup and Utility Device	<a href="#">Bootup and Utility Device</a>
Power Supply Unit	<a href="#">Power Supply Unit (CE)</a>
Battery	<a href="#">Battery</a>
Frontend Enclosure	<a href="#">Frontend Enclosure</a>
Frontend Router	<a href="#">Frontend Router</a>
Service Controller	<a href="#">Service Controller</a>
FE Power Supply Unit	<a href="#">Power Supply Unit (FE)</a>
FAN Unit	<a href="#">FAN Unit</a>
Operation Panel	<a href="#">Operation Panel</a>
Drive Enclosure	<a href="#">Drive Enclosure</a>
I/O Module	<a href="#">I/O Module</a>
Error Statistics	<a href="#">Port Error Statistics</a>
Power Supply Unit	<a href="#">Power Supply Unit (DE)</a>
Fan Expander Module	<a href="#">Fan Expander Module</a>
Drives	<a href="#">Drives</a>
Performance	<a href="#">Performance (Drive)</a>
Error Statistics	<a href="#">Drive Error Statistics</a>

Detailed information of the components can be displayed from the following screens:

- [Controller Enclosure Detail](#)
- [Controller Module Detail](#)
- [Channel Adapter Detail](#)
- [PCIe Flash Module Detail](#)
- [PSU/CPSU \(CE\) Detail](#)
- [Frontend Router Detail](#)
- [Service Controller Detail](#)
- [FE Power Supply Unit Detail](#)
- [FAN Unit Detail](#)
- [Drive Enclosure Detail](#)
- [I/O Module Detail](#)
- [Power Supply Unit \(DE\) Detail](#)
- [Fan Expander Module Detail](#)
- [Drive Detail](#)
- [Bootup and Utility Device Detail](#)
- [SAS Cable Detail](#)
- [Frontend Cable Detail](#)
- [Management Cable Detail](#)
- [Port Detail](#)

## 3.1 Storage (Basic Information)

The general information for the ETERNUS DX/AF is displayed.

### ■ Summary

- For the ETERNUS DX8700 S3/DX8900 S3



- For the other models



The following items are displayed in the Main area:

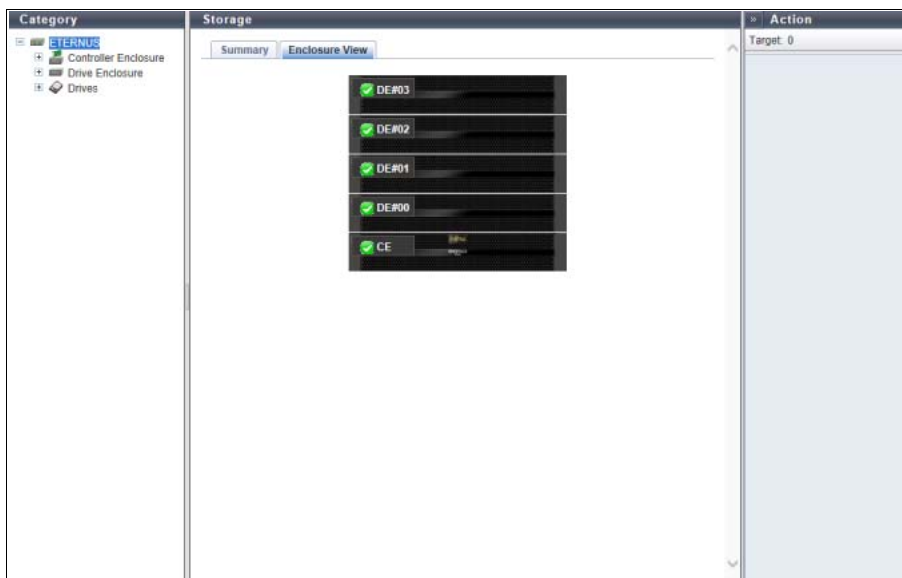
- **Storage System Name**  
The name of the ETERNUS DX/AF is displayed.
- **Model Name**  
The model name of the ETERNUS DX/AF is displayed.
- **Serial Number**  
The serial number of the ETERNUS DX/AF is displayed.
- **Device Identification Number**  
The identification number of the ETERNUS DX/AF is displayed.
- **Status**  
The general status of the ETERNUS DX/AF is displayed. Refer to ["A.1.1 Storage System General Status \(Detail\)" \(page 405\)](#) for details.
- **Battery**  
The battery charge level is displayed.  
When the battery charge level is 90% or more, "Full Charge" is displayed. When the battery charge level is less than 90%, "xx%" is displayed.  
For the ETERNUS DX8700 S3/DX8900 S3, the lowest battery charge level among all CEs is displayed. Click this item to display the [Controller Enclosure] screen. Refer to ["3.2 Controller Enclosure" \(page 81\)](#) for details.  
This item is displayed for the ETERNUS DX500 S3/DX600 S3, the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3, and the ETERNUS AF650.
- **Operation Mode**  
The operation mode is displayed.
  - Normal  
The ETERNUS DX/AF is operating.
  - Maintenance Mode  
The ETERNUS DX/AF is under maintenance.
- **Model Upgrade**  
Whether the model upgrade is possible or not is displayed. When this item is not displayed, the model upgrade is not possible.
  - Not Upgraded  
A model upgrade has not been performed yet.
  - Upgraded  
A model upgrade has been performed.

■ View

- For the ETERNUS DX60 S3



- For the ETERNUS DX100 S3/DX200 S3, the ETERNUS DX500 S3/DX600 S3 (DE#00 - DE#17), the ETERNUS DX8100 S3, or the ETERNUS AF650



- For the ETERNUS DX500 S3/DX600 S3 (DE#00 - DE#1A)



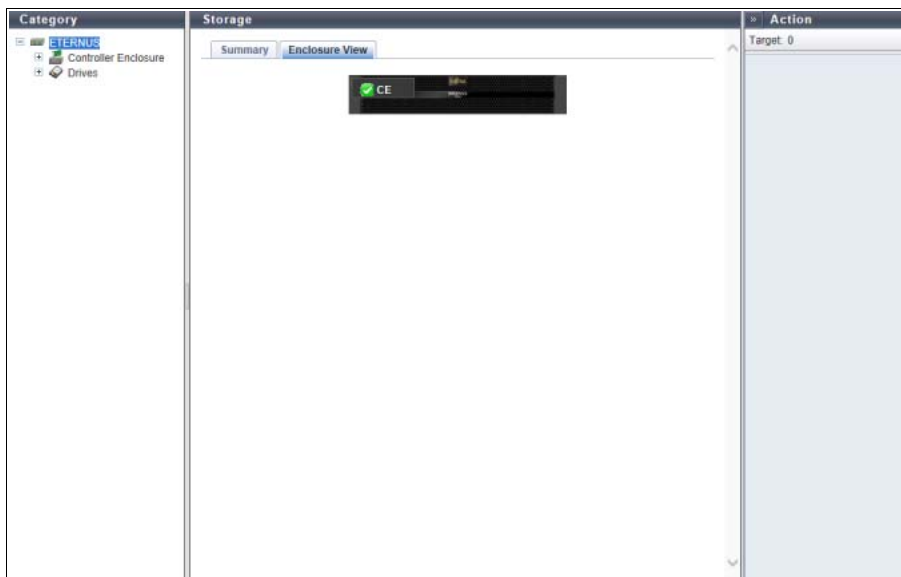
- For the ETERNUS DX8700 S3/DX8900 S3 (CE/FE)



- For the ETERNUS DX8700 S3/DX8900 S3 (DE#xx)



- For the ETERNUS AF250 or the ETERNUS DX200F



The following items are displayed in the Main area:

- Storage system image

The front view of the enclosures that are installed in the ETERNUS DX/AF is displayed. The enclosure statuses are displayed with icons. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

For the ETERNUS DX60 S3/DX100 S3/DX200 S3, the ETERNUS DX500 S3/DX600 S3, the ETERNUS DX8100 S3, the ETERNUS AF250/AF650, and the ETERNUS DX200F, click the [CE] link to display the [Controller Enclosure Detail] screen. Refer to ["3.6 Controller Enclosure Detail" \(page 117\)](#) for display items.

For the ETERNUS DX60 S3/DX100 S3/DX200 S3 and the ETERNUS DX8100 S3, click the [DE] link to display the [Drive Enclosure Detail] screen. Refer to ["3.15 Drive Enclosure Detail" \(page 152\)](#) for display items.

For the ETERNUS DX500 S3/DX600 S3 and the ETERNUS AF650, specify the range for the DEs and then click a DE to display the [Drive Enclosure Detail] screen. Refer to ["3.15 Drive Enclosure Detail" \(page 152\)](#) for display items.

For the ETERNUS DX8700 S3/DX8900 S3, the [CE/FE] button and the [DE#xx] button are displayed.

By clicking the [CE/FE] button, the CE#x (x: CE number) and the Frontend Enclosure (FE) screen is displayed. By clicking the CE#x, the [Controller Enclosure Detail] screen is displayed. Refer to ["3.6 Controller Enclosure Detail" \(page 117\)](#) for display items. By clicking the FE, the [Frontend Enclosure] screen is displayed. Refer to ["3.3 Frontend Enclosure" \(page 100\)](#) for display items.

By clicking the [DE#xx] button, the DEs in the relevant range are displayed. By clicking the DE#xx, the [Drive Enclosure Detail] screen is displayed. Refer to ["3.15 Drive Enclosure Detail" \(page 152\)](#) for display items.

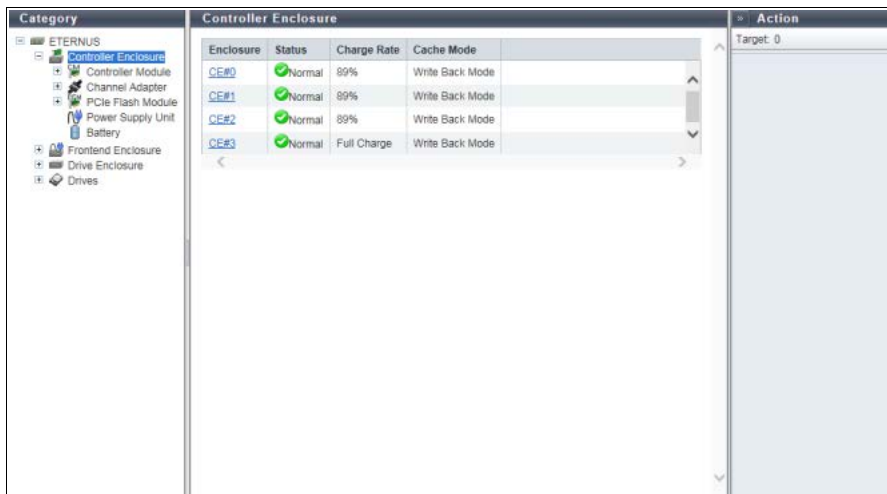


## 3.2 Controller Enclosure

The Controller Enclosure (CE) information is displayed.  
This function is displayed for the ETERNUS DX8700 S3/DX8900 S3.

### Note

For the ETERNUS DX60 S3/DX100 S3/DX200 S3, the ETERNUS DX500 S3/DX600 S3, the ETERNUS DX8100 S3, the ETERNUS AF250/AF650, and the ETERNUS DX200F, clicking "Controller Enclosure" in the category displays the [Controller Enclosure Detail] screen. Refer to ["3.6 Controller Enclosure Detail" \(page 117\)](#) for details.



Enclosure	Status	Charge Rate	Cache Mode
CE#0	Normal	89%	Write Back Mode
CE#1	Normal	89%	Write Back Mode
CE#2	Normal	89%	Write Back Mode
CE#3	Normal	Full Charge	Write Back Mode

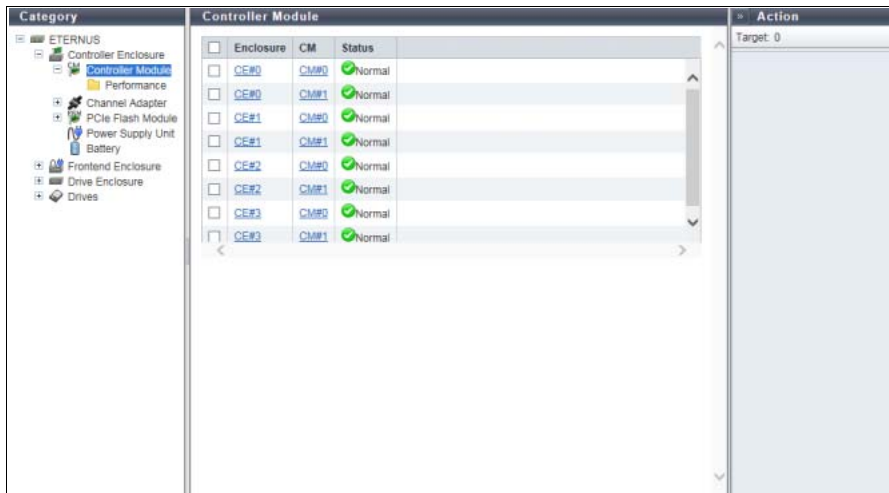
The following items are displayed in the Main area:

- Enclosure  
The CE number is displayed. By clicking this item, the [Controller Enclosure Detail] screen is displayed. Refer to ["3.6 Controller Enclosure Detail" \(page 117\)](#) for display items.
- Status  
The CE status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Charge Rate  
The battery charge level for CE is displayed.  
When the battery charge level is 90% or more, "Full Charge" is displayed. When the battery charge level is less than 90%, "xx%" is displayed.
- Cache Mode  
The current status and the factor of the cache are displayed. The normal status is "Write Back Mode". Refer to ["Cache Mode" \(page 26\)](#) in ["1.1 Overview"](#) for details.
  - Write Back Mode
  - Write Through (Pinned Data)
  - Write Through (Battery)
  - Write Through (Maintenance)
  - Write Through (1CM)

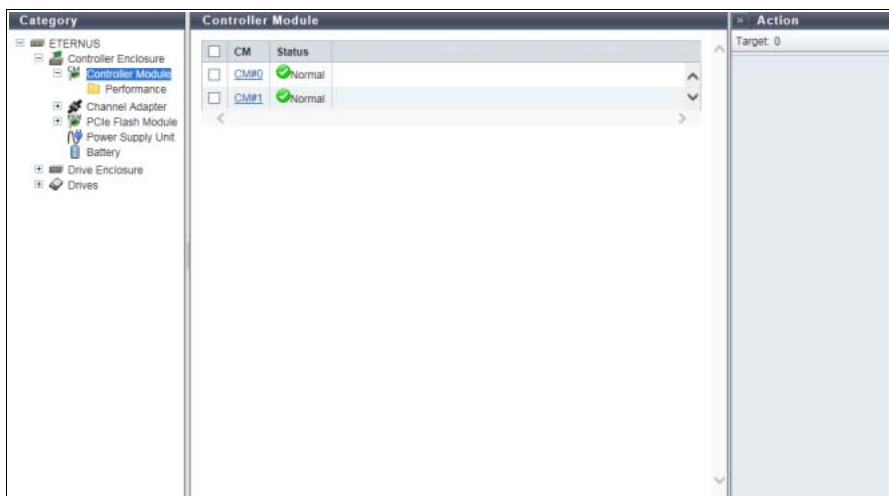
### 3.2.1 Controller Module

The CM information is displayed.

- For the ETERNUS DX8700 S3/DX8900 S3



- For the other models



The following items are displayed in the Main area:

- Enclosure  
The CE number is displayed. By clicking this item, the [Controller Enclosure Detail] screen is displayed. Refer to "[3.6 Controller Enclosure Detail](#)" (page 117) for display items. This item is displayed for the ETERNUS DX8700 S3/DX8900 S3.
- CM  
The CM number is displayed. By clicking this item, the [Controller Module] screen is displayed. Refer to "[3.7 Controller Module Detail](#)" (page 127) for display items.

- Status  
The CM status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

### 3.2.2 Performance (CM)

The CM performance information is displayed.

**Note**

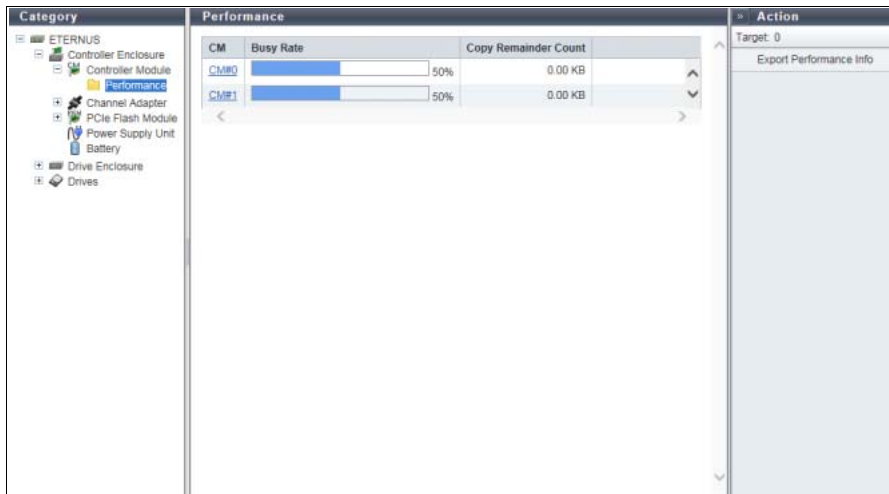
- Performance information is obtained when performance monitoring is operated from ETERNUS Web GUI, ETERNUS CLI, or any other monitoring software. Refer to "Start/Stop Performance Monitoring" in "ETERNUS Web GUI User's Guide (Settings)" for details on how to start performance monitoring with ETERNUS Web GUI.
- The interval for acquiring performance information can be specified when starting the monitoring. When using ETERNUS Web GUI, the default interval is 30 seconds.
- The average performance values during the specified interval are displayed.

■ For the ETERNUS DX8700 S3/DX8900 S3



Category	Performance				Action
Enclosure	CM	Busy Rate	Copy Remainder Count	Target: 0	Export Performance Info
CE#0	CM#0	50%	0.00 KB		
CE#0	CM#1	50%	0.00 KB		
CE#1	CM#0	50%	0.00 KB		
CE#1	CM#1	50%	0.00 KB		
CE#2	CM#0	50%	0.00 KB		
CE#2	CM#1	50%	0.00 KB		
CE#3	CM#0	50%	0.00 KB		
CE#3	CM#1	50%	0.00 KB		

■ For the other models



The following items are displayed in the Main area:

- Enclosure  
The CE number is displayed.  
This item is displayed for the ETERNUS DX8700 S3/DX8900 S3.
- CM  
The CM number is displayed.
- Busy Rate  
The CPU busy rate is displayed.
- Copy Remainder Count  
The remaining capacity of the copy session is displayed.  
"Copy Remainder Count" is displayed for each Controlling CM in the RAID group to which the copy source volume belongs.

### 3.2.3 Port Error Statistics (for the ETERNUS AF250 and the ETERNUS DX200F)

The total number of errors for ports is displayed.

An increasing number of errors in the information is used to notify early replacement for warning status components. This can also be used as analysis information when performance is reduced.

#### Note

- This function is available for the ETERNUS AF250 and the ETERNUS DX200F. For the other models, refer to ["3.4.2 Port Error Statistics" \(page 109\)](#).
- Errors that occur in the SAS transmission line are detected in CM and recovered by retries. Note that detecting an error is not an immediate cause of data failure.

Enclosure	Expander	Port No.	Phy No.	Status	Invalid Dword	Disparity Error	Loss of Dword Synchronization
CE	CM#0 IOC	Port#0	PHY#0	Link Up	0	0	
			PHY#1	Link Up	0	0	
		Port#1	PHY#0	Link Up	0	0	
			PHY#1	Link Up	0	0	
	CM#0 Expander	Port#0	PHY#0	Link Up	0	0	
			PHY#1	Link Up	0	0	
		Port#1	PHY#0	Link Up	0	0	
			PHY#1	Link Up	0	0	
	CM#1 IOC	Port#0	PHY#0	Link Up	1	0	
			PHY#1	Link Up	1	0	
		Port#1	PHY#0	Link Up	1	0	
			PHY#1	Link Up	1	0	
	CM#1 Expander	Port#0	PHY#0	Link Up	1	0	
			PHY#1	Link Up	1	0	
		Port#1	PHY#0	Link Up	1	0	
			PHY#1	Link Up	1	0	

The following items are displayed in the Main area:

- Enclosure  
Controller Enclosure that has ports is displayed.
- Expander  
The chip installation location that is targeted by the port error detection is displayed.
- Port No.  
The port number that is targeted by the port error detection is displayed.
- Phy No.  
The Phy number of the port that is targeted by the port error detection is displayed.
- Status  
The Phy status is displayed.
  - Link Up
  - Link Down
  - N/A
- Invalid Dword  
The number of Invalid Dword occurrences is displayed.  
"Invalid Dword" indicates an error in the SAS transmission line. The SAS interface encodes 8-bit to 10-bit to improve the transmission error ratio. This error is detected when the SAS interface fails encoding.

- Disparity Error  
The number of Disparity Error occurrences is displayed.  
"Disparity Error" indicates an error in the SAS transmission line. The SAS interface encodes 8-bit to 10-bit to improve the transmission error ratio. This error is detected when the SAS interface fails encoding.
- Loss of Dword Synchronization  
The number of Loss of Dword Synchronization occurrences is displayed.  
"Loss of Dword Synchronization" indicates that the SAS interface failed encoding and the SAS link synchronization is broken.
- Phy Reset Problem  
The number of Phy Reset Problem occurrences is displayed.  
"Phy Reset Problem" is detected when resetting and recovering the port in which an error occurred.

Filter setting

Filter	Description
Expander	Select the installation location of the chip that is to be displayed.

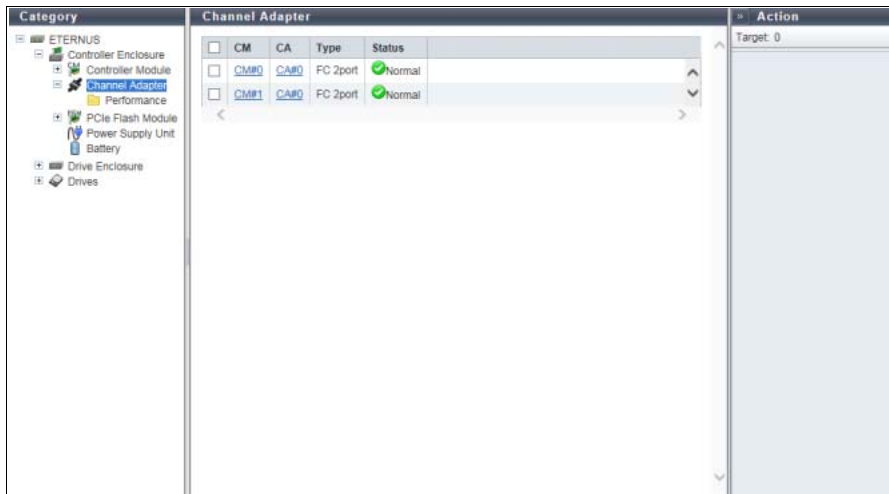
### 3.2.4 Channel Adapter

The information of all the CAs registered in the ETERNUS DX/AF is displayed.

- For the ETERNUS DX8700 S3/DX8900 S3



■ For the other models



The following items are displayed in the Main area:

- Enclosure  
The CE number is displayed. By clicking this item, the [Controller Enclosure Detail] screen is displayed. Refer to ["3.6 Controller Enclosure Detail" \(page 117\)](#) for display items. This item is displayed for the ETERNUS DX8700 S3/DX8900 S3.
- CM  
The CM number is displayed. By clicking this item, the [Controller Module] screen is displayed. Refer to ["3.7 Controller Module Detail" \(page 127\)](#) for display items.
- CA  
The CA number is displayed. By clicking this item, the [Channel Adapter Detail] screen is displayed. Refer to ["3.8 Channel Adapter Detail" \(page 132\)](#) for display items.
- Type  
The CA type is displayed.  
The display items in this filed vary depending on the storage system model.
  - For the ETERNUS DX60 S3
    - FC 2port
    - 1G-iSCSI 2port
    - 10G Base-T iSCSI 2port
    - 6G-SAS 2port
  - For the ETERNUS DX100 S3/DX200 S3
    - FC 2port
    - 10G-iSCSI 2port
    - 1G-iSCSI 2port
    - 10G Base-T iSCSI 2port
    - 6G-SAS 2port
    - 10G-FCoE 2port
    - 10G-NAS 2port
    - 1G-NAS 4port

- For the ETERNUS DX500 S3/DX600 S3
  - FC 2port
  - FC 4port
  - 10G-iSCSI 2port
  - 1G-iSCSI 2port
  - 1G-iSCSI-RA 2port
  - 10G-FCoE 2port
  - 10G-NAS 2port
  - 1G-NAS 4port
- For the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3
  - FC 2port
  - FC 4port
  - 10G-iSCSI 2port
  - 1G-iSCSI 2port
  - 1G-iSCSI-RA 2port
  - 10G-FCoE 2port
- For the ETERNUS AF250
  - FC 2port
  - 10G-iSCSI 2port
  - 10G Base-T iSCSI 2port
- For the ETERNUS AF650
  - FC 2port
  - FC 4port
  - 10G-iSCSI 2port
- For the ETERNUS DX200F
  - FC 2port
  - 10G-iSCSI 2port

 **Note**

Note that a 1-port type CA for the ETERNUS DX60 S3/DX100 S3 is displayed as "2port" (for FC, "FC 2port" is displayed). Similarly, a 2-port type CA (1G-NAS) is displayed as "1G-NAS 4port". Available ports can be checked in the [Internal Parts] tab of the [Channel Adapter Detail] screen. The [Add Channel Adapter Port] function is displayed in the action field only when a 1-port type CA or a 2-port type CA is installed in the ETERNUS DX. Refer to ["3.8 Channel Adapter Detail" \(page 132\)](#) for details. Note that 1-port type CAs and 2-port type CAs are not available in some regions.

- Status  
The CA status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.



### 3.2.5 Performance (CA)

The CA port performance information is displayed.

**Caution**

When the port mode is "Initiator", the CA port performance is not displayed.

**Note**

- Performance information is obtained when performance monitoring is operated from ETERNUS Web GUI, ETERNUS CLI, or any other monitoring software. Refer to "Start/Stop Performance Monitoring" in "ETERNUS Web GUI User's Guide (Settings)" for details on how to start performance monitoring with ETERNUS Web GUI.
- The interval for acquiring performance information can be specified when starting the monitoring. When using ETERNUS Web GUI, the default interval is 30 seconds.
- The average performance values during the specified interval are displayed.

■ For the ETERNUS DX8700 S3/DX8900 S3

Enclosure	CM	CA	Port	Port Mode	Read IOPS	Write IOPS	Read Throughput
CE#0	CM#0	CA#0	Port#0	CA	20IOPS	20IOPS	100MB
CE#0	CM#0	CA#0	Port#1	RA	20IOPS	20IOPS	100MB
CE#0	CM#1	CA#0	Port#0	CA	20IOPS	20IOPS	100MB
CE#0	CM#1	CA#0	Port#1	RA	20IOPS	20IOPS	100MB
CE#1	CM#0	CA#0	Port#0	CA	20IOPS	20IOPS	100MB
CE#1	CM#0	CA#0	Port#1	RA	20IOPS	20IOPS	100MB
CE#1	CM#1	CA#0	Port#0	CA	20IOPS	20IOPS	100MB
CE#1	CM#1	CA#0	Port#1	RA	20IOPS	20IOPS	100MB
CE#2	CM#0	CA#0	Port#0	RA	20IOPS	20IOPS	100MB
CE#2	CM#0	CA#0	Port#1	CA/RA	40IOPS	40IOPS	200MB
CE#2	CM#1	CA#0	Port#0	RA	20IOPS	20IOPS	100MB
CE#2	CM#1	CA#0	Port#1	CA/RA	40IOPS	40IOPS	200MB
CE#3	CM#0	CA#0	Port#0	RA	20IOPS	20IOPS	100MB
CE#3	CM#0	CA#0	Port#1	CA/RA	40IOPS	40IOPS	200MB
CE#3	CM#1	CA#0	Port#0	RA	20IOPS	20IOPS	100MB

■ For the other models

The screenshot shows the 'Performance' page in the ETERNUS Web GUI. On the left is a 'Category' tree with 'Performance' selected. The main area displays a table with the following data:

CM	CA	Port	Port Mode	Read IOPS	Write IOPS	Read Throughput	Write Throu
CM#0	CA#0	Port#0	CA	0IOPS	0IOPS	0MB/s	
CM#0	CA#0	Port#1	CA	0IOPS	0IOPS	0MB/s	
CM#1	CA#0	Port#0	RA	0IOPS	0IOPS	0MB/s	
CM#1	CA#0	Port#1	CA/RA	0IOPS	0IOPS	0MB/s	

On the right, an 'Action' panel shows 'Target: 0' and an 'Export Performance Info' button.

The following items are displayed in the Main area:

- Enclosure  
The CE number is displayed.  
This item is displayed for the ETERNUS DX8700 S3/DX8900 S3.
- CM  
The CM number is displayed.
- CA  
The CA number is displayed.
- Port  
The port number is displayed.
- Port Mode  
The port mode is displayed.
  - CA
  - RA
  - CA/RA
- Read IOPS  
The number of reads per second is displayed.
- Write IOPS  
The number of writes per second is displayed.
- Read Throughput  
The amount of data that is read per second is displayed.
- Write Throughput  
The amount of data that is written per second is displayed.

### 3.2.6 PCIe Flash Module

This function displays the PCIe Flash Module (PFM) information.

**Caution**

If a PFM is not available for reading and writing, "Error" is displayed for the status. If this occurs, replace the PFM. Note that PFMs can be replaced by a maintenance engineer who has the "Maintenance Operation" policy.

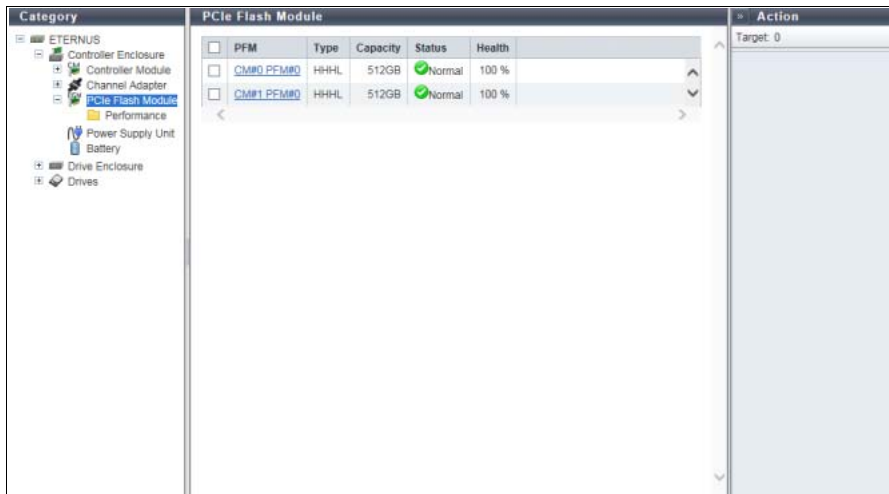
**Note**

- PFMs can be installed in the ETERNUS DX500 S3/DX600 S3 and the ETERNUS DX8700 S3/DX8900 S3.
- If the PFM capacity in each CM for the ETERNUS DX500 S3/DX600 S3 does not match, the EXC memory size that can be used for the CM is reduced to the smallest capacity.
- For the ETERNUS DX8700 S3/DX8900 S3, the PFM capacity in each CM is used as an EXC memory size.

■ For the ETERNUS DX8700 S3/DX8900 S3

Enclosure	PFM	Type	Capacity	Status	Health
CE#0	CM#0 PFM#0	HHHL	1400GB	Normal	100 %
CE#0	CM#0 PFM#1	HHHL	1400GB	Normal	100 %
CE#0	CM#1 PFM#0	HHHL	1400GB	Normal	100 %
CE#0	CM#1 PFM#1	HHHL	1400GB	Normal	100 %
CE#1	CM#0 PFM#0	HHHL	1400GB	Normal	100 %
CE#1	CM#0 PFM#1	HHHL	1400GB	Normal	100 %
CE#1	CM#1 PFM#0	HHHL	1400GB	Normal	100 %
CE#1	CM#1 PFM#1	HHHL	1400GB	Normal	100 %
CE#2	CM#0 PFM#0	HHHL	1400GB	Normal	100 %
CE#2	CM#0 PFM#1	HHHL	1400GB	Normal	100 %
CE#2	CM#1 PFM#0	HHHL	1400GB	Normal	100 %
CE#2	CM#1 PFM#1	HHHL	1400GB	Normal	100 %
CE#3	CM#0 PFM#0	HHHL	1400GB	Normal	100 %
CE#3	CM#0 PFM#1	HHHL	1400GB	Normal	100 %
CE#3	CM#1 PFM#0	HHHL	1400GB	Normal	100 %
CE#3	CM#1 PFM#1	HHHL	1400GB	Normal	100 %

■ For the other models



The following items are displayed in the Main area:

- Enclosure  
The CE number is displayed.  
This item is displayed for the ETERNUS DX8700 S3/DX8900 S3.
- PFM  
The PFM number is displayed. Click this item to display the [PCIe Flash Module Detail] screen. Refer to ["3.9 PCIe Flash Module Detail" \(page 137\)](#) for display items.
- Type  
The PFM type is displayed
- Capacity  
The PFM capacity is displayed.
- Status  
The PFM status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Health  
The lifetime information of the PFM is displayed.
  - 100% - 6%  
The PFM is available.
  - 5% - 1%  
"⚠ Warning" is displayed as the status.  
The PFM is approaching its end of life.
  - 0%  
"❌ Error" is displayed as the status.  
Reading from or writing to the PFM is not available.

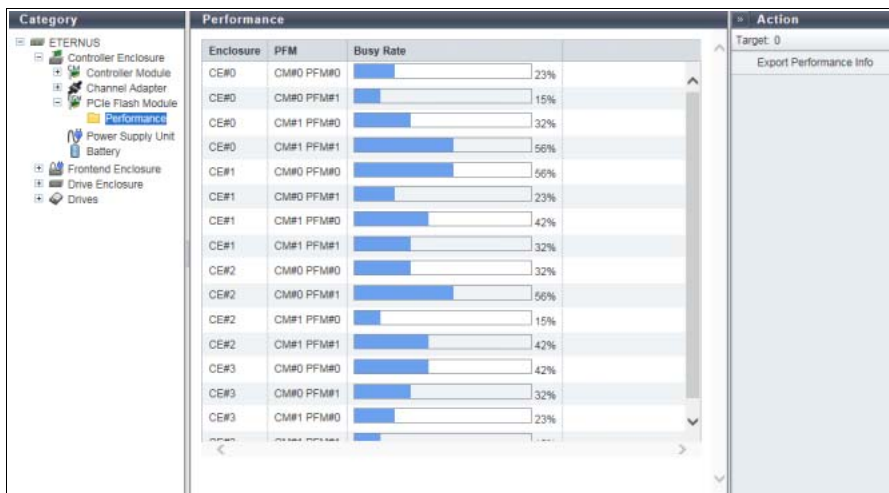
### 3.2.7 Performance (PCIe Flash Module)

This screen displays the performance information of the PFM.

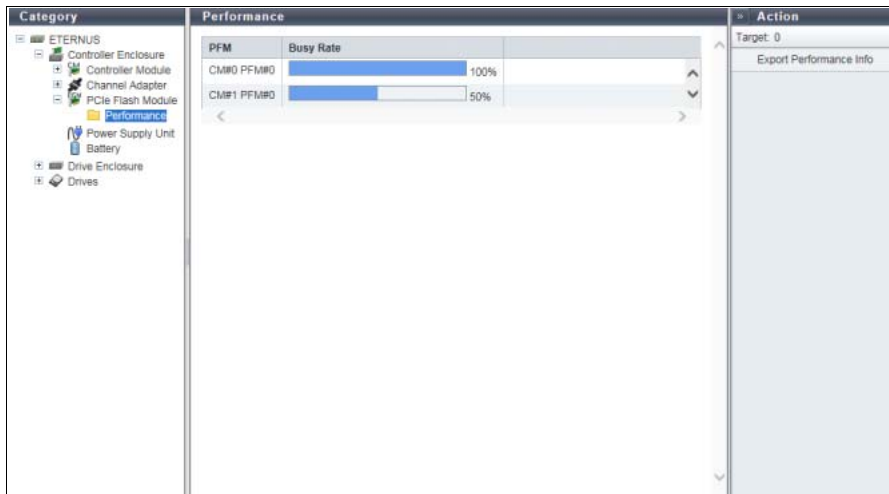
**Note**

- Performance information is obtained when performance monitoring is operated from ETERNUS Web GUI, ETERNUS CLI, or any other monitoring software. Refer to "Start/Stop Performance Monitoring" in "ETERNUS Web GUI User's Guide (Settings)" for details on how to start performance monitoring with ETERNUS Web GUI.
- The interval for acquiring performance information can be specified when starting the monitoring. When using ETERNUS Web GUI, the default interval is 30 seconds.
- The average performance values during the specified interval are displayed.
- PFMs can be installed in the ETERNUS DX500 S3/DX600 S3 and the ETERNUS DX8700 S3/DX8900 S3.

■ For the ETERNUS DX8700 S3/DX8900 S3



■ For the other models



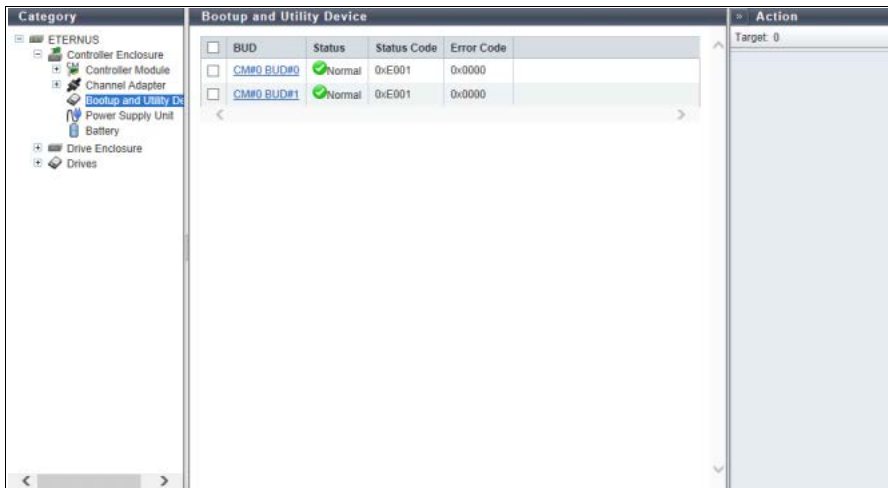
The following items are displayed in the Main area:

- Enclosure  
The CE number is displayed.  
This item is displayed for the ETERNUS DX8700 S3/DX8900 S3.
- PFM  
The PFM number is displayed.
- Busy Rate  
When performance monitoring has started, the busy rate of the PFM is displayed with a bar and a numerical number. If performance monitoring has stopped, "0%" is displayed for the busy rate.

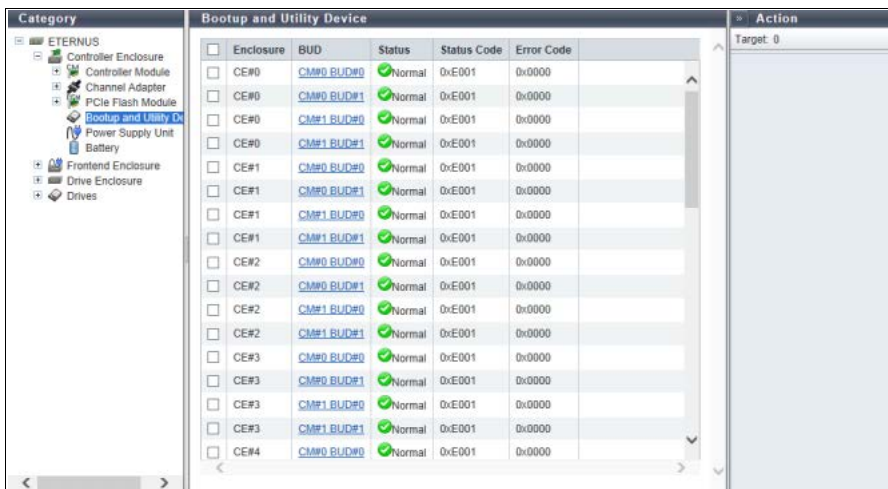
### 3.2.8 Bootup and Utility Device

The BUD information is displayed.  
 This function is displayed for the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3.

■ For the ETERNUS DX8100 S3



■ For the ETERNUS DX8700 S3/DX8900 S3



The following items are displayed in the Main area:

- Enclosure  
 The CE number is displayed.  
 This item is displayed for the ETERNUS DX8700 S3/DX8900 S3.
- BUD  
 The BUD number is displayed.  
 Click this item to display the [Bootup and Utility Device Detail] screen. Refer to ["3.20 Bootup and Utility Device Detail" \(page 169\)](#) for display items.

- Status  
The BUD status is displayed. Refer to "[A.5 Component Status](#)" (page 410) for details.
- Status Code  
The status code of BUD is displayed.
- Error Code  
The error code of BUD is displayed.

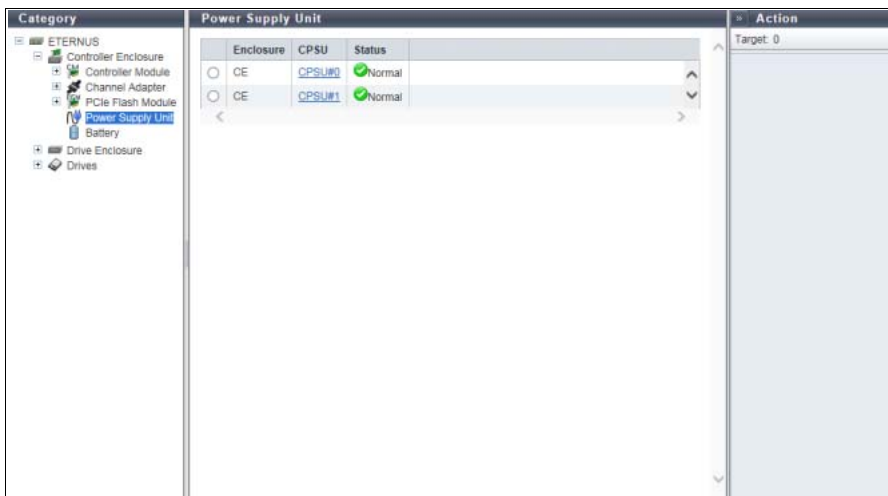
### 3.2.9 Power Supply Unit (CE)

The PSU information for a CE is displayed.

- For the ETERNUS DX8700 S3/DX8900 S3



- For the other models





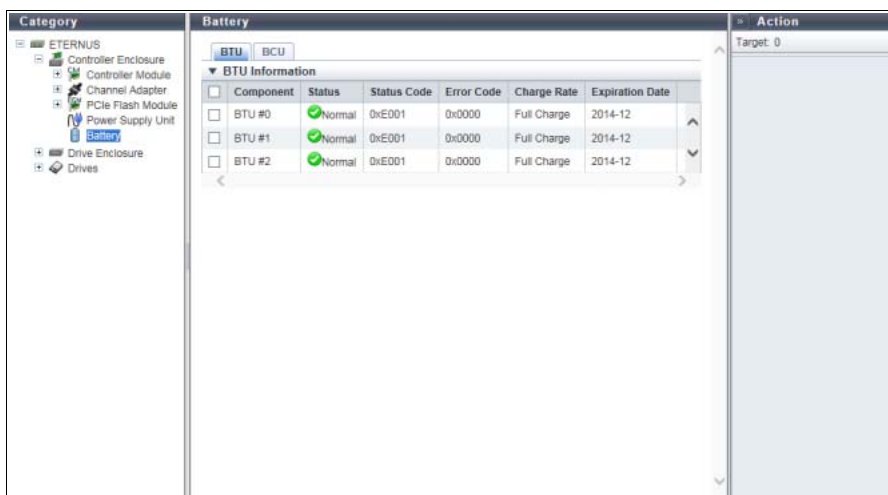
The following items are displayed in the Main area:

- Enclosure  
The enclosure where the PSU or the CPUS is installed is displayed.  
For the ETERNUS DX8700 S3/DX8900 S3, the CE number is displayed.
- PSU  
The PSU number is displayed. By clicking this item, the [Controller Enclosure Power Supply Unit] screen is displayed. Refer to ["3.10 PSU/CPSU \(CE\) Detail" \(page 140\)](#) for display items.  
This item is displayed for the ETERNUS DX60 S3/DX100 S3/DX200 S3, the ETERNUS AF250, and the ETERNUS DX200F.
- CPSU  
The CPSU number is displayed. By clicking this item, the [Controller Enclosure Power Supply Unit] screen is displayed. Refer to ["3.10 PSU/CPSU \(CE\) Detail" \(page 140\)](#) for display items.  
This item is displayed for the ETERNUS DX500 S3/DX600 S3, the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3, and the ETERNUS AF650.
- Status  
The PSU status or the CPSU status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

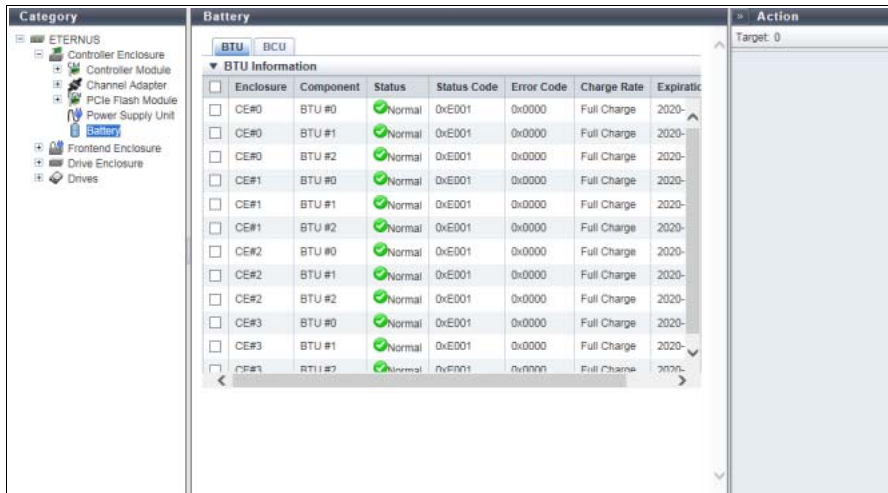
### 3.2.10 Battery

The information of the Battery Unit (BTU) and the Battery Charger Unit (BCU) is displayed.  
This function is displayed for the ETERNUS DX500 S3/DX600 S3, the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3, and the ETERNUS AF650.

- BTU
  - For the ETERNUS DX500 S3/DX600 S3, the ETERNUS DX8100 S3, and the ETERNUS AF650



- For the ETERNUS DX8700 S3/DX8900 S3

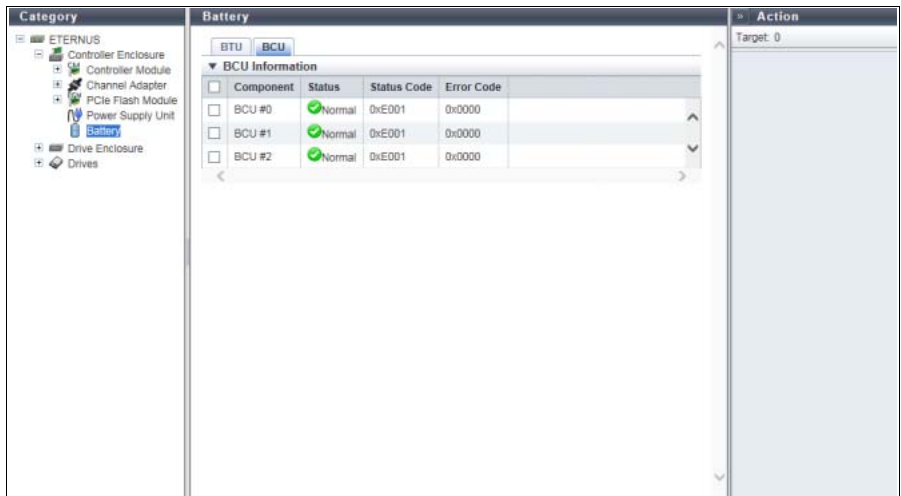


The following items are displayed in the Main area:

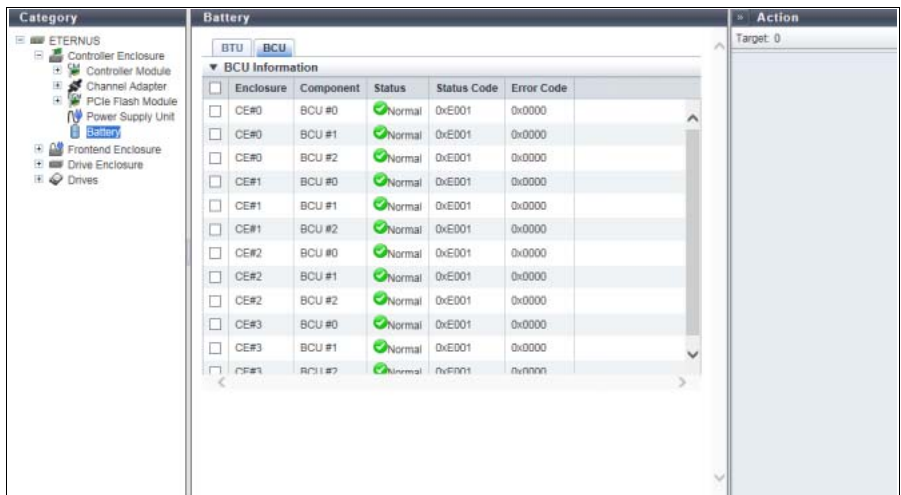
- Enclosure  
The CE number is displayed.  
This item is displayed for the ETERNUS DX8700 S3/DX8900 S3.
- Component  
The BTU number is displayed.
- Status  
The BTU status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The BTU status code is displayed.
- Error Code  
The BTU error code is displayed.
- Charge Rate  
The BTU charge rate is displayed.  
When the battery charge level is 90% or more, "Full Charge" is displayed. When the battery charge level is less than 90%, "xx%" is displayed.
- Expiration Date  
The expiration date for the BTU is displayed.

● BCU

- For the ETERNUS DX500 S3/DX600 S3, the ETERNUS DX8100 S3, and the ETERNUS AF650



- For the ETERNUS DX8700 S3/DX8900 S3



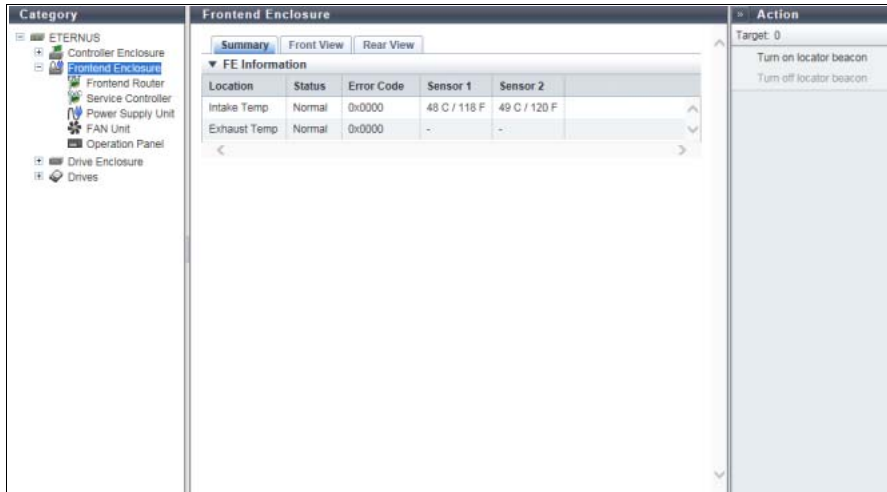
The following items are displayed in the Main area:

- Enclosure  
The CE number is displayed.  
This item is displayed for the ETERNUS DX8700 S3/DX8900 S3.
- Component  
The BCU number is displayed.
- Status  
The BCU status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The BCU status code is displayed.
- Error Code  
The BCU error code is displayed.

## 3.3 Frontend Enclosure

The Frontend Enclosure (FE) information is displayed.  
This function is displayed for the ETERNUS DX8700 S3/DX8900 S3.

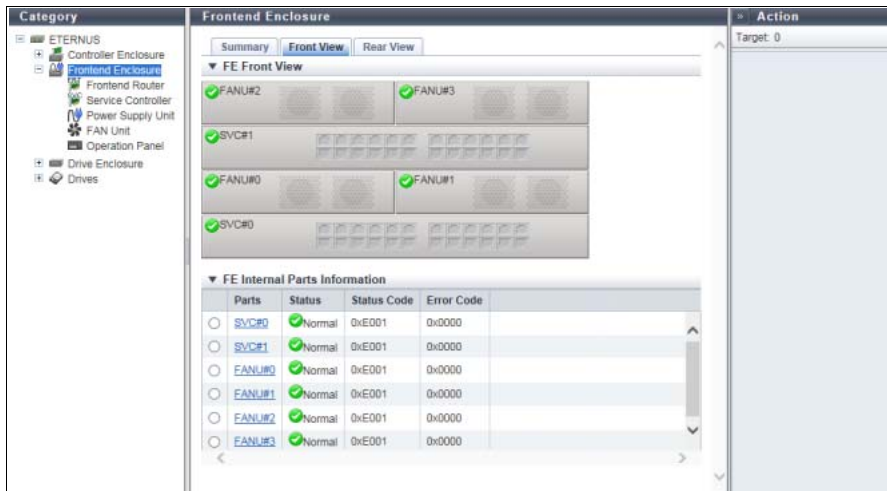
### ■ Summary



The following items are displayed in the Main area:

- Location  
The installation location of the thermal sensor is displayed.
  - Intake Temp
  - Exhaust Temp
- Status  
The thermal sensor status is displayed.
- Error Code  
The error code of the thermal sensor is displayed.
- Sensor 1  
For the "Intake Temp" field, temperature of the SVC#0 is displayed in Celsius (C) and in Fahrenheit (F).  
If the thermal information is not available due to problem such as a sensor failure, a "-" (hyphen) is displayed.  
For the "Exhaust Temp" field, a "-" (hyphen) is usually displayed.
- Sensor 2  
For the "Intake Temp" field, temperature of the SVC#1 is displayed in Celsius (C) and in Fahrenheit (F).  
If the thermal information is not available due to problem such as a sensor failure, a "-" (hyphen) is displayed.  
For the "Exhaust Temp" field, a "-" (hyphen) is usually displayed.

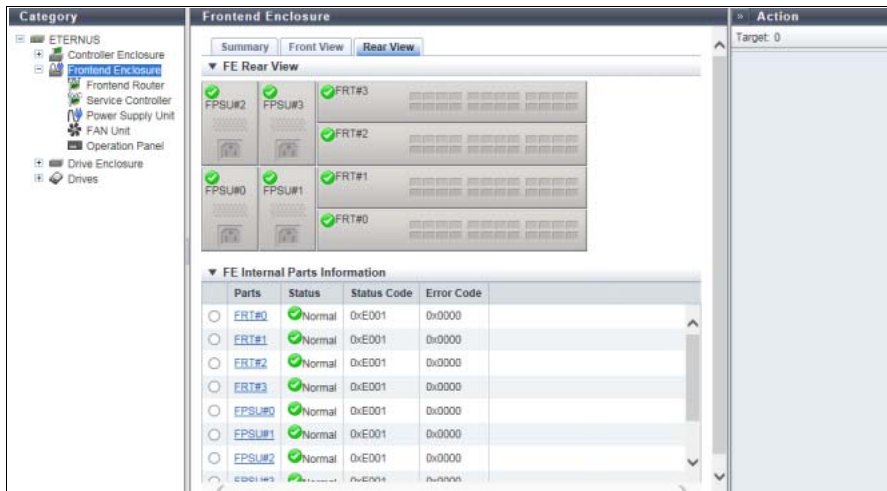
## ■ Front View



The following items are displayed in the Main area:

- Storage system image  
The front view of the FE that is installed in the ETERNUS DX is displayed.  
The Service Controller (SVC) status and the FAN Unit (FANU) status are indicated by icons. Refer to ["A.5 Component Status" \(page 410\)](#) for details.  
By clicking the SVC number, the [Service Controller Detail] screen is displayed. Refer to ["3.12 Service Controller Detail" \(page 146\)](#) for display items.  
By clicking the FANU number, the [FAN Unit Detail] screen is displayed. Refer to ["3.14 FAN Unit Detail" \(page 150\)](#) for display items.
- Parts  
The SVC number and the FANU number are displayed.  
By clicking the SVC number, the [Service Controller Detail] screen is displayed. Refer to ["3.12 Service Controller Detail" \(page 146\)](#) for display items.  
By clicking the FANU number, the [FAN Unit Detail] screen is displayed. Refer to ["3.14 FAN Unit Detail" \(page 150\)](#) for display items.
- Status  
The status of each component is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The status code of each component is displayed.
- Error Code  
The error code of each component is displayed.

## Rear View

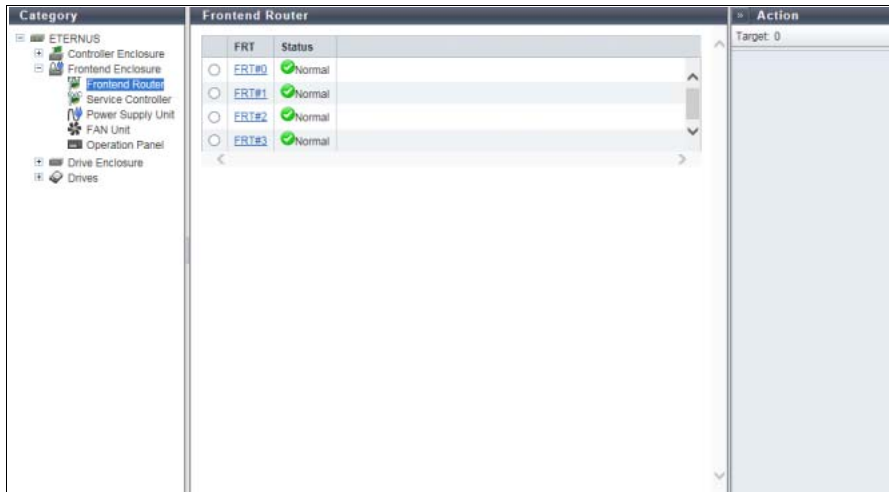


The following items are displayed in the Main area:

- Storage system image  
The rear view of the FE that is installed in the ETERNUS DX is displayed.  
The Frontend Router (FRT) status and the FE Power Supply Unit (FPSU) status are indicated by icons. Refer to ["A.5 Component Status" \(page 410\)](#) for details.  
By clicking the FRT number, the [Frontend Router Detail] screen is displayed. Refer to ["3.11 Frontend Router Detail" \(page 143\)](#) for display items.  
By clicking the FPSU number, the [FE Power Supply Unit Detail] screen is displayed. Refer to ["3.13 FE Power Supply Unit Detail" \(page 148\)](#) for display items.
- Parts  
The FRT number and the FPSU number are displayed.  
By clicking the FRT number, the [Frontend Router Detail] screen is displayed. Refer to ["3.11 Frontend Router Detail" \(page 143\)](#) for display items.  
By clicking the FPSU number, the [FE Power Supply Unit Detail] screen is displayed. Refer to ["3.13 FE Power Supply Unit Detail" \(page 148\)](#) for display items.
- Status  
The status of each component is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The status code of each component is displayed.
- Error Code  
The error code of each component is displayed.

### 3.3.1 Frontend Router

The FRT information is displayed.  
This function is displayed for the ETERNUS DX8700 S3/DX8900 S3.

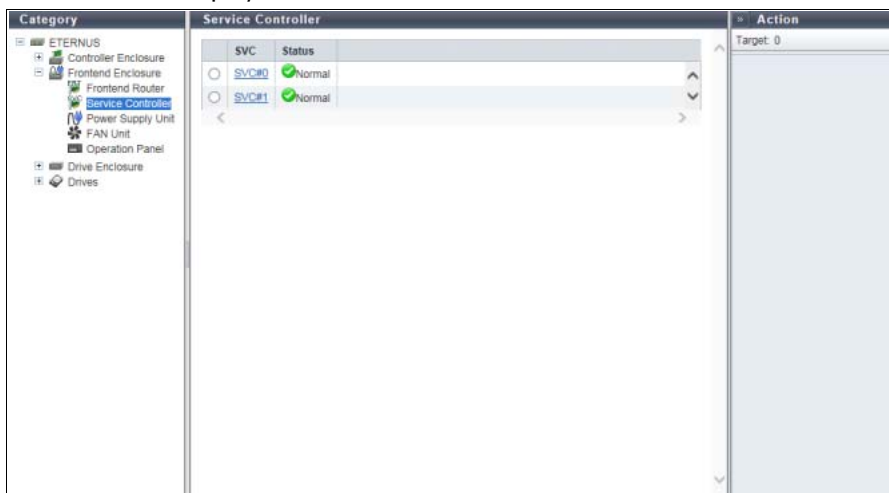


The following items are displayed in the Main area:

- Status  
The FRT number is displayed. By clicking the FRT number, the [Frontend Router Detail] screen is displayed. Refer to ["3.11 Frontend Router Detail" \(page 143\)](#) for display items.
- Status  
The FRT status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

### 3.3.2 Service Controller

The SVC information is displayed.  
This function is displayed for the ETERNUS DX8700 S3/DX8900 S3.



The following items are displayed in the Main area:

- SVC  
The SVC number is displayed. By clicking the SVC number, the [Service Controller Detail] screen is displayed. Refer to ["3.12 Service Controller Detail" \(page 146\)](#) for display items.
- Status  
The SVC status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

### 3.3.3 Power Supply Unit (FE)

The information of PSU for FE is displayed.  
This function is displayed for the ETERNUS DX8700 S3/DX8900 S3.

Enclosure	FPSU	Status
FE	FPSU#0	Normal
FE	FPSU#1	Normal
FE	FPSU#2	Normal
FE	FPSU#3	Normal

The following items are displayed in the Main area:

- Enclosure  
The enclosure where the FPSU is installed is displayed.
- FPSU  
The FPSU number is displayed. By clicking the FPSU number, the [FE Power Supply Unit Detail] screen is displayed. Refer to ["3.13 FE Power Supply Unit Detail" \(page 148\)](#) for display items.
- Status  
The FPSU status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.



### 3.3.4 FAN Unit

The FANU information is displayed.  
This function is displayed for the ETERNUS DX8700 S3/DX8900 S3.



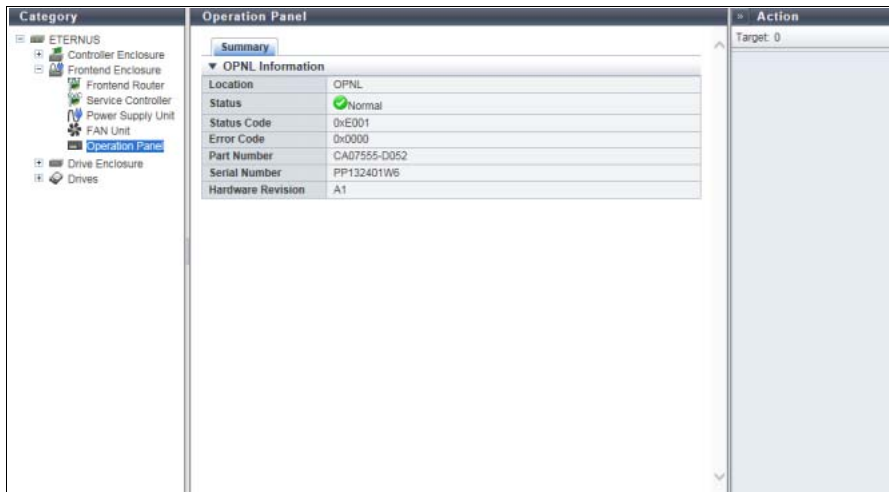
The following items are displayed in the Main area:

- FANU  
The FANU number is displayed. By clicking the FANU number, the [FAN Unit Detail] screen is displayed. Refer to ["3.14 FAN Unit Detail" \(page 150\)](#) for display items.
- Status  
The FANU status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

### 3.3.5 Operation Panel

The Operation Panel (OPNL) information is displayed.  
This function is displayed for the ETERNUS DX8700 S3/DX8900 S3.

#### ■ Summary



The following items are displayed in the Main area:

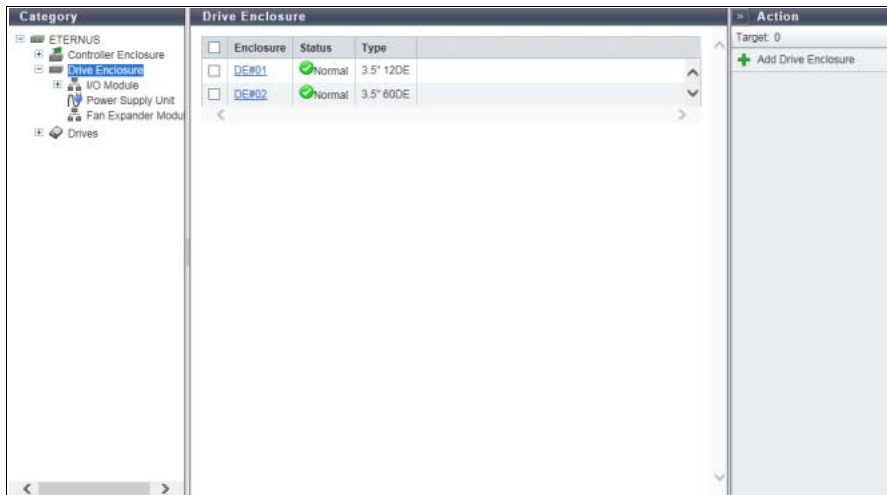
- Location  
The OPNL is displayed.
- Status  
The OPNL status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The OPNL status code is displayed.
- Error Code  
The OPNL error code is displayed.
- Part Number  
The part number of the OPNL is displayed.
- Serial Number  
The serial number of the OPNL is displayed.
- Hardware Revision  
The hardware version of the OPNL is displayed.

## 3.4 Drive Enclosure

The DE information is displayed.

### Caution

The ETERNUS AF250 and the ETERNUS DX200F do not support this function.

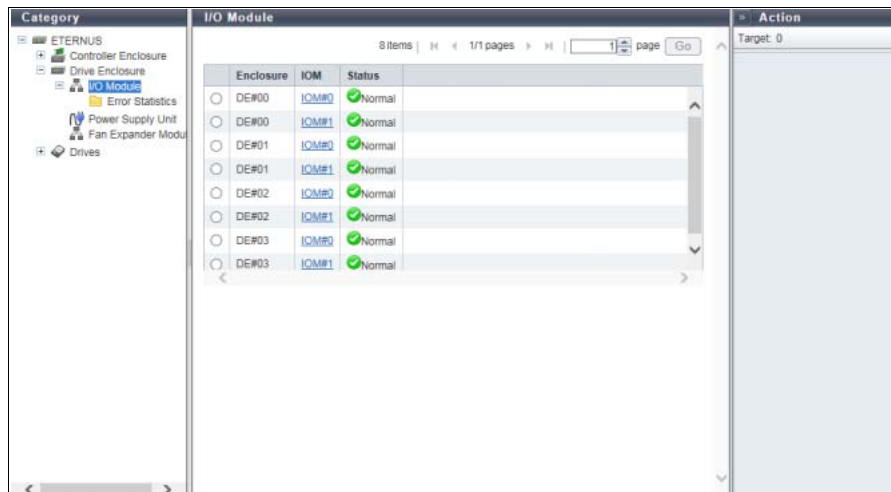


The following items are displayed in the Main area:

- Enclosure  
The DE number is displayed. By clicking this item, the [Drive Enclosure] screen is displayed. Refer to ["3.15 Drive Enclosure Detail" \(page 152\)](#) for display items.
- Status  
The DE status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Type  
The DE type is displayed.  
The DE type indicates the drive size and the maximum number of drives that can be installed.

### 3.4.1 I/O Module

The I/O Module (IOM) information is displayed.



The following items are displayed in the Main area:

- Enclosure  
The enclosure where the IOM is installed is displayed.
- IOM  
The IOM number is displayed. By clicking this item, the [I/O Module] screen is displayed. Refer to ["3.16 I/O Module Detail" \(page 157\)](#) for display items.
- Status  
The IOM status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

#### Filter setting

The filter setting is displayed for the ETERNUS DX8700 S3/DX8900 S3.

Filter	Description
Enclosure	Select the DE that is to be displayed.
Status	Select the IOM status that is to be displayed.

## 3.4.2 Port Error Statistics

The total number of errors for CM expander and DE IOM ports is displayed. An increasing number of errors in the information is used to notify early replacement for warning status components. This can also be used as analysis information when performance is reduced.

### Note

Errors that occur in the SAS transmission line are detected in CM and recovered by retries. Note that detecting an error is not an immediate cause of data failure.

Enclosure	Expander	Port No.	Phy No.	Status	Invalid Dword	Disparity Error	Loss of Dword Synchronization		
CM#0 IOC		Port#0	PHY#0	Link Up	0	0			
			PHY#1	Link Up	0	0			
			PHY#2	Link Up	0	0			
		Port#1			PHY#3	Link Up	0	0	
					PHY#0	Link Up	0	0	
					PHY#1	Link Up	0	0	
		Port#2			PHY#2	Link Up	0	0	
					PHY#3	Link Up	0	0	
					PHY#0	Link Up	0	0	
		Port#3			PHY#1	Link Up	0	0	
					PHY#0	Link Up	0	0	
					PHY#2	Link Up	0	0	

The following items are displayed in the Main area:

- Enclosure  
Enclosures (Controller Enclosure, Drive Enclosure) that have ports are displayed.
- Expander  
The chip installation location that is targeted by the port error detection is displayed.
- Port No.  
The port number that is targeted by the port error detection is displayed.
- Phy No.  
The Phy number of the port that is targeted by the port error detection is displayed.
- Status  
The Phy status is displayed.
  - Link Up
  - Link Down
  - N/A
- Invalid Dword  
The number of Invalid Dword occurrences is displayed.  
"Invalid Dword" indicates an error in the SAS transmission line. The SAS interface encodes 8-bit to 10-bit to improve the transmission error ratio. This error is detected when the SAS interface fails encoding.

- Disparity Error  
The number of Disparity Error occurrences is displayed.  
"Disparity Error" indicates an error in the SAS transmission line. The SAS interface encodes 8-bit to 10-bit to improve the transmission error ratio. This error is detected when the SAS interface fails encoding.
- Loss of Dword Synchronization  
The number of Loss of Dword Synchronization occurrences is displayed.  
"Loss of Dword Synchronization" indicates that the SAS interface failed encoding and the SAS link synchronization is broken.
- Phy Reset Problem  
The number of Phy Reset Problem occurrences is displayed.  
"Phy Reset Problem" is detected when resetting and recovering the port in which an error occurred.

#### Filter setting

Filter	Description
Expander	Select the installation location of the chip that is to be displayed.

### 3.4.3 Power Supply Unit (DE)

The PSU information for a DE is displayed.

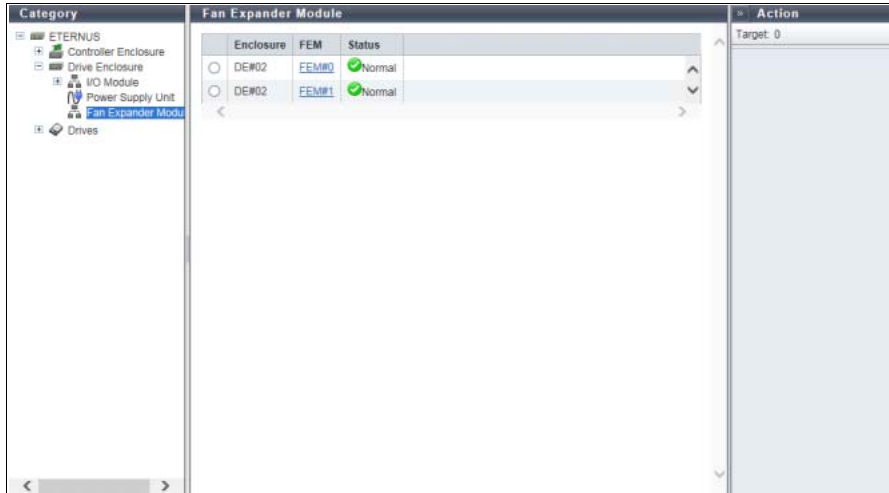


The following items are displayed in the Main area:

- Enclosure  
The enclosure where the PSU is installed is displayed.
- PSU  
The PSU number is displayed.  
By clicking this item, the [Power Supply Unit (DE)] screen is displayed. Refer to ["3.17 Power Supply Unit \(DE\) Detail" \(page 159\)](#) for display items.
- Status  
The PSU status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

## 3.4.4 Fan Expander Module

This function displays the Fan Expander Module (FEM) information.

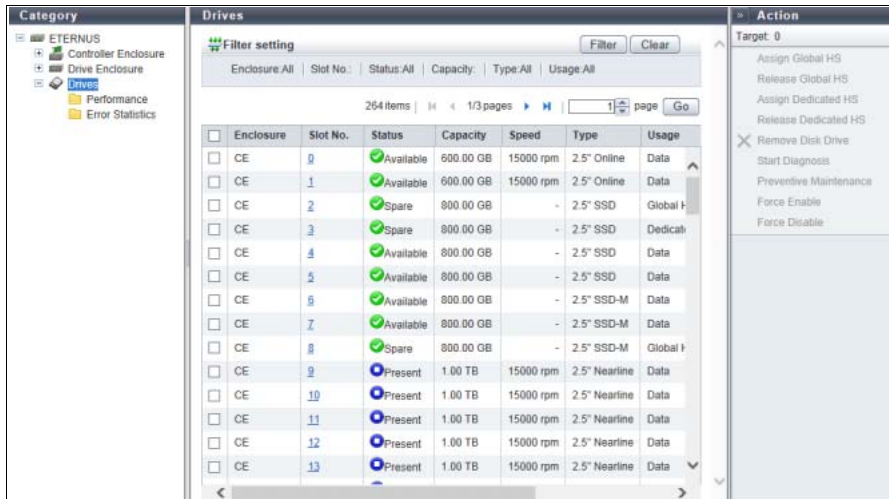


The following items are displayed in the Main area:

- Enclosure  
The drive enclosure number is displayed.
- FEM  
The FEM number is displayed. Click this item to display the [Fan Expander Module Detail] screen. Refer to ["3.18 Fan Expander Module Detail" \(page 161\)](#) for display items.
- Status  
The FEM status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

## 3.5 Drives

The drive information is displayed.



The following items are displayed in the Main area:

- Enclosure  
The enclosure where the drive is installed is displayed.
- Slot No.  
The slot number of the enclosure where the drive is installed is displayed. By clicking the drive image, the [Drives] screen is displayed. Refer to ["3.19 Drive Detail" \(page 164\)](#) for display items.
- Status  
The drive status is displayed. Refer to ["A.5.1 Drive Status" \(page 411\)](#) for details.
- Capacity  
The capacity of the drive is displayed.

### Caution

The drive capacity that is displayed for the SSD-L (\*1) differs from the product's actual capacity. For example, the drive capacity of a "1.92TB SSD-L" is displayed as "2.00 TB".

\*1: SSD-Ls are available at a lower cost per capacity than conventional SSDs by optimizing the guaranteed write endurance and the reserved space.

- Speed  
The drive speed is displayed. For SSD or SSD SED, a "-" (hyphen) is displayed.
  - 15000 rpm
  - 10000 rpm
  - 7200 rpm



- Type

The drive type is displayed.

- 2.5" Online  
2.5-inch SAS disk
- 2.5" Online AF  
2.5-inch SAS disk (Advanced Format supported)
- 2.5" Nearline  
2.5-inch Nearline SAS disk
- 2.5" Nearline AF  
2.5-inch Nearline SAS disk (Advanced Format supported)
- 3.5" Online  
3.5-inch SAS disk
- 3.5" Online AF  
3.5-inch SAS disk (Advanced Format supported)
- 3.5" Nearline  
3.5-inch Nearline SAS disk
- 3.5" Nearline AF  
3.5-inch Nearline SAS disk (Advanced Format supported)
- 2.5" SSD-M  
2.5-inch SSD-M (12 Gbit/s) (\*1)
- 3.5" SSD-M  
3.5-inch SSD-M (12 Gbit/s) (\*1)
- 2.5" SSD-L  
2.5-inch SSD-L (12 Gbit/s) (\*1)
- 3.5" SSD-L  
3.5-inch SSD-L (12 Gbit/s) (\*1)
- 2.5" SSD  
2.5-inch SSD (6 Gbit/s) (\*1)
- 3.5" SSD  
3.5-inch SSD (6 Gbit/s) (\*1)
- 2.5" Online SED  
2.5-inch Online SED
- 3.5" Nearline SED  
3.5-inch Nearline SED
- 2.5" SSD-M SED  
2.5-inch SSD-M SED (\*2)
- 3.5" SSD-M SED  
3.5-inch SSD-M SED (\*2)
- 2.5" SSD-L SED  
2.5-inch SSD-L SED (\*2)
- 3.5" SSD-L SED  
3.5-inch SSD-L SED (\*2)

\*1: The displayed item varies depending on the interface speed (bandwidth) or the capacity of the reserved space.

- "SSD-M" is displayed for SSDs with an interface speed of 12Gbit/s.
  - "SSD-L" is displayed for Value SSDs with an interface speed of 12Gbit/s.
  - "SSD" is displayed for SSDs with an interface speed of 6Gbit/s.
- Unless otherwise specified, this manual refers to "SSD-M", "SSD-L", and "SSD" collectively as "SSD".

\*2: In this manual, there may be cases when "SSD SED" is used as a collective term for options and drive types.

- Usage  
The usage of the drive is displayed.
  - For a drive that is used for user data or an unused drive  
Data
  - For a drive that is registered as a Global Hot Spare  
Global Hot Spare
  - For a drive that is registered as a Dedicated Hot Spare  
Dedicated Hot Spare
- RAID Group  
When the drive belongs to a RAID group, the RAID group number and the RAID group name are displayed. However, if the drive usage is "Dedicated Hot Spare", the RAID group number and the RAID group name are displayed even when the drive is not used as a Hot Spare. Click this item to display the [RAID Group Detail] screen.  
When the usage is not "Dedicated Hot Spare" and the drive is not registered in a RAID group, a "-" (hyphen) is displayed.
- Health  
The drive lifetime information is displayed between 0% - 100%. As the lifetime of the drive is reduced, the health level of the drive is decreased.  
A "-" (hyphen) is displayed in the following conditions:
  - The drive is neither "SSD" nor "SSD SED"
  - The lifetime information cannot be obtained

#### Filter setting

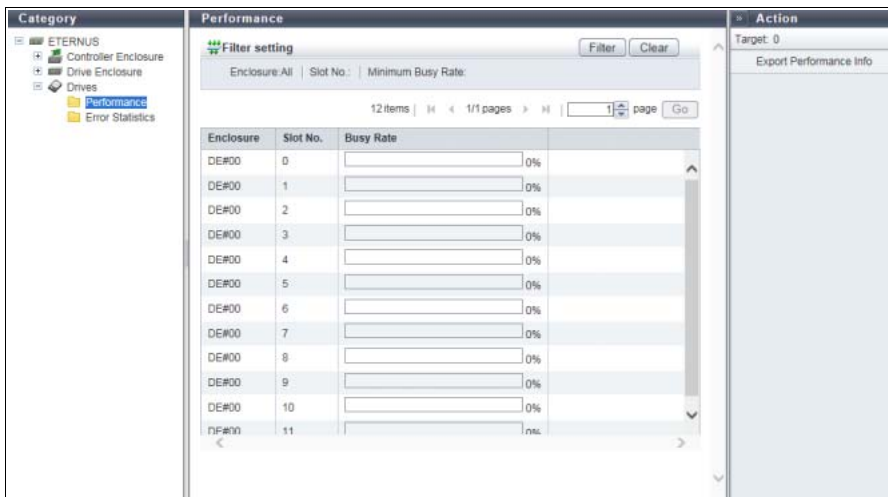
Filter	Description
Enclosure	Select the enclosure in which the target drive is installed.
Slot No.	Specify the slot number of the drive that is to be displayed. When not using the slot number for filtering, leave this item blank.
Status	Select the drive status that is to be displayed.
Capacity	Specify the capacity of the drive that is to be displayed. When not using the drive capacity for filtering, specify "0".
Type	Select the drive type that is to be displayed.
Usage	Select the usage of the drive that is to be displayed.

### 3.5.1 Performance (Drive)

The drive performance information is displayed.

**Note**

- Performance information is obtained when performance monitoring is operated from ETERNUS Web GUI, ETERNUS CLI, or any other monitoring software. Refer to "Start/Stop Performance Monitoring" in "ETERNUS Web GUI User's Guide (Settings)" for details on how to start performance monitoring with ETERNUS Web GUI.
- The interval for acquiring performance information can be specified when starting the monitoring. When using ETERNUS Web GUI, the default interval is 30 seconds.
- The average performance values during the specified interval are displayed.



The following items are displayed in the Main area:

- Enclosure  
The enclosure where the drive is installed is displayed.
- Slot No.  
The slot number of the enclosure where the drive is installed is displayed.
- Busy Rate  
The busy rate of the drive is displayed with a bar and a numerical number. When a drive is in the "Broken" or "Not Supported" state, a "-" (hyphen) is displayed.

**Filter setting**

Filter	Description
Enclosure	Select the enclosure in which the target drive is installed.
Slot No.	Specify the slot number of the drive that is to be displayed. When not using the slot number for filtering, leave this item blank.
Minimum Busy Rate	Specify the minimum busy rate for the drive that is to be displayed. The drives with a busy rate that exceeds the specified minimum busy rate are displayed. When not using the minimum busy rate for filtering, leave this item blank.

## 3.5.2 Drive Error Statistics

The total number of drive errors is displayed.

An increasing number of disk errors can be used as a sign for the early replacement of warning components or as information to analyze performance when performance is reduced.

Any unnecessary drive error information can be deleted.

Enclosure	Slot No.	Port No.	Media Error	Drive Error	Drive Recovered Error	S.M.A.R.T. Event	I/O Timeout	Link Error
DE#00	Drive#0	Port#0	0	0	0	0	0	0
		Port#1	0	0	0	0	0	0
DE#00	Drive#1	Port#0	0	0	0	0	0	0
		Port#1	0	0	0	0	0	0
DE#00	Drive#2	Port#0	0	0	0	0	0	0
		Port#1	0	0	0	0	0	0
DE#00	Drive#3	Port#0	0	0	0	0	0	0
		Port#1	0	0	0	0	0	0
DE#00	Drive#4	Port#0	0	0	0	0	0	0
		Port#1	0	0	0	0	0	0
DE#00	Drive#5	Port#0	0	0	0	0	0	0
		Port#1	0	0	0	0	0	0
DE#00	Drive#6	Port#0	0	0	0	0	0	0
		Port#1	0	0	0	0	0	0
DE#00	Drive#7	Port#0	0	0	0	0	0	0
		Port#1	0	0	0	0	0	0
		Port#0	0	0	0	0	0	0

The following items are displayed in the Main area:

- Enclosure  
The enclosure where the drive is installed is displayed.
- Slot No.  
The slot number of the enclosure where the drive is installed is displayed.
- Port No.  
The drive port number is displayed.
- Media Error  
The number of Media Error occurrences is displayed.
- Drive Error  
The number of Drive Error occurrences is displayed.
- Drive Recovered Error  
The number of Drive Recovered Error occurrences is displayed.
- S.M.A.R.T. Event  
The number of S.M.A.R.T. Event occurrences is displayed.
- I/O Timeout  
The number of I/O Timeout occurrences is displayed.
- Link Error  
The number of Link Error occurrences is displayed.
- Check Code Error  
The number of Check Code Error occurrences is displayed.

## 3.6 Controller Enclosure Detail

The detailed CE information is displayed.

### ■ Summary

- For the ETERNUS DX8700 S3/DX8900 S3

The screenshot displays the Controller Enclosure detail page for ETERNUS DX8700 S3/DX8900 S3 models. The left-hand navigation tree shows the following structure:

- Category
  - ETERNUS
    - Controller Enclosure
      - Controller Module
      - Channel Adapter
      - PCIe Flash Module
      - Power Supply Unit
      - Battery
    - Frontend Enclosure
    - Drive Enclosure
    - Drives

The main content area is titled "Controller Enclosure" and has tabs for "Summary", "Front View", and "Rear View". The "Summary" tab is active, showing the following information:

- Summary
  - Charge Rate: 89%
  - Cache Mode: Write Back Mode
  - Serial Number: PP132401W6
  - Other Information: 000000000000

Below this information is a table with the following data:

Location	Status	Error Code	Sensor 1	Sensor 2
Intake Temp	Normal	0x0000	19 C / 66 F	40 C / 104 F
Exhaust Temp	Normal	0x0000	20 C / 68 F	41 C / 105 F

The right-hand "Action" panel shows "Target: 0" and two actions: "Turn on locator beacon" and "Turn off locator beacon".

- For the other models

The screenshot displays the Controller Enclosure detail page for other models. The left-hand navigation tree is identical to the previous screenshot. The main content area shows the following information:

- Summary
  - Serial Number: SN00000000000000000000
  - Other Information: 000000000000

Below this information is a table with the following data:

Location	Status	Error Code	Sensor 1	Sensor 2
Intake Temp	Maintenance	0x0000	20 C / 68 F	21 C / 69 F
Exhaust Temp	Maintenance	0x0000	21 C / 69 F	22 C / 71 F

The right-hand "Action" panel shows "Target: 0" and two actions: "Turn on locator beacon" and "Turn off locator beacon".

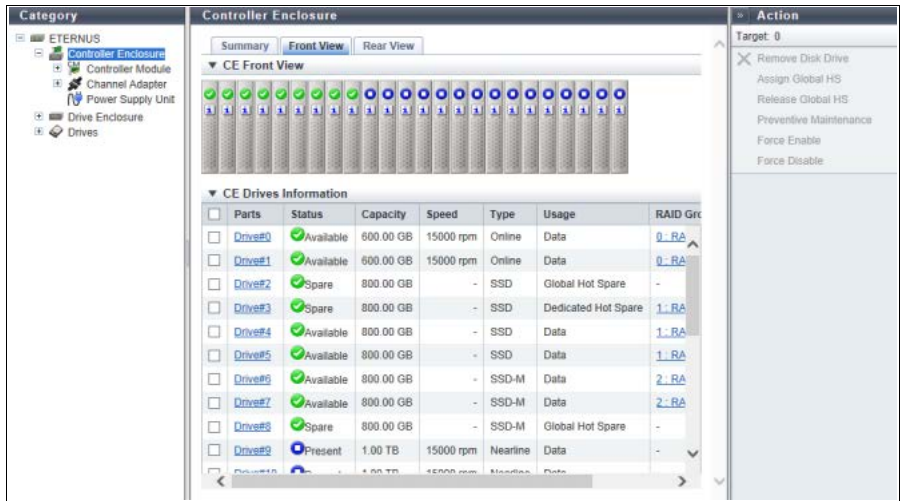
The following items are displayed in the Main area:

- **Charge Rate**  
The battery charge level for CE is displayed.  
When the battery charge level is 90% or more, "Full Charge" is displayed. When the battery charge level is less than 90%, "xx%" is displayed.  
This item is displayed for the ETERNUS DX8700 S3/DX8900 S3.
- **Cache Mode**  
The current status and the factor of the cache are displayed.  
This item is displayed for the ETERNUS DX8700 S3/DX8900 S3.
  - Write Back Mode
  - Write Through (Pinned Data)
  - Write Through (Battery)
  - Write Through (Maintenance)
  - Write Through (1CM)
- **Serial Number**  
The serial number of the CE is displayed.
- **Other Information**  
Additional information for the CE is displayed.
- **Location**  
The installation location of the thermal sensor is displayed.
  - Intake Temp
  - Exhaust Temp
- **Status**  
The status of thermal sensor is displayed.
- **Error Code**  
The error code for the thermal sensor is displayed.
- **Sensor 1**  
The temperature of CM#0 is displayed in Celsius (C) and in Fahrenheit (F).  
If the thermal information is not available due to problem such as a sensor failure, a "-" (hyphen) is displayed.
- **Sensor 2**  
The temperature of CM#1 is displayed in Celsius (C) and in Fahrenheit (F).  
If the thermal information is not available due to problem such as a sensor failure, a "-" (hyphen) is displayed.

■ Front View

The image that is displayed in this screen varies depending on the storage system model.

- For the ETERNUS DX60 S3/DX100 S3/DX200 S3, the ETERNUS AF250, and the ETERNUS DX200F



The following items are displayed in the Main area:

- Storage system image  
The front view of the CE that is installed in the ETERNUS DX/AF is displayed. The number of drives that can be installed for each CE type is as follows:
  - 2.5" CEs  
24 drives (24 drives are lined up horizontally)
  - 3.5" CEs  
12 drives (3 drives are lined up vertically and 4 drives are lined up horizontally)
  - When no drives are installed  
Blank
 The drive status is displayed with an icon. Refer to "A.5 Component Status" (page 410) for details. By clicking the drive image, the [Drive Detail] screen is displayed. Refer to "3.19 Drive Detail" (page 164) for display items.
- Parts  
The drive number is displayed. By clicking the drive number, the [Drive Detail] screen is displayed. Refer to "3.19 Drive Detail" (page 164) for display items.
- Status  
The drive status is displayed. Refer to "A.5.1 Drive Status" (page 411) for details.
- Capacity  
The capacity of the drive is displayed.

**Caution**

The drive capacity that is displayed for the SSD-L differs from the product's actual capacity. For example, the drive capacity of a "1.92TB SSD-L" is displayed as "2.00 TB".

- Speed  
The drive speed is displayed. For SSD or SSD SED, a "-" (hyphen) is displayed.
  - 15000 rpm
  - 10000 rpm
  - 7200 rpm
- Type  
The drive type is displayed.
  - Online  
SAS disks
  - Online AF  
Advanced Format supported SAS disks
  - Nearline  
Nearline SAS disks
  - Nearline AF  
Advanced Format supported Nearline SAS disks
  - SSD-M  
SSD-Ms (12 Gbit/s) (\*1)
  - SSD-L  
SSD-Ls (12 Gbit/s) (\*1)
  - SSD  
SSDs (6 Gbit/s) (\*1)
  - Online SED  
Online SEDs
  - Nearline SED  
Nearline SEDs
  - SSD-M SED  
SSD-M SEDs (\*2)
  - SSD-L SED  
SSD-L SEDs (\*2)

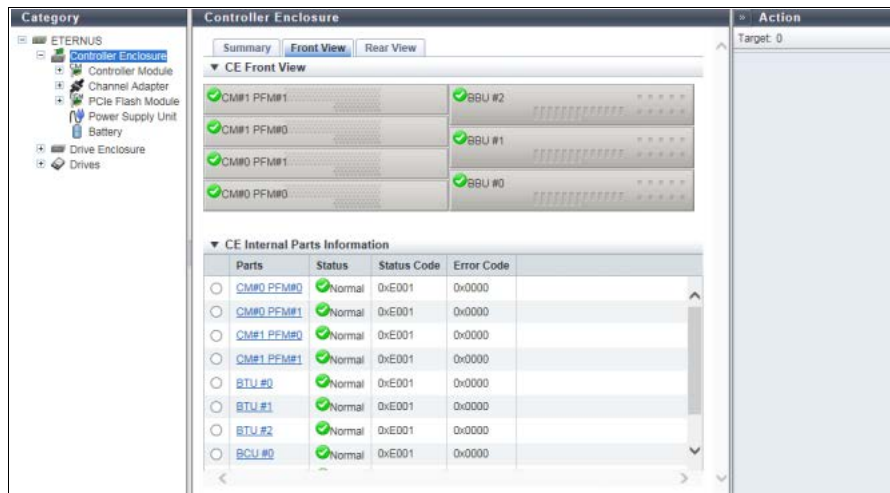
\*1: The displayed item varies depending on the interface speed (bandwidth) or the capacity of the reserved space. Unless otherwise specified, this manual refers to "SSD-M", "SSD-L", and "SSD" collectively as "SSD".

\*2: In this manual, there may be cases when "SSD SED" is used as a collective term for options and drive types.
- Usage  
The usage of the drive is displayed.
  - For a drive that is used for user data or an unused drive: Data
  - For a drive that is registered as a Global Hot Spare: Global Hot Spare
  - For a drive that is registered as a Dedicated Hot Spare: Dedicated Hot Spare
- RAID Group  
When the drive belongs to a RAID group, the RAID group number and the RAID group name are displayed. However, if the drive usage is "Dedicated Hot Spare", the RAID group number and the RAID group name are displayed even when the drive is not used as a Hot Spare. Click this item to display the [RAID Group Detail] screen.  
When the usage is not "Dedicated Hot Spare" and the drive is not registered in a RAID group, a "-" (hyphen) is displayed.



- Health  
The drive lifetime information is displayed between 0% - 100%. As the lifetime of the drive is reduced, the health level of the drive is decreased.  
A "-" (hyphen) is displayed in the following conditions:
  - The drive is neither "SSD" nor "SSD SED"
  - The lifetime information cannot be obtained

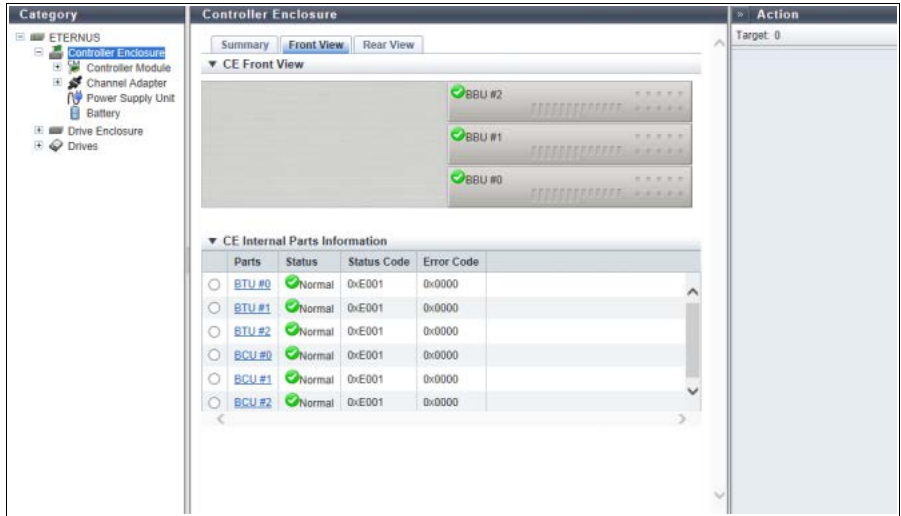
- For the ETERNUS DX500 S3/DX600 S3 and the ETERNUS AF650



The following items are displayed in the Main area:

- Storage system image  
The front view of the CE that is installed in the ETERNUS DX/AF is displayed.  
The PFM status and the Battery Backup Unit (BBU) status are indicated by icons. Refer to ["A.5 Component Status" \(page 410\)](#) for details.  
By clicking the PFM number, the [PCIe Flash Module Detail] screen is displayed. Refer to ["3.9 PCIe Flash Module Detail" \(page 137\)](#) for details.  
By clicking the BBU number, the [Battery Unit Detail] screen is displayed. Refer to ["3.2.10 Battery" \(page 97\)](#) for details.
- Parts  
The PFM number, the Battery Unit (BTU) number, and the Battery Charger Unit (BCU) number are displayed.  
By clicking the PFM number, the [PCIe Flash Module Detail] screen is displayed. Refer to ["3.9 PCIe Flash Module Detail" \(page 137\)](#) for details.  
By clicking the BTU number, the [Battery Unit Detail] screen is displayed. Refer to ["3.2.10 Battery" \(page 97\)](#) for details.  
By clicking the BCU number, the [Battery Charger Unit Detail] screen is displayed. Refer to ["3.2.10 Battery" \(page 97\)](#) for details.
- Status  
The status of each component is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The status code of each component is displayed.
- Error Code  
The error code of each component is displayed.

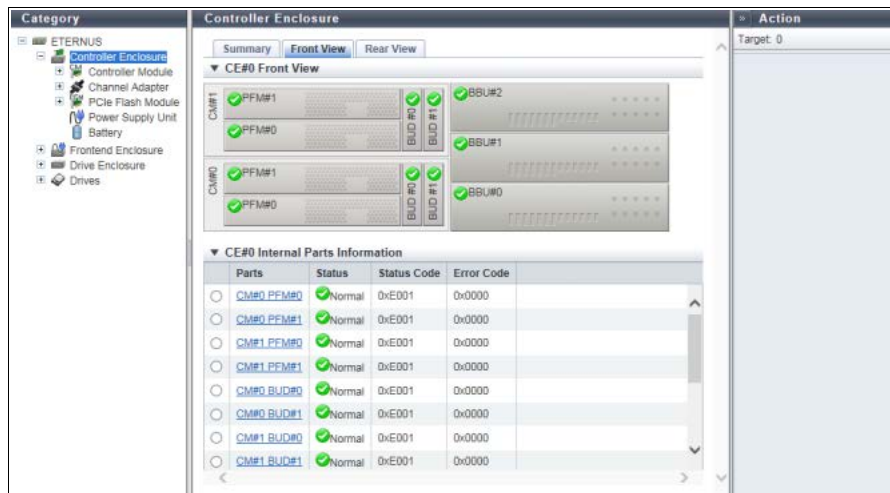
- For the ETERNUS DX8100 S3



The following items are displayed in the Main area:

- Storage system image  
The front view of the CE that is installed in the ETERNUS DX is displayed.  
The BBU status is displayed with an icon. Refer to ["A.5 Component Status" \(page 410\)](#) for details.  
By clicking the BBU number, the [Battery Unit Detail] screen is displayed. Refer to ["3.2.10 Battery" \(page 97\)](#) for details.
- Parts  
The BTU number and the BCU number are displayed  
By clicking the BTU number, the [Battery Unit Detail] screen is displayed. Refer to ["3.2.10 Battery" \(page 97\)](#) for details.  
By clicking the BCU number, the [Battery Charger Unit Detail] screen is displayed. Refer to ["3.2.10 Battery" \(page 97\)](#) for details.
- Status  
The status of each component is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The status code of each component is displayed.
- Error Code  
The error code of each component is displayed.

- For the ETERNUS DX8700 S3/DX8900 S3



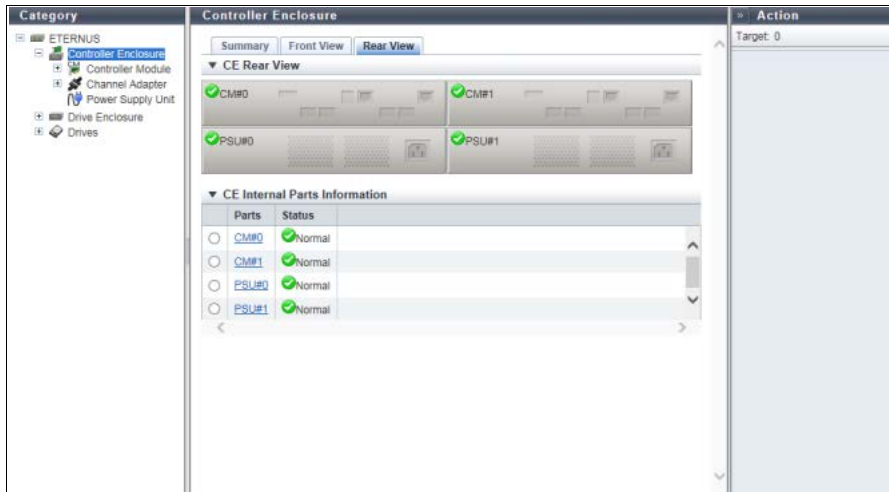
The following items are displayed in the Main area:

- Storage system image  
The front view of the CE that is installed in the ETERNUS DX is displayed.  
The PFM status, the BBU status, and the Bootup and Utility Device (BUD) status are displayed with an icon. Refer to ["A.5 Component Status" \(page 410\)](#) for details.  
By clicking the PFM number, the [PCIe Flash Module Detail] screen is displayed. Refer to ["3.9 PCIe Flash Module Detail" \(page 137\)](#) for details.  
By clicking the BBU number, the [Battery Unit Detail] screen is displayed. Refer to ["3.2.10 Battery" \(page 97\)](#) for details.  
By clicking the BUD number, the [Bootup and Utility Device Detail] screen is displayed. Refer to ["3.20 Bootup and Utility Device Detail" \(page 169\)](#) for details.
- Parts  
The PFM number, the BTU number, the BCU number, and the BUD number are displayed  
By clicking the PFM number, the [PCIe Flash Module Detail] screen is displayed. Refer to ["3.9 PCIe Flash Module Detail" \(page 137\)](#) for details.  
By clicking the BTU number, the [Battery Unit Detail] screen is displayed. Refer to ["3.2.10 Battery" \(page 97\)](#) for details.  
By clicking the BCU number, the [Battery Charger Unit Detail] screen is displayed. Refer to ["3.2.10 Battery" \(page 97\)](#) for details.  
By clicking the BUD number, the [Bootup and Utility Device Detail] screen is displayed. Refer to ["3.20 Bootup and Utility Device Detail" \(page 169\)](#) for details.
- Status  
The status of each component is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The status code of each component is displayed.
- Error Code  
The error code of each component is displayed.

## Rear View

The image that is displayed in this screen varies depending on the storage system model.

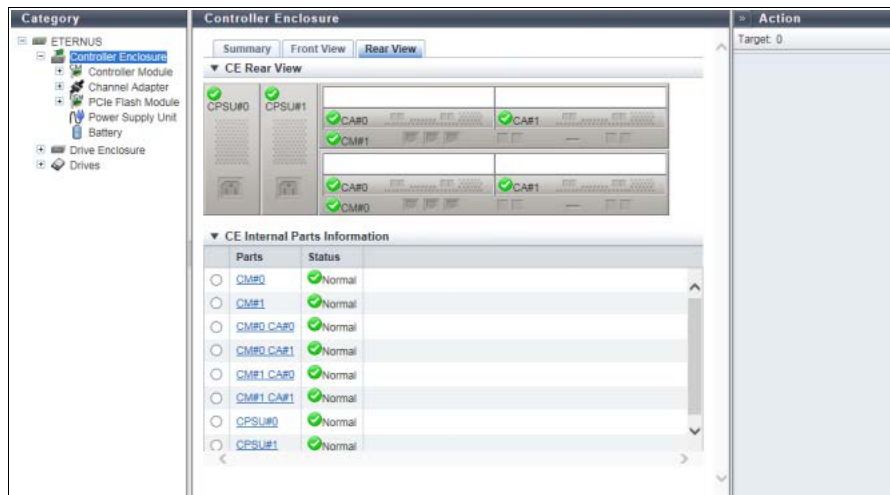
- For the ETERNUS DX60 S3/DX100 S3/DX200 S3, the ETERNUS AF250, and the ETERNUS DX200F



The following items are displayed in the Main area:

- Storage system image  
The rear view of the CE that is installed in the ETERNUS DX/AF is displayed.  
The CM status and the Power Supply Unit (PSU) status are displayed with icons.  
By clicking the CM number, the [Controller Module] screen is displayed. Refer to ["3.7 Controller Module Detail" \(page 127\)](#) for display items.  
By clicking the PSU number, the [Controller Enclosure Power Supply Unit] screen is displayed. Refer to ["3.10 PSU/CPSU \(CE\) Detail" \(page 140\)](#) for display items.
- Parts  
The CM number and the PSU number is displayed.  
By clicking the CM number, the [Controller Module] screen is displayed. Refer to ["3.7 Controller Module Detail" \(page 127\)](#) for display items.  
By clicking the PSU number, the [Controller Enclosure Power Supply Unit] screen is displayed. Refer to ["3.10 PSU/CPSU \(CE\) Detail" \(page 140\)](#) for display items.
- Status  
The status of each component is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

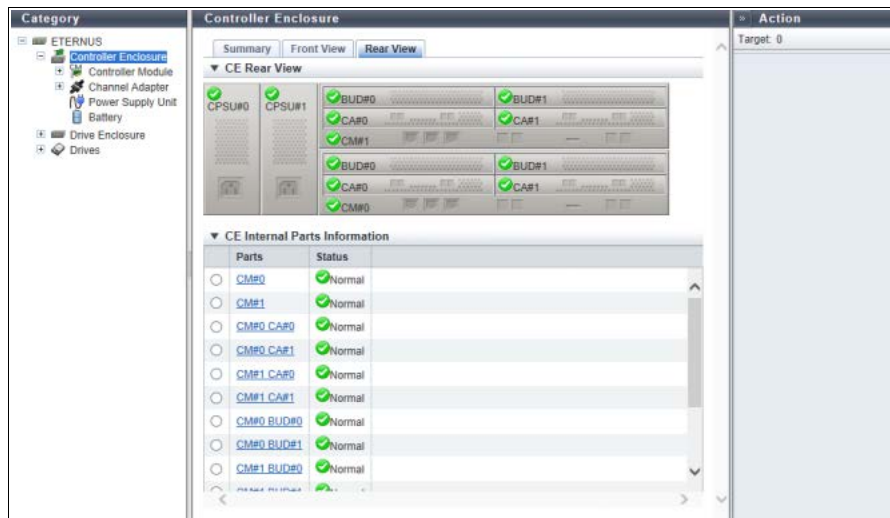
- For the ETERNUS DX500 S3/DX600 S3, the ETERNUS DX8700 S3/DX8900 S3, and the ETERNUS AF650



The following items are displayed in the Main area:

- Storage system image  
The rear view of the CE that is installed in the ETERNUS DX/AF is displayed.  
The CM status, the CA status, and the Controller enclosure Power Supply Unit (CPSU) status are displayed with icons.  
By clicking the CM number, the [Controller Module] screen is displayed. Refer to ["3.7 Controller Module Detail" \(page 127\)](#) for display items.  
By clicking the CA number, the [Channel Adapter] screen is displayed. Refer to ["3.8 Channel Adapter Detail" \(page 132\)](#) for display items.  
By clicking the CPSU number, the [Controller Enclosure Power Supply Unit] screen is displayed. Refer to ["3.10 PSU/CPSU \(CE\) Detail" \(page 140\)](#) for display items.
- Parts  
The CM number, the CA number, and the CPSU number is displayed.  
By clicking the CM number, the [Controller Module] screen is displayed. Refer to ["3.7 Controller Module Detail" \(page 127\)](#) for display items.  
By clicking the CA number, the [Channel Adapter] screen is displayed. Refer to ["3.8 Channel Adapter Detail" \(page 132\)](#) for display items.  
By clicking the CPSU number, the [Controller Enclosure Power Supply Unit] screen is displayed. Refer to ["3.10 PSU/CPSU \(CE\) Detail" \(page 140\)](#) for display items.
- Status  
The status of each component is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

- For the ETERNUS DX8100 S3



The following items are displayed in the Main area:

- Storage system image  
The rear view of the CE that is installed in the ETERNUS DX is displayed.  
The CM status, the CA status, BUD status, and the CPSU status are displayed with icons.  
By clicking the CM number, the [Controller Module] screen is displayed. Refer to ["3.7 Controller Module Detail" \(page 127\)](#) for display items.  
By clicking the CA number, the [Channel Adapter] screen is displayed. Refer to ["3.8 Channel Adapter Detail" \(page 132\)](#) for display items.  
By clicking the BUD number, the [Bootup and Utility Device Detail] screen is displayed. Refer to ["3.20 Bootup and Utility Device Detail" \(page 169\)](#) for details.  
By clicking the CPSU number, the [Controller Enclosure Power Supply Unit] screen is displayed. Refer to ["3.10 PSU/CPSU \(CE\) Detail" \(page 140\)](#) for display items.
- Parts  
The CM number, the CA number, the BUD number, and the CPSU number is displayed.  
By clicking the CM number, the [Controller Module] screen is displayed. Refer to ["3.7 Controller Module Detail" \(page 127\)](#) for display items.  
By clicking the CA number, the [Channel Adapter] screen is displayed. Refer to ["3.8 Channel Adapter Detail" \(page 132\)](#) for display items.  
By clicking the BUD number, the [Bootup and Utility Device Detail] screen is displayed. Refer to ["3.20 Bootup and Utility Device Detail" \(page 169\)](#) for details.  
By clicking the CPSU number, the [Controller Enclosure Power Supply Unit] screen is displayed. Refer to ["3.10 PSU/CPSU \(CE\) Detail" \(page 140\)](#) for display items.
- Status  
The status of each component is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

## 3.7 Controller Module Detail

The detailed CM information is displayed.

### ■ Summary

- For the ETERNUS DX8700 S3/DX8900 S3

The screenshot displays the 'Controller Module' page in the ETERNUS Web GUI. The left sidebar shows a tree view with 'Controller Module' selected. The main content area is titled 'Controller Module' and has tabs for 'Summary', 'Internal Parts', and 'View'. The 'Summary' tab is active, showing 'CE#0 CM#0 Information'.

Property	Value
Location	CE#0 CM#0
Status	Normal
Memory Size	32.00 GB
Part Number	CmPN5678901234567890
Serial Number	CmSN5678901234567890
Hardware Revision	CmREV678
MAC Address (MNT)	00-01-02-03-04-05
MAC Address (RMT)	00-01-02-03-04-05
MAC Address (FST)	00-01-02-03-04-05
Active EC	EC#1
Next EC	EC#2
CPU Clock	2.82 GHz
CPU Status	Normal
CPU Status Code	0xE001
CPU Error Code	0x0000

- For the other models



The screenshot displays the 'Controller Module' page in the ETERNUS Web GUI. The left sidebar shows a tree view with 'Controller Module' selected. The main content area is titled 'Controller Module' and has tabs for 'Summary', 'Internal Parts', and 'View'. The 'Summary' tab is active, showing 'CM#0 Information'.

Property	Value
Location	CM#0
Status	Normal
Memory Size	8.00 GB
Part Number	
Serial Number	
Hardware Revision	
MAC Address (MNT)	06-04-06-00-65-6E
MAC Address (RMT)	06-04-06-00-65-6E
MAC Address (FST)	06-04-06-00-65-6E
Active EC	EC#1
Next EC	EC#2
CPU Clock	2.81 GHz
CPU Status	Normal
CPU Status Code	0xE001
CPU Error Code	0x0000

The following items are displayed in the Main area:

- Location  
The CM number is displayed.
- Status  
The CM status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

 **Note**

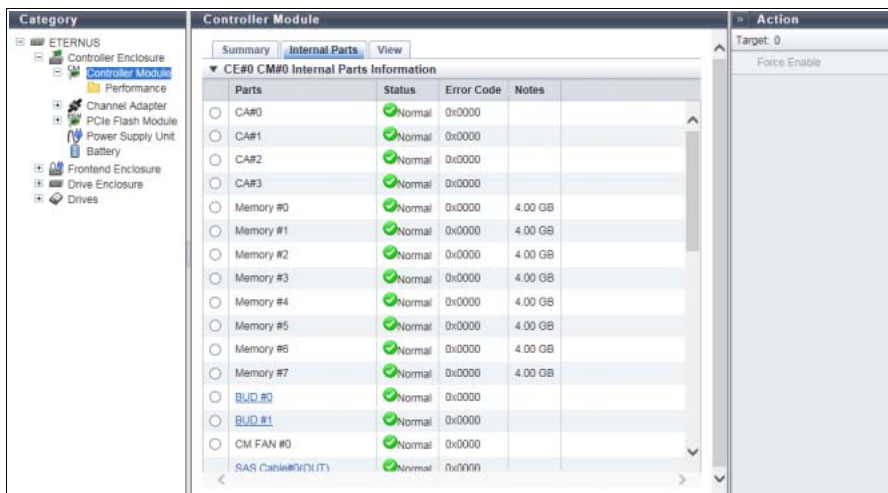
In the Unified Storage environment, " Maintenance" is displayed until a NAS system volume is created. The CM status changes to " Normal" after a NAS user volume is created and the NAS system volume is generated.

- Memory Size  
The cache memory capacity of the CM is displayed.
- Part Number  
The port number of the CM is displayed.
- Serial Number  
The serial number of the CM is displayed.
- Hardware Revision  
The hardware version of the CM is displayed.
- MAC Address (MNT)  
The MAC address of the MNT Port is displayed.
- MAC Address (RMT)  
The MAC address of the RMT Port is displayed.
- MAC Address (FST)  
The MAC address of the FST Port is displayed.  
This item is displayed for the ETERNUS DX500 S3/DX600 S3, the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3, and the ETERNUS AF650.
- Active EC  
The Edition Control (EC) number of the currently running firmware is displayed.
- Next EC  
The EC number of the firmware that is to be run at the next power-on is displayed.
- CPU#n Clock  
The clock frequency of CPU#0 or CPU#1 is displayed.
- CPU#n Status  
The status of CPU#0 or CPU#1 is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- CPU#n Status Code  
The status code of CPU#0 or CPU#1 is displayed.
- CPU#n Error Code  
The error code of CPU#0 or CPU#1 is displayed.

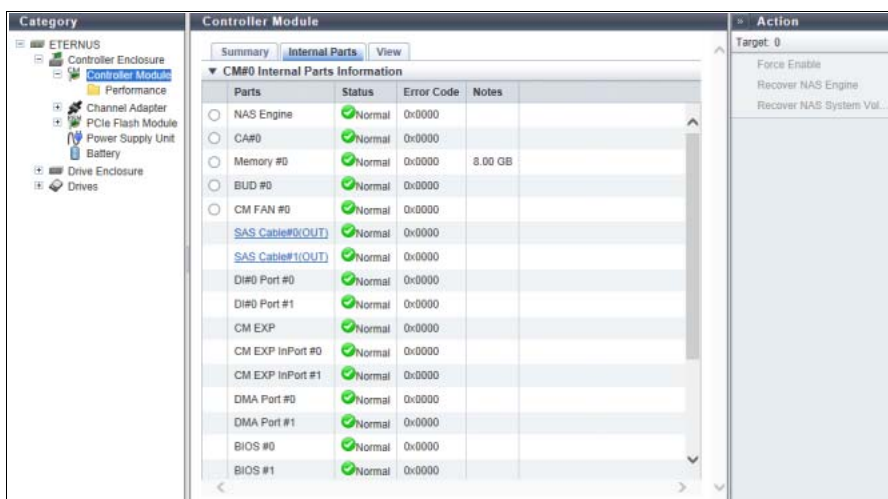


■ Internal Parts

- For the ETERNUS DX8700 S3/DX8900 S3



- For the other models

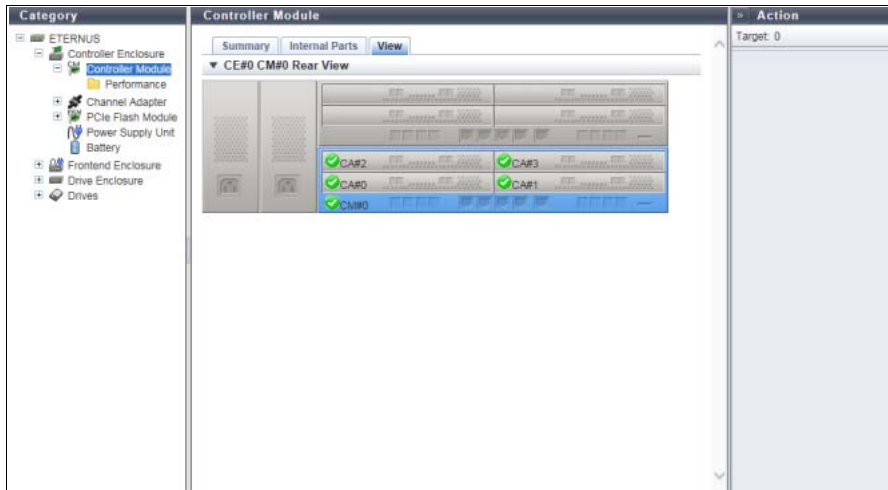


The following items are displayed in the Main area:

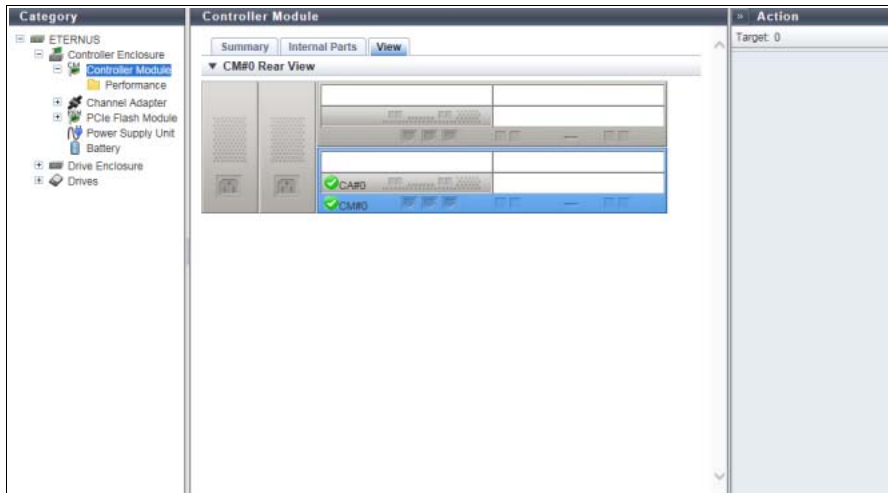
- **Parts**  
The component name and the component number are displayed.  
A link is displayed when the "Parts" is "SAS Cable". Click this link to display the [SAS Cable] screen. Refer to ["3.21 SAS Cable Detail" \(page 171\)](#) for display items.  
The following items are displayed for the ETERNUS DX8700 S3/DX8900 S3.
  - A link is displayed when the "Parts" is "Frontend Cable". Click this link to display the [Frontend Cable] screen. Refer to ["3.22 Frontend Cable Detail" \(page 172\)](#) for display items.
  - A link is displayed when the "Parts" is "Management Cable". Click this link to display the [Management Cable] screen. Refer to ["3.23 Management Cable Detail" \(page 173\)](#) for display items.
  - A link is displayed when the "Parts" is "BUD". Click this link to display the [Bootup and Utility Device Detail] screen. Refer to ["3.20 Bootup and Utility Device Detail" \(page 169\)](#) for display items.
- **Status**  
The component status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- **Error Code**  
The component error code is displayed.
- **Notes**  
Remarks are displayed.
  - When "Parts" is "Memory", the memory capacity is displayed.
  - When "Parts" is "SCU", the voltage information is displayed (for the ETERNUS DX60 S3/DX100 S3/DX200 S3, the ETERNUS AF250, and the ETERNUS DX200F).

## ■ View

- For the ETERNUS DX8700 S3/DX8900 S3



- For the other models



The following items are displayed in the Main area:

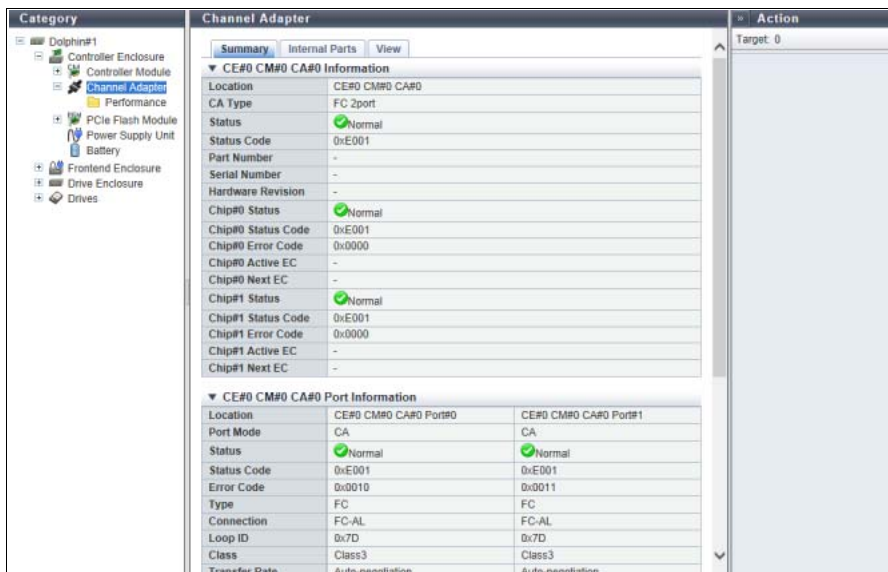
- Storage system image  
The rear view of the CE that is installed in the ETERNUS DX/AF is displayed.  
Components that are not the target CM are grayed out.  
The CM status is displayed with an icon. Refer to ["A.5 Component Status" \(page 410\)](#) for display items.

## 3.8 Channel Adapter Detail

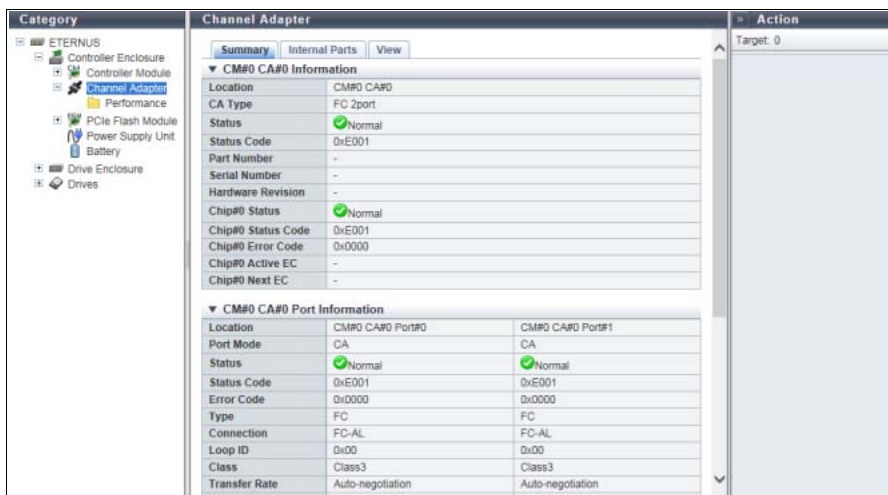
The detailed information for the Channel Adapter is displayed.

### ■ Summary

- For the ETERNUS DX8700 S3/DX8900 S3



- For the other models



The following items are displayed in the Main area:

- Location  
The CA installation location is displayed.
- CA Type  
The CA type is displayed.  
The display items in this field vary depending on the storage system model.
  - For the ETERNUS DX60 S3
    - FC 2port
    - 1G-iSCSI 2port
    - 10G Base-T iSCSI 2port
    - 6G-SAS 2port
  - For the ETERNUS DX100 S3/DX200 S3
    - FC 2port
    - 10G-iSCSI 2port
    - 1G-iSCSI 2port
    - 10G Base-T iSCSI 2port
    - 6G-SAS 2port
    - 10G-FCoE 2port
    - 10G-NAS 2port
    - 1G-NAS 4port
  - For the ETERNUS DX500 S3/DX600 S3
    - FC 2port
    - FC 4port
    - 10G-iSCSI 2port
    - 1G-iSCSI 2port
    - 1G-iSCSI-RA 2port
    - 10G-FCoE 2port
    - 10G-NAS 2port
    - 1G-NAS 4port
  - For the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3
    - FC 2port
    - FC 4port
    - 10G-iSCSI 2port
    - 1G-iSCSI 2port
    - 1G-iSCSI-RA 2port
    - 10G-FCoE 2port
  - For the ETERNUS AF250
    - FC 2port
    - 10G-iSCSI 2port
    - 10G Base-T iSCSI 2port
  - For the ETERNUS AF650
    - FC 2port
    - FC 4port
    - 10G-iSCSI 2port

- For the ETERNUS DX200F
  - FC 2port
  - 10G-iSCSI 2port

 **Note**

Note that a 1-port type CA for the ETERNUS DX60 S3/DX100 S3 is displayed as "2port" (for FC, "FC 2port" is displayed). Similarly, a 2-port type CA (1G-NAS) is displayed as "1G-NAS 4port". Available ports can be checked in the [Internal Parts] tab. Note that 1-port type CAs and 2-port type CAs are not available in some regions.

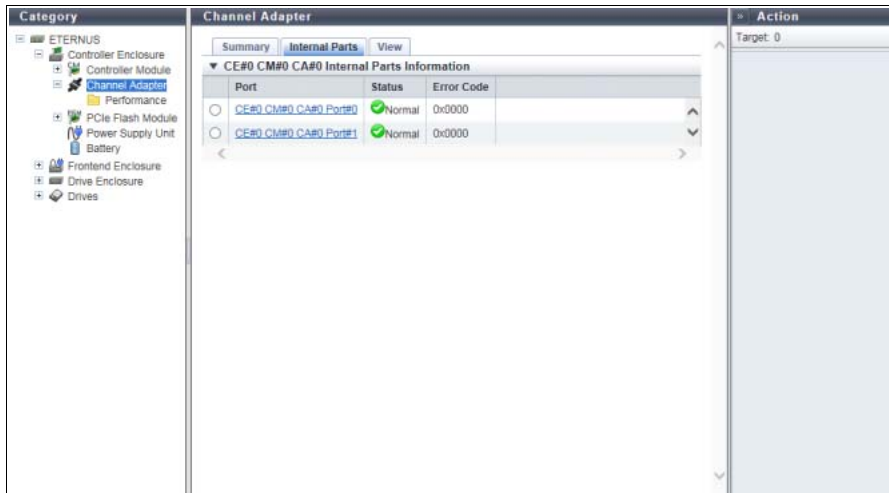
- Status  
The CA status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The CA status code is displayed.
- Part Number  
The part number of the CA is displayed.
- Serial Number  
The serial number of the CA is displayed.
- Hardware Revision  
The hardware version of the CA is displayed.
- Chip#n Status  
The status of Chip#0 or Chip#1 is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Chip#n Status Code  
The status code of Chip#0 or Chip#1 is displayed.
- Chip#n Error Code  
The error code of Chip#0 or Chip#1 is displayed.
- Chip#n Active EC  
A "-" (hyphen) is displayed.
- Chip#n Next EC  
A "-" (hyphen) is displayed.

- CM#x CA#y Port Information

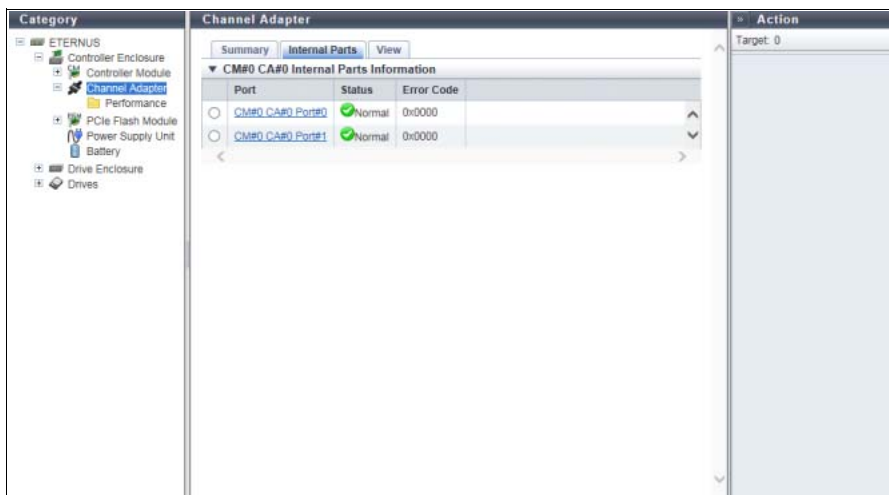
The detailed information of all the ports is displayed. Refer to "[FC port](#)" (page 174), "[iSCSI port](#)" (page 180), "[SAS Port](#)" (page 184), "[FCoE port](#)" (page 186), or "[NAS port](#)" (page 188) for display contents.

- Internal Parts

- For the ETERNUS DX8700 S3/DX8900 S3



- For the other models



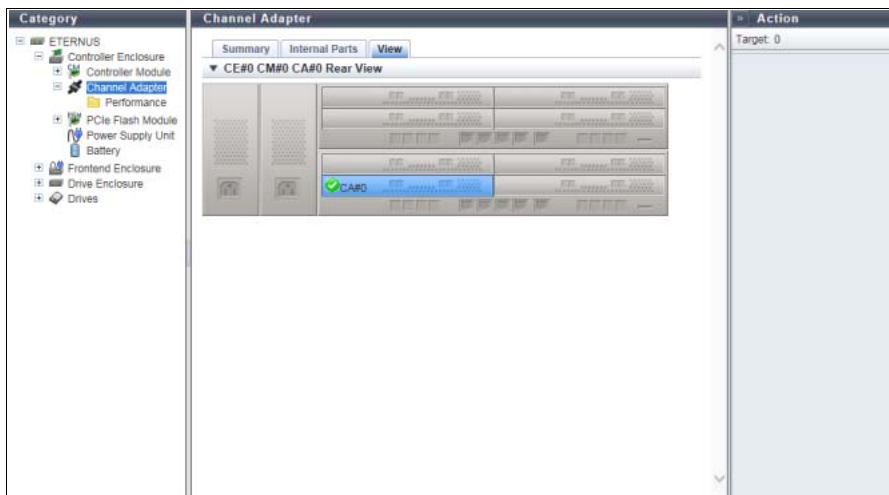
The following items are displayed in the Main area:

- Port  
The CA port number is displayed. By clicking this item, the [Port] screen is displayed. Refer to "[3.24 Port Detail](#)" (page 174) for display items.
- Status  
The CA port status is displayed. Refer to "[A.5 Component Status](#)" (page 410) for details.

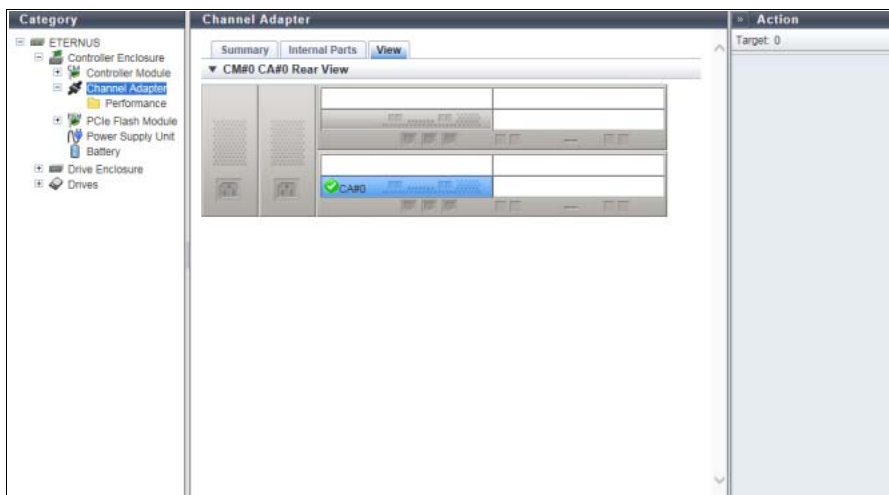
- Error Code  
The CA port error code is displayed.

■ View

- For the ETERNUS DX8700 S3/DX8900 S3



- For the other models



The following items are displayed in the Main area:

- Storage system image  
The rear view of the CE that is installed in the ETERNUS DX/AF is displayed.  
Components that are not the target CA are grayed out.  
The CA status is displayed with an icon. Refer to ["A.5 Component Status" \(page 410\)](#) for details.



## 3.9 PCIe Flash Module Detail

The detailed information for the PFM is displayed.

### ■ Summary

- For the ETERNUS DX8700 S3/DX8900 S3



- For the other models

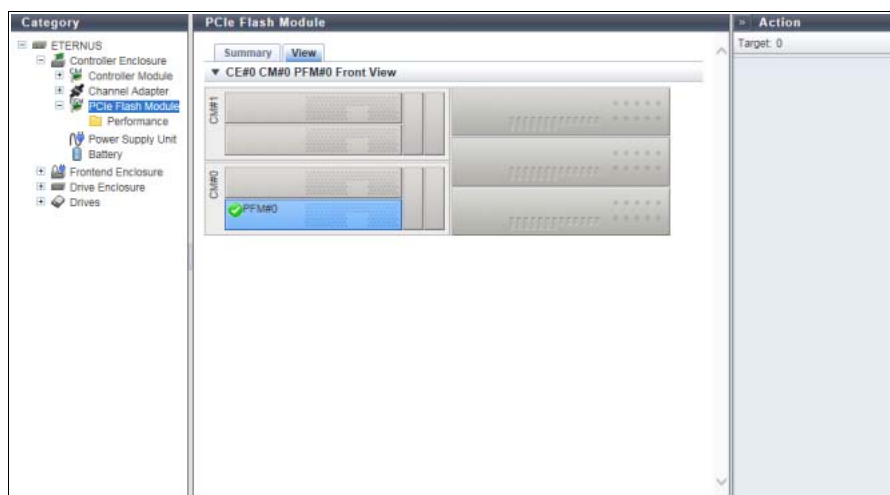


The following items are displayed in the Main area:

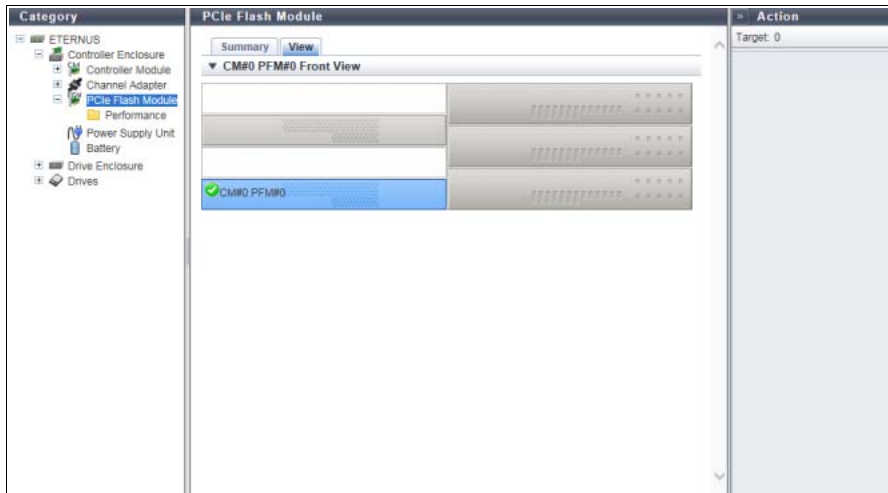
- Location  
The installation location of the PFM is displayed.
- Type  
The PFM type is displayed.
- Capacity  
The PFM capacity is displayed.
- Status  
The PFM status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Health  
The lifetime information of the PFM is displayed.
- Status Code  
The PFM status code is displayed.
- Error Code  
The PFM error code is displayed.
- Part Number  
The part number of the PFM is displayed.
- Serial No.  
The serial number of the PFM is displayed.
- Hardware Revision  
The hardware version of the PFM is displayed.

## ■ View

- For the ETERNUS DX8700 S3/DX8900 S3



- For the other models



The following items are displayed in the Main area:

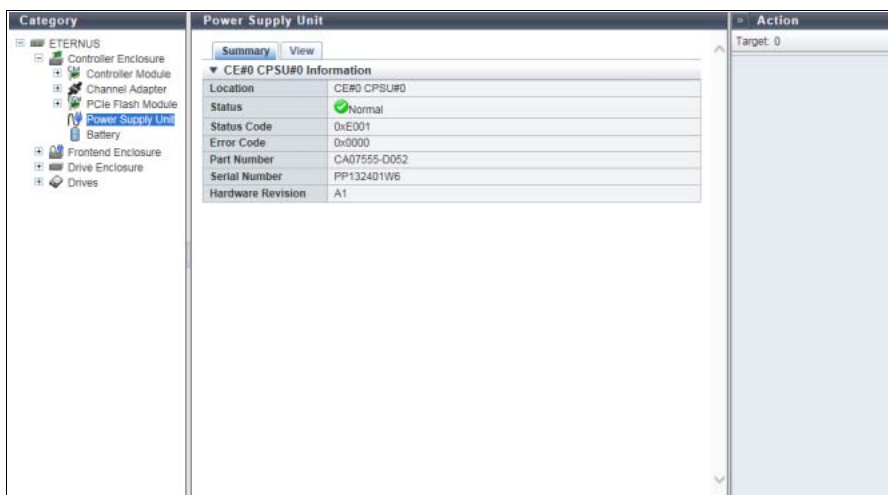
- Storage system image  
The front view of the CEs (CMs) that are installed in the ETERNUS DX is displayed.  
Components that are not the target PFM are grayed out.  
The PFM status is displayed with an icon. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

## 3.10 PSU/CPSU (CE) Detail

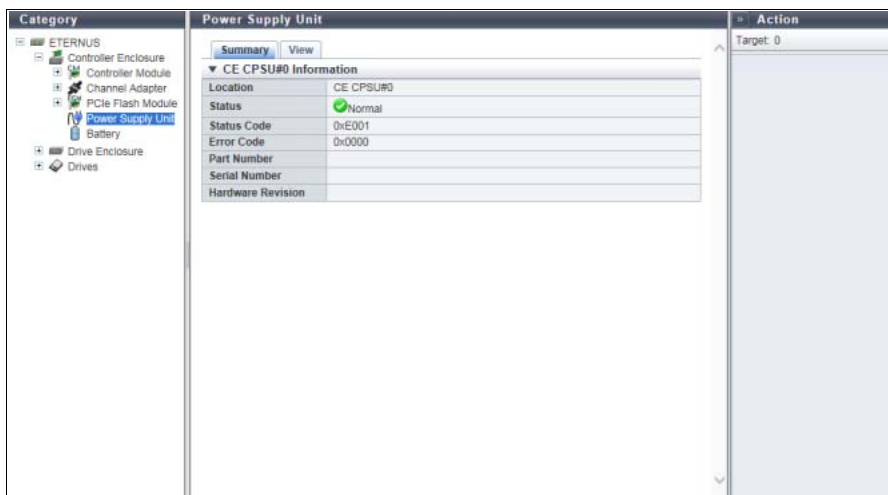
The detailed information for the PSU or the CPSU is displayed.

### ■ Summary

- For the ETERNUS DX8700 S3/DX8900 S3



- For the other models



The following items are displayed in the Main area:

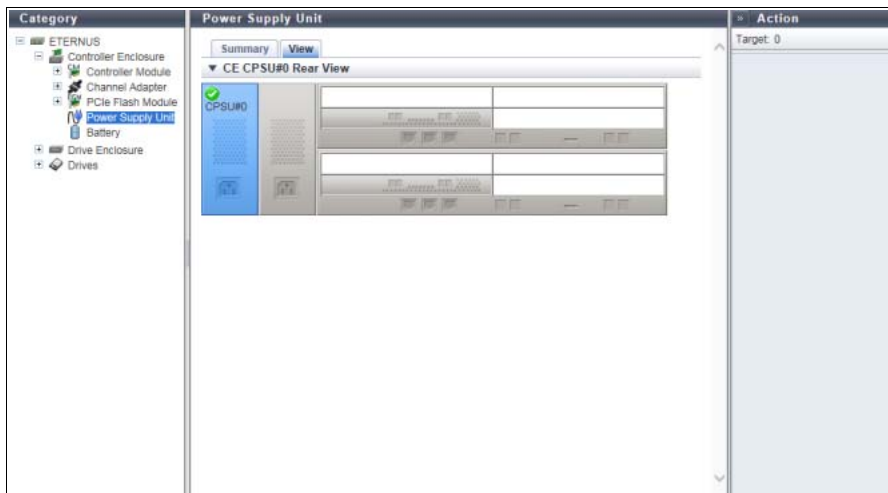
- Location  
The installation location of the PSU or the CPSU is displayed.  
For the ETERNUS DX8700 S3/DX8900 S3, the CE number is displayed.
- Status  
The PSU status or the CPSU status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The status code of PSU or CPSU is displayed.
- Error Code  
The error code of PSU or CPSU is displayed.
- Part Number  
The part number of PSU or CPSU is displayed.
- Serial Number  
The serial number of PSU or CPSU is displayed.
- Hardware Revision  
The hardware version of PSU or CPSU is displayed.

## ■ View

- For the ETERNUS DX8700 S3/DX8900 S3



- For the other models



The following items are displayed in the Main area:

- Storage system image  
The rear view of the CE that is installed in the ETERNUS DX/AF is displayed.  
Components that are not the target PSU or CPSU are grayed out.  
The PSU status or the CPSU status is displayed with an icon. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

## 3.11 Frontend Router Detail

The detailed information for the FRT is displayed.

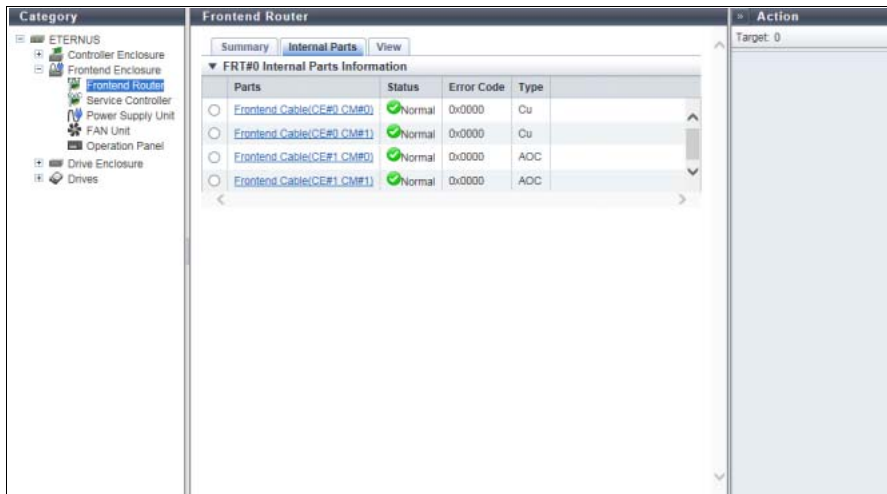
### ■ Summary



The following items are displayed in the Main area:

- Location  
The FRT number is displayed.
- Status  
The FRT status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The FRT status code is displayed.
- Error Code  
The FRT error code is displayed.
- Part Number  
The part number of the FRT is displayed.
- Serial No.  
The serial number of the FRT is displayed.
- Hardware Revision  
The hardware version of the FRT is displayed.

## Internal Parts

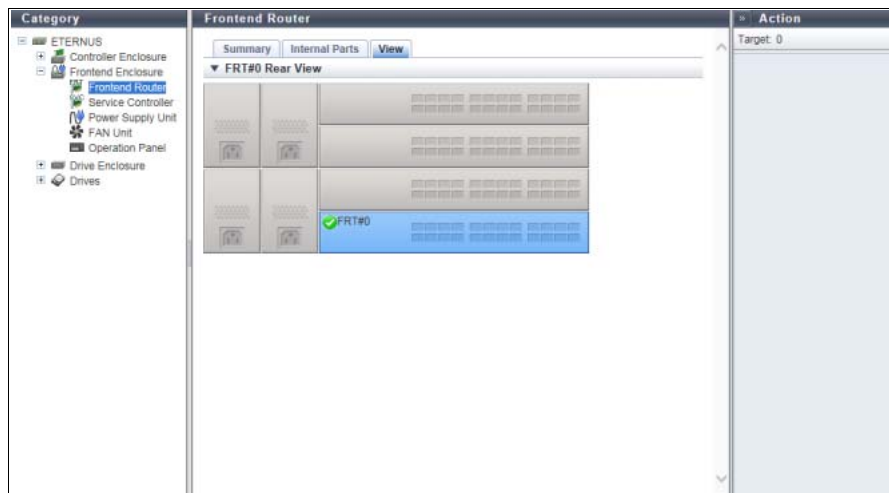


The following items are displayed in the Main area:

- **Parts**  
Information for the Frontend cable that connects between the CM and FRT is displayed. By clicking this item, the [Frontend Cable Detail] screen is displayed. Refer to ["3.22 Frontend Cable Detail" \(page 172\)](#) for display items.
- **Status**  
The Frontend cable status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- **Error Code**  
The Frontend cable error code is displayed.
- **Type**  
The Frontend cable type is displayed.
  - "Cu" is displayed when the connection cable between CM and FRT is a Frontend electric cable.
  - "AOC (Active Optical Cable)" is displayed when the connection cable between CM and FRT is a Frontend optical cable.



■ View



The following items are displayed in the Main area:

- Storage system image  
The rear view of the FE that is installed in the ETERNUS DX/AF is displayed.  
Components that are not the target FRT are grayed out.  
The FRT status is displayed with an icon. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

## 3.12 Service Controller Detail

The detailed information for the SVC is displayed.

### ■ Summary



The following items are displayed in the Main area:

- Location  
The SVC number is displayed.
- Status  
The SVC status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The SVC status code is displayed.
- Error Code  
The SVC error code is displayed.
- Part Number  
The part number of the SVC is displayed.
- Serial No.  
The serial number of the SVC is displayed.
- Hardware Revision  
The hardware version of the SVC is displayed.
- Active EC  
The EC number of the current controller firmware is displayed.
- Next EC  
The EC number of the controller firmware that is to be run at the next power-on is displayed.
- Firmware Version  
The current controller firmware version is displayed.

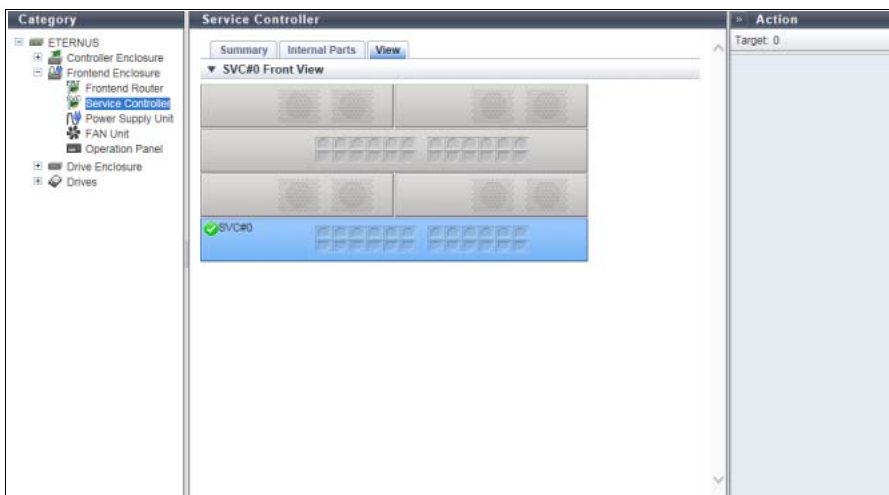
■ Internal Parts



The following items are displayed in the Main area:

- Parts  
 Information for the Management cable that connects between the CM and SVC is displayed. By clicking this item, the [Management Cable Detail] screen is displayed. Refer to ["3.23 Management Cable Detail" \(page 173\)](#) for display items.
- Status  
 The Management cable status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Error Code  
 The Management cable error code is displayed.

■ View



The following items are displayed in the Main area:

- Storage system image  
 The front view of the FE that is installed in the ETERNUS DX is displayed. Components that are not the target SVC are grayed out. The SVC status is displayed with an icon. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

## 3.13 FE Power Supply Unit Detail

The detailed information for the FPSU is displayed.

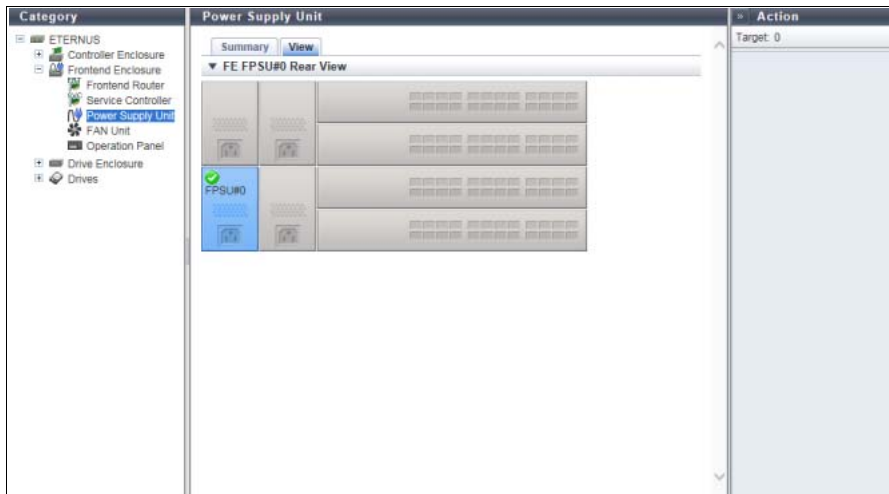
### ■ Summary



The following items are displayed in the Main area:

- Location  
The installation location of the FPSU is displayed.
- Status  
The FPSU status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The FPSU status code is displayed.
- Error Code  
The FPSU error code is displayed.
- Part Number  
The part number of the FPSU is displayed.
- Serial No.  
The serial number of the FPSU is displayed.
- Hardware Revision  
The hardware version of the FPSU is displayed.

■ View



The following items are displayed in the Main area:

- Storage system image  
The rear view of the FE that is installed in the ETERNUS DX is displayed.  
Components that are not the target FPSU are grayed out.  
The FPSU status is displayed with an icon. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

## 3.14 FAN Unit Detail

The detailed information for the FANU is displayed.

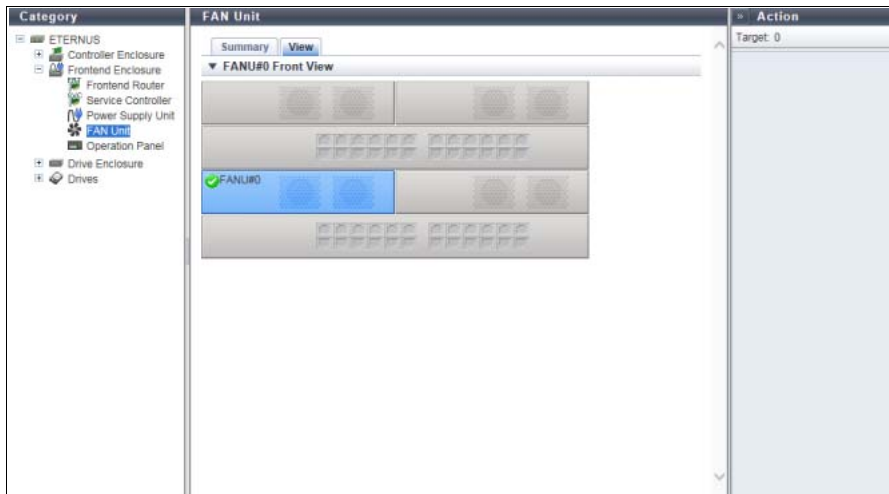
### ■ Summary



The following items are displayed in the Main area:

- Location  
The FANU number is displayed.
- Status  
The FANU status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The FANU status code is displayed.
- Error Code  
The FANU error code is displayed.
- Part Number  
The part number of the FANU is displayed.
- Serial No.  
The serial number of the FANU is displayed.
- Hardware Revision  
The hardware version of the FANU is displayed.

■ View



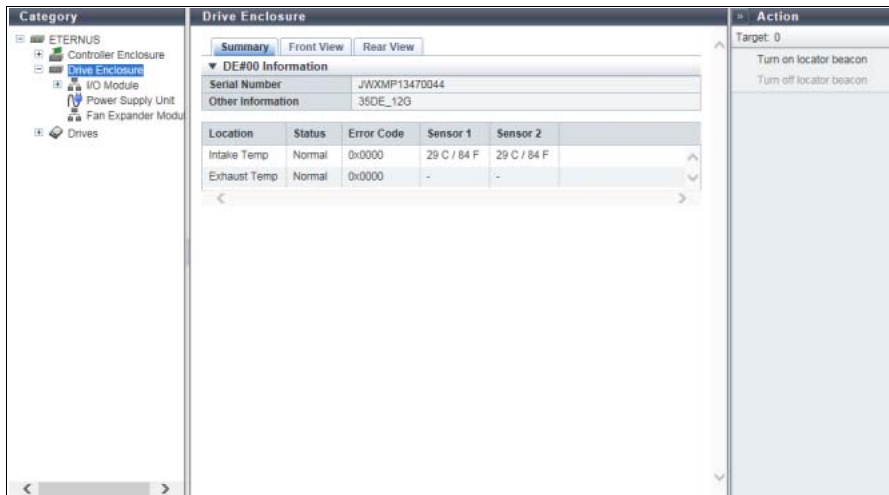
The following items are displayed in the Main area:

- Storage system image  
The front view of the FE that is installed in the ETERNUS DX is displayed.  
Components that are not the target FANU are grayed out.  
The FANU status is displayed with an icon. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

## 3.15 Drive Enclosure Detail

The detailed information of the DE is displayed.

### ■ Summary



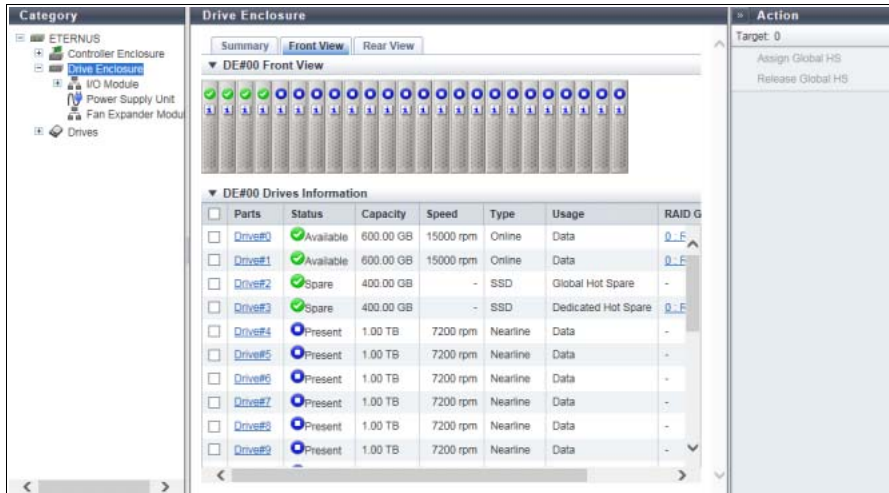
The following items are displayed in the Main area:

- Serial Number  
The serial number of the DE is displayed.
- Other Information  
Additional information for the DE is displayed.
- Location  
The installation location of the thermal sensor is displayed.
  - Intake Temp
  - Exhaust Temp
- Status  
The thermal sensor status is displayed.
- Error Code  
The error code for the thermal sensor is displayed.
- Sensor 1  
For the "Intake Temp" field, temperature of the IOM#0 is displayed in Celsius (C) and in Fahrenheit (F). If the thermal information is not available due to problem such as a sensor failure, a "-" (hyphen) is displayed.  
For the "Exhaust Temp" field, a "-" (hyphen) is usually displayed.
- Sensor 2  
For the "Intake Temp" field, temperature of the IOM#1 is displayed in Celsius (C) and in Fahrenheit (F). If the thermal information is not available due to problem such as a sensor failure, a "-" (hyphen) is displayed.  
For the "Exhaust Temp" field, a "-" (hyphen) is usually displayed.  
This item is not displayed when the ETERNUS DX is a 1CM model.

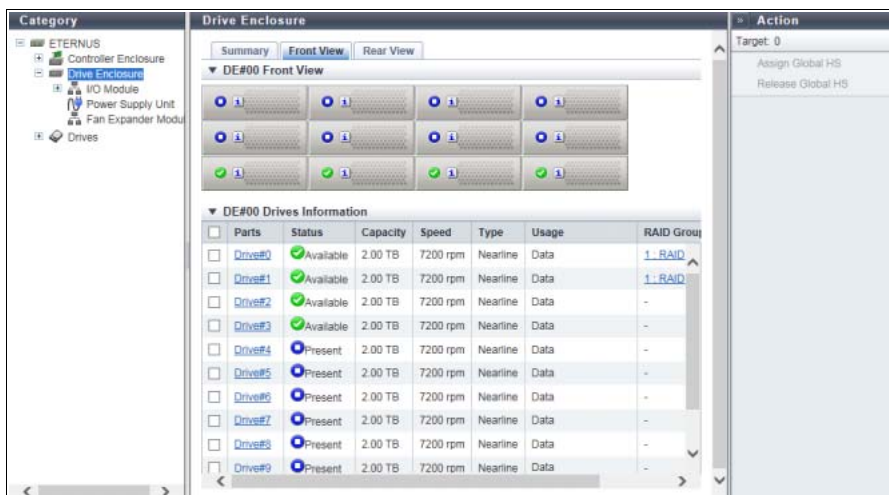


■ Front View

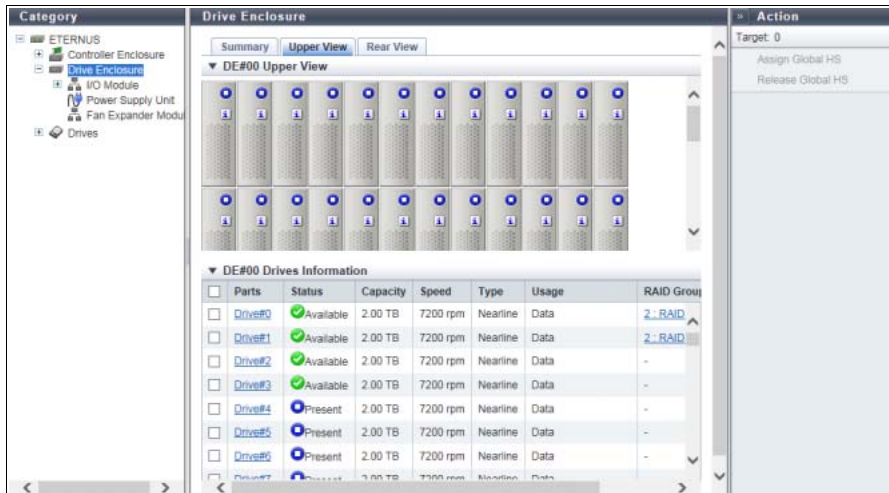
● For 2.5" DEs



● For 3.5" DEs



- For 3.5" high density DEs



The following items are displayed in the Main area:

- Storage system image  
The front view of the DEs that are installed in the ETERNUS DX/AF is displayed. The number of drives that can be installed for each DE type is as follows:
  - 2.5" DEs  
24 drives (24 drives are lined up horizontally)
  - 3.5" DEs  
12 drives (3 drives are lined up vertically and 4 drives are lined up horizontally)
  - 3.5" high density DEs  
60 drives (5 drives are lined up vertically and 12 drives are lined up horizontally)
  - When no drives are installed  
Blank

The drive status is displayed with an icon. Refer to ["A.5 Component Status" \(page 410\)](#) for details. By clicking this item, the [Drives] screen is displayed. Refer to ["3.19 Drive Detail" \(page 164\)](#) for details.

- Parts  
The drive number is displayed. By clicking this item, the [Drives] screen is displayed. Refer to ["3.19 Drive Detail" \(page 164\)](#) for details.
- Status  
The drive status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Capacity  
The capacity of the drive is displayed.

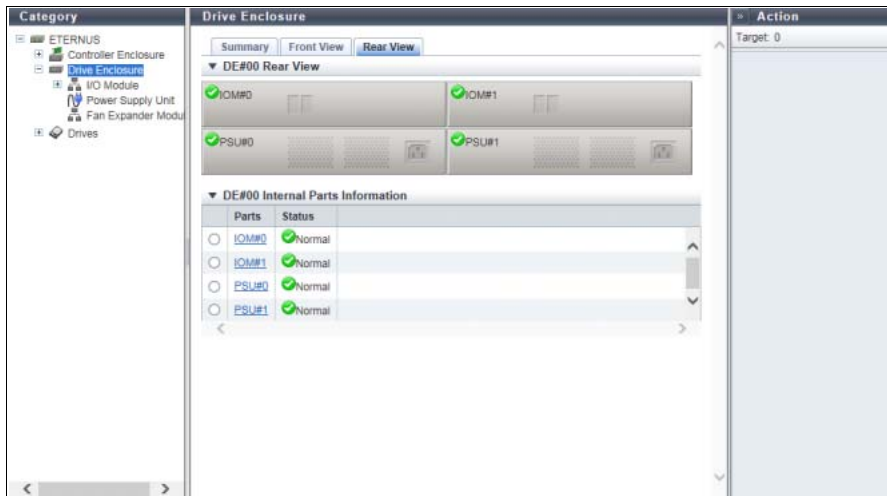
**Caution**

The drive capacity that is displayed for the SSD-L differs from the product's actual capacity. For example, the drive capacity of a "1.92TB SSD-L" is displayed as "2.00 TB".

- Speed  
The drive speed is displayed. For SSD or SSD SED, a "-" (hyphen) is displayed.
  - 15000 rpm
  - 10000 rpm
  - 7200 rpm

- Type  
The drive type is displayed.
  - Online  
SAS disks
  - Online AF  
Advanced Format supported SAS disks
  - Nearline  
Nearline SAS disks
  - Nearline AF  
Advanced Format supported Nearline SAS disks
  - SSD-M  
SSD-Ms (12 Gbit/s) (\*1)
  - SSD-L  
SSD-Ls (12 Gbit/s) (\*1)
  - SSD  
SSDs (6 Gbit/s) (\*1)
  - Online SED  
Online SEDs
  - Nearline SED  
Nearline SEDs
  - SSD-M SED  
SSD-M SEDs (\*2)
  - SSD-L SED  
SSD-L SEDs (\*2)
- \*1: The displayed item varies depending on the interface speed (bandwidth) or the capacity of the reserved space. Unless otherwise specified, this manual refers to "SSD-M", "SSD-L", and "SSD" collectively as "SSD".
- \*2: In this manual, there may be cases when "SSD SED" is used as a collective term for options and drive types.
- Usage  
The usage of the drive is displayed.
  - For a drive that is used for user data or an unused drive  
Data
  - For a drive that is registered as a Global Hot Spare  
Global Hot Spare
  - For a drive that is registered as a Dedicated Hot Spare  
Dedicated Hot Spare
- RAID Group  
When the drive belongs to a RAID group, the RAID group number and the RAID group name are displayed. However, if the drive usage is "Dedicated Hot Spare", the RAID group number and the RAID group name are displayed even when the drive is not used as a Hot Spare. Click this item to display the [RAID Group Detail] screen.  
When the usage is not "Dedicated Hot Spare" and the drive is not registered in a RAID group, a "-" (hyphen) is displayed.
- Health  
The drive lifetime information is displayed between 0% - 100%. As the lifetime of the drive is reduced, the health level of the drive is decreased.  
A "-" (hyphen) is displayed in the following conditions:
  - The drive is neither "SSD" nor "SSD SED"
  - The lifetime information cannot be obtained

## ■ Rear View



The following items are displayed in the Main area:

- Storage system image  
The rear view of the DE that is installed in the ETERNUS DX/AF is displayed.  
The status of the IOM, the PSU, and the FEM are displayed with icons. Refer to ["A.5 Component Status" \(page 410\)](#) for details.  
By clicking the IOM number, the [I/O Module] screen is displayed. Refer to ["3.16 I/O Module Detail" \(page 157\)](#) for display items.  
By clicking the PSU number, the [Power Supply Unit] screen is displayed. Refer to ["3.17 Power Supply Unit \(DE\) Detail" \(page 159\)](#) for display items.  
By clicking the FEM number, the [Fan Expander Module] screen is displayed. Refer to ["3.18 Fan Expander Module Detail" \(page 161\)](#) for display items.
- Parts  
The IOM number, the PSU number, or the FEM number is displayed.  
By clicking the IOM number, the [I/O Module] screen is displayed. Refer to ["3.16 I/O Module Detail" \(page 157\)](#) for display items.  
By clicking the PSU number, the [Power Supply Unit] screen is displayed. Refer to ["3.17 Power Supply Unit \(DE\) Detail" \(page 159\)](#) for display items.  
By clicking the FEM number, the [Fan Expander Module] screen is displayed. Refer to ["3.18 Fan Expander Module Detail" \(page 161\)](#) for display items.
- Status  
The status of IOM, PSU, or FEM is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

## 3.16 I/O Module Detail

The detailed information of IOM is displayed.

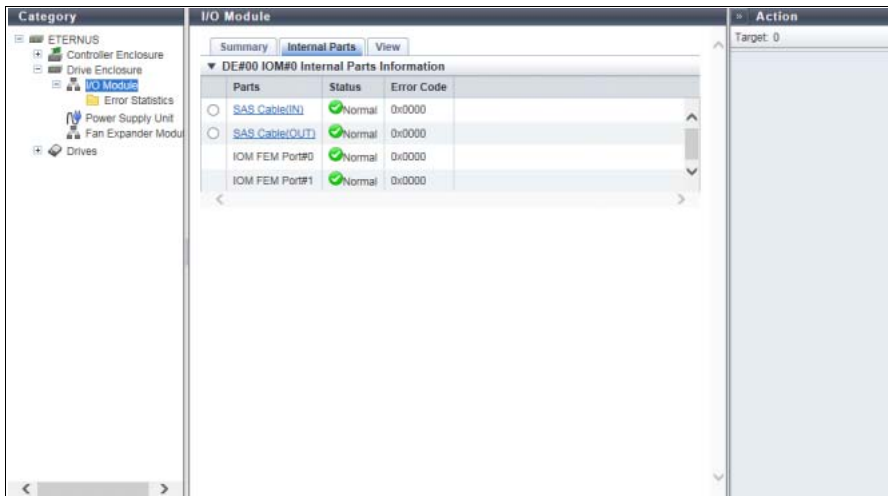
### ■ Summary



The following items are displayed in the Main area:

- Status  
The IOM status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The IOM status code is displayed.
- Error Code  
The IOM error code is displayed.
- WWN  
The IOM WWN is displayed.
- Part Number  
The part number of the IOM is displayed.
- Serial Number  
The serial number of the IOM is displayed.
- Firmware Version  
The current controller firmware version is displayed.

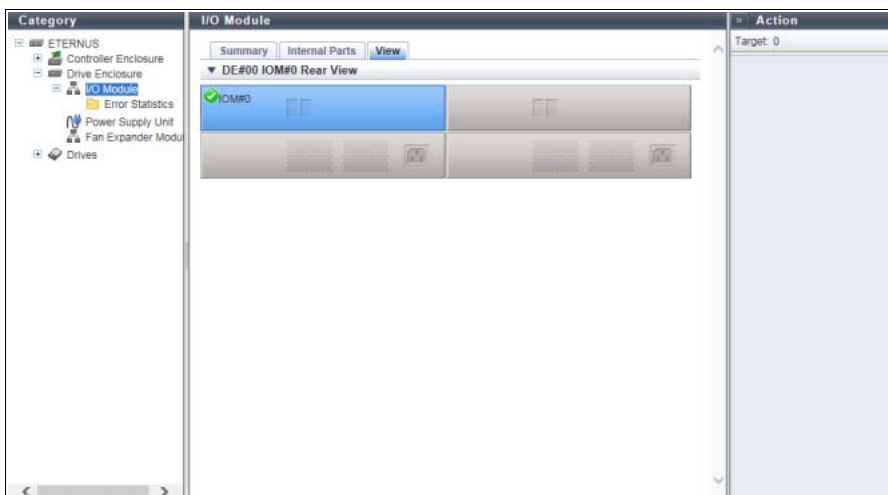
### Internal Parts



The following items are displayed in the Main area:

- **Parts**  
The internal parts of the IOM are displayed. A link is displayed when the part is "SAS Cable". Click this item to display the [SAS Cable Detail] screen. Refer to ["3.21 SAS Cable Detail" \(page 171\)](#) for display items. When the part is a high density DE, "IOM FEM Port#y" (y: 0, 1) is displayed.
- **Status**  
The internal parts status of the IOM is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- **Error Code**  
The error code for the internal parts of the IOM is displayed.

### View



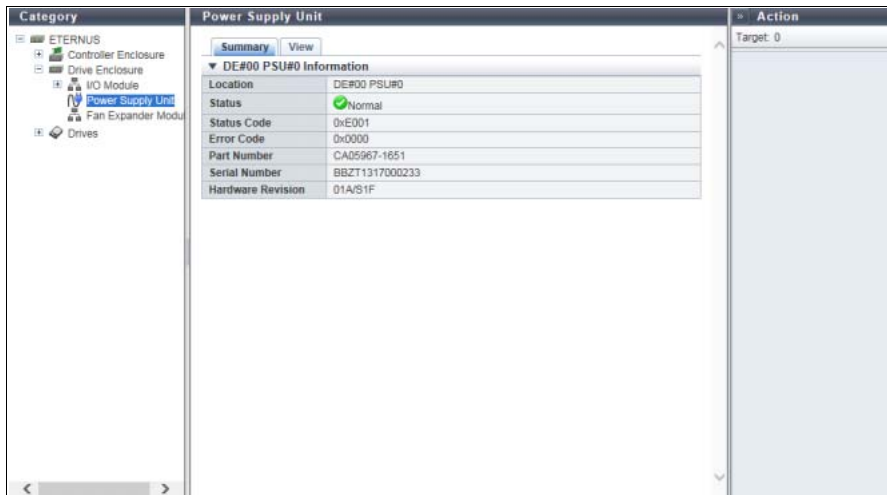
The following items are displayed in the Main area:

- **Storage system image**  
The rear view of the DE that is installed in the ETERNUS DX/AF is displayed. Components that are not the target IOM are grayed out. The IOM status is displayed with an icon. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

## 3.17 Power Supply Unit (DE) Detail

The detailed information of PSU is displayed.

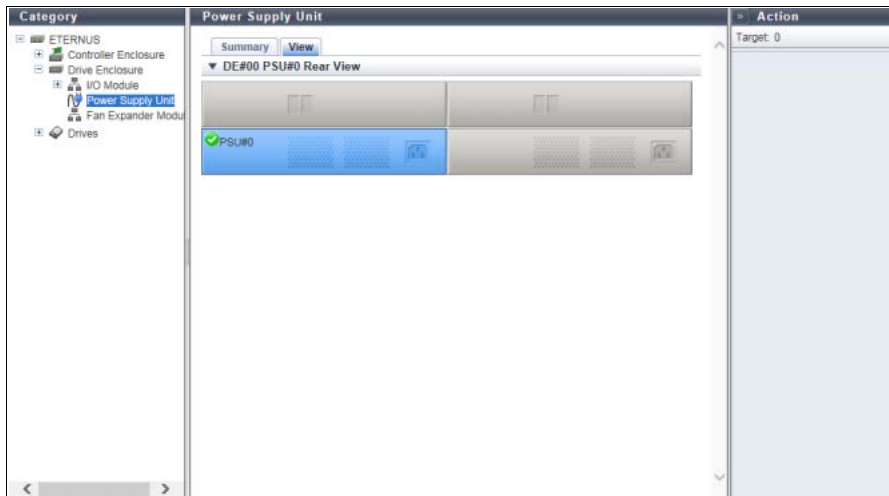
### ■ Summary



The following items are displayed in the Main area:

- Location  
The installation location of PSU is displayed.
- Status  
The PSU status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The PSU status code is displayed.
- Error Code  
The PSU error code is displayed.
- Part Number  
The part number of the PSU is displayed.
- Serial Number  
The serial number of the PSU is displayed.
- Hardware Revision  
The hardware version of the PSU is displayed.

■ View



The following items are displayed in the Main area:

- Storage system image  
The rear view of the DE that is installed in the ETERNUS DX/AF is displayed.  
Components that are not the target PSU are grayed out.  
The PSU status is displayed with an icon. Refer to ["A.5 Component Status" \(page 410\)](#) for details.



## 3.18 Fan Expander Module Detail

The detailed information of Fan Expander Module (FEM) is displayed.

### ■ Summary

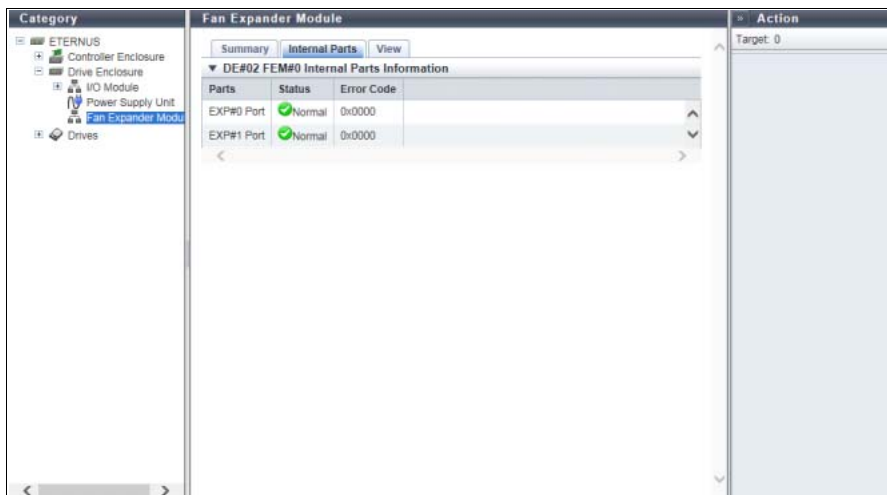


The following items are displayed in the Main area:

- Location  
The location information of the FEM is displayed.
- Status  
The FEM status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The FEM status code is displayed
- Part Number  
The part number of the FEM is displayed.
- Serial No.  
The serial number of the FEM is displayed.
- Hardware Revision  
The hardware version of the FEM is displayed.
- EXP#n Status  
The status of FEM Expander#n (n=0,1) is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- EXP#n Status Code  
The status code of FEM Expander#n (n=0,1) is displayed.
- EXP#n Error Code  
The error code of FEM Expander#n (n=0,1) is displayed.
- EXP#n WWN  
The WWN of FEM Expander#n (n=0,1) is displayed.

- EXP#n Active EC  
The EC number of Expander#n (n=0,1) that is currently running is displayed.
- EXP#n Next EC  
The EC number of FEM Expander#n (n=0,1) that is to be run after the next power-on is displayed.
- EXP#n Firmware Version  
The revision number of the firmware that is currently running in FEM Expander#n (n=0,1) is displayed.

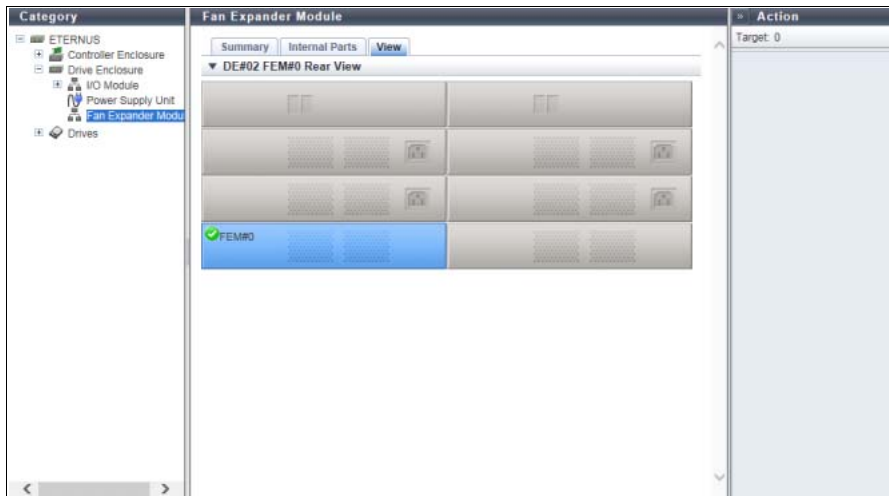
## ■ Internal Parts



The following items are displayed in the Main area:

- Parts  
The component information is displayed.
- Status  
The component status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Error Code  
The component error code is displayed.

■ View



The following items are displayed in the Main area:

- Storage system image  
The rear view of the DE that is installed in the ETERNUS DX is displayed.  
Components that are not the target FEM are grayed out.  
The FEM status is displayed with an icon. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

## 3.19 Drive Detail

The detailed information of the drive is displayed.

### ■ Summary



The following items are displayed in the Main area:

- Location  
The detailed information of the drive is displayed.
- Status  
The drive status is displayed. Refer to ["A.5.1 Drive Status" \(page 411\)](#) for details.
- Status Code  
The drive status code is displayed.
- Error Code  
The drive error code is displayed.
- Capacity  
The capacity of the drive is displayed.

### ▶ Caution

The drive capacity that is displayed for the SSD-L differs from the product's actual capacity. For example, the drive capacity of a "1.92TB SSD-L" is displayed as "2.00 TB".

- **Type**  
The drive type is displayed.
  - 2.5" Online
  - 2.5" Online AF
  - 2.5" Nearline
  - 2.5" Nearline AF
  - 3.5" Online
  - 3.5" Online AF
  - 3.5" Nearline
  - 3.5" Nearline AF
  - 2.5" SSD-M
  - 3.5" SSD-M
  - 2.5" SSD-L
  - 3.5" SSD-L
  - 2.5" SSD
  - 3.5" SSD
  - 2.5" Online SED
  - 3.5" Nearline SED
  - 2.5" SSD-M SED
  - 3.5" SSD-M SED
  - 2.5" SSD-L SED
  - 3.5" SSD-L SED
- **Speed**  
The drive speed is displayed. For SSD or SSD SED, a "-" (hyphen) is displayed.
  - 15000 rpm
  - 10000 rpm
  - 7200 rpm
- **Health**  
The drive lifetime information is displayed between 0% - 100%. As the lifetime of the drive is reduced, the health level of the drive is decreased.  
This item is displayed when the drive type is "SSD" and "SSD SED". When the lifetime information cannot be obtained, a "-" (hyphen) is displayed.
- **Usage**  
The usage of the drive is displayed.
  - Data
  - Global Hot Spare
  - Dedicated Hot Spare
- **RAID Group**  
When the drive belongs to a RAID group, the RAID group number and the RAID group name are displayed. However, if the drive usage is "Dedicated Hot Spare", the RAID group number and the RAID group name are displayed even when the drive is not used as a Hot Spare. Click this item to display the [RAID Group Detail] screen.  
When the usage is not "Dedicated Hot Spare" and the drive is not registered in a RAID group, a "-" (hyphen) is displayed.

- **Motor Status**  
The drive motor status is displayed.
  - Active  
The drive motors are activated.
  - In the Boot Process  
The drive motors are starting up.
  - Idle  
The drive motors are stopped.
  - In the Stop Process  
The drive motors are being stopped.
  - Power off  
The drive power is being turned off.
- **Rebuild/Copyback Progress**  
When rebuild or copyback is being performed, the progress rate is displayed.  
When rebuild or copyback is being performed, the progress rate is displayed.
- **Patrol**
  - Total completed passes  
The current total number of completed disk drive patrol cycles is displayed. "Completed passes" indicates the number of times the disk patrol for all of the target drives is complete.

 **Caution**

If the device configuration has been changed using the [Apply Configuration] function, the patrol progress information (total completed passes, progress with current pass, and completed passes since last power on) returns to the default settings.

- Progress with current pass  
The progress rate of the currently running disk drive patrol process is displayed.  
If the patrol is not operating for reasons such as a drive failure or a drive being formatted, a "-" (hyphen) is displayed.
- Completed passes since last Power On  
The current total number of completed disk drive patrol cycles since the last power on is displayed.

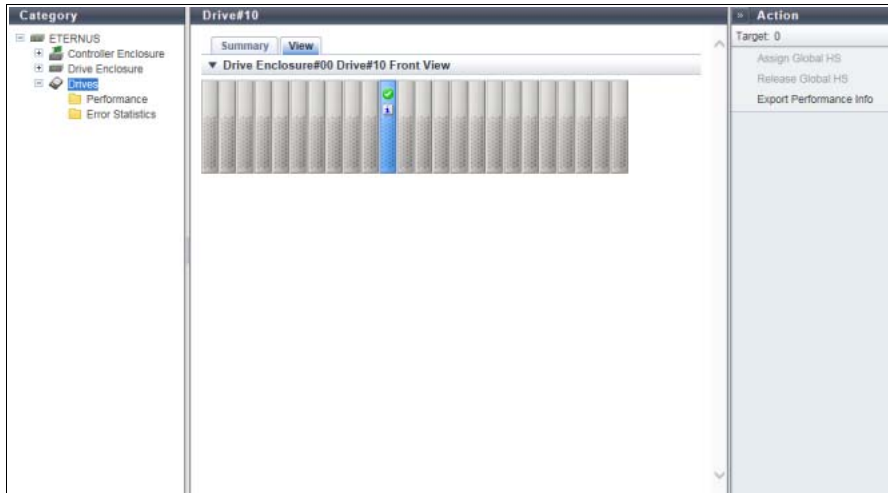
 **Caution**

"Completed passes since last Power On" may be cleared when the Controller Firmware is applied, or due to a CM failure.

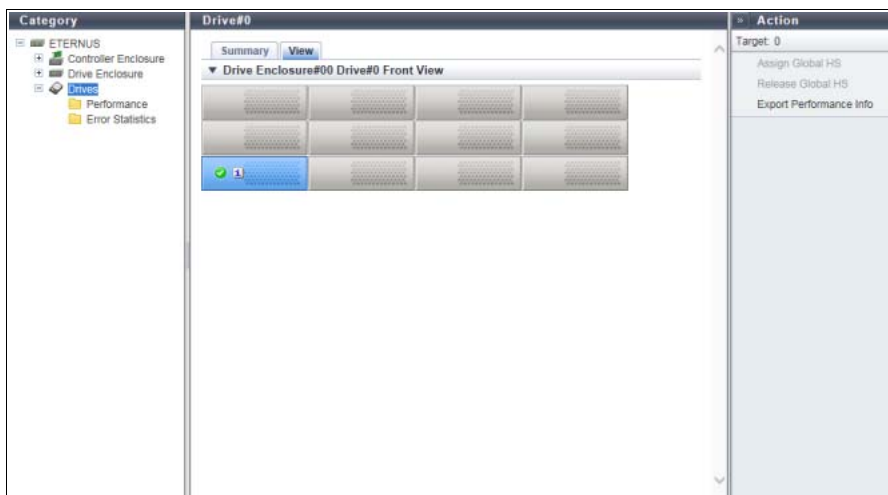
- **Vendor ID**  
The drive manufacturer name is displayed.
- **Product ID**  
The drive manufacturer name is displayed.
- **Serial Number**  
The serial number of the drive is displayed.
- **WWN**  
The drive WWN is displayed.
- **Firmware Version**  
The drive firmware version is displayed.

■ View

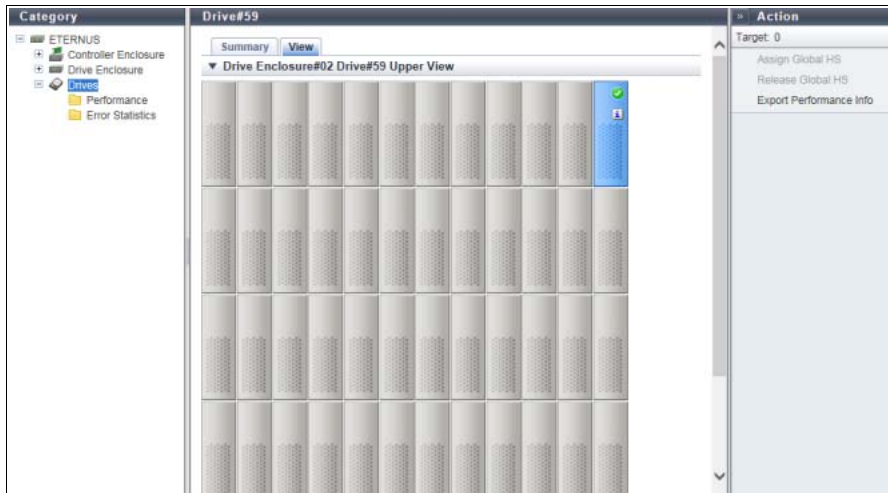
● For 2.5" DEs



● For 3.5" DEs



- For 3.5" high density DEs



The following items are displayed in the Main area:

- Storage system image  
The front view of the DEs that are installed in the ETERNUS DX/AF is displayed. The number of drives that can be installed for each DE type is as follows:
  - 2.5" DEs  
24 drives (24 drives are lined up horizontally)
  - 3.5" DEs  
12 drives (3 drives are lined up vertically and 4 drives are lined up horizontally)
  - 3.5" high density DEs  
60 drives (5 drives are lined up vertically and 12 drives are lined up horizontally)
  - When no drives are installed  
Blank

Drives that are not selected in the [Drives] screen are grayed out.

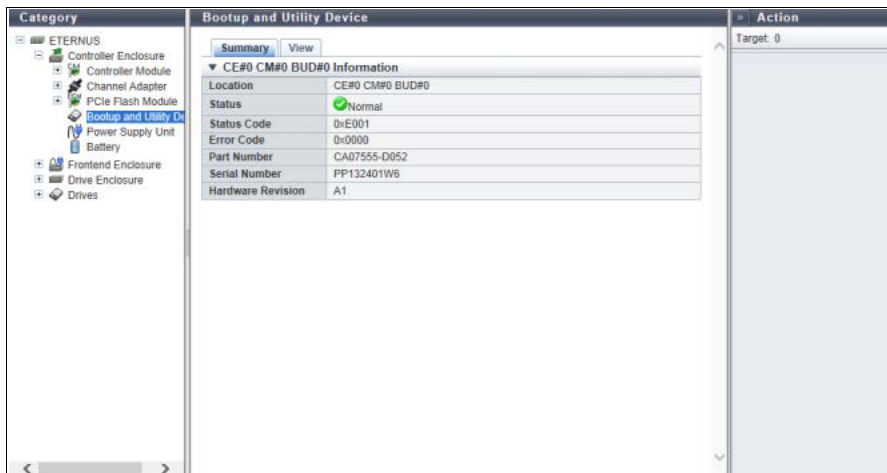
The drive status is displayed with an icon. Refer to ["A.5 Component Status" \(page 410\)](#) for details.



## 3.20 Bootup and Utility Device Detail

The detailed information for the BUD is displayed.  
This function is displayed for the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3.

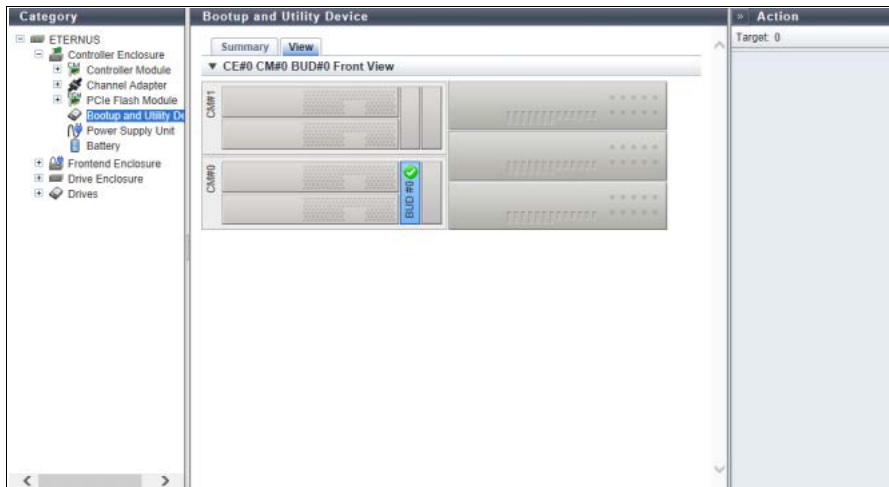
### ■ Summary



The following items are displayed in the Main area:

- Location  
The BUD number is displayed.
- Status  
The BUD status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The BUD status code is displayed.
- Error Code  
The BUD error code is displayed.
- Part Number  
The part number of the BUD is displayed.
- Serial No.  
The serial number of the BUD is displayed.
- Hardware Revision  
The hardware version of the BUD is displayed.

■ View



The following items are displayed in the Main area:

- Storage system image  
The front view of the CE that is installed in the ETERNUS DX is displayed.  
Components that are not the target BUD are grayed out.  
The BUD status is displayed with an icon. Refer to ["A.5 Component Status" \(page 410\)](#) for details.

## 3.21 SAS Cable Detail

The detailed information of the SAS cable is displayed.



The following items are displayed in the Main area:

- Status  
The SAS cable status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The SAS cable status code is displayed.
- Error Code  
The SAS cable error code is displayed.

## 3.22 Frontend Cable Detail

The detailed information of the Frontend cable is displayed.  
This function is displayed for the ETERNUS DX8700 S3/DX8900 S3.

### ■ Summary



The following items are displayed in the Main area:

- Status  
The Frontend cable status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The Frontend cable status code is displayed.
- Error Code  
The Frontend cable error code is displayed.
- Type  
The Frontend cable type is displayed.
  - "Cu" is displayed when the connection cable between the CM-FRT is a Frontend electric cable.
  - "AOC" is displayed when the connection cable between the CM-FRT is a Frontend optical cable.
- Part Number  
The part number of the Frontend cable is displayed.
- Serial Number  
The serial number of the Frontend cable is displayed.
- Hardware Revision  
The hardware version of the Frontend cable is displayed.  
If the hardware version cannot be obtained, the field is blank.

## 3.23 Management Cable Detail

The detailed information of the Management cable is displayed.  
This function is displayed for the ETERNUS DX8700 S3/DX8900 S3.

### ■ Summary



The following items are displayed in the Main area:

- Status  
The Management cable status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The Management cable status code is displayed.
- Error Code  
The Management cable error code is displayed.

## 3.24 Port Detail

The detailed information of the port is displayed.

### Caution

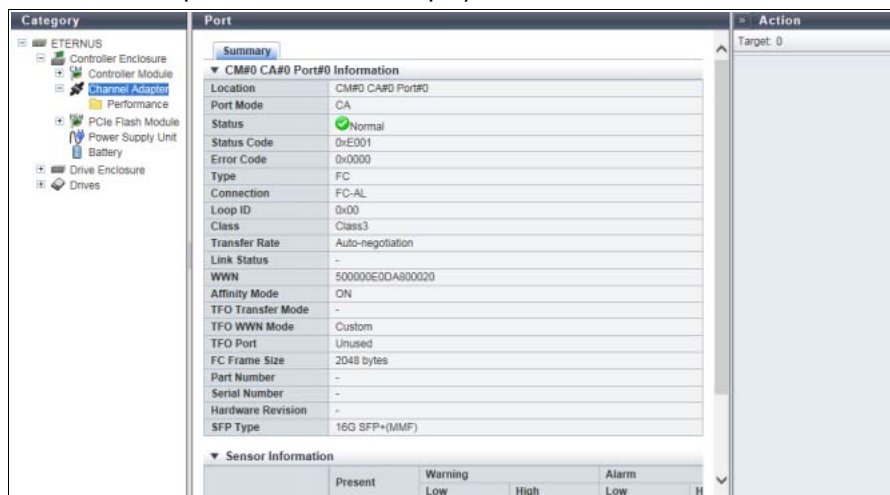
The ETERNUS DX60 S3, the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3, the ETERNUS AF250/AF650, and the ETERNUS DX200F do not support "NAS".

Display items vary depending on the port type ("[FC port](#)" (page 174), "[iSCSI port](#)" (page 180), "[SAS Port](#)" (page 184), "[FCoE port](#)" (page 186), or "[NAS port](#)" (page 188)).

### Summary

#### FC port

The detailed FC port information is displayed.



The following items are displayed in the Main area:

- CE#x CM#y CA#z Port#w Information (for the ETERNUS DX8700 S3/DX8900 S3) or CM#y CA#z Port#w Information (for the other models)

#### - Location

The location information (x: CE number, y: CM number, z: CA number, w: Port number) of the port is displayed.

- For the ETERNUS DX8700 S3/DX8900 S3  
CE#x CM#y CA#z Port#w
- For the other models  
CM#y CA#z Port#w

- Port Mode  
The port mode is displayed.
  - CA
  - RA
  - CA/RA
  - Initiator
- Status  
The port status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
- Status Code  
The port status code is displayed.
- Error Code  
The port error code is displayed.
- Type  
The port type (fixed to "FC") is displayed.
- Connection  
The connection type of the port is displayed.
  - Fabric  
A connection type that enables simultaneous communication among multiple nodes through a Fibre Channel switch. This connection type can also be used for a direct connection when "Transfer Rate" is "16 Gbit/s".
  - FC-AL  
A connection type that connects multiple nodes in a loop.
- Loop ID  
If the connection type of the target port is "FC-AL", the Loop ID is displayed.  
When the Loop ID is manually specified, the ID that is to be set for the port is displayed in hexadecimal.  
When the Loop ID is automatically specified, "Ascending" or "Descending" is displayed.  
When the "Connection" is "Fabric", a "-" (hyphen) is displayed.
- Class  
The service class of the port (fixed to "Class3") is displayed.
- Transfer Rate  
The transfer speed of the port is displayed.  
If the status is "🔍 Unknown", a "-" (hyphen) is displayed.
  - Auto-negotiation
  - 4 Gbit/s
  - 8 Gbit/s
  - 16 Gbit/s
- Link Status  
The link status of the port is displayed.  
If the status is "🔍 Unknown", a "-" (hyphen) is displayed.
  - Link Down
  - 4 Gbit/s Link Up
  - 8 Gbit/s Link Up
  - 16 Gbit/s Link Up

- WWN  
The WWN of the port is displayed.  
"WWN" is displayed when the port mode is "CA", "Remote Adapter (RA)", or "CA/RA".  
If the port mode is "Initiator", the display status varies according to the screen. A "-" (hyphen) is displayed for the CM#x CA#y port information in the [Channel Adapter Detail] screen. This item is not displayed in the [Port Detail] screen.
- WWN (Port Name)  
The WWPN of the port is displayed.  
"WWN (Port Name)" is displayed when the port mode is "Initiator".  
If the port mode is not "Initiator", the display status varies according to the screen. A "-" (hyphen) is displayed for the CM#x CA#y port information in the [Channel Adapter Detail] screen. This item is not displayed in the [Port Detail] screen.
- WWN (Node Name)  
The WWNN of the port is displayed.  
"WWN (Node Name)" is displayed when the port mode is "Initiator".  
If the port mode is not "Initiator", the display status varies according to the screen. A "-" (hyphen) is displayed for the CM#x CA#y port information in the [Channel Adapter Detail] screen. This item is not displayed in the [Port Detail] screen.
- Affinity Mode  
The affinity mode of the port is displayed.
  - ON
  - OFF
- TFO Transfer Mode  
Whether the TFO transfer mode is enabled or disabled for the target port is displayed.  
A "-" (hyphen) is displayed when the port mode is "CA" or "Initiator".  
This item is displayed only when "Enable" is selected for the Storage Cluster function.
- TFO WWN Mode  
When the port is being used by the Storage Cluster function, "Custom" is displayed if WWN has been changed, and "Default" is displayed if no changes have been made.  
A "-" (hyphen) is displayed when the port mode is "RA", "CA/RA", or "Initiator".  
This item is displayed only when "Enable" is selected for the Storage Cluster function.
  - Custom
  - Default
- TFO Port  
When the port is being used by the Storage Cluster function, "Used" is displayed, and "Unused" is displayed when the port is not used.  
This item is displayed only when "Enable" is selected for the Storage Cluster function.
  - Used
  - Unused
- FC Frame Size  
The frame size of the port is displayed.
  - 512 byte
  - 1024 byte
  - 2048 byte
- Part Number  
The part number of the port is displayed.  
If the part number cannot be acquired, a "-" (hyphen) is displayed.



- Serial Number  
The serial number of the port is displayed.  
If the serial number cannot be acquired, a "-" (hyphen) is displayed.
- Hardware Revision  
The hardware version of the port is displayed.  
If the hardware version cannot be acquired, a "-" (hyphen) is displayed.
- SFP Type  
The SFP type of the port is displayed. If the SFP is not installed, "Unmount" is displayed.
  - SFP+(SMF)  
8G LongWave
  - SFP+(MMF)  
8G SFP+
  - 16G SFP+(SMF)  
16G LongWave
  - 16G SFP+(MMF)  
16G SFP+
  - Unknown  
SFP type other than above
- Temperature  
The real time temperature of the SFP in the port is displayed in Celsius (C) and in Fahrenheit (F).  
When the information cannot be obtained, a "-" (hyphen) is displayed.
  - x C / y F (x: -128.00 to 128.00, y: -198.40 to 262.40)
- Voltage  
The real time voltage of the SFP in the port is displayed.  
When the information cannot be obtained, a "-" (hyphen) is displayed.
  - x V (x: 0.00 to 6.55)
- Current  
The real time current of the SFP in the port is displayed.  
When the information cannot be obtained, a "-" (hyphen) is displayed.
  - x mA (x: 0.00 to 131.00)
- TX Power  
The real time transmission power of the SFP in the port is displayed.  
When the information cannot be obtained, a "-" (hyphen) is displayed.
  - x mW (x: 0.00 to 6.55)
- RX Power  
The real time received power of the SFP in the port is displayed.  
When the information cannot be obtained, a "-" (hyphen) is displayed.
  - x mW (x: 0.00 to 6.55)

 **Note**

"Temperature", "Voltage", "Current", "TX Power", and "RX Power" are displayed as the CM#x CA#y port information in ["3.8 Channel Adapter Detail" \(page 132\)](#). In this screen, "Sensor Information" is displayed.

### ■ Sensor Information

The real time and threshold values (Low/High) for the temperature, voltage, current, transmission power, and received power are displayed in the Sensor Information.  
When the information cannot be obtained, a "-" (hyphen) is displayed.  
The target components for this information are FC that have SFPs from which information can be obtained.

#### Note

- An SFP is regarded as being in Warning status when the real time value is lower than the Warning threshold (Low) and higher than the Alarm threshold (Low).
- An SFP is regarded as being in Warning status when the real time value is higher than the Warning threshold (High) and lower than the Alarm threshold (High).
- An SFP is regarded as being in Alarm status when the real time value is lower than the Alarm threshold (Low) or higher than the Alarm threshold (High).

#### - Temperature

- Present  
The real time temperature of the SFP in the port is displayed.
  - x C / y F (x: -128.00 to 128.00, y: -198.40 to 262.40)
- Warning
  - Low or High  
The Warning threshold (Low/High) for the temperature of the SFP in the port is displayed.
    - x C / y F (x: -128.00 to 128.00, y: -198.40 to 262.40)
- Alarm
  - Low or High  
The Alarm threshold (Low/High) for the temperature of the SFP in the port is displayed.
    - x C / y F (x: -128.00 to 128.00, y: -198.40 to 262.40)

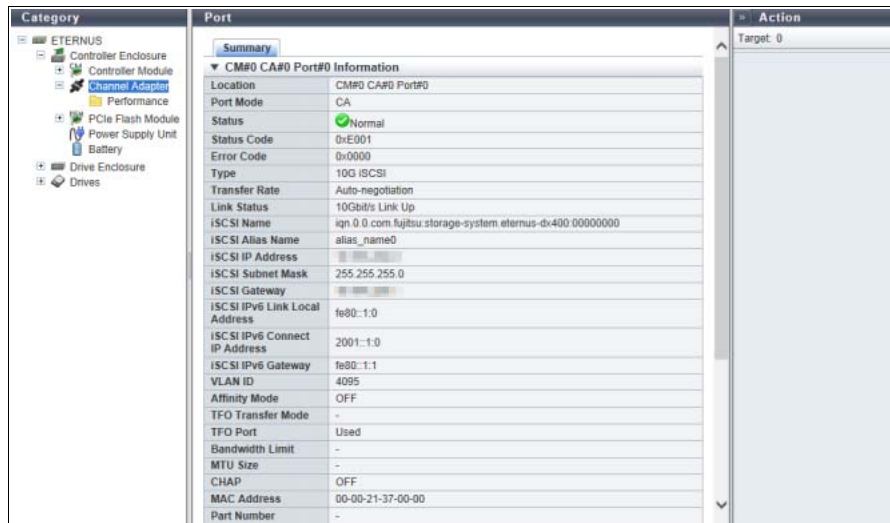
#### - Voltage

- Present  
The real time voltage of the SFP in the port is displayed.
  - x V (x: 0.00 to 6.55)
- Warning
  - Low or High  
The Warning threshold (Low/High) for the voltage of the SFP in the port is displayed.
    - x V (x: 0.00 to 6.55)
- Alarm
  - Low or High  
The Alarm threshold (Low/High) for the voltage of the SFP in the port is displayed.
    - x V (x: 0.00 to 6.55)

- Current
  - Present  
The real time current of the SFP in the port is displayed.
    - x mA (x: 0.00 to 131.00)
  - Warning
    - Low or High  
The Warning threshold (Low/High) for the current of the SFP in the port is displayed.
      - x mA (x: 0.00 to 131.00)
  - Alarm
    - Low or High  
The Alarm threshold (Low/High) for the current of the SFP in the port is displayed.
      - x mA (x: 0.00 to 131.00)
- TX Power
  - Present  
The real time transmission power of the SFP in the port is displayed.
    - x mW (x: 0.00 to 6.55)
  - Warning
    - Low or High  
The Warning threshold (Low/High) for the transmission power of the SFP in the port is displayed.
      - x mW (x: 0.00 to 6.55)
  - Alarm
    - Low or High  
The Alarm threshold (Low/High) for the transmission power of the SFP in the port is displayed.
      - x mW (x: 0.00 to 6.55)
- RX Power
  - Present  
The real time received power of the SFP in the port is displayed.
    - x mW (x: 0.00 to 6.55)
  - Warning
    - Low or High  
The Warning threshold (Low/High) for the received power of the SFP in the port is displayed.
      - x mW (x: 0.00 to 6.55)
  - Alarm
    - Low or High  
The Alarm threshold (Low/High) for the received power of the SFP in the port is displayed.
      - x mW (x: 0.00 to 6.55)

● iSCSI port

The detailed iSCSI port information is displayed.



The following items are displayed in the Main area:

- CE#x CM#y CA#z Port#w Information (for the ETERNUS DX8700 S/DX8900 S3) or CM#y CA#z Port#w Information (for the other models)
  - Location
 

The location information (x: CE number, y: CM number, z: CA number, w: Port number) of the port is displayed.

    - For the ETERNUS DX8700 S3/DX8900 S3  
CE#x CM#y CA#z Port#w
    - For the other models  
CM#y CA#z Port#w
  - Port Mode
 

The port mode is displayed.

    - CA
    - RA
    - CA/RA
  - Status
 

The port status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
  - Status Code
 

The port status code is displayed.
  - Error Code
 

The port error code is displayed.
  - Type
 

The type of the port is displayed.

    - 1G iSCSI
    - 10G iSCSI
    - 10G Base-T iSCSI
  - Multiple VLAN
 

Whether the Multiple VLAN is enabled or disabled for the port is displayed. A "-" (hyphen) is displayed when the port mode is "RA".

- Number of IP Addresses  
The number of IP addresses that are registered in the port is displayed. In this field, the total number of IP addresses (one basic IP address and the IP addresses that are specified by using Multiple VLAN (up to 15)) is displayed. "1" is displayed when the port mode is "RA" or when "Multiple VLAN" is disabled.
- Transfer Rate  
The transfer speed of the port is displayed.  
If the status is "Unknown", a "-" (hyphen) is displayed.
  - Auto-negotiation
  - 100Mbit/s
  - 1Gbit/s
  - 10Gbit/s
- Link Status  
The link status of the port is displayed.  
If the status is "Unknown", a "-" (hyphen) is displayed.
  - Link Down
  - 100Mbit/s Link Up
  - 1Gbit/s Link Up
  - 10Gbit/s Link Up
- iSCSI Name  
The iSCSI name is displayed.
- iSCSI Alias Name  
The iSCSI Alias name is displayed.
- iSCSI IP Address  
The IPv4 address of the iSCSI is displayed.  
If not specified, a "-" (hyphen) is displayed.
- iSCSI Subnet Mask  
The subnet mask of the iSCSI is displayed.  
If not specified, a "-" (hyphen) is displayed.
- iSCSI Gateway  
The IPv4 address of the iSCSI gateway is displayed.  
If not specified, a "-" (hyphen) is displayed.
- iSCSI IPv6 Link Local Address  
The IPv6 link local address of the iSCSI is displayed.  
Note that the IPv6 address is displayed as an abbreviation. If not specified, a "-" (hyphen) is displayed.
  - IPv6 address  
fe80::xxxx:xxxx:xxxx:xxxx  
xxxx: 0 - ffff (hexadecimal, "a" - "f" are lowercase letters)  
Refer to ["IPv6 Address Notation" \(page 253\)](#) for details.
- iSCSI IPv6 Connect IP Address  
The IPv6 connect IP address of the iSCSI is displayed.  
Note that the IPv6 address is displayed as an abbreviation. If not specified, a "-" (hyphen) is displayed.
  - IPv6 address  
xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx  
xxxx: 0 - ffff (hexadecimal, "a" - "f" are lowercase letters)  
Refer to ["IPv6 Address Notation" \(page 253\)](#) for details.

- iSCSI IPv6 Gateway  
The gateway IPv6 address of the target port is displayed.  
Note that the IPv6 address is displayed as an abbreviation. If not specified, a "-" (hyphen) is displayed.
  - IPv6 address  
xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx  
xxxx: 0 - ffff (hexadecimal, "a" - "f" are lowercase letters)  
Refer to ["IPv6 Address Notation" \(page 253\)](#) for details.
- VLAN ID  
The VLAN ID of the port is displayed.  
If the VLAN ID is not specified, a "-" (hyphen) is displayed.
- Affinity Mode  
The affinity mode of the port is displayed.
  - ON
  - OFF
- TFO Transfer Mode  
Whether the TFO transfer mode is enabled or disabled for the port is displayed.  
A "-" (hyphen) is displayed when the port mode is "CA".  
This item is displayed only when "Enable" is selected for the Storage Cluster function.
- TFO Port  
When the port is being used by the Storage Cluster function, "Used" is displayed, and "Unused" is displayed when the port is not used.  
This item is displayed only when "Enable" is selected for the Storage Cluster function.
  - Used
  - Unused
- Bandwidth Limit  
A "-" (hyphen) is displayed for this item.
- MTU Size  
The Maximum Transmission Unit size for iSCSI is displayed.  
When the port mode is "CA", a "-" (hyphen) is displayed.
- CHAP  
The CHAP authentication status is displayed.
  - When the "Port Mode" is "CA" or "RA": "ON" or "OFF"
  - When the "Port Mode" is "CA/RA": x / y  
x: CHAP authentication status for the CA port ("ON" or "OFF")  
y: CHAP authentication status for the RA port ("ON" or "OFF")
- MAC Address  
The MAC address of the port is displayed.
- Part Number  
The part number of the port is displayed.  
If the part number cannot be acquired, a "-" (hyphen) is displayed.
- Serial Number  
The serial number of the port is displayed.  
If the serial number cannot be acquired, a "-" (hyphen) is displayed.
- Hardware Revision  
The hardware version of the port is displayed.  
If the hardware version cannot be acquired, a "-" (hyphen) is displayed.

- SFP Type  
When the "Type" is "10G iSCSI", the SFP type of the port is displayed. If no SFP is installed, "Unmount" is displayed.  
If the "Type" is not "10G iSCSI", the display status varies according to the screen. A "-" (hyphen) is displayed for the CM#x CA#y port information in the [Channel Adapter Detail] screen. This item is not displayed in the [Port Detail] screen.
  - SFP+
  - SFP+ Copper
  - Unknown

#### Note

When the "Type" is "10G iSCSI", the temperature, voltage, current, transmission power, and received power for the SFP in the port are displayed.  
Refer to "[FC port](#)" ([page 174](#)) for display items.

#### ■ Sensor Information

The real time and threshold values (Low/High) for the temperature, voltage, current, transmission power, and received power are displayed in the Sensor Information.  
When the information cannot be obtained, a "-" (hyphen) is displayed.  
The target components for this information are 10G iSCSI that have SFPs from which information can be obtained.  
Refer to "[Sensor Information](#)" ([page 178](#)) for display items.

#### ■ Additional IP Address Information #x (x: 1 - 15)

When "Multiple VLAN" is enabled, the IP address information (up to 15 IP addresses) that is registered in the port is displayed.

- VLAN ID  
The VLAN ID of the port is displayed between 0 - 4095.  
If not specified, a "-" (hyphen) is displayed.
- iSCSI IP Address  
The IPv4 address of the iSCSI port is displayed.  
If not specified, a "-" (hyphen) is displayed.
- iSCSI Subnet Mask  
The subnet mask of the iSCSI port is displayed.  
If not specified, a "-" (hyphen) is displayed.
- iSCSI Gateway  
The gateway IPv4 address of the iSCSI port is displayed.  
If not specified, a "-" (hyphen) is displayed.
- iSCSI IPv6 Link Local Address  
The IPv6 link local address of the iSCSI port is displayed.  
Note that the IPv6 address is displayed as an abbreviation.  
If not specified, a "-" (hyphen) is displayed.
  - IPv6 address  
fe80::xxxx:xxxx:xxxx:xxxx  
xxxx: 0 - ffff (hexadecimal, "a" - "f" are lowercase letters)  
Refer to "[IPv6 Address Notation](#)" ([page 253](#)) for details.

- iSCSI IPv6 Connect IP Address  
The IPv6 connect IP address of the iSCSI port is displayed.  
Note that the IPv6 address is displayed as an abbreviation.  
If not specified, a "-" (hyphen) is displayed.
  - IPv6 address  
xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx  
xxxx: 0 - ffff (hexadecimal, "a" - "f" are lowercase letters)  
Refer to ["IPv6 Address Notation" \(page 253\)](#) for details.
- iSCSI IPv6 Gateway  
The gateway IPv6 address of the iSCSI port is displayed.  
Note that the IPv6 address is displayed as an abbreviation.  
If not specified, a "-" (hyphen) is displayed.
  - IPv6 address  
xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx  
xxxx: 0 - ffff (hexadecimal, "a" - "f" are lowercase letters)  
Refer to ["IPv6 Address Notation" \(page 253\)](#) for details.

● SAS Port

The detailed SAS port information is displayed.



The following items are displayed in the Main area:

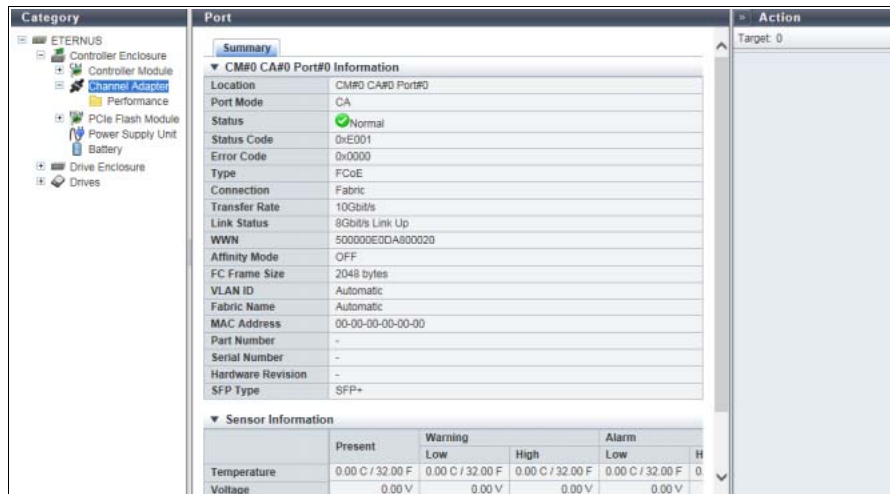
- CM#x CA#y Port#z Information
  - Location  
The location information of the port is displayed.
    - CM#x CA#y Port#z (x: CM number, y: CA number, z: Port number)
  - Status  
The port status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
  - Status Code  
The port status code is displayed.
  - Error Code  
The port error code is displayed.
  - Type  
The type of the port (fixed to "SAS") is displayed.



- Transfer Rate  
The transfer speed of the port is displayed.  
If the status is "Unknown", a "-" (hyphen) is displayed.
  - Auto-negotiation
  - 1.5Gbit/s
  - 3Gbit/s
  - 6Gbit/s
- Link Status  
The link status for each Phy is displayed.  
If the status is "Unknown", a "-" (hyphen) is displayed.
  - Phy#0 - 3:x  
"x" indicates one of the following statuses:
    - Link Down
    - 1.5Gbit/s Link Up
    - 3Gbit/s Link Up
    - 6Gbit/s Link Up
- SAS Address  
The SAS address is displayed.  
If the SAS address is not specified, a "-" (hyphen) is displayed.
- Affinity Mode  
The affinity mode of the port is displayed.
  - ON
  - OFF
- Part Number  
The part number of the port is displayed.  
If the part number cannot be acquired, a "-" (hyphen) is displayed.
- Serial Number  
The serial number of the port is displayed.  
If the serial number cannot be acquired, a "-" (hyphen) is displayed.
- Hardware Revision  
The hardware version of the port is displayed.  
If the hardware version cannot be acquired, a "-" (hyphen) is displayed.

● FCoE port

The detailed FCoE port information is displayed.



The following items are displayed in the Main area:

- CE#x CM#y CA#z Port#w Information (for the ETERNUS DX8700 S/DX8900 S3) or CM#y CA#z Port#w Information (for the other models)
  - Location
 

The location information (x: CE number, y: CM number, z: CA number, w: Port number) of the port is displayed.

    - For the ETERNUS DX8700 S3/DX8900 S3  
CE#x CM#y CA#z Port#w
    - For the other models  
CM#y CA#z Port#w
  - Port Mode
 

The port mode (fixed to "CA") is displayed.
  - Status
 

The port status is displayed. Refer to ["A.5 Component Status" \(page 410\)](#) for details.
  - Status Code
 

The port status code is displayed.
  - Error Code
 

The port error code is displayed.
  - Type
 

The type of the port (fixed to "FCoE") is displayed.
  - Connection
 

The connection type of the port is displayed.

    - Fabric
 

A connection type that enables simultaneous communication among multiple nodes through a Fibre Channel switch.
    - FC-AL
 

A connection type that connects multiple nodes in a loop.
  - Transfer Rate
 

The transfer speed of the port (fixed to "10 Gbit/s") is displayed.  
If the status is "Unknown", a "-" (hyphen) is displayed.

- Link Status  
The link status of the port is displayed.  
If the status is "Unknown", a "-" (hyphen) is displayed.
  - Link Down
  - 10Gbit/s Link Up
- WWN  
The WWN of the port is displayed.
- Affinity Mode  
The affinity mode of the port is displayed.
  - ON
  - OFF
- FC Frame Size  
The frame size of the port is displayed.
  - 512 byte
  - 1024 byte
  - 2048 byte
- VLAN ID  
The VLAN ID is displayed.  
When the VLAN ID is manually specified, the VLAN ID is displayed between 0 - 4095.  
When the VLAN ID is automatically specified, "Automatic" is displayed.
- Fabric Name  
The fabric name (WWN for FCoE) is displayed.  
When the fabric name is manually specified, the specified fabric name is displayed.  
When the fabric name is automatically specified, "Automatic" is displayed.
- MAC Address  
The MAC address of the port is displayed.
- Part Number  
The part number of the port is displayed.  
If the part number cannot be acquired, a "-" (hyphen) is displayed.
- Serial Number  
The serial number of the port is displayed.  
If the serial number cannot be acquired, a "-" (hyphen) is displayed.
- Hardware Revision  
The hardware version of the port is displayed.  
If the hardware version cannot be acquired, a "-" (hyphen) is displayed.
- SFP Type  
The SFP type of the port is displayed. If the SFP is not installed, "Unmount" is displayed.
  - SFP+
  - SFP+ Copper
  - Unknown

 **Note**

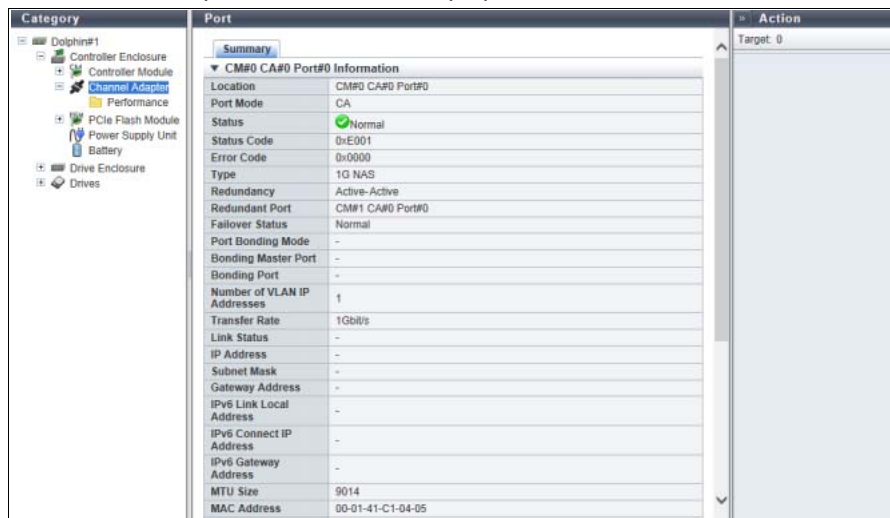
The temperature, voltage, current, transmission power, and received power for the SFP in the port are displayed. Refer to ["FC port" \(page 174\)](#) for display items.

■ Sensor Information

The real time and threshold values (Low/High) for the temperature, voltage, current, transmission power, and received power are displayed in the Sensor Information. When the information cannot be obtained, a "-" (hyphen) is displayed. The target components for this information are FCoE that have SFPs from which information can be obtained. Refer to "[Sensor Information](#)" (page 178) for display items

● NAS port

The detailed NAS port information is displayed.



The following items are displayed in the Main area:

■ CM#x CA#y Port#z Information

- Location  
The location information of the port is displayed.
  - CM#x CA#y Port#z (x: CM number, y: CA number, z: Port number)
- Port Mode  
The port mode (fixed to "CA") is displayed.
- Status  
The port status is displayed. Refer to "[A.5 Component Status](#)" (page 410) for details.
- Status Code  
The port status code is displayed.
- Error Code  
The port error code is displayed.
- Type  
The type of the port is displayed.
  - 10G NAS
  - 1G NAS

- Redundancy  
The connection type of the port is displayed. When the connection type is "Active-Active" or "Active-Standby", the "Redundant Port" information is displayed.
  - Active-Active  
Combine the ports in both of the CMs and configure the redundant ports. For this configuration, the ports of both CMs can be used at any time.
  - Active-Standby  
Combine the ports in both of the CMs and configure the redundant ports. For this configuration, one port remains in standby status.
  - Single  
Use only for the ports in the CM that are not redundant.
- Redundant Port  
The installation locations of the ports that are configured for redundancy with the target port are displayed. When redundancy is configured for each bonding port, all of the related ports are displayed. A "-" (hyphen) is displayed when "Redundancy" is "Single".
  - CM#x CA#y Port#z (x: CM number, y: CA number, z: Port number)
- Failover Status  
The failover status of the multipath is displayed. A "-" (hyphen) is displayed when the multipath is not set (or when "Redundancy" is "Single").
  - Normal  
The multipath setting between the "Location" port and "Redundant Port" is in a normal state.
  - CM#x CA#y Port#z is currently inactive  
The multipath between the "Location" port and "Redundant Port" is set, but the "CM#x CA#y Port#z" port is not used.
- Port Bonding Mode  
The bonding mode for the port is displayed.
  - Master  
The representative port among the ports that configure the bonding port. The IP address of the bonding port is assigned to the master port.
  - Member  
Ports that configure the bonding port.
- Bonding Master Port  
The installation location of the master port, which is a member of the ports that configure the bonding port, is displayed. If the bonding port is not configured, a "-" (hyphen) is displayed.
  - CM#x CA#y Port#z (x: CM number, y: CA number, z: Port number)
- Bonding Port  
The installation locations of all the member ports that configure the bonding port is displayed. If the bonding port is not configured, a "-" (hyphen) is displayed.
  - CM#x CA#y Port#z (x: CM number, y: CA number, z: Port number)
- Number of VLAN IP Addresses  
The number of VLAN IP addresses for the port is displayed. If VLAN is not set, "0" is displayed.

- Transfer Rate  
The transfer speed of the port is displayed.  
If the status is "Unknown", a "-" (hyphen) is displayed.
  - Auto-negotiation
  - 100 Mbit/s
  - 1 Gbit/s
  - 10 Gbit/s
- Link Status  
The link status of the port is displayed.  
If the status is "Unknown", a "-" (hyphen) is displayed.
  - Link Down
  - 10Mbit/s Full Duplex Link Up
  - 10Mbit/s Half Duplex Link Up
  - 100Mbit/s Full Duplex Link Up
  - 100Mbit/s Half Duplex Link Up
  - 1Gbit/s Full Duplex Link Up
  - 1Gbit/s Half Duplex Link Up
  - 10Gbit/s Full Duplex Link Up
  - 10Gbit/s Half Duplex Link Up
- IP Address  
An IPv4 address without VLAN IDs is displayed.  
If not specified, a "-" (hyphen) is displayed.
- Subnet Mask  
An IPv4 subnet mask without VLAN IDs is displayed.  
If not specified, a "-" (hyphen) is displayed.
- Gateway Address  
An IPv4 address for the gateway without VLAN IDs is displayed.  
If not specified, a "-" (hyphen) is displayed.
- IPv6 Link Local Address  
An IPv6 link local address without VLAN IDs is displayed.  
Note that the IPv6 address is displayed as an abbreviation. If not specified, a "-" (hyphen) is displayed.
  - IPv6 address  
fe80::xxxx:xxxx:xxxx:xxxx  
xxxx: 0 - ffff (hexadecimal, "a" - "f" are lowercase letters)  
Refer to ["IPv6 Address Notation" \(page 253\)](#) for details.
- IPv6 Connect IP Address  
An IPv6 connect IP address without VLAN IDs is displayed.  
Note that the IPv6 address is displayed as an abbreviation. If not specified, a "-" (hyphen) is displayed.
  - IPv6 address  
xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx  
xxxx: 0 - ffff (hexadecimal, "a" - "f" are lowercase letters)  
Refer to ["IPv6 Address Notation" \(page 253\)](#) for details.

- IPv6 Gateway Address  
An IPv6 address for the gateway without VLAN IDs is displayed.  
Note that the IPv6 address is displayed as an abbreviation. If not specified, a "-" (hyphen) is displayed.
  - IPv6 address  
xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx  
xxxx: 0 - ffff (hexadecimal, "a" - "f" are lowercase letters)  
Refer to ["IPv6 Address Notation" \(page 253\)](#) for details.
- MTU Size  
The MTU size is displayed.  
A "-" (hyphen) is displayed when the MTU size is "0".
- MAC Address  
The MAC address of the port is displayed.
- Part Number  
The part number of the port is displayed.  
If the part number cannot be acquired, a "-" (hyphen) is displayed.
- Serial Number  
The serial number of the port is displayed.  
If the serial number cannot be acquired, a "-" (hyphen) is displayed.
- Hardware Revision  
The hardware version of the port is displayed. If the hardware version cannot be acquired, a "-" (hyphen) is displayed.
- SFP Type  
When the port type is "10G NAS", SFP type in the port is displayed. If the SFP is not installed, "Unmount" is displayed.  
If the "Type" is not "10G NAS", the display status varies according to the screen. This item is not displayed in the [Port Detail] screen.
  - SFP+
  - SFP+ Copper
  - Unknown
  - Unmount

#### Note

When the "Type" is "10G NAS", the temperature, voltage, current, transmission power, and received power for the SFP in the port are displayed.  
Refer to ["FC port" \(page 174\)](#) for display items.

#### ■ Sensor Information

The real time and threshold values (Low/High) for the temperature, voltage, current, transmission power, and received power are displayed in the Sensor Information.  
When the information cannot be obtained, a "-" (hyphen) is displayed.  
The target components for this information are 10G NAS that have SFPs from which information can be obtained.  
Refer to ["Sensor Information" \(page 178\)](#) for display items.

■ Additional VLAN IP Address

- VLAN ID  
The VLAN ID of the NAS port is displayed between 1 - 4094.
- IP Address (\*1)  
The IPv4 address of the NAS port is displayed.  
If not specified, a "-" (hyphen) is displayed.
- Subnet Mask (\*1)  
The subnet mask of the NAS port is displayed.  
If not specified, a "-" (hyphen) is displayed.
- Gateway Address (\*1)  
The gateway IPv4 address of the NAS port is displayed.  
If not specified, a "-" (hyphen) is displayed.
- IPv6 Link Local Address (\*1)  
The IPv6 link local address of the NAS port is displayed.  
Note that the IPv6 address is displayed as an abbreviation. If not specified, a "-" (hyphen) is displayed.
  - IPv6 address  
fe80::xxxx:xxxx:xxxx:xxxx  
xxxx: 0 - ffff (hexadecimal, "a" - "f" are lowercase letters)  
Refer to ["IPv6 Address Notation" \(page 253\)](#) for details.
- IPv6 Connect IP Address (\*1)  
The IPv6 connect IP address of the NAS port is displayed.  
Note that the IPv6 address is displayed as an abbreviation. If not specified, a "-" (hyphen) is displayed.
  - IPv6 address  
xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx  
xxxx: 0 - ffff (hexadecimal, "a" - "f" are lowercase letters)  
Refer to ["IPv6 Address Notation" \(page 253\)](#) for details.
- IPv6 Gateway Address (\*1)  
The gateway IPv6 address of the NAS port is displayed.  
Note that the IPv6 address is displayed as an abbreviation. If not specified, a "-" (hyphen) is displayed.
  - IPv6 address  
xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx  
xxxx: 0 - ffff (hexadecimal, "a" - "f" are lowercase letters)  
Refer to ["IPv6 Address Notation" \(page 253\)](#) for details.

\*1: This item is displayed for all of the VLAN settings.



# Chapter 4

## Volume Status

Volume status displays the status information of volumes.

Volume status screens can be displayed by clicking the following categories:

Category	Volume status screen
Volume	<a href="#">Volume (Basic Information)</a>
Performance (Host I/O)	<a href="#">Performance (Host I/O)</a>
Performance (QoS)	<a href="#">Performance (QoS)</a>
Performance (Advanced Copy)	<a href="#">Performance (Advanced Copy)</a>
LUN Group	<a href="#">LUN Group</a>
Reservation	<a href="#">Reservation</a>
Pinned Data	<a href="#">Pinned Data</a>
Bad Sector	<a href="#">Bad Sector</a>
Balancing Thin Provisioning Volume	<a href="#">Balancing Thin Provisioning Volume</a>
Snapshot	<a href="#">Snapshot</a>

Detailed information of the volumes can be displayed from the following screens:

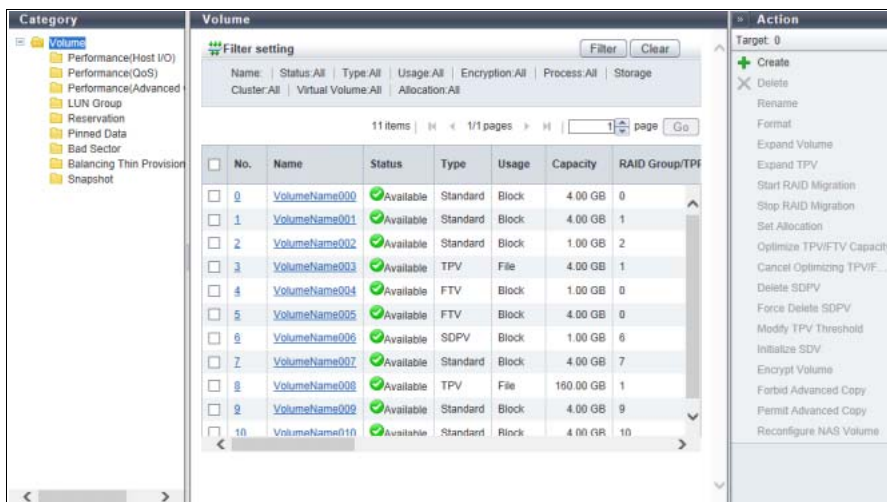
- [Volume Detail \(Basic\)](#)
- [Volume Detail \(Reservation\)](#)
- [Volume Detail \(Pinned Data\)](#)
- [Volume Detail \(Balancing TPV\)](#)
- [Volume Detail \(Used RAID Group\)](#)
- [Volume Detail \(Snapshot\)](#)

## 4.1 Volume (Basic Information)

This function displays the basic information of volumes.

### Caution

The display process for the volume list may be delayed for a maximum of two minutes while a meta cache redistribution is being performed for NAS volumes (NAS user volumes or NAS backup volumes).



The following items are displayed in the Main area:

- No.  
The volume number is displayed.  
During volume creation, the volume number can be allocated automatically or specified manually. When the volume number is allocated automatically, the volume number is allocated from the smallest unused decimal number in ascending order.  
Click this item to display the [Volume Detail] screen. Refer to ["4.11 Volume Detail \(Basic\)" \(page 223\)](#) for display items.
- Name  
The volume name is displayed. Click this item to display the [Volume Detail] screen. Refer to ["4.11 Volume Detail \(Basic\)" \(page 223\)](#) for display items.
- Status  
The volume status is displayed. When the volume status is normal, "Available" is displayed. Refer to ["A.2 Volume Status" \(page 406\)](#) for detailed information of volume status.
- Type  
The volume type is displayed.
  - Standard  
Standard volumes are the most commonly used volumes that are created in RAID groups.  
A standard volume is used for normal usage, such as file systems and databases. The server recognizes it as a single logical unit.
  - WSV  
WSV is a volume that is created by concatenating distributed areas in from 2 to 64 RAID groups.  
Processing speed is fast because data access is distributed.

- TPV  
Thin Provisioning Volume (TPV) is a virtual volume that is created in a Thin Provisioning Pool area. When data is being written to a TPV from the server, the drives are allocated in specified size units.
  - FTV  
A Flexible Tier Volume is a virtual volume that is created in an FTRP. This volume is a target volume for layering. Data is automatically redistributed in small block units according to the access frequency. The FTV is created by ETERNUS CLI or ETERNUS SF Storage Cruiser.
  - SDV  
A Snap Data Volume (SDV) is an area that is used as the copy destination for a SnapOPC/SnapOPC+. For a SnapOPC, SDVs are created for each copy destination. For a SnapOPC+, SDVs are created for each generation of the copy destination.
  - SDPV  
A Snap Data Pool Volume (SDPV) is a volume that is used to configure SDP areas. The SDP capacity equals the total capacity of the SDPVs. A volume is supplied from a SDP when the amount of updates exceeds the capacity of the SDV.
  - Temporary  
Temporary is a migration source volume that failed to delete after RAID migration is complete, a work volume that failed to delete after TPV balancing is complete, or a work volume that failed to delete after FTRP balancing is complete.
- Usage  
The usage of the volume is displayed.
    - Block  
The volumes that are used for the SAN.
    - Block/Dedup  
The Deduplication/Compression Volumes.
    - File  
The volumes that are used for the NAS.
    - System  
The volumes that are used for management information.  
The system volumes described below. Refer to ["Usage Details" \(page 228\)](#) in ["4.11 Volume Detail \(Basic\)" \(page 223\)](#) for details.
      - System volumes for the NAS system
      - System volumes for the Virtual Volume function
      - Deduplication/Compression System Volumes
  - Capacity  
The volume capacity is displayed.  
The capacity is displayed in units of "MB", "GB", or "TB". Even when volumes are created in units of "MB", if the volume capacity exceeds 1023.99MB, the capacity is displayed in units of "GB". If the volume capacity exceeds 1023.99GB, the capacity is displayed in units of "TB". The capacity is rounded off to two decimal places.  
When the volume type is "SDV", the virtual capacity is displayed. The virtual capacity indicates the capacity that is secured automatically when creating SDVs (24 (MB) + copy source volume capacity x 0.1%).

- RAID Group/TPP/FTRP No.  
The following number is displayed:
  - If the type is "WSV"  
The RAID group number to which the representative volume (\*1) belongs is displayed.  
\*1: A volume for WSV, which is created by concatenating multiple RAID groups with striping, that belongs to the RAID group that is first in the concatenation order.
  - If the type is "TPV"  
The Thin Provisioning Pool (TPP) number to which the volume belongs is displayed.
  - If the type is "FTV"  
The Flexible Tier Pool (FTRP) number to which the volume belongs is displayed.
  - If the type is not one of the types listed above  
The RAID group number to which the volume belongs is displayed.
- RAID Group/TPP/FTRP Name  
The following name is displayed:
  - If the type is "WSV"  
The RAID group name to which the representative volume belongs is displayed.
  - If the type is "TPV"  
The Thin Provisioning Pool (TPP) name to which the volume belongs is displayed.
  - If the type is "FTV"  
The Flexible Tier Pool (FTRP) name to which the volume belongs is displayed.
  - If the type is not one of the types listed above  
The RAID group name to which the volume belongs is displayed.
- Encryption  
The encryption status is displayed.  
For the ETERNUS DX60 S3, this item is not displayed.
  - CM  
A volume that is encrypted by CM
  - "-" (hyphen)  
A volume that is not encrypted (plain text volume)
  - SED  
A volume that is encrypted by SED
- UID  
The Universal Identifier (UID) is displayed.  
The UID is an identifier (storage system name) to specify a volume from the open system server.  
A "-" (hyphen) is displayed for the Deduplication/Compression System Volume.

- Process

A process that is being performed for the volume is displayed.  
If multiple processes are currently being performed, the processes are separated with a ":" (colon)" and displayed using ("xx:yy"). "Encrypting", "Formatting", "Migrating", or "Balancing" is displayed as "xx". "Optimizing Capacity" or "Reserved Optimizing Capacity" is displayed as "yy".  
If no process is being performed, a "-" (hyphen) is displayed.

  - Encrypting  
Volume encryption is being performed.
  - Formatting  
Formatting is being performed.
  - Migrating  
RAID migration is being performed.
  - Balancing  
TPV balancing or FTRP balancing is being performed.
  - Optimizing Capacity  
Capacity optimization (\*1) is being performed in a TPV or an FTV.
  - Reserved Optimizing Capacity  
Capacity optimization is being reserved (\*2) for a TPV or an FTV.

\*1: "Capacity Optimization" is a function that releases the allocated physical area when data in the physical area that is allocated to a TPV or an FTV is filled with zeros.

\*2: If "Start Optimizing TPV/FTV Capacity after migration" is enabled for the RAID migration function, the migration source volume is reserved for capacity optimization.
- Forbid Advanced Copy

The protection status of the volume or the volume attribute (such as mirroring reservation) is displayed.  
"No" is displayed for the Deduplication/Compression System Volume.

  - Yes  
The volume is protected. The volume cannot be used as a copy destination volume.
  - No  
The volume is not protected. The volume can be used as a copy destination volume.
  - DLM (Dynamic LUN Mirroring)  
An attribute that is to be set to a volume being created as the REC copy destination by the Dynamic LUN Mirroring function regardless of whether the volume is protected. If this attribute is displayed, the volume might be the one that is left in the storage system due to unsuccessful creation.
  - ODX (Offloaded Data Transfer)  
An ODX Buffer volume. ODX Buffer volumes cannot be protected.
- Storage Cluster

When the volume is being used by the Storage Cluster function, "Enable" is displayed. When no volumes are used for the Storage Cluster function, "Disable" is displayed.  
This item is displayed only when "Enable" is selected for the Storage Cluster function.
- Virtual Volume

When the volume is being used by the Virtual Volume function, "Enable" is displayed. When no volumes are used by the Virtual Volume function, "Disable" is displayed.  
For \$VVOL\_META, "Disable" is displayed even if the relevant volume is being used by the Virtual Volume function. "\$VVOL\_META" is a system volume that is used for storing the management information (metadata) of the Virtual Volume function.  
This item is displayed only when "Enable" is selected for the Virtual Volume function.

- Allocation  
The allocation method for the volume is displayed.  
A "-" (hyphen) is displayed when the volume type is other than "TPV" or "FTV".
  - Thin  
Physical area is allocated to the target area of the volume when a write I/O is received.
  - Thick  
Physical area is allocated to the whole area of the volume when volumes are created.
- Used Capacity  
The used capacity (physically allocated capacity) of volume is displayed with "MB", "GB", or "TB".  
A "-" (hyphen) is displayed in the following conditions:
  - The volume type is not "TPV" or "FTV"
  - Deduplication/Compression Volumes (\*1)
    - \*1: The used capacity of the Deduplication/Compression Volumes in the TPP can be determined by checking the used capacity of the DEDUP\_SYS Volume that is created in the TPP. The used capacity of the DEDUP\_SYS Volume approximately corresponds to the total used capacity of the Deduplication/Compression Volumes in the relevant TPP.
- Used Rate  
The volume utilization is displayed between 0% - 100%.  
$$\text{Used Rate} = \text{Used Capacity} / \text{Capacity}$$
  
A "-" (hyphen) is displayed in the following conditions:
  - The volume type is not "TPV" or "FTV"
  - Deduplication/Compression Volumes (\*1)
    - \*1: The used rate of the Deduplication/Compression Volumes in the TPP can be determined by checking the used rate of the DEDUP\_SYS Volume that is created in the TPP. The used rate of the DEDUP\_SYS Volume approximately corresponds to the total used rate of the Deduplication/Compression Volumes in the relevant TPP. Note that the capacity reduction rate for the TPP due to the Deduplication/Compression function can be checked in the [Thin Provisioning Pool] screen. Refer to ["7.1.1 Thin Provisioning Pool \(Basic Information\)" \(page 325\)](#) for details.
- Threshold  
The threshold for monitoring the volume utilization is displayed between 1% - 100%.  
If the "Used Rate" value exceeds the "Threshold", a Host Sense Key Code Qualifier is notified.  
A "-" (hyphen) is displayed in the following conditions:
  - The volume type is not "TPV" or "FTV"
  - Deduplication/Compression Volumes or Deduplication/Compression System Volumes

 **Note**

- The threshold for TPPs can be checked in the [Threshold] screen. Refer to ["7.1.5 Threshold \(Thin Provisioning Pool\)" \(page 334\)](#) for details.
- The threshold for FTRPs can be checked in the [Flexible Tier Pool] screen. Refer to ["7.2.1 Flexible Tier Pool \(Basic Information\)" \(page 340\)](#) for details.

### Filter setting

Filter	Description
Name	Input the volume name that is to be displayed. When not using the volume name for filtering, leave this item blank.
Status	Select the volume status that is to be displayed.
Type	Select the volume type that is to be displayed.
Usage	Select the usage of the volume that is to be displayed.
Encryption	Select the encryption status of the volume that is to be displayed. For the ETERNUS DX60 S3, this item is not displayed.
Process	Select which current process for the volume is to be displayed.
Storage Cluster	Select the Storage Cluster function usage status for the volume that is to be displayed. This item is displayed only when "Enable" is selected for the Storage Cluster function.
Virtual Volume	Select the Virtual Volume function usage status for the volume that is to be displayed. This item is displayed only when "Enable" is selected for the Virtual Volume function.
Allocation	Select the allocation method of the volume that is to be displayed.

## 4.2 Performance (Host I/O)

This function displays the performance information of the volumes for Host I/O.

### Note

- Performance information is obtained when performance monitoring is operated from ETERNUS Web GUI, ETERNUS CLI, or any other monitoring software. Refer to "Start/Stop Performance Monitoring" in "ETERNUS Web GUI User's Guide (Settings)" for details on how to start performance monitoring with ETERNUS Web GUI.
- The interval for acquiring performance information can be specified when starting the monitoring. When using ETERNUS Web GUI, the default interval is 30 seconds.
- The average performance values during the specified interval are displayed.
- When the performance monitoring function is stopped, "0" is displayed as the performance information.

No.	Name	Type	Usage	Read IOPS	Write IOPS	Read Throughput	Write Throughput
0	Volume000	Standard	Block	0 IOPS	0 IOPS	0 MB/s	0 M
1	Volume001	TPV	Block	0 IOPS	0 IOPS	0 MB/s	0 M
2	Volume002	TPV	Block	0 IOPS	0 IOPS	0 MB/s	0 M
3	Volume003	Standard	Block	0 IOPS	0 IOPS	0 MB/s	0 M

The following items are displayed in the Main area:

- No.  
The volume number is displayed. Click this item to display the [Volume Detail] screen.
- Name  
The volume name is displayed. Click this item to display the [Volume Detail] screen.
- Type  
The volume type is displayed.
  - Standard
  - WSV
  - TPV
  - FTV
  - SDV
  - SDPV
  - Temporary



- Usage  
The usage of the volume is displayed.
  - Block  
The volumes that are used for the SAN.
  - Block/Dedup  
The Deduplication/Compression Volumes.
  - File  
The volumes that are used for the NAS.
  - System  
The volumes that are used for management information.  
Refer to "[Usage Details](#)" ([page 228](#)) in "[4.11 Volume Detail \(Basic\)](#)" for details.
- Read IOPS  
The read count per second is displayed.
- Write IOPS  
The write count per second is displayed.
- Read Throughput  
The amount of transferred data that is read per second is displayed.
- Write Throughput  
The amount of transferred data that is written per second is displayed.
- Read Response Time  
The average read response time per host I/O is displayed.
- Write Response Time  
The average write response time per host I/O is displayed.
- Read Processing Time  
The average read processing time per host I/O is displayed.  
This item is displayed only when the controller firmware version V10L4x or later is used.
- Write Processing Time  
The average write processing time per host I/O is displayed.  
This item is displayed only when the controller firmware version V10L4x or later is used.
- Read Cache Hit Rate  
The cache hit rate (for read) is displayed.
- Write Cache Hit Rate  
The cache hit rate (for write) is displayed.
- Prefetch Cache Hit Rate  
The cache hit rate (for prefetch) is displayed.
- Extreme Cache Cache Hit Rate  
The cache hit rate of EXC for read I/O is displayed.  
This item is displayed when EXC or EXCP is enabled for the ETERNUS DX. A "-" (hyphen) is displayed for volumes where EXC and EXCP are disabled. Enabling or disabling EXC for the volume can be performed with ETERNUS CLI or ETERNUS SF Storage Cruiser. Enabling or disabling EXCP for the volume can be performed with ETERNUS Web GUI. Refer to "Modify Cache Parameters" in "ETERNUS Web GUI User's Guide (Settings)" for details.  
The mode (Extreme Cache or Extreme Cache Pool) that is being used for the ETERNUS DX is displayed in the [System Settings] screen. Refer to "[2.12 System Settings](#)" ([page 71](#)) for details.

 **Note**

A "-" (hyphen) is usually displayed for the following volumes:

- Volume type is "SDV" or "SDPV"
- Volumes that are created in a RAID group or a TPP configured with SSDs or SSD SEDs
- ODX Buffer volumes

- **Cache Page Capacity**  
The cache page capacity is displayed.  
When the cache page capacity is "-" (hyphen), there is no limit for the cache capacity.  
A "-" (hyphen) is displayed when the volume type is "TPV", "FTV", or "WSV". Note that a "-" (hyphen) is displayed for a "Standard" type volume that is concatenated by the LUN concatenation function.
- **PL**  
The prefetch limit is displayed. If PL is "0", prefetch is not performed.
- **FP**  
The selected usage for the Force Prefetch Mode, which performs forcible prefetching for cache, is displayed.
  - ON  
Perform prefetch even if the sequential characteristics of the data access is not detected.
  - OFF  
Perform prefetch only when the sequential characteristics of the data access is detected.
- **MWC**  
The value of the Multi Write back Count is displayed.
- **PSDC**  
The number of times that sequentiality of data access (Read I/O) is detected (value of the Prefetch Sequential Detect Count) is displayed. If any sequential data is accessed for the number of times specified for PSDC, such access is determined as sequential access and prefetch is performed.
- **SDDC**  
The number of times that sequentiality of data access (Write I/O) is detected (value of the Sequential Dirty Detect Count) is displayed. If any sequential data is accessed for the number of times specified for SDDC, such access is determined as sequential access and prefetch is performed.
- **SS**  
The value of the parameter (Sequential Slope) to determine the sequentiality of data access (Read I/O) is displayed. If the difference in addresses between the end LBA of the previous I/O and the start LBA of the current I/O is within (SS setting + 1), it is determined as sequential data.
- **SDS**  
The value of the parameter (Sequential Dirty Slope) to determine the sequentiality of data access (Write I/O) is displayed. If the difference in addresses between the end LBA of the previous I/O and the start LBA of the current I/O is within (SDS setting + 1), it is determined as sequential data.
- **SPMC**  
The value of the parameter (Sequential Parallel Multi I/O Count) to determine the sequentiality of data access (Read I/O and Write I/O) is displayed. If the difference in addresses between the start address of the previous I/O and the start address of the received I/O is within (I/O size x Specified value), it is determined as sequential data.

- ALUA  
The set state for Asymmetric Logical Unit Access (ALUA) is displayed. A "-" (hyphen) is displayed for volumes that cannot be mapped (\*1).
    - Follow Host Response  
Use the same "Asymmetric / Symmetric Logical Unit Access" setting as the host response for the host group or the host.
    - ACTIVE / ACTIVE  
All of the paths to the volume are regarded as being recommended paths. The use of a multipath driver determines which paths are used.
    - ACTIVE-ACTIVE / PREFERRED\_PATH  
There are recommended paths and non-recommended paths for each volume. By using a CA port in the Controlling CM of a RAID group in which the volume belongs for the recommended paths (other ports are regarded as non-recommended paths), data migration between CMs (cross access) can be reduced.
- \*1: The following volumes cannot be mapped.
- "SDPV" or "Temporary" type volumes
  - ODX Buffer volumes
  - "Usage" is "File" or "System"

#### Filter setting

Filter	Description
Name	Input the volume name that is to be displayed. When not using the volume name for filtering, leave this item blank.
Type	Select the volume type that is to be displayed.
Usage	Select the usage of the volume that is to be displayed.

## 4.3 Performance (QoS)

This function displays the performance information of the volume QoS for Host I/O. IOPS, throughput, and the bandwidth limit for each volume can be checked.

### Caution

The ETERNUS DX60 S3 does not support this function.

### Note

- The target volume types for this function are Standard, SDV, WSV, TPV (including NAS user volumes and Deduplication/Compression Volumes), and FTV. Note that the performance information is not displayed for ODX Buffer volumes, NAS backup volumes, NAS system volumes, and Deduplication/Compression System Volumes.
- This function displays the performance information of volume QoS regardless of whether the QoS mode is enabled or disabled. If the QoS mode is disabled, the default bandwidth limit ("Unlimited") is displayed for all items.
- Performance information is obtained when performance monitoring is operated from ETERNUS Web GUI, ETERNUS CLI, or any other monitoring software. Refer to "Start/Stop Performance Monitoring" in "ETERNUS Web GUI User's Guide (Settings)" for details on how to start performance monitoring with ETERNUS Web GUI.
- The interval for acquiring performance information can be specified when starting the monitoring. When using ETERNUS Web GUI, the default interval is 30 seconds.
- The average performance values during the specified interval are displayed.

No.	Name	Type	Usage	IOPS	Throughput	Bandwidth Limit
0	Volume000	Standard	Block	0 IOPS	0 MB/s	Unlimited
1	Volume001	TPV	Block	0 IOPS	0 MB/s	Unlimited
2	Volume002	TPV	Block	0 IOPS	0 MB/s	Unlimited
3	Volume003	Standard	Block	0 IOPS	0 MB/s	Unlimited

The following items are displayed in the Main area:

- No.  
The volume number is displayed.  
Click this item to display the [Volume Detail] screen. Refer to ["4.11 Volume Detail \(Basic\)" \(page 223\)](#) for display items.

- Name  
The volume name is displayed.  
Click this item to display the [Volume Detail] screen. Refer to ["4.11 Volume Detail \(Basic\)" \(page 223\)](#) for display items.
- Type  
The volume type is displayed.
  - Standard
  - TPV
  - FTV
  - WSV
  - SDV
- Usage  
The usage of the volume is displayed.
  - Block  
The volumes that are used for the SAN.
  - Block/Dedup  
The Deduplication/Compression Volumes.
  - File  
The volumes that are used for the NAS.
- IOPS  
IOPS, the total number of reads and writes per second, is displayed.
- Throughput  
Throughput, the total amount of read data and write data transferred per second, is displayed.
- Bandwidth Limit  
The bandwidth limit for the volume is displayed.  
If the bandwidth limit has not been configured for the volume, the default value ("Unlimited") is displayed.

#### Filter setting

Filter	Description
Name	Input the volume name that is to be displayed. When not using the volume name for filtering, leave this item blank.
Type	Select the volume type that is to be displayed. "TPV" and "FTV" are displayed as options only when the Thin Provisioning function is enabled.
Usage	Select the usage of the volume that is to be displayed.

## 4.4 Performance (Advanced Copy)

This function displays the performance information of the volumes for Advanced Copy.

### Note

- The performance information is not displayed for Deduplication/Compression System Volumes.
- Performance information is obtained when performance monitoring is operated from ETERNUS Web GUI, ETERNUS CLI, or any other monitoring software. Refer to "Start/Stop Performance Monitoring" in "ETERNUS Web GUI User's Guide (Settings)" for details on how to start performance monitoring with ETERNUS Web GUI.
- The interval for acquiring performance information can be specified when starting the monitoring. When using ETERNUS Web GUI, the default interval is 30 seconds.
- The average performance values during the specified interval are displayed.
- When the performance monitoring function is stopped, "0" is displayed as the performance information.

No.	Name	Type	Usage	Read IOPS	Write IOPS	Read Throughput	Write Throughput
0	Volume000	Standard	Block	0 IOPS	0 IOPS	0 MB/s	0 M
1	Volume001	TPV	Block	0 IOPS	0 IOPS	0 MB/s	0 M
2	Volume002	TPV	Block	0 IOPS	0 IOPS	0 MB/s	0 M
3	Volume003	Standard	Block	0 IOPS	0 IOPS	0 MB/s	0 M

The following items are displayed in the Main area:

- No.  
The volume number is displayed. Click this item to display the [Volume Detail] screen.
- Name  
The volume name is displayed. Click this item to display the [Volume Detail] screen.
- Type  
The volume type is displayed.
  - Standard
  - WSV
  - TPV
  - FTV
  - SDV
  - SDPV
  - Temporary

- Usage  
The usage of the volume is displayed.
  - Block  
The volumes that are used for the SAN.
  - Block/Dedup  
The Deduplication/Compression Volumes.
  - File  
The volumes that are used for the NAS.
  - System  
The volumes that are used for management information.  
Refer to "[Usage Details](#)" (page 228) in "[4.11 Volume Detail \(Basic\)](#)" (page 223) for details.
- Read IOPS  
The read count per second is displayed.
- Write IOPS  
The write count per second is displayed.
- Read Throughput  
The amount of transferred data that is read per second is displayed.
- Write Throughput  
The amount of transferred data that is written per second is displayed.
- Read Cache Hit Rate  
The cache hit rate (for read) is displayed.
- Write Cache Hit Rate  
The cache hit rate (for write) is displayed.
- Prefetch Cache Hit Rate  
The cache hit rate (for prefetch) is displayed.
- Extreme Cache Cache Hit Rate  
The cache hit rate of EXC for read I/O is displayed.  
This item is displayed when EXC or EXCP is enabled for the ETERNUS DX. A "-" (hyphen) is displayed for volumes where EXC and EXCP are disabled. Enabling or disabling EXC for the volume can be performed with ETERNUS CLI or ETERNUS SF Storage Cruiser. Enabling or disabling EXCP for the volume can be performed with ETERNUS Web GUI. Refer to "Modify Cache Parameters" in "ETERNUS Web GUI User's Guide (Settings)" for details.  
The mode (Extreme Cache or Extreme Cache Pool) that is being used for the ETERNUS DX is displayed in the [System Settings] screen. Refer to "[2.12 System Settings](#)" (page 71) for details.

 **Note**

A "-" (hyphen) is usually displayed for the following volumes:

- Volume type is "SDV" or "SDPV"
- Volumes that are created in a RAID group or a TPP configured with SSDs or SSD SEDs
- ODX Buffer volumes

### Filter setting

Filter	Description
Name	Input the volume name that is to be displayed. When not using the volume name for filtering, leave this item blank.
Type	Select the volume type that is to be displayed.
Usage	Select the usage of the volume that is to be displayed.



## 4.5 LUN Group

This function displays the LUN groups of each volume.

A LUN group is a group of Logical Unit Numbers (LUNs), which can be recognized by the host. The allocation information of LUNs and volumes in the ETERNUS DX/AF are configured to the LUN group.

No.	Name	LUN Group Count	LUN Group	Storage Cluster
0	VolumeName000	1	LUNG00	Enable
1	VolumeName001	1	LUNG01	Disable

The following items are displayed in the Main area:

- No.  
The volume number is displayed.
- Name  
The volume name is displayed.
- LUN Group Count  
The total number of LUN groups for the volume and the number of ports to which the volume is allocated is displayed.
- LUN Group  
The LUN group names of the volume are displayed. If the host, ports, and LUNs are allocated without specifying a host group or port group, the location information (x: CE number, y: CM number, z: CA number, w: Port number) of the ports is displayed.  
If the volume is registered in multiple LUN groups or the volume is allocated to multiple ports, the multiple LUN group names and port locations are displayed.  
When the volume does not belong to any LUN groups, or the volume is not allocated to any ports, a "-" (hyphen) is displayed.
  - LUN group name
  - For the ETERNUS DX8700 S3/DX8900 S3  
CE#x CM#y CA#z Port#w
  - For the other models  
CM#y CA#z Port#w
- Storage Cluster  
When the volume is being used by the Storage Cluster function, "Enable" is displayed. When no volumes are used for the Storage Cluster function, "Disable" is displayed.  
This item is displayed only when "Enable" is selected for the Storage Cluster function.

### Filter setting

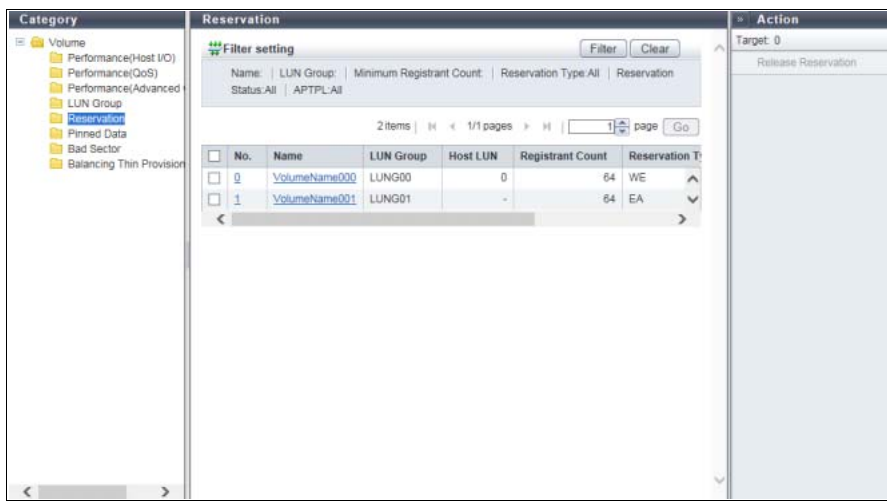
Filter	Description
Name	Input the volume name that is to be displayed. When not using the volume name for filtering, leave this item blank.
LUN Group	Input the LUN group name that is to be displayed. When not using the LUN group name for filtering, leave this item blank.
Storage Cluster	Select the Storage Cluster function usage status for the volume that is to be displayed. This item is displayed only when "Enable" is selected for the Storage Cluster function.

## 4.6 Reservation

This function displays the reservation status of the volumes that are specified by a host.

### Note

The reservation status for volumes where the usage is "Block" and "Block/Dedup" is displayed. Refer to ["4.1 Volume \(Basic Information\)" \(page 194\)](#) for details.



The following items are displayed in the Main area:

- No.  
The volume number is displayed. Click this item to display the [Volume Detail] screen. Refer to ["4.12 Volume Detail \(Reservation\)" \(page 232\)](#) for display items.
- Name  
The volume name is displayed. Click this item to display the [Volume Detail] screen. Refer to ["4.12 Volume Detail \(Reservation\)" \(page 232\)](#) for display items.
- LUN Group  
When the host affinity setting is specified for a host that reserves the volume, the LUN group name is displayed. If the host, ports, and LUNs are directly allocated (mapped), the location information (x: CE number, y: CM number, z: CA number, w: Port number) of the ports is displayed. When the volume is not reserved, a "-" (hyphen) is displayed.
  - LUN group name
  - For the ETERNUS DX8700 S3/DX8900 S3  
CE#x CM#y CA#z Port#w
  - For the other models  
CM#y CA#z Port#w
- Host LUN  
The host LUN, which is allocated to the volume, is displayed. When the volume is not reserved, a "-" (hyphen) is displayed.
- Registrant Count  
The number of reservation keys registered in the volume is displayed.

- **Reservation Type**  
When the volume is in persistent reservation status, one of the following persistent reservation types is displayed. When the volume is in reservation status other than persistent reservation status, or when the volume is not reserved, a "-" (hyphen) is displayed.
  - WE (Write Exclusive)
  - EA (Exclusive Access)
  - WE\_RO (Write Exclusive-Registrants Only)
  - EA\_RO (Exclusive Access-Registrants Only)
  - WE\_AR (Write Exclusive-All Registrants)
  - EA\_AR (Exclusive Access-All Registrants)
- **Reservation Status**  
The volume reservation status is displayed.
  - Yes  
In persistent reservation status
  - No  
In reservation status, but not in persistent reservation status
  - "-" (hyphen)  
Not in reservation status
- **APTPL (\*1)**  
Whether or not persistent reservation information is kept after the ETERNUS DX/AF has been shutdown/rebooted is displayed. When the volume is in reservation status other than persistent reservation status, "No" is displayed. When the volume is not reserved, a "-" (hyphen) is displayed.
 

\*1: Activate Persist Through Power Loss

  - Yes  
The persistent reservation information is kept.
  - No  
The persistent reservation information is not kept.

#### Filter setting

Filter	Description
Name	Input the volume name that is to be displayed. When not using the volume name for filtering, leave this item blank.
LUN Group	Input the LUN group name or the port location information that is to be displayed. When not using the LUN group name or port location information for filtering, leave this item blank.
Bottom of Registrant Count	Input the minimum number of reservation keys for the volume that is to be displayed. When not using the bottom of the registrant count, leave this item blank.
Reservation Type	Select the reservation type that is to be displayed.
Reservation Status	Select the status of reservations that is to be displayed.
APTPL	Select the APTPL that is to be displayed.

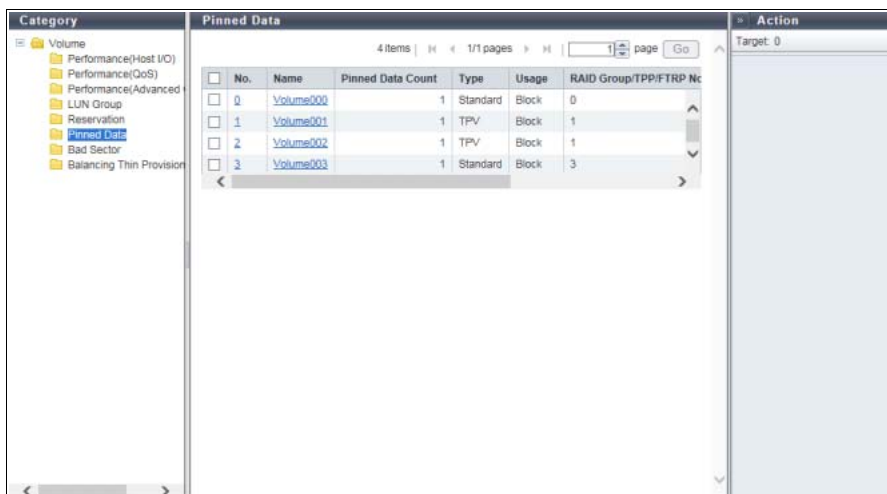
## 4.7 Pinned Data

Volumes including pinned data are displayed.

"Pinned data" is the data left in the cache memory due to unsuccessful write-back to the volume from the cache memory.

### Note

- When a system message that indicates the detection of pinned data is displayed in the [Overview] screen, or when a "Pinned data" event is notified by Host Sense Key Code Qualifier or SNMP Trap, use this function to check the detected pinned data.  
Use the [Setup Event Notification] function to specify whether to perform event notification when pinned data is detected. Refer to "Setup Event Notification" in "ETERNUS Web GUI User's Guide (Settings)" for details. Note that writing back, deleting, and saving pinned data can be performed by a maintenance engineer who has the "Maintenance Operation" policy.
- Deduplication/Compression Volumes are not displayed in the pinned data list.



No.	Name	Pinned Data Count	Type	Usage	RAID Group/TPP/FTRP Nc
0	Volume000	1	Standard	Block	0
1	Volume001	1	TPV	Block	1
2	Volume002	1	TPV	Block	1
3	Volume003	1	Standard	Block	3

The following items are displayed in the Main area:

- No.  
The volume number is displayed. Click this item to display the [Volume Detail] screen. Refer to "[4.13 Volume Detail \(Pinned Data\)](#)" (page 233) for display items.
- Name  
The volume name is displayed. Click this item to display the [Volume Detail] screen. Refer to "[4.13 Volume Detail \(Pinned Data\)](#)" (page 233) for display items.
- Pinned Data Count  
The number of pinned data is displayed.

- Type  
The volume type is displayed.
  - Standard
  - WSV
  - TPV
  - FTV
  - SDV
  - SDPV
  - Temporary
- Usage  
The usage of the volume is displayed.
  - Block  
The volumes that are used for the SAN.
  - File  
The volumes that are used for the NAS.
  - System  
The volumes that are used for management information.  
Refer to ["Usage Details" \(page 228\)](#) in ["4.11 Volume Detail \(Basic\)" \(page 223\)](#) for details.
- RAID Group/TPP/FTRP No.  
The following number is displayed:
  - If the type is "WSV"  
The RAID group number to which the representative volume (\*1) belongs is displayed.  
\*1: A volume for WSV, which is created by concatenating multiple RAID groups with striping, that belongs to the RAID group that is first in the concatenation order.
  - If the type is "TPV"  
The Thin Provisioning Pool (TPP) number to which the volume belongs is displayed.
  - If the type is "FTV"  
The Flexible Tier Pool (FTRP) number to which the volume belongs is displayed.
  - If the type is not one of the types listed above  
The RAID group number to which the volume belongs is displayed.
- RAID Group/TPP/FTRP Name  
The following name is displayed:
  - If the type is "WSV"  
The RAID group name to which the representative volume belongs is displayed.
  - If the type is "TPV"  
The Thin Provisioning Pool (TPP) name to which the volume belongs is displayed.
  - If the type is "FTV"  
The Flexible Tier Pool (FTRP) name to which the volume belongs is displayed.
  - If the type is not one of the types listed above  
The RAID group name to which the volume belongs is displayed.
- Controlling CM  
The Controlling CM of the RAID group to which the volume belongs is displayed.

## 4.8 Bad Sector

The bad sector information is displayed.

### Note

- When data for rebuild, copyback, or redundant copy is not read normally, bad sector information is recorded.
- When a system message that indicates the detection of bad sector is displayed in the [Overview] screen or when a "Bad data" event is notified by Host Sense Key Code Qualifier or an SNMP Trap, use this screen to check the detected bad sector.  
Use the [Setup Event Notification] function to specify whether to perform event notification when a bad sector is detected. Refer to "Setup Event Notification" in "ETERNUS Web GUI User's Guide (Settings)" for details. Note that the deletion of bad sector can be performed by a maintenance engineer who has the "Maintenance Operation" policy.
- Deduplication/Compression Volumes are not displayed in the bad sector list.

No.	Name	Type	Usage	Error LBA	Error LBA Count	Error
0	Volume000	Standard	Block	0x0000000000000000	0x0000000000000000	Cc
1	Volume001	TPV	Block	0x0000000000000000	0x0000000000000000	Cc
2	Volume002	TPV	Block	0x0000000000000000	0x0000000000000000	Cc
3	Volume003	Standard	Block	0x0000000000000000	0x0000000000000000	Cc

The following items are displayed in the Main area:

- No.  
The volume number is displayed.
- Name  
The volume name is displayed.  
When the volume type is WSV or when the volume is concatenated by LUN concatenation, "Volume name (n/m)" (n: nth volume in the concatenation order, m: number of concatenated volumes) is displayed.

- Type  
The volume type is displayed.
    - Standard
    - WSV
    - TPV
    - FTV
    - SDV
    - SDPV
    - Temporary
  - Usage  
The usage of the volume is displayed.
    - Block  
The volumes that are used for the SAN.
    - File  
The volumes that are used for the NAS.
    - System  
The volumes that are used for management information.  
Refer to ["Usage Details" \(page 228\)](#) in ["4.11 Volume Detail \(Basic\)"](#) for details.
  - Error LBA  
The start position of the bad sector information in the volume is displayed using the Logical Block Address (LBA).  
When the volume type is WSV or when the volume is concatenated by LUN concatenation, the LBA for each volume that is concatenated (\*1) is displayed.  
A "-" (hyphen) is displayed when the "Error Type" is "Dispersion".
  - Error LBA Count  
The number of LBAs from Error LBA of the bad sector information in the volume is displayed.  
When the volume type is WSV or when the volume is concatenated by LUN concatenation, the LBA Count for each volume that is concatenated (\*1) is displayed.  
A "-" (hyphen) is displayed when the "Error Type" is "Dispersion".
  - Error Type  
The number of bad sector information in the volume is displayed.
    - When one bad sector information exists in the volume: "Contiguity"
    - When multiple number of bad sector information exist in the volume: "Dispersion"
- \*1: Each volume is displayed in "volume name (n/m)" format (n: nth volume in the concatenation order, m: number of concatenated volumes). Refer to ["4.1 Volume \(Basic Information\)" \(page 194\)](#) for details.



## 4.9 Balancing Thin Provisioning Volume

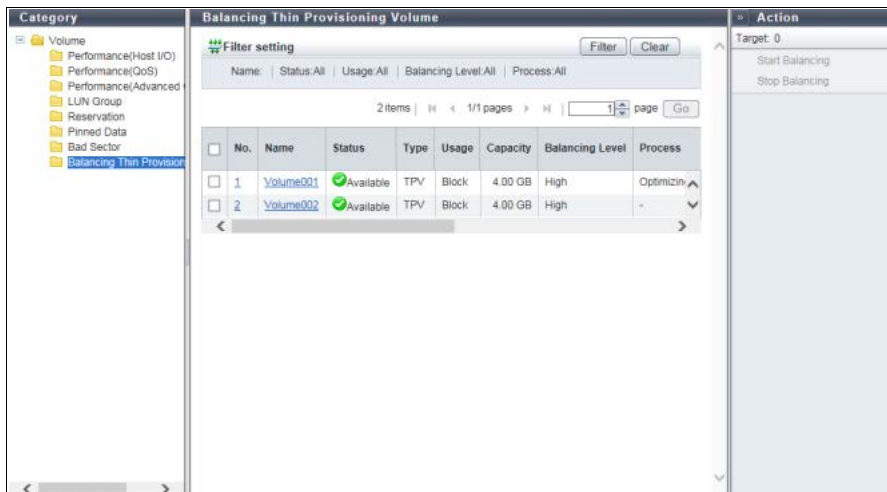
This function displays the information of balancing Thin Provisioning Volumes (TPVs).

### Caution

When using the Thin Provisioning function, "Enable" the Thin Provisioning. Refer to "Set Thin Provisioning" in "ETERNUS Web GUI User's Guide (Settings)" for details.

### Note

- Deduplication/Compression Volumes and Deduplication/Compression System Volumes are not displayed in the TPV list because they are not targets for balancing.
- To check whether the Thin Provisioning function is enabled or disabled, refer to the ["7.3 Settings \(Thin Provisioning\)" \(page 355\)](#).



The following items are displayed in the Main area:

- No.  
The volume number is displayed. Click this item to display the [Volume Detail] screen. Refer to ["4.14 Volume Detail \(Balancing TPV\)" \(page 234\)](#) for display items.
- Name  
The volume name is displayed. Click this item to display the [Volume Detail] screen. Refer to ["4.14 Volume Detail \(Balancing TPV\)" \(page 234\)](#) for display items.
- Status  
The volume status is displayed. Refer to ["A.2 Volume Status" \(page 406\)](#) for detailed information of volume status.
- Type  
The volume type (fixed to "TPV") is displayed.

- Usage  
The usage of the volume is displayed.
  - Block  
The volumes that are used for the SAN.
  - File  
The volumes that are used for the NAS.
  - System  
The volumes that are used for management information.  
Refer to ["Usage Details" \(page 228\)](#) in ["4.11 Volume Detail \(Basic\)" \(page 223\)](#) for details.
- Capacity  
The total volume capacity is displayed.
- Balancing Level  
The balancing level of the volume is displayed.
  - When the volume is balanced  
High
  - When the volume is almost balanced  
Middle
  - When the volume is not balancing well  
Low
  - When the ETERNUS DX/AF is abnormal  
"-" (hyphen)
- Process  
A process that is being performed for the volume is displayed.  
If multiple processes are being performed, the processes are separated with a ":" (colon)" and displayed using ("xx:yy"). "Balancing", "Formatting", or "Migrating" is displayed as "xx". "Optimizing Capacity" or "Reserved Optimizing Capacity" is displayed as "yy".  
If no process is being performed, a "-" (hyphen) is displayed.
  - Balancing  
TPV balancing is being performed
  - Formatting  
Formatting is being performed
  - Migrating  
RAID migration is being performed
  - Optimizing Capacity  
Capacity optimization (\*1) is being performed in a TPV or an FTV.
  - Reserved Optimizing Capacity  
Capacity optimization is being reserved (\*2) for a TPV or an FTV.
    - \*1: "Capacity Optimization" is a function that releases the allocated physical area when data in the physical area that is allocated to a TPV or an FTV is filled with zeros.
    - \*2: If "Start Optimizing TPV/FTV Capacity after migration" is enabled for the RAID migration function, the migration source volume is reserved for capacity optimization.

- Balancing Process  
When "Process" is not "Balancing", a "-" (hyphen) is displayed.
  - Status  
The status of TPV balancing is displayed.
    - Active  
Running normally
    - Error  
Stopped due to an error
  - Progress  
The progress of TPV balancing is displayed.
  - Work Vol. No.  
The volume number undergoing TPV balancing is displayed.
  - Work Vol. Name  
The volume name undergoing TPV balancing is displayed.
  - Error Code  
The error code of TPV balancing is displayed when an error occurs.
  - Elapsed Time  
The elapsed time of TPV balancing is displayed.  
The displayed time is the elapsed time at the point when this screen is displayed.

#### Filter setting

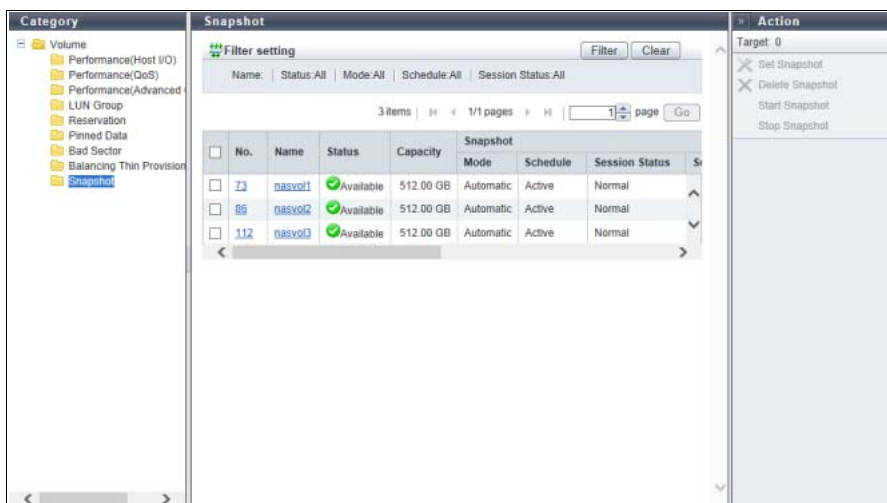
Filter	Description
Name	Input the volume name that is to be displayed. When not using the volume name for filtering, leave this item blank.
Status	Select the volume status that is to be displayed.
Usage	Select the usage of the volume that is to be displayed.
Balancing Level	Select the volume type that is to be displayed.
Process	Select which current process for the volume is to be displayed.

## 4.10 Snapshot

This function displays the Snapshot configuration information of the NAS user volume. This function is displayed in a Unified Storage environment.

### Caution

The ETERNUS DX60 S3, the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3, the ETERNUS AF250/AF650, and the ETERNUS DX200F do not support this function.



The following items are displayed in the Main area:

- No.  
The NAS user volume number is displayed. Click this item to display the [Volume Detail] screen. Refer to ["4.16 Volume Detail \(Snapshot\)" \(page 236\)](#) for display items.
- Name  
The NAS user volume name is displayed. Click this item to display the [Volume Detail] screen. Refer to ["4.16 Volume Detail \(Snapshot\)" \(page 236\)](#) for display items.
- Status  
The NAS user volume status is displayed.  
When the volume status is normal, "Available" is displayed.  
Refer to ["A.2 Volume Status" \(page 406\)](#) for detailed information of volume status.
- Capacity  
The NAS user volume capacity is displayed.
- Snapshot  
The Snapshot information is displayed.
  - Mode  
The collection mode for the Snapshot is displayed.  
If the Snapshot is not set, a "-" (hyphen) is displayed.
    - Automatic  
The Snapshot is set from ETERNUS Web GUI, ETERNUS CLI, or ETERNUS SF Storage Cruiser.

- Manual  
The Snapshot is set from VMware vSphere Web Client.  
Refer to "ETERNUS vCenter Plug-in 3.0.0 User's Guide" for details.
  - Schedule  
Status of the scheduled operation for Snapshot is displayed.  
If the Snapshot is not set or if the collection mode (or the "Mode" setting) for Snapshot is set to "Manual", a "-" (hyphen) is displayed.
    - Active
    - Inactive
  - Session Status  
The session status for the Snapshot is displayed.  
If the Snapshot is not set, a "-" (hyphen) is displayed.
    - Normal  
Snapshot performs normally.
    - Error  
Some Snapshots cannot be referenced due to an error.  
If the session status of even one generation is error in the [Volume Detail] screen, "Error" is displayed for this item. Refer to ["4.16 Volume Detail \(Snapshot\)" \(page 236\)](#) for details.
  - Schedule Day  
The Snapshot acquisition schedule (set day) is displayed.  
If the Snapshot schedule is specified for all the days of the week, "Every Day" is displayed.  
If the Snapshot is not set or if the collection mode (or the "Mode" setting) for Snapshot is set to "Manual", a "-" (hyphen) is displayed.
  - Schedule Time  
The Snapshot acquisition schedule (set time) is displayed.  
If the Snapshot schedule is specified for all hours, "Every Hour" is displayed.  
If the Snapshot is not set or if the collection mode (or the "Mode" setting) for Snapshot is set to "Manual", a "-" (hyphen) is displayed.
  - Number of Generations  
The number of generations for the Snapshot is displayed. If the Snapshot is not set, a "-" (hyphen) is displayed.
    - ETERNUS DX100 S3  
1 - 16 (\*1) or 1 - 64 (\*2)
    - ETERNUS DX200 S3  
1 - 64 (\*1) or 1 - 128 (\*2)
    - ETERNUS DX500 S3  
1 - 128
    - ETERNUS DX600 S3  
1 - 128
- \*1: The maximum number of generations when "Memory Extension" described below is installed. "Memory Extension" is used in a Unified Storage environment or for the Deduplication/Compression function.
- ETERNUS DX100 S3  
8GB/CM
  - ETERNUS DX200 S3  
16GB/CM
- \*2: The maximum number of generations when "Memory Extension" described below is installed.
- ETERNUS DX100 S3  
16GB/CM (the controller firmware version is V10L53 or later)
  - ETERNUS DX200 S3  
32GB/CM (the controller firmware version is V10L33 or later)

- RAID Group No.  
The RAID group number that the Snapshot destination SDV belongs to is displayed. If the Snapshot is not set, a "-" (hyphen) is displayed.
- RAID Group Name  
The RAID group name that the Snapshot destination SDV belongs to is displayed. If the Snapshot is not set, a "-" (hyphen) is displayed.

#### Filter setting

Filter	Description
Name	Input the volume name that is to be displayed. When not using the volume name for filtering, leave this item blank.
Status	Select the volume status that is to be displayed.
Mode	Select the Snapshot collection mode of the volume that is to be displayed. To display volumes without the Snapshot setting, select "-" (hyphen).
Schedule	Select the scheduled Snapshot operation status of the volume that is to be displayed. To display volumes without the Snapshot setting, select "-" (hyphen).
Session Status	Select the Snapshot session status of the volume that is to be displayed. To display volumes without the Snapshot setting, select "-" (hyphen).

## 4.11 Volume Detail (Basic)

The detail information of the volume is displayed.

- Standard volume

The screenshot shows the 'Volume Detail' window for a Standard volume. The left sidebar lists categories like Performance, Reservation, and Snapshot. The main area displays the following information:

- Volume Detail:** No.: 0, Name: VolumeName000, Type: Standard, Usage: Block.
- Volume Information:**
  - Status: Available
  - Capacity: 4.00 GB
  - Capacity on RAID Group: 4.00 GB (4194304.00 KB)
  - RAID Group No.: 0
  - RAID Group Name: RAIDName000
  - Encryption: -
  - Data Integrity: Default
  - Wide Stripe Size: -
  - Reserved Deletion: -
  - UID: 82383C3D3E3F36003839616263640000
  - Storage Cluster: Enable
  - Virtual Volume: Disable
  - Allocation: -
  - Usage Details: Block
  - Process: -
  - Progress: -
  - Optimizing Capacity Progress: -

The right sidebar shows various actions such as Rename, Format, Expand Volume, Start RAID Migration, and Modify Cache Parameters.

- TPV

The screenshot shows the 'Volume Detail' window for a TPV volume. The left sidebar is the same as in the previous screenshot. The main area displays the following information:

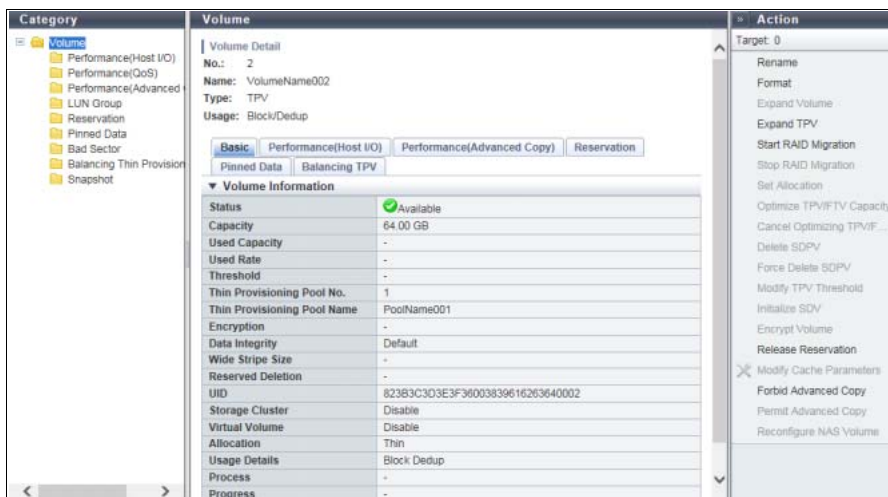
- Volume Detail:** No.: 5, Name: VolumeName005, Type: TPV, Usage: Block.
- Volume Information:**
  - Status: Available
  - Capacity: 4.00 GB
  - Used Capacity: 0.00 MB
  - Used Rate: 0 %
  - Threshold: 80 %
  - Thin Provisioning Pool No.: 1
  - Thin Provisioning Pool Name: PoolName001
  - Encryption: -
  - Data Integrity: Default
  - Wide Stripe Size: -
  - Reserved Deletion: -
  - UID: 82383C3D3E3F36003839616263640005
  - Storage Cluster: Disable
  - Virtual Volume: Disable
  - Allocation: Thin
  - Usage Details: Block
  - Process: -
  - Progress: -

The right sidebar shows various actions such as Rename, Format, Expand TPV, Start RAID Migration, and Modify Cache Parameters.

● NAS user volume



● Deduplication/Compression Volume



The following items are displayed in the Main area:

- Status  
The volume status is displayed.  
When the volume status is normal, "Available" is displayed.  
Refer to ["A.2 Volume Status" \(page 406\)](#) for detailed information of RAID group status.
- Capacity  
The volume capacity is displayed with "MB", "GB", or "TB". The unit of measurement for the capacity is determined according to the actual volume size.
- Capacity on RAID Group  
The volume capacity is displayed with "MB", "GB", or "TB". The unit of measurement for the capacity is determined according to the actual volume size. The capacity is also displayed with "KB".  
While the capacity that is specified by the user when creating the volume is displayed in the "Capacity" field described above, the volume capacity that is actually secured in units of the basic volume size in the RAID group is displayed in this field. This item is displayed when the volume type is "Standard", "WSV", "SDV", "SDPV", or "Temporary".



- **Used Capacity**  
The used capacity (physically allocated capacity) of volume is displayed.  
A "-" (hyphen) is displayed for the Deduplication/Compression Volume (\*1).  
This item is displayed when the volume type is "TPV" or "FTV".  
\*1: The used capacity of the Deduplication/Compression Volumes in the TPP can be determined by checking the used capacity of the DEDUP\_SYS Volume that is created in the TPP. The used capacity of the DEDUP\_SYS Volume approximately corresponds to the total used capacity of the Deduplication/Compression Volumes in the relevant TPP.
- **Used Rate**  
The volume utilization is displayed between 0% - 100%.  
  
Used Rate = Used Capacity / Capacity  
  
A "-" (hyphen) is displayed for the Deduplication/Compression Volume (\*1).  
This item is displayed when the volume type is "TPV" or "FTV".  
\*1: The used rate of the Deduplication/Compression Volumes in the TPP can be determined by checking the used rate of the DEDUP\_SYS Volume that is created in the TPP. The used rate of the DEDUP\_SYS Volume approximately corresponds to the total used rate of the Deduplication/Compression Volumes in the relevant TPP. Note that the capacity reduction rate for the TPP due to the Deduplication/Compression function can be checked in the [Thin Provisioning Pool] screen. Refer to ["7.1.1 Thin Provisioning Pool \(Basic Information\)" \(page 325\)](#) for details.
- **Threshold**  
The threshold for monitoring the volume utilization is displayed between 1% - 100%.  
If the "Used Rate" value exceeds the "Threshold", a Host Sense Key Code Qualifier is notified.  
A "-" (hyphen) is displayed for the Deduplication/Compression Volume or the Deduplication/Compression System Volume.  
This item is displayed when the volume type is "TPV" or "FTV".

 **Note**

- The threshold for TPPs can be checked in the [Threshold] screen. Refer to ["7.1.5 Threshold \(Thin Provisioning Pool\)" \(page 334\)](#) for details.
- The threshold for FTRPs can be checked in the [Flexible Tier Pool] screen. Refer to ["7.2.1 Flexible Tier Pool \(Basic Information\)" \(page 340\)](#) for details.

- **NAS FS Block Size**  
The block size of the NAS file system (NAS user volume) is displayed.  
This item is displayed only when the usage details of the volume is "NAS Data".  
The maximum NAS user volume capacity and the maximum file size vary depending on the block size of the NAS file system. For details, refer to the following table.

**The maximum NAS user volume capacity and the maximum file size of each "NAS FS Block Size"**

	NAS FS Version (*1)	NAS FS Block Size		
		8KB	32KB	256KB
The maximum NAS user volume capacity	1 or 2	-	-	128TB
	3	4TB	16TB	-
	4 or 5	32TB	128TB	128TB
The maximum file size (*2)	1 or 2	-	-	32TB
	3, 4, or 5	1TB	4TB	32TB

- \*1: The version of the NAS file system (NAS user volume). For the details, refer to ["NAS FS Version" \(page 226\)](#).
- \*2: The "file size" indicates the size of the user data that is created in the shared folder.

- NAS FS Version

The NAS file system (NAS user volume) version is displayed.

This item is displayed only when the usage details of the volume is "NAS Data". For the maximum NAS user volume capacity for each "NAS FS Version", refer to ["The maximum NAS user volume capacity and the maximum file size of each "NAS FS Block Size" \(page 225\)](#).

NAS FS Version	Volume capacity expansion	Description
1	N/A	The NAS user volumes that are created with the controller firmware version earlier than V10L21. "NAS FS Block Size" is fixed to "256KB".
2	Available (*1)	The NAS user volumes that are created with the controller firmware version V10L21. "NAS FS Block Size" is fixed to "256KB".
3	Available (*1)	The NAS user volumes that are created with the controller firmware version V10L31. "NAS FS Block Size" is "8KB" or "32KB". When creating a NAS user volume where the block size is "256KB", "2" is displayed for this item.
4	Available (*1)	The NAS user volumes that are created with the controller firmware version V10L33. "NAS FS Block Size" is "8KB", "32KB", or "256KB". The maximum NAS user volume capacity varies depending on whether the version is "3" or "4" or later.
5	Available (*1)	The NAS user volumes that are created with the controller firmware versions V10L51 and later. "NAS FS Block Size" is "8KB", "32KB", or "256KB". When the version is "5" or later, the quota information can be configured for each shared folder.

\*1: Refer to "Reconfigure NAS Volume" and "Expand Thin Provisioning Volume" in "ETERNUS Web GUI User's Guide (Settings)" for details.

 **Caution**

- If the file system format for the NAS user volume where the "NAS FS Version" is "1", "2", "3", or "4" is converted, the "NAS FS Version" is changed to "5". Refer to "Reconfigure NAS Volume" in "ETERNUS Web GUI User's Guide (Settings)" for details. Note that the "NAS FS Block Size" for the relevant NAS user volume is not changed.
- To configure the quota information for each shared folder to which the NAS user volume belongs when the "NAS FS Version" is "2", "3", or "4", the file system must be changed. Use the [Reconfigure NAS Volume] function for Web GUI and execute the "start nas-fsck" ETERNUS CLI command to change the file system for the relevant NAS user volume. Refer to "Add Quota Setting" in "ETERNUS Web GUI User's Guide (Settings)" for details.

 **Note**

If the "NAS FS Block Size" is "8KB" or "32KB" and the file system format for the NAS user volume where the "NAS FS Version" is "3" is converted, the maximum capacity of the NAS user volume that can be created is expanded.

- RAID Group No.  
The RAID group number to which the volume belongs is displayed.  
If the type is "WSV", the RAID group number to which the representative volume belongs is displayed.  
This item is not displayed when the volume type is "TPV" or "FTV".
- RAID Group Name  
The RAID group name to which the volume belongs is displayed.  
If the type is "WSV", the RAID group name to which the representative volume belongs is displayed.  
This item is not displayed when the volume type is "TPV" or "FTV".
- Thin Provisioning Pool No.  
The TPP number to which the volume belongs is displayed.  
This item is displayed only when the volume type is "TPV".
- Thin Provisioning Pool Name  
The TPP name to which the volume belongs is displayed.  
This item is displayed only when the volume type is "TPV".
- FTRP No.  
The FTRP name to which the volume belongs is displayed.  
This item is displayed only when the volume type is "FTV".
- FTRP Name  
The FTRP name to which the volume belongs is displayed.  
This item is displayed only when the volume type is "FTV".
- Encryption  
The encryption status of the volume is displayed.  
For the ETERNUS DX60 S3, this item is not displayed.
  - CM  
The volume that is encrypted by CM.
  - "-" (hyphen)  
The volume that is not encrypted.
  - SED  
The volume that is encrypted by SED.
- Data Integrity  
The volume protection method is displayed.
  - Default  
Data is protected within the ETERNUS DX/AF.
  - T10-DIF  
Data is protected with a T10-DIF (Data Integrity Field) compatible method in the ETERNUS DX/AF and the host paths. This method is available only when the host interface is FC.
- Wide Stripe Size  
The Wide Stripe Size is displayed.  
"Wide Stripe Size" is the size of the WSV Unit that is allocated to each RAID group in series. A "-" (hyphen) is displayed when the volume type is other than "WSV".
  - Normal  
An integral multiple of the basic size for each RAID level (\*1). The maximum size is 16MB or smaller.
  - Small  
An integral multiple of the basic size for each RAID level (\*1). The maximum size is 2MB or smaller.  
Note that when the basic size for a RAID group is larger than 2MB, the basic size is specified.

\*1: The basic size (stripe size) when creating a volume. Refer to "Basic Size for each RAID Group" in "ETERNUS Web GUI User's Guide (Settings)" for details.

- **Reserved Deletion**

The "Reserved Deletion" state of the SDPV is displayed.  
If the SDPV is currently being used, the target SDPV status is changed to "Reserved Deletion". Refer to "Delete Snap Data Pool Volume" in "ETERNUS Web GUI User's Guide (Settings)" for details.  
A "-" (hyphen) is displayed when the volume type is other than "SDPV".

  - Yes  
SDPVs are in the "Reserved Deletion" state.
  - No  
SDPVs are not in the "Reserved Deletion" state.
- **UID**

The UID is displayed.  
A "-" (hyphen) is displayed for the Deduplication/Compression System Volume.
- **Storage Cluster**

When the volume is being used by the Storage Cluster function, "Enable" is displayed. When no volumes are used for the Storage Cluster function, "Disable" is displayed.  
This item is displayed only when "Enable" is selected for the Storage Cluster function.
- **Virtual Volume**

When the volume is being used by the Virtual Volume function, "Enable" is displayed. When no volumes are used by the Virtual Volume function, "Disable" is displayed.  
For \$VVOL\_META, "Disable" is displayed even if the relevant volume is being used by the Virtual Volume function.  
This item is displayed only when "Enable" is selected for the Virtual Volume function.
- **Allocation**

The allocation method for the volume is displayed.  
A "-" (hyphen) is displayed when the volume type is other than "TPV" or "FTV".

  - Thin
  - Thick
- **Usage Details**

The detailed usage of the volume is displayed.


  - When the usage is "Block"  
"Block" is displayed. The volumes that are used for the SAN.
  - When the usage is "Block/Dedup"  
"Block Dedup" is displayed. The Deduplication/Compression Volumes.  
Volumes that have the Deduplication/Compression setting (or the Deduplication/Compression function) enabled during volume creation.
  - When the usage is "File"
    - **NAS Data**

The user volumes that are used for the NAS.  
The NAS Data type volumes can be created by ETERNUS Web GUI.
    - **NAS Backup**

The backup volumes that are used for the NAS.  
The NAS Backup type volumes are created by ETERNUS CLI or ETERNUS SF Storage Cruiser.
    - **NAS Snapshot**

The Snapshot destination SDVs that are used for NAS.  
NAS Snapshots are automatically created when performing the [Set Snapshot] function.

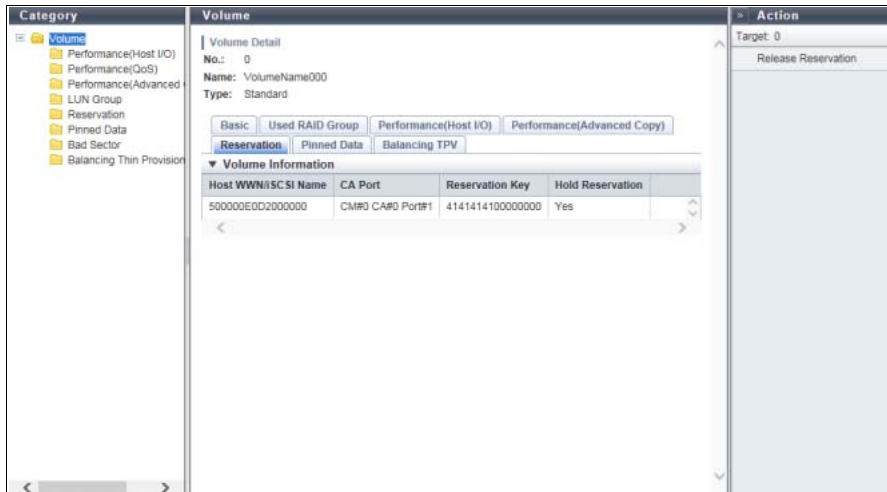
- When the usage is "System"
  - NAS CM#0 System (\*1)  
The system volumes that are used for CM#0 in the NAS system.
  - NAS CM#1 System (\*1)  
The system volumes that are used for CM#1 in the NAS system.
  - NAS FS Management (\*1)  
The system volumes that are used for NAS system file management.
  - NAS CM#0 EX System (\*2)  
The NAS expanded system volume that is used to store NAS monitoring logs for CM#0 in the NAS system.
  - NAS CM#1 EX System (\*2)  
The NAS expanded system volume that is used to store NAS monitoring logs for CM#1 in the NAS system.
  - VVOL Metadata  
The system volumes that are used for storing the management information (metadata) of the Virtual Volume function.  
This volume is automatically created when the Virtual Volume function is set to "Enable" and when VVOL is created from ETERNUS SF Storage Cruiser for the first time.
  - Dedup System (\*3)  
The Deduplication/Compression System Volumes (or DEDUP\_SYS Volumes).  
This volume is used to store data and meta data after the Deduplication/Compression process is complete.
  - Dedup Map (\*3)  
The Deduplication/Compression System Volumes (or DEDUP\_MAP Volumes).  
This volume is used to store the mapping tables for obtaining the physical location information of DEDUP\_SYS Volumes from Deduplication/Compression Volumes.
- \*1: The volume is created automatically when NAS Data volumes are created.
- \*2: The volume is created by executing the "create volume" ETERNUS CLI command. Web GUI cannot be used to create these volumes. NAS volumes of which the usage is "System" is collectively referred to as "NAS system volumes" in this manual.
- \*3: The volume is created automatically when Deduplication/Compression (or the Deduplication/Compression function) for TPP is enabled.
- Process  
A process that is being performed for the volume is displayed.  
If no process is being performed, a "-" (hyphen) is displayed.  
If multiple processes are currently being performed, the processes are separated with a ":" (colon)" and displayed using ("xx:yy"). "Encrypting", "Formatting", "Migrating", or "Balancing" is displayed as "xx". "Optimizing Capacity" or "Reserved Optimizing Capacity" is displayed as "yy". If no process is being performed, a "-" (hyphen) is displayed.
  - Encrypting
  - Formatting
  - Migrating
  - Balancing
  - Optimizing Capacity
  - Reserved Optimizing Capacity

- **Migration Status**  
The RAID migration status is displayed.  
This item is only displayed when using controller firmware version V10L4x or later, and when the process is "Migrating".
    - Reserved  
The RAID migration is in a reserved state.
    - Active  
The RAID migration is operating normally.
    - Error  
The RAID migration has been suspended due to an error.
    - "-" (hyphen)  
A status other than the ones listed above.
  - **Progress**  
The progress of a process that is being performed is displayed with a bar and a rate (%). To display the latest progress, refresh the screen. If no process is being performed, or if the migration status is "Reserved", a "-" (hyphen) is displayed.
  - **Estimated Time Left**  
The estimated remaining time before formatting is complete is displayed. To display the latest estimated remaining time, refresh the screen. This item is not displayed when the process is other than "Formatting".
    - Calculating  
The ETERNUS DX/AF is calculating the estimated remaining time.
    - 30 days or more  
The estimated remaining time is 30 days or more.
    - x days y h z min. (x: 1 - 29, y: 0 - 23, z: 0 - 59)  
The estimated remaining time is more than one minute and less than 30 days. When the estimated remaining time is less than one day, the "days" value is omitted. When the estimated remaining time is less than one hour, the "days" and "hours" values are omitted.
    - Less than 1 min.  
The estimated remaining time is less than one minute.
-  **Caution**
- The "Estimated Time Left" value may increase or decrease due to the I/O load when displaying this item.
- 
- **Remaining Size**  
The remaining size of the unformatted volume is displayed. To display the latest size, refresh the screen. This item is not displayed when the process is other than "Formatting".
  - **Optimizing Capacity Progress**  
The progress of capacity optimization processes that are being performed is displayed with a bar and a ratio value. To display the latest progress for the capacity optimization, refresh the screen. When capacity optimization is not being performed, a "-" (hyphen) is displayed.  
When the storage system status is "Not Ready", the field is blank.
  - **Total Device Space**  
The total space of the file system is displayed.  
The "Total Device Space" indicates the NAS user volume capacity that is available for the user.  
This item is displayed only when the usage details of the volume is "NAS Data".
  - **Used Device Space**  
The used space in the file system is displayed.  
The "Used Device Space" indicates the NAS user volume capacity that has already been used by the user.  
This item is displayed only when the usage details of the volume is "NAS Data".

- Free Device Space  
The free space in the file system is displayed.  
The "Free Device Space" indicates the NAS user volume capacity that will be available for the user.  
This item is displayed only when the usage details of the volume is "NAS Data".
- File System Information  
The mount state of the file system is displayed.  
This item is displayed only when the usage details of the volume is "NAS Data".

## 4.12 Volume Detail (Reservation)

The detailed information of reservation volume is displayed.



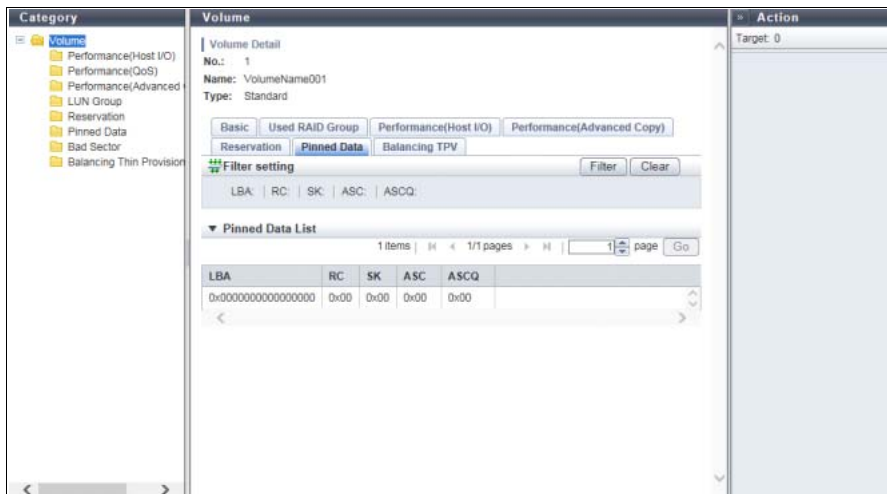
The following items are displayed in the Main area:

- Host WWN/iSCSI Name  
The WWN or the iSCSI name of the host that can access the volume is displayed.
- CA Port  
The location information (x: CE number, y: CM number, z: CA number, w: Port number) of the CA port that connects to the host is displayed.
  - For the ETERNUS DX8700 S3/DX8900 S3  
CE#x CM#y CA#z Port#w
  - For the other models  
CM#y CA#z Port#w
- Reservation Key  
The reservation key that is used for persistent reservation of the volume is displayed.  
When no reservation keys exist, a "-" (hyphen) is displayed.
- Hold Reservation  
Whether the target reservation key is used for persistent reservation is displayed.  
When the volume is in reservation status other than persistent reservation status, "No" is displayed.
  - Yes  
In persistent reservation status
  - No  
Not in persistent reservation status



## 4.13 Volume Detail (Pinned Data)

The detailed information of pinned data is displayed.



The following items are displayed in the Main area:

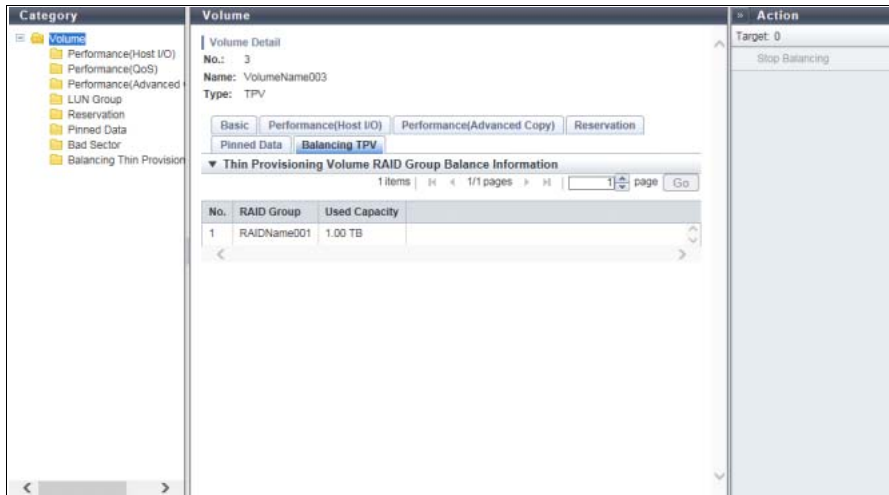
- LBA  
The location of the pinned data in the volume is displayed using the Logical Block Address (LBA).
- RC  
The reason (Reason Code) that created the pinned data is displayed.
- SK  
The Sense Key (SK) part is displayed from the sense information that is output when the pinned data is created.
- ASC  
Additional Sense Code (ASC) part is displayed from the sense information that is output when the pinned data is created.
- ASCQ  
Additional Sense Code Qualifier (ASCQ) part is displayed from the sense information that is output when the pinned data is created.

### Filter setting

Filter	Description
LBA	Input the LBA that is to be displayed. When not using the LBA for filtering, leave this item blank.
RC	Input the RC that is to be displayed. When not using the RC for filtering, leave this item blank.
SK	Input the SK that is to be displayed. When not using the SK for filtering, leave this item blank.
ASC	Input the ASC that is to be displayed. When not using the ASC for filtering, leave this item blank.
ASCQ	Input the ASCQ that is to be displayed. When not using the ASCQ for filtering, leave this item blank.

## 4.14 Volume Detail (Balancing TPV)

The detailed information of TPV balancing is displayed.



The following items are displayed in the Main area:

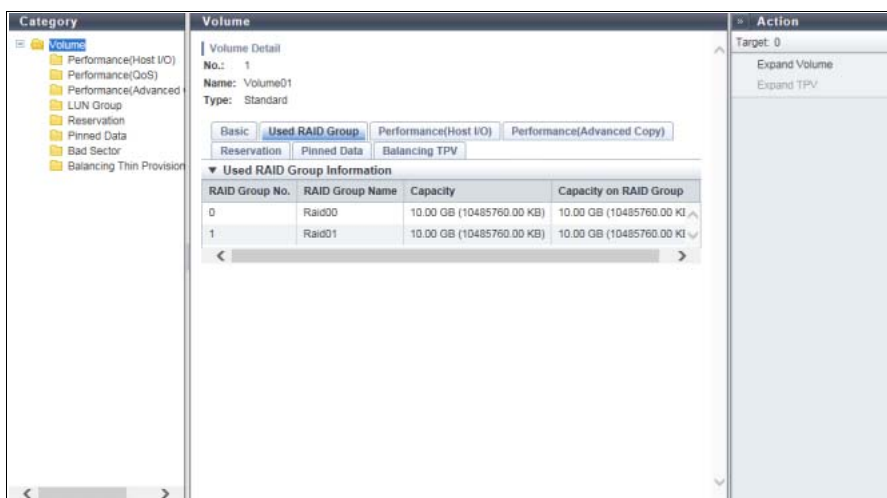
- No.  
The number of the RAID group that allocates the physical capacity to the target TPV is displayed.
- RAID Group  
The name of the RAID group that allocates the physical capacity to the target TPV is displayed.
- Used Capacity  
The capacity for each RAID group that allocates the physical capacity to the target TPV is displayed.  
This is the capacity that is available when balancing of the target TPV is started.  
Note that it is not the capacity after re-allocating the physical capacity in the relevant TPV to the RAID groups in the TPP.

## 4.15 Volume Detail (Used RAID Group)

The detailed information of LUN concatenation or WSV is displayed. This screen is not displayed when the volume type is "TPV" and "FTV".

The information for a RAID group that is being used is displayed in the following order. Note that sorting of the display contents is not available.

- When the volume type is "Standard", volumes are displayed in concatenation order with LUN Concatenation
- When the volume type is "WSV", volumes are displayed according to the concatenation number of the WSV Unit (the order of allocating the WSV unit to the RAID group)

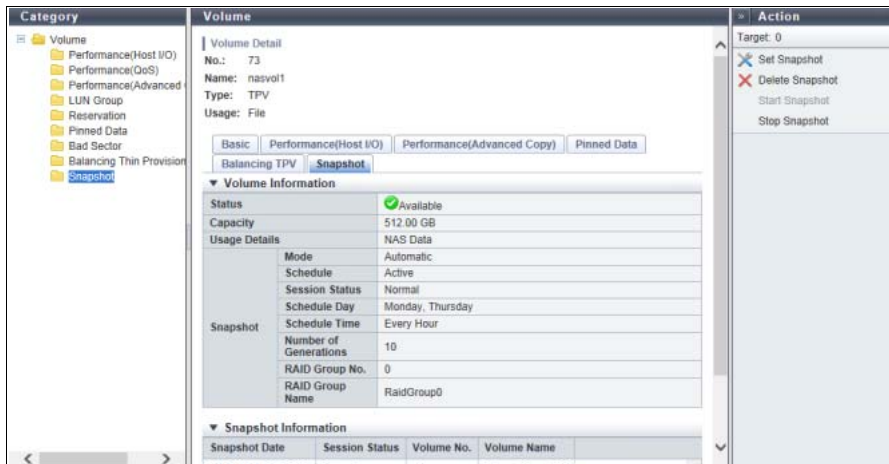


The following items are displayed in the Main area:

- RAID Group No.  
The RAID group number to which the concatenated volume or WSV Unit belongs is displayed.
- RAID Group Name  
The RAID group name to which the concatenated volume or WSV Unit belongs is displayed.
- Capacity  
The capacity of the concatenated volume or the WSV Unit is displayed. The volume capacity is displayed with "MB", "GB", or "TB". The unit of measurement for the capacity is determined according to the actual volume size. The capacity is also displayed with "KB".
- Capacity on RAID Group  
The capacity that is secured in the RAID group by the concatenated volume or the WSV Unit is displayed. The volume capacity is displayed with "MB", "GB", or "TB". The unit of measurement for the capacity is determined according to the actual volume size. The capacity is also displayed with "KB".

## 4.16 Volume Detail (Snapshot)

The detailed information of the Snapshot is displayed.  
This screen is displayed only for NAS user volumes (volumes of which the "Usage Details" are "NAS Data").



The following items are displayed in the Main area:

- Volume Information
  - Status  
The NAS user volume status is displayed.  
Refer to "[A.2 Volume Status](#)" ([page 406](#)) for detailed information of volume status.
  - Capacity  
The NAS user volume capacity is displayed.
  - Usage Details  
The usage details of the NAS user volume are displayed.
  - Snapshot  
The Snapshot information is displayed.
    - Mode  
The collection mode for the Snapshot is displayed.  
If the Snapshot is not set, a "-" (hyphen) is displayed.
      - Automatic  
The Snapshot is set from ETERNUS Web GUI, ETERNUS CLI, or ETERNUS SF Storage Cruiser.
      - Manual  
The Snapshot is set from VMware vSphere Web Client.  
Refer to "ETERNUS vCenter Plug-in 3.0.0 User's Guide" for details.
    - Schedule  
Status of the scheduled operation for Snapshot is displayed.  
If the Snapshot is not set or if the collection mode (or the "Mode" setting) for Snapshot is set to "Manual", a "-" (hyphen) is displayed.
      - Active
      - Inactive

- Session Status  
The session status for the Snapshot is displayed.  
If the Snapshot is not set, a "-" (hyphen) is displayed.
  - Normal  
Snapshot performs normally.
  - Error  
Some Snapshots cannot be referenced due to an error.  
If the session status of even one generation is error in the "Snapshot Information" field, "Error" is displayed for this item.
- Schedule Day  
The Snapshot acquisition schedule (set day) is displayed.  
If the Snapshot schedule is specified for all the days of the week, "Every Day" is displayed.  
If the Snapshot is not set or if the collection mode (or the "Mode" setting) for Snapshot is set to "Manual", a "-" (hyphen) is displayed.
- Schedule Time  
The Snapshot acquisition schedule (set time) is displayed.  
If the Snapshot schedule is specified for all hours, "Every Hour" is displayed.  
If the Snapshot is not set or if the collection mode (or the "Mode" setting) for Snapshot is set to "Manual", a "-" (hyphen) is displayed.
- Number of Generations  
The number of generations for the Snapshot is displayed. If the Snapshot is not set, a "-" (hyphen) is displayed.
  - ETERNUS DX100 S3  
1 - 16 (\*1) or 1 - 64 (\*2)
  - ETERNUS DX200 S3  
1 - 64 (\*1) or 1 - 128 (\*2)
  - ETERNUS DX500 S3  
1 - 128
  - ETERNUS DX600 S3  
1 - 128

\*1: The maximum number of generations when "Memory Extension" described below is installed. "Memory Extension" is used in a Unified Storage environment or for the Deduplication/Compression function.

  - ETERNUS DX100 S3  
8GB/CM
  - ETERNUS DX200 S3  
16GB/CM

\*2: The maximum number of generations when "Memory Extension" described below is installed.

  - ETERNUS DX100 S3  
16GB/CM (the controller firmware version is V10L53 or later)
  - ETERNUS DX200 S3  
32GB/CM (the controller firmware version is V10L33 or later)
- RAID Group No.  
The RAID group number that the Snapshot destination SDV belongs to is displayed. If the Snapshot is not set, a "-" (hyphen) is displayed.
- RAID Group Name  
The RAID group name that the Snapshot destination SDV belongs to is displayed. If the Snapshot is not set, a "-" (hyphen) is displayed.

- Snapshot Information

- Snapshot Date

The date and time of when the Snapshot was acquired is displayed in descending order.

If the Snapshot is not set, a "-" (hyphen) is displayed.

- YYYY-MM-DD hh:mm:ss (YYYY: Year (2001-2037), MM: Month (01 - 12), DD: Date (01 - 31), hh: Hour (00 - 23), mm: Minute (00 - 59), ss: Second (00 - 59))

- Session Status

The session status for the Snapshot is displayed.

If the Snapshot is not set, a "-" (hyphen) is displayed.

- Normal  
Snapshot performs normally.
- Error  
The Snapshot is stopped due to an error.

- Volume No.

The volume number for the Snapshot destination SDV is displayed.

- Volume Name

The volume name for the Snapshot destination SDV is displayed.

# Chapter 5

## Connectivity Status

Connectivity status displays the status information of volumes.  
Connectivity status screens can be displayed by clicking the following categories:

Category	Connectivity status screen
Connectivity	<a href="#">Connectivity (Basic Information)</a>
Host Group	<a href="#">Host Group</a>
FC	<a href="#">FC/FCoE Host</a>
iSCSI	<a href="#">iSCSI Host</a>
SAS	<a href="#">SAS Host</a>
Port Group	<a href="#">CA Port Group</a>
FC	<a href="#">FC Port</a>
iSCSI	<a href="#">iSCSI Port</a>
SAS	<a href="#">SAS Port</a>
FCoE	<a href="#">FCoE Port</a>
LUN Group	<a href="#">LUN Group</a>
Host Response	<a href="#">Host Response</a>
CA Reset Group	<a href="#">CA Reset Group</a>
Host-LU QoS	<a href="#">Host-LU QoS</a>
Host QoS	<a href="#">Host QoS (Basic)</a>
FC/FCoE	<a href="#">FC/FCoE Host QoS</a>
iSCSI	<a href="#">iSCSI Host QoS</a>
SAS	<a href="#">SAS Host QoS</a>
Port QoS	<a href="#">Port QoS (Basic)</a>
FC	<a href="#">FC Port QoS</a>
iSCSI	<a href="#">iSCSI Port QoS</a>
SAS	<a href="#">SAS Port QoS</a>
FCoE	<a href="#">FCoE Port QoS</a>
LU QoS Group	<a href="#">LU QoS Group</a>
NAS	<a href="#">NAS</a>
NAS Interface	<a href="#">NAS Interface</a>
Environment Settings	<a href="#">Environment Settings</a>
Quota Management	<a href="#">Quota Management</a>
Meta Cache Distribution	<a href="#">Meta Cache Distribution</a>

Detailed information of the current settings can be displayed from the following screens:

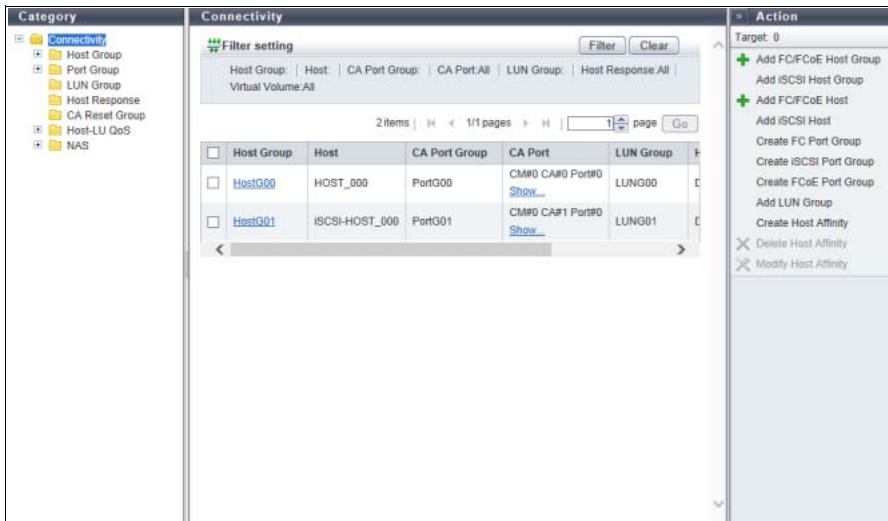
- [Host Affinity Detail \(Host Group - CA Port Group - LUN Group Setting\)](#)
- [Host Affinity Detail \(Host - CA Port - LUN Group Setting\)](#)
- [Host Group Detail](#)
- [LUN Group Detail](#)
- [Host-LU QoS Performance Information](#)
- [LUN Group : LU QoS Group Detail](#)



## 5.1 Connectivity (Basic Information)

A list of the host affinity groups is displayed.

When the target connection is "Host Group - CA Port Group", a host affinity is a group that defines an association between a "Host Group", a "CA Port Group", and a "LUN Group". When the target connection is "Host - CA Port", a host affinity is a group that defines an association between a "Host", a "CA Port", and a "LUN Group".



The following items are displayed in the Main area:

- Host Group**  
 The "Host Group Name" with the host affinity setting is displayed.  
 If all of the hosts are to be connected, instead of specific host groups, "All" is displayed.  
 By clicking "Host Group Name" or "All", the [Host Affinity Detail (Host Group - CA Port Group - LUN Group Setting)] screen is displayed. Refer to ["5.7.2 LUN Group : LU QoS Group Detail" \(page 280\)](#) for display items.  
 Regardless of whether the host belongs to a host group, a "-" (hyphen) is displayed if the host affinity setting is specified when selecting a host.  
 By clicking "-" (hyphen), the [Host Affinity Detail (Host - CA Port - LUN Group Setting)] screen is displayed. Refer to ["5.1.2 Host Affinity Detail \(Host - CA Port - LUN Group Setting\)" \(page 246\)](#) for display items.
- Host**  
 The "Host Name" with the host affinity setting is displayed.  
 If all of the hosts are to be connected, instead of specific hosts, "All" is displayed.  
 When setting the host affinity with the host group specification, the host name that configures the host group is displayed. If "All" has been selected for the host group, "All" is displayed for the host.
- CA Port Group**  
 The CA port group names for which the host affinity setting is configured are displayed.  
 Regardless of whether the CA port belongs to a CA port group, a "-" (hyphen) is displayed if the host affinity setting is specified for a CA port.

- **CA Port**  
The location information (x: CE number, y: CM number, z: CA number, w: Port number) of the CA port with the host affinity setting is displayed.  
When setting the host affinity with the CA port group specifications, the location information of the CA port that configures the CA port group is displayed.
  - For the ETERNUS DX8700 S3/DX8900 S3  
CE#x CM#y CA#z Port#w
  - For the other models  
CM#y CA#z Port#w
- **LUN Group**  
The names of the LUN groups with host affinity settings are displayed.  
When LUNs are directly allocated to the CA port (when LUN mapping is created) by an application other than ETERNUS Web GUI, a "-" (hyphen) is displayed.
- **Host Response**  
One of the following host responses is displayed.
  - Host response that is allocated to the host group
  - Host response that is allocated to the host
  - If all of the hosts are to be connected ("All" is displayed in the "Host" field), the host response that was selected when setting the host affinity
    - Solaris MPxIO
    - HP-UX
    - AIX
    - AIX VxVM
    - VS850/SVC
    - BS2000
    - Host responses registered in the ETERNUS DX/AF
    - Default
- **Virtual Volume**  
When the host affinity is being used by the Virtual Volume function, "Enable" is displayed. When the host affinity is not used for the Virtual Volume function, "Disable" is displayed.  
This item is displayed only when "Enable" is selected for the Virtual Volume function.

 **Caution**

Host affinities of which the Virtual Volume function is enabled cannot be modified by using ETERNUS Web GUI.

To change host affinities, use the ETERNUS SF Storage Cruiser.

### Display Examples of Host Affinities

Display examples of host affinities are shown in the following table.

Example No.	Display contents						Description
	Host Group	Host	CA Port Group	CA Port	LUN Group	Host Response	
Example 1	Host_Group_xxx	Host_1 Show...	Port_Group_xxx	CM#0 CA#0 Port#0 Show...	LUN_Group_xxx	Host_Response1	The host affinity setting has been configured in "Host_Group_xxx", "Port_Group_xxx" and "LUN_Group_xxx". The server recognizes the LUN group, "LUN_Group_xxx", which has been specified for each member host (HBA) in "Host_Group_xxx". In the host field, the name of the host that configures "Host_Group_xxx" is displayed. In the CA port field, the location information of the CA port that configures "Port_Group_xxx" is displayed. Refer to "Example 6" for display example when clicking the [Show...] link in the "Host" field or the "CA Port" field.
Example 2	All	All	Port_Group_yyy	CM#0 CA#1 Port#1	LUN_Group_yyy	Host_Response2	All servers will be covered. The server recognizes the specified LUN group, "LUN_Group_yyy", from every member port in "Port_Group_yyy". In the CA port field, the location information of the CA port that configures "Port_Group_yyy" is displayed.
Example 3	-	Host_z	-	CM#0 CA#0 Port#0	LUN_Group_zzz	Host_Response3	The host affinity setting of "Host_z (HBA)" and "LUN_Group_zzz" has been configured to the device side CA port, "CM#0 CA#0 Port#0". Hosts, CA ports, and LUN groups are allocated without specifying a host group or CA port group.
Example 4	-	All	-	CM#1 CA#1 Port#1	LUN_Group_www	Host_Response4	The LUN mapping of "LUN_Group_www" has been configured to the device side CA port, "CM#1 CA#1 Port#1". Hosts, CA ports, and LUN groups are allocated without specifying a host group or CA port group.

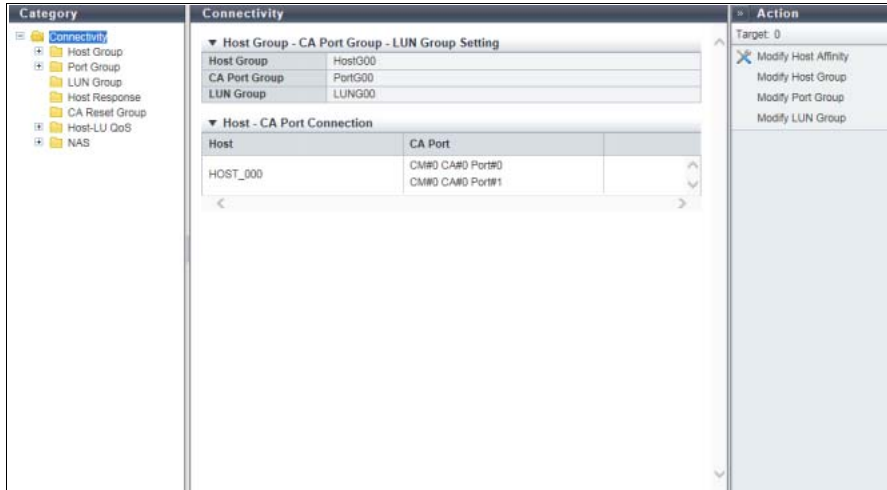
Example No.	Display contents						Description
	Host Group	Host	CA Port Group	CA Port	LUN Group	Host Response	
Example 5	-	All	-	CM#0 CA#1 Port#1	-	Host_ Response5	The LUN is directly allocated to CA port "CM#0 CA#1 Port#1" by an application other than ETERNUS Web GUI (LUN mapping is created).
Example 6	Host_Group_ xxx	Host_1 Host_2 Host_3 Hide...	Port_Group_ xxx	CM#0 CA#0 Port#0 CM#1 CA#0 Port#0 Hide...	LUN_Group_ xxx	Host_ Response1	Display example when the [Show...] link for the "Host" field or the "CA Port" field is clicked in Example 1. In the host field, the names of all the hosts that configure "Host_Group_ xxx" are displayed. In the CA port field, the location information of all the CA ports that configure "Port_Group_ xxx" is displayed. Refer to "Example 1" for display example when clicking the [Hide...] link in the "Host" field or the "CA Port" field.

#### Filter setting

Filter	Description
Host Group	Input the host group name that is to be displayed. When not using the host group name for filtering, leave this item blank.
Host	Input the host name that is to be displayed. When not using the host name for filtering, leave this item blank.
CA Port Group	Input the CA port group name that is to be displayed. When not using the CA port group name for filtering, leave this item blank.
CA Port	Select the CA port name that is to be displayed.
LUN Group	Input the LUN group name that is to be displayed. When not using the LUN group name for filtering, leave this item blank.
Host Response	Select the host response name that is to be displayed.
Virtual Volume	Select the set state of the Virtual Volume function that is to be displayed. This item is only displayed when "Enable" is selected for the Virtual Volume function.

## 5.1.1 Host Affinity Detail (Host Group - CA Port Group - LUN Group Setting)

The details of the host affinity are displayed.

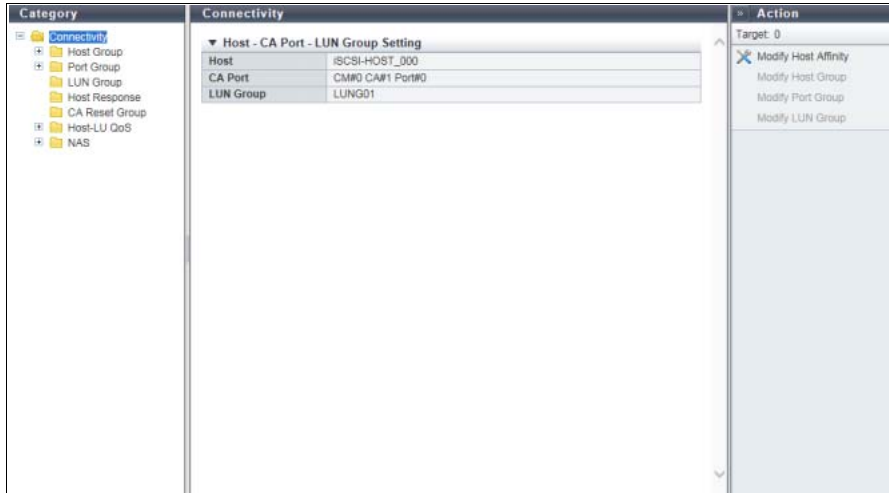


The following items are displayed in the Main area:

- Host Group - CA Port Group - LUN Group Setting
  - Host Group  
The selected host group name or "All" is displayed.
  - CA Port Group  
The CA port group that is allocated to the selected host group is displayed.
  - LUN Group  
The LUN group that is allocated to the selected host group is displayed.
- Host - CA Port Connection
  - Host  
Member hosts in the selected host group is displayed.  
If "All" has been selected for the host group, "All" is also displayed for the host.
  - CA Port  
The location information of the CA port which has the host affinity setting with the relevant host is displayed.

## 5.1.2 Host Affinity Detail (Host - CA Port - LUN Group Setting)

The detailed information of host affinities is displayed.



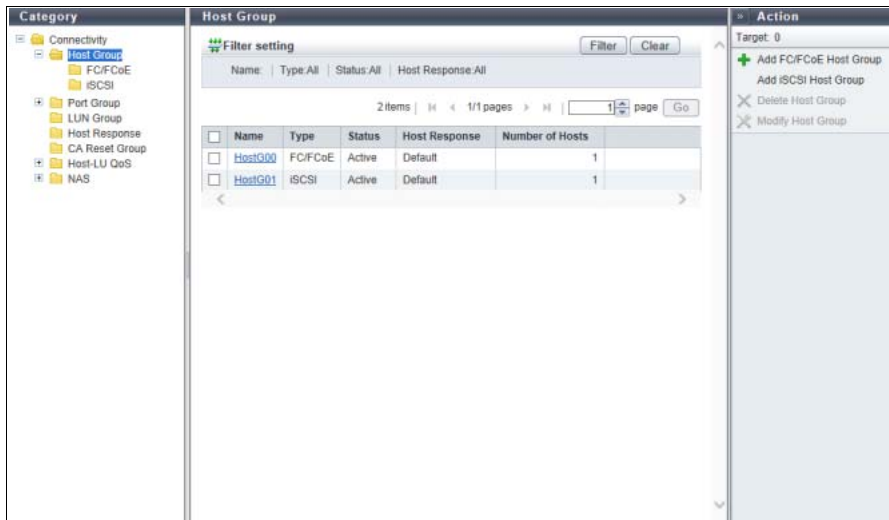
The following items are displayed in the Main area:

- Host - CA Port - LUN Group Setting
  - Host  
The selected host name or "All" is displayed.
  - CA Port  
The location information of the CA port, which is allocated with the selected host, is displayed.
  - LUN Group  
The LUN group that is allocated with the selected host, or a "-" (hyphen) is displayed.

## 5.2 Host Group

The list of the host groups is displayed.

A host group uses the same interface type, and groups the hosts (HBAs), which access the same LUN group.



The following items are displayed in the Main area:

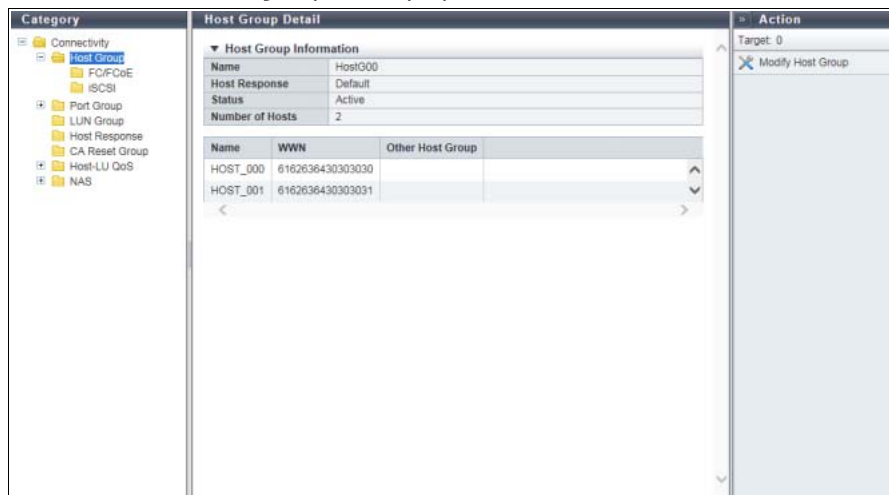
- Name  
The host group name is displayed.  
By clicking this item, the [Host Group Detail] screen is displayed. Refer to ["5.7.2 LUN Group : LU QoS Group Detail" \(page 280\)](#) for display items.
- Type  
The interface type of the host registered in the host group is displayed.
- Status  
Whether the host group is used ("Active") or not ("Inactive") for the host affinity settings is displayed.  
"Host affinity setting" is to specify association between "Host Group", "CA Port Group", and "LUN Group".
  - Active  
The host group is used for the host affinity settings. The LUN group can be accessed from the member host of the host group.
  - Inactive  
The host group is not used for the host affinity settings.
- Host Response  
The host response name that has been assigned to a host group is displayed.
- Number of Hosts  
The number of hosts that have been registered in the host group is displayed.

### Filter setting

Filter	Description
Name	Input the host group name that is to be displayed. When not using the name for filtering, leave this item blank.
Type	Select the interface type of the host group that is to be displayed.
Status	Select the set state of the host affinity for the host group that is to be displayed.
Host Response	Select the name of the host response that is assigned to the host group that is to be displayed.

## 5.2.1 Host Group Detail

The details of the host group are displayed.



The following items are displayed in the Main area:

- Host Group Information
  - Name  
The host group name is displayed.
  - Host Response  
The host response, which has been assigned to a host group, is displayed.
  - Status  
Whether the host group is "Active" or "Inactive" in the host affinity setting is displayed.
  - Number of Hosts  
The number of hosts, which have been registered in the host group, is displayed.



- Host List
  - Name  
The host name is displayed.
  - WWN  
When the host interface type is "FC/FCoE", the WWN of the host is displayed.
  - iSCSI Name  
When the host interface type is "iSCSI", the iSCSI name of the host is displayed.
  - SAS Address  
When the host interface type is "SAS", the SAS address of the host is displayed.
  - Other Host Group  
The other host group names to which the host belongs are displayed.  
If the host belongs to only one host group, the field is blank.

## 5.2.2 FC/FCoE Host

In this screen, registered FC hosts in the ETERNUS DX/AF are displayed.

### ● Note

The interface types "FC" and "FCoE" are both regarded as "FC". Both "FC host" and "FCoE host" are abbreviated as "FC host" in this section.

No.	Name	WWN	Host Group	CA Port Group	CA Port
0	HOST_000	6162636430303030	HostG00	PortG00	CMR0 CA#0 Poi <a href="#">Show...</a>
1	HOST_001	6162636430303031	-	-	-
2	HOST_002	6162636430303032	-	-	-
3	HOST_003	6162636430303033	-	-	-
4	HOST_004	6162636430303034	-	-	-
5	HOST_005	6162636430303035	-	-	-
6	HOST_006	6162636430303036	-	-	-
7	HOST_007	6162636430303037	-	-	-
8	HOST_008	6162636430303038	-	-	-
9	HOST_009	6162636430303039	-	-	-
10	HOST_010	6162636430303130	-	-	-
11	HOST_011	6162636430303131	-	-	-
12	HOST_012	6162636430303132	-	-	-
13	HOST_013	6162636430303133	-	-	-

The following items are displayed in the Main area:

- No.  
The FC host number is displayed.
- Name  
The FC host name is displayed.
- WWN  
The FC host WWN is displayed.

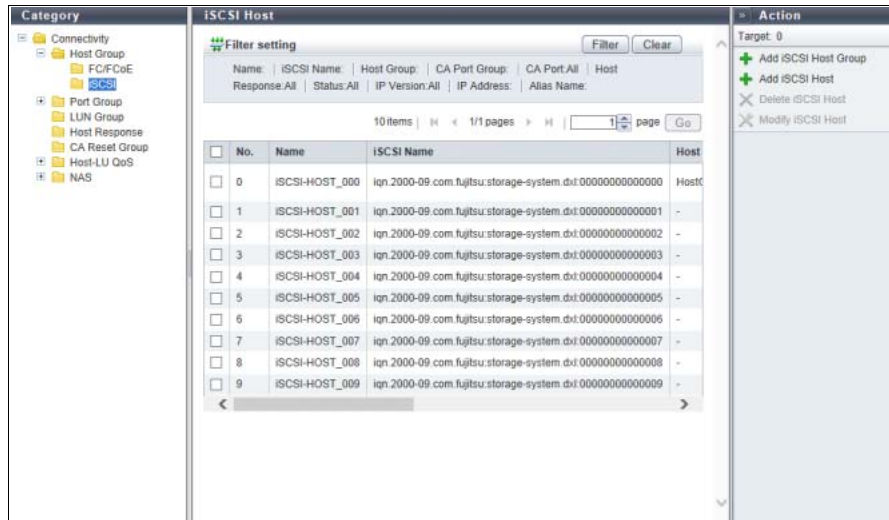
- **Host Group**  
The host group name, to which the FC host belongs, is displayed.  
If the FC host does not belong to a host group, a "-" (hyphen) is displayed.
- **CA Port Group**  
The name of the CA port group that has the host affinity setting with the FC host is displayed.  
If no CA port group with the host affinity setting exists, a "-" (hyphen) is displayed.
- **CA Port**  
The location information (x: CE number, y: CM number, z: CA number, w: Port number) of the CA port that has the host affinity setting with the FC host is displayed.  
If no CA port with the host affinity setting exists, a "-" (hyphen) is displayed.
  - For the ETERNUS DX8700 S3/DX8900 S3  
CE#x CM#y CA#z Port#w
  - For the other models  
CM#y CA#z Port#w
- **Host Response**  
The host response that is assigned to the FC host or to the host group of the FC host is displayed.
- **Status**  
Whether the host affinity setting is applied to the FC host is displayed.  
"Host Affinity Setting" is to specify association between "Host Group", "CA Port Group", and "LUN Group" or association between "Host", "CA Port", "and "LUN Group". The host affinity setting specifies the path between each host and port.
  - Active  
The host affinity setting is applied to the FC host. The LUN group can be accessed from the FC host.
  - Inactive  
The host affinity setting is not applied to the FC host.

#### Filter setting

Filter	Description
Name	Input the FC host name that is to be displayed. When not using the name for filtering, leave this item blank.
WWN	Input the WWN for the FC host that is to be displayed. When not using the WWN for filtering, leave this item blank.
Host Group	Input the name of the host group to which the FC host that is to be displayed belongs. When not using the host group for filtering, leave this item blank.
CA Port Group	Input the name of the CA port group that has the host affinity setting with the FC host that is to be displayed. When not using the CA port group for filtering, leave this item blank.
CA Port	Select the CA port that has the host affinity setting with the FC host that is to be displayed.
Host Response	Select the name of the host response that is assigned to the FC host that is to be displayed.
Status	Select the set state of the host affinity for the FC host that is to be displayed.

### 5.2.3 iSCSI Host

In this screen, registered iSCSI hosts in the ETERNUS DX/AF are displayed.



The following items are displayed in the Main area:

- No.  
The iSCSI host number is displayed.
- Name  
The iSCSI host name is displayed.
- iSCSI Name  
The iSCSI name of the iSCSI host is displayed.
- Host Group  
The host group name, to which the iSCSI host belongs, is displayed.  
If the iSCSI host does not belong to a host group, a "-" (hyphen) is displayed.
- CA Port Group  
The name of the CA port group that has the host affinity setting with the iSCSI host is displayed.  
If no CA port group with the host affinity setting exists, a "-" (hyphen) is displayed.
- CA Port  
The location information (x: CE number, y: CM number, z: CA number, w: Port number) of the CA port that has the host affinity setting with the iSCSI host is displayed.  
If no CA port with the host affinity setting exists, a "-" (hyphen) is displayed.
  - For the ETERNUS DX8700 S3/DX8900 S3  
CE#x CM#y CA#z Port#w
  - For the other models  
CM#y CA#z Port#w
- Host Response  
The host response that is assigned to the iSCSI host or to the host group of the iSCSI host is displayed.

- **Status**  
Whether the host affinity setting is applied to the iSCSI host is displayed.  
"Host Affinity Setting" is to specify association between "Host Group", "CA Port Group", and "LUN Group" or association between "Host", "CA Port", "and "LUN Group". The host affinity setting specifies the path between each host and port.
  - Active  
The host affinity setting is applied to the iSCSI host. The LUN group can be accessed from the iSCSI host.
  - Inactive  
The host affinity setting is not applied to the iSCSI host.
- **IP Version**  
The IP version when the IP address was registered for the iSCSI host is displayed.
- **IP Address**  
The IP address of the iSCSI host is displayed.  
Note that the IPv6 address is displayed as an abbreviation. Refer to ["IPv6 Address Notation" \(page 253\)](#) for details.  
If the IP address is not specified, the field is blank.
- **Alias Name**  
The iSCSI host Alias Name is displayed.  
If the Alias Name is not set, the field is blank.
- **CHAP User ID**  
The CHAP user name of the iSCSI host is displayed.  
If the CHAP user ID is not specified, the field is blank.

### Filter setting

Filter	Description
Name	Input the iSCSI host name that is to be displayed. When not using the name for filtering, leave this item blank.
iSCSI Name	Input the iSCSI name of the iSCSI host that is to be displayed. When not using the iSCSI name for filtering, leave this item blank.
Host Group	Input the name of the host group to which the iSCSI host that is to be displayed belongs. When not using the host group for filtering, leave this item blank.
CA Port Group	Input the name of the CA port group that has the host affinity setting with the iSCSI host that is to be displayed. When not using the CA port group for filtering, leave this item blank.
CA Port	Select the CA port that has the host affinity setting with the iSCSI host that is to be displayed.
Host Response	Select the name of the host response that is assigned to the iSCSI host that is to be displayed.
Status	Select the set state of the host affinity for the iSCSI host that is to be displayed.
IP Version	Select the IP version for the iSCSI host that is to be displayed.
IP Address	Input the IP address for the iSCSI host that is to be displayed. The iSCSI hosts that match the beginning of the entered IP address are displayed. When not using the IP address for filtering, leave this item blank.
Alias Name	Input the Alias name of the iSCSI host that is to be displayed. When not using the Alias name for filtering, leave this item blank.

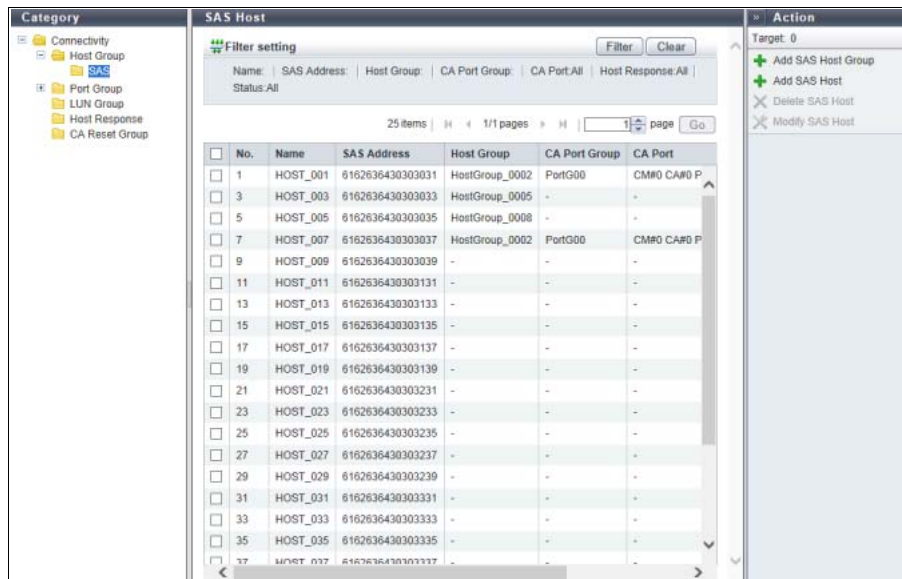


## 5.2.4 SAS Host

In this screen, registered SAS hosts in the ETERNUS DX are displayed.

### Caution

The ETERNUS DX500 S3/DX600 S3, the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3, the ETERNUS AF250/AF650, and the ETERNUS DX200F do not support this function.



No.	Name	SAS Address	Host Group	CA Port Group	CA Port
1	HOST_001	6162636430303031	HostGroup_0002	PortG00	CM#0 CA#0 P
3	HOST_003	6162636430303033	HostGroup_0005	-	-
5	HOST_005	6162636430303035	HostGroup_0008	-	-
7	HOST_007	6162636430303037	HostGroup_0002	PortG00	CM#0 CA#0 P
9	HOST_009	6162636430303039	-	-	-
11	HOST_011	6162636430303131	-	-	-
13	HOST_013	6162636430303133	-	-	-
15	HOST_015	6162636430303135	-	-	-
17	HOST_017	6162636430303137	-	-	-
19	HOST_019	6162636430303139	-	-	-
21	HOST_021	6162636430303231	-	-	-
23	HOST_023	6162636430303233	-	-	-
25	HOST_025	6162636430303235	-	-	-
27	HOST_027	6162636430303237	-	-	-
29	HOST_029	6162636430303239	-	-	-
31	HOST_031	6162636430303331	-	-	-
33	HOST_033	6162636430303333	-	-	-
35	HOST_035	6162636430303335	-	-	-
37	HOST_037	6162636430303337	-	-	-

The following items are displayed in the Main area:

- No.  
The SAS host number is displayed.
- Name  
The SAS host name is displayed.
- SAS Address  
The SAS address of the SAS host is displayed.
- Host Group  
The host group name, to which the SAS host belongs, is displayed.  
If the SAS host does not belong to a host group, a "-" (hyphen) is displayed.
- CA Port Group  
The name of the CA port group that has the host affinity setting with the SAS host is displayed.  
If no CA port group with the host affinity setting exists, a "-" (hyphen) is displayed.
- CA Port  
The location information (x: CE number, y: CM number, z: CA number, w: Port number) of the CA port that has the host affinity setting with the SAS host is displayed.  
If no CA port with the host affinity setting exists, a "-" (hyphen) is displayed.
  - For the ETERNUS DX8700 S3/DX8900 S3  
CE#x CM#y CA#z Port#w
  - For the other models  
CM#y CA#z Port#w

- Host Response  
The host response that is assigned to the SAS host or to the host group of the SAS host is displayed.
- Status  
Whether the host affinity setting is applied to the SAS host is displayed.
  - Active  
The host affinity setting is applied to the SAS host. The LUN group can be accessed from the SAS host.
  - Inactive  
The host affinity setting is not applied to the SAS host.

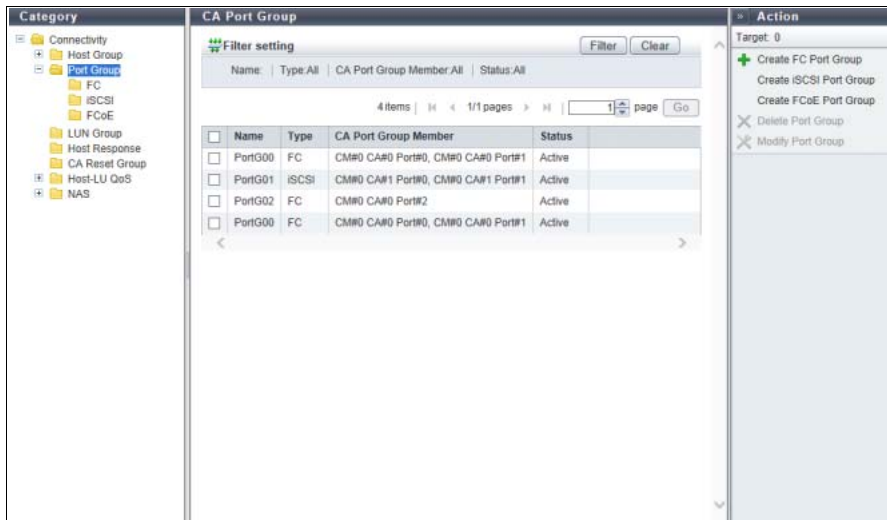
#### Filter setting

Filter	Description
Name	Input the SAS host name that is to be displayed. When not using the name for filtering, leave this item blank.
SAS Address	Input the SAS address for the SAS host that is to be displayed. When not using the SAS address for filtering, leave this item blank.
Host Group	Input the name of the host group to which the SAS host that is to be displayed belongs. When not using the host group for filtering, leave this item blank.
CA Port Group	Input the name of the CA port group that has the host affinity setting with the SAS host that is to be displayed. When not using the CA port group for filtering, leave this item blank.
CA Port	Select the CA port that has the host affinity setting with the SAS host that is to be displayed.
Host Response	Select the name of the host response that is assigned to the SAS host that is to be displayed.
Status	Select the set state of the host affinity for the SAS host that is to be displayed.

## 5.3 CA Port Group

A list of the CA port groups is displayed.

A CA port group is a group of the same CA type ports that are connected to the specified host group.



The following items are displayed in the Main area:

- Name  
The port group name is displayed.
- Type  
The type of the CA port group is displayed.
  - FC
  - iSCSI
  - SAS
  - FCoE
- CA Port Group Member  
The location information (x: CE number, y: CM number, z: CA number, w: Port number) of the port, which is a CA port group member, is displayed.
  - For the ETERNUS DX8700 S3/DX8900 S3  
CE#x CM#y CA#z Port#w
  - For the other models  
CM#y CA#z Port#w
- Status  
Whether the CA port group is used ("Active") or not ("Inactive") for the host affinity settings is displayed. "Host affinity setting" is to specify association between "Host Group", "CA Port Group" and "LUN Group".
  - Active  
The CA port group is used for the host affinity settings. The LUN group can be accessed from the host group via the CA port group.
  - Inactive  
The CA port group is not used for the host affinity settings.

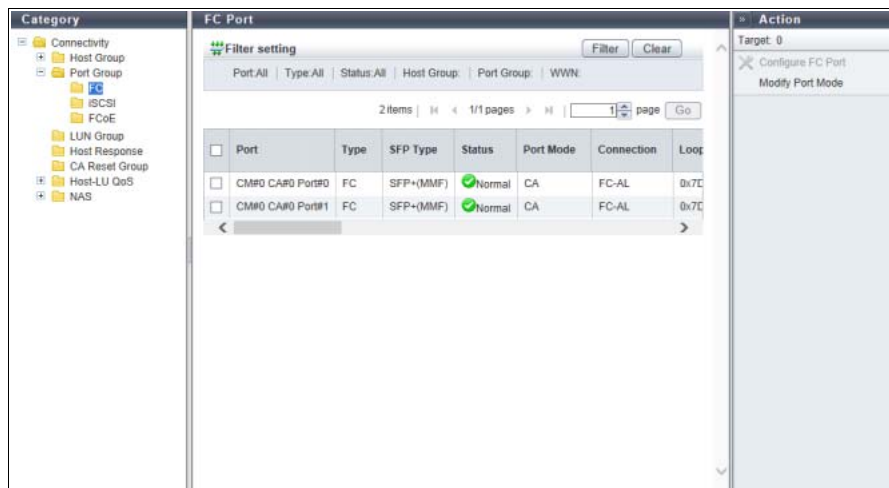


### Filter setting

Filter	Description
Name	Input the CA port group name that is to be displayed. When not using the name for filtering, leave this item blank.
Type	Select the type of the CA port group that is to be displayed.
CA Port Group Member	Select the location information of the member port for the CA port group that is to be displayed.
Status	Select the set state of the host affinity for the CA port group that is to be displayed.

## 5.3.1 FC Port

Parameters of the FC ports that are registered in the ETERNUS DX/AF are displayed.



The following items are displayed in the Main area:

- Port  
The location information (x: CE number, y: CM number, z: CA number, w: Port number) of the target port is displayed.
  - For the ETERNUS DX8700 S3/DX8900 S3  
CE#x CM#y CA#z Port#w
  - For the other models  
CM#y CA#z Port#w
- Type  
The CA type of the target port is displayed.
- SFP Type  
The SFP type of the target port is displayed. If an SFP is not installed, "Unmount" is displayed.
  - SFP+ (SMF)  
An SFP (8G LongWave) that is installed in an 8Gbit/s (maximum) FC port.
  - SFP+(MMF)  
An SFP (8G SFP+) that is installed in an 8Gbit/s (maximum) FC port.
  - 16G SFP+ (SMF)  
An SFP (16G LongWave) that is installed in a 16Gbit/s (maximum) FC port.

- 16G SFP+(MMF)  
An SFP (16G SFP+) that is installed in a 16Gbit/s (maximum) FC port.
- Unknown  
Other than the above SFPs.
- Status  
The status of the target port is displayed.
- Port Mode  
The mode of the target port is displayed.
  - CA
  - RA
  - CA/RA
  - Initiator
- Connection  
The connection type of the target port is displayed.
  - Fabric  
A connection type that enables simultaneous communication among multiple nodes through a Fibre Channel switch. This connection type can also be used for a direct connection when "Transfer Rate" is "16 Gbit/s".
  - FC-AL  
A connection type that connects multiple nodes in a loop.
- Loop ID  
If the connection type of the target port is "FC-AL", the Loop ID is displayed.  
"Loop ID" is an identification number of a node in a loop.  
When the connection type of the target port is "Fabric", a "-" (hyphen) is displayed.
- Transfer Rate  
The transfer speed of the target port is displayed.
  - Auto-negotiation
  - 4 Gbit/s
  - 8 Gbit/s
  - 16 Gbit/s
- FC Frame Size  
The frame size of the target port is displayed.  
"FC Frame Size" specifies the length of the communication information.
  - 512 bytes
  - 1024 bytes
  - 2048 bytes
- Reset Scope  
The reset scope of the target port is displayed.  
Reset scope is the range where the command reset from the server is performed, when the target port is connected to multiple servers.  
A "-" (hyphen) is displayed when the port mode is "RA" or "Initiator".
  - I\_T\_L (I: Initiator, T: Target, L: LUN)  
Reset (cancel) the command request from the server that sent the command reset request.
  - T\_L (T: Target, L: LUN)  
Reset (cancels) the command request from all of the servers that are connected to the port.

- Release Reservation if Chip is Reset  
Whether the function to release the reservation status of the volume when the target port (chip) is reset is enabled or disabled is displayed.  
A "-" (hyphen) is displayed when the port mode is "RA" or "Initiator".
- REC Line No.  
The REC line number of the target port is displayed.  
The REC line number is used to switch the communication path when a line fails.  
A "-" (hyphen) is displayed when the port mode is "CA" or "Initiator".  
This item is displayed only when the Advanced Copy license has been registered.
- REC Transfer Mode  
Whether the REC synchronous transfer mode, the REC asynchronous stack mode, the REC asynchronous consistency mode, or the REC asynchronous through mode is enabled or disabled for the target port is displayed.  
A "-" (hyphen) is displayed when the port mode is "CA" or "Initiator".  
This item is displayed only when the Advanced Copy license has been registered.
  - Sync  
When the REC synchronous transfer mode is enabled, the target port can be used as an REC synchronous transfer mode path.
  - Async Stack  
When the REC asynchronous stack mode is enabled, the target port can be used as an REC asynchronous stack mode path.
  - Async Consistency  
When the REC asynchronous consistency mode is enabled, the target port can be used as an REC asynchronous consistency mode path.
  - Async Through  
When the REC asynchronous through mode is enabled, the target port can be used as an REC asynchronous through mode path.
- TFO Transfer Mode  
Whether the TFO transfer mode is enabled or disabled for the target port is displayed.  
A "-" (hyphen) is displayed when the port mode is "CA" or "Initiator".  
This item is displayed only when "Enable" is selected for the Storage Cluster function.
- TFO WWN Mode  
When the target port is being used by the Storage Cluster function, "Custom" is displayed if WWN has been changed, and "Default" is displayed if no changes have been made.  
A "-" (hyphen) is displayed when the port mode is "RA", "CA/RA", or "Initiator".  
This item is displayed only when "Enable" is selected for the Storage Cluster function.
- TFO Port  
When the target port is being used by the Storage Cluster function, "Used" is displayed, and "Unused" is displayed when the target port is not used.  
This item is displayed only when "Enable" is selected for the Storage Cluster function.
- Host Group  
The name of the host group that has the host affinity setting with the target port is displayed.  
If no host group with the host affinity setting exists, a "-" (hyphen) is displayed.
- Port Group  
The name of the port group to which the target port belongs is displayed.  
If the target port does not belong to a port group, a "-" (hyphen) is displayed.

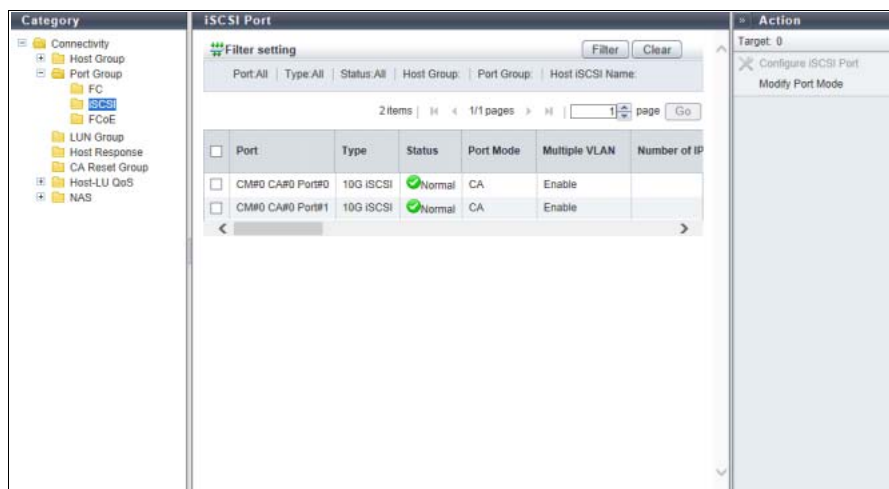
- **WWN**  
WWNs of all FC/FCoE hosts that have the host affinity setting with the target port are displayed.  
If the host affinity setting is not configured, the field is blank.

### Filter setting

Filter	Description
Port	Select the location information of the port that is to be displayed.
Type	Select the CA type of the port that is to be displayed.
Status	Select the status of the port that is to be displayed.
Host Group	Input the name of the host group that has the host affinity setting with the port that is to be displayed. When not using the host group name for filtering, leave this item blank.
Port Group	Input the name of the port group to which the port that is to be displayed belongs. When not using the port group name for filtering, leave this item blank.
WWN	Input the WWN of the FC/FCoE host that has the host affinity setting with the port that is to be displayed. When not using the WWN for filtering, leave this item blank.

## 5.3.2 iSCSI Port

Parameters of the iSCSI ports that are registered in the ETERNUS DX/AF are displayed.



The following items are displayed in the Main area:

- **Port**  
The location information (x: CE number, y: CM number, z: CA number, w: Port number) of the target port is displayed.
  - For the ETERNUS DX8700 S3/DX8900 S3  
CE#x CM#y CA#z Port#w
  - For the other models  
CM#y CA#z Port#w

- **Type**  
The type of the target port is displayed.
  - 1G iSCSI  
1Gbit/s iSCSI. The port mode can be changed (CA, RA, or CA/RA).
  - 10G iSCSI  
10Gbit/s iSCSI. The port mode can be changed (CA, RA, or CA/RA).
  - 10G Base-T iSCSI  
10Gbit/s iSCSI. The port mode can be changed (CA, RA, or CA/RA). This port can be installed in the ETERNUS DX60 S3, the ETERNUS DX100 S3/DX200 S3, and the ETERNUS AF250.
- **Status**  
The status of the target port is displayed.
- **Port Mode**  
The mode of the target port is displayed.
  - CA
  - RA
  - CA/RA
- **Multiple VLAN**  
Whether the Multiple VLAN is enabled or disabled for the target port is displayed. "Multiple VLAN" is a function that enables up to 16 pieces of VLAN information (IP address information) to be registered for each port.  
A "-" (hyphen) is displayed when the port mode is "RA".
- **Number of IP Addresses**  
The number of IP addresses that are used for the relevant port is displayed. When "Multiple VLAN" is enabled, the number of IP addresses that are registered in the port is displayed. When "Multiple VLAN" is disabled or "-" is displayed in the "Multiple VLAN" field, "1" is displayed.
- **Transfer Rate**  
The transfer speed of the target port is displayed. All transfers are full-duplex.
  - Auto-negotiation
  - 1Gbit/s
  - 10Gbit/s
  - 100Mbit/s
- **Reset Scope**  
The reset scope of the target port is displayed.  
Reset scope is the range where the command reset from the server is performed, when the target port is connected to multiple servers. A "-" (hyphen) is displayed when the port mode is "RA".
  - I\_T\_L (I: Initiator, T: Target, L: LUN)  
Reset (cancel) the command request from the server that sent the command reset request.
  - T\_L (T: Target, L: LUN)  
Reset (cancels) the command request from all of the servers that are connected to the port.
- **Release Reservation if Chip is Reset**  
Whether the function to release the reservation status of the volume when the target port (chip) is reset is enabled or disabled is displayed.  
A "-" (hyphen) is displayed when the port mode is "RA".
- **iSCSI Name**  
The iSCSI name of the target port is displayed.

- **Alias Name**  
The Alias Name of the target port is displayed.  
If the Alias Name is not specified, the field is blank.
- **Bandwidth Limit**  
A "-" (hyphen) is displayed for this item.
- **MTU**  
The MTU size of the target port is displayed.  
"Maximum Transmission Unit (MTU)" is the maximum amount of data that can be transmitted at the one time over the communication network.  
A "-" (hyphen) is displayed when the port mode is "CA".
- **CHAP**  
When CHAP authentication for the target port is enabled, "ON" is displayed. If the authentication is disabled, "OFF" is displayed.  
When the "Port Mode" is "CA/RA", this item is displayed in "x / y" format.  
x: The CHAP authentication status of the CA port ("ON" or "OFF")  
y: The CHAP authentication status of the RA port ("ON" or "OFF")
- **REC Line No.**  
The REC line number of the target port is displayed.  
The REC line number is used to switch the communication path when a line fails.  
A "-" (hyphen) is displayed when the port mode is "CA".  
This item is displayed only when the Advanced Copy license has been registered.
- **REC Transfer Mode**  
Whether the REC synchronous transfer mode, the REC asynchronous stack mode, the REC asynchronous consistency mode, or the REC asynchronous through mode is enabled or disabled for the target port is displayed.  
A "-" (hyphen) is displayed when the port mode is "CA".  
This item is displayed only when the Advanced Copy license has been registered.
  - Sync  
When the REC synchronous transfer mode is enabled, the target port can be used as an REC synchronous transfer mode path.
  - Async Stack  
When the REC asynchronous stack mode is enabled, the target port can be used as an REC asynchronous stack mode path.
  - Async Consistency  
When the REC asynchronous consistency mode is enabled, the target port can be used as an REC asynchronous consistency mode path.
  - Async Through  
When the REC asynchronous through mode is enabled, the target port can be used as an REC asynchronous through mode path.
- **TFO Transfer Mode**  
Whether the TFO transfer mode is enabled or disabled for the target port is displayed.  
A "-" (hyphen) is displayed when the port mode is "CA".  
This item is displayed only when "Enable" is selected for the Storage Cluster function.
- **TFO Port**  
When the target port is being used by the Storage Cluster function, "Used" is displayed, and "Unused" is displayed when the target port is not used.  
This item is only displayed when "Enable" is selected for the Storage Cluster function.

- **Host Group**  
The name of the host group that has the host affinity setting with the target port is displayed.  
If no host group with the host affinity setting exists, a "-" (hyphen) is displayed.
- **Port Group**  
The name of the port group to which the target port belongs is displayed.  
If the target port does not belong to a port group, a "-" (hyphen) is displayed.
- **Host iSCSI Name**  
iSCSI names of all iSCSI hosts that have the host affinity setting with the target port are displayed.  
If the host affinity setting is not configured, a "-" (hyphen) is displayed.

### Filter setting

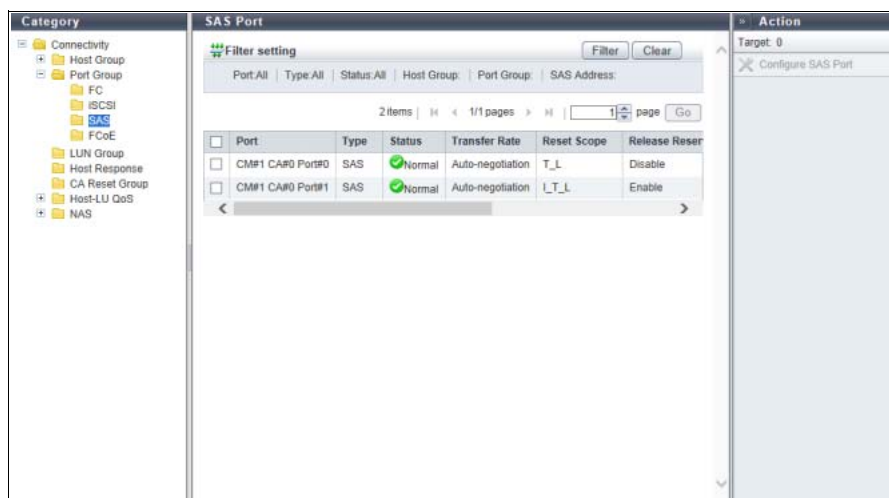
Filter	Description
Port	Select the location information of the port that is to be displayed.
Type	Select the type of the port that is to be displayed.
Status	Select the status of the port that is to be displayed.
Host Group	Input the name of the host group that has the host affinity setting with the port that is to be displayed. When not using the host group name for filtering, leave this item blank.
Port Group	Input the name of the port group to which the port that is to be displayed belongs. When not using the port group name for filtering, leave this item blank.
Host iSCSI Name	Input the host iSCSI name of the iSCSI host that has the host affinity setting with the port that is to be displayed. When not using the host iSCSI name for filtering, leave this item blank.

## 5.3.3 SAS Port

Parameters of the SAS ports that are registered in the ETERNUS DX are displayed.

### Caution

The ETERNUS DX500 S3/DX600 S3, the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3, the ETERNUS AF250/AF650, and the ETERNUS DX200F do not support this function.



The following items are displayed in the Main area:

- Port  
The location information of the target port is displayed.
  - CM#x CA#y Port#z (x: CM number, y: CA number, z: Port number)
- Type  
The CA type (fixed at "SAS") of the target port is displayed.
- Status  
The status of the target port is displayed.
- Transfer Rate  
The transfer speed of the target port is displayed.
  - Auto-negotiation
  - 1.5 Gbit/s
  - 3 Gbit/s
  - 6 Gbit/s
- Reset Scope  
The reset scope of the target port is displayed.  
Reset scope is the range where the command reset request from the server is performed, when the target port is connected to multiple servers.
  - I\_T\_L (I: Initiator, T: Target, L: LUN)  
Reset (cancel) the command request from the server that sent the command reset request.
  - T\_L (T: Target, L: LUN)  
Reset (cancel) the command request from all of the servers that are connected to the port.
- Release Reservation if Chip is Reset  
Whether the function to release the reservation status of the volume when the target port (chip) is reset is enabled or disabled is displayed.
- Host Group  
The name of the host group that has the host affinity setting with the target port is displayed.  
If no host group with the host affinity setting exists, a "-" (hyphen) is displayed.
- Port Group  
The name of the port group to which the target port belongs is displayed.  
If the target port does not belong to a port group, a "-" (hyphen) is displayed.
- SAS Host Address  
SAS host addresses of all SAS hosts that have the host affinity setting with the target port are displayed.  
If the host affinity setting is not configured, a "-" (hyphen) is displayed.



### Filter setting

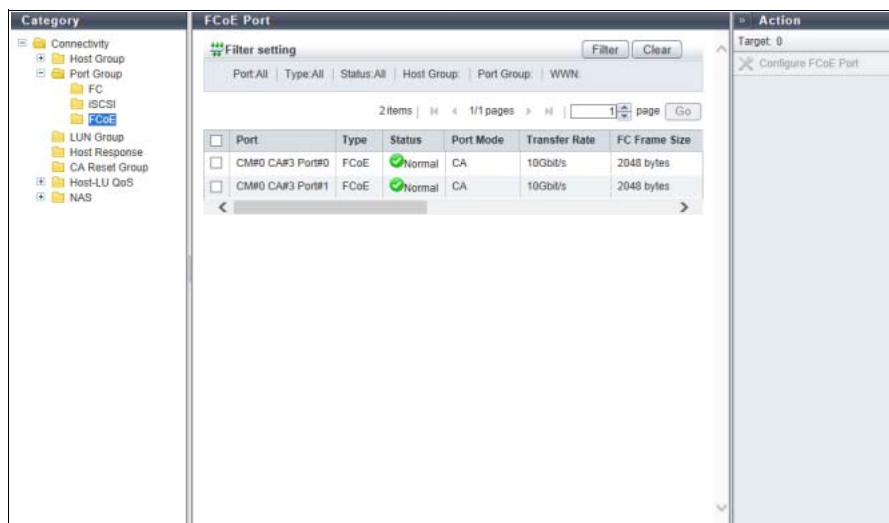
Filter	Description
Port	Select the location information of the port that is to be displayed.
Type	Select the type of the port that is to be displayed.
Status	Select the status of the port that is to be displayed.
Host Group	Input the name of the host group that has the host affinity setting with the port that is to be displayed. When not using the host group name for filtering, leave this item blank.
Port Group	Input the name of the port group to which the port that is to be displayed belongs. When not using the port group name for filtering, leave this item blank.
SAS Address	Input the SAS Address of the SAS host that has the host affinity setting with the port that is to be displayed. When not using the SAS address for filtering, leave this item blank.

### 5.3.4 FCoE Port

Parameters of the FCoE ports that are registered in the ETERNUS DX are displayed.

#### Caution

The ETERNUS DX60 S3, the ETERNUS AF250/AF650, and the ETERNUS DX200F do not support this function.



The following items are displayed in the Main area:

- Port  
The location information (x: CE number, y: CM number, z: CA number, w: Port number) of the target port is displayed.
  - For the ETERNUS DX8700 S3/DX8900 S3  
CE#x CM#y CA#z Port#w
  - For the other models  
CM#y CA#z Port#w
- Type  
The CA type (fixed at "FCoE") of the target port is displayed.

- Status  
The status of the target port is displayed.
- Port Mode  
The mode (fixed at "CA") of the target port is displayed.
- Transfer Rate  
The transfer speed (fixed at "10 Gbit/s") of the target port is displayed.
- FC Frame Size  
The frame size of the target port is displayed.  
"FC Frame Size" specifies the length of the communication information.
  - 512 bytes
  - 1024 bytes
  - 2048 bytes
- VLAN ID  
The VLAN ID of the target port is displayed.
- Fabric Name  
The fabric name of the target port is displayed.
- Reset Scope  
The reset scope of the target port is displayed.  
Reset scope is the range where the command reset from the server is performed, when the target port is connected to multiple servers.
  - I\_T\_L (I: Initiator, T: Target, L: LUN)  
Reset (cancel) the command request from the server that sent the command reset request.
  - T\_L (T: Target, L: LUN)  
Reset (cancels) the command request from all of the servers that are connected to the port.
- Release Reservation if Chip is Reset  
Whether the function to release the reservation status of the volume when the target port (chip) is reset is enabled or disabled is displayed.
- Host Group  
The name of the host group that has the host affinity setting with the target port is displayed.  
If no host group with the host affinity setting exists, a "-" (hyphen) is displayed.
- Port Group  
The name of the port group to which the target port belongs is displayed.  
If the target port does not belong to a port group, a "-" (hyphen) is displayed.
- WWN  
WWNs of all FC/FCoE hosts that have the host affinity setting with the target port are displayed.  
If the host affinity setting is not configured, the field is blank.

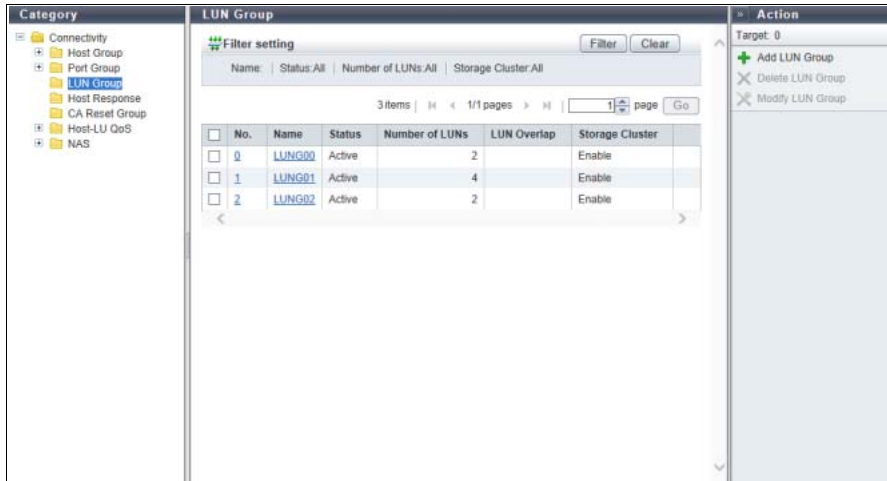
### Filter setting

Filter	Description
Port	Select the location information of the port that is to be displayed.
Type	Select the CA type of the port that is to be displayed.
Status	Select the status of the port that is to be displayed.
Host Group	Input the name of the host group that has the host affinity setting with the port that is to be displayed. When not using the host group name for filtering, leave this item blank.
Port Group	Input the name of the port group to which the port that is to be displayed belongs. When not using the port group name for filtering, leave this item blank.
WWN	Input the WWN of the FC/FCoE host that has the host affinity setting with the port that is to be displayed. When not using the WWN for filtering, leave this item blank.

## 5.4 LUN Group

A list of the LUN groups is displayed.

A LUN group is a group of LUNs, which can be recognized by the host. The allocation information of LUNs and volumes in the ETERNUS DX/AF are configured to the LUN group.



The following items are displayed in the Main area:

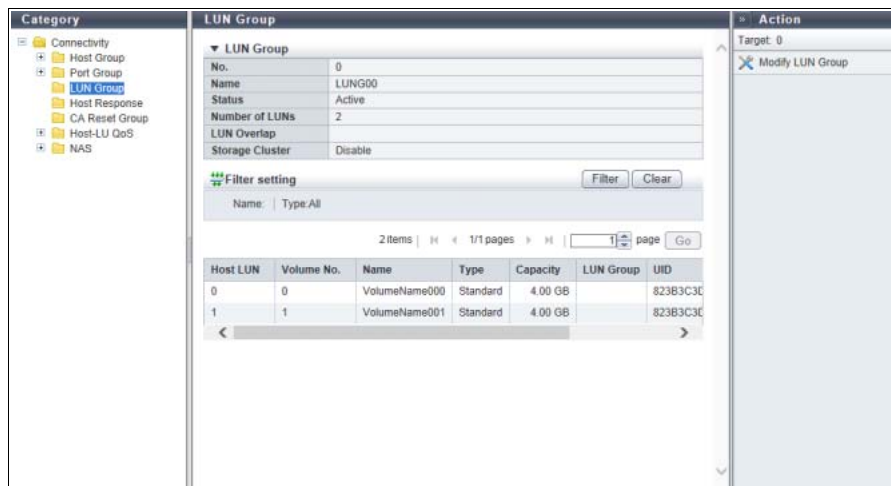
- No.  
The LUN group number is displayed. By clicking this item, the [LUN Group Detail] screen is displayed. Refer to ["5.4.1 LUN Group Detail" \(page 269\)](#) for display items.
- Name  
The LUN group name is displayed. By clicking this item, the [LUN Group Detail] screen is displayed. Refer to ["5.4.1 LUN Group Detail" \(page 269\)](#) for display items.
- Status  
Whether the LUN group is used ("Active") or not ("Inactive") for the host affinity settings is displayed. "Host Affinity Setting" is to specify association between "Host Group", "CA Port Group", and "LUN Group" or association between "Host", "CA Port", "and "LUN Group".
  - Active  
The LUN group is used for the host affinity settings. The LUN group can be accessed from the host.
  - Inactive  
The LUN group is not used for the host affinity settings.
- Number of LUNs  
The number of LUNs, which have been allocated to volumes in the LUN group, is displayed.
- LUN Overlap  
If volumes in the LUN group satisfy one or both of the following conditions, "Yes" is displayed. For any other conditions, the field is blank.
  - The volumes are allocated to different LUN groups.
  - The volumes are included in the mapping information, which is directly allocated to the CA port without specifying the host group or the CA port group.
- Storage Cluster  
If volumes in the LUN group are used for the Storage Cluster function, "Enable" is displayed. When no volumes are used for the Storage Cluster function, "Disable" is displayed. This item is displayed only when "Enable" is selected for the Storage Cluster function.

Filter setting

Filter	Description
Name	Input the LUN group name that is to be displayed. When not using the LUN group name for filtering, leave this item blank.
Status	Select the LUN group status that is to be displayed.
Number of LUNs	Select the number of LUNs that is to be displayed. Using "512LUN" as the standard, ">512" or "<=512" can be selected.
Storage Cluster	Select "Enable" when displaying LUN groups with volumes that are used by the Storage Cluster function exists. Select "Disable" when displaying LUN groups without volumes used by the Storage Cluster function. This item is displayed only when "Enable" is selected for the Storage Cluster function.

### 5.4.1 LUN Group Detail

The detailed information of a LUN group is displayed.



The following items are displayed in the Main area:

- Host LUN  
The host LUN is displayed.
- Volume No.  
The volume number, which is allocated to the LUN, is displayed.
- Name  
The volume name is displayed.
- Type  
The volume type is displayed.
  - Standard
  - WSV
  - TPV
  - FTV
  - SDV

- Capacity  
The volume capacity is displayed.  
When the "Type" is "SDV", the logical capacity, which can be accessed from the host, is displayed.
- LUN Group  
If the volume is allocated to different LUN groups, the LUN group name is displayed. If the host, ports, and LUNs are allocated without specifying a host group or CA port group, the location information of the ports is displayed.  
When a volume is not allocated to different LUN groups, the field is blank.
- UID  
The volume UID is displayed.  
The UID is an identifier (storage system name) to specify a volume from the open system server.  
A "-" (hyphen) is displayed for the Deduplication/Compression System Volume.  
This item is displayed only when the controller firmware version V10L4x or later is used.

## 5.5 Host Response

The registered host responses are displayed.

The host response configures the appropriate operation mode on which the host makes connection. The usual host connection uses a recommended pattern or the default setting which have been arranged in advance in accordance with each OS type.

When customizing the host response in accordance with the OS type or the operating environment, refer to "Add Host Response" in "ETERNUS Web GUI User's Guide (Settings)".



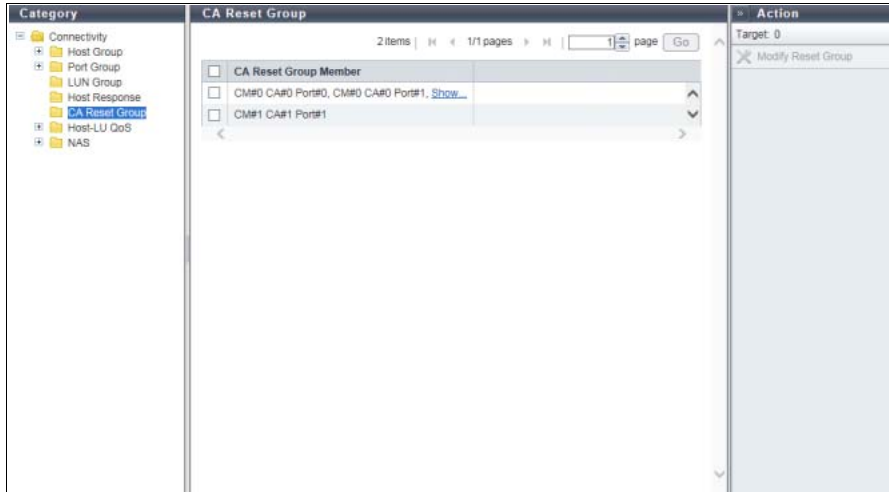
The following items are displayed in the Main area:

- Name  
All of the host responses, which have been registered in the ETERNUS DX/AF, are displayed.
  - Solaris MPxIO
  - HP-UX
  - AIX
  - AIX VxVM
  - VS850/SVC
  - BS2000
  - Host responses registered in the ETERNUS DX/AF
  - Default
- Status  
The usage of the host response ("Active" or "Inactive") is displayed.
  - Active  
A host response which is being used on host, host group, or host affinity.
  - Inactive  
A host response which is not being used on host, host group, or host affinity.

## 5.6 CA Reset Group

A list of the registered CA reset groups is displayed.

A "CA reset group" is a group of ports which are released simultaneously under the instruction of a server.



The following items are displayed in the Main area:

- CA Reset Group Member  
The location information (x: CE number, y: CM number, z: CA number, w: Port number) of member ports of each CA reset group is displayed.
  - For the ETERNUS DX8700 S3/DX8900 S3  
CE#x CM#y CA#z Port#w
  - For the other models  
CM#y CA#z Port#w



## 5.7 Host-LU QoS

A list of the registered Host-LU QoS groups is displayed.

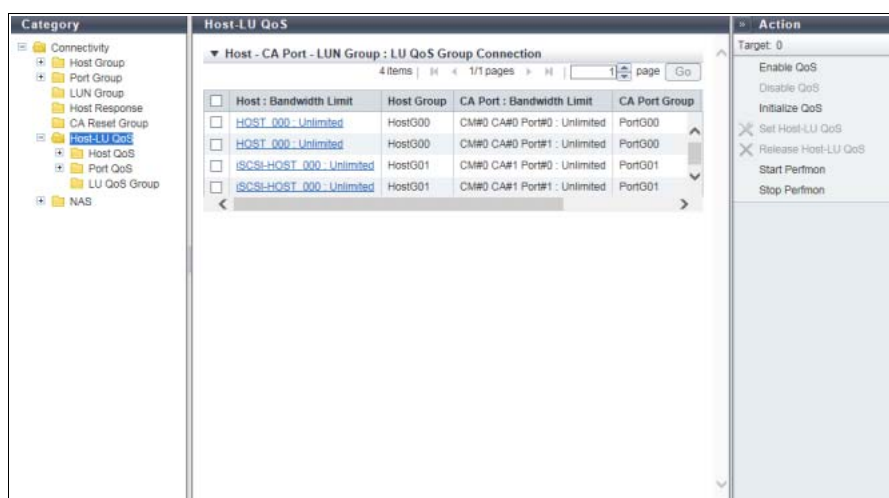
The Host-LU QoS list shows the association between "Host", "CA Port", and "LUN Group", bandwidth limit (performance limits), and performance information.

### Caution

- The ETERNUS DX60 S3 does not support this function.
- When using ETERNUS Web GUI, schedule settings for QoS parameters and displaying scheduled QoS parameters are not available. Use ETERNUS CLI to check the scheduled QoS parameters that are specified using ETERNUS CLI. ETERNUS Web GUI displays the bandwidth limit and the performance information that are specified by using ETERNUS Web GUI.
- Host-LU QoS does not support from LUN#1024 onward. If volumes are mapped from LUN#1024 onward, only the first 1024 LUNs (LUN#0 - LUN#1023) are displayed.

### Note

- Whether the QoS mode is enabled or disabled can be checked in the action field. Refer to "Enable/Disable QoS" in "ETERNUS Web GUI User's Guide (Settings)" for details.
- Host-LU QoS starts its operation by configuring the bandwidth limit on a "hosts", "CA ports", or "LUNs", and enabling the QoS mode.
- This function displays the performance information that is obtained during performance monitoring regardless of whether the QoS mode is enabled or disabled. When the performance information is displayed before stopping performance monitoring, the performance information that is obtained from the start time until the time when displaying the performance information is requested is displayed. This function displays the total performance information for the host and the performance information for each host LUN.
- The performance information of each CA port can also be displayed. Refer to ["5.7.7 Port QoS \(Basic\)" \(page 284\)](#) for details.



The following items are displayed in the Main area:

- Host : Bandwidth Limit
    - Host  
The host name for which the host affinity setting is configured is displayed.  
If "All" is displayed, all of the hosts can access the ETERNUS DX/AF.
    - Bandwidth Limit  
The maximum performance is displayed in IOPS (throughput value). If the bandwidth limit has not been configured (the bandwidth has not been limited), "Unlimited" is displayed.  
If "All" has been selected for hosts, a "-" (hyphen) is displayed.
- Click the [Host : Bandwidth Limit] link to display the total performance information for the host and the performance information of each LUN. Refer to ["5.7.1 Host-LU QoS Performance Information" \(page 275\)](#) for details.
- Host Group  
If a host belongs to a host group, the host group name is displayed. If a host does not belong to the host group, a "-" (hyphen) is displayed.  
If "All" is displayed, all of the hosts can access the ETERNUS DX/AF.
  - CA Port : Bandwidth Limit
    - CA Port  
The location information of the CA port with the host affinity setting is displayed.
    - Bandwidth Limit  
The maximum performance is displayed in IOPS (throughput value). If the bandwidth limit has not been configured (the bandwidth has not been limited), "Unlimited" is displayed.
  - CA Port Group  
If a CA port belongs to a CA port group, the CA port group name is displayed. If a host does not belong to a CA port group, a "-" (hyphen) is displayed.
  - LUN Group : LU QoS Group
    - LUN Group  
The LUN group name is displayed. If the ETERNUS CLI command ("set mapping") is used for LUN mapping, a "-" (hyphen) is displayed.
    - LU QoS Group  
The LU QoS group number is displayed between 0 and 1055. If a LU QoS group number is not configured, a "-" (hyphen) is displayed.

Click the [LUN Group : LU QoS Group] link to display a bandwidth limit on each LUN. Refer to ["5.7.2 LUN Group : LU QoS Group Detail" \(page 280\)](#) for details.

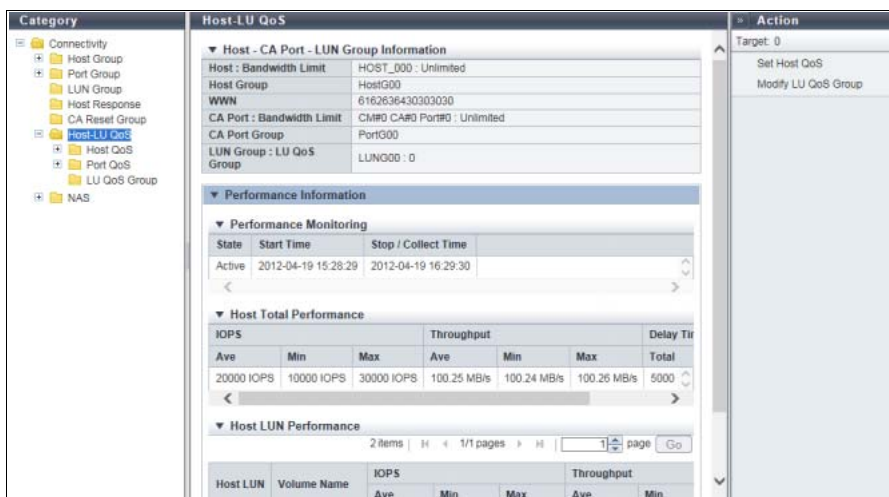
## 5.7.1 Host-LU QoS Performance Information

When a host affinity setting with a specific host group is already configured, the total performance information for the host and the performance information of each LUN are displayed.  
If a host affinity setting with all of the host groups is configured ("All" is specified as the target host group), the performance information of each host LUN is displayed.

### Caution

The monitoring status of the performance information and obtained performance information are cleared in the following conditions:

- The port mode is changed (CA, CA/RA → RA or Initiator)
- The ETERNUS DX/AF is rebooted
- An error is detected in the ETERNUS DX/AF
- Hot maintenance of the CM is performed
- Hot controller firmware upgrade is performed



The following items are displayed in the Main area:

- Host - CA Port - LUN Group Information
  - Host : Bandwidth Limit  
The host name and the bandwidth limit of the selected host is displayed in "Host : Bandwidth Limit" format.  
If the bandwidth limit has not been configured (the bandwidth has not been limited), "Unlimited" is displayed as the "Bandwidth Limit". If "All" has been selected for the host, a "-" (hyphen) is displayed as the "Bandwidth Limit".
  - Host Group  
The host group name, to which the selected host belongs, is displayed.  
If all of the hosts are to be connected, "All" is displayed.  
If the host does not belong to a host group, a "-" (hyphen) is displayed.

- **WWN**  
The WWN for the selected host is displayed.  
This item is displayed when the host affinity setting is configured and the selected host is "FC" or "FCoE".
- **iSCSI Name**  
The iSCSI name for the selected host is displayed.  
This item is displayed when the host affinity setting is configured and the selected host is "iSCSI".
- **IP Version**  
The IP version of the iSCSI host is displayed. This item is displayed when the host affinity setting is configured and the selected host is "iSCSI".
  - IPv4
  - IPv6
- **IP Address**  
The IP address of the selected iSCSI host is displayed.  
Note that the IPv6 address is displayed as an abbreviation. If the IP address is not specified, the field is blank.  
This item is displayed when the host affinity setting is configured and the selected host is "iSCSI".
  - For IPv4 address
    - xxx.xxx.xxx.xxx  
xxx: 0 - 255 for other fields (decimal)
  - For IPv6 address
    - xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx  
xxxx: 0 - ffff (hexadecimal, "a" - "f" are lowercase letters)  
Refer to ["IPv6 Address Notation" \(page 253\)](#) for details.
- **SAS Address**  
The SAS address of the selected host is displayed.  
This item is displayed when the host affinity setting is configured and the selected host is "SAS".
- **CA Port : Bandwidth Limit**  
The location information and the bandwidth limit of the selected CA port is displayed in "CA Port : Bandwidth Limit" format.  
If the bandwidth limit has not been configured (the bandwidth has not been limited), "Unlimited" is displayed as the "Bandwidth Limit".
- **CA Port Group**  
If a CA port that is connected to the selected host belongs to a CA port group as a member, the CA port group name is displayed. If a host does not belong as a member, a "-" (hyphen) is displayed.
- **LUN Group : LU QoS Group**  
The LUN group name and LU QoS group number (between 0 and 1055) are displayed in "LUN Group : LU QoS Group" format.  
If the ETERNUS CLI command ("set mapping") is used for LUN mapping, a "-" (hyphen) is displayed as "LUN Group".  
If a LUN QoS group number has not been configured, a "-" (hyphen) is displayed as "LU QoS Group".

- Performance information

- Login IP Address

IP address that is logged in is displayed.

The performance information is displayed for each specified IP address. Note that the IPv6 address is displayed as an abbreviation. If there is no IP address, a "-" (hyphen) is displayed.

This item is displayed for the iSCSI host when the host affinity setting is configured, the iSCSI name is specified, and the IP address is not specified.

- For IPv4 address

- xxx.xxx.xxx.xxx  
xxx: 0 - 255 for other fields (decimal)

- For IPv6 address

- xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx  
xxxx: 0 - ffff (hexadecimal, "a" - "f" are lowercase letters)  
Refer to ["IPv6 Address Notation" \(page 253\)](#) for details.

- Performance Monitoring

- State

The status of performance monitoring for the host is displayed.

- Active
- Stopped

- Start Time

- Stop / Collect Time

The start time and the end time for performance monitoring are displayed.

The displayed time varies depending on how the performance monitoring is started or ended.

- Before monitoring is started (\*1)

"State" for performance monitoring is "Stopped". "-" (hyphens) are displayed for "Start Time" and "Stop Collect Time".

- Monitoring is started

"State" for performance monitoring is changed from "Stopped" to "Active". The time when performance monitoring was started is displayed for "Start Time". The time when the performance information is obtained is displayed for "Stop / Collect Time".

- Monitoring is started while the monitoring session has already been started

"State" for performance monitoring is "Active". The last time when performance monitoring was started is displayed for "Start Time". The time when the performance information is obtained is displayed for "Stop / Collect Time".

- Monitoring is stopped

"State" for performance monitoring is changed from "Active" to "Stopped". The last time when performance monitoring was started is displayed for "Start Time". The time when performance monitoring is stopped is displayed for "Stop / Collect Time".

- Monitoring is stopped while the monitoring session has already been stopped

"State" for performance monitoring is "Stopped". The last time when performance monitoring was started is displayed for "Start Time". The first time when performance monitoring was stopped is displayed for "Stop / Collect Time".

\*1: When performance monitoring is not being performed after the ETERNUS DX/AF is started.

In the following conditions, "-" (hyphens) are displayed for "Start Time" and "Stop / Collect Time".

- When no iSCSI host with the host affinity setting is connected
- When no IP address for an iSCSI host with the host affinity setting is logged in
- When the start time is "0"

 **Caution**

If performance monitoring is restarted during an active performance monitoring session, the performance information that is already obtained is deleted and the collection of performance information starts again.

- **Host Total Performance**

When the host affinity setting is configured by a port and a specific host group, the total performance information for the specific host that is connected to the port is displayed.

If an IP address is not specified and multiple IP addresses are logged in with the iSCSI host that is connected to the target port, the performance information of each IP address is displayed.

- **IOPS**

The performance information from when performance monitoring is started until performance monitoring is ended (or performance information is displayed) is displayed.

- Ave  
The average I/O count per second is displayed.
- Min  
The minimum I/O count per second is displayed.
- Max  
The maximum I/O count per second is displayed.

- **Throughput**

The transfer data size from when performance monitoring is started until performance monitoring is ended (or performance information is displayed) is displayed.

- Ave  
The average data transfer size per second is displayed.
- Min  
The minimum data transfer size per second is displayed.
- Max  
The maximum data transfer size per second is displayed.

- **Delay Time**

- Total  
The total delay time for executing a command from when performance monitoring is started until performance monitoring is ended (or performance information is displayed) is displayed. If the total delay time exceeds the maximum value, "Overflow" is displayed.
- Ave  
The average delay time per command from when performance monitoring is started until performance monitoring is ended (or performance information is displayed) is displayed.

- Host LUN Performance

The performance information of each LUN is displayed for the specific host (when "All" is specified for the host, all of the hosts) that is connected to the port.

- Host LUN

The host LUN is displayed.

- 0 - 1023

- Volume Name

The volume name is displayed.

- IOPS

The performance information from when performance monitoring is started until performance monitoring is ended (or performance information is displayed) is displayed.

- Ave  
The average I/O count per second is displayed.
- Min  
The minimum I/O count per second is displayed.
- Max  
The maximum I/O count per second is displayed.

- Throughput

The transfer data size from when performance monitoring is started until performance monitoring is ended (or performance information is displayed) is displayed.

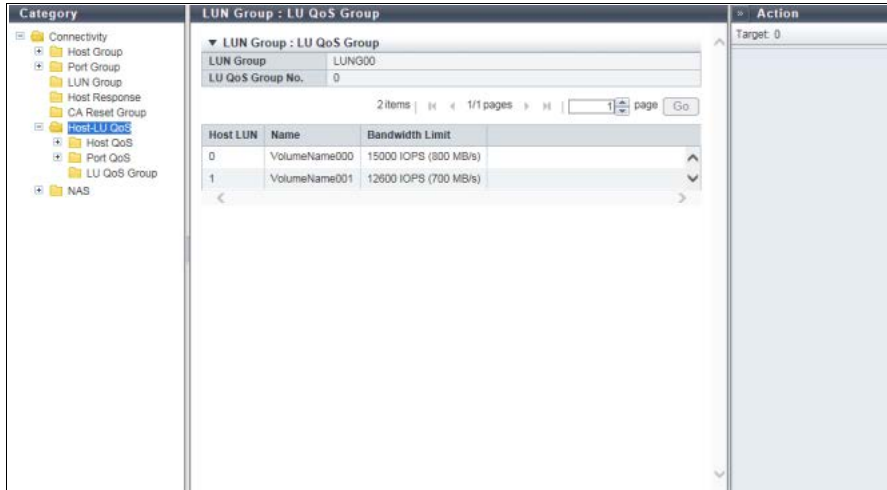
- Ave  
The average data transfer size per second is displayed.
- Min  
The minimum data transfer size per second is displayed.
- Max  
The maximum data transfer size per second is displayed.

- Delay Time

- Total  
The total delay time for executing a command from when performance monitoring is started until performance monitoring is ended (or performance information is displayed) is displayed. If the total delay time exceeds the maximum value, "Overflow" is displayed.
- Ave  
The average delay time per command from when performance monitoring is started until performance monitoring is ended (or performance information is displayed) is displayed.

## 5.7.2 LUN Group : LU QoS Group Detail

The bandwidth limit for each LUN is displayed.



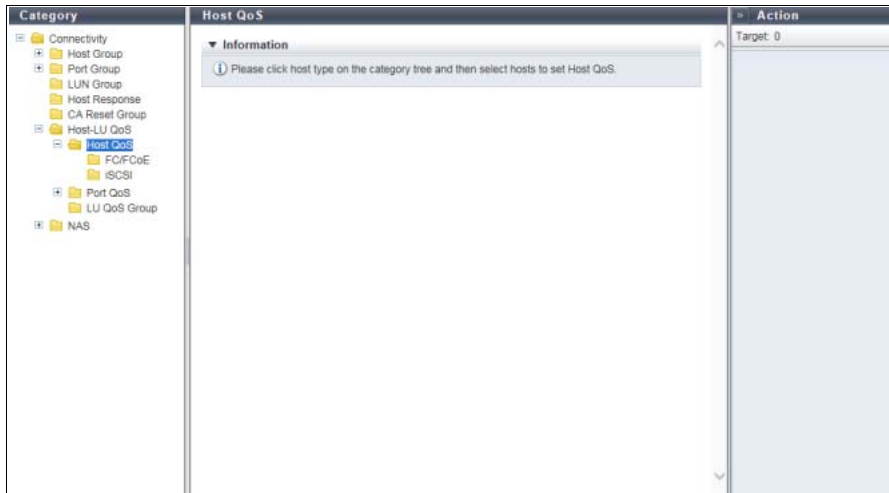
The following items are displayed in the Main area:

- LUN Group  
The LUN group name is displayed. If the ETERNUS CLI command ("set mapping") is used for LUN mapping, a "-" (hyphen) is displayed.
- LU QoS Group No.  
The LU QoS group number is displayed between 0 and 1055. If a LU QoS group number is not configured, a "-" (hyphen) is displayed.
- Host LUN  
The host LUN number is displayed.
- Name  
The volume name is displayed.
- Bandwidth Limit  
The maximum performance is displayed in IOPS (throughput value). If the bandwidth limit has not been configured (the bandwidth has not been limited), "Unlimited" is displayed.



### 5.7.3 Host QoS (Basic)

Follow the message in the Information area to configure a bandwidth limit on each host.

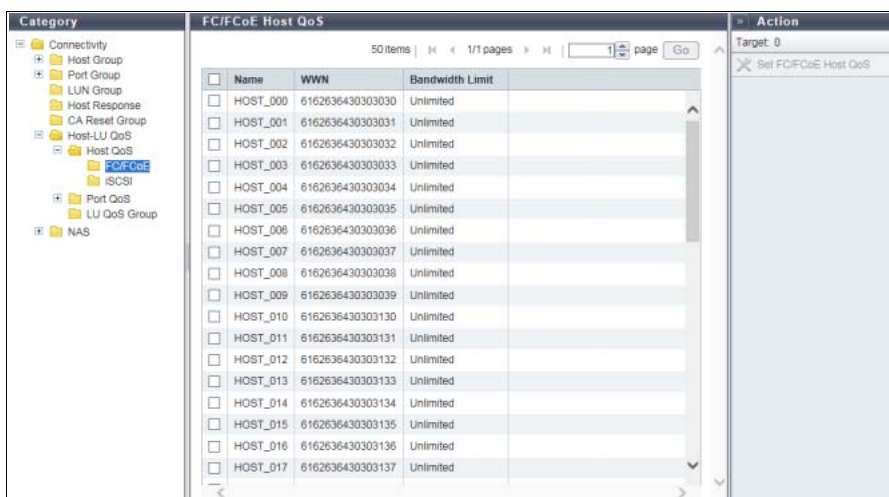


### 5.7.4 FC/FCoE Host QoS

The bandwidth limit of the FC/FCoE hosts that are registered in the ETERNUS DX/AF is displayed.

**Note**

This function displays all the hosts that are registered in the ETERNUS DX/AF regardless of whether the hosts belong to host groups or not.



The following items are displayed in the Main area:

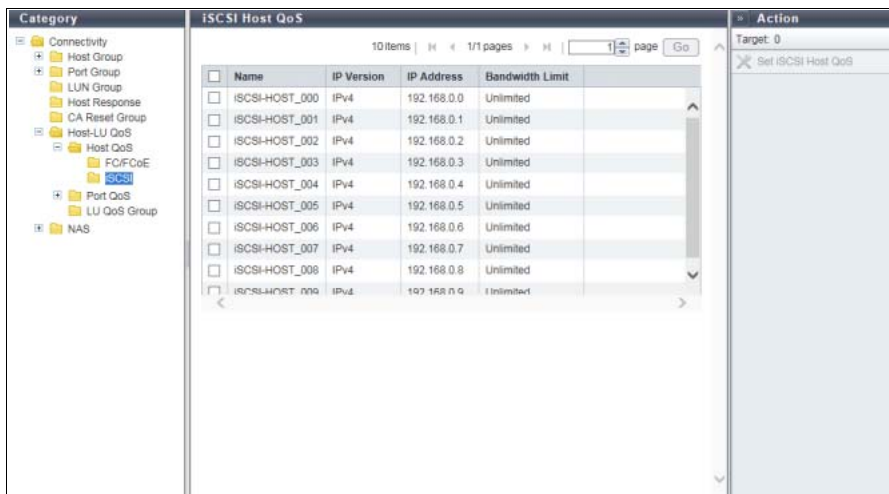
- Name  
The FC/FCoE host name is displayed.
- WWN  
The FC/FCoE host WWN is displayed.
- Bandwidth Limit  
The maximum performance of the FC/FCoE host is displayed in IOPS (throughput value). If the bandwidth limit has not been configured (the bandwidth has not been limited), "Unlimited" is displayed.

### 5.7.5 iSCSI Host QoS

The bandwidth limit of the iSCSI hosts that are registered in the ETERNUS DX/AF is displayed.

**Note**

This function displays all the hosts that are registered in the ETERNUS DX/AF regardless of whether the hosts belong to host groups or not.



The following items are displayed in the Main area:

- Name  
The iSCSI host name is displayed.
- IP Version  
The IP version of the iSCSI host is displayed.
- IP Address  
The IP address of the iSCSI host is displayed.  
Note that the IPv6 address is displayed as an abbreviation. Refer to ["IPv6 Address Notation" \(page 253\)](#) for details.  
If the IP address is not set, the field is blank.
- Bandwidth Limit  
The maximum performance of the iSCSI host is displayed in IOPS (throughput value). If the bandwidth limit has not been configured (the bandwidth has not been limited), "Unlimited" is displayed.

## 5.7.6 SAS Host QoS

The bandwidth limit of the SAS hosts that are registered in the ETERNUS DX is displayed.

### Caution

The ETERNUS DX500 S3/DX600 S3, the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3, the ETERNUS AF250/AF650, and the ETERNUS DX200F do not support this function.

### Note

This function displays all the hosts that are registered in the ETERNUS DX regardless of whether the hosts belong to host groups or not.

Name	SAS Address	Bandwidth Limit
HOST_001	6162636430303031	Unlimited
HOST_003	6162636430303033	Unlimited
HOST_005	6162636430303035	Unlimited
HOST_007	6162636430303037	Unlimited
HOST_009	6162636430303039	Unlimited
HOST_011	6162636430303131	Unlimited
HOST_013	6162636430303133	Unlimited
HOST_015	6162636430303135	Unlimited
HOST_017	6162636430303137	Unlimited
HOST_019	6162636430303139	Unlimited
HOST_021	6162636430303231	Unlimited
HOST_023	6162636430303233	Unlimited
HOST_025	6162636430303235	Unlimited
HOST_027	6162636430303237	Unlimited
HOST_029	6162636430303239	Unlimited
HOST_031	6162636430303331	Unlimited
HOST_033	6162636430303333	Unlimited
HOST_035	6162636430303335	Unlimited

The following items are displayed in the Main area:

- Name  
The SAS host name is displayed.
- SAS Address  
The SAS address of the SAS host is displayed.
- Bandwidth Limit  
The maximum performance of the SAS host is displayed in IOPS (throughput value). If the bandwidth limit has not been configured (the bandwidth has not been limited), "Unlimited" is displayed.

### 5.7.7 Port QoS (Basic)

Follow the message in the Information area to configure a bandwidth limit on each port.

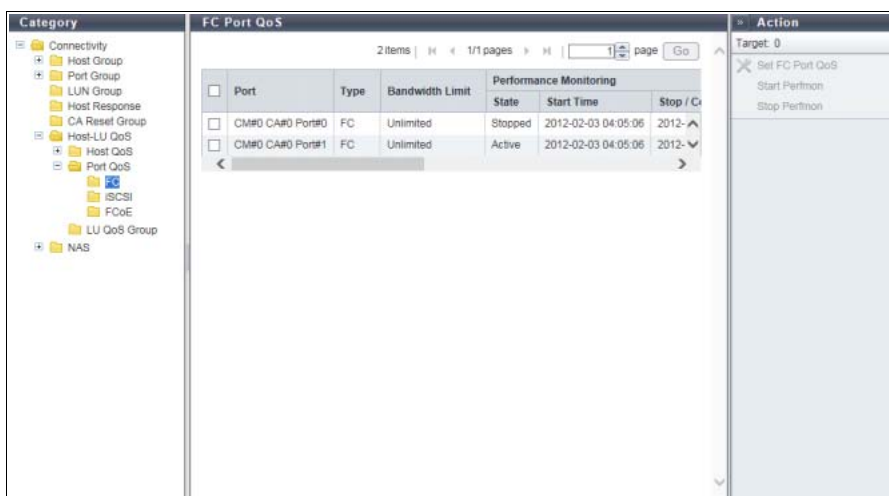


### 5.7.8 FC Port QoS

This function displays the bandwidth limit and the performance information of the FC ports that are registered in the ETERNUS DX/AF.

**Note**

- The ports with "CA" or "CA/RA" as the port mode that are registered by the ETERNUS DX/AF are displayed regardless of whether the ports belong to CA port groups or not.
- This function displays the performance information that is obtained during performance monitoring regardless of whether the QoS mode is enabled or disabled. When the performance information is displayed before stopping performance monitoring, the performance information that is obtained from the start time until the time when displaying the performance information is requested is displayed. This function displays the performance information of each port.



The following items are displayed in the Main area:

- Port  
The location information of the target port is displayed.
- Type  
The port type (fixed to "FC") is displayed.
- Bandwidth Limit  
The maximum performance of the target port is displayed in IOPS (throughput value). If the bandwidth limit has not been configured (the bandwidth has not been limited), "Unlimited" is displayed.
- Performance Monitoring
  - State  
The status of performance monitoring for the host is displayed.
    - Active
    - Stopped
  - Start Time
  - Stop / Collect Time  
The start time and the end time for performance monitoring are displayed.
    - YYYY-MM-DD hh:mm:ss (YYYY: Year (AD), MM: Month (01 - 12), DD: Date (01 - 31), hh: Hour (00 - 23), mm: Minute (00 - 59), ss: Second (00 - 59))

The displayed time varies depending on how the performance monitoring is started or ended.

- Before monitoring is started (\*1)  
"State" for performance monitoring is "Stopped". "-" (hyphens) are displayed for "Start Time" and "Stop Collect Time".
- Monitoring is started  
"State" for performance monitoring is changed from "Stopped" to "Active". The time when performance monitoring was started is displayed for "Start Time". The time when the performance information is obtained is displayed for "Stop / Collect Time".
- Monitoring is started while the monitoring session has already been started  
"State" for performance monitoring is "Active". The last time when performance monitoring was started is displayed for "Start Time". The time when the performance information is obtained is displayed for "Stop / Collect Time".
- Monitoring is stopped  
"State" for performance monitoring is changed from "Active" to "Stopped". The last time when performance monitoring was started is displayed for "Start Time". The time when performance monitoring is stopped is displayed for "Stop / Collect Time".
- Monitoring is stopped while the monitoring session has already been stopped  
"State" for performance monitoring is "Stopped". The last time when performance monitoring was started is displayed for "Start Time". The first time when performance monitoring was stopped is displayed for "Stop / Collect Time".

\*1: When performance monitoring is not being performed after the ETERNUS DX/AF is started.

When the start time is "0", "-" is displayed for "Start Time" and "Stop / Collect Time".

 **Caution**

If performance monitoring is restarted during an active performance monitoring session, the performance information that is already obtained is deleted and the collection of performance information starts again.

- IOPS  
The performance information from when performance monitoring is started until performance monitoring is ended (or performance information is displayed) is displayed.
  - Ave  
The average I/O count per second is displayed.
  - Min  
The minimum I/O count per second is displayed.
  - Max  
The maximum I/O count per second is displayed.
- Throughput  
The transfer data size from when performance monitoring is started until performance monitoring is ended (or performance information is displayed) is displayed.
  - Ave  
The average data transfer size per second is displayed.
  - Min  
The minimum data transfer size per second is displayed.
  - Max  
The maximum data transfer size per second is displayed.
- Delay Time
  - Total  
The total delay time for executing a command from when performance monitoring is started until performance monitoring is ended (or performance information is displayed) is displayed. If the total delay time exceeds the maximum value, "Overflow" is displayed.
  - Ave  
The average delay time per command from when performance monitoring is started until performance monitoring is ended (or performance information is displayed) is displayed.

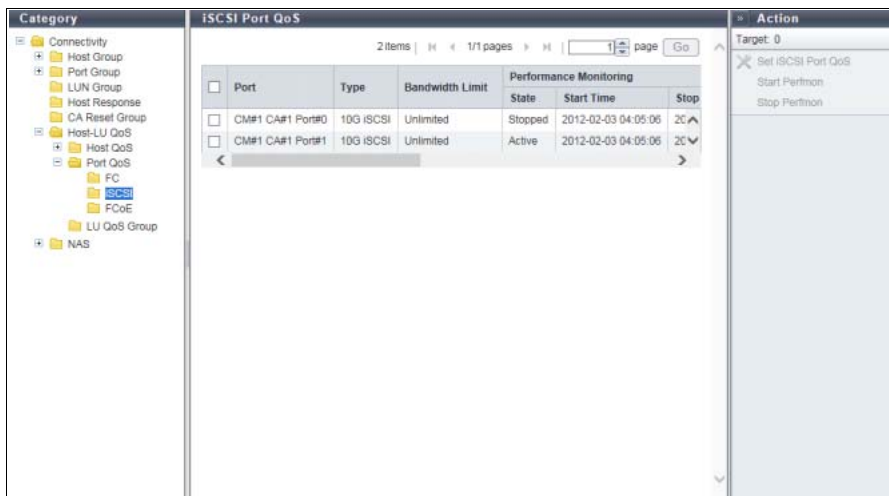
### 5.7.9 iSCSI Port QoS

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This function displays the bandwidth limit and the performance information of the iSCSI ports that are registered in the ETERNUS DX/AF.

#### Note

- The ports with "CA" or "CA/RA" as the port mode that are registered by the ETERNUS DX/AF are displayed regardless of whether the ports belong to CA port groups or not.
  - This function displays the performance information that is obtained during performance monitoring regardless of whether the QoS mode is enabled or disabled. When the performance information is displayed before stopping performance monitoring, the performance information that is obtained from the start time until the time when displaying the performance information is requested is displayed. This function displays the performance information of each port.
-



The following items are displayed in the Main area:

- Port  
The location information of the target port is displayed.
- Type  
The type of the target port is displayed.
  - 1G iSCSI  
1Gbit/s iSCSI.
  - 10G iSCSI  
10Gbit/s iSCSI.
- Bandwidth Limit  
The maximum performance of the target port is displayed in IOPS (throughput value). If the bandwidth limit has not been configured (the bandwidth has not been limited), "Unlimited" is displayed.
- Performance Monitoring  
Refer to "[Performance Monitoring](#)" (page 285) for details.
- IOPS  
Refer to "[Performance Monitoring](#)" (page 285) for details.
- Throughput  
Refer to "[Performance Monitoring](#)" (page 285) for details.
- Delay Time  
Refer to "[Performance Monitoring](#)" (page 285) for details.

## 5.7.10 SAS Port QoS

This function displays the bandwidth limit and the performance information of the SAS ports that are registered in the ETERNUS DX.

### Caution

The ETERNUS DX500 S3/DX600 S3, the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3, the ETERNUS AF250/AF650, and the ETERNUS DX200F do not support this function.

### Note

- The ports that are registered by the ETERNUS DX are displayed regardless of whether the ports belong to CA port groups or not.
- This function displays the performance information that is obtained during performance monitoring regardless of whether the QoS mode is enabled or disabled. When the performance information is displayed before stopping performance monitoring, the performance information that is obtained from the start time until the time when displaying the performance information is requested is displayed. This function displays the performance information of each port.

Port	Type	Bandwidth Limit	Performance Monitoring		
			State	Start Time	Stop / C
<input type="checkbox"/> CM#0 CA#0 Port#0	SAS	Unlimited	Stopped	2012-02-03 04:05:06	2012-
<input type="checkbox"/> CM#0 CA#0 Port#1	SAS	Unlimited	Active	2012-02-03 04:05:06	2012-
<input type="checkbox"/> CM#1 CA#0 Port#0	SAS	Unlimited	Stopped	2012-02-03 04:05:06	2012-
<input type="checkbox"/> CM#1 CA#0 Port#1	SAS	Unlimited	Active	2012-02-03 04:05:06	2012-

The following items are displayed in the Main area:

- Port  
The location information of the target port is displayed.
- Type  
The type of the target port is displayed.
- Bandwidth Limit  
The maximum performance of the target port is displayed in IOPS (throughput value). If the bandwidth limit has not been configured (the bandwidth has not been limited), "Unlimited" is displayed.
- Performance Monitoring  
Refer to "[Performance Monitoring](#)" (page 285) for details.
- IOPS  
Refer to "[Performance Monitoring](#)" (page 285) for details.



- Throughput  
Refer to "[Performance Monitoring](#)" (page 285) for details.
- Delay Time  
Refer to "[Performance Monitoring](#)" (page 285) for details.

### 5.7.11 FCoE Port QoS

This function displays the bandwidth limit and the performance information of the FCoE ports that are registered in the ETERNUS DX.

#### Caution

The ETERNUS DX60 S3, the ETERNUS AF250/AF650, and the ETERNUS DX200F do not support this function.

#### Note

- The ports that are registered by the ETERNUS DX are displayed regardless of whether the ports belong to CA port groups or not.
- This function displays the performance information that is obtained during performance monitoring regardless of whether the QoS mode is enabled or disabled. When the performance information is displayed before stopping performance monitoring, the performance information that is obtained from the start time until the time when displaying the performance information is requested is displayed. This function displays the performance information of each port.

Port	Type	Bandwidth Limit	Performance Monitoring		
			State	Start Time	Stop / C
<input type="checkbox"/> CM#0 CA#0 Port#0	FCoE	Unlimited	Stopped	2012-02-03 04:05:06	2012-▲
<input type="checkbox"/> CM#0 CA#0 Port#1	FCoE	Unlimited	Active	2012-02-03 04:05:06	2012-▼

The following items are displayed in the Main area:

- Port  
The location information of the target port is displayed.
- Type  
The type of the target port is displayed.
- Bandwidth Limit  
The maximum performance of the target port is displayed in IOPS (throughput value). If the bandwidth limit has not been configured (the bandwidth has not been limited), "Unlimited" is displayed.

- Performance Monitoring  
Refer to "[Performance Monitoring](#)" (page 285) for details.
- IOPS  
Refer to "[Performance Monitoring](#)" (page 285) for details.
- Throughput  
Refer to "[Performance Monitoring](#)" (page 285) for details.
- Delay Time  
Refer to "[Performance Monitoring](#)" (page 285) for details.

## 5.7.12 LU QoS Group

A list of the registered LU QoS groups is displayed.

An LU QoS group is a group of the bandwidth limit (the maximum performance) configured for each Host LUN.

### Note

By assigning a LU QoS group to a LUN group with the host affinity setting, the bandwidth limit can be configured for each LUN. Refer to "Set Host-LU QoS" in "ETERNUS Web GUI User's Guide (Settings)" for details.

LU QoS Group No.	Status
0	Active
1	Active
2	Active
3	Active
4	Active
5	Active
6	Inactive

The following items are displayed in the Main area:

- LU QoS Group No.  
The LU QoS group number is displayed between 0 and 1055.
- Status  
Whether a LU QoS group is assigned to a LUN group with the host affinity setting is displayed. "Host affinity setting" is to specify association between "Host", "CA Port" and "LUN Group".
  - Active  
The LU QoS group is assigned to a LUN group.
  - Inactive  
The LU QoS group is not assigned to a LUN group.

## 5.8 NAS

This function displays a list of shared folders that are used in a NAS environment. This function is displayed in a Unified Storage environment.

### Caution

- The ETERNUS DX60 S3, the ETERNUS DX8100 S3/DX8700 S3/DX8900 S3, the ETERNUS AF250/AF650, and the ETERNUS DX200F do not support this function.
- The display process for the shared folder list may be delayed for a maximum of two minutes while a meta cache redistribution is being performed for NAS volumes (NAS user volumes or NAS backup volumes).

### Note

- A unified upgrade is necessary for an ETERNUS DX S3 series that will be used in a Unified Storage environment if it was previously used in a SAN environment. Note that "Maintenance Operation" policy is required to perform the unified upgrade. This function is added in the category after the unified upgrade is complete.
- Shared folders include home directories. "Home directory" is created for each user and is used as a dedicated folder that can be used freely by the user. Users that are authenticated by the Active Directory authentication server or the local user authentication use home directories with a CIFS connection.




No.	Shared Folder Name	Protocol	Shared Status	Process	Oplocks	Writable
0	NasShare7300	CIFS	Online	-	Enable	Yes
1	homes	CIFS	Online	-	Enable	Yes
2	NasShare7302	CIFS	Online	-	Enable	Yes
3	NasShare7303	CIFS/NFS	Offline	-	Enable	Yes
4	NasShare8600	NFS	Offline	-	-	Yes
5	NasShare8601	NFS	Online	-	-	Yes
6	NasShare8602	NFS	Online	-	-	Yes
7	NasShare8603	NFS	Online	-	-	Yes
8	NasShare8604	CIFS	Online	-	Enable	Yes
9	NasShare8605	CIFS	Online	-	Enable	Yes
10	NasShare8606	CIFS	Online	-	Enable	Yes
11	NasShare8607	CIFS/NFS	Online	-	Enable	Yes
12	NasShare8608	NFS	Online	-	-	Yes
13	NasShare8609	NFS	Online	-	-	Yes
14	NasShare0000	NFS	Online	-	-	Yes
15	NasShare0001	NFS	Online	-	-	Yes

The following items are displayed in the Main area:

- No.  
The shared folder number is displayed between 0 - 255.

 **Caution**

When a NAS backup volume is restored, shared folder numbers that belong to the NAS backup volume targeted for restoration, may be changed. Use this function to check the shared folder number after restoration. Note that a shared folder number is not changed when the folder has not been restored.

- Shared Folder Name  
The shared folder name is displayed.  
For the home directory, "homes" is displayed in this item. User dedicated folders are created under the "homes" folder. For home directories, the following display items are fixed.
  - Shared Folder Name  
homes
  - Protocol  
CIFS
  - Writable  
Yes
  - Access Based Enumeration  
Disable
  - NFS Allowed Hosts  
Blank
  - CIFS Permissions  
Blank
- Protocol  
The protocol for the shared folder is displayed.
  - When the Windows CIFS protocol is used, "CIFS" is displayed
  - When the UNIX NFS protocol is used, "NFS" is displayed
  - When the Windows CIFS or the UNIX NFS protocol is used, "CIFS/NFS" is displayed
- Shared Status  
The shared status is displayed.
  -  Online  
The folder is shared.
  -  Offline  
The folder is not shared.
  -  Unknown  
Other than above status.
- Process  
A process that is being performed for the shared folder is displayed.  
If the NAS data is being deleted, "Clearing Data" is displayed.  
If no process is being performed, a "-" (hyphen) is displayed.

- **Oplocks**  
When using the Opportunistic locking (Oplocks) function to avoid conflicts between files by locking the files in the shared folder, "Enable" is displayed. When this function is not used, "Disable" is displayed. A "-" (hyphen) is displayed when the protocol is "NFS".
- **Writable**  
When the write permission is specified for the shared folder, "Yes" is displayed. When the write permission is not specified, "No" is displayed.
- **Volume No.**  
The NAS user volume number (decimal) to which the shared folder belongs is displayed.
- **Volume Name**  
The NAS user volume name to which the shared folder belongs is displayed.
- **Volume Total Capacity**  
The total capacity of the NAS user volume to which the shared folder belongs is displayed between 400.00 GB - 128.00 TB.
- **Volume Total Free Space**  
The total free space in the NAS user volume to which the shared folder belongs is displayed between 0.00 MB - 128.00 TB.
- **Owner**  
The owner of the shared folder is displayed.
- **Group**  
The group of the shared folder is displayed.
- **SMB Encryption of Data Access**  
The current SMB encryption setting (enabled or disabled) for the data access is displayed. When SMB encryption is performed for data while accessing the shared folder, "Enable" is displayed. When data is not encrypted, "Disable" is displayed. A "-" (hyphen) is displayed when the protocol is "NFS".
- **Access Based Enumeration**  
The current setting (enabled or disabled) for the enumeration based on the access permission is displayed. When shared folders and directories that cannot be accessed are hidden according to the access control list (ACL function), "Enable" is displayed. When inaccessible shared folders and directories are not hidden, "Disable" is displayed. A "-" (hyphen) is displayed when the protocol is "NFS".
- **CIFS Allowed Hosts**  
A list of CIFS Allowed Hosts is displayed.
- **CIFS Denied Hosts**  
A list of CIFS Denied Hosts is displayed.
- **NFS Allowed Hosts**  
A list of NFS Allowed Hosts is displayed.

- CIFS Permissions

The CIFS access permissions that are set for the shared folder is displayed.  
A "-" (hyphen) is displayed when the protocol is "NFS".

The CIFS access permissions are displayed in the following format.

- User name or group name [Type, Authority]
  - Type  
This item shows whether the displayed name is for user or group (u: User, g: Group).
  - Authority  
This item shows the access permission (r: Read Only, rw: Read/Write) for the displayed name.  
"Read/Write" indicates that reading from and writing to the shared folder is allowed.  
"Read Only" indicates that the shared folder is read only.
  - If "Everyone" is displayed as the group name, the specified authority is applied to all users and groups. In this case, "Type" is omitted.

[Example]

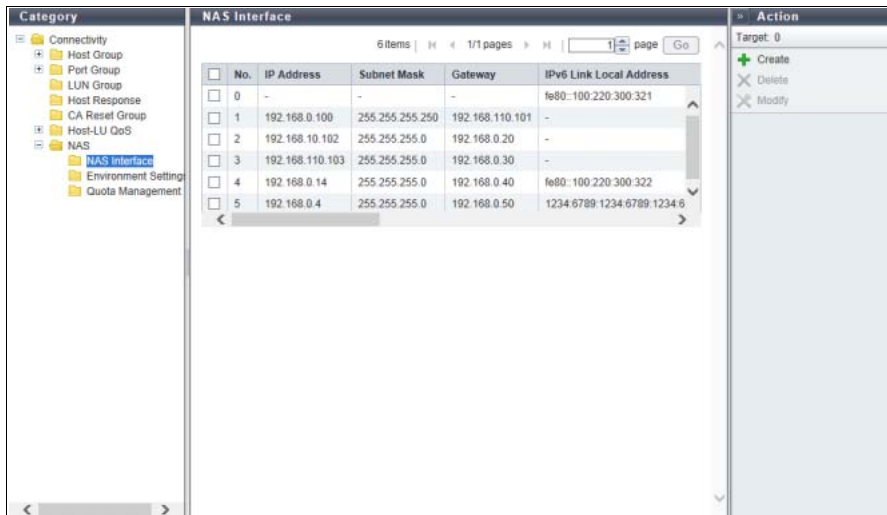
- aaa000 [u, rw]  
Type is "User", name is "aaa000", and authority is "Read/Write".
- group0 [g, r]  
Type is "Group", name is "group0", and authority is "Read Only".
- Everyone [rw]  
Type is "Everyone" and authority is "Read/Write".

#### Note

- User and group are user information that is managed in the Active Directory authentication server.
- "Read/Write" is given priority over "Read Only".
  - If "Read Only" is specified for UserA and "Read/Write" is specified for GroupA in which UserA is a part of, "Read/Write" is set for all users in GroupA including UserA.
  - If "Read/Write" is specified for UserA and "Read Only" is specified for GroupA in which UserA is a part of, "Read/Write" is set for UserA and "Read Only" is set for other users in GroupA excluding UserA.
  - If "Everyone" is selected for the CIFS access permission type, the authority is set with the same conditions as when "Read/Write" or "Read Only" is set to all groups in the ETERNUS DX.

## 5.8.1 NAS Interface

This function displays a list of the NAS interfaces.  
This function is displayed in a Unified Storage environment.



No.	IP Address	Subnet Mask	Gateway	IPv6 Link Local Address
0	-	-	-	fe80::100:220:300:321
1	192.168.0.100	255.255.255.250	192.168.110.101	-
2	192.168.10.102	255.255.255.0	192.168.0.20	-
3	192.168.110.103	255.255.255.0	192.168.0.30	-
4	192.168.0.14	255.255.255.0	192.168.0.40	fe80::100:220:300:322
5	192.168.0.4	255.255.255.0	192.168.0.50	1234:6789:1234:6789:1234:6

The following items are displayed in the Main area:

- No.  
The NAS interface number is displayed 0 - 159.
- IP Address  
The IPv4 address of the target port is displayed.
- Subnet Mask  
The subnet mask of the target port is displayed.
- Gateway  
The IPv4 gateway address of the target port is displayed.
- IPv6 Link Local Address  
The IPv6 link local address of the target port is displayed.
- IPv6 Connect IP Address  
The IPv6 connect IP address of the target port is displayed.
- IPv6 Prefix length  
Whether the Routing Information Protocol (RIP) setting is enabled or disabled is displayed.  
When this setting is enabled, the network settings are simplified.
- IPv6 Gateway  
The IPv6 gateway address of the target port is displayed.
- RIP Setting  
Whether the Routing Information Protocol (RIP) setting is enabled or disabled is displayed.
- VLAN ID  
The VLAN ID of the target port is displayed.  
If the VLAN ID is not specified, a "-" (hyphen) is displayed.
- Port  
The location information of the port with the NAS interface setting is displayed.

- **Redundant Port**  
The location information of the pair port, which configure multipath setting with the target port, is displayed.  
If the redundant port is not specified, a "-" (hyphen) is displayed.
- **Failover Status**  
The failover status of the multipath is displayed.  
A "-" (hyphen) is displayed when the multipath is not set (or when "Redundancy" is "Single").
  - Normal  
The multipath setting between the "Port" and "Redundant Port" is in a normal state.
  - CM#x CA#y Port#z is currently inactive  
The multipath between the "Port" and "Redundant Port" is set, but the "CM#x CA#y Port#z" port is not used.
- **Redundancy**  
The connection type of the target port is displayed.  
When the connection type is "Active-Active" or "Active-Standby", the "Redundant Port" information is displayed.
  - Active-Active  
Combine the ports in both of the CMs and configure the redundant ports. For this configuration, the ports of both CMs can be used at any time.
  - Active - Standby  
Combine the ports in both of the CMs and configure the redundant ports. For this configuration, one port remains in standby status.
  - Single  
Use only for the ports in the CM that are not redundant.

## 5.8.2 Environment Settings

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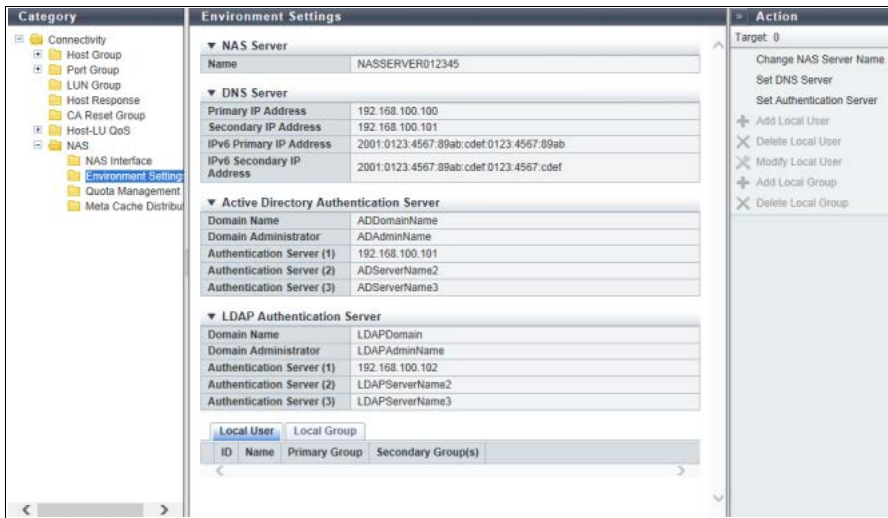
This function displays the setup information of the servers (NAS servers, DNS servers, and authentication servers) and the local user authentication that is used for the NAS system.  
This function is displayed in a Unified Storage environment.

### Note

- The local user authentication cannot be used when an Active Directory authentication server or an LDAP authentication server is used. In this case, the setting item names are displayed in the [Local User] tab and the [Local Group] tab, but all contents are blank.
  - If the local user authentication is used, an Active Directory authentication server and an LDAP authentication server cannot be used. In this case, the setting item names are displayed for the Active Directory authentication server and the LDAP authentication server, but all contents are blank.
-



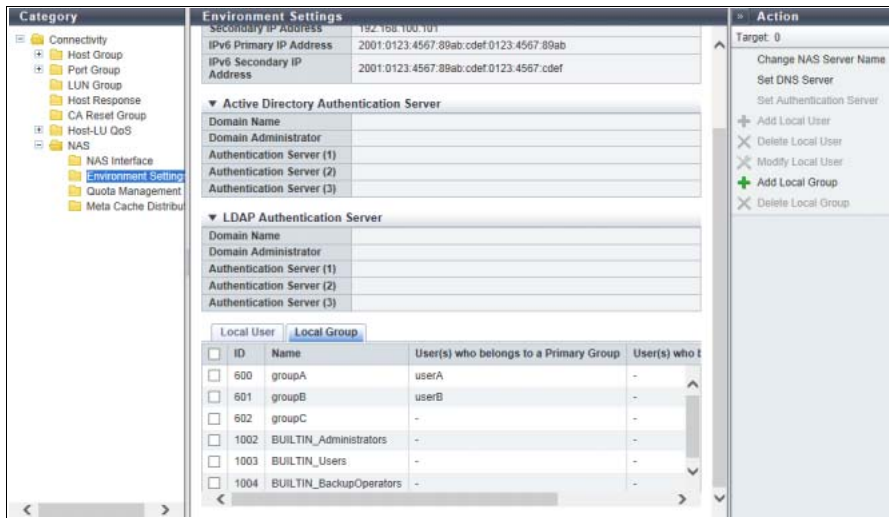
- When an Active Directory authentication server or an LDAP authentication server is used



- When a local user authentication is used (Add Local User)



■ When a local group authentication is used (Add Local Group)



The following items are displayed in the Main area:

- NAS Server
  - Name  
The NAS server name is displayed.
- DNS Server
  - Primary IP Address  
The IPv4 primary IP address of the DNS server is displayed.  
If the relevant IP address is not specified, the field is blank.
  - Secondary IP Address  
The IPv4 secondary IP address of the DNS server is displayed.  
If the relevant IP address is not specified, the field is blank.
  - IPv6 Primary IP Address  
The IPv6 primary IP address of the DNS server is displayed.  
If the relevant IP address is not specified, the field is blank.
  - IPv6 Secondary IP Address  
The IPv6 secondary IP address of the DNS server is displayed.  
If the relevant IP address is not specified, the field is blank.
- Active Directory Authentication Server
  - Domain Name  
The domain name of the Active Directory authentication server is displayed.  
If the authentication server is not specified, the field is blank.
  - Domain Administrator  
The administrator name of the Active Directory authentication server is displayed.  
If the authentication server is not specified, the field is blank.

- Authentication Server (1)  
The IPv4 address, IPv6 address, or the FQDN of the Active Directory authentication server is displayed.  
If the Authentication Server (1) is not specified, the field is blank.
- Authentication Server (2)  
The IPv4 address, IPv6 address, or the FQDN of the Active Directory authentication server is displayed.  
If the Authentication Server (2) is not specified, the field is blank.
- Authentication Server (3)  
The IPv4 address, IPv6 address, or the FQDN of the Active Directory authentication server is displayed.  
If the Authentication Server (3) is not specified, the field is blank.
- LDAP Authentication Server
  - Domain Name  
The domain name of the LDAP authentication server is displayed.  
If the authentication server is not specified, the field is blank.
  - Domain Administrator  
The administrator name of the LDAP authentication server is displayed.  
If the authentication server is not specified, the field is blank.
  - Authentication Server (1)  
The IPv4 address, IPv6 address, or the FQDN of the LDAP authentication server is displayed.  
If the Authentication Server (1) is not specified, the field is blank.
  - Authentication Server (2)  
The IPv4 address, IPv6 address, or the FQDN of the LDAP authentication server is displayed.  
If the Authentication Server (2) is not specified, the field is blank.
  - Authentication Server (3)  
The IPv4 address, IPv6 address, or the FQDN of the LDAP authentication server is displayed.  
If the Authentication Server (3) is not specified, the field is blank.
- Local User
  - ID  
The user ID of the local user is displayed.  
If the local user authentication that has been supported by controller firmware versions V10L51 and earlier is used, "450" is displayed.  
If the local user is not registered in the ETERNUS DX, the field is blank.
  - Name  
The local user name is displayed.  
If the local user authentication that has been supported by controller firmware versions V10L51 and earlier is used, "shareuser\$" is displayed.  
If the local user is not registered in the ETERNUS DX, the field is blank.
  - Primary Group  
The primary group name to which the local user belongs is displayed.  
If the local user is not registered in the ETERNUS DX, the field is blank.
  - Secondary Group(s)  
The secondary group names to which the local user belongs are displayed.  
If multiple secondary groups exist, all factors are separated with a "," (comma) and displayed. If no secondary group name exists, a "-" (hyphen) is displayed.  
If the local user is not registered in the ETERNUS DX, the field is blank.

● Local Group

- ID  
The group ID for the local group is displayed.  
For details about group IDs for local groups that are automatically created in the ETERNUS DX, refer to "[Special group](#)" (page 300).
- Name  
The local group name is displayed.  
For details about group names for local groups that are automatically created in the ETERNUS DX, refer to "[Special group](#)" (page 300).
- User(s) who belongs to a Primary Group  
The local user names that belong to the primary group are displayed.  
If multiple local user names exist, all factors are separated with a "," (comma) and displayed. If no local user name exists, a "-" (hyphen) is displayed.  
If the local user is not registered in the ETERNUS DX, the field is blank.
- User(s) who belongs to a Secondary Group  
The local user names that belong to the secondary group are displayed.  
If multiple local user names exist, all factors are separated with a "," (comma) and displayed. If no local user name exists, a "-" (hyphen) is displayed.  
If the local user is not registered in the ETERNUS DX, the field is blank.

Special group

Local group ID	Local group name	Description
450	shareuser\$	The local user "shareuser\$" belongs to this group. This group is automatically created when the controller firmware is updated from controller firmware version V10L51 or earlier while the authentication server is not being used (or all users share the same fixed user account) to V10L53 or later. Regular local users can also belong to this group.
451	sharegroup\$	The initial primary group to which the created local users belong. This group is automatically created when local users are created. If all local users that belong to this group are deleted, this group is automatically deleted. If the local user "shareuser\$" is deleted and then added again, the recreated "shareuser\$" belongs to this group.
1002	BUILTIN Administrators	One of the BUILTIN groups (*1). Users who belong to this group can execute all operations for all domain controllers within the domain.
1003	BUILTIN Users	One of the BUILTIN groups (*1). Users who belong to this group can execute most of the general operations.
1004	BUILTIN BackupOperators	One of the BUILTIN groups (*1). Users who belong to this group can perform file backups and file recoveries regardless of the access permissions for all the files of domain controllers within the domain.

\*1: "BUILTIN groups" are groups that are included in the ETERNUS DX as standard. If local users belong to these groups, the backup software "Arcserve Backup" can be used to back up or restore files by using the ETERNUS DX as a backup device.

### 5.8.3 Quota Management

The list of quota setting information is displayed.

Quota is a function that limits drive space or the number of files used on a NAS user volume or a shared folder to prevent the depletion of resources in the ETERNUS DX. There are two types of thresholds ("Warning" and "Limit").

This function is displayed in a Unified Storage environment.

#### Caution

- Quotas for NAS user volumes are set for users or groups that are registered in the authentication server. When using this function, registering the users or groups in the authentication server in advance is necessary.
- Quotas for shared folders are set for shared folders that are registered in the ETERNUS DX. Create the shared folders in advance. Refer to "Create Shared Folder" in "ETERNUS Web GUI User's Guide (Settings)" for details.





#### Note





Shared folders include home directories.

Volume No.	Volume Name	Type	Name	Used Status	Drive Space	Used Rat
73	VolumeName073	User	user1	Normal	1.00 MB	
73	VolumeName073	Group	group1	Normal	3.00 MB	
73	VolumeName073	Share	homes	Normal	5.00 MB	
73	VolumeName073	Share	NasShare7301	Normal	3.00 MB	
85	VolumeName085	User	user1	Normal	5.00 MB	

The following items are displayed in the Main area:

- Volume No.  
The volume number of the quota setting target volume is displayed.
- Volume Name  
The name of the quota setting target volume is displayed.
- Type  
The quota target type is displayed.
  - User
  - Group
  - Share

- Name  
The quota target user name, group name, or shared folder name is displayed.  
For the home directory, "homes" is displayed for this item.
- Used Status  
The use state for the quota target drive space or file count is displayed.  
If the drive space use state and the file count use state do not match, the use state is displayed according to the priority.
  -  Normal  
Normal status (The usage is below the warning value. If the warning value is not specified, the usage is below the limit value.)
  -  Warning  
The usage has exceeded the warning value but is below the limit value.
  -  Exceeded  
The usage has exceeded the limit value.
  -  Unknown  
Other than above.

The priority for the use state is " Unknown" > " Exceeded" > " Warning" > " Normal".
- Drive Space  
The usage amount of the drive is displayed.
  - Used Size  
The current drive usage amount is displayed.  
If no quota target user or group is registered in the authentication server, or if the usage amount cannot be obtained, a "-" (hyphen) is displayed.

 **Note**

The usage amount is displayed with the largest unit (TB/GB/MB) after rounding off to two decimal places. For example, if the usage amount in the ETERNUS DX is "1572864000 KB", "1.46 TB" is displayed.

- Used Rate  
The usage rate of the drive usage limit value is displayed between 0 - 100%.  
Used Rate = Used Size / Limit  
A "-" (hyphen) is displayed in the following conditions:
  - The limit value is not specified
  - No quota target user or group is registered in the authentication server
  - The used size cannot be obtained

 **Note**

For the used rate, the result of the division is rounded up to two decimal places. If the used rate is larger than "0" but smaller than or equal to "1", "1 %" is displayed.

- Warning  
The drive usage warning value is displayed.  
If not specified, "Not Specified" is displayed. If the warning value cannot be obtained, a "-" (hyphen) is displayed.

**Note**

The warning value is displayed with the largest unit (TB/GB/MB) after rounding off to two decimal places. Refer to the Note of "[Used Size](#)" (page 302) for details.

- Limit  
The drive usage limit value is displayed.  
If not specified, "Not Specified" is displayed. If the limit value cannot be obtained, a "-" (hyphen) is displayed.

**Note**

The limit value is displayed with the largest unit (TB/GB/MB) after rounding off to two decimal places. Refer to the Note of "[Used Size](#)" (page 302) for details.

- File Count  
The number of used files is displayed.
  - Used Count  
The current file count is displayed.  
If no quota target user or group is registered in the authentication server, or if the used count cannot be obtained, a "-" (hyphen) is displayed.
  - Used Rate  
The usage rate of the file count limit value is displayed between 0 - 100%.  
Used Rate = Used Count / Limit  
A "-" (hyphen) is displayed in the following conditions:
    - The limit value is not specified
    - No quota target user or group is registered in the authentication server
    - The used count cannot be obtained

**Note**

For the used rate, the result of the division is rounded up to two decimal places. If the used rate is larger than "0" but smaller than or equal to "1", "1 %" is displayed.

- Warning  
The file count warning value is displayed.  
If not specified, "Not Specified" is displayed. If the warning value cannot be obtained, a "-" (hyphen) is displayed.
- Limit  
The file count limit value is displayed.  
If not specified, "Not Specified" is displayed. If the limit value cannot be obtained, a "-" (hyphen) is displayed.

### Filter setting

Filter	Description
Volume Name	Input the volume name that is to be displayed. When not using the volume name for filtering, leave this item blank.
Name	Input the user name, group name, or shared folder name of the quota target that is to be displayed. When not using the name for filtering, leave this item blank.
Used Status	Select the used state that is to be displayed.
Drive Used Size	Input the used size of the drive that is to be displayed. The quota setting information is displayed if the drive used size is larger than or equal to the specified value. When not using the drive used size for filtering, leave this item blank.
Drive Used Rate	Input the used rate of the drive that is to be displayed. The quota setting information is displayed if the drive used rate is larger than or equal to the specified value. When not using the drive used rate for filtering, leave this item blank.
File Used Count	Input the number of used files that is to be displayed. The quota setting information is displayed if the number of used files is greater than or equal to the specified value. When not using the file used count for filtering, leave this item blank.
File Used Rate	Input the used rate for the file that is to be displayed. The quota setting information is displayed if the file used rate is larger than or equal to the specified value. When not using the file used rate for filtering, leave this item blank.

## 5.8.4 Meta Cache Distribution

This function displays the setting state of the automatic meta cache distribution and the location of the meta cache.

"Meta cache" is a cache area in NAS for storing the management information of the file system. If the meta cache distribution is different from the initial location when the NAS volumes (NAS user volumes and the NAS backup volumes) are created, the meta cache is concentrated in one controller. In this case, the CM memory where the meta cache exists may become insufficient or the access performance to the NAS volumes from the CM without meta cache may be reduced.

This function is displayed in a Unified Storage environment.

### Note

- To distribute the meta cache, using the [Initialize Meta Cache Distribution] function is recommended.
- The meta cache distribution can be initialized manually. Refer to "Initialize Meta Cache Distribution" in "ETERNUS Web GUI User's Guide (Settings)" for details.
- The meta cache distribution can be initialized automatically. Refer to "Enable Automatic Meta Cache Distribution" in "ETERNUS Web GUI User's Guide (Settings)" for details.
- Automatic meta cache distribution can be disabled. Refer to "Disable Automatic Meta Cache Distribution" in "ETERNUS Web GUI User's Guide (Settings)" for details.





The following items are displayed in the Main area:

- Automatic Meta Cache Distribution
  - Automatic Meta Cache Distribution  
Whether the automatic meta cache distribution is enabled or not is displayed.
- Meta Cache Distribution Information
  - Volume No.  
The NAS volume number is displayed.
  - Volume Name  
The NAS volume name is displayed.
  - Current Location  
The current meta cache distribution is displayed.  
When the distribution information cannot be obtained, a "-" (hyphen) is displayed.
  - Initial Location  
The location of the meta cache when the NAS volume was created is displayed.  
When the distribution information cannot be obtained, a "-" (hyphen) is displayed.

# Chapter 6

## RAID Group Status

RAID group status displays the status information of volumes.

RAID group status screens can be displayed by clicking the following categories:

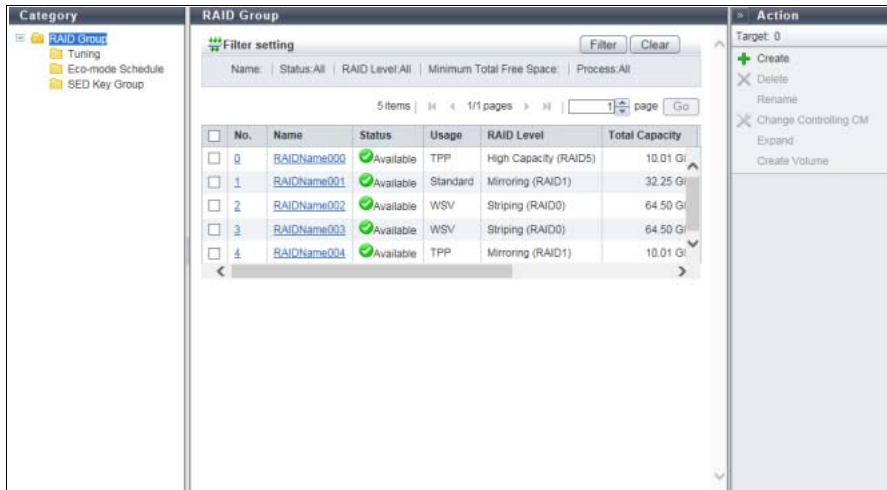
Category	RAID group status screen
RAID Group	<a href="#">RAID Group (Basic Information)</a>
Tuning	<a href="#">Tuning</a>
Eco-mode Schedule	<a href="#">Eco-mode Schedule (RAID Group)</a>
SED Key Group	<a href="#">SED Key Group</a>

Detailed information of the RAID groups can be displayed from the following screens:

- [RAID Group Detail \(Basic\)](#)
- [RAID Group Detail \(Volume Layout\)](#)
- [RAID Group Detail \(Drives\)](#)

## 6.1 RAID Group (Basic Information)

This function displays the basic information of RAID groups.



No.	Name	Status	Usage	RAID Level	Total Capacity
0	RAIDName000	Available	TPP	High Capacity (RAID5)	10.01 Gi
1	RAIDName001	Available	Standard	Mirroring (RAID1)	32.25 Gi
2	RAIDName002	Available	WSV	Striping (RAID0)	64.50 Gi
3	RAIDName003	Available	WSV	Striping (RAID0)	64.50 Gi
4	RAIDName004	Available	TPP	Mirroring (RAID1)	10.01 Gi

The following items are displayed in the Main area:

- No.  
The RAID group number is displayed. Click this item to display ["6.5 RAID Group Detail \(Basic\)" \(page 318\)](#).  
The RAID group number is allocated when a volume is created from the smallest unused decimal number in ascending order.
- Name  
The RAID group name is displayed. Click this item to display ["6.5 RAID Group Detail \(Basic\)" \(page 318\)](#).
- Status  
The RAID group status is displayed. Refer to ["A.3 RAID Group Status" \(page 407\)](#) for detailed information of RAID group status.
- Usage  
The usage of the RAID group is displayed.
  - Standard  
A RAID group that is used for creating "Standard", "SDV", or "SDPV" type volumes
  - Standard / WSV  
A RAID group that is used for creating the following volumes:
    - "WSV" and "Standard"
    - "WSV" and "SDV"
    - "WSV" and "SDPV"
  - WSV  
A RAID group that is used for creating "WSV" type volumes
  - TPP  
A RAID group that belongs to a TPP
  - FTRP  
A RAID group that belongs to a Flexible Tier Pool (FTRP)
  - RDB  
A RAID group that is registered as an REC Disk Buffer
  - Extreme Cache Pool  
A RAID group that is registered as an Extreme Cache Pool

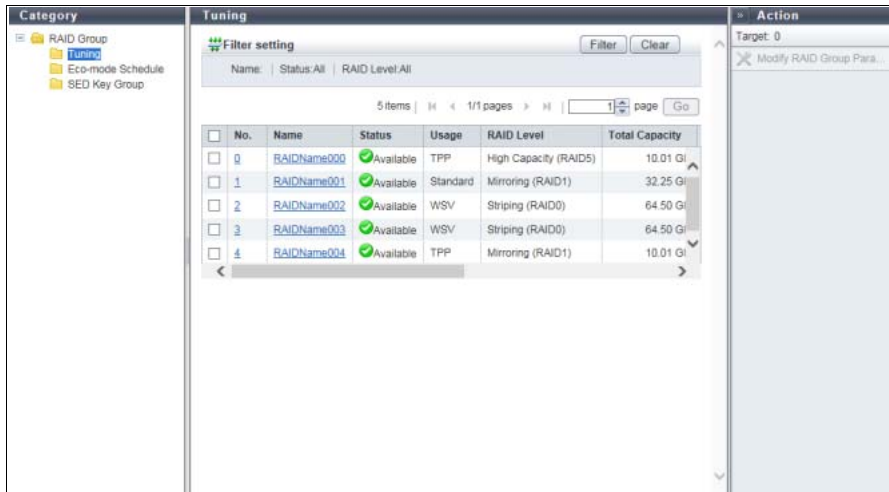
- Temporary  
A RAID group that is temporarily created while LDE is being performed
- "-" (hyphen)  
A RAID group that is not used
- RAID Level  
The RAID level is displayed.
  - High Performance (RAID1+0)
  - High Capacity (RAID5)
  - High Reliability (RAID6)
  - High Reliability (RAID6-FR)
  - Reliability (RAID5+0)
  - Mirroring (RAID1)
  - Striping (RAID0)
- Total Capacity  
The total capacity of the RAID groups is displayed.  
The capacity is displayed in units of "GB" or "TB". Even when volumes are created in units of "GB", if the volume capacity exceeds 1023.99GB, the capacity is displayed in units of "TB". The capacity is rounded off to two decimal places.
- Total Free Space  
The total free space in the RAID group is displayed.  
If the total free capacity exceeds 1023.99MB, the capacity is displayed in units of "GB". If the total free capacity exceeds 1023.99GB, the capacity is displayed in units of "TB". The capacity is rounded off to two decimal places.  
"Free space" means an area in the RAID group where no volume is created, and dispersed areas which became free by creating and deleting a volume.
- Controlling CM  
The Controlling CM of the RAID group is displayed (x: CE number, y: CM number).
  - For the ETERNUS DX8700 S3/DX8900 S3  
CE#x CM#y
  - For the other models  
CM#y
- Process  
A process that is being performed for the RAID group is displayed. If no process is being performed, a "-" (hyphen) is displayed.
  - Recovering  
Rebuild, copyback, redundant copy, or RAID group recovery is being performed.
  - Expanding  
Expansion of the RAID group by LDE is being performed.
  - Formatting  
Formatting of the RAID group is being performed.

### Filter setting

Filter	Description
Name	Input the RAID group name that is to be displayed. When not using the RAID group name for filtering, leave this item blank.
Status	Select the RAID group status that is to be displayed.
RAID Level	Select the RAID level that is to be displayed.
Bottom of Total Free Space	Input the minimum capacity of unused free space for the RAID groups that are to be displayed and select the units of capacity. When the minimum free space of the RAID group is not used for filtering, specify "0MB".
Process	Select which current process for the RAID group is to be displayed.

## 6.2 Tuning

The RAID group tuning information is displayed.



The screenshot shows a web-based interface for RAID group tuning. On the left, a 'Category' sidebar lists 'RAID Group', 'Tuning', 'Eco-mode Schedule', and 'SED Key Group'. The main 'Tuning' area features a 'Filter setting' section with 'Name: Status:All RAID Level:All' and a 'Filter' button. Below this is a table with 5 items, showing columns for 'No.', 'Name', 'Status', 'Usage', 'RAID Level', and 'Total Capacity'. The table contains five rows of RAID group information. To the right, an 'Action' panel shows 'Target: 0' and a 'Modify RAID Group Para.' link.

No.	Name	Status	Usage	RAID Level	Total Capacity
0	RAIDName000	Available	TPP	High Capacity (RAID5)	10.01 Gi
1	RAIDName001	Available	Standard	Mirroring (RAID1)	32.25 Gi
2	RAIDName002	Available	WSV	Striping (RAID0)	64.50 Gi
3	RAIDName003	Available	WSV	Striping (RAID0)	64.50 Gi
4	RAIDName004	Available	TPP	Mirroring (RAID1)	10.01 Gi

The following items are displayed in the Main area:

- No.  
The RAID group number is displayed. Click this item to display ["6.5 RAID Group Detail \(Basic\)" \(page 318\)](#).
- Name  
The RAID group name is displayed. Click this item to display ["6.5 RAID Group Detail \(Basic\)" \(page 318\)](#).
- Status  
The RAID group status is displayed. Refer to ["A.3 RAID Group Status" \(page 407\)](#) for detailed information of RAID group status.
- Usage  
The usage of the RAID group is displayed.
  - Standard  
A RAID group that is used for creating "Standard", "SDV", or "SDPV" type volumes
  - Standard / WSV  
A RAID group that is used for creating the following volumes:
    - "WSV" and "Standard"
    - "WSV" and "SDV"
    - "WSV" and "SDPV"
  - WSV  
A RAID group that is used for creating "WSV" type volumes
  - TPP  
A RAID group that belongs to a TPP
  - FTRP  
A RAID group that belongs to an FTRP
  - RDB  
A RAID group that is registered as an REC Disk Buffer
  - Extreme Cache Pool  
A RAID group that is registered as an Extreme Cache Pool

- "-" (hyphen)  
A RAID group that is not used
- RAID Level  
The RAID level is displayed.
  - High Performance (RAID1+0)
  - High Capacity (RAID5)
  - High Reliability (RAID6)
  - High Reliability (RAID6-FR)
  - Reliability (RAID5+0)
  - Mirroring (RAID1)
  - Striping (RAID0)
- Total Capacity  
The total capacity of the RAID groups is displayed.
- Rebuild Priority  
The rebuild priority of the RAID group is displayed.  
When the Rebuild Priority is "Low", give priority to host access.  
When the Rebuild Priority is "Middle", give the same priority as the host access to rebuild, copyback, and redundant copy.  
When the Rebuild Priority is "High", give priority to rebuild, copyback, and redundant copy.  
A "-" (hyphen) is displayed for the RAID group that is registered as an EXCP.
- DCMF  
The Drive Command Multiplying Factor (DCMF) is displayed.  
If the DCMF is changed, the number of commands issued to the drive is increased in multiples of the DCMF set value (if DCMF is "2", it is double).
- Drive Access Priority  
The drive access priority is displayed.  
When "Response" is specified, responses to host I/O are given priority over throughput.  
When "Throughput" is specified, throughput is given priority over responses to host I/O.  
When the drives that configure the target RAID group are SSDs or SSD SEDs, a "-" (hyphen) is displayed.
- Throttle  
The throttle value is displayed.  
Throttle is the proportion of the number of commands that are issued to a drive at the same time to the maximum number of commands that can be issued. When the throttle value is "100%", the maximum number of commands specified for each drive (the default number of commands) are issued.  
When "Drive Tuning Parameter Setting" of the [Modify RAID Group Parameters] function is disabled, a "-" (hyphen) is displayed.  
When logged in with a user account that has a default "Monitor" role, this item is not displayed.
- Ordered Cut  
Ordered Cut is displayed between 0 and 65535.  
Ordered Cut is the number of commands for optimizing drive access processing (priority control). When Ordered Cut is "x", the command to perform the priority control is issued for every x commands issued, and priority control is performed for the command issued before this command.  
When Ordered Cut is "0", the interval for priority control (priority control at every "x" commands) cannot be specified. All of the commands issued to the drive are processed according to their priority settings.  
When "Drive Tuning Parameter Setting" of the [Modify RAID Group Parameters] function is disabled, or the configuration drive of the RAID group is SSD or SSD SED, a "-" (hyphen) is displayed.  
When logged in with a user account that has a default "Monitor" role, this item is not displayed.

 **Caution**

RAID groups in which LDE is being performed are not displayed in the list.

**Filter setting**

Filter	Description
Name	Input the RAID group name that is to be displayed. When not using the RAID group name for filtering, leave this item blank.
Status	Select the RAID group status that is to be displayed.
RAID Level	Select the RAID level that is to be displayed.



## 6.3 Eco-mode Schedule (RAID Group)

This function displays the set state of the Eco-mode that is applied for the RAID group.

### Caution

The ETERNUS AF250/AF650 and the ETERNUS DX200F do not support this function.

### Note

- To use the Eco-mode, follow the procedure in "Modify Eco-mode General Setting" and "Create Eco-mode Schedule" in "ETERNUS Web GUI User's Guide (Settings)" to perform the general Eco-mode setup and create an Eco-mode schedule.
- To assign the Eco-mode to a RAID group, refer to "Assign Eco-mode Schedule (RAID Group)" in "ETERNUS Web GUI User's Guide (Settings)".

No.	Name	Status	Usage	RAID Level	Total Capacity	Eco
0	RAIDName001	Available	Standard	Mirroring (RAID1)	32.25 GB	⊞
1	RAIDName002	Available	WSV	Striping (RAID0)	64.50 GB	⊞
2	RAIDName003	Available	WSV	Striping (RAID0)	64.50 GB	⊞

The following items are displayed in the Main area:

- No.  
The RAID group number is displayed. Click this item to display ["6.5 RAID Group Detail \(Basic\)" \(page 318\)](#).
- Name  
The RAID group name is displayed. Click this item to display ["6.5 RAID Group Detail \(Basic\)" \(page 318\)](#).
- Status  
The RAID group status is displayed. Refer to ["A.3 RAID Group Status" \(page 407\)](#) for detailed information of RAID group status.
- Usage  
The usage of the RAID group is displayed.
  - Standard  
A RAID group that is used for creating "Standard", "SDV", or "SDPV" type volumes

- Standard / WSV  
A RAID group that is used for creating the following volumes:
  - "WSV" and "Standard"
  - "WSV" and "SDV"
  - "WSV" and "SDPV"
- WSV  
A RAID group that is used for creating "WSV" type volumes
- RAID Level  
The RAID level is displayed.
  - High Performance (RAID1+0)
  - High Capacity (RAID5)
  - High Reliability (RAID6)
  - High Reliability (RAID6-FR)
  - Reliability (RAID5+0)
  - Mirroring (RAID1)
  - Striping (RAID0)
- Total Capacity  
The total capacity of the RAID groups is displayed.
- Eco-mode Schedule  
The Eco-mode schedule name that is assigned to the RAID group is displayed. If the Eco-mode is controlled with Storage Foundation Software ETERNUS SF, "External" is displayed. When no Eco-mode schedule has been assigned, the field is blank.
- Eco-mode Action  
The Eco-mode schedule action status is displayed.  
When no Eco-mode schedule has been assigned, a "-" (hyphen) is displayed.
  - Drive power off  
The power for the drive is turned off during Eco-mode operation.
  - Drive motor off  
The drive motor is stopped during Eco-mode operation.
  - Drive always on  
Disable Eco-mode and the drive is always active.
- Motor Status  
The drive motor status is displayed.
  - Active  
The drive motors are activated.
  - In the Boot Process  
The drive motors are starting up.
  - Idle  
The drive motors are stopped.
  - In the Stop Process  
The drive motors are being stopped.
  - Power off  
The drive power is being turned off.

### Filter setting

Filter	Description
Name	Input the RAID group name that is to be displayed. When not using the RAID group name for filtering, leave this item blank.
Status	Select the RAID group status that is to be displayed.
RAID Level	Select the RAID level that is to be displayed.
Eco-mode Schedule	Input the Eco-mode schedule that is to be displayed. When not using the Eco-mode schedule name for filtering, leave this item blank.
Eco-mode Action	Select the Eco-mode action that is to be displayed.

## 6.4 SED Key Group

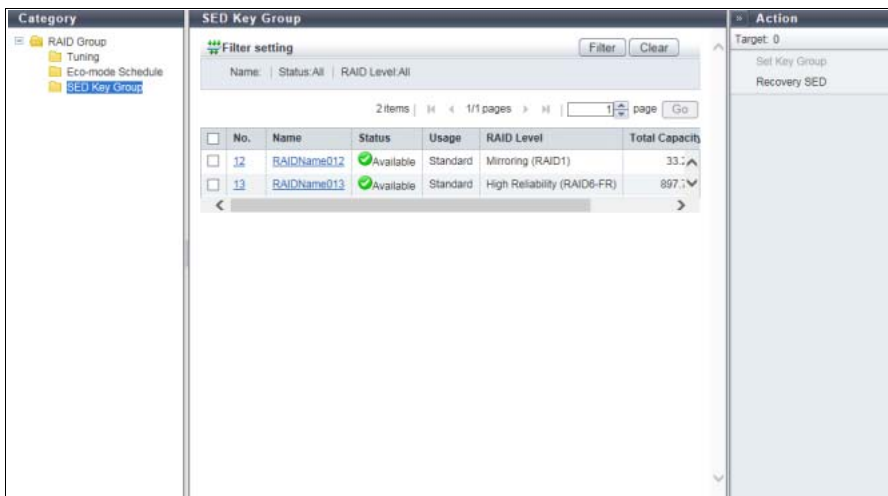
This function displays the key group settings for the RAID groups that are configured with SEDs. The key group combines all of the RAID groups that use the same SED authentication key.

**Caution**

The ETERNUS DX60 S3 does not support this function.

**Note**

- One key group can be created in the ETERNUS DX/AF.
- Use the [Key Group] screen to check the SED authentication key information and the SSL/KMIP certificate information that is used for the key group. Refer to ["2.4.1 Key Group" \(page 54\)](#) for details.
- There are two types of SED keys: an SED authentication key that is managed by the key server and a common key that is stored in the ETERNUS DX/AF. If a RAID group that is configured with SEDs is registered in the key group, the relevant RAID group is managed by the SED authentication key. If the RAID group is not registered in the key group, the relevant RAID group is managed by the common key.
- RAID groups that are configured with SEDs can be added in the key group or deleted from the key group. Refer to "Set Key Group (RAID Group)" in "ETERNUS Web GUI User's Guide (Settings)" for details.



The following items are displayed in the Main area:

- No.  
The RAID group number is displayed. Click this item to display ["6.5 RAID Group Detail \(Basic\)" \(page 318\)](#).
- Name  
The RAID group name is displayed. Click this item to display ["6.5 RAID Group Detail \(Basic\)" \(page 318\)](#).
- Status  
The RAID group status is displayed. Refer to ["A.3 RAID Group Status" \(page 407\)](#) for detailed information of RAID group status.

- Usage  
The usage of the RAID group is displayed.
  - Standard  
A RAID group that is used for creating "Standard", "SDV", or "SDPV" type volumes
  - Standard / WSV  
A RAID group that is used for creating the following volumes:
    - "WSV" and "Standard"
    - "WSV" and "SDV"
    - "WSV" and "SDPV"
  - WSV  
A RAID group that is used for creating "WSV" type volumes
  - TPP  
A RAID group that belongs to a TPP
  - FTRP  
A RAID group that belongs to an FTRP
  - RDB  
A RAID group that is registered as an REC Disk Buffer
  - Temporary  
A RAID group that is temporarily created while LDE is being performed
  - "-" (hyphen)  
A RAID group that is not used
- RAID Level  
The RAID level is displayed.
  - High Performance (RAID1+0)
  - High Capacity (RAID5)
  - High Reliability (RAID6)
  - High Reliability (RAID6-FR)
  - Reliability (RAID5+0)
  - Mirroring (RAID1)
  - Striping (RAID0)
- Total Capacity  
The total capacity of the RAID groups is displayed.
- Key Group  
The set state of the key group for the RAID groups is displayed.
  - If the relevant RAID group is registered in the key group: "Enable"
  - If one of the following conditions applies to the relevant RAID group: "Disable"
    - No common key for SEDs is registered
    - The relevant RAID group is not registered in the key group

#### Filter setting

Filter	Description
Name	Input the RAID group name that is to be displayed. When not using the RAID group name for filtering, leave this item blank.
Status	Select the RAID group status that is to be displayed.
RAID Level	Select the RAID level that is to be displayed.

## 6.5 RAID Group Detail (Basic)

Click the [No.] link or the [Name] link in the "[6.1 RAID Group \(Basic Information\)](#)" ([page 307](#)) to display the detailed information of the target RAID group.



The following items are displayed in the Main area:

- Status  
The RAID group status is displayed. Refer to "[A.3 RAID Group Status](#)" ([page 407](#)) for detailed information of RAID group status.
  - RAID Level  
The RAID level is displayed.
    - High Performance (RAID1+0)
    - High Capacity (RAID5)
    - High Reliability (RAID6)
    - High Reliability (RAID6-FR)
    - Reliability (RAID5+0)
    - Mirroring (RAID1)
    - Striping (RAID0)
  - Fast Recovery Configuration  
The drive configuration in the Fast Recovery RAID group is displayed. This item is displayed only when the RAID level is "High Reliability (RAID6-FR)".
    - (3D+2P)x2+1HS
    - (4D+2P)x2+1HS
    - (6D+2P)x2+1HS
    - (9D+2P)x2+1HS
    - (12D+2P)x2+1HS
    - (5D+2P)x4+1HS
    - (13D+2P)x2+1HS
    - (8D+2P)x3+1HS
    - (4D+2P)x5+1HS
    - (3D+2P)x6+1HS
- D: Data drives, P: Parity drives, HS: Hot Spares

- **Total Capacity**  
The total capacity of the RAID groups is displayed.
- **Total Free Space**  
The total free space in the RAID group is displayed.
- **Controlling CM**  
The Controlling CM of the RAID group is displayed (x: CE number, y: CM number).
  - For the ETERNUS DX8700 S3/DX8900 S3  
CE#x CM#y
  - For the other models  
CM#y
- **Eco-mode Schedule**  
The Eco-mode schedule name that is assigned to the RAID group is displayed.  
If the Eco-mode is controlled with Storage Foundation Software ETERNUS SF, "External" is displayed.  
When no Eco-mode schedule has been assigned, the field is blank.
- **Eco-mode Action**  
The Eco-mode schedule action status is displayed.  
When no Eco-mode schedule has been assigned, a "-" (hyphen) is displayed.
  - Drive power off  
The power for the drive is turned off during Eco-mode operation.
  - Drive motor off  
The drive motor is stopped during Eco-mode operation.
  - Drive always on  
Disable Eco-mode and the drive is always active.
- **Motor Status**  
The drive motor status is displayed.
  - Active  
The drive motors are activated.
  - In the Boot Process  
The drive motors are starting up.
  - Idle  
The drive motors are stopped.
  - In the Stop Process  
The drive motors are being stopped.
  - Power Off  
The drive power is being turned off.
- **Fast Recovery Drive**  
When the hot spare area in the Fast Recovery RAID group is used (\*1), the drive number for the data recovery source drive is displayed. If Fast Recovery (\*2) is not used, the field is blank.  
This item is displayed only when the RAID level is "High Reliability (RAID6-FR)".
  - \*1: The hot spare area is used from the beginning of high-speed rebuilding up until the copyback process (from the hot spare area to the replaced normal drive) completes successfully.
  - \*2: High-speed rebuilding when one drive fails in the Fast Recovery RAID group.
    - CE Drive#yy (for the ETERNUS DX60 S3/DX100 S3/DX200 S3, the ETERNUS AF250, and the ETERNUS DX200F)
    - DE#xx Drive#yy (xx: DE number, yy: Drive number)
- **Process**  
A process that is being performed for the RAID group is displayed. If no process is being performed, a "-" (hyphen) is displayed.

- Progress  
The progress of a process that is being performed is displayed with a bar and a rate (%). To display the latest progress, refresh the screen. If no process is being performed, a "-" (hyphen) is displayed.
- Estimated Time Left  
The estimated remaining time before recovering is complete is displayed. To display the latest estimated remaining time, refresh the screen. This item is not displayed when the process is other than "Recovering".
  - Calculating  
The ETERNUS DX/AF is calculating the estimated remaining time.
  - 30 days or more  
The estimated remaining time is 30 days or more.
  - x days y h z min. (x: 1 - 29, y: 0 - 23, z: 0 - 59)  
The estimated remaining time is more than one minute and less than 30 days. When the estimated remaining time is less than one day, the "days" value is omitted. When the estimated remaining time is less than one hour, the "days" and "hours" values are omitted.
  - Less than 1 min.  
The estimated remaining time is less than one minute.

 **Caution**

The "Estimated Time Left" value may increase or decrease due to the I/O load when displaying this item.

- Remaining Size  
The remaining size of the unrecovered RAID group is displayed. To display the latest size, refresh the screen. This item is not displayed when the process is other than "Recovering".

 **Caution**

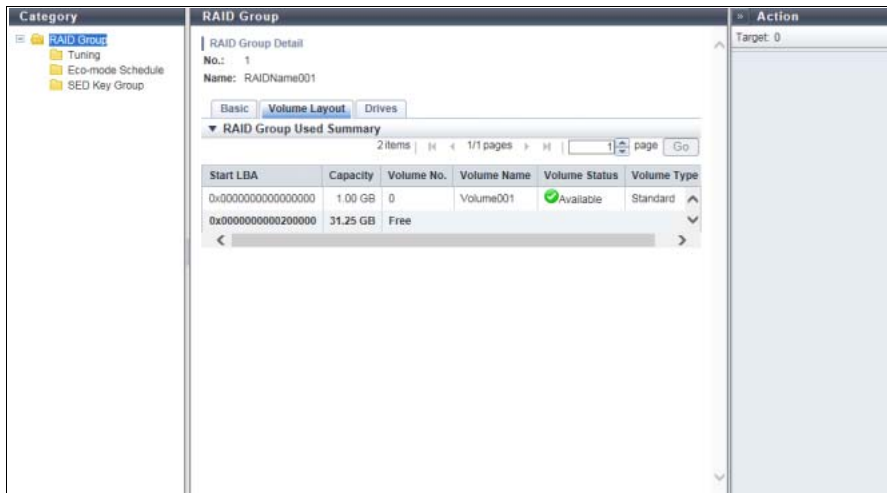
The remaining physical capacity in the drive that is being recovered is displayed. Note that the remaining capacity may be larger than the capacity that is currently being used by users.

- Stripe Depth  
The Stripe Depth (\*1) of the RAID group is displayed.  
If the RAID level is "Mirroring (RAID1)", a "-" (hyphen) is displayed.  
\*1: The number of logical blocks that are assigned to a drive for each stripe when configuring a stripe volume in a RAID group. Normally, it is 64KB.
  - 64 KB
  - 128 KB
  - 256 KB
  - 512 KB
  - 1024 KB



## 6.6 RAID Group Detail (Volume Layout)

Detailed information of the volume layout is displayed. Note that the [Volume Layout] tab is not displayed for RAID groups that are registered as EXCPs.

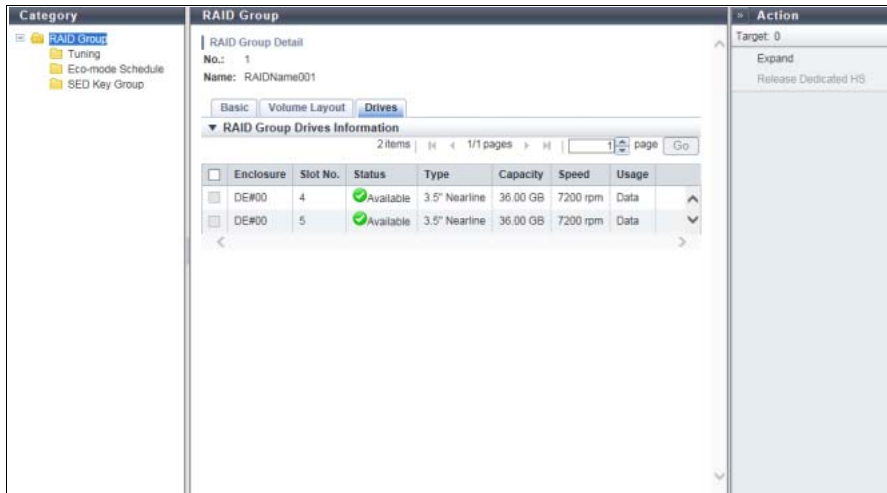


The following items are displayed in the Main area:

- Start LBA  
The first Logical Block Address (LBA) of the volume is displayed.
- Capacity  
The volume capacity is displayed.  
If the volume capacity exceeds 1023.99MB, the capacity is displayed in units of "GB". If the volume capacity exceeds 1023.99GB, the capacity is displayed in units of "TB". The capacity is rounded off to two decimal places. To check the volume capacity in units of "MB", use ETERNUS CLI.
- Volume No.  
The volume number is displayed. Unused space is displayed as "Free".
- Volume Name  
The volume name is displayed.
- Volume Status  
The volume status is displayed. Refer to ["A.2 Volume Status" \(page 406\)](#) for detailed information of volume status.
- Volume Type  
The volume type is displayed.
  - Standard
  - WSV
  - SDV
  - SDPV

## 6.7 RAID Group Detail (Drives)

Detailed information of drives that configure the RAID group is displayed.



The following items are displayed in the Main area:

- Enclosure  
The number of the enclosure where the drive is installed is displayed.
- Slot No.  
The number of the slot where the drive is installed is displayed.
- Status  
The drive status is displayed. Refer to ["A.5.1 Drive Status" \(page 411\)](#) for details.
- Type  
The drive type is displayed.
  - 2.5" Online  
2.5-inch SAS disk
  - 2.5" Online AF  
2.5-inch SAS disk (Advanced Format supported)
  - 2.5" Nearline  
2.5-inch Nearline SAS disk
  - 2.5" Nearline AF  
2.5-inch Nearline SAS disk (Advanced Format supported)
  - 3.5" Online  
3.5-inch SAS disk
  - 3.5" Online AF  
3.5-inch SAS disk (Advanced Format supported)
  - 3.5" Nearline  
3.5-inch Nearline SAS disk
  - 3.5" Nearline AF  
3.5-inch Nearline SAS disk (Advanced Format supported)
  - 2.5" SSD-M  
2.5-inch SSD-M (12 Gbit/s) (\*1)
  - 3.5" SSD-M  
3.5-inch SSD-M (12 Gbit/s) (\*1)

- 2.5" SSD-L  
2.5-inch SSD-L (12 Gbit/s) (\*1)
- 3.5" SSD-L  
3.5-inch SSD-L (12 Gbit/s) (\*1)
- 2.5" SSD  
2.5-inch SSD (6 Gbit/s) (\*1)
- 3.5" SSD  
3.5-inch SSD (6 Gbit/s) (\*1)
- 2.5" Online SED  
2.5-inch Online SED
- 3.5" Nearline SED  
3.5-inch Nearline SED
- 2.5" SSD-M SED  
2.5-inch SSD-M SED (\*2)
- 3.5" SSD-M SED  
3.5-inch SSD-M SED (\*2)
- 2.5" SSD-L SED  
2.5-inch SSD-L SED (\*2)
- 3.5" SSD-L SED  
3.5-inch SSD-L SED (\*2)

\*1: The displayed item varies depending on the interface speed (bandwidth) or the capacity of the reserved space. Unless otherwise specified, this manual refers to "SSD-M", "SSD-L", and "SSD" collectively as "SSD".

\*2: In this manual, there may be cases when "SSD SED" is used as a collective term for options and drive types.

- Capacity

The capacity of the drive is displayed.

 **Caution**

The drive capacity that is displayed for the SSD-L differs from the product's actual capacity. For example, the drive capacity of a "1.92TB SSD-L" is displayed as "2.00 TB".

- Speed

The drive speed is displayed. For SSD or SSD SED, a "-" (hyphen) is displayed.

- Usage

The usage of the drive is displayed.

- Data  
A drive that is used for user data or an unused drives
- Global Hot Spare  
A drive that is registered as a Global Hot Spare
- Dedicated Hot Spare  
A drive that is registered as a Dedicated Hot Spare

# Chapter 7

## Thin Provisioning Pool Status

This chapter describes Thin Provisioning Pool status.

Thin Provisioning Pool status displays the status information of Thin Provisioning Pools.

Thin Provisioning Pool status screens can be displayed by clicking the following categories:

Category	Thin Provisioning Pool status screen
Thin Provisioning Pools	<a href="#">Thin Provisioning Pools</a>
Threshold	<a href="#">Threshold (Thin Provisioning Pool)</a>
Eco-mode Schedule	<a href="#">Eco-mode Schedule (Thin Provisioning Pool)</a>
Flexible Tier Pools	<a href="#">Flexible Tier Pools</a>
Settings	<a href="#">Settings (Thin Provisioning)</a>

Detailed information of the Thin Provisioning Pools can be displayed from the following screen:

- [Thin Provisioning Pool Detail \(Basic\)](#)
- [Thin Provisioning Pool Detail \(RAID Group\)](#)
- [Thin Provisioning Pool Detail \(Volume\)](#)
- [Flexible Tier Pool Detail \(Basic\)](#)
- [Flexible Tier Pool Detail \(Flexible Tier Sub Pool\)](#)
- [Flexible Tier Pool Detail \(Volume\)](#)
- [Flexible Tier Sub Pool Detail \(Basic\)](#)
- [Flexible Tier Sub Pool Detail \(RAID Group\)](#)
- [Flexible Tier Sub Pool Detail \(RAID Group Detail\)](#)

## 7.1 Thin Provisioning Pools

The Thin Provisioning Pools category provides the setting information for Thin Provisioning Pools.

### 7.1.1 Thin Provisioning Pool (Basic Information)

This function shows the list of TPPs.

#### Caution

- When creating TPP type volumes, "Enable" the Thin Provisioning function. Refer to "Set Thin Provisioning" in "ETERNUS Web GUI User's Guide (Settings)" for details.
- When the used status of the Thin Provisioning Pool is "⚠ Attention" or "🚫 Warning" in the TPP list, the TPP used capacity exceeds the threshold. Add drives immediately to expand the TPP capacity.




#### Note

- This function displays the TPP basic information, a list of the RAID groups that configure the TPP, and a list of the TPVs that are registered in the TPP.
- To check whether the Thin Provisioning function is enabled or disabled, refer to ["7.3 Settings \(Thin Provisioning\)" \(page 355\)](#).
- To check the threshold for monitoring the used capacity of a TPP, refer to ["7.1.5 Threshold \(Thin Provisioning Pool\)" \(page 334\)](#).
- To check the Eco-mode settings of a TPP, refer to ["7.1.6 Eco-mode Schedule \(Thin Provisioning Pool\)" \(page 337\)](#).

No.	Name	Drive Type	RAID Level	Status	Used Sta
0	PoolName000	Online	High Performance (RAID1+0)	Available	Noi
1	PoolName001	Online	High Capacity (RAID5)	Available	Noi
2	PoolName002	Undefined	High Performance (RAID1+0)	Available	Noi
3	PoolName003	Undefined	High Capacity (RAID5)	Available	Noi
4	PoolName004	Undefined	High Performance (RAID1+0)	Available	Noi
5	PoolName005	Undefined	High Capacity (RAID5)	Available	Noi
6	PoolName006	Undefined	Mirroring (RAID1)	Available	Noi
7	PoolName007	Undefined	High Reliability (RAID6)	Available	Noi
8	PoolName008	Undefined	High Performance (RAID1+0)	Available	Noi
9	PoolName009	Undefined	High Capacity (RAID5)	Available	Noi
10	PoolName010	Undefined	Mirroring (RAID1)	Available	Noi
11	PoolName011	Undefined	High Capacity (RAID5)	Available	Noi
12	PoolName012	Undefined	High Performance (RAID1+0)	Available	Noi

The following items are displayed in the Main area:

- No.  
The TPP number is displayed. Click this item to display the screen shown in ["7.1.2 Thin Provisioning Pool Detail \(Basic\)" \(page 328\)](#).
- Name  
The TPP name is displayed. Click this item to display the screen shown in ["7.1.2 Thin Provisioning Pool Detail \(Basic\)" \(page 328\)](#).
- Drive Type  
The type of drive that is used to configure the TPP is displayed.
  - Online  
SAS disks
  - Nearline  
Nearline SAS disks
  - SSD  
SSDs (\*1)
  - Online SED  
Online SEDs
  - Nearline SED  
Nearline SEDs
  - SSD SED  
SSD SEDs

\*1: "SSD" is displayed regardless of the actual SSD type (SSD-M/SSD-L/SSD).
- RAID Level  
The level of RAID group that configures the TPP is displayed.
  - High Performance (RAID1+0)
  - High Capacity (RAID5)
  - High Reliability (RAID6)
  - High Reliability (RAID6-FR)
  - Mirroring (RAID1)
  - Striping (RAID0)
- Status  
The TPP status is displayed. Refer to ["A.4 Thin Provisioning Pool Status" \(page 409\)](#) for detailed information of TPP status.
- Used Status  
The usage of TPP is displayed.
  -  Normal  
TPP usage does not exceed the "Attention" threshold.
  -  Attention  
TPP usage exceeds the "Attention" threshold but does not exceed the "Warning" threshold.
  -  Warning  
TPP usage exceeds the "Warning" threshold.

- Encryption  
 The TPP encryption status is displayed.  
 For the ETERNUS DX60 S3, this item is not displayed.
  - CM  
 The TPP that is encrypted by CM.
  - "-" (hyphen)  
 The TPP that is not encrypted.
  - SED  
 The TPP that is encrypted by SED.
  
- Deduplication/Compression  
 The Deduplication/Compression status (whether the setting is enabled and the state of the Deduplication/Compression) of the TPP is displayed.  
 This item is displayed only when Deduplication/Compression for the ETERNUS DX/AF is enabled.
  - Enable  
 Deduplication/Compression for the TPP is enabled and Deduplication/Compression is in the normal state.
  - Disable  
 Deduplication/Compression for the TPP is disabled.
  - Error  
 Deduplication/Compression for the TPP is enabled and Deduplication/Compression is in the error state.
  - "-" (hyphen)  
 Deduplication/Compression for the TPP is enabled and the information cannot be obtained.
  
- Capacity Reduction Rate  
 The capacity reduction rate of Deduplication/Compression for the TPP is displayed.  
 If 10TB of data is written to 3TB after deduplicated and compressed, "70%" is displayed.  
 This item is displayed only when Deduplication/Compression for the ETERNUS DX/AF is enabled.  
 A "-" (hyphen) is displayed in the following conditions:
  - Deduplication/Compression for TPP is "Disable"
  - The DEDUP\_SYS Volumes cannot be accessed

Filter setting

Filter	Description
Name	Input the TPP name that is to be displayed. When not using the TPP name for filtering, leave this item blank.
Drive Type	Select the drive type that is to be displayed.
RAID Level	Select the RAID level that is to be displayed.
Deduplication/Compression	Select the Deduplication/Compression set state that is to be displayed. This item is displayed only when Deduplication/Compression for the ETERNUS DX/AF is enabled.

## 7.1.2 Thin Provisioning Pool Detail (Basic)

Click the [No.] link or the [Name] link on the ["7.1 Thin Provisioning Pools" \(page 325\)](#) to display the corresponding Thin Provisioning Pool Details screen.






The following items are displayed in the Main area:

- Drive Type  
The type of drive that configures the TPP is displayed.
  - Online  
SAS disks
  - Nearline  
Nearline SAS disks
  - SSD  
SSDs (\*1)
  - Online SED  
Online SEDs
  - Nearline SED  
Nearline SEDs
  - SSD SED  
SSD SEDs

\*1: "SSD" is displayed regardless of the actual SSD type (SSD-M/SSD-L/SSD).
- RAID Level  
The level of RAID group that configures the TPP is displayed.
  - High Performance (RAID1+0)
  - High Capacity (RAID5)
  - High Reliability (RAID6)
  - High Reliability (RAID6-FR)
  - Mirroring (RAID1)
  - Striping (RAID0)



- **Fast Recovery Configuration**  
The Fast Recovery configuration of the RAID group that configures TPPs is displayed.  
This item is displayed only when the RAID level is "RAID6-FR".
  - (4D+2P)x2+1HS
  - (6D+2P)x2+1HS
  - (8D+2P)x3+1HS
  - (4D+2P)x5+1HSD: Data drives, P: Parity drives, HS: Hot Spares
- **Status**  
The TPP status is displayed. Refer to ["A.4 Thin Provisioning Pool Status" \(page 409\)](#) for detailed information of TPP status.
- **Provisioned Capacity**  
The total logical capacity of the TPVs in the TPP is displayed.
- **Provisioned Rate**  
The ratio (%) of the total logical capacity of TPVs in the TPP and the total capacity of the TPP is displayed.  
Capacity ratio (Provisioned Rate) = Total logical capacity of TPVs in the relevant TPP (Provisioned Capacity) / Total capacity of the relevant TPP (Total Capacity)
- **Total Capacity**  
The total capacity of TPP is displayed.
- **Used Capacity**  
The used capacity of TPP is displayed.  
"Used Capacity" indicates the total for the physically allocated capacities of the TPVs in the TPP.
- **Used Status**  
The usage of TPP is displayed.
  -  Normal  
TPP usage does not exceed the "Attention" threshold.
  -  Attention  
TPP usage exceeds the "Attention" threshold but does not exceed the "Warning" threshold.
  -  Warning  
TPP usage exceeds the "Warning" threshold.
- **Warning**  
The TPP physical capacity "xxx", which is converted based on the TPP warning threshold, and the threshold (yy%) are displayed.
- **Attention**  
The TPP physical capacity "xxx", which is converted based on the TPP attention threshold, and the threshold (yy%) are displayed.  
When the attention threshold is omitted, a "-" (hyphen) is displayed.

- Encryption  
The TPP encryption status is displayed.  
For the ETERNUS DX60 S3, this item is not displayed.
  - CM  
The TPP that is encrypted by CM.
  - "-" (hyphen)  
The TPP that is not encrypted.
  - SED  
The TPP that is encrypted by SED.
- MWC  
Multi Writeback Count (MWC) of the TPP is displayed.
- Usage  
"TPV" is displayed when a TPV is registered in the TPP.  
If there are no TPVs in the Thin Provisioning Pool, a "-" (hyphen) is displayed.
- Eco-mode Schedule  
The Eco-mode schedule name that is assigned to the TPP is displayed. If the Eco-mode is controlled with Storage Foundation Software ETERNUS SF, "External" is displayed.  
When no Eco-mode schedule has been assigned, the field is blank.
- Eco-mode Action  
The Eco-mode schedule action status is displayed.  
When no Eco-mode schedule has been assigned, a "-" (hyphen) is displayed.
  - Drive power off  
The power for the drive is turned off during Eco-mode operation.
  - Drive motor off  
The drive motor is stopped during Eco-mode operation.
  - Drive always on  
Disable Eco-mode and the drive is always active.
- Motor Status  
The drive motor status is displayed.
  - Active  
The drive motors are activated.
  - In the Boot Process  
The drive motors are starting up.
  - Idle  
The drive motors are stopped.
  - In the Stop Process  
The drive motors are being stopped.
  - Power Off  
The drive power is being turned off.
- Process  
A process that is being performed for the TPP is displayed.  
If no process is being performed, a "-" (hyphen) is displayed.
- Progress  
The progress of a process that is being performed is displayed with a bar and a rate (%). To display the latest progress, refresh the screen.  
If no process is being performed, a "-" (hyphen) is displayed.

- **Estimated Time Left**  
The estimated remaining time before formatting is complete is displayed. To display the latest estimated remaining time, refresh the screen. This item is not displayed when the process is other than "Formatting".
  - Calculating  
The ETERNUS DX/AF is calculating the estimated remaining time.
  - 30 days or more  
The estimated remaining time is 30 days or more.
  - x days y h z min. (x: 1 - 29, y: 0 - 23, z: 0 - 59)  
The estimated remaining time is more than one minute and less than 30 days. When the estimated remaining time is less than one day, the "days" value is omitted. When the estimated remaining time is less than one hour, the "days" and "hours" values are omitted.
  - Less than 1 min.  
The estimated remaining time is less than one minute.

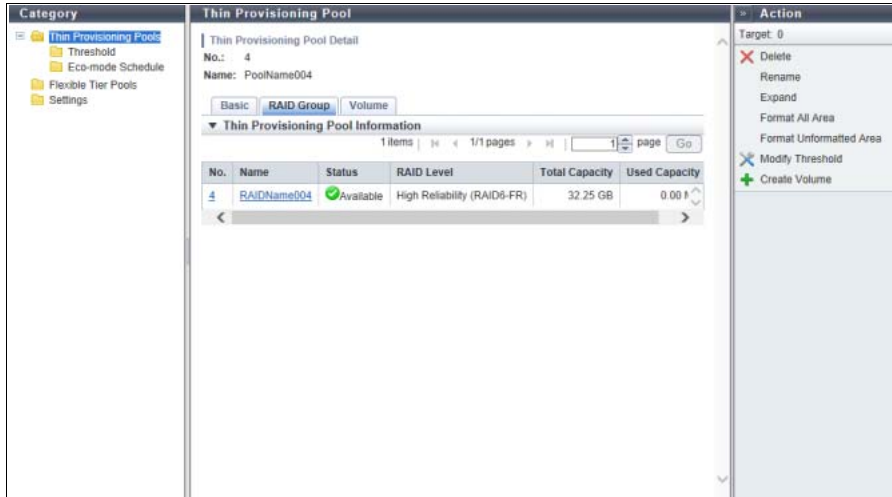
 **Caution**

The "Estimated Time Left" value may increase or decrease due to the I/O load when displaying this item.

- **Remaining Size**  
The remaining size of the unformatted volume is displayed. To display the latest size, refresh the screen. This item is not displayed when the process is other than "Formatting".
- **Stripe Depth**  
The Stripe Depth value (\*1) for the RAID groups that configure the TPP is displayed.  
If the RAID level is "Mirroring (RAID1)", a "-" (hyphen) is displayed.  
\*1: The number of logical blocks that are assigned to a drive for each stripe when configuring a stripe volume in a RAID group. Normally, it is 64KB.
- **Deduplication/Compression**  
The Deduplication/Compression status (whether the setting is enabled and the state of the Deduplication/Compression) of the TPP is displayed.  
This item is displayed only when Deduplication/Compression for the ETERNUS DX/AF is enabled.
  - Enable  
Deduplication/Compression for the TPP is enabled and Deduplication/Compression is in the normal state.
  - Disable  
Deduplication/Compression for the TPP is disabled.
  - Error  
Deduplication/Compression for the TPP is enabled and Deduplication/Compression is in the error state.
  - "-" (hyphen)  
Deduplication/Compression for the TPP is enabled and the information cannot be obtained.
- **Capacity Reduction Rate**  
The capacity reduction rate of Deduplication/Compression for the TPP is displayed.  
If 10TB of data is written to 3TB after deduplicated and compressed, "70%" is displayed.  
This item is displayed only when Deduplication/Compression for the ETERNUS DX/AF is enabled.  
A "-" (hyphen) is displayed in the following conditions:
  - Deduplication/Compression for TPP is "Disable"
  - The DEDUP\_SYS Volumes cannot be accessed

### 7.1.3 Thin Provisioning Pool Detail (RAID Group)

In this screen, a list of the RAID groups that configure the relevant TPP is displayed. When no RAID groups are registered in the TPP, only the item name is displayed.

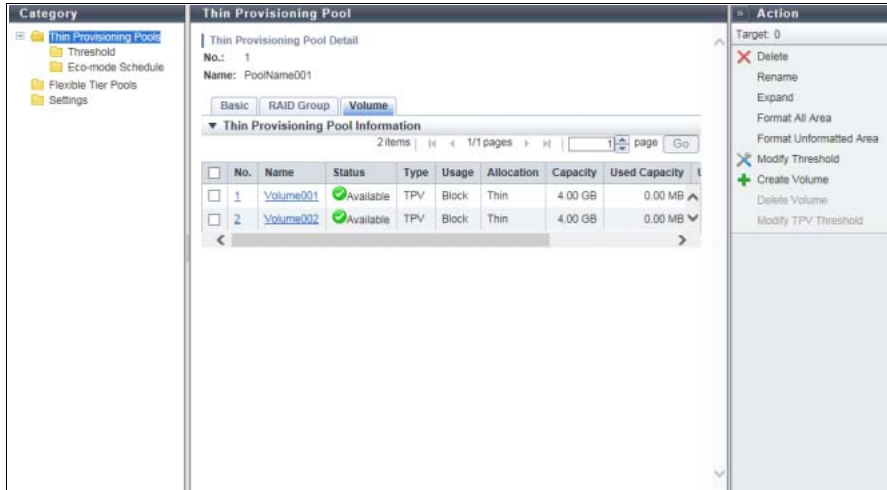


The following items are displayed in the Main area:

- No.  
The RAID group number is displayed. Click this item to display ["6.5 RAID Group Detail \(Basic\)" \(page 318\)](#).
- Name  
The RAID group name is displayed. Click this item to display ["6.5 RAID Group Detail \(Basic\)" \(page 318\)](#).
- Status  
The RAID group status is displayed. Refer to ["A.3 RAID Group Status" \(page 407\)](#) for detailed information of RAID group status.
- RAID Level  
The RAID level is displayed.
  - High Performance (RAID1+0)
  - High Capacity (RAID5)
  - High Reliability (RAID6)
  - High Reliability (RAID6-FR)
  - Mirroring (RAID1)
  - Striping (RAID0)
- Total Capacity  
The total capacity of the RAID groups is displayed.
- Used Capacity  
The used capacity of the RAID groups is displayed.  
"Used Capacity" indicates the total for the physically allocated capacities of the TPVs in the RAID group.

## 7.1.4 Thin Provisioning Pool Detail (Volume)

In this screen, the volumes that are registered in the TPP can be checked. When no volumes are registered in the TPP, only the item name is displayed.



The following items are displayed in the Main area:

- No.  
The volume number is displayed. Click this item to display ["4.11 Volume Detail \(Basic\)" \(page 223\)](#).
- Name  
The volume name is displayed. Click this item to display ["4.11 Volume Detail \(Basic\)" \(page 223\)](#).
- Status  
The volume status is displayed. Refer to ["A.2 Volume Status" \(page 406\)](#) for detailed information of volume status.
- Type  
The volume type is displayed. This volume list displays only the volumes whose type is "TPV".
- Usage  
The usage of the volume is displayed.
  - Block  
The volumes that are used for the SAN.
  - Block/Dedup  
The Deduplication/Compression Volumes.
  - File  
The volumes that are used for the NAS.
  - System  
The volumes that are used for management information.  
Refer to ["Usage Details" \(page 228\)](#) in ["4.11 Volume Detail \(Basic\)" \(page 223\)](#) for details.

- Allocation  
The allocation method for the volume is displayed.
  - Thin  
Physical area is allocated to the target area of the volume when a write I/O is received.
  - Thick  
Physical area is allocated to the whole area of the volume when volumes are created.
- Capacity  
The volume capacity is displayed.
- Used Capacity  
The used capacity (physically allocated capacity) of volume is displayed.
- Used Rate  
The volume utilization is displayed between 0% - 100%.  
Used Rate = Used Capacity / Capacity
- Threshold  
The threshold for monitoring the volume utilization is displayed between 1% - 100%.  
If the "Used Rate" value exceeds the "Threshold", a Host Sense Key Code Qualifier is reported.
- Process  
A process that is being performed for the TPP is displayed. If no process is being performed, a "-" (hyphen) is displayed.
  - Balancing  
TPV balancing is being performed.
  - Formatting  
Formatting is being performed.
  - Migrating  
RAID migration is being performed.

### 7.1.5 Threshold (Thin Provisioning Pool)

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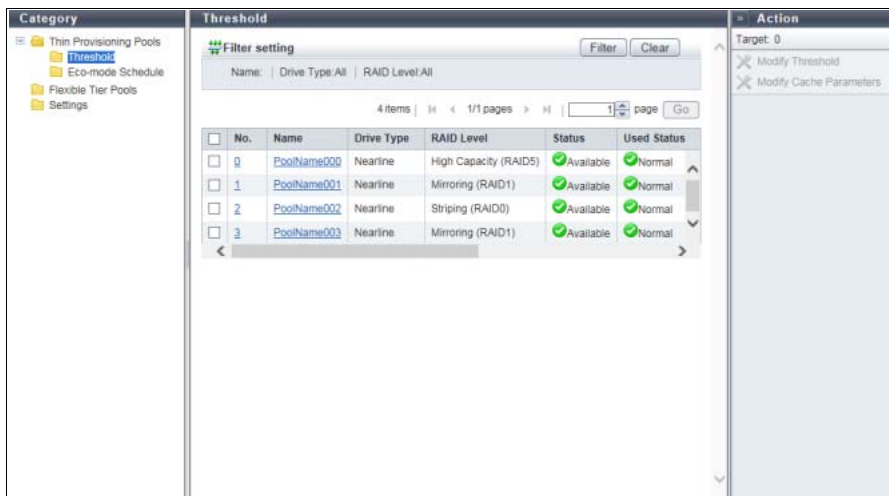
This function shows the threshold for monitoring the used capacity of a Thin Provisioning Pool.

#### Caution

When changing threshold for TPP monitoring, "Enable" the Thin Provisioning function. Refer to "Set Thin Provisioning" in "ETERNUS Web GUI User's Guide (Settings)" for details.

#### Note




- To check whether the Thin Provisioning function is enabled or disabled, refer to ["7.3 Settings \(Thin Provisioning\)" \(page 355\)](#).
- If the TPP used capacity exceeds the threshold, notification is sent to the destination that was specified using the [Setup Event Notification] function. Refer to "Setup Event Notification" in "ETERNUS Web GUI User's Guide (Settings)" for details.
- To change the threshold of a TPP, follow the procedure that is provided in "Modify Threshold Thin Provisioning Pool" in "ETERNUS Web GUI User's Guide (Settings)".



The following items are displayed in the Main area:

- No.  
The TPP number is displayed. Click this item to display the screen shown in ["7.1.2 Thin Provisioning Pool Detail \(Basic\)" \(page 328\)](#).
- Name  
The TPP name is displayed. Click this item to display the screen shown in ["7.1.2 Thin Provisioning Pool Detail \(Basic\)" \(page 328\)](#).
- Drive Type  
The type of drive that is used to configure the TPP is displayed.
  - Online  
SAS disks
  - Nearline  
Nearline SAS disks
  - SSD  
SSDs (\*1)
  - Online SED  
Online SEDs
  - Nearline SED  
Nearline SEDs
  - SSD SED  
SSD SEDs

\*1: "SSD" is displayed regardless of the actual SSD type (SSD-M/SSD-L/SSD).
- RAID Level  
The level of RAID group that configures the TPP is displayed.
  - High Performance (RAID1+0)
  - High Capacity (RAID5)
  - High Reliability (RAID6)
  - High Reliability (RAID6-FR)
  - Mirroring (RAID1)
  - Striping (RAID0)

- Status  
The TPP status is displayed. Refer to ["A.4 Thin Provisioning Pool Status" \(page 409\)](#) for detailed information of TPP status.
- Used Status  
The usage of TPP is displayed.
  -  Normal  
TPP usage does not exceed the "Attention" threshold.
  -  Attention  
TPP usage exceeds the "Attention" threshold but does not exceed the "Warning" threshold.
  -  Warning  
TPP usage exceeds the "Warning" threshold.
- Total Capacity  
The total capacity of TPP is displayed.
- Used Capacity  
The used capacity of TPP is displayed.  
"Used Capacity" indicates the total for the physically allocated capacities of the TPVs in the TPP.
- Warning  
The warning threshold (%) for monitoring the TPP used capacity is displayed.
- Attention  
The attention threshold (%) for monitoring the TPP used capacity is displayed. When the "Attention" threshold is omitted, "0%" is displayed.
- MWC  
Multi Writeback Count (MWC) of the TPP is displayed.

#### Filter setting

Filter	Description
Name	Input the TPP name that is to be displayed. When not using the TPP name for filtering, leave this item blank.
Drive Type	Select the drive type that is to be displayed.
RAID Level	Select the RAID level that is to be displayed.



## 7.1.6 Eco-mode Schedule (Thin Provisioning Pool)

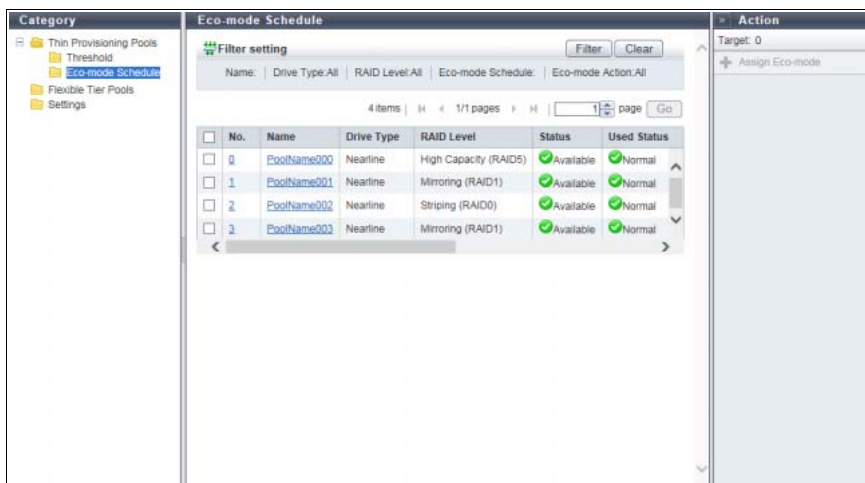
This function displays the Eco-mode setting state of the Thin Provisioning Pool.

### Caution

- The ETERNUS AF250/AF650 and the ETERNUS DX200F do not support this function.
- When assigning Eco-mode schedule to the Thin Provisioning Pool, "Enable" the Thin Provisioning function. Refer to "Set Thin Provisioning" in "ETERNUS Web GUI User's Guide (Settings)" for details.

### Note

- To check whether the Thin Provisioning function is enabled or disabled, refer to ["7.3 Settings \(Thin Provisioning\)" \(page 355\)](#).
- To use the Eco-mode, follow the procedure in "Modify Eco-mode General Setting" in "ETERNUS Web GUI User's Guide (Settings)" and "Create Eco-mode Schedule" in "ETERNUS Web GUI User's Guide (Settings)" to perform the general Eco-mode setup and create an Eco-mode schedule.
- To assign the Eco-mode schedule to a TPP, refer to "Assign Eco-mode Schedule (Thin Provisioning Pool)" in "ETERNUS Web GUI User's Guide (Settings)".






The screenshot shows the 'Eco-mode Schedule' web interface. On the left is a 'Category' sidebar with 'Eco-mode Schedule' selected. The main area has a 'Filter setting' section with 'Name: Drive Type:All | RAID Level:All | Eco-mode Schedule: | Eco-mode Action:All'. Below this is a table with 4 items. The table has columns: No., Name, Drive Type, RAID Level, Status, and Used Status. The 'Action' column contains a dropdown menu with 'Assign Eco-mode' selected.

No.	Name	Drive Type	RAID Level	Status	Used Status	Action
0	PoolName000	Nearline	High Capacity (RAID5)	Available	Normal	Assign Eco-mode
1	PoolName001	Nearline	Mirroring (RAID1)	Available	Normal	Assign Eco-mode
2	PoolName002	Nearline	Striping (RAID0)	Available	Normal	Assign Eco-mode
3	PoolName003	Nearline	Mirroring (RAID1)	Available	Normal	Assign Eco-mode

The following items are displayed in the Main area:

- No.  
The TPP number is displayed. Click this item to display the screen shown in ["7.1.2 Thin Provisioning Pool Detail \(Basic\)" \(page 328\)](#).
- Name  
The TPP name is displayed. Click this item to display the screen shown in ["7.1.2 Thin Provisioning Pool Detail \(Basic\)" \(page 328\)](#).

- Drive Type  
The type of drive that configures the TPP is displayed.
  - Online  
SAS disks
  - Nearline  
Nearline SAS disks
  - SSD  
SSDs (\*1)
  - Online SED  
Online SEDs
  - Nearline SED  
Nearline SEDs
  - SSD SED  
SSD SEDs

\*1: "SSD" is displayed regardless of the actual SSD type (SSD-M/SSD-L/SSD).
- RAID Level  
The level of RAID group that configures the TPP is displayed.
  - High Performance (RAID1+0)
  - High Capacity (RAID5)
  - High Reliability (RAID6)
  - High Reliability (RAID6-FR)
  - Mirroring (RAID1)
  - Striping (RAID0)
- Status  
The TPP status is displayed. Refer to ["A.4 Thin Provisioning Pool Status" \(page 409\)](#) for detailed information of TPP status.
- Used Status  
The usage of TPP is displayed.
  -  Normal  
TPP usage does not exceed the "Attention" threshold.
  -  Attention  
TPP usage exceeds the "Attention" threshold but does not exceed the "Warning" threshold.
  -  Warning  
TPP usage exceeds the "Warning" threshold.
- Total Capacity  
The total capacity of TPP is displayed.
- Eco-mode Schedule  
The Eco-mode schedule name that is assigned to the TPP is displayed. If the Eco-mode is controlled with Storage Foundation Software ETERNUS SF, "External" is displayed.  
When no Eco-mode schedule has been assigned, the field is blank.

- **Eco-mode Action**  
The Eco-mode schedule action status is displayed.  
When no Eco-mode schedule has been assigned, a "-" (hyphen) is displayed.
  - Drive power off  
The power for the drive is turned off during Eco-mode operation.
  - Drive motor off  
The drive motor is stopped during Eco-mode operation.
  - Drive always on  
Disable Eco-mode and the drive is always active.
- **Motor Status**  
The drive motor status is displayed.
  - Active  
The drive motors are activated.
  - In the Boot Process  
The drive motors are starting up.
  - Idle  
The drive motors are stopped.
  - In the Stop Process  
The drive motors are being stopped.
  - Power Off  
The drive power is being turned off.

#### Filter setting

Filter	Description
Name	Input the TPP name that is to be displayed. When not using the TPP name for filtering, leave this item blank.
Drive Type	Select the drive type that is to be displayed.
RAID Level	Select the RAID level that is to be displayed.
Eco-mode Schedule	Select the Eco-mode schedule that is to be displayed.
Eco-mode Action	Select the Eco-mode action that is to be displayed.

## 7.2 Flexible Tier Pools

The Flexible Tier Pools category provides the setting information for Flexible Tier Pools.




### Caution

The ETERNUS DX60 S3 does not support the Flexible Tier Pool related functions.

### 7.2.1 Flexible Tier Pool (Basic Information)

This function shows the list of Flexible Tier Pools (FTRPs).

### Caution




- To use the Flexible Tier function (Automated Storage Tiering), the following operations are required:
  - Select "Enable" for the Thin Provisioning function. Refer to "Set Thin Provisioning" in "ETERNUS Web GUI User's Guide (Settings)" for details.
  - To use Automated Storage Tiering with multiple layers, register the Optimization option license for ETERNUS SF Storage Cruiser.
  - Use ETERNUS SF Storage Cruiser to perform the following procedure.
    - Enable "Automated Storage Tiering"
    - Create FTRPs, Flexible Tier Sub Pools (FTSPs), and FTVs
- When " Attention" or " Warning" is displayed in the "Used Status" field for the FTRP list, the used capacity of the relevant FTRP has exceeded the threshold. Immediately add drives and use ETERNUS SF Storage Cruiser to expand the capacity of the appropriate FTSP (for which expansion is determined to be necessary based upon the performance and used capacity).
- If the target FTRP does not exist when displaying the details screen, a message, " Target is Not Found." is displayed.

### Note

- This function displays a basic FTRP information, a list of FTSPs which belong to the FTRP, a list of RAID groups which configure the FTSP, and a list of FTVs which have been registered to the FTRP.
- To check whether the Thin Provisioning function is enabled or disabled, refer to "[7.3 Settings \(Thin Provisioning\)](#)" ([page 355](#)).

Category		Flexible Tier Pool						Action	
Thin Provisioning Pools								Target: 0	
Flexible Tier Pools		<input type="checkbox"/>	No.	Name	Status	Used Status	Provisioned Capacity	Provisioned Rate	Total
Settings		<input type="checkbox"/>	0	FTRP_0	Available	Normal	4.00 GB	49%	
		<input type="checkbox"/>	1	FTRP_1	Available	Normal	4.00 GB	49%	
		<input type="checkbox"/>	2	FTRP_2	Available	Normal	4.00 GB	49%	
		<input type="checkbox"/>	3	FTRP_3	Available	Normal	4.00 GB	49%	
		<div style="border: 1px solid gray; padding: 5px;">           Start Balancing FTRP            Stop Balancing FTRP         </div>							

The following items are displayed in the Main area:

- No.  
The FTRP number is displayed. Click this item to display the screen shown in ["7.2.2 Flexible Tier Pool Detail \(Basic\)" \(page 343\)](#).
- Name  
The FTRP name is displayed. Click this item to display the screen shown in ["7.2.2 Flexible Tier Pool Detail \(Basic\)" \(page 343\)](#).
- Status  
The FTRP status is displayed. Refer to ["A.4 Thin Provisioning Pool Status" \(page 409\)](#) for detailed information of FTRP status.
- Used Status  
The usage of FTRP is displayed.
  -  Normal  
FTRP usage does not exceed the "Attention" threshold.
  -  Attention  
FTRP usage exceeds the "Attention" threshold but does not exceed the "Warning" threshold.
  -  Warning  
FTRP usage exceeds the "Warning" threshold.
- Provisioned Capacity  
The total logical capacity of FTVs in the FTRP is displayed.
- Provisioned Rate  
The ratio (%) of the total logical capacity of FTVs in the FTRP and the total capacity of the FTRP is displayed.  
Capacity ratio (Provisioned Rate) = Total logical capacity of FTVs in the relevant FTRP (Provisioned Capacity) / Total capacity of the relevant FTRP (Total Capacity)
- Total Capacity  
The total capacity of FTRP is displayed.
- Used Capacity  
The used capacity of the FTRP is displayed.  
"Used Capacity" indicates the total for the physically allocated capacities of the FTVs in the FTRP.

- **Warning**  
The warning threshold (%) for monitoring the FTRP used capacity is displayed.
- **Attention**  
The attention threshold (%) for monitoring the FTRP used capacity is displayed. When the "Attention" threshold is omitted, "0%" is displayed.
- **Encryption**  
The FTRP encryption status is displayed.
  - CM  
The FTRP that is encrypted by CM.
  - "-" (hyphen)  
The FTRP that is not encrypted.
- **Balancing Level**  
The balancing level of the FTRP is displayed.  
If multiple FTSPs exist in the FTRP, the lowest balancing level among the FTSPs is displayed. A "-" (hyphen) is displayed when the physically allocated capacity cannot be checked due to the storage system status or when the balancing level cannot be obtained due to the FTRP status (\*1).
  - High  
The physically allocated capacity among the RAID groups in the FTSP is equalized.
  - Middle  
The physically allocated capacity among the RAID groups in the FTSP is slightly unequal.
  - Low  
The physically allocated capacity among the RAID groups in the FTSP is significantly unequal.
- **Balancing Process**  
A "-" (hyphen) is displayed when FTRP balancing is not being performed, when the physically allocated capacity cannot be checked due to the storage system status, or when the balancing level cannot be obtained due to the FTRP status (\*1).
  - Status  
The balancing status of the FTRP is displayed.
    - Active  
All of the FTVs in the FTRP are either reserved or operating normally.
    - Error  
An FTV in error status exists in the FTRP.
  - Error Code  
The error code of FTRP balancing is displayed when an error occurs.  
A "-" (hyphen) is displayed if no errors occur.

\*1: The status of the FTRP is not " Available", " Partially Ready", or " Exposed"
- **Shrinking**  
The shrinking status is displayed.  
Shrinking is a function that deletes specific RAID groups in the FTRP to reduce the physical capacity of the FTRP.  
If the shrinking is not being performed, a "-" (hyphen) is displayed.
  - Executing  
The FTRP capacity is being reduced.
  - Error  
Reducing the FTRP capacity failed.

## 7.2.2 Flexible Tier Pool Detail (Basic)

Click the [No.] link or the [Name] link on the "[7.2.1 Flexible Tier Pool \(Basic Information\)](#)" (page 340) to display the detailed information of the corresponding FTRP.  
Click the [Basic] tab on the [Flexible Tier Pool Detail] screen to display the basic information of the corresponding FTRP.



The following items are displayed in the Main area:

- Status  
The FTRP status is displayed. Refer to "[A.4 Thin Provisioning Pool Status](#)" (page 409) for detailed information of FTRP status.
- Provisioned Capacity  
The total logical capacity of FTVs in the FTRP is displayed.
- Provisioned Rate  
The ratio (%) of the total logical capacity of FTVs in the FTRP and the total capacity of the FTRP is displayed.
- Total Capacity  
The total capacity of FTRP is displayed.
- Used Capacity  
The used capacity of the FTRP is displayed.  
"Used Capacity" indicates the total for the physically allocated capacities of the FTVs in the FTRP.
- Used Status  
The usage of FTRP is displayed.
  - Normal  
FTRP usage does not exceed the "Attention" threshold.
  - Attention  
FTRP usage exceeds the "Attention" threshold but does not exceed the "Warning" threshold.
  - Warning  
FTRP usage exceeds the "Warning" threshold.

- **Warning**  
The FTRP physical capacity "xxx", which is converted based on the FTRP warning threshold, and the threshold (yy%) are displayed.
- **Attention**  
The FTRP physical capacity "xxx", which is converted based on the FTRP attention threshold, and the threshold (yy%) are displayed.  
When the attention threshold is omitted, a "-" (hyphen) is displayed.
- **Encryption**  
The FTRP encryption status is displayed.
  - CM  
The FTRP that is encrypted by CM.
  - "-" (hyphen)  
The FTRP that is not encrypted.
- **Process**  
A process that is being performed for the FTRP is displayed.  
If no process is being performed, a "-" (hyphen) is displayed.
- **Progress**  
The progress of a process that is being performed is displayed with a bar and a rate (%). To display the latest progress, refresh the screen.  
If no process is being performed, a "-" (hyphen) is displayed.
- **Estimated Time Left**  
The estimated remaining time before formatting is complete is displayed. To display the latest estimated remaining time, refresh the screen. This item is not displayed when the process is other than "Formatting".
  - Calculating  
The ETERNUS DX/AF is calculating the estimated remaining time.
  - 30 days or more  
The estimated remaining time is 30 days or more.
  - x days y h z min. (x: 1 - 29, y: 0 - 23, z: 0 - 59)  
The estimated remaining time is more than one minute and less than 30 days. When the estimated remaining time is less than one day, the "days" value is omitted. When the estimated remaining time is less than one hour, the "days" and "hours" values are omitted.
  - Less than 1 min.  
The estimated remaining time is less than one minute.




 **Caution**

The "Estimated Time Left" value may increase or decrease due to the I/O load when displaying this item.

- **Remaining Size**  
The remaining size of the unformatted volume is displayed. To display the latest size, refresh the screen. This item is not displayed when the process is other than "Formatting".



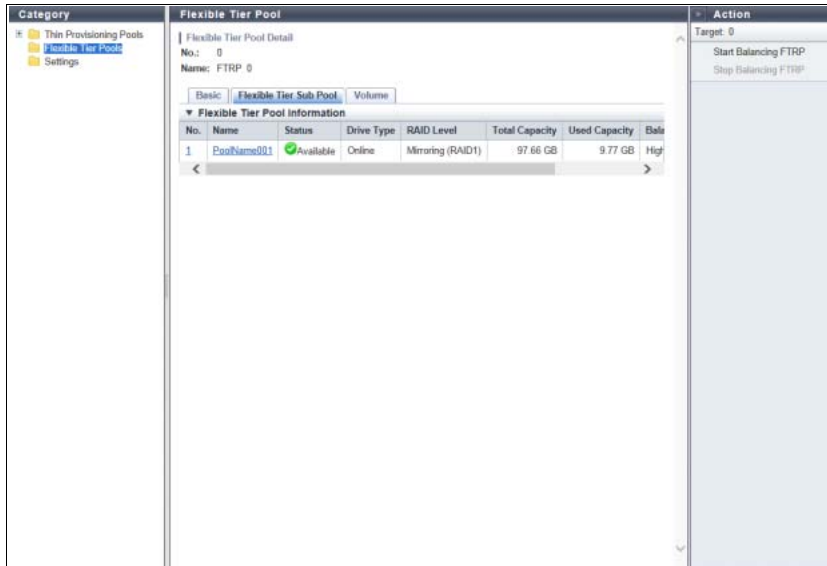
- **Balancing Level**  
The balancing level of the FTRP is displayed.  
If multiple FTSPs exist in the FTRP, the lowest balancing level among the FTSPs is displayed. A "-" (hyphen) is displayed when the physically allocated capacity cannot be checked due to the storage system status or when the balancing level cannot be obtained due to the FTRP status (\*1).
  - High  
The physically allocated capacity among the RAID groups in the FTSP is equalized.
  - Middle  
The physically allocated capacity among the RAID groups in the FTSP is slightly unequal.
  - Low  
The physically allocated capacity among the RAID groups in the FTSP is significantly unequal.
- **Balancing Process**  
A "-" (hyphen) is displayed when FTRP balancing is not being performed, when the physically allocated capacity cannot be checked due to the storage system status, or when the balancing level cannot be obtained due to the FTRP status (\*1).
  - Status  
The balancing status of the FTRP is displayed.
    - Active  
All of the FTVs in the FTRP are either reserved or operating normally
    - Error  
An FTV in error status exists in the FTRP
  - Progress  
The lowest progress rate among the FTV balancing sessions that are being performed in the FTRP is displayed.
  - Error Code  
The error code of FTRP balancing is displayed when an error occurs.  
A "-" (hyphen) is displayed if no errors occur.

\*1: The status of the FTRP is not " Available", " Partially Ready", or " Exposed"
- **Shrinking**  
The shrinking status is displayed.  
Shrinking is a function that deletes specific RAID groups in the FTRP to reduce the physical capacity of the FTRP.  
If the shrinking is not being performed, a "-" (hyphen) is displayed.
  - Executing  
The FTRP capacity is being reduced.
  - Error  
Reducing the FTRP capacity failed.

### 7.2.3 Flexible Tier Pool Detail (Flexible Tier Sub Pool)

Click the [No.] link or the [Name] link on the ["7.2 Flexible Tier Pools" \(page 340\)](#) to display the corresponding Flexible Tier Pool Details screen.

Click the [Flexible Tier Sub Pool] tab on the [Flexible Tier Pool Detail] screen to display a list of FTSPs that are registered in the corresponding FTRP.



The following items are displayed in the Main area:

- No.  
The FTSP number is displayed. Click this item to display the screen shown in ["7.2.5 Flexible Tier Sub Pool Detail \(Basic\)" \(page 349\)](#).
- Name  
The FTSP name is displayed. Click this item to display the screen shown in ["7.2.5 Flexible Tier Sub Pool Detail \(Basic\)" \(page 349\)](#).
- Status  
The FTSP status is displayed. Refer to ["A.4 Thin Provisioning Pool Status" \(page 409\)](#) for detailed information of FTSP status.
- Drive Type  
The type of drive that is used to configure the FTSP is displayed.
  - Online  
SAS disks
  - Nearline  
Nearline SAS disks
  - SSD  
SSDs (\*1)
  - Online SED  
Online SEDs
  - Nearline SED  
Nearline SEDs
  - SSD SED  
SSD SEDs

\*1: "SSD" is displayed regardless of the actual SSD type (SSD-M/SSD-L/SSD).

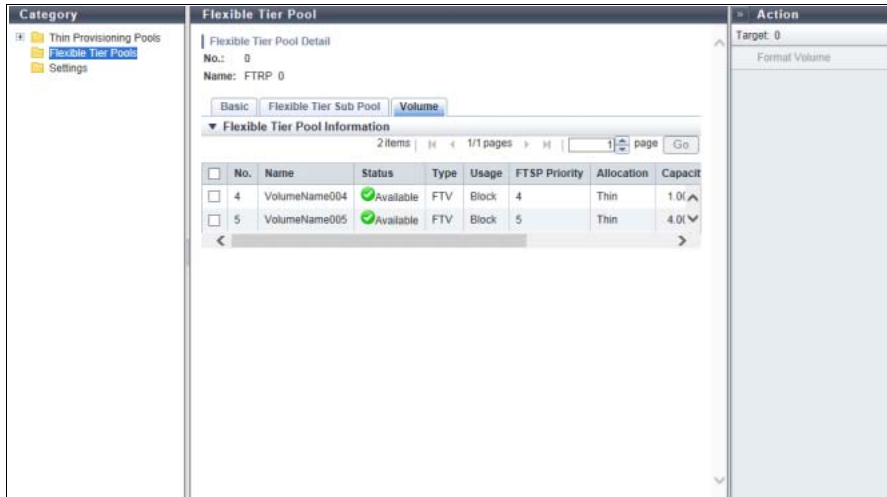
- **RAID Level**  
The level of RAID group that configures the FTSP is displayed.
  - High Performance (RAID1+0)
  - High Capacity (RAID5)
  - High Reliability (RAID6)
  - High Reliability (RAID6-FR)
  - Mirroring (RAID1)
  - Striping (RAID0)
- **Total Capacity**  
The total capacity of FTSP is displayed.
- **Used Capacity**  
The used capacity of the FTSP is displayed.  
"Used Capacity" indicates the total for the physically allocated capacities of the FTVs in the FTSP.
- **Balancing Level**  
The balancing level of the FTSP is displayed.  
A "-" (hyphen) is displayed when the physically allocated capacity cannot be checked due to the storage system status or when the balancing level cannot be obtained due to the FTRP status (\*1).
  - High  
The physically allocated capacity among the RAID groups is equalized.
  - Middle  
The physically allocated capacity among the RAID groups is slightly unequal.
  - Low  
The physically allocated capacity among the RAID groups is significantly unequal.

\*1: The status of the FTRP is not "🟢 Available", "🟡 Partially Ready", or "🔴 Exposed"
- **Shrinking**  
The shrinking status of the RAID groups in the FTSP is displayed.  
Shrinking is a function that deletes specific RAID groups in the FTRP to reduce the physical capacity of the FTRP.  
If the shrinking is not being performed, a "-" (hyphen) is displayed.
  - Executing  
The FTRP capacity is being reduced.
  - Error  
Reducing the FTRP capacity failed.

## 7.2.4 Flexible Tier Pool Detail (Volume)

Click the [No.] link or the [Name] link on the ["7.2 Flexible Tier Pools" \(page 340\)](#) to display the corresponding Flexible Tier Pool Details screen.

Click the [Volume] tab on the [Flexible Tier Pool Detail] screen to display a list of volumes that are registered in the corresponding FTRP. When no volumes are registered in the FTRP, only the item name is displayed.



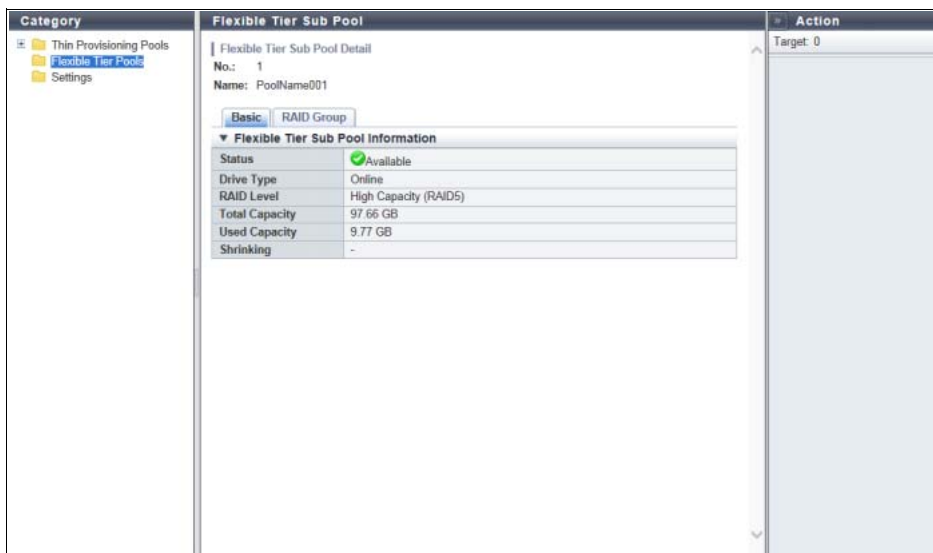
The following items are displayed in the Main area:

- No.  
The volume number is displayed.
- Name  
The volume name is displayed.
- Status  
The volume status is displayed. Refer to ["A.2 Volume Status" \(page 406\)](#) for detailed information of volume status.
- Type  
The volume type is displayed.  
This volume list displays only the volumes whose type is "FTV".
- Usage  
The usage of the volume is displayed.
  - Block  
The volumes that are used for the SAN.
  - File  
The volumes that are used for the NAS.
  - System  
The volumes that are used for management information.  
Refer to ["Usage Details" \(page 228\)](#) in ["4.11 Volume Detail \(Basic\)" \(page 223\)](#) for details.
- FTSP Priority  
The FTSP number, to which a volume is assigned on a priority basis in the FTRP, is displayed. When the setting is omitted, "-" (hyphen) is displayed.

- Allocation  
The allocation method for the volume is displayed.
  - Thin  
Physical area is allocated to the target area of the volume when a write I/O is received.
  - Thick  
Physical area is allocated to the whole area of the volume when volumes are created.
- Capacity  
The total volume capacity is displayed.
- Used Capacity  
The used capacity (physically allocated capacity) of volume is displayed.
- Used Rate  
The volume utilization is displayed.  
Used Rate = Used Capacity / Capacity
- Threshold  
The threshold for monitoring the volume utilization is displayed.  
If the "Used Rate" value exceeds the "Threshold", a Host Sense Key Code Qualifier is reported.

## 7.2.5 Flexible Tier Sub Pool Detail (Basic)

Click the [No.] link or the [Name] link on the "[7.2.3 Flexible Tier Pool Detail \(Flexible Tier Sub Pool\)](#)" (page 346) to display the corresponding Flexible Tier Sub Pool Detail screen.  
Click the [Basic] tab on the [Flexible Tier Sub Pool Detail] screen to display the basic information of the corresponding FTSP.



The following items are displayed in the Main area:

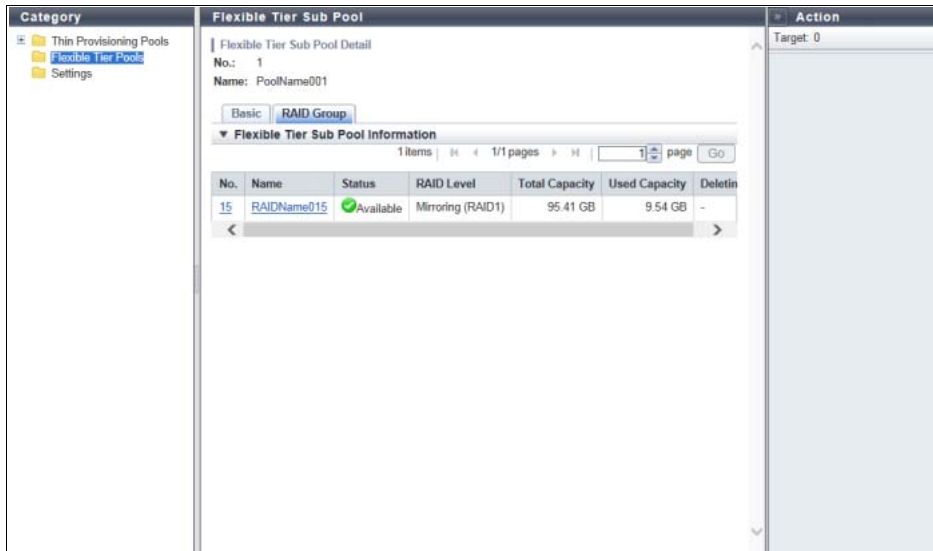
- Status  
The FTSP status is displayed. Refer to "[A.4 Thin Provisioning Pool Status](#)" (page 409) for detailed information of FTSP status.

- Drive Type  
The type of drive that configures the FTSP is displayed.
  - Online  
SAS disks
  - Nearline  
Nearline SAS disks
  - SSD  
SSDs (\*1)
  - Online SED  
Online SEDs
  - Nearline SED  
Nearline SEDs
  - SSD SED  
SSD SEDs

\*1: "SSD" is displayed regardless of the actual SSD type (SSD-M/SSD-L/SSD).
- RAID Level  
The level of RAID group that configures the FTSP is displayed.
  - High Performance (RAID1+0)
  - High Capacity (RAID5)
  - High Reliability (RAID6)
  - High Reliability (RAID6-FR)
  - Mirroring (RAID1)
  - Striping (RAID0)
- Total Capacity  
The total capacity of FTSP is displayed.
- Used Capacity  
The used capacity of the FTSP is displayed.  
"Used Capacity" indicates the total for the physically allocated capacities of the FTVs in the FTSP.
- Shrinking  
The shrinking status of the RAID groups in the FTSP is displayed.  
Shrinking is a function that deletes specific RAID groups in the FTRP to reduce the physical capacity of the FTRP.  
If the shrinking is not being performed, a "-" (hyphen) is displayed.
  - Executing  
The FTRP capacity is being reduced.
  - Error  
Reducing the FTRP capacity failed.

## 7.2.6 Flexible Tier Sub Pool Detail (RAID Group)

Click the [No.] link or the [Name] link on the "[7.2.3 Flexible Tier Pool Detail \(Flexible Tier Sub Pool\)](#)" (page 346) to display the detailed information of the corresponding Flexible Tier Sub Pool. Click the [RAID Group] tab on the [Flexible Tier Sub Pool Detail] screen to display the drive list that configures the relevant RAID group.



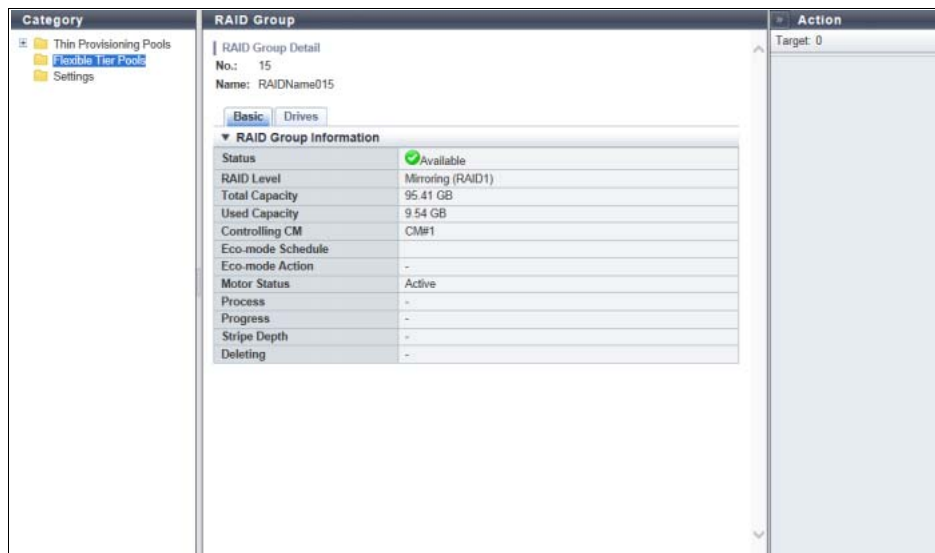
The following items are displayed in the Main area:

- No.  
The number of the RAID group that belongs to the FTSP is displayed. Click this item to display the [RAID Group Detail] screen.
- Name  
The RAID group name is displayed. Click this item to display the [RAID Group Detail] screen.
- Status  
The RAID group status is displayed. Refer to "[A.3 RAID Group Status](#)" (page 407) for details.
- RAID Level  
The RAID level is displayed.
  - High Performance (RAID1+0)
  - High Capacity (RAID5)
  - High Reliability (RAID6)
  - High Reliability (RAID6-FR)
  - Mirroring (RAID1)
  - Striping (RAID0)
- Total Capacity  
The total capacity of the RAID groups is displayed.
- Used Capacity  
The used capacity of the RAID groups is displayed.  
"Used Capacity" indicates the total for the physically allocated capacities of the FTVs in the RAID group.

- Deleting  
The RAID group deletion status is displayed.  
If a RAID group deletion process is not being performed, a "-" (hyphen) is displayed.
  - Executing  
A RAID group deletion process is being performed or a data migration related to the deletion process is being performed.
  - Error  
Deletion of the RAID group failed.

## 7.2.7 Flexible Tier Sub Pool Detail (RAID Group Detail)

Click the [No.] link or the [Name] link on the ["7.2.6 Flexible Tier Sub Pool Detail \(RAID Group\)" \(page 351\)](#) to display the detailed information of the corresponding RAID group.



The following items are displayed in the Main area:

- Status  
The RAID group status is displayed. Refer to ["A.3 RAID Group Status" \(page 407\)](#) for details.
- RAID Level  
The RAID level is displayed.
  - High Performance (RAID1+0)
  - High Capacity (RAID5)
  - High Reliability (RAID6)
  - High Reliability (RAID6-FR)
  - Mirroring (RAID1)
  - Striping (RAID0)



- **Fast Recovery Configuration**  
The drive configuration in the Fast Recovery RAID group (\*1) is displayed.  
This item is displayed only when the RAID level is "High Reliability (RAID6-FR)".
  - (4D+2P)x2+1HS
  - (6D+2P)x2+1HS
  - (8D+2P)x3+1HS
  - (4D+2P)x5+1HSD: Data drives, P: Parity drives, HS: Hot Spares  
\*1: "RAID6-FR" groups that configure FTSPs are called "Fast Recovery RAID groups".
- **Total Capacity**  
The total capacity of the RAID groups is displayed.
- **Used Capacity**  
The used capacity of the RAID groups is displayed.  
"Used Capacity" indicates the total for the physically allocated capacities of the FTVs in the RAID group.
- **Controlling CM**  
The Controlling CM of the RAID group is displayed (x: CE number, y: CM number).
  - For the ETERNUS DX8700 S3/DX8900 S3  
CE#x CM#y
  - For the other models  
CM#y
- **Eco-mode Schedule**  
The Eco-mode schedule name that is assigned to the RAID group is displayed.  
If the Eco-mode is controlled with Storage Foundation Software ETERNUS SF, "External" is displayed.  
When no Eco-mode schedule has been assigned, the field is blank.
- **Eco-mode Action**  
The Eco-mode schedule action status is displayed.  
When no Eco-mode schedule has been assigned, a "-" (hyphen) is displayed.
  - Drive power off  
The power for the drive is turned off during Eco-mode operation.
  - Drive motor off  
The drive motor is stopped during Eco-mode operation.
  - Drive always on  
Disable Eco-mode and the drive is always active.
- **Motor Status**  
The drive motor status is displayed.
  - Active  
The drive motors are activated.
  - In the Boot Process  
The drive motors are starting up.
  - Idle  
The drive motors are stopped.
  - In the Stop Process  
The drive motors are being stopped.
  - Power Off  
The drive power is being turned off.

- **Fast Recovery Drive**  
When the hot spare area in the Fast Recovery RAID group is used, the drive number for the data recovery source drive is displayed. If Fast Recovery (\*1) is not used, the field is blank.  
This item is displayed only when the RAID level is "High Reliability (RAID6-FR)".  
\*1: High-speed rebuilding when one drive fails in the Fast Recovery RAID group.
  - CE Drive#yy (for the ETERNUS DX60 S3/DX100 S3/DX200 S3, the ETERNUS AF250, and the ETERNUS DX200F)
  - DE#xx Drive#yy (xx: DE number, yy: Drive number)
- **Process**  
A process that is being performed is displayed. If no process is being performed, a "-" (hyphen) is displayed.
- **Progress**  
The progress of a process that is being performed is displayed with a bar and a rate (%). To display the latest progress, refresh the screen. If no process is being performed, a "-" (hyphen) is displayed.
- **Stripe Depth**  
The Stripe Depth (\*1) of the RAID group is displayed.  
If the RAID level is "Mirroring (RAID1)", a "-" (hyphen) is displayed.
  - 64 KB
  - 128 KB
  - 256 KB
  - 512 KB
  - 1024 KB\*1: The number of logical blocks that are assigned to a drive for each stripe when configuring a stripe volume in a RAID group. Normally, it is 64KB.
- **Deleting**  
The RAID group deletion status is displayed.  
If a RAID group deletion process is not being performed, a "-" (hyphen) is displayed.
  - Executing  
A RAID group deletion process is being performed or a data migration related to the deletion process is being performed.
  - Error  
Deletion of the RAID group failed.

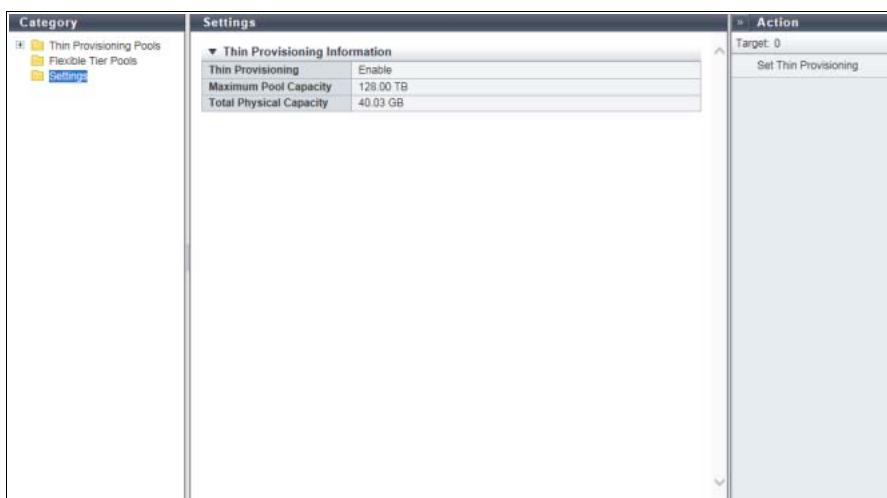
## 7.3 Settings (Thin Provisioning)

This function displays information on the Thin Provisioning function settings.

### Note

The parameters that are described below can be changed. Refer to "Set Thin Provisioning" in "ETERNUS Web GUI User's Guide (Settings)" for details.

- Whether to enable or disable the Thin Provisioning function
- Maximum Pool Capacity



The following items are displayed in the Main area:

- Thin Provisioning  
Whether the Thin Provisioning function is enabled or disabled is displayed.
- Maximum Pool Capacity  
The maximum pool capacity that is specified for the ETERNUS DX/AF is displayed.  
The maximum pool capacity is the maximum total capacity for TPPs and FTRPs that can be created in the ETERNUS DX/AF. This item is displayed only when "Enable" is selected for the Thin Provisioning function.
  - ETERNUS DX60 S3  
32.00 TB, 64.00 TB, 128.00 TB
  - ETERNUS DX100 S3/DX200 S3  
32.00 TB, 64.00 TB, 128.00, 256.00 TB
  - ETERNUS DX500 S3  
64.00 TB, 128.00 TB, 256.00 TB, 384.00 TB
  - ETERNUS DX600 S3  
128.00 TB, 256.00 TB, 512.00 TB, 768.00 TB, 1024.00 TB
  - ETERNUS DX8100 S3  
64.00 TB, 128.00 TB
  - ETERNUS DX8700 S3/DX8900 S3  
256.00 TB, 512.00 TB, 768.00 TB, 1024.00 TB, 1536.00 TB, 2048.00 TB
  - ETERNUS AF250  
32.00 TB, 64.00 TB, 128.00 TB, 256.00 TB

- ETERNUS AF650  
128.00 TB, 256.00 TB, 512.00 TB, 768.00 TB, 1024.00 TB
- ETERNUS DX200F  
32.00 TB, 64.00 TB, 128.00 TB, 256.00 TB

 **Caution**

The maximum pool capacity is used as a virtual logical capacity in the ETERNUS DX/AF. When the Thin Provisioning function is enabled, the ETERNUS DX/AF allocates capacity to the physical drives proportionate to the amount of data that is written to the virtual volume. Therefore, the actual available capacity is limited depending on the maximum physical capacity of the drives that can be installed in the storage system or the maximum pool capacity, whichever is smaller. For example, when using an ETERNUS DX200F that is configured only with 800GB SSDs, the actual capacity that can be used is approximately 16TB even if the maximum pool capacity is "32.00TB".

- **Total Physical Capacity**  
The total physical capacity [PB/TB/GB/MB] of the TPPs in the ETERNUS DX/AF is displayed. This item is displayed only when "Enable" is selected for the Thin Provisioning function.

# Chapter 8

## Advanced Copy Status

Advanced Copy status displays the status information of volumes.

Advanced Copy status screens can be displayed by clicking the following categories:

Category	Advanced Copy status screen
Advanced Copy	<a href="#">Advanced Copy (Basic Information)</a>
Local Copy	<a href="#">Advanced Copy (All Local Sessions)</a>
EC	<a href="#">EC</a>
OPC	<a href="#">OPC</a>
QuickOPC	<a href="#">QuickOPC</a>
SnapOPC	<a href="#">SnapOPC</a>
SnapOPC+	<a href="#">SnapOPC+</a>
Monitor	<a href="#">Monitor</a>
Remote Copy	<a href="#">Advanced Copy (All Remote Sessions)</a>
REC	<a href="#">REC</a>
ODX	<a href="#">ODX Sessions</a>
XCopy	<a href="#">XCOPY Sessions</a>
Virtual Volume	<a href="#">Virtual Volume Sessions</a>
Settings	<a href="#">Settings (Advanced Copy)</a>
Snap Data Pool	<a href="#">Snap Data Pool</a>
Copy Path	<a href="#">Copy Path</a>
REC Buffer	<a href="#">REC Buffer</a>
REC Disk Buffer	<a href="#">REC Disk Buffer</a>

Detailed information of the Advanced Copy functions can be displayed from the following screens:

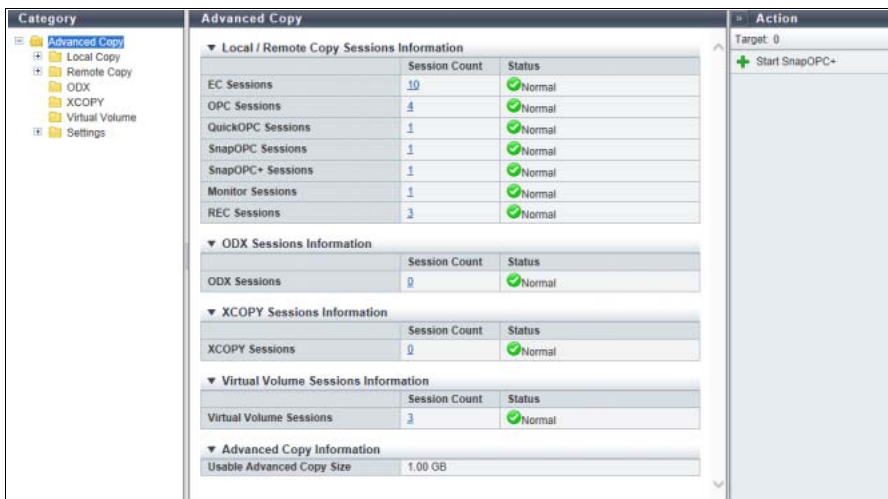
- [Advanced Copy \(Property\)](#)
- [Advanced Copy \(Extent information\)](#)
- [Copy Path Detail](#)

## 8.1 Advanced Copy (Basic Information)

This function displays the status of all the Advanced Copy sessions.

**Note**

- To display the local/remote copy session information and the Advanced Copy information, register the Advanced Copy license. Note that the Remote Copy Sessions Information and Remote Copy related categories (copy path, REC Buffer, and REC Disk Buffer) are displayed only when using an ETERNUS DX/AF model that supports REC.
- In the Unified Storage environment, the following items are displayed even if the Advanced Copy function license is not registered.
  - Local Copy Sessions Information (SnapOPC+ Session)
  - Advanced Copy Information (Usable Advanced Copy Size for SnapOPC+)
- Registering an Advanced Copy license is not required to display the Advanced Copy session information for ODX sessions, Extended Copy (XCOPY) sessions, or Virtual Volume sessions.



The following items are displayed in the Main area:



- Local / Remote Copy Sessions Information
  - Session Count  
 The number of Advanced Copy sessions that are currently being performed for each type (EC, OPC, QuickOPC, SnapOPC, SnapOPC+, Monitor, and REC) is displayed.  
 The "Session Count" is a total of copy sessions in all the statuses including " Reserved". Click the [Session Count] link to display the list of sessions for each type.
  - ETERNUS DX60 S3  
0 - 1024
  - ETERNUS DX100 S3  
0 - 1024 (2048) (\*1)
  - ETERNUS DX200 S3  
0 - 2048 (4096) (\*1)
  - ETERNUS DX500 S3/DX600 S3  
0 - 8192

- ETERNUS DX8100 S3  
0 - 8192
- ETERNUS DX8700 S3/DX8900 S3  
0 - 32768
- ETERNUS AF250  
0 - 2048
- ETERNUS AF650  
0 - 8192
- ETERNUS DX200F  
0 - 2048

\*1: Values in parentheses indicate the number of sessions when "Expand Volume Mode" is "Enable". Refer to "Setup Subsystem Parameters" in "ETERNUS Web GUI User's Guide (Settings)" for details.

- Status

The status for each Advanced Copy session is displayed.


-  Normal  
All the copy sessions are in the normal state.
-  Error  
At least one copy session is not in the normal state.

- ODX Copy Sessions Information

An ODX session is created when the ODX function of Windows server 2012 is used.



- Session Count

The number of ODX sessions (0 - 4096) that are currently being performed is displayed.

The "Session Count" is a total of copy sessions in all the statuses including " Reserved". Click the [Session Count] link to display the list of sessions.

- Status

The status for ODX sessions are displayed.


-  Normal  
All the copy sessions are in the normal state.
-  Error  
At least one copy session is not in the normal state.

- XCOPY Sessions Information



An XCOPY session is created when the Full Copy function of VMware VAAI is used.

- Session Count

The number of XCOPY (Extended Copy) sessions (0 - 4096) (\*1) that are currently being performed is displayed.

The "Session Count" is a total of copy sessions in all the statuses including " Reserved". Click the [Session Count] link to display the list of sessions.


\*1: An XCOPY session is created when the Full Copy function of VMware vStorage APIs for Array Integration (VAAI) is used.



- Status  
The status for XCOPY sessions are displayed.
  -  Normal  
All the copy sessions are in the normal state.
  -  Error  
At least one copy session is not in the normal state.

- Virtual Volume Sessions Information

 **Caution**

For the ETERNUS DX60 S3, this session information is not displayed.

- Session Count  
The number of Virtual Volume sessions that are currently running is displayed.  
The "Session Count" is a total of copy sessions in all the statuses including " Reserved". Click the [Session Count] link to display the list of sessions.
  - ETERNUS DX100 S3  
0 - 4096
  - ETERNUS DX200 S3  
0 - 4096 (8192) (\*1)
  - ETERNUS DX500 S3/DX600 S3  
0 - 16384
  - ETERNUS DX8100 S3  
0 - 16384
  - ETERNUS DX8700 S3/DX8900 S3  
0 - 65535
  - ETERNUS AF250  
0 - 1536
  - ETERNUS AF650  
0 - 6144
  - ETERNUS DX200F  
0 - 1536

\*1: Values in parentheses indicate the number of sessions when "Expand Volume Mode" is "Enable". Refer to "Setup Subsystem Parameters" in "ETERNUS Web GUI User's Guide (Settings)" for details.
- Status  
The Virtual Volume session status is displayed.
  -  Normal  
All the copy sessions are in the normal state.
  -  Error  
At least one copy session is not in the normal state.
- Advanced Copy Information
  - Usable Advanced Copy Size  
The Advanced Copy capacity that can be added to the session is displayed.



## 8.2 Advanced Copy (All Local Sessions)

This function displays status for local copy sessions.

The following session types are available: Equivalent Copy (EC), One Point Copy (OPC), QuickOPC, SnapOPC, SnapOPC+, and Monitor.

### Note

- Local Copy Sessions Information is displayed only when the Advanced Copy function license has been registered.
- When an ETERNUS DX is used in a Unified Storage environment, the SnapOPC+ session list and SnapOPC+ session details are displayed even if the Advanced Copy function license has not been registered.

The screenshot shows the 'Advanced Copy (All Local Sessions)' window. On the left is a 'Category' tree with 'Local Copy' expanded. The main area contains a table with columns: Session ID, Source Volume No., Destination Volume No., Type, Status, Phase, Error Code, and Time. The table lists 15 sessions, all with a status of 'Active'. The right side of the window shows an 'Action' panel with 'Start SnapOPC+' and 'Stop Session' options.






Session ID	Source Volume No.	Destination Volume No.	Type	Status	Phase	Error Code	Time
0x0061	1	17	OPC	Active	Copying	0x00	2
0x0062	2	18	QOPC	Active	Copying	0x00	2
0x0063	3	19	SOPC	Active	Copying	0x00	2
0x0064	4	20	SOPC+	Active	Copying	0x00	1
0x0065	5	21	EC	Active	Copying	0x00	2
0x0067	7	-	MON	Active	Equivalent	0x00	2
0x0068	8	-	MON	Active	Equivalent	0x00	2
0x0069	9	25	OPC	Active	Copying	0x00	2
0x006C	12	28	QOPC	Active	Copying	0x00	2
0x006D	13	29	SOPC	Active	Readying	0x00	2
0x006E	14	30	SOPC+	Active	Readying	0x00	1
0x006F	15	31	FC	Active	Conversion	0x00	2

The following items are displayed in the Main area:


- Session ID  
The session ID is displayed.  
Click this item to display the screen shown in ["8.8 Advanced Copy \(Property\)" \(page 393\)](#) or ["8.9 Advanced Copy \(Extent information\)" \(page 400\)](#).
- Source Volume No.  
The copy source volume number is displayed.  
If the status is "Reserved", a "-" (hyphen) is displayed.
- Destination Volume No.  
The copy destination volume number is displayed.  
If the "Status" is "Reserved" or when the copy session type is "MON", a "-" (hyphen) is displayed.
- Type  
The copy session type is displayed using an abbreviation.
  - For Equivalent Copy: EC
  - For One Point Copy: OPC
  - For QuickOPC: QOPC
  - For SnapOPC: SOPC
  - For SnapOPC+: SOPC+
  - For Monitor: MON

- Status

The copy session status is displayed.


-  Active  
Operating normally
-  Reserve  
Session ID reserved
-  Suspend  
Suspended by an instruction from the host
-  Error Suspend  
Copy canceled due to an error
-  Unknown  
A status other than the ones listed above

- Phase


The copy session phase is displayed. If the status is " Reserved", a "-" (hyphen) is displayed.

- Copying  
For OPC, EC, SnapOPC, and SnapOPC+: Copying  
For QuickOPC: Copying the updated areas after recording of updated areas is stopped  
For Monitor: Recording the updated areas
- Equivalent  
Maintaining equivalent status of the copy source and copy destination that are duplicated after copy is complete
- Tracking  
Recording only the updated area after copy is complete
- Tracking & Copy  
Recording the area updated during copy processing and after copy starts
- Ready  
Readying to start multiple copy using the Concurrent OPC.





- Error Code

The error code is displayed when an error occurs. If the status is " Reserved", a "-" (hyphen) is displayed. Refer to "[Appendix B Error Code](#)" (page 414) for details.

- Time Stamp

The time when backup is complete and the time when an error occurred are displayed. If the status is " Reserved", a "-" (hyphen) is displayed.

The time stamp is updated in the following conditions:

- OPC, QuickOPC, SnapOPC, and SnapOPC+  
The time stamp is updated when copy starts and when an error occurs.  
The following information is displayed:
  - When "Status" is " Active", the backup time when the copy started is displayed.
  - When "Status" is " Error Suspend", the time when the error occurred is displayed.
- QuickOPC  
The time stamp is updated when copy starts, restarts, and when an error occurs.  
The following information is displayed:
  - When "Status" is " Active", the backup time when the copy started is displayed.
  - When "Status" is " Error Suspend", the time when the error occurred is displayed.

- EC  
The time stamp is updated at Suspend and when an error occurs.  
The following information is displayed:
  - When "Status" is "✔ Active" and the copy session is not suspended yet, "0" is displayed for all of the display items. When suspend is requested and "Status" is "✔ Active", the backup time of the previous suspend that was requested is displayed.
  - When "Status" is "✔ Suspend", the backup time when the copy was suspended is displayed.
  - When "Status" is "✘ Error Suspend", the time when an error occurred is displayed.
- Monitor  
When "Status" is "✔ Active", "0" is displayed for all of the display items.
- Elapsed Time  
The elapsed time after a copy session has started is displayed. If the status is "✔ Reserved", a "-" (hyphen) is displayed.
- Copied Data Size  
The size of a copy that has been completed is displayed. If the status is "✔ Reserved", a "-" (hyphen) is displayed.  
When the copy type is "SOPC" or "SOPC+", only the original data (or previous data) before update in the copy target area is copied.  
When the copy type is "MON", the updated data in the area for monitoring updates is copied. This copy type performs a pseudo copy to measure the updated amount of data.
- Total Data Size  
The data size of the copy target area is displayed. If the status is "✔ Reserved", a "-" (hyphen) is displayed.  
When the copy type is "MON", the data size of the area for monitoring updates is displayed.
- Resolution  
The copy session resolution is displayed. If the status is "✔ Reserved", a "-" (hyphen) is displayed.
- Requestor  
The information of the client that started the copy session is displayed. If the status is "✔ Reserved", a "-" (hyphen) is displayed.
  - SCSI  
Copy session requested by the copy management software (via SCSI).
  - LAN  
Copy session requested by the copy management software (via LAN).
  - GUI  
Copy session requested by ETERNUS Web GUI.
  - CLI  
Copy session requested by ETERNUS CLI.
  - SMI-S  
Copy session requested by SMI-S.
  - Unknown  
Other than the above clients.

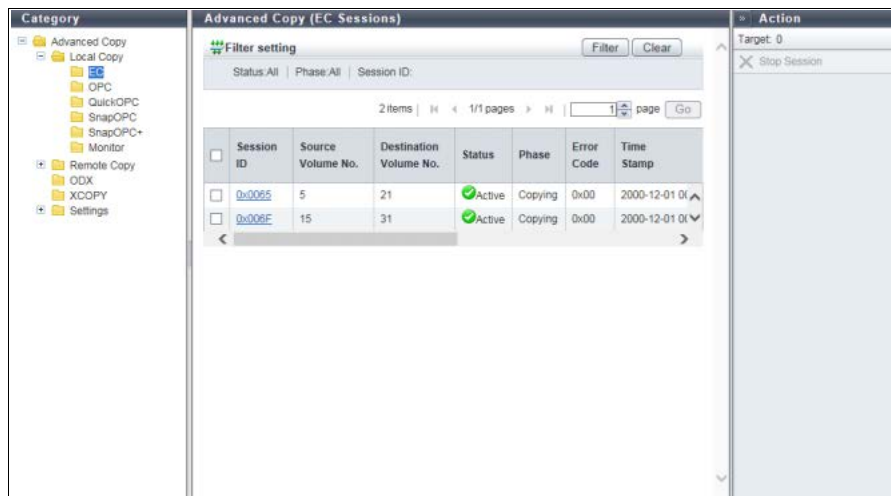
- License
  - The registration status of the Advanced Copy license when the copy session is started is displayed.
  - Regular
    - The copy session is started with a paid license or a free license (for the ETERNUS DX60 S3/DX100 S3/DX200 S3, the ETERNUS AF250, and the ETERNUS DX200F).
  - Trial
    - The copy session is started with a trial license. Copy sessions that use a trial license are deleted automatically after the expiration of the trial license.

Filter setting

Filter	Description
Status	Select the copy session status that is to be displayed.
Phase	Select the copy session phase to be displayed.
Session ID	Input the session ID of the copy session that is to be displayed. When not using the session ID for filtering, leave this item blank.

8.2.1 EC

This function displays detailed information for EC sessions.

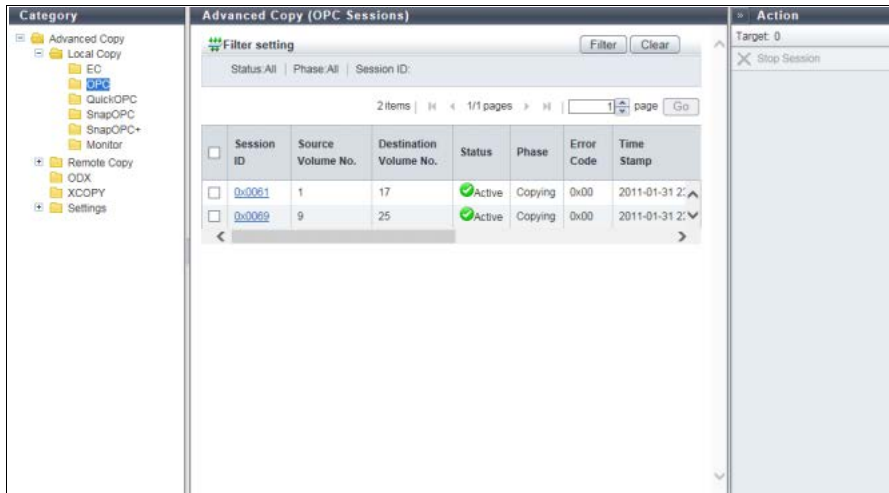


**Note**

Refer to "[8.2 Advanced Copy \(All Local Sessions\)](#)" (page 361) for display items.

## 8.2.2 OPC

This function displays detailed information for OPC sessions.

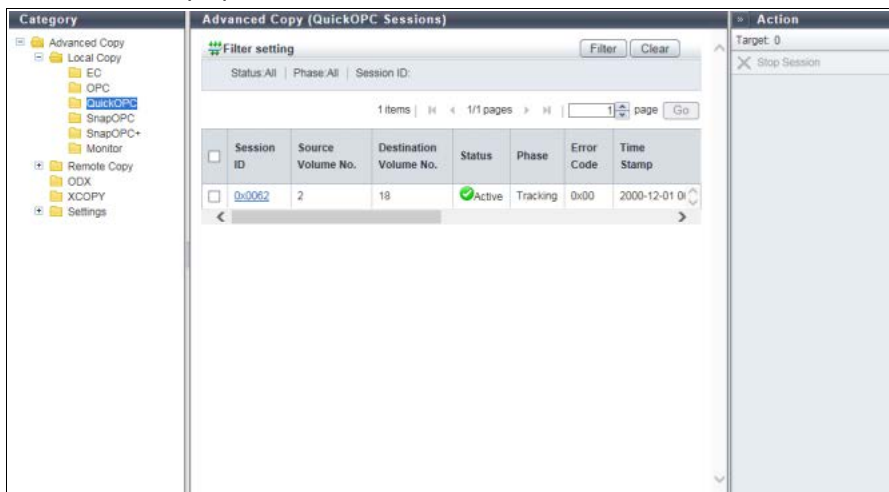


### Note

Refer to "[8.2 Advanced Copy \(All Local Sessions\)](#)" (page 361) for display items.

## 8.2.3 QuickOPC

This function displays detailed information for QuickOPC sessions.



The following items are displayed in the Main area:

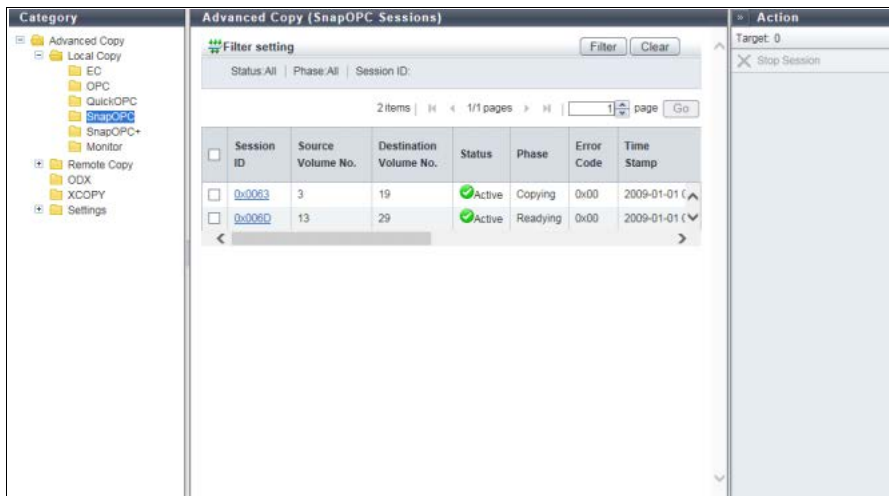
- **Modified Data Size**  
 The differential data size when QuickOPC is executed is displayed. The modified data size is updated in the "Tracking & Copy" and "Tracking" phases. When recopy starts, the modified data size is once changed to "0" and then the differential data size from the time when recopy started is displayed. When tracking stops, the modified data size is changed to "0". If the status is "Reserved", a "-" (hyphen) is displayed.

**Note**

Refer to "[8.2 Advanced Copy \(All Local Sessions\)](#)" (page 361) for the display items that are not described in this section.

## 8.2.4 SnapOPC

This function displays detailed information for SnapOPC sessions.



The following items are displayed in the Main area:

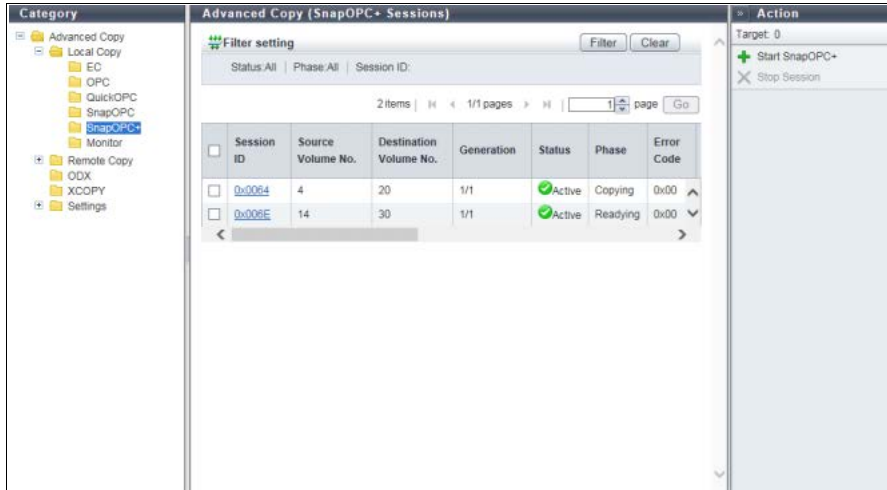
- SDP No.  
The Snap Data Pool number, which is used when the copy destination SDV capacity is insufficient, is displayed. If the status is "Active Reserved" or when the copy destination is not an SDP, a "-" (hyphen) is displayed.
- SDP Used Capacity  
The used capacity of Snap Data Pool is displayed. If the status is "Active Reserved" or when the copy destination is not an SDP, a "-" (hyphen) is displayed.

**Note**

Refer to "[8.2 Advanced Copy \(All Local Sessions\)](#)" (page 361) for the display items that are not described in this section.

## 8.2.5 SnapOPC+

This function displays detailed information for SnapOPC+ sessions.



The following items are displayed in the Main area:

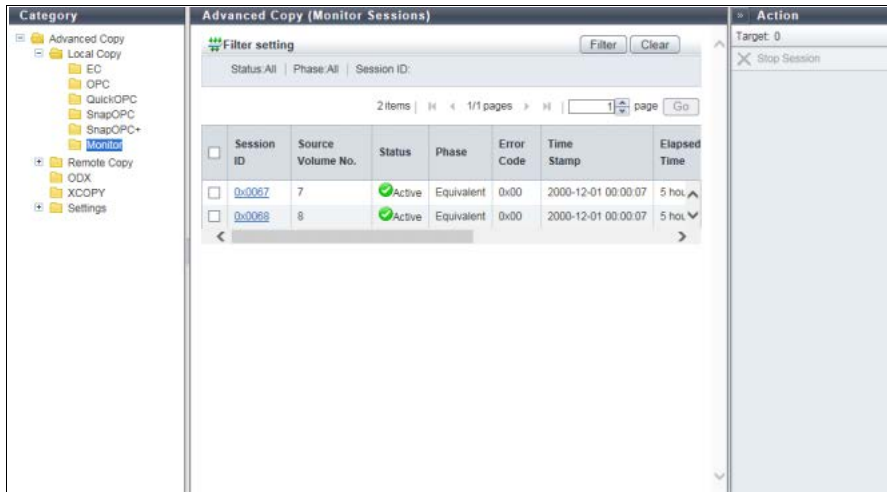
- Generation  
The generation and total number of generations of the copy session are displayed.
- SDP No.  
The Snap Data Pool number, which is used when the copy destination SDV capacity is insufficient, is displayed. If the status is "🟢 Reserved" or when the copy destination is not an SDP, a "-" (hyphen) is displayed.
- SDP Used Capacity  
The used capacity of Snap Data Pool is displayed. If the status is "🟢 Reserved" or when the copy destination is not an SDP, a "-" (hyphen) is displayed.

### 🔵 Note

Refer to "[8.2 Advanced Copy \(All Local Sessions\)](#)" (page 361) for the display items that are not described in this section.

## 8.2.6 Monitor

This function displays detailed information for Monitor sessions.



### Note

Refer to ["8.2 Advanced Copy \(All Local Sessions\)" \(page 361\)](#) for display items.



## 8.3 Advanced Copy (All Remote Sessions)

This function displays the status for remote copy sessions.

### Caution

The ETERNUS DX60 S3 does not support the remote copy sessions.










### Note

Remote Copy Sessions Information is displayed only when the Advanced Copy function license has been registered, and when using an ETERNUS DX/AF model that supports REC.

Session ID	Source Volume No.	Destination Volume No.	Remote Session ID	Type	Status	Phase	Error Code
0x0098	8	22	0x0006	REC	Active	Copying	0x00
0x0098	11	27	0x0008	REC	Active	Copying	0x00
0x0074	20	35	0x0014	REC	Active	Copying	0x00

The following items are displayed in the Main area:

- Session ID  
The session ID is displayed.  
Click this item to display the screen shown in ["8.8 Advanced Copy \(Property\)" \(page 393\)](#) or ["8.9 Advanced Copy \(Extent information\)" \(page 400\)](#).
- Source Volume No.  
The copy source volume number is displayed. If the status is " Reserved", a "-" (hyphen) is displayed.
- Destination Volume No.  
The copy destination volume number is displayed. If the status is " Reserved", a "-" (hyphen) is displayed.
- Remote Session ID  
The session ID for the remote storage system is displayed.
- Type  
The copy session type is displayed using an abbreviation (REC).

- Status  
The copy session status is displayed.
  -  Active  
Operating normally
  -  Reserve  
Session ID reserved
  -  Suspend  
Suspended by an instruction from the host
  -  Halt  
Remote copy disabled due to an error
  -  Error Suspend  
Copy canceled due to an error
  -  Unknown  
A status other than the ones listed above
- Phase  
The copy session phase is displayed. If the status is " Reserved", a "-" (hyphen) is displayed.
  - Copying  
Copying
  - Equivalent  
Maintaining equivalent status of the copy source and copy destination that are duplicated after copy is complete
- Error Code  
The error code is displayed when an error occurs. If the status is " Reserved", a "-" (hyphen) is displayed. Refer to "[Appendix B Error Code](#)" (page 414) for details.
- Direction  
The copy direction of the applicable session is displayed. If the status is " Reserved", a "-" (hyphen) is displayed.
  - From Local/To Remote  
Session from the local storage system (copy source) to the remote storage system (copy destination)
  - From Remote/To Local  
Session from the remote storage system (copy source) to the local storage system (copy destination)

- **Time Stamp**

The time when backup has been completed, and the time when an error occurred, are displayed. The time stamp is updated when the process is suspended, when an error occurs, and when the status is changed.

The following information is displayed for "Time Stamp".

  - When "Status" is "✅ Reserved", a "-" (hyphen) is displayed.
  - When "Status" is "✅ Active" and the copy session is not suspended yet, "0" is displayed for all of the display items. When suspend is requested and "Status" is "✅ Active", the backup time of the previous suspend that was requested is displayed.
  - When "Status" is "✅ Suspend", the backup time when the copy was suspended is displayed.
  - When "Status" is "❌ Error Suspend", the time when an error occurred is displayed.
  - When "Status" is "❌ Halt", the time when an error occurred is displayed.

When the status is changed from "❌ Halt" to "✅ Active" or when the copy session is forcibly suspended, the time stamp information is cleared and "0" is displayed for all of the display items.
- **Elapsed Time**

The elapsed time after a copy session starts is displayed. If the status is "✅ Reserved", a "-" (hyphen) is displayed.
- **Copied Data Size**

The size of copy that has been completed is displayed. If the status is "✅ Reserved", a "-" (hyphen) is displayed.
- **Total Data Size**

The total copy size is displayed. If the status is "✅ Reserved", a "-" (hyphen) is displayed.
- **Resolution**

The copy session resolution is displayed. If the status is "✅ Reserved", a "-" (hyphen) is displayed.
- **Requestor**

The information of the client that started the copy session is displayed. If the status is "✅ Reserved", a "-" (hyphen) is displayed.

  - SCSI  
Copy session requested by the copy management software (via SCSI).
  - LAN  
Copy session requested by the copy management software (via LAN).
  - SMI-S  
Copy session requested by SMI-S.
  - Unknown  
Other than the above clients.
- **License**

The registration status of the Advanced Copy license when the copy session is started is displayed. If the license information for the connection target storage system cannot be obtained due to a copy path error, "Unknown" is displayed.

  - Regular  
The copy session is started with a paid license.
  - Trial  
The copy session is started with a trial license. Copy sessions that use a trial license are deleted automatically after the expiration of the trial license.

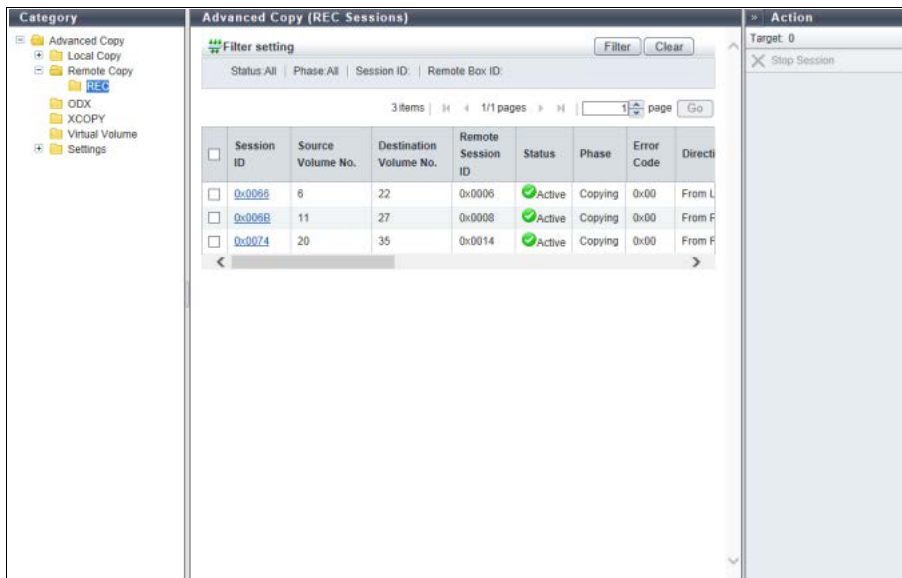
- Remote Box ID  
The remote Box ID is displayed.

#### Filter setting

Filter	Description
Status	Select the copy session status that is to be displayed.
Phase	Select the copy session phase that is to be displayed.
Session ID	Input the session ID of the copy session that is to be displayed. When not using the session ID for filtering, leave this item blank.
Remote Box ID	Input the remote Box ID of the copy session that is to be displayed. When not using the remote BOX ID for filtering, leave this item blank.

### 8.3.1 REC

This function displays detailed information for REC sessions.



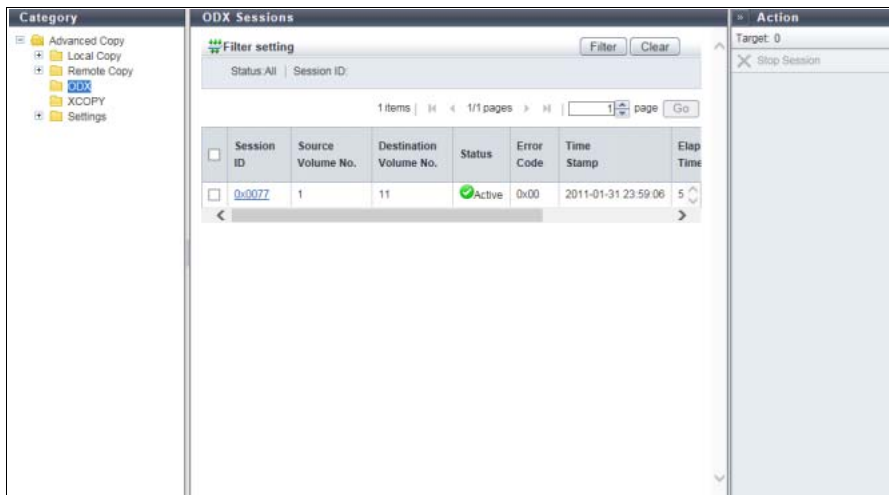
**Note**

Refer to "[8.3 Advanced Copy \(All Remote Sessions\)](#)" (page 369) for display items.

## 8.4 ODX Sessions

This function displays the status for ODX sessions.

ODX sessions are created when the ODX function is used for a server with "Windows Server 2012". The ODX function offloads the workload for copying or migrating data from the server to the ETERNUS DX/AF.



The following items are displayed in the Main area:

- Session ID  
The session ID is displayed.  
Click this item to display the screen shown in ["8.8 Advanced Copy \(Property\)" \(page 393\)](#) or ["8.9 Advanced Copy \(Extent information\)" \(page 400\)](#).
- Source Volume No.  
The copy source volume number is displayed. If the status is "🟢 Reserved", a "-" (hyphen) is displayed.
- Destination Volume No.  
The copy destination volume number is displayed. If the status is "🟢 Reserved", a "-" (hyphen) is displayed.
- Status  
The copy session status is displayed.
  - 🟢 Active  
Operating normally
  - 🟢 Reserve  
Session ID reserved
  - 🛑 Error Suspend  
Copy canceled due to an error
  - ? Unknown  
A status other than the ones listed above

- **Error Code**  
The error code is displayed when an error occurs. If the status is "✔ Reserved", a "-" (hyphen) is displayed. Refer to ["Appendix B Error Code" \(page 414\)](#) for details.
- **Time Stamp**  
The time when backup is complete and the time when an error occurred are displayed. The time stamp is updated when starting a copy session or an error occurs. The following information are displayed for this item:
  - If the status is "✔ Reserved", a "-" (hyphen) is displayed.
  - If the status is "✔ Active", the backup time when the copy started is displayed.
  - If the status is "✘ Error Suspend", the time when an error occurred is displayed.
- **Elapsed Time**  
The elapsed time after a session starts is displayed. If the status is "✔ Reserved", a "-" (hyphen) is displayed.
- **Copied Data Size**  
The size of copy that has been completed is displayed. If the status is "✔ Reserved", a "-" (hyphen) is displayed.
- **Total Data Size**  
The total copy size is displayed. If the status is "✔ Reserved", a "-" (hyphen) is displayed.

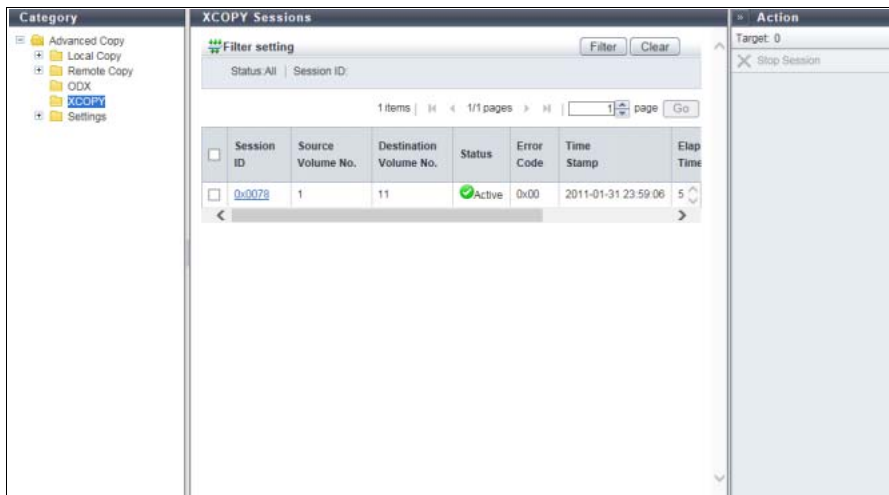
#### Filter setting

Filter	Description
Status	Select the copy session status that is to be displayed.
Session ID	Input the session ID of the copy session that is to be displayed. When not using the session ID for filtering, leave this item blank.

## 8.5 XCOPY Sessions

This function displays the status for XCOPY sessions.

An XCOPY (Extended Copy) session is created when the Full Copy function of VMware vStorage APIs for Array Integration (VAAI) is used.



The following items are displayed in the Main area:

- Session ID  
The session ID is displayed.  
Click this item to display the screen shown in ["8.8 Advanced Copy \(Property\)" \(page 393\)](#) or ["8.9 Advanced Copy \(Extent information\)" \(page 400\)](#).
- Source Volume No.  
The copy source volume number is displayed. If the status is "🟢 Reserved", a "-" (hyphen) is displayed.
- Destination Volume No.  
The copy destination volume number is displayed. If the status is "🟢 Reserved", a "-" (hyphen) is displayed.
- Status  
The copy session status is displayed.
  - 🟢 Active  
Operating normally
  - 🟢 Reserve  
Session ID reserved
  - 🚫 Error Suspend  
Copy canceled due to an error
  - ? Unknown  
A status other than the ones listed above
- Error Code  
The error code is displayed when an error occurs. If the status is "🟢 Reserved", a "-" (hyphen) is displayed.  
Refer to ["Appendix B Error Code" \(page 414\)](#) for details.



- Time Stamp  
The time when backup has been completed, and the time when an error occurred, are displayed. The time stamp is updated when starting a copy session or an error occurs. The following information is displayed:
  - If the status is "✅ Reserved", a "-" (hyphen) is displayed.
  - If the status is "✅ Active", the backup time when the copy started is displayed.
  - If the status is "❌ Error Suspend", the time when the error occurred is displayed.
- Elapsed Time  
The elapsed time after a session starts is displayed. If the status is "✅ Reserved", a "-" (hyphen) is displayed.
- Copied Data Size  
The size of copy that has been completed is displayed. If the status is "✅ Reserved", a "-" (hyphen) is displayed.
- Total Data Size  
The total copy size is displayed. If the status is "✅ Reserved", a "-" (hyphen) is displayed.

#### Filter setting

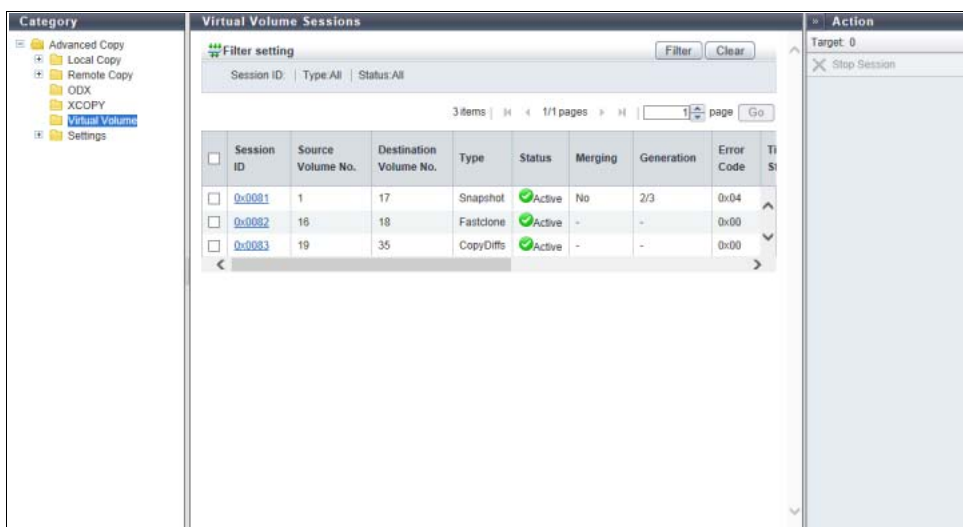
Filter	Description
Status	Select the copy session status that is to be displayed.
Session ID	Input the session ID of the copy session that is to be displayed. When not using the session ID for filtering, leave this item blank.

## 8.6 Virtual Volume Sessions

This function displays the status for the Virtual Volume session.  
Virtual Volume sessions are created by VMware vSphere 6.0.

### Caution

The ETERNUS DX60 S3 does not support the Virtual Volume function.


















The screenshot shows the 'Virtual Volume Sessions' interface. On the left is a 'Category' tree with 'Virtual Volume' selected. The main area displays a table with columns: Session ID, Source Volume No., Destination Volume No., Type, Status, Merging, Generation, Error Code, and TI. Three sessions are listed, all with a status of 'Active'.

Session ID	Source Volume No.	Destination Volume No.	Type	Status	Merging	Generation	Error Code	TI
0x0081	1	17	Snapshot	Active	No	2/3	0x04	
0x0082	16	18	Fastclone	Active	-	-	0x00	
0x0083	19	35	CopyDiff	Active	-	-	0x00	

The following items are displayed in the Main area:

- Session ID  
The session ID is displayed.  
Click this item to display the screen shown in ["8.8 Advanced Copy \(Property\)" \(page 393\)](#).
- Source Volume No.  
The copy source volume number is displayed. If the status is "🟢 Reserved", a "-" (hyphen) is displayed.
- Destination Volume No.  
The copy destination volume number is displayed. If the status is "🟢 Reserved", a "-" (hyphen) is displayed.
- Type  
The session type is displayed.
  - Snapshot  
WVOLS are being copied with the Copy-on-Write method (equivalent to SnapOPC+).  
Write I/O for the copy destination WVOL is not allowed.
  - Fastclone  
WVOLS are being copied with the Copy-on-Write method (equivalent to SnapOPC).  
Write I/O for the copy destination WVOL is allowed, but restoring data is not allowed.
  - Clone  
WVOLS are being copied with the Background copy method (equivalent to OPC).
  - Revert  
Data is being restored from the Snapshot destination WVOL to the Snapshot source WVOL.

- CopyDiffs  
Comparison result (the difference of a data) between two VVOLs during a Snapshot session is being copied to the third VVOL.
- Status  
The copy session status is displayed.
  -  Active  
Operating normally
  -  Reserved  
Session ID reserved
  -  Error Suspend  
Copy canceled due to an error
  -  Unknown  
A status other than the ones listed above
- Merging  
When the data merge process for a Snapshot is being performed, "Yes" is displayed.  
If not, "No" is displayed. The "merge process" targets deleted data of a specific generation (except the oldest generation) and copies the difference in data to the previous generation.  
When the session type is not "Snapshot" or when the copy status is " Reserved", a "-" (hyphen) is displayed.
- Generation  
The generation and total number of generations of the Snapshot session are displayed.  
When the session type is not "Snapshot" or when the copy status is " Reserved", a "-" (hyphen) is displayed.
- Error Code  
The error code is displayed when an error occurs. If the status is " Reserved", a "-" (hyphen) is displayed.  
Refer to ["Appendix B Error Code" \(page 414\)](#) for details.
- Time Stamp  
The time when backup has been completed, and the time when an error occurred, are displayed.  
The time stamp is updated when starting a copy session or an error occurs.  
The following information is displayed:
  - If the status is " Reserved", a "-" (hyphen) is displayed.
  - If the status is " Active", the backup time when the copy started is displayed.
  - If the status is " Error Suspend", the time when the error occurred is displayed.
- Elapsed Time  
The elapsed time after a session starts is displayed. If the status is " Reserved", a "-" (hyphen) is displayed.
- Copied Data Size  
The size of copy that has been completed is displayed. If the status is " Reserved", a "-" (hyphen) is displayed.
- Total Data Size  
The total copy size is displayed. If the status is " Reserved", a "-" (hyphen) is displayed.

- Destination FTRP No.  
The FTRP No. to which the copy destination FTV belongs is displayed.  
When the copy session type is not "Snapshot" or "Fastclone", or when the copy status is "  Reserved", a "-" (hyphen) is displayed.
- Used Session Capacity  
The used capacity of FTRP area is displayed.  
When the copy session type is not "Snapshot" or "Fastclone", or when the copy status is "  Reserved", a "-" (hyphen) is displayed.

#### Filter setting

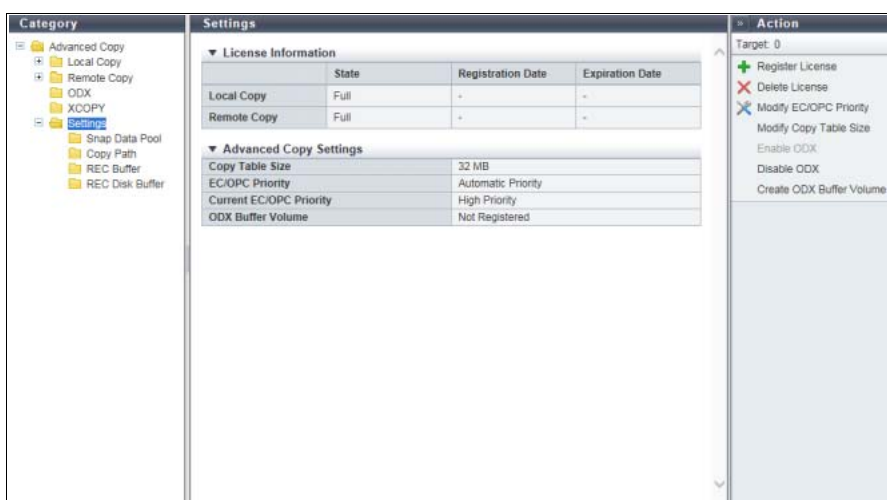
Filter	Description
Session ID	Input the session ID of the copy session that is to be displayed. When not using the session ID for filtering, leave this item blank.
Type	Select the type of the copy session that is to be displayed.
Status	Select the copy session status that is to be displayed.

## 8.7 Settings (Advanced Copy)

This function displays the current Advanced Copy license registration status and the Advanced Copy setting state.

### Note

- When the trial license is registered, the registration date and the expiration date is displayed.
- Registering an Advanced Copy license and registering the copy table size are not required when using the ODX or XCOPY function, or when using copy functions with VVOLs.



The following items are displayed in the Main area:

### License Information

- State
  - Registration status of the Advanced Copy license is displayed. "Remote Copy" is displayed only for models that support REC.
    - Not Registered  
No license is registered.
    - Free  
The free license is registered. Up to eight local copy sessions can be created as an Advanced Copy. This item is only displayed for the local copy functions of an ETERNUS DX60 S3/DX100 S3/DX200 S3, an ETERNUS AF250, and an ETERNUS DX200F.
    - Trial  
A trial license is registered. All of the Advanced Copy functions can be used for a limited time.
    - Trial Expiration  
The trial license is expired. The Advanced Copy function is not available. This item is displayed for the local copy functions of an ETERNUS DX500 S3/DX600 S3, an ETERNUS DX8100 S3/DX8700 S3/DX8900 S3, and an ETERNUS AF650.
    - Full  
A paid license is registered. All of the Advanced Copy functions can be used.

- **Registration Date**  
The date when the trial license was registered is displayed. A "-" (hyphen) is displayed in the following conditions:
  - Trial license has never been registered.
  - A paid license or a free license is registered.
- **Expiration Date**  
The expiration date for the trial license is displayed. A "-" (hyphen) is displayed in the following conditions:
  - Trial license has never been registered.
  - A paid license or a free license is registered.
- **Advanced Copy Settings**
  - **Copy Table Size**  
A copy table size is displayed.  
This item is displayed only when the Advanced Copy function license has been registered or when the Unified Storage function is enabled.
  - **EC/OPC Priority**  
The EC/OPC priority is displayed.  
This item is displayed only when the Advanced Copy function license or the Storage Cluster function license has been registered.
    - **Automatic Priority**  
This mode changes the EC/OPC priority automatically in response to the operating load status.
    - **High Priority**  
This mode operates by making maximum use of internal resources.
    - **Middle Priority**  
This mode operates slightly slower than the High Priority mode.
    - **Low Priority**  
This mode reduces the effect on host access.
    - **Very Low Priority**  
This mode operates slower than the Low Priority mode.
  - **Current EC/OPC Priority**  
The current EC/OPC priority is displayed.  
This item is displayed only when the Advanced Copy function license or the Storage Cluster function license has been registered.
    - High Priority
    - Middle Priority
    - Low Priority
    - Very Low Priority
  - **ODX Buffer Volume**  
The registration status of the ODX Buffer volume is displayed.
    - Registered
    - Not Registered

## 8.7.1 Snap Data Pool

This function displays the usage of SDP.

SDP is the area used when in case executing SnapOPC and SnapOPC+ increases the amount of copy data and exceeds the SDV capacity.

SDP becomes available when creating an SDPV. Created SDPV is automatically added to the SDP.

### Note

- This function is displayed only when the Advanced Copy function license has been registered or when the Unified Storage function is enabled.
- Because the ETERNUS DX60 S3 does not support the encryption function, display items that follow "Total Capacity" are displayed without the "Encrypted/Unencrypted" table heading.

- For the ETERNUS DX60 S3

SDP No.	Total Capacity	Total Free Space	SDPE	Total Capacity	Total Used Capacity	Total Used Capacity (%)	Used Host Capacity	Used Copy Capacity
0	4 GB	4 GB	1 GB	4 GB	0 GB	0 %	0 GB	0 GB

- For the other models

SDP No.	Total Capacity	Total Free Space	SDPE	Unencrypted				
				Total Capacity	Total Used Capacity	Total Used Capacity (%)	Used Host Capacity	Used Copy Capacity
0	8 GB	8 GB	1 GB	4 GB	0 GB	0 %	0 GB	0 GB

The following items are displayed in the Main area:

- SDP No.  
The SDP number (fixed as "0") is displayed.
- Total Capacity  
The total capacity of the SDP is displayed.
- Total Free Space  
The total free space of the SDP is displayed.
- SDPE  
Snap Data Pool Element (SDPE), the allocation unit for SDV, is displayed with 1GB, 2GB, or 4GB.
- Unencrypted
  - Total Capacity  
The total capacity of unencrypted SDP is displayed.
  - Total Used Capacity  
The total used capacity of unencrypted SDP is displayed.
  - Total Used Capacity (%)  
The usage rate of unencrypted SDP is displayed.
  - Used Host Capacity  
The total capacity of the SDPE that is allocated for an unencrypted SDV where a capacity shortage caused by data writing from the host has occurred is displayed.
  - Used Copy Capacity  
The total capacity of the SDPE that is allocated for an unencrypted SDV where a capacity shortage caused by SnapOPC or SnapOPC+ has occurred is displayed.
- Encrypted
  - Total Capacity  
The total capacity of encrypted SDP is displayed.
  - Total Used Capacity  
The total used capacity of encrypted SDP is displayed.
  - Total Used Capacity (%)  
The usage rate of encrypted SDP is displayed.
  - Used Host Capacity  
The total capacity of the SDPE that is allocated for an encrypted SDV where a capacity shortage caused by data writing from the host has occurred is displayed.
  - Used Copy Capacity  
The total capacity of the SDPE that is allocated for an encrypted SDV where a capacity shortage caused by SnapOPC or SnapOPC+ has occurred is displayed.



## 8.7.2 Copy Path

This function displays the REC path status between the local and remote storage systems. It shows whether the copy path created with the function in "Set Copy Path" is operating properly. Refer to "Set Copy Path" in "ETERNUS Web GUI User's Guide (Settings)".

Select the target remote storage system. (Up to 16 storage systems can be registered.) The following items are displayed.

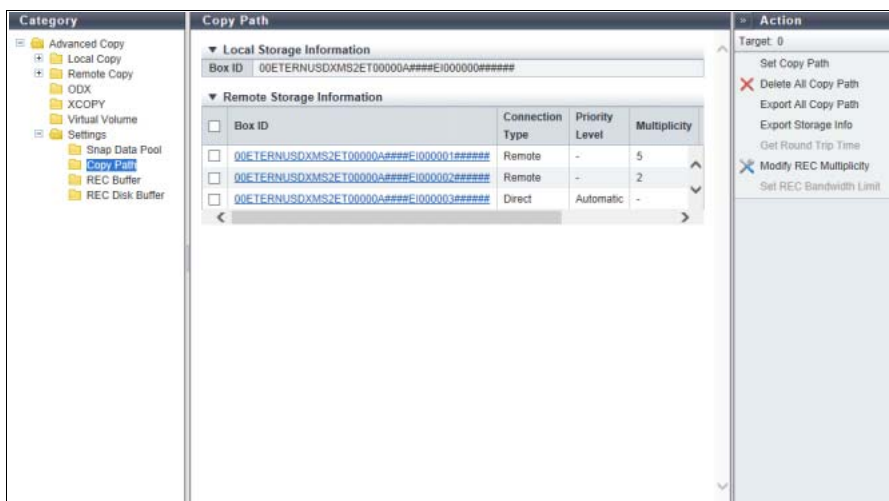
- Storage System
- Advanced Copy Path Status

### Caution

- The ETERNUS DX60 S3 does not support this function.
- After creating the copy paths, make sure to check the copy path status with this function.

### Note

- This function is displayed only when the Advanced Copy function license or the Storage Cluster function license has been registered, and when using an ETERNUS DX/AF model that supports REC.
- The "Priority Level" and the "Multiplicity" settings can be specified for each remote Box ID. Refer to "Modify REC Multiplicity" in "ETERNUS Web GUI User's Guide (Settings)" for details.
- To change the "Link Speed" setting, create a copy path with a new link speed by using the [Set Copy Path] function, and apply the created copy path to the related storage systems. Refer to "Set Copy Path" in "ETERNUS Web GUI User's Guide (Settings)" for details.



The following items are displayed in the Main area:

- Local Storage System Information

- Box ID

The Box ID for the local storage system is displayed.

"Box ID" is an identifier used to identify individual storage systems. This ID is a unique name in the user system and consists of 40-digit code.

The initial Box ID is a device ID consisting of device information (such as series name, model name, and serial number).

- Remote Storage System Information

- Box ID

This is the Box ID of the remote storage system that has a path to the local storage system. Click this item to display the [Copy Path] screen. Refer to ["8.10 Copy Path Detail" \(page 401\)](#) for details.

- Connection Type

The type of connection to the remote storage system that has a path to the local storage system is displayed.

- Direct
    - Remote

- Priority Level

REC is performed using the priority level (Automatic Priority/High Priority/Middle Priority/Low Priority/Very Low Priority) that is specified with the [Modify EC/OPC Priority] function (\*1).

- Automatic

REC is performed using the priority level (Automatic Priority/High Priority/Middle Priority/Low Priority/Very Low Priority) that is specified using the "Modify REC Multiplicity" function (\*1).

- 1 - 8

REC is performed with the displayed priority level. "1" corresponds to "Very Low Priority", and "8" corresponds to "High Priority" for the [Modify EC/OPC Priority] function (\*1).

- Multiplicity

When the local storage system and the remote storage system are connected by remote connection, the multiplicity is displayed. If the "Connection Type" is "Direct", a "-" (hyphen) is displayed.

- Automatic

REC is performed with the recommended multiplicity that is calculated by the [Measure Round Trip Time] result (\*2).

- 1 - 1024

REC is performed with the multiplicity that is manually specified with the [Modify REC Multiplicity] function (\*3).

- Recommended Multiplicity

When the local storage system and the remote storage system are connected by remote connection, the recommended multiplicity is displayed. If the "Connection Type" is "Direct", a "-" (hyphen) is displayed.

- 1 - 1024

The recommended multiplicity that is calculated by the [Measure Round Trip Time] result (\*2).

- \*\*\*

The round trip time is not measured by the [Measure Round Trip Time] function (\*2).

- **Link Speed**  
 When the local storage system and the remote storage system are connected by remote connection, the link speed is displayed between 1 Mbit/s - 65535 Mbit/s. If the "Connection Type" is "Direct", a "-" (hyphen) is displayed.
- \*1: Refer to "Modify EC/OPC Priority" in "ETERNUS Web GUI User's Guide (Settings)" for details.  
 \*2: Refer to "Measure Round Trip Time" in "ETERNUS Web GUI User's Guide (Settings)" for details.  
 \*3: Refer to "Modify REC Multiplicity" in "ETERNUS Web GUI User's Guide (Settings)" for details.

### 8.7.3 REC Buffer

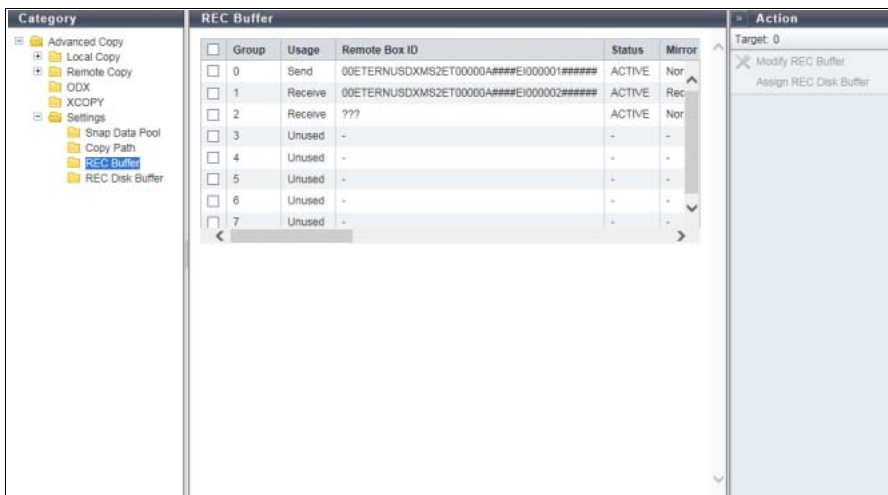
This function displays the REC Buffer status when performing REC in "REC asynchronous consistency mode". The "Consistency mode" secures the order of data transfer to the remote storage system for all of the specified REC sessions. This mode requires constant securement of the dedicated REC Buffer in the cache memory. Copying via REC Buffer stores multiple REC session I/Os in the REC Buffer for a certain period of time, and copies in blocks.

**Caution**

The ETERNUS DX60 S3 does not support this function.

**Note**

This function is displayed only when the Advanced Copy function license has been registered, and when using an ETERNUS DX/AF model that supports REC.



The following items are displayed in the Main area:

- Group  
The management group number of the REC Buffer is displayed.
  - ETERNUS DX100 S3  
0
  - ETERNUS DX200 S3  
0 - 3
  - ETERNUS DX500 S3/DX600 S3  
0 - 7
  - ETERNUS DX8100 S3/DX8700 S3/DX8900 S3  
0 - 7
  - ETERNUS AF250  
0 - 3
  - ETERNUS AF650  
0 - 7
  - ETERNUS DX200F  
0 - 3
- Usage  
The REC Buffer usage is displayed.
  - Unused
  - Send
  - Receive
- Remote Box ID  
The Box ID for the remote storage system is displayed.  
If the copy path information is deleted after the REC Buffer creation, "???" is displayed. Note that REC Buffers with "???" cannot be used. Delete any REC Buffers with this status. Refer to "Modify REC Buffer" in "ETERNUS Web GUI User's Guide (Settings)" for details.  
A "-" (hyphen) is displayed when the usage is "Unused".
- Status  
The REC Buffer status is displayed.
  - ACTIVE  
REC Buffer can transfer data.
  - INACTIVE  
REC Buffer cannot transfer data.
- Mirror Status  
The mirroring status (redundancy status) of the REC Buffer is displayed. When the REC Buffer usage is "Unused", a "-" (hyphen) is displayed. The REC Buffer is duplicated by two CMs to prevent data loss when the ETERNUS DX/AF fails or when maintenance is performed.
  - Normal  
Duplication of the REC Buffer was successful.
  - Recovering  
Duplication of the REC Buffer failed.

- **Size**  
The REC Buffer size is displayed. When the REC Buffer usage is "Unused", a "-" (hyphen) is displayed.
  - ETERNUS DX100 S3  
128MB
  - ETERNUS DX200 S3  
128MB, 256MB, 512MB
  - ETERNUS DX500 S3/DX600 S3  
128MB, 256MB, 512MB, 1024MB, 2048MB
  - ETERNUS DX8100 S3/DX8700 S3/DX8900 S3  
128MB, 256MB, 512MB, 1024MB, 2048MB
  - ETERNUS AF250  
128MB, 256MB, 512MB
  - ETERNUS AF650  
128MB, 256MB, 512MB, 1024MB, 2048MB
  - ETERNUS DX200F  
128MB, 256MB, 512MB
- **Forwarding Interval**  
The data transfer interval is displayed. When the REC Buffer usage is "Unused", a "-" (hyphen) is displayed.
- **Monitoring Time**  
The monitoring time, before transition to the "Halt" state for a copy session when an REC Buffer shortage occurs, is displayed. When the monitoring time is "0 min.", the ETERNUS DX/AF is not being monitored. When the REC Buffer usage is "Unused", a "-" (hyphen) is displayed.
- **HALT Wait Timer**  
The maximum non-responding time is displayed. During the non-response time, the host I/O response is stopped to give priority to performing REC Buffer transfers in a high-load state. When the REC Buffer usage is "Unused", a "-" (hyphen) is displayed.
- **I/O Priority Mode**  
Whether the "I/O Priority Mode" is enabled or disabled is displayed. A "-" (hyphen) is displayed when the usage is "Unused".  
"I/O Priority Mode" reduces the effect on host I/O when an initial copy for starting, restarting, or recovering the copy function is performed.  
This item is available when logged in using a user account with the "Advanced Copy Management" policy.
- **Immediate HALT Mode**  
Whether the "Immediate HALT Mode" is enabled or disabled is displayed. A "-" (hyphen) is displayed when the usage is "Unused".  
"Immediate HALT Mode" reduces the effect on host I/O because the REC Buffer is insufficient when "HALT Wait Timer" is set to "0 sec.".  
This item is available when logged in using a user account with the "Advanced Copy Management" policy.
- **High Bandwidth Mode**  
Whether the "High Bandwidth Mode" is enabled or disabled is displayed. A "-" (hyphen) is displayed when the usage is "Unused".  
"High Bandwidth Mode" reduces the number of communications by transferring control data required for buffer transfers with as little time as possible to improve the transfer speed for long distance communication.  
This item is available when a user with the "Advanced Copy Management" policy is logged on an ETERNUS DX/AF with a controller firmware version V10L4x or later.

- **REC Disk Buffer Status**  
When the REC Buffer usage is "Send", the status of the REC Disk Buffers that are assigned to the REC Buffer is displayed. A "-" (hyphen) is displayed when the REC Disk Buffer is not allocated or the usage is "Receive" or "Unused".
  - Active  
All of the REC Disk Buffers in the REC Buffer are available.
  - Rebuilding  
Rebuild/copyback is being performed in some of the REC Disk Buffers.
  - Formatting  
Formatting is being performed in some of the REC Disk Buffers.
  - Not Supported  
The copy destination storage system for REC does not support the REC Disk Buffers.
  - Not Mirrored  
Some of the REC Disk Buffers have lost redundancy due to disk failure.
  - Error  
Some of the REC Disk Buffers cannot be used (due to RAID group failure or RAID group blockage).

If the "REC Disk Buffer Status" is "Formatting", "Not Supported", or "Error", all of the other REC Disk Buffers that belong to the same REC Buffer cannot be used.

- **REC Disk Buffer Total Capacity**  
When the usage is "Send", the total capacity of the REC Disk Buffer, which is assigned to the REC Buffer, is displayed. A "-" (hyphen) is displayed when the REC Disk Buffer is not assigned or when the usage is "Receive" or "Unused".
- **Total Storage Data Size**  
When the REC Buffer usage is "Send", the size of the data in the REC Disk Buffer that is assigned to the REC Buffer is displayed. A "-" (hyphen) is displayed when the REC Disk Buffer is not assigned or when the usage is "Receive" or "Unused".
- **Free Disk Buffer Size**  
When the usage is "Send", the unused capacity of the REC Disk Buffer, which is assigned to the REC Buffer, is displayed. A "-" (hyphen) is displayed when the REC Disk Buffer is not assigned or when the usage is "Receive" or "Unused".

## 8.7.4 REC Disk Buffer

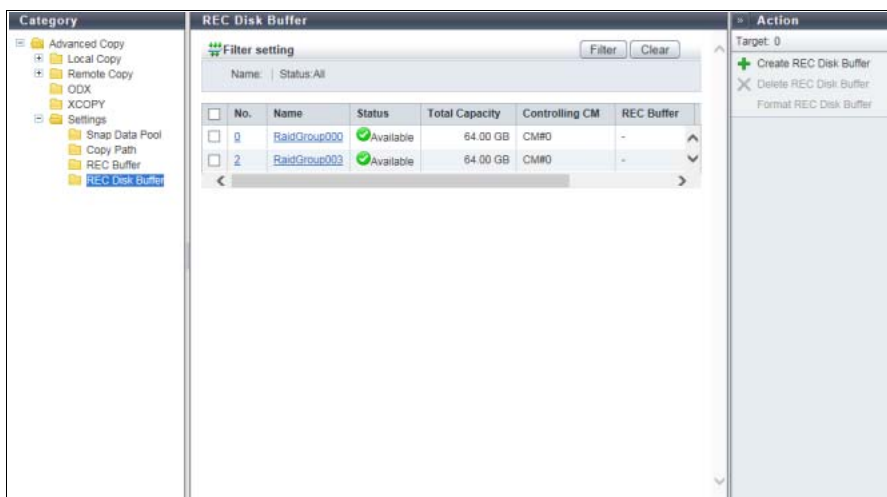
This function displays the existing REC Disk Buffers in the ETERNUS DX/AF.

### Caution

- The ETERNUS DX60 S3 does not support this function.
- Drives are not monitored for bad sectors when the drives configure the REC Disk Buffer.

### Note

This function is displayed only when the Advanced Copy function license has been registered, and when using an ETERNUS DX/AF model that supports REC.



The following items are displayed in the Main area:

### REC Disk Buffer List

- No.  
The RAID group number of the REC Disk Buffer is displayed. Click this item to display the [REC Disk Buffer Detail] screen.
- Name  
The REC Disk Buffer name is displayed. Click this item to display the [REC Disk Buffer Detail] screen.
- Status  
The REC Disk Buffer status is displayed. Refer to ["A.3 RAID Group Status" \(page 407\)](#) for details.
- Total Capacity  
The total capacity of the REC Disk Buffer is displayed.
- Controlling CM  
The Controlling CM of the REC Disk Buffer is displayed (x: CE number, y: CM number).
  - For the ETERNUS DX8700 S3/DX8900 S3  
CE#x CM#y
  - For the other models  
CM#y

- **REC Buffer**  
The management group number of the REC Buffer, to which the REC Disk Buffer is assigned, is displayed. A "-" (hyphen) is displayed for an REC Disk Buffer that is not assigned to any REC Buffers.
  - ETERNUS DX100 S3  
0
  - ETERNUS DX200 S3  
0 - 3
  - ETERNUS DX500 S3/DX600 S3  
0 - 7
  - ETERNUS DX8100 S3/DX8700 S3/DX8900 S3  
0 - 7
  - ETERNUS AF250  
0 - 3
  - ETERNUS AF650  
0 - 7
  - ETERNUS DX200F  
0 - 3
- **Encryption**  
The encryption status of the REC Disk Buffer is displayed.
  - CM  
An REC Disk Buffer that is encrypted by CM
  - "-" (hyphen)  
An REC Disk Buffer that is not encrypted (unencrypted volume)
  - SED  
An REC Disk Buffer that is encrypted by SED
- **Process**  
A process that is being performed for the REC Disk Buffer is displayed. If no process is being performed, a "-" (hyphen) is displayed.
  - Recovering  
Rebuild, copyback, redundant copy, or recovery of the RAID group is being performed.
  - Formatting  
Formatting is being performed.

#### Filter setting

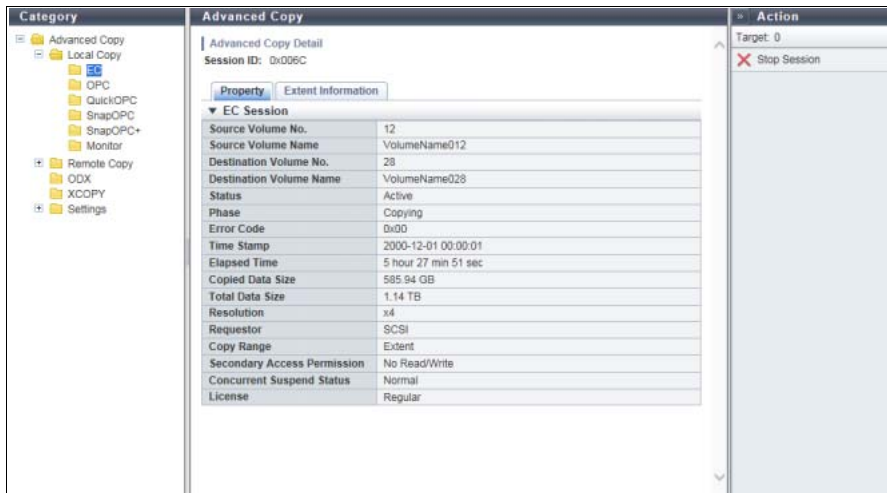
Filter	Description
Name	Input the REC Disk Buffer name that is to be displayed. REC Disk Buffers matching or partially matching the input name are displayed. When not using the REC Disk Buffer name for filtering, leave this item blank.
Status	Select the REC Disk Buffer status that is to be displayed. When not using the REC Disk Buffer status for filtering, select "All" (all REC Disk Buffers).



## 8.8 Advanced Copy (Property)

Detailed information (Property) about the Advanced Copy is displayed.

### ■ For Local Copy



The following items are displayed in the Main area:

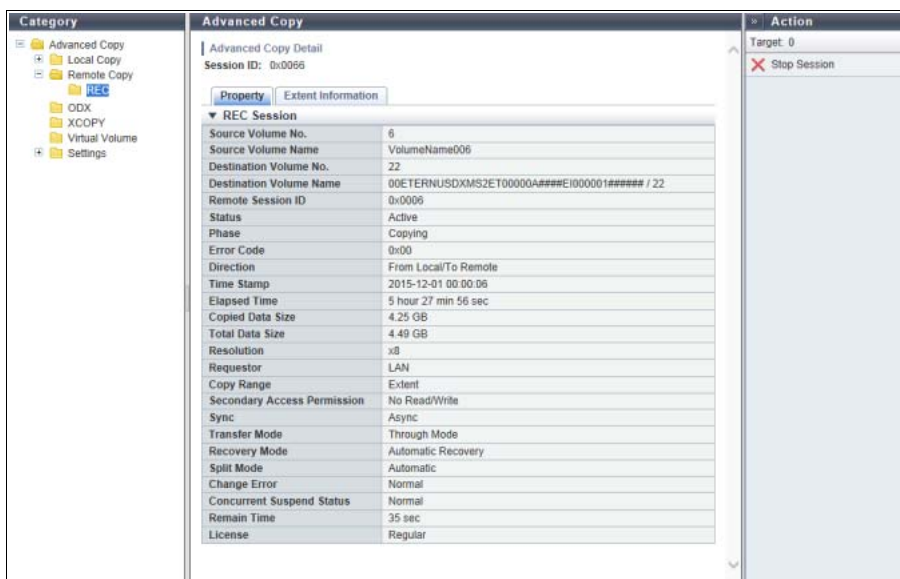
- Session ID  
The session ID selected in the [Local Copy] screen is displayed.
- Source Volume Name  
The copy source volume name is displayed. If the status is "✔ Reserved", a "-" (hyphen) is displayed.
- Destination Volume Name  
The copy destination volume name is displayed. When the "Status" is "✔ Reserved" or when the copy session type is "MON", a "-" (hyphen) is displayed.
- Copy Range  
The copy range of the copy session is displayed. If the status is "✔ Reserved", a "-" (hyphen) is displayed.
  - Totally  
Whole volume
  - Extent  
Part of volume
- Secondary Access Permission  
If the status is "✔ Active", accessibility from the host to the copy destination volume is displayed. This item is displayed in EC. If the status is "✔ Reserved", a "-" (hyphen) is displayed.
  - Read Only at Equivalency  
When the "Phase" is "Equivalent", only read access to the copy destination volume is allowed
  - No Read/Write  
No read/write access to the copy destination volume is allowed

- Concurrent Suspend Status  
When an instruction to collectively and tentatively separate multiple pairs of a copy source volume and a copy destination volume (Concurrent Suspend request) is received in EC session, transition status to "Suspend" is displayed. This item is displayed in EC. If the status is "🟢 Reserved", a "-" (hyphen) is displayed. If the Concurrent Suspend Status cannot be obtained, "Unknown" is displayed.
  - Normal  
Transition to the "Suspend" state is complete or Concurrent Suspend cannot be performed
  - Exec  
Transition to the "Suspend" state in progress
  - Error  
Transition to the "Suspend" state failed
  - Unknown  
A status other than the ones listed above

**Note**

Refer to ["8.2 Advanced Copy \(All Local Sessions\)" \(page 361\)](#) for the display items that are not described in this section.

■ For Remote Copy



The following items are displayed in the Main area:

- Session ID  
The session ID selected in the [Remote Copy] screen is displayed.
- Source Volume Name  
The following is displayed depending on the "Direction". If the status is "🟢 Reserved", a "-" (hyphen) is displayed.
  - When the "Direction" is "From Local/To Remote"  
The copy source volume name is displayed.
  - When the "Direction" is "From Remote/To Local"  
The "Remote Box ID / Copy source volume number" is displayed.

- Destination Volume Name  
The following is displayed depending on the "Direction". If the status is "✔ Reserved", a "-" (hyphen) is displayed.
  - When the "Direction" is "From Local/To Remote"  
The "Remote Box ID / Copy destination volume number" is displayed.
  - When the "Direction" is "From Remote/To Local"  
The copy destination volume name is displayed.
- Copy Range  
The copy range of the copy session is displayed. If the status is "✔ Reserved", a "-" (hyphen) is displayed.
  - Totally  
Whole volume
  - Extent  
Part of volume
- Secondary Access Permission  
If the status is "✔ Active", accessibility from the host to the copy destination volume is displayed. If the status is "✔ Reserved", a "-" (hyphen) is displayed.
  - Read Only at Equivalency  
When the "Phase" is "Equivalent", only read access to the copy destination volume is allowed
  - No Read/Write  
No read/write access to the copy destination volume is allowed
- Sync  
The operation mode of the copy session is displayed. If the status is "✔ Reserved", a "-" (hyphen) is displayed.
  - Sync (synchronous)
  - Async (asynchronous)
- Transfer Mode  
The transfer mode of the copy session is displayed. If the "Status" is "✔ Reserved", a "-" (hyphen) is displayed. If the "Sync" is "Sync", a "-" (hyphen) is displayed.
  - Stack Mode (Asynchronous Stack mode)
  - Consistency Mode (Asynchronous Consistency mode)
  - Through Mode (Asynchronous Through mode)
- Recovery Mode  
The recovery mode of the copy session is displayed. If the status is "✔ Reserved", a "-" (hyphen) is displayed.
  - Automatic Recovery  
In this mode, copy automatically resumes when the copy path is recovered from error status.
  - Manual Recovery  
In this mode, copy does not automatically resume when the copy path is recovered from error status.

- **Split Mode**  
The split mode of the copy session is displayed. This item is available only for sessions in REC synchronous mode. If the status is "✔ Reserved", a "-" (hyphen) is displayed. If the "Transfer Mode" is "Stack Mode" or "Consistency Mode", the field is blank.
  - Automatic  
In this mode, Write I/O access to the copy source volume is accepted when the copy path is in error status.
  - Manual  
In this mode, Write I/O access to the copy source volume is not accepted when the copy path is in error status. Specific sense data is sent to the host.
- **Change Error**  
The result of changing REC mode ("Transfer Mode", "Recovery Mode", or "Split Mode") and the result of REC reverse operation is displayed.  
When anything other than "Normal" is displayed, the operation mode may be different between the copy source and the copy destination storage systems, or REC reverse operation may be disabled due to restriction in other functions.  
If the status is "✔ Reserved", a "-" (hyphen) is displayed.
  - Normal  
REC mode change and REC reverse operation are working normally
  - Mode Change Error  
An error was detected while changing the REC mode change
  - Reverse Error  
An error was detected while the REC reverse operation was being performed
- **Concurrent Suspend Status**  
When an instruction to collectively and tentatively separate multiple pairs of a copy source volume and a copy destination volume (Concurrent Suspend request) is received in REC session, transition status to "Suspend" is displayed. If the status is "✔ Reserved", a "-" (hyphen) is displayed. If the Concurrent Suspend Status cannot be obtained, "Unknown" is displayed.
  - Normal  
Transition to the "Suspend" state is complete or Concurrent Suspend cannot be performed
  - Exec  
Transition to the "Suspend" state is in progress
  - Error  
Transition to the "Suspend" state failed
  - Unknown  
A status other than the ones listed above
- **Remain Time**  
The expected time to complete transition to the "Suspend" when a Concurrent Suspend request is received. If the "Status" is "✔ Reserved", or if the "Remain Time" cannot be obtained, a "-" (hyphen) is displayed.

 **Note**

Refer to "[8.3 Advanced Copy \(All Remote Sessions\)](#)" (page 369) for the display items that are not described in this section.

■ For ODX



The following items are displayed in the Main area:

- Session ID  
The session ID selected in the [ODX] screen is displayed.
- Source Volume Name  
The copy source volume name is displayed. If the "Status" is "🟢 Reserved", a "-" (hyphen) is displayed.
- Destination Volume Name  
The copy destination volume name is displayed. If the "Status" is "🟢 Reserved", a "-" (hyphen) is displayed.

**Note**

Refer to "[8.4 ODX Sessions](#)" (page 374) for the display items that are not described in this section.

■ For XCOPY



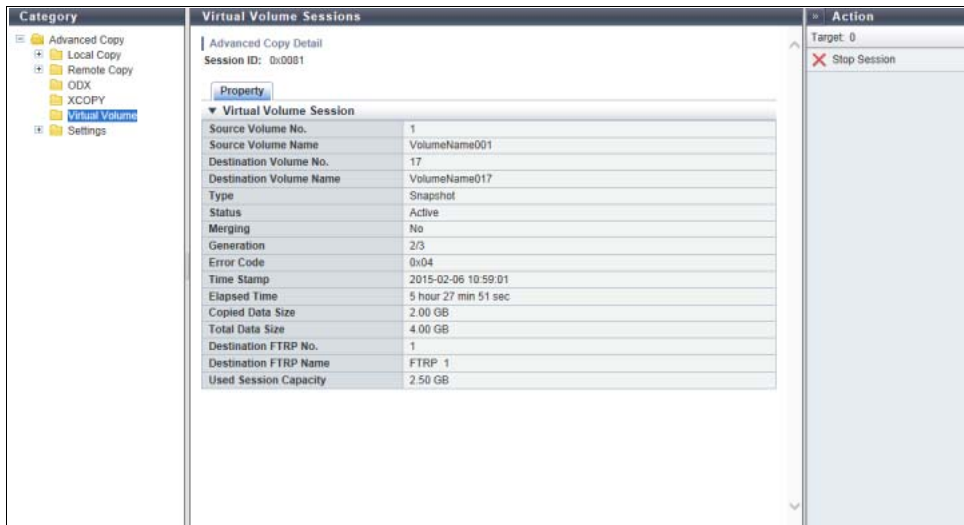
The following items are displayed in the Main area:

- Session ID  
The session ID selected in the [XCOPY] screen is displayed.
- Source Volume Name  
The copy source volume name is displayed. If the "Status" is "🟢 Reserved", a "-" (hyphen) is displayed.
- Destination Volume Name  
The copy destination volume name is displayed. If the "Status" is "🟢 Reserved", a "-" (hyphen) is displayed.

**Note**

Refer to ["8.5 XCOPY Sessions" \(page 376\)](#) for the display items that are not described in this section.

■ For Virtual Volume



The following items are displayed in the Main area:

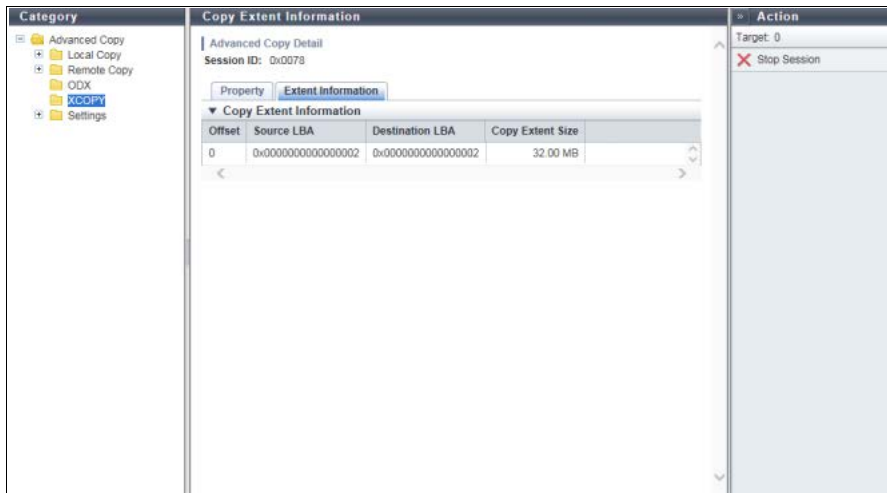
- Session ID  
The session ID selected in the [Virtual Volume] screen is displayed.
- Source Volume Name  
The copy source volume name is displayed. If the "Status" is "🟢 Reserved", a "-" (hyphen) is displayed.
- Destination Volume Name  
The copy destination volume name is displayed. If the "Status" is "🟢 Reserved", a "-" (hyphen) is displayed.
- Destination FTRP Name  
The FTRP name to which the copy destination FTV belongs is displayed. If the "Status" is "🟢 Reserved", a "-" (hyphen) is displayed. If the copy session type is not "Snapshot" or "Fastclone", this item is not displayed.

**Note**

Refer to ["8.6 Virtual Volume Sessions" \(page 378\)](#) for the display items that are not described in this section.

## 8.9 Advanced Copy (Extent information)

Detailed information (Extent information) about the Advanced Copy is displayed. This screen is available only when the "Copy Range" is "Extent".



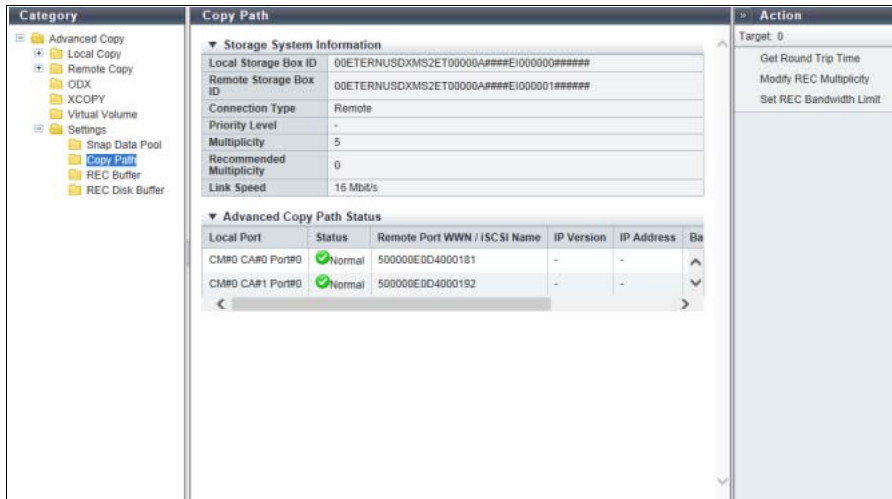
The following items are displayed in the Main area:

- Offset  
The array number of extent information is displayed.
- Source LBA  
The copy source start Logical Block Address (LBA) of copy with range specification is displayed.
- Destination LBA  
The copy destination start LBA of copy with range specification is displayed.
- Copy Extent Size  
The data amount for copy with range specification is displayed.



## 8.10 Copy Path Detail

Detailed information of copy path is displayed.





The following items are displayed in the Main area:

- Storage System Information
  - Local Storage System Box ID  
The Box ID of the local storage system is displayed.
  - Remote Storage System Box ID  
The Box ID of the selected remote storage system is displayed.
  - Connection Type  
The connection type between the local storage system and the selected remote storage system is displayed.
    - Direct
    - Remote
  - Priority Level  
When the local storage system and the selected remote storage system are connected by direct connection, the priority level is displayed. If the "Connection Type" is "Remote", a "-" (hyphen) is displayed.
  - Multiplicity  
When the local storage system and the selected remote storage system are connected by remote connection, the multiplicity is displayed. If the "Connection Type" is "Direct", a "-" (hyphen) is displayed.
  - Recommended Multiplicity  
When the local storage system and the selected remote storage system are connected by remote connection, the recommended multiplicity is displayed. If the "Connection Type" is "Direct", a "-" (hyphen) is displayed.
  - Link Speed  
When the local storage system and the selected remote storage system are connected by remote connection, the link speed is displayed. If the "Connection Type" is "Direct", a "-" (hyphen) is displayed.

- **Advanced Copy Path Status**
  - **Local Port**

The port information of the local storage system is displayed.
  - **Status**

The port path status between the local and remote storage systems is displayed with an icon and a character string.

    -  Normal  
The copy path is in the normal state.
    -  Error  
The copy path is in the error state.
  - **Remote Port WWN/iSCSI Name**

The port WWN or iSCSI name of the remote storage system is displayed.
  - **IP Version**

When the port type is iSCSI, the IP version for the destination iSCSI port of the copy path is displayed.  
A "-" (hyphen) is displayed when the port type is FC.

    - IPv4
    - IPv6 (Link Local)
    - IPv6 (Connect IP)
    - "-" (hyphen)
  - **IP Address**

When the port type is iSCSI, the IP address for the destination iSCSI port of the copy path is displayed.  
The display format varies according to the IP version.  
A "-" (hyphen) is displayed when the port type is FC.

    - For IPv4 address
      - xxx.xxx.xxx.xxx  
xxx: 0 - 255 (decimal)
    - For IPv6 address
      - xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx  
xxxx: 0 - ffff (hexadecimal, "a" - "f" are lowercase letters)  
Refer to ["IPv6 Address Notation" \(page 253\)](#) for details.
  - **Bandwidth Limit**

The bandwidth limit for sending data from the local storage system to the path is displayed.

    - Unlimited
    - 1 - 65535 Mbit/s

- Detail Information

Detailed information about the copy path is displayed.

If an error occurs in the copy path, the error details or location is displayed using the following abbreviations. If there are multiple error locations, multiple abbreviations are displayed.

- Connectable  
The copy path is in the normal state.
- Path Unstable  
The copy path between the local storage system and remote storage system is in unstable status. For example, link-down repeatedly occurs in a certain period of time or communication fails.
- Bitmap Resolution Mismatched  
The resolution settings are different between the local and remote storage systems.
- Suspected Spot (D)  
The copy path settings may be invalid.
- Suspected Spot (N)  
The error occurs in the remote storage system.
- Suspected Spot (T)  
The error occurs in the FC-RA port or iSCSI-RA port on the remote storage system.
- Suspected Spot (C)  
The error occurs in the cable.
- Suspected Spot (O)  
The error occurs in an adapter that is not for a local or a remote storage system. This occurs only when the connection type is FC-AL.
- Suspected Spot (S)  
The error occurs in the switch or switch settings.
- Suspected Spot (I)  
The error occurs in the FC-RA port or iSCSI-RA port on the local storage system.
- Suspected Spot (M)  
The error occurs in the memory.






# Appendix A

## Status List

The status of the ETERNUS DX/AF, volumes, RAID groups, Thin Provisioning Pools, components, an SED authentication key (hereinafter, referred to as "key"), and key servers that are displayed in the operation screens is described below.

### A.1 Storage System General Status



















The general status of the ETERNUS DX/AF is displayed as an icon with character strings. A "Normal (green)" general status icon indicates normal status, while other color images indicate a failure. The meaning of each general status icon is described below.

Device general status	Description
 (Green)	The ETERNUS DX/AF is in the normal state.
 (Orange)	The ETERNUS DX/AF is under maintenance.
 (Yellow)	The ETERNUS DX/AF is in the warning state.
 (Red)	The ETERNUS DX/AF is in the failed status.
 (Red)	"Not Ready" is a status where an abnormality is detected at a power-off, and I/O access from the host cannot be received.

## A.1.1 Storage System General Status (Detail)
















The general status of the ETERNUS DX/AF (detail) is displayed with an icon and character string, or only character string.

The meaning of ETERNUS DX/AF general status (detail) is described below.

Device general status (detail)	Device general status	Description
 Normal	 (Green)	The ETERNUS DX/AF is in the normal state.
 Maintenance	 (Orange)	Components that are undergoing maintenance exist in the ETERNUS DX/AF. Rebuild or copyback is being performed.
 Change Controlling CM	 (Orange)	Changing of the Controlling CM is required.
 Pinned Data	 (Yellow)	Pinned data is detected.
 Warning	 (Yellow)	A component requires preventive maintenance. A bad sector is detected.
 Error	 (Red)	A component has an error.
 Not Ready (*)	 (Red)	A failure is detected when starting or turning off the ETERNUS DX/AF. I/O from the host cannot be received normally. *: The number, which indicates the factor of being "Not Ready", is displayed.
 Subsystem Down	 (Red)	The ETERNUS DX/AF is in failed status. I/O from the host cannot be received normally.
 Unknown	 (Red)	A status other than the ones listed above.

















## A.2 Volume Status






Volume status is displayed with an icon and the status name. The volume status is described below.

Status	Description
 Available	The volume is operating normally.
 Spare in Use	The RAID group to which the volume belongs manages redundancy by using the hot spare.
 Readyng	The volume is not formatted.
 Rebuild	Rebuilding from a failed data drive to the hot spare or to the replaced drive is being performed in the RAID group to which the volume belongs.
 Copyback	Copyback from the hot spare to the new data drive is being performed in the RAID group to which the volume belongs.
 Redundant Copy	Redundant copy to the hot spare is being performed in the RAID group to which the volume belongs.
 Partially Exposed Rebuild	Rebuilding from the first failed data drive to the hot spare or to the replaced drive is being performed in the RAID group to which the volume belongs. This status is displayed only when the RAID level of the RAID group to which the volume belongs is "High Reliability (RAID6)" or "High Reliability (RAID6-FR)".
 Exposed Rebuild	Two of the data drives for the RAID group to which the volume belongs have failed. Rebuilding from the first failed data drive to the hot spare or to the replaced drive is being performed. In addition, all the hot spares have already been used. As a result, the second failed data drive is waiting for the hot spare to become available. This status is displayed only when the type of the RAID group to which the volume belongs is "High Reliability (RAID6)" or "High Reliability (RAID6-FR)".
 Exposed	The RAID group to which the volume belongs lost redundancy due to drive failure.
 Partially Exposed	One of the drives that configures the RAID group to which the volume belongs has failed. This status is displayed only when the type of the RAID group to which the volume belongs is "High Reliability (RAID6)" or "High Reliability (RAID6-FR)".
 Not Available	The volume cannot be used.
 Not Ready	The RAID group to which the volume belongs is blocked.
 Broken	The volume is broken.
 Data Lost	Data in the volume is lost. Reading or writing of data cannot be performed.
 Unknown	A status other than the ones listed above.

## A.3 RAID Group Status

RAID group status is displayed with an icon and the status name. The RAID group status is described below.










Status	Description
 Available	The RAID group is operating normally.
 Spare in Use	Rebuilding to the hot spare is complete. The RAID group manages redundancy by using the hot spare.
 Spare in Use (Fast)	Rebuilding to the Fast Recovery hot spare is complete. The RAID group manages redundancy by using the Fast Recovery hot spare. This status is displayed only when the RAID level is "High Reliability (RAID6-FR)".
 Readyng	The RAID group that is registered as an REC Disk Buffer is not formatted. This status is displayed only for a RAID group that is registered as an REC Disk Buffer.
 Rebuild	Rebuilding from a failed data drive to the hot spare or to the replaced drive is being performed in the RAID group.
 Copyback	Copyback from the hot spare to the new data drive is being performed in the RAID group.
 Copyback (Fast)	Copyback from the Fast Recovery hot spare (*1) to the new data drive for the RAID group is being performed. This status is displayed only when the RAID level is "High Reliability (RAID6-FR)". *1: Hot spare area that is distributed in the Fast Recovery RAID group.
 Redundant Copy	Redundant copy to the hot spare is being performed in the RAID group.
 Partially Exposed Rebuild	Rebuilding from the first failed data drive to the hot spare or to the replaced drive is being performed in the RAID group. This status is displayed only when the RAID level is "High Reliability (RAID6)".
 Partially Exposed Rebuild (Fast)	Rebuilding from the first failed data drive to the Fast Recovery hot spare is being performed in the RAID group. This status is displayed only when the RAID level is "High Reliability (RAID6-FR)".
 Exposed Rebuild	Two of the data drives for the RAID group have failed. Rebuilding from the first failed data drive to the hot spare or to the replaced drive is being performed. In addition, all the hot spares have already been used. As a result, the second failed data drive is waiting for the hot spare to become available. This status is displayed only when the RAID level is "High Reliability (RAID6)".
 Exposed Rebuild (Fast)	Two of the data drives for the RAID group have failed. Rebuilding from the first failed data drive to the Fast Recovery hot spare is being performed. In addition, all the hot spares have already been used. As a result, the second failed data drive is waiting for the hot spare to become available. This status is displayed only when the RAID level is "High Reliability (RAID6-FR)".
 Exposed	The RAID group lost redundancy due to drive failure.
 Exposed (Fast)	The RAID group lost redundancy due to drive failure. The RAID group uses the Fast Recovery hot spare. This status is displayed only when the RAID level is "High Reliability (RAID6-FR)".
 Partially Exposed	One of the drives that configures the RAID group has failed. This status is displayed only when the RAID level is "High Reliability (RAID6)".
 Partially Exposed (Fast)	One of the drives that configures the RAID group has failed. The RAID group uses the Fast Recovery hot spare. This status is displayed only when the RAID level is "High Reliability (RAID6-FR)".

Status	Description
 No Disk Path	The RAID group is blocked.
 SED Locked	The RAID group is blocked. If an SED authentication key cannot be obtained from the key server, "SED Locked" is displayed.
 Broken	The RAID group is broken.
 Broken (Fast)	The RAID group is broken. The RAID group uses the Fast Recovery hot spare. This status is displayed only when the RAID level is "High Reliability (RAID6-FR)".
 Unknown	A status other than the ones listed above.



## A.4 Thin Provisioning Pool Status







Thin Provisioning Pool (TPP) status is displayed with an icon and the status name. The TPP status is described below.

Status	Description
 Available	The TPP is operating normally.
 Maintenance	Forcible recovery of the TPP is being performed.
 Readyng	All the physical allocation area in the TPP is not formatted.
 Partially Readyng	Some parts of the physical allocation area in the TPP is not formatted.
 Exposed	The TPP is available. The "Exposed" state of the TPP is displayed not only when the RAID group that configures the TPP has lost redundancy and is in the "Exposed" state, but also when the RAID group maintains redundancy in the "Spare in Use" state. The "Exposed" state of TPP indicates that the RAID group in the TPP is not in the normal state because of any causes such as the drive failure.
 Blockade	The TPP is blocked.
 Broken	The TPP is broken.
 Data Lost	Data in the TPP is lost. Reading or writing of data cannot be performed.
 Unknown	A status other than the ones listed above.











## A.5 Component Status

This section explains the component status.

The status of the components is displayed with an icon for each storage system image in the view screen.












Status	Description
	The component is operating normally.
	The component is installed, but not used.
	The component is under maintenance.
	The component requires preventive maintenance.
	An error has occurred in the component.
	A status other than the ones listed above.

In the list screen and the detailed information screen, the status of the components is displayed with an icon and the status name.

Status	Description
 Normal	The component is operating normally.
 Unconnected	A faulty component exists in the ETERNUS DX/AF.
 Undefined	The component is installed, but not used.
 Undefined (Error)	The component, which is not being used, is in the error state.
 Normal (Unused parts inside)	There is an unused component that is installed in the ETERNUS DX/AF.
 Check1	The component is being rebooted.
 Maintenance	The component is under maintenance.
 Warning	The component requires preventive maintenance.
 Error	An error has occurred in the component.
 Unknown	A status other than the ones listed above.

## A.5.1 Drive Status

Drive status is displayed with an icon and the status name. The drive status is described below.

Status	Description
 Available	The drive is in the normal state. The drive is used in the RAID group.
 Spare	The drive is an unused hot spare.
 Present	The drive is not used (not registered as a RAID group or hot spare), or is waiting for rebuild/copy back.
 Readyng	The drive is starting up.
 Rebuild/Copyback	Rebuild or copy back is being performed in the drive.
 Redundant Copy	A Redundant copy is being performed in the drive.
 Not Supported	The drive is not supported. [Example] Drive capacity is insufficient.
 Not Exist	The drive cannot be recognized.
 Failed Usable	An error involving RAID group failure has occurred in the drive.
 Broken	An error has occurred in the drive.
 Unknown	A status other than the ones listed above.

## A.6 Key Status

Key status is displayed with the status name. The key status is described below.

Status	Description
Normal	A valid key is registered for the SEDs. The key is in the normal state.
Unregistered Server Certificate	The "SSL / KMIP Certificate" (key server certification) is not registered in the ETERNUS DX/AF. Communication between the ETERNUS DX/AF and the key server cannot be performed.
Expired Server Certificate	The "SSL / KMIP Certificate" (key server certification) has expired. Communication between the ETERNUS DX/AF and the key server cannot be performed.
No SSL Certificate	An SSL certificate (*1) for the ETERNUS DX/AF has not been created. Communication between the ETERNUS DX/AF and the key server cannot be performed.
Network Error	The key cannot be obtained due to a network error between the ETERNUS DX/AF and the key server.
Not Acquired	The required key for starting key server management is not obtained. The allocation of the Master server and the Slave server to the key group has been deleted.
Expiration	An expired key is registered in the SED. The key has expired, but a new key can be obtained from the server.
Key Server Error	The network between the ETERNUS DX/AF and the key server is in the normal state, but no SED key is stored in the key server.
Modifying	A RAID group in which the key is being modified exists in the key group. "RAID group of which key is modifying" indicates the following conditions: <ul style="list-style-type: none"> <li>• The key is being updated manually from ETERNUS Web GUI or ETERNUS CLI</li> <li>• The key is automatically being updated because it expired</li> <li>• Updating of the key stopped due to an error</li> <li>• SEDs are maintained while a network error occurs when the security level is "Low"</li> </ul>

\*1: "Self-signed SSL certificate" or "SSL server certificate"

## A.7 Key Server Status

Key server status is displayed with the status name. The key server status is described below.

Status	Description
Normal	The communication between the ETERNUS DX/AF and the key server is normal. The key can be obtained successfully. The key server is in the normal state.
Setting	"Setting" indicates the following conditions: <ul style="list-style-type: none"><li>• The "SSL / KMIP Certificate" (key server certification) or SSL certificate (*1) is not registered.</li><li>• The network between the ETERNUS DX/AF and the key server is normal, but connection to the key server is forbidden.</li></ul>
Network Error	The network between the ETERNUS DX/AF and the key server is not connected normally.
Key Acquisition Failure	The key that is requested from the ETERNUS DX/AF does not exist in the key server.
Key Server Error	An error due to a failure other than key acquisition failure is detected.
Internal Error	Communication to the key server could not be performed due to an internal failure of the ETERNUS DX/AF.

\*1: "Self-signed SSL certificate" or "SSL server certificate"

# Appendix B

## Error Code

The error codes for copy sessions are described below.

Error code	Description
0x10 – 0x1F	An error that is caused by a copy source volume occurs. Some copy source volumes cannot be accessed because a failure has occurred in a component (e.g. drives and drive enclosures).
0x20 – 0x2F	An error that is caused by a copy destination volume occurs. Some copy destination volumes cannot be accessed because a failure has occurred in a component (e.g. drives and drive enclosures).
0x30 – 0x3F	An error that is caused by a copy path occurs or an REC Buffer Halt occurs. The error location (Suspected Spot) is displayed in the "Detail Information" field on the [Copy Path] screen. Refer to <a href="#">"8.7.2 Copy Path" (page 385)</a> for details.
0xB1	This copy session stopped due to an error that has occurred in the cascade source session while the cascade copy was being specified.
0xBA	A bad sector is detected.
0xBB	SDV/SDP capacity is insufficient.
0xBD	Overload status is detected in a copy destination volume or a copy destination storage system.
0xBE	A copy path error occurs. Data is stored in the REC Buffer. This error is displayed only when the "Type" is "REC".
0xBF	A copy path error occurs. Data is stored in the REC Disk Buffer. This error is displayed only when the "Type" is "REC".
Other than above	An error other than the ones listed above occurs.

# Appendix C

## Setting Procedures for Replacing HBAs

This appendix describes how to replace a Host Bus Adapter (HBA) in the ETERNUS DX.

When management software such as ETERNUS SF Storage Cruiser is used, use the management software for migrating the current access path settings instead of the procedure that is provided in this manual.

One of the following connection statuses is used between a host and an ETERNUS DX. Note that the required procedures depend on the connection status.

- When the host affinity settings are used
- When the host affinity settings are not used (when conventional LUN mapping is used)

### C.1 Advance Preparation

Before starting the operation, check the following information.

- The WWN of the current HBA
- The host name corresponds to the WWN of the current HBA
- The WWN of the new HBA

## C.2 Overview of the Procedure

The workflow for replacing an HBA is as follows. Perform the following procedure.

- (1) Check the connection status between the host and the ETERNUS DX/AF.  
Refer to ["C.3 Checking the Connection Status Between the Host and the ETERNUS DX/AF" \(page 417\)](#) for details.
- (2) Replaces the HBA in the host and connects the host and the ETERNUS DX/AF.  
This operation must be performed by a maintenance engineer.
- (3) Perform the system settings according to the connection status that was checked in Step (1).
  - When the host affinity settings are used  
Settings for the ETERNUS DX/AF are required. Refer to ["C.4 Required Storage System Settings After HBA Replacement \(When Host Affinity Settings are Used\)" \(page 418\)](#) for details.
  - When the host affinity settings are not used (conventional LUN mapping is used)  
Settings for the ETERNUS DX/AF are not required. This ends the replacement procedure for an HBA.

The following procedure is an example when a FC interface is used between the host and the ETERNUS DX/AF. The same procedure can basically be used even when the interface type is iSCSI or FCoE.

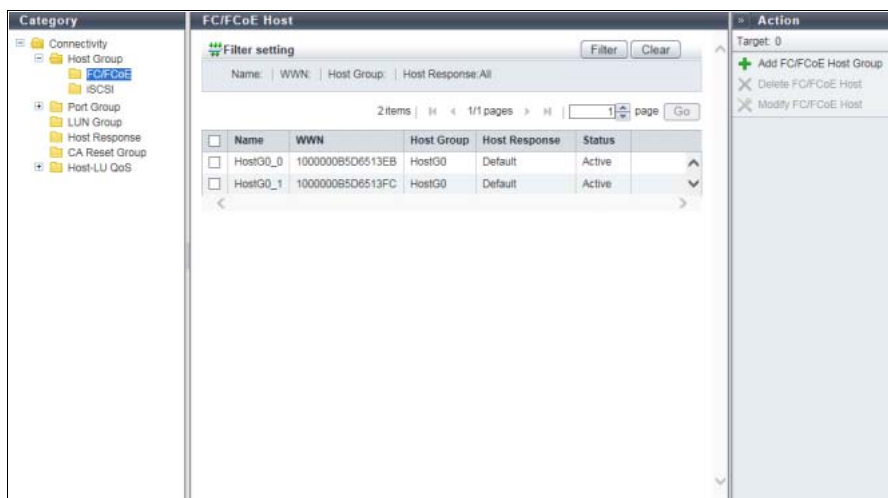


## C.3 Checking the Connection Status Between the Host and the ETERNUS DX/AF

Perform the following procedure to check the connection status between the host and the ETERNUS DX/AF.

### Procedure

- 1 Click [Connectivity] in the navigation.
- 2 Click [FC/FCoE] in the category.



→ The [FC/FCoE Host] screen appears.

- 3 Check the connection status between the relevant host and the ETERNUS DX/AF in the "Status" field.
  - When the host affinity settings are used
    - "Active" is displayed as the status. Proceed to ["C.4 Required Storage System Settings After HBA Replacement \(When Host Affinity Settings are Used\)"](#) (page 418)
  - When the host affinity settings are not used (conventional LUN mapping is used)
    - "Inactive" is displayed as the status. In this case, settings after replacing the HBA are not required. The replacement of the HBA is complete.

End of procedure

## C.4 Required Storage System Settings After HBA Replacement (When Host Affinity Settings are Used)

In this section, the setting procedure for an ETERNUS DX/AF that uses host affinity settings is provided.

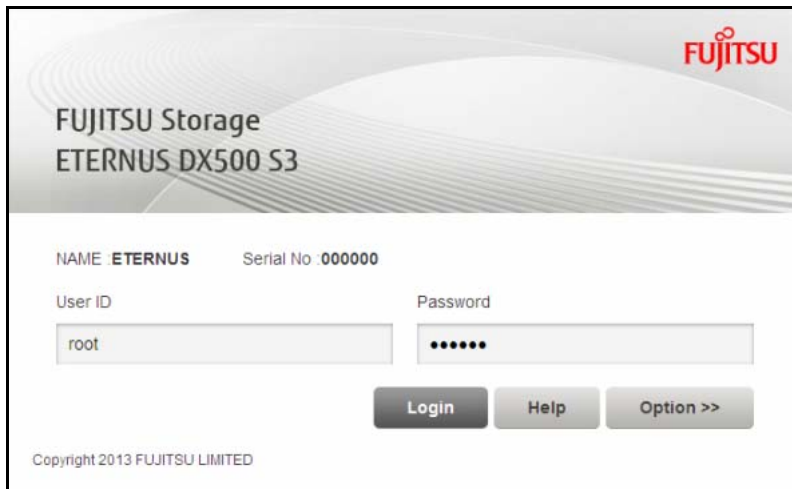
### Caution

- When management software such as ETERNUS SF Storage Cruiser is used, use the management software for migrating the current access path settings instead of the procedure that is provided in this manual (manual setting).
- To set WWN zoning by using the switch, make sure to change the zoning settings in advance.

The procedure for storage system settings when the host affinity is used is as follows.  
Change the WWN of the HBA that is to be replaced to the WWN of the new HBA.

### Procedure

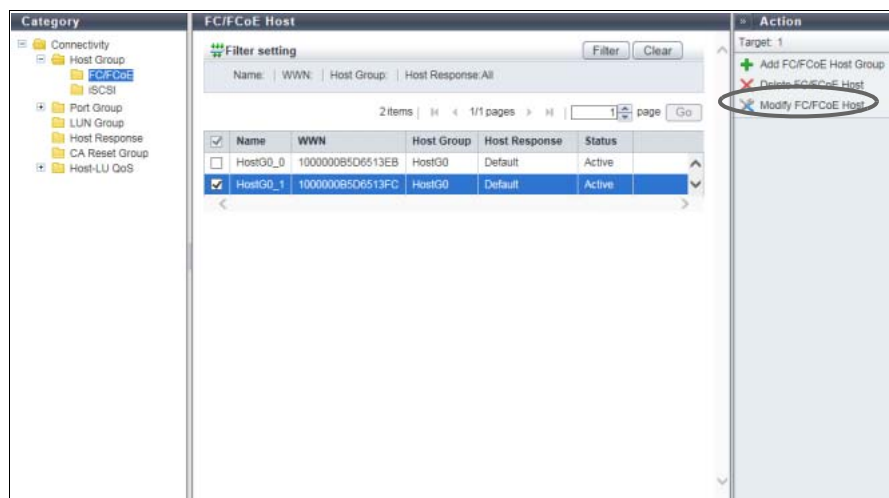
- 1 Input "User ID" and "Password" in the browser and log in to ETERNUS Web GUI.



The screenshot shows the ETERNUS Web GUI login interface. At the top right is the Fujitsu logo. The main header reads "FUJITSU Storage ETERNUS DX500 S3". Below this, the system name "NAME ETERNUS" and serial number "Serial No 000000" are displayed. The login section contains two input fields: "User ID" with the text "root" and "Password" with masked characters. Below the input fields are three buttons: "Login", "Help", and "Option >>". At the bottom left of the page, the text "Copyright 2013 FUJITSU LIMITED" is visible.

## 2 Change the WWN of the HBA that is to be replaced to the WWN of the new HBA.

- 2-1** Click [Connectivity] in the navigation.  
→ The [Connectivity] screen appears.
- 2-2** Click [FC/FCoE] in the category.  
→ The [FC/FCoE Host] screen appears.
- 2-3** Select the checkbox of the WWN for the HBA that is to be replaced (in this example, "1000000B5D6513FC" is selected).
- 2-4** Click [Modify FC/FCoE Host] in [Action].

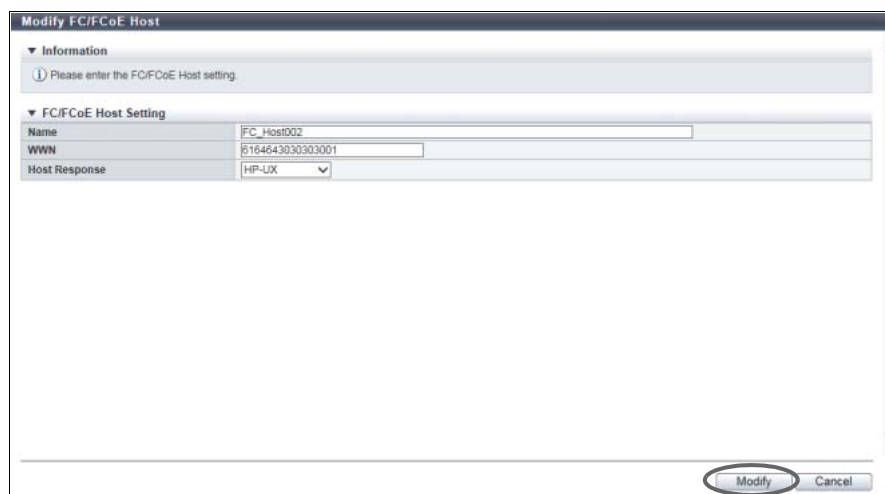


→ The [Modify FC/FCoE Host] screen appears.

- 2-5** Change the WWN of the HBA that is to be replaced to the WWN of the new HBA, and click the [Modify] button.

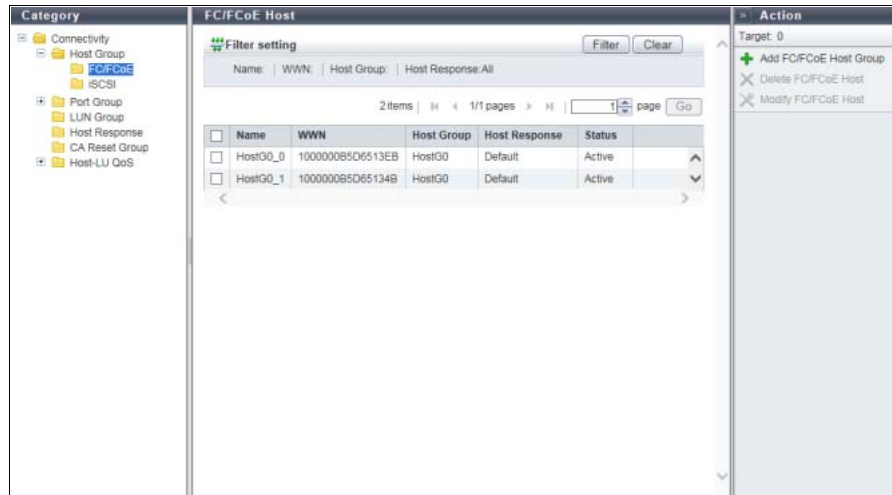
### Caution

Do not change the "Name".



→ A confirmation screen appears.

- 2-6** Click the [OK] button.  
→ Changing of the FC host starts.
- 2-7** Click the [Done] button to return to the [FC/FCoE Host] screen.
- 2-8** Confirm that the WWN is successfully changed.



**End of procedure**

This ends the host affinity setting for replacing an HBA.

Recover the multipath configuration from the host.

After recovering the multipath configuration, confirm that the ETERNUS DX/AF can be accessed from the host.

**Caution**

If the WWN is changed by the [Modify FC/FCoE Host] function, changing the host affinity setting is not required.

## C.5 Required Storage System Settings After HBA Replacement (When Host Affinity Settings are not Used)

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When the host affinity function is not used (conventional LUN mapping is used), changing the storage system settings after replacing an HBA is not required.

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ETERNUS Web GUI User's Guide (Operation)  
FUJITSU Storage ETERNUS DX60 S3/DX100 S3/DX200 S3,  
ETERNUS DX500 S3/DX600 S3,  
ETERNUS DX8100 S3/DX8700 S3/DX8900 S3  
Disk Storage Systems,  
ETERNUS AF250/AF650, ETERNUS DX200F  
All-Flash Arrays

P2X0-1260-19ENZ0

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