FUJITSU Storage
ETERNUS SF
Express V16.9A / Storage Cruiser V16.9A / AdvancedCopy Manager V16.9A

Release Notes

Preface

Purpose of This Manual

This manual describes the update information of the following products:

- ETERNUS SF Express (hereafter abbreviated as "Express")

- ETERNUS SF Storage Cruiser (hereafter abbreviated as "Storage Cruiser")

- ETERNUS SF AdvancedCopy Manager (hereafter abbreviated as "AdvancedCopy Manager")

Intended Readers

This manual is intended for users who plan or perform the upgrade to this version from a previous version of these software products, or who perform the upgrade process (mainly for system administrators).

Structure of This Manual

The structure of this manual is as follows.

Chapter 1 Overview of New Functions

This chapter describes the overview of new functions and improved functions provided in this version.

Chapter 2 Compatibility Information

This chapter describes the contents changed from the previous version.

Chapter 3 Upgrade Information

This chapter describes the possibility of an upgrade from previous versions and notes for when combining different versions.

Chapter 4 Program Fix List

This chapter describes the overview of applied fixes in this version.

Conventions

- "FUJITSU Storage" and "Fujitsu Storage" are omitted from the names of the products and manuals.

- This manual abides by the conventions listed in "Conventions" in the *ETERNUS SF Express / Storage Cruiser / AdvancedCopy Manager Documentation Road Map*.

Export Controls

Exportation/release of this document may require necessary procedures in accordance with the regulations of your resident country and/or US export control laws.

Trademarks

- Microsoft, Windows, Windows Server, Internet Explorer, and Microsoft Edge are trademarks or registered trademarks of Microsoft Corporation in the United States and other countries.

- UNIX is a registered trademark of The Open Group in the United States and other countries.

- Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

- Linux is a registered trademark of Linus Torvalds.

- Red Hat and RPM are registered trademarks of Red Hat, Inc. in the U.S. and other countries.

- Novell is a registered trademark of Novell Inc., and SUSE and the SUSE logo is a trademark, of SUSE LLC, in the United States and other countries.

- HP-UX is a trademark of Hewlett-Packard Company in the United States and other countries.

- AIX is a trademark or a registered trademark of International Business Machines Corporation in the United States and other countries.

- VMware, VMware logo, Virtual SMP, and vMotion are the registered trademarks or trademarks of VMware, Inc. in the United States and other countries.

- All other brand and product names are trademarks or registered trademarks of their respective owners.

Revision History

Date of Publication	Revision	Document Part Number	
		PDF	HTML
September 2023	11	B1FW-5998-11ENZ0(00)	B1FW-5998-11ENZ2(00)
February 2023	10.4	B1FW-5998-10ENZ0(04)	B1FW-5998-10ENZ2(04)
May 2022	10.3	B1FW-5998-10ENZ0(03)	B1FW-5998-10ENZ2(03)
November 2021	10.2	B1FW-5998-10ENZ0(02)	B1FW-5998-10ENZ2(02)
October 2021	10.1	B1FW-5998-10ENZ0(01)	B1FW-5998-10ENZ2(01)
August 2021	10	B1FW-5998-10ENZ0(00)	B1FW-5998-10ENZ2(00)
October 2020	9.4	B1FW-5998-09ENZ0(04)	B1FW-5998-09ENZ2(04)
July 2020	9.3	B1FW-5998-09ENZ0(03)	B1FW-5998-09ENZ2(03)
March 2020	9.2	B1FW-5998-09ENZ0(02)	B1FW-5998-09ENZ2(02)
January 2020	9.1	B1FW-5998-09ENZ0(01)	B1FW-5998-09ENZ2(01)
November 2019	9	B1FW-5998-09ENZ0(00)	B1FW-5998-09ENZ2(00)
April 2019	8.1	B1FW-5998-08ENZ0(01)	B1FW-5998-08ENZ2(01)
December 2018	8	B1FW-5998-08ENZ0(00)	B1FW-5998-08ENZ2(00)
December 2017	7	B1FW-5998-07ENZ0(00)	B1FW-5998-07ENZ2(00)
May 2017	6	B1FW-5998-06ENZ0(00)	B1FW-5998-06ENZ2(00)
October 2016	5	B1FW-5998-05ENZ0(00)	B1FW-5998-05ENZ2(00)
June 2016	4.4	B1FW-5998-04ENZ0(04)	B1FW-5998-04ENZ2(04)
April 2016	4.3	B1FW-5998-04ENZ0(03)	B1FW-5998-04ENZ2(03)
February 2016	4.2	B1FW-5998-04ENZ0(02)	B1FW-5998-04ENZ2(02)
December 2015	4.1	B1FW-5998-04ENZ0(01)	B1FW-5998-04ENZ2(01)
October 2015	4	B1FW-5998-04ENZ0(00)	B1FW-5998-04ENZ2(00)
July 2015	3.2	B1FW-5998-03ENZ0(02)	B1FW-5998-03ENZ2(02)
March 2015	3.1	B1FW-5998-03ENZ0(01)	B1FW-5998-03ENZ2(01)
January 2015	3	B1FW-5998-03ENZ0(00)	B1FW-5998-03ENZ2(00)
July 2014	2.1	B1FW-5998-02ENZ0(01)	B1FW-5998-02ENZ2(01)
June 2014	2	B1FW-5998-02ENZ0(00)	B1FW-5998-02ENZ2(00)
May 2014	1.1	B1FW-5998-01ENZ0(01)	B1FW-5998-01ENZ2(01)
December 2013	1	B1FW-5998-01ENZ0(00)	B1FW-5998-01ENZ2(00)

Notes

Update History

Content of Update	Updated Section	Revision
The version information has been changed to 16.9A.	Cover page	11
The overview of new function that is supported with this version has been described. In addition, [Point] has been deleted.	1.1.1.4	
The program bugs fixed with this version have been described.	Chapter 4	
The overview of new function that is supported with this version has been described.	1.1.1.4, 1.1.3.1.3, 1.1.3.1.4, 1.1.4.2, 1.1.4.3	10.4
The overview of new function that is supported with this version has been described.	1.1.1.4	10.3
[Note] has been added.	1.1.3.1.1	
The overview of new function that is supported with this version has been described.	1.1.3.2.2	10.2
The overview of new functions that are supported with this version has been described.	1.1.2.1, 1.1.3.1.2	10.1
Information related to the following storage devices has been added. - ETERNUS DX S4/S3 series (excluding the ETERNUS DX8900 S4), ETERNUS AF S2 series, AF series, or ETERNUS DX200F that has firmware version V10L90-1000 or later	1.1.3.2.1, 2.3.56	
The overview of new functions that are supported with this version has been described.	Chapter 1	10
Incompatible information has been described.	2.3.55, 2.3.56, 2.5.24	
The title of the section has been changed.	2.5.10	
An annotation has been added in the figure "Possibility of Combining Manager Programs and Agent Programs".	3.2	
A new section has been added.	3.3	
The program bugs fixed with this version have been described.	Chapter 4	
The overview of new functions that are supported with this version has been described.	1.1.1.1, 1.1.1.2, 1.1.1.4, 1.1.2.2, 1.1.2.3, 1.1.3.1.2, 1.1.3.1.4	9.4
[Note] has been deleted.	1.1.1.2	
The overview of new functions that are supported with this version has been described.	1.1.1.4, 1.1.1.5, 1.1.3.1.1, 1.1.4.3	9.3
The overview of new functions that are supported with this version has been described.	1.1.1.3, 1.1.3.1.3	9.2
[Point] has been added.	1.1.2.1, 1.1.3.1.1, 1.1.4.1	9.1
The explanation has been modified.	1.1.2.2, 1.1.3.1.2	
The description for Conventions has been changed so that the *ETERNUS SF Express / Storage Cruiser / AdvancedCopy Manager Documentation Road Map* is referenced.	"Conventions" in Preface	9
The "Manual Organization and Reading Suggestions" section has been deleted from Preface.	Preface	

Content of Update	Updated Section	Revision
The description about new functions and modified functions with this version has been added.	Chapter 1	
The order of the chapters has been changed.	Chapter 2 and 3	
Incompatible information has been described.	2.2.1 - 2.2.3, 2.3.10 - 2.3.13, 2.4.6 - 2.4.10	
The titles for the chapter and sections have been changed.	Chapter 3	
Information indicating that version 14.x cannot be upgraded to this version has been added.	3.1	
Information indicating that this version is incompatible with version 13.x or 14.x has been added.	3.2	
The program bugs fixed with this version have been described.	Chapter 4	
Information related to Microsoft Windows Server 2019 has been added.	"Notation" and "Others" in Preface	8.1
The overview of new functions that are supported with this version has been described.	1.1.2, 1.2.1, 1.3.1.1, 1.3.1.2	
Information related to the ETERNUS DX8900 S4 has been added.	"Notation" in Preface	8
The overview of new functions that are supported with this version has been described.	Chapter 1	
Incompatible information has been described.	3.5.23	
The program bugs fixed with this version have been described.	Chapter 4	
Information related to Solaris 9 has been deleted.	"Notation" in Preface	7
Information related to the ETERNUS DX500 S4/DX600 S4 has been added.	"Notation" in Preface	
Information related to the ETERNUS AF250 S2/AF650 S2 has been added.	"Notation" in Preface	
The overview of new functions that are supported with this version has been described.	Chapter 1	
Incompatible information has been described.	3.1.2, 3.1.3, 3.3.11, 3.4.7	
The program bugs fixed with this version have been described.	Chapter 4	
Information related to Microsoft Windows Server 2016 has been added.	"Notation" and "Others" in Preface	6
Information related to Windows Vista has been deleted.	"Notation" in Preface	
Information related to SUSE Linux Enterprise Server 11 has been deleted and information related to SUSE Linux Enterprise Server 12 for AMD64 & Intel64 has been added.	"Notation" in Preface	
Information related to the ETERNUS DX60 S4/DX100 S4/DX200 S4 has been added.	"Notation" in Preface	
The overview of new functions that are supported with this version has been described.	Chapter 1	
A new chapter has been added.	Chapter 2	
Incompatible information has been described.	3.3.11, 3.3.52, 3.4.7, 3.4.35	
The reference destination related to the combination of the manager program and the agent program has been changed.	3.3.13, 3.4.9	
The program bugs fixed with this version have been described.	Chapter 4	

Content of Update	Updated Section	Revision
Information related to HP-UX 11i v1/v2 has been deleted.	"Notation" in Preface	5
Information related to VMware vSphere 4 has been deleted.	"Notation" in Preface	
Information related to the ETERNUS DX80/DX90 has been deleted.	"Notation" in Preface	
Information related to the ETERNUS AF250/AF650 has been added.	"Notation" and "Others" in Preface	
The overview of new functions that are supported with this version has been described.	Chapter 1	
Incompatible information has been described.	2.2.1, 2.2.2, 2.3.10 - 2.3.12, 2.3.51, 2.4.6 - 2.4.8, 2.4.10, 2.5.22	
The program bugs fixed with this version have been described.	Chapter 3	
The overview of new features has been described.	1.2.3, 1.3.4, 1.5.1	4.4
The overview of new features has been described.	1.2.1, 1.3.2, 1.3.5, 1.4.2	4.3
The overview of new features has been described.	1.1.2	4.2
The overview of new features has been described.	1.2.1, 1.2.3, 1.3.2, 1.3.4	4.1
The description of the inter-box backup of a NAS volume has been added.	1.5.1	
Incompatible information has been described.	2.5.21	
Information related to Microsoft Windows Server 2003 has been deleted.	"Notation" in Preface	4
Information related to Windows 10 has been added.	"Notation" in Preface	
The overview of new features supported with this version has been described.	Chapter 1	
Incompatible information has been modified.	2.2.18, 2.3.11, 2.3.49, 2.3.50, 2.4.7, 2.5.18 - 2.5.20	
The program bugs fixed with this version have been described.	Chapter 3	
Information related to the ETERNUS DX8700 S3/DX8900 S3 has been added.	"Notation" in Preface, 1.3.2, 1.4.1, 1.7.2	3.2
Information related to the NetApp FAS Series and V-Series has been added.	"Notation" in Preface, 1.3.2	
The term "VMware Virtual Volumes" has been changed to "VMware vSphere Virtual Volumes" according to the terms used by VMware, Inc.	Throughout this manual	3.1
Information related to VMware vSphere(R) 6 has been added.	"Notation" in Preface	
Incompatible information has been modified.	2.3.46	
Information related to the ETERNUS DX200F has been modified or added.	"Others" in Preface, 2.5.15	3
The overview of new features supported with this version has been described.	Chapter 1	
Incompatible information has been modified.	2.3.7, 2.3.21, 2.3.23, 2.4.24, 2.4.34, 2.5.5	
Information that Red Hat(R) Enterprise Linux(R) AS v.4 and Red Hat(R) Enterprise Linux(R) ES v.4 are no longer supported has been described.	2.3.11, 2.4.7	
The incompatible information from previous version has been described.	2.2.16 - 2.2.18, 2.3.42 - 2.3.49, 2.5.17	

Content of Update	Updated Section	Revision
The program bugs fixed with this version have been described.	Chapter 3	
Incompatible information has been modified.	2.4.34	2.1
The overview of new features supported with this version has been described.	Chapter 1	2
The incompatible information from previous version has been described.	2.2.4, 2.2.15, 2.3.33, 2.3.34, 2.3.36 - 2.3.41, 2.4.10, 2.4.26 - 2.4.34, 2.5.14 - 2.5.16	
The program bugs fixed with this version have been described.	Chapter 3	
Information related to the ETERNUS DX200F has been added.	"Others" in Preface, 1.1.2, 1.2.3	1.1

Contents

Chapter 1 Overview of New Functions

1.1 New Functions in Version 16.9

1.1.1 New Functions of Common for All Products

1.1.1.1 Improved Capacity Chart Display of Thin Provisioning Pools in Web Console

From version 16.9, even if the warning threshold and the caution threshold are not set, the capacity chart of the Thin Provisioning Pools is displayed.

1.1.1.2 Improved Remote Advanced Copy Settings for the Wizard

From version 16.9, even if the measurement of the round trip time fails while the wizard is operating the settings, the REC path settings performed by the wizard are reflected.
Note that the round trip time can be measured separately after the operation with the wizard is completed.

Information

In Versions 16.8 or earlier, if the measurement of the round trip time fails while the wizard is operating the settings, the REC path settings performed by the wizard are not reflected.

1.1.1.3 Disabling the TLS 1.0/TLS 1.1 Protocols by Default

To enhance the security, among the communication protocols used to connect to the Management Server from a browser, TLS 1.0 and TLS 1.1 are disabled by default.

See

Refer to "Notes Related to Communication Protocols When Accessing the Management Server" in the *Web Console Guide* for details.

1.1.1.4 Support of New Operation Systems

Operation with the following operating systems is supported from version 16.9:

- Microsoft Windows Server 2022

- Red Hat Enterprise Linux 9 (for Intel64)

Operation possibilities of each product are as follows.

OS Type	Express	Storage Cruiser		AdvancedCopy Manager		
		Manager	Agent	Manager	Agent	Advanced Copy Manager Copy Control Module
Microsoft Windows Server 2022	A	A	A	A	A	A
Red Hat Enterprise Linux 9 (for Intel64)	A (*1)	A (*1)	A	A (*1)	A	A (*1)

A=Available, N/A=Not Available

*1: Requires Red Hat Enterprise Linux 9 (for Intel64) UpdateRelease2 or later.

📒 Note
··

- If a Microsoft Windows Server 2022 server is installed with the Storage Cruiser's agent and/or AdvancedCopy Manager's agent is registered to the software, the following character strings are displayed as the OS name of the server information on Web Console.

    - Servers with Storage Cruiser's agent only: "Windows Server 2019"

    - Servers with AdvancedCopy Manager's agent only: "Windows"

    - Servers with Storage Cruiser's agent and AdvancedCopy Manager's agent: "Windows Server 2019"

- When the server information of the Management Server and Managed Server, which are running Microsoft Windows Server 2022, is displayed by executing the "stgxfwcmdispsrv" command of AdvancedCopy Manager, "Windows Server" is displayed in the **OS-Type** column.

··

📚 See
··

Refer to the following sections in the *Installation and Setup Guide* for the operating systems that are supported by Express, Storage Cruiser, and AdvancedCopy Manager.

- "Operating Environment of ETERNUS SF Manager"

- "Operating Environment of Storage Cruiser's Agent"

- "Operating Environment of AdvancedCopy Manager's Agent"

- "Operating Environment of AdvancedCopy Manager CCM"

··

1.1.2　New Functions of Express

1.1.2.1　Compatibility with New Functions of ETERNUS Disk Storage Systems

The following functions that have been added to the specific storage devices can be executed from Express:

- Whether data access failures in the RAID group during redundancy loss are displayed

- Whether access failures to the disks that configure a RAID group are displayed

📘 Point
··

To use this function, the firmware version of the target storage device must be upgraded as shown below. In addition, the Program Urgent Fix that supports the firmware version must be applied to the manager program of this software.

Storage Devices	Required Firmware Version
ETERNUS DX60 S5/DX100 S5/DX200 S5 ETERNUS AF150 S3/AF250 S3	V11L50-1000 or later
ETERNUS DX60 S4/DX100 S4/DX200 S4 ETERNUS DX60 S3/DX100 S3/DX200 S3 ETERNUS AF250 S2/AF250 ETERNUS DX200F	V10L90-1000 or later

··

1.1.3 New Functions of Storage Cruiser

1.1.3.1 New Functions Available With Standard License

1.1.3.1.1 Displaying the OS Information of Microsoft Windows Server 2019 and Microsoft Windows Server 2016

From version 16.9, if Microsoft Windows Server 2019 or Microsoft Windows Server 2016 where Storage Cruiser's agent is installed is registered in this software, the OS levels and OS names on Web Console are displayed as follows.

OS Type	Items to be Displayed on Web Console	Displayed Strings
Microsoft Windows Server 2019	OS Level	10.0
	OS Name	Windows Server 2019
Microsoft Windows Server 2016	OS Level	10.0
	OS Name	Windows Server 2016

🔖 **See**
. . . .
For the displayed contents of the OS levels and OS names in version 16.8 or earlier, refer to "2.3.55 OS Information Displayed for Microsoft Windows Server 2019 and Microsoft Windows Server 2016".
. . . .

🅿 **Point**
. . . .
If the Microsoft Windows Server 2019 or the Microsoft Windows Server 2016 that is installed with Storage Cruiser's agent whose version is 16.8 or earlier is already registered in this software, Storage Cruiser's agent must be upgraded to version 16.9 and the **Reload Conf.** operation must be performed for the relevant server in Web Console to display the OS level and OS name of that server as described in the table above.
. . . .

🈂 **Note**
. . . .
The OS name "Windows Server 2019" of the server information displayed on Web Console is also displayed when a Microsoft Windows Server 2022 server installed with the Storage Cruiser's agent version 16.9 is registered in this software.
. . . .

1.1.3.1.2 Compatibility with New Functions of ETERNUS Disk Storage Systems

The following functions that have been added to the specific storage devices can be executed from Storage Cruiser:

- Whether data access failures in the RAID group during redundancy loss are displayed

- Whether access failures to the disks that configure a RAID group are displayed

🅿 **Point**
. . . .
To use this function, the firmware version of the target storage device must be upgraded as shown below. In addition, the Program Urgent Fix that supports the firmware version must be applied to the manager program of this software.

Storage Devices	Required Firmware Version
ETERNUS DX S5 series ETERNUS DX8900 S4 ETERNUS AF S3 series	V11L50-1000 or later
ETERNUS DX S4/S3 series (excluding the ETERNUS DX8900 S4) ETERNUS AF S2 series ETERNUS AF series ETERNUS DX200F	V10L90-1000 or later

1.1.3.1.3 Support of New Devices

The following device can be used from version 16.9.

- VMware vSphere 8

    The following function can be used with this device. The support level is "C".

    - Fault monitoring (monitoring polling with VMware dedicated protocol, and obtaining the device status)

Refer to "Support Levels" in the *Storage Cruiser Operation Guide* for details.
Refer to the *Event Guide* for information on the event traps notified from the device.

P Point

To manage VMware vSphere 8, the Program Urgent Fix that supports VMware vSphere 7.0 Update 2 must be applied to the manager program of this software.

1.1.3.1.4 Enhanced Features for VMware vSphere Virtual Volumes Environments

The following devices can be used in a VMware vSphere Virtual Volumes environment from version 16.9.

- VMware vSphere 8

- VMware vCenter Server Appliance 8

Refer to the *Storage Cruiser / AdvancedCopy Manager Operation Guide for VMware vSphere Virtual Volumes* for details.

P Point

To use the above devices in a VMware vSphere Virtual Volumes environment, the Program Urgent Fix that supports VMware vSphere 7.0 Update 2 must be applied to the manager program of this software.

1.1.3.2 New Functions Available With Storage Cluster Option License

1.1.3.2.1 Enhanced Features for Improved Maintainability

- Failover(Maintenance state only)/Failback(Maintenance state only) function of advanced operations

    When the TFO group phase is "Maintenance", a failover and a failback can be performed manually.

Note

Because this function is used for maintenance of the Storage Cluster operating environment, do not use it unless instructed by your maintenance engineer.

To use this function, the firmware version of the target storage device must be upgraded as shown below.

Storage Devices	Required Firmware Version
ETERNUS DX S5 series ETERNUS DX8900 S4 ETERNUS AF S3 series	V11L40-5000 or later
ETERNUS DX S4/S3 series (excluding the ETERNUS DX8900 S4) ETERNUS AF S2 series ETERNUS AF series ETERNUS DX200F	V10L90-1000 or later

- Warning dialog improvement

  The warning dialogs displayed when the following operations are performed for TFO groups have been improved.

Operation	Details of Improvement
Changing the settings of a TFO group	A warning dialog is displayed.
Deleting a TFO group	The messages in the warning dialogs have been changed.
Manual failover and manual failback	

1.1.3.2.2 Compatibility with New Functions of ETERNUS Disk Storage Systems

The following function that has been added to the ETERNUS DX S4 series (excluding the ETERNUS DX8900 S4) and the ETERNUS AF S2 series that have firmware version V10L90-2000 or later can be executed from Storage Cruiser:

- Supporting Storage Cluster settings in Veeam environments

1.1.4 New Functions of AdvancedCopy Manager

1.1.4.1 Support of SQL Server 2019

From version 16.9, backup operations for SQL Server databases of SQL Server 2019 are available.

See

Refer to "Backup and Restore of SQL Server Database" in the *AdvancedCopy Manager Operation Guide (for Windows)* for information on the backup operation for SQL Server databases.

1.1.4.2 Enhanced Features for VMware Virtual Machine Automatic Backup/ Restore (Script)

In an environment that uses the AdvancedCopy Manager Copy Control Module, VMware script operations that use the following software are supported.

- VMware vSphere(ESXi) 8.0

- VMware vCenter Server 8.0

- VMware vSphere PowerCLI 12.7

Refer to "Operating Conditions" under the chapter "VMware Virtual Machine Automatic Backup/Restore (Script)" in the *AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

1.1.4.3   Enhanced Features for VMware vSphere Virtual Volumes Environments

The following devices can be used in a VMware vSphere Virtual Volumes environment from version 16.9.

- VMware vSphere 8

- VMware vCenter Server Appliance 8

Refer to the *Storage Cruiser / AdvancedCopy Manager Operation Guide for VMware vSphere Virtual Volumes* for details.

📘 Point
....

To use the above devices in a VMware vSphere Virtual Volumes environment, the Program Urgent Fix that supports VMware vSphere 7.0 Update 2 must be applied to the manager program of this software.
....

1.2   New Functions in Version 16.8

1.2.1   New Functions of Common for All Products

1.2.1.1   Support of New Operation Systems

Operation with the following operating systems is supported from version 16.8:

- Red Hat(R) Enterprise Linux(R) 8 (for Intel64)

- SUSE(R) Linux Enterprise Server 15 for AMD64 & Intel64

- SUSE(R) Linux Enterprise Server 12 Service Pack 4 for AMD64 & Intel64

Operation possibilities of each product are as follows.

OS Type	Express	Storage Cruiser		AdvancedCopy Manager		
		Manager	Agent	Manager	Agent	Advanced Copy Manager Copy Control Module
Red Hat Enterprise Linux 8 (for Intel64)	A	A	A	A	A	A
SUSE Linux Enterprise Server 15 for AMD64 & Intel64	N/A	N/A	A	N/A	A	A
SUSE Linux Enterprise Server 12 Service Pack 4 for AMD64 & Intel64	N/A	N/A	A	N/A	A	A

A=Available, N/A=Not Available

📚 See
....

Refer to the following sections in the *Installation and Setup Guide* for the operating systems that are supported by Express, Storage Cruiser, and AdvancedCopy Manager:

- Operating Environment of ETERNUS SF Manager

- Operating Environment of Storage Cruiser's Agent

- Operating Environment of AdvancedCopy Manager's Agent

- Operating Environment of AdvancedCopy Manager CCM

P Point
....

To use the following functions in an operation environment where the Management Server OS is Red Hat Enterprise Linux 8, the Program Urgent Fix that supports operation of the ETERNUS SF SNMP Trap monitoring daemon on the Red Hat Enterprise Linux 8 server must be applied to the manager program of this software.

- When using Express

    - Device monitoring using the SNMPv3 protocol

- When using Storage Cruiser

    - Device monitoring using the SNMPv3 protocol

    - SNMP Trap monitoring with an IPv6 address

    - Device monitoring for the ETERNUS AB/HB series
....

1.2.1.2 Support of New Performance Screen in Web Console

From version 16.8, in addition to the conventional performance screen, you can use a new performance screen to monitor the performance information of storage devices and Fibre Channel switches. By configuring the new performance screen to display graphs of frequently referenced performance information during operation, you can easily check the performance information at any time.

The new performance screen has the following advantages compared to the conventional performance screen.

- The performance information that is displayed can be set individually for each user.

- Multiple panels can be displayed on one screen, with a maximum of five graphs in each panel. By using multiple panels, more performance information can be displayed compared to conventional performance graphs (when using Storage Cruiser).

ℹ Information
....

- On the conventional performance screen, up to 10 graphs can be displayed in the Performance Chart window.

- When many performance graphs are displayed at the same time on the conventional performance screen, differentiating between graphs may become difficult. The new performance screen solves this problem. For example, when displaying eight performance graphs at the same time, differentiating between the graphs is easy because there are four panels (two horizontal and two vertical) with two graphs displayed in each panel.
....

- By switching between tabs, you can quickly and easily display multiple performance graphs (when using Storage Cruiser).

- The time range of performance data to display can be changed freely, just by dragging the mouse.

- When the current time is included in the display period, the performance graphs displayed on the screen are automatically updated.

- The display settings are carried over to the next login session and are not deleted even if you log out from Web Console. It is not necessary to reconfigure the display settings every time you login, so you can restart performance monitoring immediately using the display settings of the previous session.

See
....

Refer to the following sections in the *Web Console Guide* for information on the new performance screen and how to operate it.

- "Performance" in "Web Console Screen Layout"

- "Operations for Performance"

⋯⋯

🅿 Point
⋯⋯

- The conventional performance screen can still be used for conventional operational methods and procedures for performance monitoring.
The conventional performance screen and the new performance screen can also be used together by changing part of the conventional methods and procedures.

- To monitor the performance information of Fibre Channel switches on the new performance screen, the Program Urgent Fix that provides support for the function must be applied to the manager program of this software.

⋯⋯

1.2.1.3   Added a Detail View Shortcut Menu in Web Console

Added a shortcut menu to each screen of Detail View in the Dashboard tab. The following features are available by using this shortcut to switch screens.

- The target screen can be displayed quickly simply by selecting the menu from the drop-down list.

- The target screen can be displayed in a new browser tab and by switching between the browser tabs, the Detail View screen and Dashboard can be operated.
If Internet Explorer or Firefox is used, the target screen can also be displayed in a new browser window. Therefore, both the Detail View screen and Dashboard can be displayed simultaneously and each screen can be operated by switching between the browser windows.

📖 See
⋯⋯

For details on the above function, refer to "Shortcut to Detail View" in the "Web Console Screen Layout" chapter of the *Web Console Guide*.

⋯⋯

🅿 Point
⋯⋯

To use the above function, the Program Urgent Fix that provides support for the function must be applied to the manager program of this software.

⋯⋯

1.2.1.4   Simplification of the Storage Cluster Settings in Web Console

From version 16.8, a menu has been provided so that business volume allocations can be set for the Primary Storage and Secondary Storage from a single screen. Because of this, an operation environment to use the Storage Cluster function can be configured with fewer screen operations than before. Refer to "Storage Cluster Function" in the *Storage Cruiser Operation Guide*.

🅿 Point
⋯⋯

To use the above function, the Program Urgent Fix that provides support for the function must be applied to the manager program of this software.

⋯⋯

1.2.1.5   Specification of Any Name to ETERNUS SF Role Group

From version 16.8, any name can be specified for an ETERNUS SF role group that is created in the domain controller (Active Directory) or in the Management Server.

··

For details on the above function, refer to "Creating User Accounts for Operating from Web Console" and "Customizing Role Group Configuration File" in the *Installation and Setup Guide*.
··

 Point
··

To use the above function, the Program Urgent Fix that provides support for the function must be applied to the manager program of this software.
··

1.2.1.6 Universal Specification to Scope of ETERNUS SF Role Group

From version 16.8, Universal can be specified for the scope of an ETERNUS SF role group that is created in the domain controller (Active Directory).

 See
··

For details on the above function, refer to "Creating User Accounts for Operating from Web Console" and "Customizing Role Group Configuration File" in the *Installation and Setup Guide*.
··

 Point
··

To use the above function, the Program Urgent Fix that provides support for the function must be applied to the manager program of this software.
··

1.2.2 New Functions of Express

1.2.2.1 Support of New Devices

The ETERNUS DX60 S5/DX100 S5/DX200 S5, ETERNUS AF150 S3/AF250 S3 can be used from version 16.8.
Refer to the *Event Guide* for information on the event traps notified from the device.

 Point
··

To manage the above storage devices, the Program Urgent Fix that makes them available must be applied to the manager program of this software.
··

1.2.2.2 Compatibility with New Functions of ETERNUS Disk Storage Systems

The following functions that have been added to the ETERNUS DX60 S5 can be executed from Express:

- Expanding the maximum capacity of the Thin Provisioning Pool to 2 PB

- Managing the FC-CA board that responds to a 16 Gbps port transfer speed

The following functions that have been added to the ETERNUS DX100 S5/DX200 S5, ETERNUS AF150 S3/AF250 S3 can be executed from Express:

- Setting and displaying the Deduplication/Compression of the Thin Provisioning Pool

- Expanding the maximum capacity of the Thin Provisioning Pool and Tier Pool to the following capacity

Storage Device Name	Maximum Capacity of Thin Provisioning Pool and Tier Pool
ETERNUS DX100 S5	4 PB

Storage Device Name	Maximum Capacity of Thin Provisioning Pool and Tier Pool
ETERNUS DX200 S5	6 PB
ETERNUS AF150 S3	4 PB
ETERNUS AF250 S3	6 PB

- Displaying the Deduplication/Compression performance information of the Thin Provisioning Volume

- Changing the line speed of the REC path (if at least one of the REC connection storage devices is the ETERNUS DX100 S5/DX200 S5, ETERNUS AF150 S3/AF250 S3)

The following functions added to the ETERNUS DX200 S5 and ETERNUS AF250 S3 whose firmware version is V11L40 or later can be operated from Express.

- Displaying the GC remaining size of Thin Provisioning Pools enabled with Deduplication or Compression

- Displaying the alarm status of Thin Provisioning Pools enabled with Deduplication or Compression

- Displaying the alarm status of Container Volumes

- Improving the Unaligned I/O rate of the performance information to the effective value

🅿 Point
. . . .

To use the functions added to the ETERNUS DX200 S5 and ETERNUS AF250 S3 whose firmware version is V11L40 or later, the Program Urgent Fix that supports the firmware version must be applied to the manager program of this software.
. . . .

1.2.2.3　Displaying the Volume Capacity in Units of Megabytes

From version 16.8, the volume capacity of the storage device can be displayed in units of megabytes.

🅿 Point
. . . .

To use the above function, the Program Urgent Fix that provides support for the function must be applied to the manager program of this software.
. . . .

1.2.3　New Functions of Storage Cruiser

1.2.3.1　New Functions Available With Standard License

1.2.3.1.1　Support of New Devices

The following device can be used from version 16.8.

- ETERNUS DX S5 series, ETERNUS AF S3 series

    The following functions can be used with this device. The support level is "A".

    - Fault monitoring (receiving and analyzing SNMP Traps, monitoring polling with SNMP, and obtaining the device status)

    - Linkage through management window

    - Performance management

- ETERNUS AX/HX series, ETERNUS AB/HB series

    The following function can be used with this device. The support level is "E".

    - Fault monitoring (receiving and analyzing SNMP Traps, monitoring polling with ping)

- Linkage through management window

- VMware vSphere 7

  The following function can be used with this device. The support level is "C".

  - Fault monitoring (monitoring polling with VMware dedicated protocol, and obtaining the device status)

Refer to "Support Levels" in the *Storage Cruiser Operation Guide* for details.
Refer to the *Event Guide* for information on the event traps notified from the device.

P Point
· ·

- To manage the following storage devices, the Program Urgent Fix that makes their storage devices available must be applied to the manager program of this software.

  - ETERNUS DX60 S5/DX100 S5/DX200 S5, DX900 S5, ETERNUS AF150 S3/AF250 S3

  - ETERNUS AX/HX series, ETERNUS AB/HB series

- To manage VMware vSphere 7, the Program Urgent Fix that makes its server node available must be applied to the manager program of this software.

· ·

1.2.3.1.2 Compatibility with New Functions of ETERNUS Disk Storage Systems

The following functions that have been added to the ETERNUS DX60 S5 can be executed from Storage Cruiser:

- Expanding the maximum capacity of the Thin Provisioning Pool to 2 PB

- Managing the FC-CA board that responds to a 16 Gbps port transfer speed

The following functions that have been added to the ETERNUS DX S5 series (excluding the ETERNUS DX60 S5) and the ETERNUS AF S3 series can be executed from Storage Cruiser:

- Setting, releasing, or displaying Extreme Cache (for the ETERNUS DX500 S5/DX600 S5/DX900 S5 only)

- Setting and displaying the Deduplication/Compression of the Thin Provisioning Pool (excluding the ETERNUS DX900 S5)

- Setting and displaying the Compression of the Thin Provisioning Pool (for the ETERNUS DX900 S5 only)

- Expanding the maximum capacity of the Thin Provisioning Pool and Tier Pool to the following capacity

Storage Device Name	Maximum Capacity of Thin Provisioning Pool and Tier Pool
ETERNUS DX100 S5	4 PB
ETERNUS DX200 S5	6 PB
ETERNUS DX500 S5	16 PB
ETERNUS DX600 S5	24 PB
ETERNUS DX900 S5	128 PB
ETERNUS AF150 S3	4 PB
ETERNUS AF250 S3	6 PB
ETERNUS AF650 S3	24 PB

- Displaying the Deduplication/Compression performance information of the Thin Provisioning Volume (excluding the ETERNUS DX900 S5)

- Displaying the Compression performance information of the Thin Provisioning Volume (for the ETERNUS DX900 S5 only)

- Changing the line speed of the REC path (if at least one of the REC connection storage devices is the ETERNUS DX100 S5/DX200 S5, DX500 S5/DX600 S5/DX900 S5, the ETERNUS AF150 S3/AF250 S3, AF650 S3)

The following functions added to the ETERNUS DX S5 series (excluding the ETERNUS DX60 S5 and ETERNUS DX100 S5), ETERNUS DX8900 S4, and ETERNUS AF S3 series (excluding the ETERNUS AF150 S3) whose firmware version is V11L40 or later can be operated from Storage Cruiser.

- Displaying the GC remaining size of Thin Provisioning Pools enabled with Deduplication or Compression

- Displaying the alarm status of Thin Provisioning Pools enabled with Deduplication or Compression

- Displaying the alarm status of Container Volumes

- Improving the Unaligned I/O rate of the performance information to the effective value

- Supporting Storage Cluster settings in Veeam environments

🅿 Point
. . . .
To use the functions added to the ETERNUS DX S5 series (excluding the ETERNUS DX60 S5 and ETERNUS DX100 S5), ETERNUS DX8900 S4, and ETERNUS AF S3 series (excluding the ETERNUS AF150 S3) whose firmware version is V11L40 or later, the Program Urgent Fix that supports the firmware version must be applied to the manager program of this software.
. . . .

1.2.3.1.3　Expanding Event Messages Related to Threshold Monitoring Alarms

From version 16.8, the following information can be added and displayed in event messages related to the threshold monitoring alarms of the ETERNUS DX S5 series, ETERNUS DX8900 S4, and ETERNUS AF S3 series.

Additional Information That Can Be Displayed	Remarks
Volume number (Decimal notation)	-
Volume name	-
RAID group number (Decimal notation)	-
RAID group name	-
CE number (Decimal notation)	Displayed only for the ETERNUS DX900 S5 and ETERNUS DX8900 S4.
CE name	Displayed only for the ETERNUS DX900 S5 and ETERNUS DX8900 S4.
CM number (Decimal notation)	-
CM name	-

For the added display format of the above information, refer to "Performance Management Traps" in the *Event Guide*. For the setting method to add and display the above information, refer to "perf.conf Parameter" in the *Storage Cruiser Operation Guide*.

🅿 Point
. . . .
To use the above function, the manager program of this software must be applied with the Program Urgent Fix that supports adding information to event messages related to the Threshold Monitoring Alarms.
. . . .

1.2.3.1.4　Displaying the Volume Capacity in Units of Megabytes

From version 16.8, the volume capacity of the storage device can be displayed in units of megabytes.

🅿 Point
. . . .
To use the above function, the Program Urgent Fix that provides support for the function must be applied to the manager program of this software.
. . . .

1.2.4   New Functions of AdvancedCopy Manager

1.2.4.1   Support of New Devices

The ETERNUS DX S5 series, ETERNUS AF S3 series can be used from version 16.8.

📘 Point
....

To manage the ETERNUS DX60 S5/DX100 S5/DX200 S5, DX900 S5, the ETERNUS AF150 S3/AF250 S3, the Program Urgent Fix that makes their storage devices available must be applied to the following program.

- For the Agent-based operating model: Manager program of this software

- For the Agent-less operating model: AdvancedCopy Manager Copy Control Module
....

📙 Note
....

The storage devices described above are not supported by the AdvancedCopy Manager Agent for HP-UX/AIX.
....

1.2.4.2   Compatibility with New Functions of ETERNUS Disk Storage Systems

AdvancedCopy Manager can use the following functions that are added in the ETERNUS DX S5 series, ETERNUS AF S3 series:

- Stopping the SnapOPC+ session of a specific snap generation other than the oldest among the snap generations created with SnapOPC+

- Using the Deduplication/Compression volume as the SnapOPC+ copy destination

- Starting a cascaded SnapOPC+ session for the copy destination of the SnapOPC+ session

📙 Note
....

- The functions described above are not supported by the AdvancedCopy Manager Agent for HP-UX/AIX.

- The behavior after operations for SnapOPC+ sessions are performed varies depending on the storage device. Refer to the following manuals for details.

    - "Deletable SnapOPC+ Snap Generations" under the Chapter "Replication" in the *AdvancedCopy Manager Operation Guide*

    - "Stopping SnapOPC+" under the Chapter "Operation" in the *AdvancedCopy Manager Operation Guide for Copy Control Module*

  To prevent necessary SnapOPC+ sessions from being stopped, confirm that the target storage device, its firmware version, the volume type of the copy destination volume, and the snap generation are all correct before stopping the SnapOPC+ session.
....

1.2.4.3   Enhanced Features for VMware Virtual Machine Automatic Backup/ Restore (Script)

In an environment that uses the AdvancedCopy Manager Copy Control Module, VMware script operations that use the following software are supported.

- VMware vSphere(ESXi) 7.0

- VMware vCenter Server 7.0

- VMware vSphere PowerCLI 11.5

Refer to "Operating Conditions" under the chapter "VMware Virtual Machine Automatic Backup/Restore (Script)" in the *AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

1.3 New Functions in Version 16.7

1.3.1 New Functions of Common for All Products

1.3.1.1 Support of Quick Launch in Web Console

Quick Launch provides a function for configuring frequently used storage system settings on a single screen with a minimal input.
With Quick Launch, users who are unfamiliar with storage systems can easily conduct basic operations.

The following functions are available.

- Creation of pools (Thin Provisioning Pools)

- Creation of volumes (Thin Provisioning Volumes) and assignment of volumes to a server

- Creation of snapshots for a business volume

- Restore from snapshots to a business volume

- Deletion of snapshots for a business volume

For details on the usage conditions and operational procedure of Quick Launch, refer to "Requirements for Using Quick Launch", "Quick Launch" in "Web Console Screen Layout", and "Operations for Quick Launch" in the *Web Console Guide*.

1.3.1.2 Support of New Operation Systems

Operation with Microsoft Windows Server 2019 is supported from version 16.7.

 Point

. . . .

To run Express, Storage Cruiser, or AdvancedCopy Manager on Microsoft Windows Server 2019, Program Urgent Fix may need to be applied to the software.

- To run Express

  The Program Urgent Fix for enabling the use of Express on Microsoft Windows Server 2019 must be applied to the manager program.

- To run Storage Cruiser

  The Program Urgent Fix for enabling the use of Storage Cruiser on Microsoft Windows Server 2019 must be applied to the manager program.

  No Program Urgent Fix needs to be applied to the Storage Cruiser's agent.

- To run AdvancedCopy Manager

  For Agent-based operating models, the Program Urgent Fix for enabling the use of AdvancedCopy Manager on Microsoft Windows Server 2019 must be applied to the manager program and AdvancedCopy Manager's agent.

  For Agent-less operating models, the Program Urgent Fix does not need to be applied to AdvancedCopy Manager Copy Control Module.

. . . .

 Note

. . . .

If a Microsoft Windows Server 2019 server is installed with the Storage Cruiser's agent and is registered to Storage Cruiser, that server appears in Web Console with "6.2" for the OS level and "Windows2012" for the OS name.

. . . .

Refer to the following sections in the *Installation and Setup Guide* for the operating systems that are supported by Express, Storage Cruiser, and AdvancedCopy Manager.

- "Operating Environment of ETERNUS SF Manager"

- "Operating Environment of Storage Cruiser's Agent"

- "Operating Environment of AdvancedCopy Manager's Agent"

- "Operating Environment of AdvancedCopy Manager CCM"

1.3.2 New Functions of Express

1.3.2.1 Compatibility with New Functions of ETERNUS Disk Storage Systems

Web Console screens that show the volume information (such as the Volume Overview screen and the Volume Detail screen) can display snapshot volumes that are used for Veeam. This function is supported for the following storage devices.

- ETERNUS DX60 S4/DX100 S4/DX200 S4

- ETERNUS AF250 S2

🅿 Point

To use the above-mentioned function, the firmware version of the target storage device must be upgraded to a version that supports the Veeam interoperation function. In addition, the Program Urgent Fix for supporting the firmware version must be applied to the manager program of this software.

1.3.3 New Functions of Storage Cruiser

1.3.3.1 New Functions Available With Standard License

1.3.3.1.1 Support of New Devices

The following device can be used from version 16.7.

- ETERNUS DX8900 S4

  The following functions can be used with this device. The support level is "A".

  - Fault monitoring (receiving and analyzing SNMP Traps, monitoring polling with SNMP, and obtaining the device status)

  - Linkage through management window

  - Performance management

- ETERNUS LT140

  The following functions can be used with this device. The support level is "E".

  - Fault monitoring (receiving and analyzing SNMP Traps, monitoring polling with ping)

  - Linkage through management window

Refer to "Support Levels" in the *Storage Cruiser Operation Guide* for details.
Refer to the *Event Guide* for information on the event traps notified from the device.

1.3.3.1.2　Compatibility with New Functions of ETERNUS Disk Storage Systems

The following functions that have been added to the ETERNUS DX8900 S4 can be executed from Storage Cruiser:

- Setting, releasing, or displaying Extreme Cache

- Setting and displaying the Compression of the Thin Provisioning Pool

- Expanding the maximum capacity of the Thin Provisioning Pool and Tier Pool to 128 PB

- Displaying the Compression performance information of the Thin Provisioning Volume

- Changing the line speed of the REC path (if at least one of the REC connection storage devices is the ETERNUS DX8900 S4)

- Displaying the QoS Pattern Settings that are changed in the storage device

The following function that has been added to the ETERNUS DX100 S4/DX200 S4, DX500 S4/DX600 S4, DX S3 series (excluding the ETERNUS DX60 S3), and the ETERNUS AF All-Flash Arrays can be executed from Storage Cruiser:

- Displaying the QoS Pattern Settings that are changed in the storage device

🅿 Point

To use the above-mentioned function for the ETERNUS DX100 S4/DX200 S4, DX500 S4/DX600 S4, DX S3 series (excluding the ETERNUS DX60 S3), and the ETERNUS AF All-Flash Arrays, the firmware version of the storage device must be upgraded to a version that supports the function.

Web Console screens that show the volume information (such as the Volume Overview screen and the Volume Detail screen) can display snapshot volumes that are used for Veeam. This function is supported for the following storage devices.

- ETERNUS DX S4 series (excluding the ETERNUS DX8900 S4)

- ETERNUS AF S2 series

🅿 Point

To use the above-mentioned function, the firmware version of the target storage device must be upgraded to a version that supports the Veeam interoperation function. In addition, the Program Urgent Fix for supporting the firmware version must be applied to the manager program of this software.

1.3.4　New Functions of AdvancedCopy Manager

1.3.4.1　Support of New Devices

The ETERNUS DX8900 S4 can be used from version 16.7.

1.4　New Functions in Version 16.6

1.4.1　New Functions of Common for All Products

1.4.1.1　Support of New Browser

You can use Web Console with the following web browser:

- Chrome 60 (for PC)

1.4.2   New Functions of Express

1.4.2.1   Support of New Devices

The ETERNUS AF250 S2 can be used from version 16.6.
Refer to the *Event Guide* for information on the event traps notified from the device.

1.4.2.2   Compatibility with New Functions of ETERNUS Disk Storage Systems

The following operations can be performed for the Non-disruptive Storage Migration functions that are added to the ETERNUS DX60 S4/DX100 S4/DX200 S4, DX60 S3/DX100 S3/DX200 S3, the ETERNUS AF250 S2/AF250, and the ETERNUS DX200F.

- Displaying information of the volumes that are used for the Non-disruptive Storage Migration

- Displaying performance information of the volumes that are used for the Non-disruptive Migration

- Displaying performance information of the FC-Initiator port

📒 Note

In this product, the External Drive or the External RAID Group that is used for the Non-disruptive Storage Migration cannot be displayed.

Express can manage the ETERNUS DX100 S4/DX200 S4 and the ETERNUS AF250 S2 that have the following component:

- FC-CA board that responds to a 32 Gbps port transfer speed

Express can manage the ETERNUS DX60 S4 that has the following component:

- SAS-CA board that responds to a 12 Gbps port transfer speed

🅿 Point

To perform the operations or use the functions described in this section, the firmware version of the target storage device must be V10L80 or later.

1.4.3   New Functions of Storage Cruiser

1.4.3.1   New Functions Available With Standard License

1.4.3.1.1   Support of New Devices

The following devices can be used from version 16.6.

- ETERNUS DX500 S4/DX600 S4, ETERNUS AF S2 series

  The following functions can be used with the ETERNUS DX500 S4/DX600 S4, ETERNUS AF S2 series. The support level is "A".

  - Fault monitoring (receiving and analyzing SNMP Traps, monitoring polling with SNMP, and obtaining the device status)

  - Linkage through management window

  - Performance management

- NetApp AFF A series

  The following functions can be used with the NetApp AFF A series. The support level is "E".

- Fault monitoring (receiving and analyzing SNMP Traps and monitoring polling with ping)

- Brocade G610

  The following functions can be used with the Brocade G610. The support level is "A".

  - Fault monitoring (receiving and analyzing SNMP Traps, monitoring polling with SNMP, and obtaining the device status)

  - Linkage through management window

  - Performance management

Refer to "Support Levels" in the *Storage Cruiser Operation Guide* for details.
Refer to the *Event Guide* for information on the event traps notified from the device.

1.4.3.1.2   Compatibility with New Functions of ETERNUS Disk Storage Systems

The following operations can be performed for the Non-disruptive Storage Migration functions that are added to the ETERNUS DX S4/S3 series, ETERNUS AF All-Flash Arrays, and the ETERNUS DX200F.

- Displaying information of the volumes that are used for the Non-disruptive Storage Migration

- Displaying performance information of the volumes that are used for the Non-disruptive Migration

- Monitoring the threshold of the volumes that are used for the Non-disruptive Migration

- Setting and displaying access paths

- Displaying performance information of the FC-Initiator port

📒 Note

In this product, the External Drive or the External RAID Group that is used for the Non-disruptive Storage Migration cannot be displayed.

Storage Cruiser can manage the ETERNUS DX S4 series and the ETERNUS AF S2 series that have the following component:

- FC-CA board that responds to a 32 Gbps port transfer speed

Storage Cruiser can manage the ETERNUS DX60 S4 that has the following component:

- SAS-CA board that responds to a 12 Gbps port transfer speed

🅿 Point

To perform the operations or use the functions described in this section, the firmware version of the target storage device must be V10L80 or later.

1.4.3.1.3   Expanding the Number of Allocable Volumes for Affinity/LUN Groups

For the ETERNUS DX S4/S3 series, the ETERNUS AF All-Flash Arrays, and the ETERNUS DX200F, affinity/LUN groups can be allocated with up to 4,096 volumes.

Due to this, a maximum of 4,096 LUNs that belong to the affinity/LUN groups are displayed on the **Affinity/LUN Group Details** screen of Web Console. In addition, a maximum of eight concatenated affinity group numbers that the LUNs belong to are also displayed.

🅿 Point

- To use this function, the firmware version of the target storage device must be V10L80 or later.

- The host affinity which Affinity/LUN groups that have 513 or more volumes is associated can be set in a Storage Cluster configuration of a BS2000 environment.

- The affinity groups for the BS2000 can be modified.

1.4.3.2 New Functions Available With Storage Cluster Option License

1.4.3.2.1 Supported Platform Expansion for Storage Cluster Controller

In addition to Windows supported by version 16.5 or earlier, Storage Cluster Controller can be configured in servers running the following OSs:

- Red Hat Enterprise Linux 7 (for Intel64)

- Red Hat Enterprise Linux 6 (for Intel64)

- Oracle Solaris 11

- Oracle Solaris 10

Refer to "Operating Environment of Storage Cruiser's Agent" in the *Installation and Setup Guide* for information on a list of OSs where Storage Cluster Controller can operate.

1.4.4 New Functions of AdvancedCopy Manager

1.4.4.1 Support of New Devices

The ETERNUS DX500 S4/DX600 S4, ETERNUS AF S2 series can be used from version 16.6.

1.4.4.2 Expanding the Functions of the Pre- and Post-processing Scripts for Backup/Replication (for Linux)

For backup/replication in Red Hat Enterprise Linux 7, Red Hat Enterprise Linux 6, or Red Hat Enterprise Linux 5 environments, the pre- and post-processing scripts for suppressing the file system updates and for canceling the suppression by using the "fsfreeze" command are provided. When the processes are validated, the backup/replication operation is as follows:

- Backup

  The backup is executed while the transaction volume is mounted.
  Refer to "Pre-processing and Post-processing of Backup and Restoration" in the *AdvancedCopy Manager Operation Guide (for Linux)* for details.

- Replication

  The replication is executed while the copy source volume is mounted.
  Refer to "Pre-processing and Post-processing of Replication" in the *AdvancedCopy Manager Operation Guide (for Linux)* for details.

🅿 Point

To use the "fsfreeze" command, the OS must support the "fsfreeze" command and the file system in which the volumes for backup/replication belong is ext3, ext4, or XFS.

📖 Information

By default, the lines that execute the "fsfreeze" command to suppress the file system updates and cancel the suppression are commented out in the pre- and post-processing scripts. To perform the operation, you must uncomment the lines. Refer to the above mentioned manuals for details.

1.5   New Functions in Version 16.5

1.5.1   New Functions of Common for All Products

1.5.1.1   Support of New Operation Systems

Operation with the following operating systems is supported from version 16.5:

- Microsoft(R) Windows Server(R) 2016 Standard

- Microsoft(R) Windows Server(R) 2016 Datacenter

- SUSE(R) Linux Enterprise Server 12 Service Pack 1 for AMD64 & Intel64

Operation possibilities of each product are as follows.

OS Type	Express	Storage Cruiser		AdvancedCopy Manager		
		Manager	Agent	Manager	Agent	Advanced Copy Manager Copy Control Module
Microsoft Windows Server 2016	A	A	A	A	A	A
SUSE Linux Enterprise Server 12 Service Pack 1 for AMD64 & Intel64	N/A	N/A	A	N/A	A	A

A=Available, N/A=Not Available

📚 See

. . . .

Refer to the following sections in the *Installation and Setup Guide* for the operating systems that are supported by Express, Storage Cruiser, and AdvancedCopy Manager:

- Operating Environment of ETERNUS SF Manager

- Operating Environment of Storage Cruiser's Agent

- Operating Environment of AdvancedCopy Manager's Agent

- Operating Environment of AdvancedCopy Manager CCM

. . . .

1.5.1.2   Support of New Devices

The ETERNUS DX60 S4/DX100 S4/DX200 S4 can be used from version 16.5.

- When using Storage Cruiser

  The following functions can be used with the above storage devices. The support level is "A".

  - Fault monitoring (receiving and analyzing SNMP Traps, monitoring polling with ping, and obtaining the device status)

  - Linkage through management window

  - Performance management

  Refer to "Support Levels" in the *Storage Cruiser Operation Guide* for details.

If you use Express or Storage Cruiser, refer to the *Event Guide* for information on the event traps notified from the device.

1.5.2 New Functions of Express

1.5.2.1 Support for LUN Concatenated Volumes

The following operations can be performed for LUN concatenated volumes:

- Deleting a volume

- Creating an affinity group

- Changing the configuration of an affinity group (adding/deleting a volume)

1.5.2.2 Compatibility with New Functions of ETERNUS Disk Storage Systems

- Express can manage the ETERNUS DX100 S4/DX200 S4 that have the following component:

    - SAS-CA board that responds to a 12 Gbps port transfer speed

- Express can use the following functions that are added in the ETERNUS DX200 S3, ETERNUS DX200F, ETERNUS AF250:

    - Separate configuration of data deduplication and compression for Thin Provisioning Pools and separate display

    - Configuration of data deduplication and compression when a Thin Provisioning Pool is created

    This function can be also used with the ETERNUS DX200 S4.

- Expanding the maximum pool capacity of Thin Provisioning pools and Tier pools that are added to the ETERNUS DX60 S3, DX100 S3/DX200 S3, ETERNUS AF250, and ETERNUS DX200F is supported. The following information is displayed on Web Console:

    - Capacity of Thin Provisioning pools and Tier pools (exceeding 2 PB)

        Capacities exceeding 2 PB can be displayed starting from version 16.5.

    - Chunk size

        The chunk size is a capacity per block in Thin Provisioning Volumes or Flexible Tier Volumes.

    This function can be also used with the ETERNUS DX60 S4/DX100 S4/DX200 S4.

 Point

To use the above functions for storage devices other than the ETERNUS DX60 S4/DX100 S4/DX200 S4, the firmware version of the target storage device must be V10L70 or later.

1.5.2.3 Automatic creation of Thin Provisioning Pools

For the ETERNUS DX60 S4/DX100 S4/DX200 S4, DX60 S3/DX100 S3/DX200 S3, ETERNUS DX200F, and ETERNUS AF250, Thin Provisioning Pools that disks are selected automatically can be created.

 Point

To use the above functions for storage devices other than the ETERNUS DX60 S4/DX100 S4/DX200 S4, the firmware version of the target storage device must be V10L70 or later.

1.5.3   New Functions of Storage Cruiser

1.5.3.1   New Functions Available With Standard License

1.5.3.1.1   Support for LUN Concatenated Volumes

The following operations can be performed for LUN concatenated volumes:

- Deleting a volume

- Creating an affinity group

- Changing the configuration of an affinity group (adding/deleting a volume)

1.5.3.1.2   Compatibility with New Functions of ETERNUS Disk Storage Systems

- Storage Cruiser can manage the ETERNUS DX100 S4/DX200 S4 that have the following component:

  - SAS-CA board that responds to a 12 Gbps port transfer speed

- Storage Cruiser can use the following function that is added in the ETERNUS DX200 S3, DX500 S3/DX600 S3, and the ETERNUS All-Flash Arrays:

  - Separate configuration of data deduplication and compression for Thin Provisioning Pools and separate display

  - Configuration of data deduplication and compression when a Thin Provisioning Pool is created

  This function can be also used with the ETERNUS DX200 S4.

- Expanding the maximum pool capacity of Thin Provisioning pools and Tier pools that are added to the ETERNUS DX S3 series and the ETERNUS All-Flash Arrays is supported. The following information is displayed on Web Console:

  - Capacity of Thin Provisioning pools and Tier pools (exceeding 2 PB)

    Capacities exceeding 2 PB can be displayed starting from version 16.5.

  - Chunk size

    The chunk size is a capacity per block in Thin Provisioning Volumes or Flexible Tier Volumes.

  This function can be also used with the ETERNUS DX S4 series.

 Point

• •

To use the above functions for storage devices other than the ETERNUS DX S4 series, the firmware version of the target storage device must be V10L70 or later.

• •

1.5.3.1.3   Automatic creation of Thin Provisioning Pools

For the ETERNUS DX S4 series, DX S3 series, and the ETERNUS All-Flash Arrays, Thin Provisioning Pools that disks are selected automatically can be created.

 Point

• •

To use the above functions for storage devices other than the ETERNUS DX S4 series, the firmware version of the target storage device must be V10L70 or later.

• •

📚 **See**
. . . .
Refer to the following section in the *Storage Cruiser Operation Guide* for details:

- Chapter "Operation" > "Resource Management" > "Thin Provisioning Management"
. . . .

1.5.3.2   New Functions Available With Optimization Option License

1.5.3.2.1   Expansion of the Total Value for the Evaluatable Used Capacity in a Tier Pool

The total value of the evaluatable capacity in the same time zone is expanded to 48 PB (6 PB in version 16.4) for Tier pools in the ETERNUS DX S3 series (excluding DX60 S3) and the ETERNUS AF series.
The ETERNUS DX S4 series (excluding DX60 S4) has also been expanded to 48 PB.

🅟 **Point**
. . . .
- To use the above functions for storage devices other than the ETERNUS DX S4 series, the firmware version of the target storage device must be V10L70 or later.

- The total value of the evaluatable used capacity in a Tier pool varies by the chunk size that is set for each Tier pool. Refer to "Upper Limit of Automated Storage Tiering" in the *Installation and Setup Guide* for details.
. . . .

1.5.3.2.2   Reduction of the Evaluation Processing Time for Automated Storage Tiering

For Automated Storage Tiering in the ETERNUS DX S3 series (excluding DX60 S3) and the ETERNUS AF series, increasing the data amount that can be processed for a one-time relocation reduces the time required for a relocation. This function is also applied when using the ETERNUS DX S4 series (excluding DX60 S4).

📚 **See**
. . . .
Refer to "Tiering Policies" in the *Storage Cruiser Operation Guide for Optimization Function* for details.
. . . .

1.5.3.3   New Functions Available With Storage Cluster Option License

1.5.3.3.1   Functionality Expansion for Availability Improvement

The following operations can be performed in a Storage Cluster environment:

- Setting and displaying the total capacity of TFOVs per storage device

- Expanding the maximum number of TFO groups that can be created from 2 to 32

- Creating TFO groups in the same direction

🅟 **Point**
. . . .
To use the above functions for storage devices other than the ETERNUS DX S4 series, the firmware version of the target storage device must be V10L70 or later.
. . . .

📚 **See**
. . . .
Refer to "Storage Cluster Function" in the *Storage Cruiser Operation Guide* for details.
. . . .

1.5.3.3.2 Functionality Expansion for Operability Improvement

The following operations can be performed from Web Console:

- Expanding the volume capacity

- Adding an expanded volume to a TFO group

- Releasing and recovering a TFO pair in the maintenance procedure

In version 16.4 or earlier, the above operations required commands to be executed from ETERNUS CLI. However, because they can be performed from Web Console with version 16.5 or later, the operability of the storage operation using the Storage Cluster function is improved.

🗐 See
. . . .

Refer to "Storage Cluster Function" in the *Storage Cruiser Operation Guide* for details.
. . . .

1.5.3.3.3 Functionality Expansion for Maintainability Improvement

- Automatic Failover function during a RAID close

    In a Storage Cluster environment, if the RAID close of the storage device occurs during operation with a TFO status is "Active", Automatic Failover is performed if the Failover mode is "Auto".

- Automatic Failover function triggered by CA port linkdown

    In a Storage Cluster environment, in TFO groups that satisfy all the following requirements, if all the CA ports belonging to the Primary TFO Group are linked down because of CA port failure or connection failure during operation with a TFO status of the Primary TFO Group is "Active", Automatic Failover is performed.

    - For TFO groups, the Automatic Failover function is set to be used if CA port linkdown occurs.

    - The Failover mode is set to "Auto".

    - The Failback mode is set to "Manual".

In version 16.4 or earlier, even if the Failover mode was "Auto", performing a Manual Failover was required. Because Automatic Failover is performed for version 16.5 or later, the maintenance procedure is reduced when compared with version 16.4 or earlier.

🅿 Point
. . . .

To use the above functions for storage devices other than the ETERNUS DX S4 series, the firmware version of the target storage device must be V10L70 or later.
. . . .

🗐 See
. . . .

- Refer to "RAID Close" of the chapter "Storage Cluster Function" in the *Storage Cruiser Operation Guide* for the maintenance procedure for the RAID close.

- Refer to "Configuring TFO Group" in "Installation" of the chapter "Storage Cluster Function" in the *Storage Cruiser Operation Guide* for the configuration procedure of the Automatic Failover function triggered by CA port linkdown. Refer to "CA Port Linkdown" of the chapter "Storage Cluster Function" in the *Storage Cruiser Operation Guide* for the maintenance procedure for the CA port linkdown.
. . . .

1.6 New Functions in Version 16.4

1.6.1 New Functions of Common for All Products

1.6.1.1 New Browser Support

You can use the Web Console with the following web browsers:

- Firefox ESR 45

- Microsoft Edge 25

- Chrome 50 (Android version)

1.6.2 New Functions of Express

1.6.2.1 Support of New Devices

From version 16.4, the ETERNUS AF250 can be used.
Refer to the *Event Guide* for information on the event traps notified from the device.

1.6.2.2 Compatibility with New Functions of ETERNUS Disk Storage System

Express can manage the ETERNUS DX100 S3/DX200 S3 and the ETERNUS DX200F that have the following component:

- Port type 10G Base-T iSCSI

Express can use the following functions that are added in the ETERNUS DX100 S3/DX200 S3:

- Displaying Read Intensive SSDs (RI SSD)

- Creating RAID groups, Thin Provisioning pools, and Tier pools that are composed of RI SSDs

- Expanding the maximum number of volumes that can be created in the storage device

  The ETERNUS DX100 S3 can use a maximum of 4096 volumes and the ETERNUS DX200 S3 can use a maximum of 8192 volumes.

Express can use the following function that is added in the ETERNUS DX200 S3 and the ETERNUS DX200F:

- Deduplication and compression of data on a virtual volume

Express can use the following function that is added in the ETERNUS DX60 S3, DX100 S3/DX200 S3, and the ETERNUS DX200F:

- SnapOPC+ that uses TPVs as copy destination volumes

🅿 Point
....
To use the above functions, the firmware version of the target storage device must be V10L60 or later.
....

1.6.2.3 Automatic Update of Status of Components in Storage Device

If the components mounted on the ETERNUS DX60 S3, DX100 S3/DX200 S3 and the ETERNUS DX200F fail/recover, Express updates the device component status automatically.
With this function, you do not need to perform the **Reload Conf.** operation with the Web Console.

🅿 Point
....
To use the above function, the firmware version of the target storage device must be V10L60 or later.
....

1.6.2.4 Displaying of Port Link Status

The link status of the following ports mounted on the ETERNUS DX60 S3, DX100 S3/DX200 S3 and the ETERNUS DX200F can be displayed:

- FC port

- iSCSI port

- SAS port

- FCoE port

🅿 Point
....
To use the above function, the firmware version of the target storage device must be V10L60 or later.
....

1.6.3 New Functions of Storage Cruiser

1.6.3.1 New Functions Available With Standard License

1.6.3.1.1 Support of New Devices

The following functions can be used with the ETERNUS AF series. The support level is "A".

- Fault monitoring (receiving and analyzing SNMP Traps, monitoring polling with ping, and obtaining the device status)

- Linkage through management window

- Performance management

Refer to "Support Levels" in the *Storage Cruiser Operation Guide* for details.
Refer to the *Event Guide* for information on the event traps notified from the device.

1.6.3.1.2 Compatibility with New Functions of ETERNUS Disk Storage System

Storage Cruiser can manage the ETERNUS DX100 S3/DX200 S3 and the ETERNUS DX200F that have the following component:

- Port type 10G Base-T iSCSI

Storage Cruiser can manage the ETERNUS DX500 S3/DX600 S3, DX8700 S3/DX8900 S3 that have the following component:

- FC port 16G-CA(4port)

Storage Cruiser can use the following function that is added in the ETERNUS DX100 S3/DX200 S3:

- Expanding the maximum number of volumes that can be created in the storage device

    The ETERNUS DX100 S3 can use a maximum of 4096 volumes and the ETERNUS DX200 S3 can use a maximum of 8192 volumes.

Storage Cruiser can use the following function that is added in the ETERNUS DX200 S3:

- Model updating to the ETERNUS DX500 S3

Storage Cruiser can use the following function that is added in the ETERNUS DX500 S3/DX600 S3:

- Expanding the number of hosts that can be connected to the device

Storage Cruiser can use the following functions that are added in the ETERNUS DX S3 series (excluding DX60 S3):

- Displaying Read Intensive SSDs (RI SSD)

- Creating RAID groups, Thin Provisioning pools, and Tier pools that are composed of RI SSDs

Storage Cruiser can use the following function that is added in the ETERNUS DX200 S3, DX500 S3/DX600 S3 and the ETERNUS DX200F:

- Deduplication and compression of data on a virtual volume

🅿 Point
....
To use the above functions, the firmware version of the target storage device must be V10L60 or later.
....

1.6.3.1.3   Automatic Update of Status of Components in Storage Device

If the components mounted on the ETERNUS DX S3 series and the ETERNUS DX200F fail/recover, Storage Cruiser updates the device component status automatically.
With this function, you do not need to perform the **Reload Conf.** operation with the Web Console.

🅿 Point
....
To use the above function, the firmware version of the target storage device must be V10L60 or later.
....

1.6.3.1.4   Displaying of Port Link Status

The link status of the following ports mounted on the ETERNUS DX S3 series and the ETERNUS DX200F can be displayed:

- FC port

- iSCSI port

- SAS port

- FCoE port

🅿 Point
....
To use the above function, the firmware version of the target storage device must be V10L60 or later.
....

1.6.3.1.5   Deleting RAID Groups That Constitute Tier Pool

The function to delete RAID groups that constitute a Tier pool is supported. This function makes it possible to reduce the total capacity of a Tier pool without deleting the Tier pool.

🅿 Point
....
To use this structure, the firmware version of the target storage device must be V10L60 or later. Refer to "Deletion of RAID Groups in One Layer Tier Pool" in the *Storage Cruiser Operation Guide* for details.
....

1.6.3.2   New Functions Available With Optimization Option License

1.6.3.2.1   Automatic Update of Information for Automated Storage Tiering

Storage Cruiser automatically updates the evaluation/relocation status of the access status data for Automated Storage Tiering.
With this function, you do not need to perform the **Status Update** operation for the relocation target volume when performing the following operations with the Web Console:

- Stopping the relocation process that is currently running

- Deleting the evaluation result (when deleting the evaluation result without executing a relocation)

1.6.3.2.2   Expanding Total Value of Used Capacity for Evaluable Tier Pools

For Tier pools of the ETERNUS DX S3 series (excluding DX60 S3), the total value of the evaluable used capacity can be expanded from 1 PB to a maximum of 6 PB in the same time period.

1.6.3.2.3   Adding Capacity Unit That Can Be Used for Minimum Required Capacity of Sub-pools

The petabyte unit value can be specified in the setting item **Minimum Required Capacity** for the sub-pool of the Tier pool.

1.6.3.2.4   Deleting RAID Groups That Constitute Tier Pool

The function to delete RAID groups that constitute a Tier pool is supported. This function makes it possible to reduce the total capacity or the number of tiers of a Tier pool without deleting the Tier pool.

Point

. . . .

To use this structure, the firmware version of the target storage device must be V10L60 or later. Refer to "Deletion of RAID Groups" in the *Storage Cruiser Operation Guide for Optimization Function* for details.

. . . .

1.6.3.3   New Functions Available With Storage Cluster Option License

1.6.3.3.1   Expansion of Supported Configuration

The following configurations are available with the Storage Cluster function:

- iSCSI host interface

- Automatic Failover through the REC path of the iSCSI port

Point

. . . .

To use this structure, the firmware version of the target storage device must be V10L60 or later. Refer to "Storage Cluster Function" in the *Storage Cruiser Operation Guide* for details.

. . . .

1.6.4   New Functions of AdvancedCopy Manager

1.6.4.1   Support of New Devices

From version 16.4, the ETERNUS AF series can be used.

1.6.4.2   Compatibility with New Functions of ETERNUS Disk Storage System

AdvancedCopy Manager can use the following function that is added in the ETERNUS DX S3 series and the ETERNUS DX200F:

- SnapOPC/SnapOPC+ that uses TPVs or FTVs as copy destination volumes

1.7   New Functions in Version 16.3

1.7.1   New Functions of Common for All Products

1.7.1.1   Dashboard

A Dashboard with the following features is provided:

- Multiple information that the system administrator requires during operations can be browsed on one screen

- New look & feel using HTML5

- Customizable for each user according to the operation

Refer to "Web Console Screen Layout" and "Dashboard Operations" in the *Web Console Guide* for details.

1.7.1.2   Support of Web Browsers for Tablet

You can use the Web Console on the following web browsers for tablet:

- Safari 8 (iOS version)

- Safari 9 (iOS version)

- Chrome 47 (Android version)

Screen resolution of 1,024 x 768 pixels or more is required.
It is only the Dashboard screen that can be operated in the Web Console on the tablet devices.

1.7.2   New Functions of Express

1.7.2.1   Compatibility with New Functions of ETERNUS Disk Storage System

Express can use the following functions added for the ETERNUS DX200 S3, ETERNUS DX200F:

- Deduplication and compression of data on a virtual volume

Express can use the following function added for the ETERNUS DX100 S3/DX200 S3:

- Display of Extreme Cache Pool that is composed of SED SSD

Express can use the following function added for the ETERNUS DX60 S3:

- Display of port type "10G Base-T iSCSI"

Express can use the following function added for the ETERNUS DX100 S3/DX200 S3:

- Set and display of encryption mode "AES-256"

Point

To use the above functions, the firmware version of a target storage device must be the firmware version number or later that supports the above functions. In addition, to use the function that sets and displays the encryption mode "AES-256", the application of the latest Program Urgent Fix is required for the Management Server of ETERNUS SF version 16.3.

1.7.2.2 SNMPv3 Protocol Support

SNMPv3 protocol can be used for SNMP communication between the Express's manager and managed devices. Refer to the *Express Operation Guide* for details.

1.7.2.3 NAS Management Feature

The NAS management function supports the following features to use the ETERNUS DX100 S3/DX200 S3 as a NAS device. Refer to "NAS Management" in the *Express Operation Guide* for details.

Firmware Version of Device	Usable Features
V10L51 or later	- Setting of shared folder name using multibyte characters (Japanese) - Setting of access permission for shared folders with CIFS protocol - Capacity limit function (Quota management) on a per shared folder basis - Display of NAS snapshot settings (Manual mode)
V10L53 or later	- Home directory feature - Setting of root access allowed hosts for shared folders with NFS protocol

Point

To use the above functions, the firmware version of a target storage device must be the firmware version number or later that supports the above functions. In addition, the application of the Program Urgent Fix to support each firmware is required for the Management Server of ETERNUS SF version 16.3, which is connected to the target storage device.

1.7.3 New Functions of Storage Cruiser

1.7.3.1 Support of New Devices

The following features can be used with the Tintri VMstore series. The support level is "E".

- Fault monitoring (receiving and analyzing SNMP Traps, monitoring polling with ping)

Refer to "Support Levels" in the *Storage Cruiser Operation Guide* for details.
Refer to the *Event Guide* for information on the event traps notified from the device.

Also, it is only when the operating system of Management Server is Windows that the Tintri VMstore series can be monitored.

1.7.3.2 Compatibility with New Functions of ETERNUS Disk Storage System

Storage Cruiser can use the following functions added for the ETERNUS DX200 S3/DX500 S3/DX600 S3, ETERNUS DX200F:

- Deduplication and compression of data on a virtual volume

Storage Cruiser can use the following function added for the ETERNUS DX100 S3/DX200 S3, DX500 S3/DX600 S3:

- Display of Extreme Cache Pool that is composed of SED SSD

Storage Cruiser can use the following function added for the ETERNUS DX60 S3:

- Display of port type "10G Base-T iSCSI"

Storage Cruiser can use the following function added for ETERNUS DX S3 series (excluding DX60 S3):

- Set and display of encryption mode "AES-256"

🅿 Point
. . . .
To use the above functions, the firmware version of a target storage device must be the firmware version number or later that supports the above functions. In addition, to use the function that sets and displays the encryption mode "AES-256", the application of the latest Program Urgent Fix is required for the Management Server of ETERNUS SF version 16.3.
. . . .

1.7.3.3 SNMPv3 Protocol Support

SNMPv3 protocol can be used for SNMP communication between the Storage Cruiser's manager and managed devices. Refer to the *Storage Cruiser Operation Guide* for details.

1.7.3.4 NAS Management Feature

The NAS management function supports the following features to use the ETERNUS DX100 S3/DX200 S3, DX500 S3/DX600 S3 as a NAS device. Refer to "NAS Management" in the *Storage Cruiser Operation Guide* for details.

Firmware Version of Storage Device	Usable Features
V10L51 or later	- Setting of shared folder name using multibyte characters (Japanese) - Setting of access permission for shared folders with CIFS protocol - Capacity limit function (Quota management) on a per shared folder basis - Display of NAS snapshot settings (Manual mode)
V10L53 or later	- Home directory feature - Setting of root access allowed hosts for shared folders with NFS protocol

🅿 Point
. . . .
To use the above functions, the firmware version of a target storage device must be the firmware version number or later that supports the above functions. In addition, the application of the Program Urgent Fix to support each firmware is required for the Management Server and Managed Servers of ETERNUS SF version 16.3, which are connected to the target storage device.
. . . .

1.7.3.5 Expanding Display Function of Virtual Volumes in VMware vSphere Virtual Volumes Environments

In VMware vSphere Virtual Volumes environments, a list of all the Virtual Volumes managed by the ETERNUS SF system can be displayed. Refer to "Display Virtual Volume" in the *Web Console Guide* for the display procedure.

🅿 Point
. . . .
To use the above function, the application of the latest Program Urgent Fix is required for the Management Server of ETERNUS SF version 16.3.
. . . .

1.7.4 New Functions of Storage Cruiser Optimization Option

1.7.4.1 Expanding Total Number of Used Capacity of Evaluable Tier Pools

The total number of the used capacity that can be simultaneously evaluated for Tier pools in the ETERNUS DX S3 series (excluding DX60 S3) has been expanded from 768 TB to 1 PB.

1.7.4.2 Change of Reserved Area Required for Access Status Data Evaluation/ Relocation

As for Tier pools in the ETERNUS DX S3 series (excluding DX60 S3), even if there is not about 10 % of reserved area in a Tier pool, evaluation and relocation of access status data can be executed. Refer to "Configuration of Tier Pool" in the *Storage Cruiser Operation Guide for Optimization Function* for details.

P Point
....
To use the above function, the application of the latest Program Urgent Fix is required for the Management Server of ETERNUS SF version 16.3.
....

1.7.5 New Functions of AdvancedCopy Manager

1.7.5.1 Enhanced Features for NAS Backup Function

The NAS management function supports the following features to use the ETERNUS DX100 S3/DX200 S3, DX500 S3/ DX600 S3 as a NAS device.

- Deleting the NAS backup settings

  Refer to "Backup of NAS Environment" in the *AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

- In the inter-box backup/restore function of a NAS volume, when the firmware version of both operation side device and standby side device is V10L51 or later, a NAS volume on the operation side device can be backed up/restored onto any NAS volume on the standby side device.

- When the firmware version number of a storage device is V10L53 or later, even if CMs and NAS Engines in the storage device are not in normal condition, a NAS volume can be backed up.
  The "NAS Engine" is a NAS control service inside a CM.

1.8 New Functions in Version 16.2

1.8.1 New Functions of Express

1.8.1.1 Expansion of Supported OS

Operation of Express is supported by the following operating system:

- Red Hat Enterprise Linux 7 (for Intel64)

Refer to "Operating Environment of ETERNUS SF Manager" in the *Installation and Setup Guide* for the operating systems supported by Express.

1.8.1.2 Support of New Devices

The following features can be used with the ETERNUS DX60 S3.

- Fault monitoring (receiving and analyzing SNMP Traps, monitoring polling with ping, and obtaining device status)

- Linkage through management window

- Performance management

Refer to the *Event Guide* for information on the event traps notified from the device.

1.8.1.3   Compatibility with New Functions of ETERNUS Disk Storage System

Express can use the following functions added for the ETERNUS DX100 S3/DX200 S3, ETERNUS DX200F.

- Deduplication and compression of data on a virtual volume (ETERNUS DX100 S3 excluded)

- Using Extreme Cache Pool

- Configuring the bandwidth of the REC path

- Allocating a physical area of the entire volume area when creating a Thin Provisioning volume or FTV

- Using RAID6-FR in Thin Provisioning pools and Tier pools

P Point
. . . .

To use the above functions, V10L30 or later firmware is required for a target storage device.
. . . .

1.8.1.4   NAS Management Function

The NAS management function supports the following functions to use the DX100 S3/DX200 S3 as a NAS device.

- Antivirus function

- Strengthening of the security function for CIFS shared folders

Refer to "NAS Management" in the *Express Operation Guide* for details.

1.8.1.5   NAS Performance Management Function

The performance management function for NAS volumes and NAS systems can be used with the ETERNUS DX100 S3/
DX200 S3.
Refer to "Performance Management" in the *Express Operation Guide* for details.

Information
. . . .

The threshold monitoring is not supported.
. . . .

1.8.1.6   Performance Management Improvement

The operation that specifies the entire range of volumes when starting a performance management is improved. When a volume is found to have been created or removed, the volume is included as a target for performance management. Refer to "Instruction for Performance Management" in the *Express Operation Guide* for details.

1.8.2   New Functions of Storage Cruiser

1.8.2.1   Expansion of Supported OS

Operation of both Storage Cruiser's manager and Storage Cruiser's agent is supported by the following operating system:

- Red Hat Enterprise Linux 7 (for Intel64)

Refer to "Operating Environment of ETERNUS SF Manager" and "Operating Environment of Storage Cruiser's Agent" in the *Installation and Setup Guide* for the operating systems supported by Storage Cruiser.

Refer to "Server Node Middleware for Which Management Is Possible" in the *Storage Cruiser Operation Guide* for information on the supported file systems.

1.8.2.2   Support of New Devices

The following features can be used with the ETERNUS DX60 S3, DX8700 S3/DX8900 S3. The support level is "A".

- Fault monitoring (receiving and analyzing SNMP Traps, monitoring polling with ping, and obtaining device status)

- Linkage through management window

- Performance management

In addition, the following features can be used with the ETERNUS LT260 and the NetApp FAS Series (with clustered Data ONTAP). The support level is "E".

- Fault monitoring (receiving and analyzing SNMP Traps, monitoring polling with ping)

Refer to "Support Levels" in the *Storage Cruiser Operation Guide* for details.
Refer to the *Event Guide* for information on the event traps notified from the device.

🅿 Point
. . . .
- To manage the ETERNUS DX8700 S3/DX8900 S3 by Storage Cruiser, the Program Urgent Fix that makes ETERNUS DX8700 S3/DX8900 S3 available must be applied to the Management Server of ETERNUS SF version 16.2.

- To manage the NetApp FAS Series (with clustered Data ONTAP) by Storage Cruiser, the Program Urgent Fix that makes NetApp FAS Series (with clustered Data ONTAP) available must be applied to the Management Server of ETERNUS SF version 16.2.
. . . .

1.8.2.3   Compatibility with New Functions of ETERNUS Disk Storage System

Storage Cruiser can use the following functions added for the ETERNUS DX S3 series (DX60 S3 excluded), ETERNUS DX200F.

- Deduplication and compression of data on a virtual volume (ETERNUS DX100 S3 excluded)

- Using Extreme Cache Pool

- Configuring the bandwidth of the REC path

- Allocating a physical area of the entire volume area when creating a Thin Provisioning volume or FTV

- Using RAID6-FR in Thin Provisioning pools and Tier pools

🅿 Point
. . . .
To use the above functions, V10L30 or later firmware is required for a target storage device.
. . . .

1.8.2.4   Support of VMware vSphere Virtual Volumes Function

The VMware vSphere Virtual Volumes function allows VM disk (VMDK) file operation to be performed with volume operations in a storage system instead of with a Virtual Machine File System (VMFS) operation. This makes it possible to create an environment for VMware vSphere Virtual Volumes and manage them using Storage Cruiser.
Refer to the *Storage Cruiser / AdvancedCopy Manager Operation Guide for VMware vSphere Virtual Volumes* for details.

1.8.2.5   NAS Management Function

The NAS management function supports the following functions to use the ETERNUS DX S3 series (DX60 S3 excluded) as a NAS device.

- Antivirus function

- Strengthening of the security function for CIFS shared folders

Refer to "NAS Management" in the *Storage Cruiser Operation Guide* for details.

1.8.2.6   NAS Performance Management Function

The performance management function for NAS volumes and NAS systems can be used with the ETERNUS DX S3 series (DX60 S3 excluded).
Refer to "Performance Management" in the *Storage Cruiser Operation Guide* for details.

📖 Information
. . . .
The threshold monitoring is not supported.
. . . .

1.8.2.7   Tier Pool Balancing

For one layer Tier pool, the following operations that are related to Tier pool balancing can be performed:

- Starting / Stopping the Tier pool balancing

- Starting the Tier pool balancing when performing the sub-pool capacity expansions

1.8.2.8   Performance Management Improvement

The operation that specifies the entire range of volumes when starting a performance management is improved. When a volume is found to have been created or removed, the volume is included as a target for performance management.
Refer to "Instruction for Performance Management" in the *Storage Cruiser Operation Guide* for details.

1.8.2.9   Automatic Update Improvement

In targets that have the ETERNUS Disk storage systems information automatically updated, Automated Storage Tiering information is included.

1.8.3   New Functions of Storage Cruiser Optimization Option

1.8.3.1   Support of New Devices

From version 16.2, the ETERNUS DX8700 S3/DX8900 S3 can be used.

1.8.3.2   Tier Pool Balancing

For the Tier pool created with Automated Storage Tiering, the following operations related to for the Tier pool balancing can be performed:

- Starting / Stopping the Tier pool balancing

- Starting the Tier pool balancing when performing the sub-pool capacity expansions

1.8.3.3   Synchronizing Access Status Data of Automated Storage Tiering

Between storage devices that use the Storage Cluster function, FTVs of the Secondary Storage (standby system) can be evaluated and relocated using FTV access status data of the Primary Storage (active system). Even after a failover from the Primary Storage to the Secondary Storage, this enables operations to maintain pre-failover access performance.

Refer to "Access Status Data Synchronization" in the *Storage Cruiser Operation Guide for Optimization Function* for information on this function.
Refer to "Storage Cluster Function" in the *Storage Cruiser Operation Guide* for information on the Storage Cluster function.

1.8.3.4 Automatic Update Improvement

In targets that have the ETERNUS Disk storage systems information automatically updated, Automated Storage Tiering information is included.

1.8.4 New Functions of Storage Cruiser Quality of Service Management Option

1.8.4.1 Enhanced Features for Improved Operability and Usability

The following functions are provided. Refer to the *Storage Cruiser for Optimization Function* for details.

Virtual Volume Support

A Virtual Volume that is available on a per VMware virtual machine basis can be used as an Automated QoS enabled volume.

Concurrent Operation of Automated QoS Priority and Tune by Quota Share

When using Automated QoS Priority and Tune by Quota Share concurrently, in version 16.1 or earlier, a quota capacity ratio was required to be set in the FTV. However, in version 16.2, the Automated QoS function determines the status of the quota ratio automatically.
Therefore, when creating or changing the FTV, setting the quota capacity ratio is not required.

Tuning Quota Ratio According to Automated QoS Priority

When using Automated QoS Priority, in version 16.1 or earlier, the benchmark of target performance was determined based on the current sub-pool quota share. However, in version 16.2, the quota share is determined according to Automated QoS Priority, by tuning to the I/O performance desired by the users.

Improved QoS Achievement Rate Graph

When using Automated QoS Priority, in version 16.1 or earlier, the QoS achievement rate graph calculated and displayed the ratio of the measured values to the most up to date target response time that is automatically calculated by the Automated QoS function. However, in version 16.2, the target response time of the moment data is collected is regarded as comparative data.
Therefore, the achievement rate that reflects the status of the data collection time is displayed.

Expanding Target Volume

The upper limit for the sum of FTVs in all the storage systems that enable the Automated QoS function is expanded from 600 to 1,800.

1.8.5 New Functions of Storage Cruiser Storage Cluster Option

1.8.5.1 Enhanced Features for Improved Operability

The following functions are provided for improving operability in storage operations that use the Storage Cluster function:

- Automatic Failback

- Display synchronization progress of TFO groups and volumes

- Automatically update the TFO group status

- Single-image display for TFO group information of the Primary/Secondary Storage in the TFO group list screen

- Perform a Manual Failover, Manual Failback, and Force-Failover from the standby system

Refer to "Storage Cluster Function" in the *Storage Cruiser Operation Guide* for details.

1.8.6 New Functions of AdvancedCopy Manager

1.8.6.1 Expansion of Supported OS

Operation of AdvancedCopy Manager's manager, AdvancedCopy Manager's agent, and AdvancedCopy Manager Copy Control Module is supported by the following operating system:

- Red Hat Enterprise Linux 7 (for Intel64)

Refer to "Operating Environment of ETERNUS SF Manager", "Operating Environment of AdvancedCopy Manager's Agent", and "Operating Environment of AdvancedCopy Manager CCM" in the *Installation and Setup Guide* for the operating systems supported by AdvancedCopy Manager.

1.8.6.2 Support of New Devices

From version 16.2, the ETERNUS DX60 S3, DX8700 S3/DX8900 S3 can be used.

🅿 Point
....

To manage the ETERNUS DX8700 S3/DX8900 S3 by AdvancedCopy Manager, the Program Urgent Fix that makes ETERNUS DX8700 S3/DX8900 S3 Advanced Copy function available must be applied to the system environment of ETERNUS SF version 16.2.

Target	Program Urgent Fix Applicable Condition
Management Server	The Program Urgent Fix application is required.
Managed Server	The Program Urgent Fix application is required to Managed Servers where ETERNUS DX8700 S3/DX8900 S3 volumes are assigned.
CCM Server	The Program Urgent Fix application is required.

....

1.8.6.3 Snapshot/Backup on a per Virtual Machine Basis in VMware vSphere Virtual Volumes Environments

In VMware vSphere Virtual Volumes environments, high-speed snapshots, backups, and restores on a per virtual machine basis can be achieved using the Advanced Copy function of the ETERNUS Disk storage system.
Refer to the *Storage Cruiser / AdvancedCopy Manager Operation Guide for VMware vSphere Virtual Volumes* for details.

1.8.6.4 Storage Cluster Continuous Copy Function

In a Storage Cluster environment, even if a failover occurs in the Primary Storage while executing Advanced Copy, we provide a function that can continue the copy operation with the Secondary Storage by automatically taking over the Advanced Copy process.

Refer to "Storage Cluster Continuous Copy Function" in the *AdvancedCopy Manager Operation Guide* when using this function with AdvancedCopy Manager.
Refer to "Storage Cluster Continuous Copy Function" in the *AdvancedCopy Manager Operation Guide for Copy Control Module* when using this function with AdvancedCopy Manager Copy Control Module.

1.8.6.5 Enhanced Features for VMware Virtual Machine Automatic Backup/ Restore (Script)

The following function is provided.

- Backup and restore the system area and data area as a set

Refer to "VMware Virtual Machine Automatic Backup/Restore (Script)" in the *AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

1.9   New Functions in Version 16.1

1.9.1   New Functions of Common for All Products

1.9.1.1   Patch Management

In the Web Console, the following functions are provided for Consolidated Patch which aggregates patches of the ETERNUS SF Manager program.

- Application of Consolidated Patch

- Confirmation of Consolidated Patch applied

- Deletion of all patches applied on the ETERNUS SF Manager program

Refer to "Consolidated Patch" in the *Installation and Setup Guide* and "Patch Management" in the *Web Console Guide* for details.

 P Point
. . . .

This function is only available if the operating system with the ETERNUS SF Manager program installed is Windows.
. . . .

1.9.1.2   Feature Improvement of Web Console

Holding of Checks Placed in Table Checkboxes and Table Radio Buttons

When the following operations have been performed, the checks placed in the table checkboxes and table radio buttons will be maintained. The checks would disappear in version 16.0 or earlier.

- Click **Filter** or **Clear** in **Filter Setting**.

- Click the links (**<<, <, >, >>**) for the displayed page in **Page Setting**.

- Click **Go** in **Page Setting**.

- Change the pull-down menu in **Display *xxx* records** of **Displayed Record Setting**.

- Click on the column of the table (sort the table).

In addition, even when checks are placed in the checkboxes of the full listing screen (the screen on which the Category pane, Main pane, and Action pane exist), automatic update will not be stopped. Automatic update would be partially stopped in version 16.0 or earlier.

Configuration of Default Record Count in Table

The default record count in the table can be configured to 10, 25, 50, or 100. It was fixed to 10 in version 16.0 or earlier. Refer to "Main Pane" in the *Web Console Guide* for details.

1.9.2   New Functions of Express

1.9.2.1   Compatibility with New Functions of ETERNUS Disk Storage System

Express functions added for ETERNUS DX100 S3/DX200 S3.

- Use of a new RAID type

  RAID6-FR can be used in addition to the traditional RAID type.

- Model upgrades

  The following model upgrades are available:

  - ETERNUS DX100 S3 to DX200 S3

- Eco-mode power control

    For the RAID group Eco-mode operation, the disk drive power supply can be controlled in addition to the traditional spindle rotation control of the disk drive.

P Point

. . . .

To use the above functions, the firmware of the storage device must be V10L20 or later.

. . . .

Note

. . . .

The above functions cannot be used for ETERNUS DX200F.

. . . .

1.9.2.2 NAS Management Function

Regarding the NAS management functions for operating ETERNUS DX100 S3/DX200 S3 as NAS device, the following functions are provided.

- Port bonding of NAS ports

- VLAN ID settings of NAS interface

- Settings of DNS server

- Change in NAS server name

- Capacity expansion of NAS volume

- Inter-box backup/restore of NAS volumes

- Automatic collection function of NAS volume snapshots

- Capacity limit function (Quota management) of NAS volumes

Refer to "NAS Management" in the *Express Operation Guide* for details.

Note

. . . .

The above functions cannot be used for ETERNUS DX200F.

. . . .

1.9.3 New Functions of Storage Cruiser

1.9.3.1 Storage Cluster Function

A feature is provided in which between two storage devices connected to a server, switching is performed transparently in order to enable continuation of business even in cases when the Primary Storage is down. Refer to "Storage Cluster Function" in the *Storage Cruiser Operation Guide* for details.

1.9.3.2 Compatibility with New Functions of ETERNUS Disk Storage System

Storage Cruiser functions added for ETERNUS DX100 S3/DX200 S3, DX500 S3/DX600 S3.

- Use of a new RAID type

    RAID6-FR can be used in addition to the traditional RAID type.

- Model upgrades

    The following model upgrades are available:

    - ETERNUS DX100 S3 to DX200 S3

- ETERNUS DX500 S3 to DX600 S3

- Eco-mode power control

  For the RAID group Eco-mode operation, the disk drive power supply can be controlled in addition to the traditional spindle rotation control of the disk drive.

- Use of the following functions of ETERNUS DX100 S3

  - Set Up REC path

  - Acquire REC path information

  - Collect REC Device Information

  - Measure REC Response Delay Time

  - Set Up REC Multiplicity

  - Set Up REC Buffer

Point

To use the above functions, the firmware of the storage device must be V10L20 or later.

Note

The above functions cannot be used for ETERNUS DX200F.

1.9.3.3　　Support of New Devices

The following features can be used with Brocade VDX 6740/VDX 6740T. The support level is "A".

- Fault monitoring (SNMP Trap receiving and analyzing, Polling monitoring using ping, Obtaining device status)

- Linkage through management window

- Performance management

In addition, the following features can be used with Brocade VDX 8770-4/VDX 8770-8. The support level is "B".

- Fault monitoring (SNMP Trap receiving and analyzing, Polling monitoring using ping, Obtaining device status)

- Linkage through management window

Refer to "Support Levels" in the *Storage Cruiser Operation Guide* for details.
Refer to the *Event Guide* for information on the event traps notified from the device.

1.9.3.4　　SSH Connection Between Storage Cruiser's Manager and Managed Switches

SSH connection is supported as a communication method between the Storage Cruiser's manager and Fibre Channel switches that version is Fabric OS v6.3 or later. Refer to "Supported Devices" in the *Installation and Setup Guide* for details.

1.9.3.5　　Call Management Software of Switch

The management software of a switch can be specified with the switch registration screen of the Web Console. Refer to "Register FC Switch" in the *Web Console* for details about the switch registration screen.

In addition, the management software of a switch can be called from the Map View. Refer to "Call Management Software from Overview" or "Call Management Software from Logical Path View Screen" in the *Web Console* for information on how to call the management software of a switch.

1.9.3.6　Display of Capacity Graph of One Layer Tier Pool

The total capacity and the used capacity for one layer Tier pool can be displayed as a graph. Refer to "Capacity Management of One Layer Tier Pool" in the *Storage Cruiser Operation Guide* for details.

1.9.3.7　NAS Management Function

Regarding the NAS management functions for operating ETERNUS DX100 S3/DX200 S3, DX500 S3/DX600 S3 as NAS device, following functions are provided.

- Port bonding of NAS ports

- VLAN ID settings of NAS interface

- Settings of DNS server

- Change in NAS server name

- Capacity expansion of NAS volume

- Inter-box backup/restore of NAS volumes

- Automatic collection function of NAS volume snapshots

- Capacity limit function (Quota management) of NAS volumes

Refer to "NAS Management" in the *Storage Cruiser Operation Guide* for details.

📌 Note

The above functions cannot be used for ETERNUS DX200F.

1.9.4　New Functions of Storage Cruiser Optimization Function

1.9.4.1　Display of Capacity Graph of Tier Pool

The total capacity and the used capacity for Tier pool can be displayed as a graph. Refer to "Capacity Management of Tier Pool" in the *Storage Cruiser Operation Guide for Optimization Function* for details.

1.9.4.2　Evaluation Day for Automated Storage Tiering

When creating a Tiering policy of Automated Storage Tiering with the Web Console, it is possible to execute the evaluations on any day of a week by specifying "Week" with **Evaluation Period** and specifying the **Evaluation Day**. Refer to "Tiering Policies" in the *Storage Cruiser Operation Guide for Optimization Function* for details.

1.9.4.3　Providing of Command Line Interface for Automated Storage Tiering

The Command Line Interface for the following operations will be provided. Refer to "Command References" in the *Storage Cruiser Operation Guide for Optimization Function* for information on the commands.

Operation	Command Name
Start Automated Storage Tiering	esfast autotier start
Stop Automated Storage Tiering	esfast autotier stop
Start evaluation of Automated Storage Tiering	esfast evaluate start
Configure volume allocation ratio of Automated Storage Tiering	esfast ftvshare set
Display list of relocation history information of Automated Storage Tiering	esfast relocation history
Display list of relocation target volumes information of Automated Storage Tiering	esfast relocation status
Start Relocation of Automated Storage Tiering	esfast relocation start

Operation	Command Name
Stop Relocation of Automated Storage Tiering	esfast relocation stop

1.9.4.4 Feature Improvement of Automated QoS (Quality of Service)

The following functions are provided. Refer to the *Storage Cruiser Operation Guide for Optimization Function* for details.

Simplification of Configurations of Automated QoS Feature

By configuring an Automated QoS priority in relation to the volume the user will be utilizing, a performance target will be automatically calculated based on the priority and automated tuning will be performed in order to achieve the calculated target.

Coordination of Automated Storage Tiering and Automated QoS Feature

By configuring an Automated QoS priority or target response time, automated tuning of the performance will be performed with the Automated QoS feature or Automated Storage Tiering. For this reason, it will not be necessary to separate the use of the Automated QoS feature and Automated Storage Tiering.

Visualization of Effects of Performance Improvements

It is possible to confirm the effects of the installation of the Automated QoS feature with the Web Console.

1.9.5 New Functions of AdvancedCopy Manager

1.9.5.1 Backup Operation of Storage Cluster Enabled Volumes

AdvancedCopy Manager Copy Control Module provides the backup function of volumes on which the Storage Cluster function is enabled. Refer to "Advanced Copy Operation Using TFOV" in the *AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

1.9.5.2 Feature Improvement of Backup Management Function and Replication Management Function

Automatic Configuration of Maintenance Mode of MSCS or WSFC

In clustered operation with MSCS or WSFC, in cases involving a configuration with one partition per disk or copying in LUN units, it is possible to automatically configure the maintenance mode of the corresponding physical disk resource. Refer to "Notes on Backup in Clustered System" or "Notes on Replication in Clustered System" in the *AdvancedCopy Manager Operation Guide (for Windows)* for details.

1.9.5.3 Backup Wizard and Restore Wizard for SQL Server

The Backup Wizard for SQL Server is provided to enable easy the backup settings and operations for SQL Server. Both of which require complex procedures. This wizard provides a simple easy to use interface, and does not require the user to have specialist knowledge.
In addition, the Restore Wizard for SQL Server is provided to enable easy restore of the SQL Server database from the Web Console.
Refer to "Backup and Restore Using Wizard for SQL Server" in the *AdvancedCopy Manager Operation Guide (for Windows)* for details.

📖 Information

··

To use the Restore Wizard for SQL Server, ETERNUS SF AdvancedCopy Manager for Microsoft SQL Server license is required.

··

1.9.5.4 Scheduler

Provides a function to schedule and run scripts to back up databases of Exchange Server and SQL Server. This function allows backup schedules to be registered easily using a wizard. Refer to the *AdvancedCopy Manager Operation Guide (for Windows)* for details.

1.9.5.5 New Feature of VMware Virtual Machine Automatic Backup/Restore (Script)

The following features are provided.

- Script behaviors on Microsoft Windows Server 2012

- Script behaviors with the following functions of VMware vSphere enabled:

  - vSphere HA

  - vSphere DRS

  - vMotion

  - Storage DRS

  - Storage vMotion

- Backup/Restore of the system area of a virtual machine to which the RDM data area is connected

Refer to "VMware Virtual Machine Automatic Backup/Restore (Script)" in the *AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

1.10 New Functions in Version 16.0

1.10.1 New Functions of Common for All Products

1.10.1.1 Feature Improvement of Web Console

Expansion of the Range of the Automatic Screen Update

The entire screen of the three panes (overview screen) of the Web Console will automatically be updated. An update range that is the same as previous version can be selected.

Improvement of Session Timeout

In Version 15.3 or earlier, in cases when the automatic refresh interval was shorter than the session timeout interval, session timeout did not occur. In version 16.0, regardless of the value of the automatic refresh interval, if an operation is not performed during the time specified for the session timeout interval, a session timeout will occur. The default value of the session timeout interval is 60 minutes.

It is now possible to specify "0" as the session timeout interval. When "0" is specified, session timeout will not occur.

Refer to the *Web Console Guide* for details.

1.10.2 New Functions of Express

1.10.2.1 Support of New Devices

The following features can be used with the ETERNUS DX100 S3/DX200 S3.

- Fault monitoring (SNMP Trap receiving and analyzing, Polling monitoring using ping, Obtaining device status)

- Linkage through management window

- Performance management

Refer to the *Event Guide* for information on the event traps notified from the device.

1.10.2.2　NAS Management Feature

A NAS management feature will be provided to operate the ETERNUS DX100 S3/DX200 S3 as a NAS device.
Refer to "NAS Management" in the *Express Operation Guide* for details.

Note
....
This function cannot be used for ETERNUS DX200F.
....

1.10.3　New Functions of Storage Cruiser

1.10.3.1　Support of New Devices

The following features can be used with the ETERNUS DX100 S3/DX200 S3, DX500 S3/DX600 S3. The support level is "A".

- Fault monitoring (SNMP Trap receiving and analyzing, Polling monitoring using ping, Obtaining device status)

- Linkage through management window

- Performance management

Refer to "Support levels" in the *Storage Cruiser Operation Guide* for details.
Refer to the *Event Guide* for information on the event traps notified from the device.

1.10.3.2　Support of One Layer Tier Pool

An FTV created in a one layer Tier pool is equivalent to a TPV. The advantage of a one layer Tier Pool over a Thin Provisioning Pool is that the number of layers can be increased. A Thin Provisioning Pool cannot be converted to a Tier Pool.
A one layer Tier Pool does not require the ETERNUS SF Storage Cruiser Optimization Option license.
Refer to the *Storage Cruiser Operation Guide* for details.

1.10.3.3　NAS Management Feature

A NAS management feature will be provided to operate the ETERNUS DX100 S3/DX200 S3, DX500 S3/DX600 S3 as a NAS device.
Refer to "NAS Management" in the *Storage Cruiser Operation Guide* for details.

Note
....
This function cannot be used for ETERNUS DX200F.
....

1.10.3.4　Extreme Cache Feature

The following features are provided for the ETERNUS DX500 S3/DX600 S3 Extreme Cache.

- Configuration of enabling / disabling Extreme Cache (device units, volume units)

- Capacity configuration of Extreme Cache

- Obtaining the performance Information of Extreme Cache

1.10.3.5　Reporting Feature

Information of the volume connected to servers is collected and capacity information necessary for billing can be reported.
Refer to the *Storage Cruiser Operation Guide* for details.

1.10.4   New Functions of Storage Cruiser Optimization Function

In the Storage Cruiser Optimization Function, the following features are expanded.

1.10.4.1   Support of New Devices

From version 16.0, the ETERNUS DX100 S3/DX200 S3, DX500 S3/DX600 S3 can be used.

1.10.4.2   Automated Quality of Service Feature

According to task priority, task performance can be automatically tuned. The user configures the target value (in milliseconds) as response time of each volume, and the bandwidth is automatically adjusted to match the target value. Refer to the *Storage Cruiser Operation Guide for Optimization Function* for details.

1.10.4.3   Feature Improvement of Tier Pool

By performing the status update of the Automated Storage Tiering, the Tier pool created in the storage device can be used. Additionally, the configuration of the Tier pool embedded in the Automated Storage Tiering can be changed. The details that may be changed are as listed below.

- Increase the number of layers with the addition of a sub pool (the number of layers cannot be decreased)

- Change of layer level for an already created sub pool (for example, changing from Low sub pool to High sub pool)

- Change of the Tiering policy

- Change of the sub pool name

Refer to "Setting of Tier Pool" in the *Storage Cruiser Operation Guide for Optimization Function* for details.

1.10.4.4   Feature Improvement of Tiering Policy

The Tiering policy allows selection of the days of the week for evaluation. Performance data only for the days of the week specified is evaluated. Also, as in the past, specification of the evaluation time frames, narrowing of the evaluation subjects, and configuration of days to exclude from the evaluation are possible. When the specified unit for the evaluation period is "Hour", values of 2, 4, 6, 8, and 12 may be specified.
Refer to "Setting of Tiering Policy" in the *Storage Cruiser Operation Guide for Optimization Function* for details.

1.10.5   New Functions of AdvancedCopy Manager

1.10.5.1   Support of New Devices

From version 16.0, the ETERNUS DX100 S3/DX200 S3, DX500 S3/DX600 S3 can be used.

1.10.5.2   Backup Operation of NAS

A backup feature, for environments where the ETERNUS DX100 S3/DX200 S3, DX500 S3/DX600 S3 is operated as a NAS device, is provided.
Refer to "Backup of NAS environment" in the *AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

Chapter 2   Compatibility Information

This chapter describes the contents changed from the previous version of products.

2.1   Incompatible Information List

2.1.1   Incompatible Information List of Express

Refer to the following tables related to the version before upgrading:

- Table 2.1 Incompatible Information List of Express (When the Version before Upgrading is Version 16)

- Table 2.2 Incompatible Information List of Express (When the Version before Upgrading is Version 15 or Earlier)

Table 2.1 Incompatible Information List of Express (When the Version before Upgrading is Version 16)

Functions and Compatibility Issues	Version Before Upgrade								
	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8
Changes for Supported Storage Devices	I	I	I	I	I	I	I	I	C
Changes for Supported Web Browsers	I	I	I	I	I	I	I	I	I
Changes for Supported Operating Systems	I	I	I	I	I	I	I	I	C
Administrator's Belonging Group	C	C	C	C	C	C	C	C	C
Specification of FQDN (Fully Qualified Domain Name)	C	C	C	C	C	C	C	C	C
Troubleshooting Information Sending Function	C	C	C	C	C	C	C	C	C
Copy Group Definition Export/Import Function	C	C	C	C	C	C	C	C	C
RAID Group Automatic Creation Function	C	C	C	C	C	C	C	C	C
Different Name Setting Function for Device Information	C	C	C	C	C	C	C	C	C
Web Console Connection Address	C	C	C	C	C	C	C	C	C
Changes License Management Operation	C	C	C	C	C	C	C	C	C
Messages and Event Logs	C	C	C	C	C	C	C	C	C
Express_diag Command	C	C	C	C	C	C	C	C	C
Storageadm Perfdata Command Path Name (for Windows)	C	C	C	C	C	C	C	C	C
Troubleshooting Information Collection Command Name and Path Name (for Windows)	C	C	C	C	C	C	C	C	C
Response Time Displayed by Performance Management	I	C	C	C	C	C	C	C	C
Monitor Volume Range for Performance Management	I	I	C	C	C	C	C	C	C
Selectable RAID Type and Reliability When Using High-Capacity Disks	I	I	C	C	C	C	C	C	C
Output Messages	I	I	I	C	C	C	C	C	C
Count Method in Extended Copy Sessions and Default Filter on Session List Screen	C	C	C	C	C	C	C	C	C
Setting Method and Minimum Value for Copy Table Size	C	C	C	C	C	C	C	C	C

Functions and Compatibility Issues	Version Before Upgrade								
	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8
Screen Refresh Interval and Display/Input Unit of Web Console	C	C	C	C	C	C	C	C	C
Help Button Design and Online Help Display Procedures of Web Console	C	C	C	C	C	C	C	C	C
Changes Communication Port Default Value	C	C	C	C	C	C	C	C	C
Sanma.conf Configuration Checking for Device Registration	C	C	C	C	C	C	C	C	C
Customizing Configuration File	C	C	C	C	C	C	C	C	C
Operations for Host Response	C	C	C	C	C	C	C	C	C
Changes Character Strings in Performance Chart Window	C	C	C	C	C	C	C	C	C
Online Manual in DVD Media	C	C	C	C	C	C	C	C	C
Online Help Feature	C	C	C	C	C	C	C	C	C
Changes Configuration File Path for Port Number	C	C	C	C	C	C	C	C	C
Name of Commands Related to Configuration Import	C	C	C	C	C	C	C	C	C
Holding of Checks Placed in Table Checkboxes and Table Radio Buttons	I	C	C	C	C	C	C	C	C
Displayed Strings for CA Type Information	I	C	C	C	C	C	C	C	C
Category Pane Related to NAS Management Operation in Web Console	I	C	C	C	C	C	C	C	C
Change of Input Condition for Shared Folder Name	I	I	C	C	C	C	C	C	C
Change of Web Console Dashboard	I	I	I	C	C	C	C	C	C
Change of Column Name on Web Console Various Log Screens	I	I	I	C	C	C	C	C	C
Change of Action Name for Record Count Preference on Web Console	C	I	I	C	C	C	C	C	C
Displayed Contents of NAS Management Operation on Web Console	I	I	I	I (*1)	C	C	C	C	C
Displayed Contents Related to AntiVirus Function of Web Console	C	C	I	I	C	C	C	C	C
Change of Column Name on Web Console Thin Provisioning Screen	C	C	I	I	I	I	I	I	C
Change of the Display String Related to the Temperature on Web Console	I	I	I	I	I	I	I	I	I

Key

C: Compatible. No known compatibility issues.

I: Incompatible. Possible compatibility issues.

*1: This incompatibility occurs only when upgrading from an environment in which the Management Server is not applied with the Program Urgent Fix for supporting the ETERNUS DX100 S3/DX200 S3 that has a firmware version V10L51 or later.

Table 2.2 Incompatible Information List of Express (When the Version before Upgrading is Version 15 or Earlier)

Functions and Compatibility Issues	Version Before Upgrade				
	14.2 or Earlier	15.0	15.1	15.2	15.3
Changes for Supported Storage Devices	I	I	I	I	I
Changes for Supported Web Browsers	I	I	I	I	I
Changes for Supported Operating Systems	I	I	I	I	I
Administrator's Belonging Group	I	C	C	C	C
Specification of FQDN (Fully Qualified Domain Name)	I	C	C	C	C
Troubleshooting Information Sending Function	I	C	C	C	C
Copy Group Definition Export/Import Function	I	C	C	C	C
RAID Group Automatic Creation Function	I	C	C	C	C
Different Name Setting Function for Device Information	I	C	C	C	C
Web Console Connection Address	I	C	C	C	C
Changes License Management Operation	I	C	C	C	C
Messages and Event Logs	I	C	C	C	C
Express_diag Command	I	C	C	C	C
Storageadm Perfdata Command Path Name (for Windows)	I	C	C	C	C
Troubleshooting Information Collection Command Name and Path Name (for Windows)	I	C	C	C	C
Response Time Displayed by Performance Management	I	I	I	I	I
Monitor Volume Range for Performance Management	C	I	I	I	I
Selectable RAID Type and Reliability When Using High-Capacity Disks	C	I	I	I	I
Output Messages	I	I	I	I	I
Count Method in Extended Copy Sessions and Default Filter on Session List Screen	C	I	C	C	C
Setting Method and Minimum Value for Copy Table Size	C	I	C	C	C
Screen Refresh Interval and Display/Input Unit of Web Console	C	I	I	C	C
Help Button Design and Online Help Display Procedures of Web Console	C	I	I	C	C
Changes Communication Port Default Value	I	I	I	I	I
Sanma.conf Configuration Checking for Device Registration	C	I	I	I	I
Customizing Configuration File	C	I	I	I	I
Operations for Host Response	I	I	I	I	I
Changes Character Strings in Performance Chart Window	C	I	I	I	I
Online Manual in DVD Media	I	I	I	I	I
Online Help Feature	C	I	I	I	I
Changes Configuration File Path for Port Number	C	I	I	I	I

Functions and Compatibility Issues	Version Before Upgrade				
	14.2 or Earlier	15.0	15.1	15.2	15.3
Name of Commands Related to Configuration Import	C	I	I	I	I
Holding of Checks Placed in Table Checkboxes and Table Radio Buttons	I	I	I	I	I
Displayed Strings for CA Type Information	C	C	C	C	C
Category Pane Related to NAS Management Operation in Web Console	C	C	C	C	C
Change of Input Condition for Shared Folder Name	C	C	C	C	C
Change of Web Console Dashboard	C	I	I	I	I
Change of Column Name on Web Console Various Log Screens	C	I	I	I	I
Change of Action Name for Record Count Preference on Web Console	C	C	C	C	C
Displayed Contents of NAS Management Operation on Web Console	C	C	C	C	C
Displayed Contents Related to AntiVirus Function of Web Console	C	C	C	C	C
Change of Column Name on Web Console Thin Provisioning Screen	C	C	C	C	C
Change of the Display String Related to the Temperature on Web Console	C	I	I	I	I

Key
C: Compatible. No known compatibility issues.
I: Incompatible. Possible compatibility issues.

2.1.2 Incompatible Information List of Storage Cruiser

Refer to the following tables related to the version before upgrading:

- Table 2.3 Incompatible Information List of Storage Cruiser (When the Version before Upgrading is Version 16)

- Table 2.4 Incompatible Information List of Storage Cruiser (When the Version before Upgrading is Version 15)

- Table 2.5 Incompatible Information List of Storage Cruiser (When the Version before Upgrading is Version 14 or Earlier)

Table 2.3 Incompatible Information List of Storage Cruiser (When the Version before Upgrading is Version 16)

Functions and Compatibility Issues	Version Before Upgrade								
	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8
First Argument Value to Be Handed Over to Event Linkage Function	C	C	C	C	C	C	C	C	C
Daemon Start/Stop Command	C	C	C	C	C	C	C	C	C
Cmdline Resource for Clustered Systems	C	C	C	C	C	C	C	C	C
Displayed Contents for LVM (for HP-UX)	C	C	C	C	C	C	C	C	C
Message of Communication Recovery Event	C	C	C	C	C	C	C	C	C

Functions and Compatibility Issues	Version Before Upgrade								
	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8
Ssmgr3228 Message	C	C	C	C	C	C	C	C	C
SNMP Trap Reception Program Specification	C	C	C	C	C	C	C	C	C
Default Installation Path of Programs (for Windows)	C	C	C	C	C	C	C	C	C
Troubleshooting Information Collection Command Name and Path Name	C	C	C	C	C	C	C	C	C
Changes for Supported Devices	I	I	I	I	I	I	I	I	I
Changes for Supported Operating Systems	I	I	I	I	I	I	I	I	I
Changes for Supported Web Browsers	I	I	I	I	I	I	I	I	I
Changes for Supported Agent Version	I	I	I	I	I	I	I	I	C
Storage Volume Configuration Navigator	C	C	C	C	C	C	C	C	C
Supports of GUI Client	C	C	C	C	C	C	C	C	C
Changes for Login Account	C	C	C	C	C	C	C	C	C
Memo Information Table and Revolving Light Icon	C	C	C	C	C	C	C	C	C
Beacon Function for Solaris Server Node	C	C	C	C	C	C	C	C	C
Display Information of Correlation Management	C	C	C	C	C	C	C	C	C
Changes for Performance Management	C	C	C	C	C	C	C	C	C
Information Required for ETERNUS Disk Storage System Registration	C	C	C	C	C	C	C	C	C
SNMP Trap Setup Function Checking at Device Registration	C	C	C	C	C	C	C	C	C
SNMP Trap Setup After Registering Fibre Channel Switch	C	C	C	C	C	C	C	C	C
Thin Provisioning Pool Threshold Monitoring Icon	C	C	C	C	C	C	C	C	C
Display Method of Thin Provisioning Pool Capacity Chart	C	C	C	C	C	C	C	C	C
Managed Server Deletion Process	C	C	C	C	C	C	C	C	C
VM Host Deletion Procedure if VM Guests Exist on VM Host	C	C	C	C	C	C	C	C	C
Displayed Contents of End to End View	C	C	C	C	C	C	C	C	C
Changes for Map View	C	C	C	C	C	C	C	C	C
Output Information of Storageadm Port Command and Storageadm Iscsiport Command	C	C	C	C	C	C	C	C	C
Firmware Version Notation of ETERNUS Disk Storage System	C	C	C	C	C	C	C	C	C
Sanadmsh Chtraprcvip Command Format	C	C	C	C	C	C	C	C	C
Changes Connection Method Between Storage Cruiser's Manager and Managed Switches	I	C	C	C	C	C	C	C	C
Response Time Displayed by Performance Management	I	C	C	C	C	C	C	C	C
Tiering Policy Import Command Name	C	C	C	C	C	C	C	C	C
Output Message IDs of Storage Cruiser	C	C	C	C	C	C	C	C	C

Functions and Compatibility Issues	Version Before Upgrade								
	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8
Output Messages of Automated Storage Tiering	I	C	C	C	C	C	C	C	C
Item Name of Tiering Policy	I	C	C	C	C	C	C	C	C
Action Name of Tier Pool	I	C	C	C	C	C	C	C	C
Item Name of Tier Pool	I	C	C	C	C	C	C	C	C
Item Name of FTV	I	C	C	C	C	C	C	C	C
Display Contents in TFO Group List Screen for Storage Cluster Function	C	I	C	C	C	C	C	C	C
Output Messages of Storage Cluster Function	C	I	C	C	C	C	C	C	C
Monitor Volume Range for Performance Management	I	I	C	C	C	C	C	C	C
Selectable RAID Type and Reliability When Using High-Capacity Disks	I	I	C	C	C	C	C	C	C
Recognition Methods for VM Guests	I	I	C	C	C	C	C	C	C
Item Name of Automated QoS Function	C	I	C	C	C	C	C	C	C
Output Messages of Automated QoS Function	C	I	C	C	C	C	C	C	C
Output Messages	I	I	I	C	C	C	C	C	C
Action Name for Enabling/Disabling Extreme Cache Function	I	I	I	C	C	C	C	C	C
Capacity Displayed for Automated Storage Tiering	I	I	I	I	C	C	C	C	C
Status Display of TFO Group Regarding Storage Cluster Function	C	I	I	I	I	C	C	C	C
Port Selection Method for VVOL Access Path Settings in Web Console	C	C	I (*1)	I	I	C	C	C	C
Port Display for VVOL Access Path Setting in Web Console	C	C	I (*1)	I	I	C	C	C	C
OS Information Displayed for Microsoft Windows Server 2019 and Microsoft Windows Server 2016	C	C	C	C	C	C	I	I	I
Behavior of Manual Failover/Failback in the Storage Cluster Function	C	C	C	C	C	C	C	C	I
Count Method in Extended Copy Sessions and Default Filter on Session List Screen	C	C	C	C	C	C	C	C	C
Setting Method and Minimum Value for Copy Table Size	C	C	C	C	C	C	C	C	C
Screen Refresh Interval and Display/Input Unit of Web Console	C	C	C	C	C	C	C	C	C
Help Button Design and Online Help Display Procedures of Web Console	C	C	C	C	C	C	C	C	C
Sanma.conf Configuration Checking for Device Registration	C	C	C	C	C	C	C	C	C
Customizing Configuration File	C	C	C	C	C	C	C	C	C
Operations for Host Response	C	C	C	C	C	C	C	C	C
Changes Character Strings in Performance Chart Window	C	C	C	C	C	C	C	C	C

Functions and Compatibility Issues	Version Before Upgrade								
	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8
Online Manual in DVD Media	C	C	C	C	C	C	C	C	C
Online Help Feature	C	C	C	C	C	C	C	C	C
Changes Configuration File Path for Port Number	C	C	C	C	C	C	C	C	C
Name of Commands Related to Configuration Import	C	C	C	C	C	C	C	C	C
Holding of Checks Placed in Table Checkboxes and Table Radio Buttons	I	C	C	C	C	C	C	C	C
Displayed Strings for CA Type Information	I	C	C	C	C	C	C	C	C
Category Pane Related to NAS Management Operation in Web Console	I	C	C	C	C	C	C	C	C
Change of Input Condition for Shared Folder Name	I	I	C	C	C	C	C	C	C
Change of Web Console Dashboard	I	I	I	C	C	C	C	C	C
Change of Column Name on Web Console Various Log Screens	I	I	I	C	C	C	C	C	C
Change of Action Name for Record Count Preference on Web Console	C	I	I	C	C	C	C	C	C
Displayed Contents of NAS Management Operation on Web Console	I	I	I	I (*2)	C	C	C	C	C
Displayed Contents Related to AntiVirus Function of Web Console	C	C	I	I	C	C	C	C	C
Change of Column Name on Web Console Thin Provisioning Screen	C	C	I	I	I	I	I	I	C
Change of the Display String Related to the Temperature on Web Console	I	I	I	I	I	I	I	I	I

Key

C: Compatible. No known compatibility issues.

I: Incompatible. Possible compatibility issues.

*1: This incompatibility occurs only when upgrading from an environment in which the Management Server is applied with the Program Urgent Fix for supporting the VMware vSphere Virtual Volumes function.

*2: This incompatibility occurs only when upgrading from an environment in which the Management Server is not applied with the Program Urgent Fix for supporting the ETERNUS DX100 S3/DX200 S3, DX500 S3/DX600 S3 that has a firmware version V10L51 or later.

Table 2.4 Incompatible Information List of Storage Cruiser (When the Version before Upgrading is Version 15)

Functions and Compatibility Issues	Version Before Upgrade			
	15.0	15.1	15.2	15.3
First Argument Value to Be Handed Over to Event Linkage Function	C	C	C	C
Daemon Start/Stop Command	I	I	I	I
Cmdline Resource for Clustered Systems	I	I	I	I
Displayed Contents for LVM (for HP-UX)	C	C	C	C
Message of Communication Recovery Event	C	C	C	C
Ssmgr3228 Message	C	C	C	C

Functions and Compatibility Issues	Version Before Upgrade			
	15.0	15.1	15.2	15.3
SNMP Trap Reception Program Specification	I	I	I	C
Default Installation Path of Programs (for Windows)	C	C	C	C
Troubleshooting Information Collection Command Name and Path Name	C	C	C	C
Changes for Supported Devices	I	I	I	I
Changes for Supported Operating Systems	I	I	I	I
Changes for Supported Web Browsers	I	I	I	I
Changes for Supported Agent Version	I	I	I	I
Storage Volume Configuration Navigator	C	C	C	C
Supports of GUI Client	C	C	C	C
Changes for Login Account	C	C	C	C
Memo Information Table and Revolving Light Icon	C	C	C	C
Beacon Function for Solaris Server Node	C	C	C	C
Display Information of Correlation Management	C	C	C	C
Changes for Performance Management	C	C	C	C
Information Required for ETERNUS Disk Storage System Registration	C	C	C	C
SNMP Trap Setup Function Checking at Device Registration	C	C	C	C
SNMP Trap Setup After Registering Fibre Channel Switch	I	I	I	I
Thin Provisioning Pool Threshold Monitoring Icon	C	C	C	C
Display Method of Thin Provisioning Pool Capacity Chart	C	C	C	C
Managed Server Deletion Process	C	C	C	C
VM Host Deletion Procedure if VM Guests Exist on VM Host	C	C	C	C
Displayed Contents of End to End View	I	C	C	C
Changes for Map View	I	C	C	C
Output Information of Storageadm Port Command and Storageadm Iscsiport Command	I	C	C	C
Firmware Version Notation of ETERNUS Disk Storage System	I	I	C	C
Sanadmsh Chtraprcvip Command Format	I	I	I	I
Changes Connection Method Between Storage Cruiser's Manager and Managed Switches	I	I	I	I
Response Time Displayed by Performance Management	I	I	I	I
Tiering Policy Import Command Name	C	C	I	I
Output Message IDs of Storage Cruiser	I	I	I	I
Output Messages of Automated Storage Tiering	I	I	I	I
Item Name of Tiering Policy	C	C	C	C
Action Name of Tier Pool	C	C	C	C
Item Name of Tier Pool	C	C	C	I
Item Name of FTV	C	C	C	C

Functions and Compatibility Issues	Version Before Upgrade			
	15.0	15.1	15.2	15.3
Display Contents in TFO Group List Screen for Storage Cluster Function	C	C	C	C
Output Messages of Storage Cluster Function	C	C	C	C
Monitor Volume Range for Performance Management	I	I	I	I
Selectable RAID Type and Reliability When Using High-Capacity Disks	I	I	I	I
Recognition Methods for VM Guests	I	I	I	I
Item Name of Automated QoS Function	C	C	C	C
Output Messages of Automated QoS Function	C	C	C	C
Output Messages	I	I	I	I
Action Name for Enabling/Disabling Extreme Cache Function	C	C	C	C
Capacity Displayed for Automated Storage Tiering	I	I	I	I
Status Display of TFO Group Regarding Storage Cluster Function	C	C	C	C
Port Selection Method for VVOL Access Path Settings in Web Console	C	C	C	C
Port Display for VVOL Access Path Setting in Web Console	C	C	C	C
OS Information Displayed for Microsoft Windows Server 2019 and Microsoft Windows Server 2016	C	C	C	C
Behavior of Manual Failover/Failback in the Storage Cluster Function	C	C	C	C
Count Method in Extended Copy Sessions and Default Filter on Session List Screen	I	C	C	C
Setting Method and Minimum Value for Copy Table Size	I	C	C	C
Screen Refresh Interval and Display/Input Unit of Web Console	I	I	C	C
Help Button Design and Online Help Display Procedures of Web Console	I	I	C	C
Sanma.conf Configuration Checking for Device Registration	I	I	I	I
Customizing Configuration File	I	I	I	I
Operations for Host Response	I	I	I	I
Changes Character Strings in Performance Chart Window	I	I	I	I
Online Manual in DVD Media	I	I	I	I
Online Help Feature	I	I	I	I
Changes Configuration File Path for Port Number	I	I	I	I
Name of Commands Related to Configuration Import	I	I	I	I
Holding of Checks Placed in Table Checkboxes and Table Radio Buttons	I	I	I	I
Displayed Strings for CA Type Information	C	C	C	C
Category Pane Related to NAS Management Operation in Web Console	C	C	C	C

Functions and Compatibility Issues	Version Before Upgrade			
	15.0	15.1	15.2	15.3
Change of Input Condition for Shared Folder Name	C	C	C	C
Change of Web Console Dashboard	I	I	I	I
Change of Column Name on Web Console Various Log Screens	I	I	I	I
Change of Action Name for Record Count Preference on Web Console	C	C	C	C
Displayed Contents of NAS Management Operation on Web Console	C	C	C	C
Displayed Contents Related to AntiVirus Function of Web Console	C	C	C	C
Change of Column Name on Web Console Thin Provisioning Screen	C	C	C	C
Change of the Display String Related to the Temperature on Web Console	I	I	I	I

Key

C: Compatible. No known compatibility issues.

I: Incompatible. Possible compatibility issues.

Table 2.5 Incompatible Information List of Storage Cruiser (When the Version before Upgrading is Version 14 or Earlier)

Functions and Compatibility Issues	Version Before Upgrade						
	13.0	13.1	13.2	13.3	13.4	14.0, 14.1	14.2
First Argument Value to Be Handed Over to Event Linkage Function	I	I	C	C	C	C	C
Daemon Start/Stop Command	I	I	I	I	I	I	I
Cmdline Resource for Clustered Systems	I	I	I	I	I	I	I
Displayed Contents for LVM (for HP-UX)	I	I	I	I	C	C	C
Message of Communication Recovery Event	I	I	I	I	I	C	C
Ssmgr3228 Message	C	C	C	C	C	I	C
SNMP Trap Reception Program Specification	I	I	I	I	I	I	I
Default Installation Path of Programs (for Windows)	I	I	I	I	I	I	I
Troubleshooting Information Collection Command Name and Path Name	I	I	I	I	I	I	I
Changes for Supported Devices	I	I	I	I	I	I	I
Changes for Supported Operating Systems	I	I	I	I	I	I	I
Changes for Supported Web Browsers	C	C	C	C	C	C	C
Changes for Supported Agent Version	I	I	I	I	I	I	I
Storage Volume Configuration Navigator	C	I	I	I	I	I	I
Supports of GUI Client	I	I	I	I	I	I	I
Changes for Login Account	I	I	I	I	I	I	I
Memo Information Table and Revolving Light Icon	I	I	I	I	I	I	I

Functions and Compatibility Issues	Version Before Upgrade						
	13.0	13.1	13.2	13.3	13.4	14.0, 14.1	14.2
Beacon Function for Solaris Server Node	I	I	I	I	I	I	I
Display Information of Correlation Management	I	I	I	I	I	I	I
Changes for Performance Management	I	I	I	I	I	I	I
Information Required for ETERNUS Disk Storage System Registration	I	I	I	I	I	I	I
SNMP Trap Setup Function Checking at Device Registration	I	I	I	I	I	I	I
SNMP Trap Setup After Registering Fibre Channel Switch	C	C	C	C	C	C	C
Thin Provisioning Pool Threshold Monitoring Icon	C	C	C	C	C	I	I
Display Method of Thin Provisioning Pool Capacity Chart	C	C	C	C	C	I	I
Managed Server Deletion Process	I	I	I	I	I	I	I
VM Host Deletion Procedure if VM Guests Exist on VM Host	C	C	C	C	I	I	I
Displayed Contents of End to End View	I	I	I	I	I	I	I
Changes for Map View	I	I	I	I	I	I	I
Output Information of Storageadm Port Command and Storageadm Iscsiport Command	C	C	C	C	C	C	I
Firmware Version Notation of ETERNUS Disk Storage System	I	I	I	I	I	I	I
Sanadmsh Chtraprcvip Command Format	I	I	I	I	I	I	I
Changes Connection Method Between Storage Cruiser's Manager and Managed Switches	I	I	I	I	I	I	I
Response Time Displayed by Performance Management	I	I	I	I	I	I	I
Tiering Policy Import Command Name	C	C	C	C	C	C	C
Output Message IDs of Storage Cruiser	C	C	C	I	I	I	I
Output Messages of Automated Storage Tiering	C	C	C	C	C	C	C
Item Name of Tiering Policy	C	C	C	C	C	C	C
Action Name of Tier Pool	C	C	C	C	C	C	C
Item Name of Tier Pool	C	C	C	C	C	C	C
Item Name of FTV	C	C	C	C	C	C	C
Display Contents in TFO Group List Screen for Storage Cluster Function	C	C	C	C	C	C	C
Output Messages of Storage Cluster Function	C	C	C	C	C	C	C
Monitor Volume Range for Performance Management	C	C	C	C	C	C	C
Selectable RAID Type and Reliability When Using High-Capacity Disks	C	C	C	C	C	C	C
Recognition Methods for VM Guests	C	C	C	C	I	I	I
Item Name of Automated QoS Function	C	C	C	C	C	C	C
Output Messages of Automated QoS Function	C	C	C	C	C	C	C
Output Messages	C	C	C	C	I	I	I
Action Name for Enabling/Disabling Extreme Cache Function	C	C	C	C	C	C	C
Capacity Displayed for Automated Storage Tiering	C	C	C	C	C	C	C

Functions and Compatibility Issues	Version Before Upgrade						
	13.0	13.1	13.2	13.3	13.4	14.0, 14.1	14.2
Status Display of TFO Group Regarding Storage Cluster Function	C	C	C	C	C	C	C
Port Selection Method for VVOL Access Path Settings in Web Console	C	C	C	C	C	C	C
Port Display for VVOL Access Path Setting in Web Console	C	C	C	C	C	C	C
OS Information Displayed for Microsoft Windows Server 2019 and Microsoft Windows Server 2016	C	C	C	C	C	C	C
Behavior of Manual Failover/Failback in the Storage Cluster Function	C	C	C	C	C	C	C
Count Method in Extended Copy Sessions and Default Filter on Session List Screen	C	C	C	C	C	C	C
Setting Method and Minimum Value for Copy Table Size	C	C	C	C	C	C	C
Screen Refresh Interval and Display/Input Unit of Web Console	C	C	C	C	C	C	C
Help Button Design and Online Help Display Procedures of Web Console	C	C	C	C	C	C	C
Sanma.conf Configuration Checking for Device Registration	C	C	C	C	C	C	C
Customizing Configuration File	I	I	I	I	I	I	I
Operations for Host Response	C	C	C	C	C	C	C
Changes Character Strings in Performance Chart Window	C	C	C	C	C	C	C
Online Manual in DVD Media	I	I	I	I	I	I	I
Online Help Feature	C	C	C	C	C	C	C
Changes Configuration File Path for Port Number	C	C	C	C	C	C	C
Name of Commands Related to Configuration Import	C	C	C	C	C	C	C
Holding of Checks Placed in Table Checkboxes and Table Radio Buttons	I	I	I	I	I	I	I
Displayed Strings for CA Type Information	C	C	C	C	C	C	C
Category Pane Related to NAS Management Operation in Web Console	C	C	C	C	C	C	C
Change of Input Condition for Shared Folder Name	C	C	C	C	C	C	C
Change of Web Console Dashboard	C	C	C	C	C	C	C
Change of Column Name on Web Console Various Log Screens	C	C	C	C	C	C	C
Change of Action Name for Record Count Preference on Web Console	C	C	C	C	C	C	C
Displayed Contents of NAS Management Operation on Web Console	C	C	C	C	C	C	C
Displayed Contents Related to AntiVirus Function of Web Console	C	C	C	C	C	C	C
Change of Column Name on Web Console Thin Provisioning Screen	C	C	C	C	C	C	C

Functions and Compatibility Issues	Version Before Upgrade						
	13.0	13.1	13.2	13.3	13.4	14.0, 14.1	14.2
Change of the Display String Related to the Temperature on Web Console	C	C	C	C	C	C	C

Key

C: Compatible. No known compatibility issues.

I: Incompatible. Possible compatibility issues.

2.1.3 Incompatible Information List of AdvancedCopy Manager

Refer to the following tables related to the version before upgrading:

- Table 2.6 Incompatible Information List of AdvancedCopy Manager (When the Version before Upgrading is Version 16)

- Table 2.7 Incompatible Information List of AdvancedCopy Manager (When the Version before Upgrading is Version 15)

- Table 2.8 Incompatible Information List of AdvancedCopy Manager (When the Version before Upgrading is Version 14 or Earlier)

Table 2.6 Incompatible Information List of AdvancedCopy Manager (When the Version before Upgrading is Version 16)

Functions and Compatibility Issues	Version Before Upgrade								
	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8
Registration Method for Remote ETERNUS Disk Storage System Using AdvancedCopy Manager Copy Control Module	C	C	C	C	C	C	C	C	C
Host Affinity Group List Display Command Name of AdvancedCopy Manager Copy Control Module	C	C	C	C	C	C	C	C	C
Output Messages of AdvancedCopy Manager Copy Control Module	C	C	C	C	C	C	C	C	C
Name of Term Used with AdvancedCopy Manager Copy Control Module	C	C	C	C	C	C	C	C	C
Supports of GUI Client	C	C	C	C	C	C	C	C	C
Changes for Supported Storage Devices	I	I	I	I	I	I	I	I	C
Changes for Supported Operating Systems	I	I	I	I	I	I	I	I	I
Changes for Supported Web Browsers	I	I	I	I	I	I	I	I	I
Changes for Supported Agent Version	I	I	I	I	I	I	I	I	C
Changes for Supported Software	I	I	I	I	I	I	I	I	I
Default Installation Path of Programs (for Windows)	C	C	C	C	C	C	C	C	C
Installation Destination Directory of Program (for Solaris, Linux)	C	C	C	C	C	C	C	C	C
Command Preview	C	C	C	C	C	C	C	C	C
Stgmgrinfobkup Command Processing at -t Option Specification	C	C	C	C	C	C	C	C	C
Output Information of Stgenvdisp Command	C	C	C	C	C	C	C	C	C
Swstbackup Command Processing (for Windows)	C	C	C	C	C	C	C	C	C

Functions and Compatibility Issues	Version Before Upgrade								
	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8
Swsrpmake Command and Swsrpcancel Command Processing (for Windows)	C	C	C	C	C	C	C	C	C
Environment Setup/Deletion Methods for PRIMECLUSTER (for Linux)	C	C	C	C	C	C	C	C	C
Troubleshooting Information Collection Command Name and Path Name	C	C	C	C	C	C	C	C	C
Swsrpmake Command Processing on Combining Cascade Copy and Concurrent OPC	C	C	C	C	C	C	C	C	C
Acopc Start Command and Acsnap Start Command Processing	C	C	C	C	C	C	C	C	C
Environment Setup/Deletion Methods for Clustered Systems (for Solaris, HP-UX)	C	C	C	C	C	C	C	C	C
AdvancedCopy Manager Copy Control Module Customization Procedure	C	C	C	C	C	C	C	C	C
Copy Progress Rate of QuickOPC	C	C	C	C	C	C	C	C	C
Information to Be Displayed If Hardware Error, etc. Occurs	C	C	C	C	C	C	C	C	C
Automatic Configuration of Maintenance Mode of MSCS or WSFC	I	C	C	C	C	C	C	C	C
Database Backup/Restore Method	I	C	C	C	C	C	C	C	C
Database Save/Recovery Method	I	C	C	C	C	C	C	C	C
Target of Management Information Package Backup of AdvancedCopy Manager	I	C	C	C	C	C	C	C	C
Commands/Services/Daemons Related to AdvancedCopy Manager Database	I	C	C	C	C	C	C	C	C
Items Displayed by Stgenvdisp Command	I	C	C	C	C	C	C	C	C
Meaning of -d Option of Stgrepocnv Command	I	C	C	C	C	C	C	C	C
Meaning of -b Option of Stgforcedelsrv Command	I	C	C	C	C	C	C	C	C
Name of NAS Backup Volume and Copy Group Created by Setting of NAS Backup	I	I	C	C	C	C	C	C	C
Behavior When Specifying Copy Groups with Execution Type Commands of AdvancedCopy Manager Copy Control Module	I	I	I	I	I	C	C	C	C
Count Method in Extended Copy Sessions and Default Filter on Session List Screen	C	C	C	C	C	C	C	C	C
Setting Method and Minimum Value for Copy Table Size	C	C	C	C	C	C	C	C	C
Screen Refresh Interval and Display/Input Unit of Web Console	C	C	C	C	C	C	C	C	C
Help Button Design and Online Help Display Procedures of Web Console	C	C	C	C	C	C	C	C	C
Changes Communication Port Default Value	C	C	C	C	C	C	C	C	C
Sanma.conf Configuration Checking for Device Registration	C	C	C	C	C	C	C	C	C

Functions and Compatibility Issues	Version Before Upgrade								
	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8
Customizing Configuration File	C	C	C	C	C	C	C	C	C
Online Manual in DVD Media	C	C	C	C	C	C	C	C	C
Online Help Feature	C	C	C	C	C	C	C	C	C
Changes Configuration File Path for Port Number	C	C	C	C	C	C	C	C	C
Name of Commands Related to Configuration Import	C	C	C	C	C	C	C	C	C
Holding of Checks Placed in Table Checkboxes and Table Radio Buttons	I	C	C	C	C	C	C	C	C
Displayed Strings for CA Type Information	I	C	C	C	C	C	C	C	C
Category Pane Related to NAS Management Operation in Web Console	I	C	C	C	C	C	C	C	C
Change of Input Condition for Shared Folder Name	I	I	C	C	C	C	C	C	C
Change of Web Console Dashboard	I	I	I	C	C	C	C	C	C
Change of Column Name on Web Console Various Log Screens	I	I	I	C	C	C	C	C	C
Change of Action Name for Record Count Preference on Web Console	C	I	I	C	C	C	C	C	C
Displayed Contents Related to AntiVirus Function of Web Console	C	C	C	C	C	C	C	C	C
Change of Column Name on Web Console Thin Provisioning Screen	C	C	I	I	I	I	I	I	C
Change of the Display String Related to the Temperature on Web Console	I	I	I	I	I	I	I	I	I

Key

C: Compatible. No known compatibility issues.

I: Incompatible. Possible compatibility issues.

Table 2.7 Incompatible Information List of AdvancedCopy Manager (When the Version before Upgrading is Version 15)

Functions and Compatibility Issues	Version Before Upgrade			
	15.0	15.1	15.2	15.3
Registration Method for Remote ETERNUS Disk Storage System Using AdvancedCopy Manager Copy Control Module	C	C	C	C
Host Affinity Group List Display Command Name of AdvancedCopy Manager Copy Control Module	C	C	C	C
Output Messages of AdvancedCopy Manager Copy Control Module	C	C	C	C
Name of Term Used with AdvancedCopy Manager Copy Control Module	C	C	C	C
Supports of GUI Client	C	C	C	C
Changes for Supported Storage Devices	I	I	I	I
Changes for Supported Operating Systems	I	I	I	I
Changes for Supported Web Browsers	I	I	I	I

Functions and Compatibility Issues	Version Before Upgrade			
	15.0	15.1	15.2	15.3
Changes for Supported Agent Version	I	I	I	I
Changes for Supported Software	I	I	I	I
Default Installation Path of Programs (for Windows)	C	C	C	C
Installation Destination Directory of Program (for Solaris, Linux)	C	C	C	C
Command Preview	C	C	C	C
Stgmgrinfobkup Command Processing at -t Option Specification	C	C	C	C
Output Information of Stgenvdisp Command	C	C	C	C
Swstbackup Command Processing (for Windows)	C	C	C	C
Swsrpmake Command and Swsrpcancel Command Processing (for Windows)	C	C	C	C
Environment Setup/Deletion Methods for PRIMECLUSTER (for Linux)	C	C	C	C
Troubleshooting Information Collection Command Name and Path Name	C	C	C	C
Swsrpmake Command Processing on Combining Cascade Copy and Concurrent OPC	I	C	C	C
Acopc Start Command and Acsnap Start Command Processing	I	C	C	C
Environment Setup/Deletion Methods for Clustered Systems (for Solaris, HP-UX)	I	C	C	C
AdvancedCopy Manager Copy Control Module Customization Procedure	I	C	C	C
Copy Progress Rate of QuickOPC	I	C	C	C
Information to Be Displayed If Hardware Error, etc. Occurs	I	I	C	C
Automatic Configuration of Maintenance Mode of MSCS or WSFC	I	I	I	I
Database Backup/Restore Method	I	I	I	I
Database Save/Recovery Method	I	I	I	I
Target of Management Information Package Backup of AdvancedCopy Manager	I	I	I	I
Commands/Services/Daemons Related to AdvancedCopy Manager Database	I	I	I	I
Items Displayed by Stgenvdisp Command	I	I	I	I
Meaning of -d Option of Stgrepocnv Command	I	I	I	I
Meaning of -b Option of Stgforcedelsrv Command	I	I	I	I
Name of NAS Backup Volume and Copy Group Created by Setting of NAS Backup	C	C	C	C
Behavior When Specifying Copy Groups with Execution Type Commands of AdvancedCopy Manager Copy Control Module	I	I	I	I

Functions and Compatibility Issues	Version Before Upgrade			
	15.0	15.1	15.2	15.3
Count Method in Extended Copy Sessions and Default Filter on Session List Screen	I	C	C	C
Setting Method and Minimum Value for Copy Table Size	I	C	C	C
Screen Refresh Interval and Display/Input Unit of Web Console	I	I	C	C
Help Button Design and Online Help Display Procedures of Web Console	I	I	C	C
Changes Communication Port Default Value	I	I	I	I
Sanma.conf Configuration Checking for Device Registration	I	I	I	I
Customizing Configuration File	I	I	I	I
Online Manual in DVD Media	I	I	I	I
Online Help Feature	I	I	I	I
Changes Configuration File Path for Port Number	I	I	I	I
Name of Commands Related to Configuration Import	I	I	I	I
Holding of Checks Placed in Table Checkboxes and Table Radio Buttons	I	I	I	I
Displayed Strings for CA Type Information	C	C	C	C
Category Pane Related to NAS Management Operation in Web Console	C	C	C	C
Change of Input Condition for Shared Folder Name	C	C	C	C
Change of Web Console Dashboard	I	I	I	I
Change of Column Name on Web Console Various Log Screens	I	I	I	I
Change of Action Name for Record Count Preference on Web Console	C	C	C	C
Displayed Contents Related to AntiVirus Function of Web Console	C	C	C	C
Change of Column Name on Web Console Thin Provisioning Screen	C	C	C	C
Change of the Display String Related to the Temperature on Web Console	I	I	I	I

Key

C: Compatible. No known compatibility issues.

I: Incompatible. Possible compatibility issues.

Table 2.8 Incompatible Information List of AdvancedCopy Manager (When the Version before Upgrading is Version 14 or Earlier)

Functions and Compatibility Issues	Version Before Upgrade		
	14.0 or Earlier	14.1	14.2
Registration Method for Remote ETERNUS Disk Storage System Using AdvancedCopy Manager Copy Control Module	I	I	C
Host Affinity Group List Display Command Name of AdvancedCopy Manager Copy Control Module	I	I	C
Output Messages of AdvancedCopy Manager Copy Control Module	I	I	C
Name of Term Used with AdvancedCopy Manager Copy Control Module	I	I	I
Supports of GUI Client	I	I	I
Changes for Supported Storage Devices	I	I	I
Changes for Supported Operating Systems	I	I	I
Changes for Supported Web Browsers	C	C	C
Changes for Supported Agent Version	I	I	I
Changes for Supported Software	I	I	I
Default Installation Path of Programs (for Windows)	I	I	I
Installation Destination Directory of Program (for Solaris, Linux)	I	I	I
Command Preview	I	I	I
Stgmgrinfobkup Command Processing at -t Option Specification	I	I	I
Output Information of Stgenvdisp Command	I	I	I
Swstbackup Command Processing (for Windows)	I	I	I
Swsrpmake Command and Swsrpcancel Command Processing (for Windows)	I	I	I
Environment Setup/Deletion Methods for PRIMECLUSTER (for Linux)	I	I	I
Troubleshooting Information Collection Command Name and Path Name	I	I	I
Swsrpmake Command Processing on Combining Cascade Copy and Concurrent OPC	C	C	C
Acopc Start Command and Acsnap Start Command Processing	C	C	C
Environment Setup/Deletion Methods for Clustered Systems (for Solaris, HP-UX)	I	I	I
AdvancedCopy Manager Copy Control Module Customization Procedure	C	C	C
Copy Progress Rate of QuickOPC	I	I	I

Functions and Compatibility Issues	Version Before Upgrade		
	14.0 or Earlier	14.1	14.2
Information to Be Displayed If Hardware Error, etc. Occurs	I	I	I
Automatic Configuration of Maintenance Mode of MSCS or WSFC	I	I	I
Database Backup/Restore Method	I	I	I
Database Save/Recovery Method	I	I	I
Target of Management Information Package Backup of AdvancedCopy Manager	I	I	I
Commands/Services/Daemons Related to AdvancedCopy Manager Database	I	I	I
Items Displayed by Stgenvdisp Command	I	I	I
Meaning of -d Option of Stgrepocnv Command	I	I	I
Meaning of -b Option of Stgforcedelsrv Command	I	I	I
Name of NAS Backup Volume and Copy Group Created by Setting of NAS Backup	C	C	C
Behavior When Specifying Copy Groups with Execution Type Commands of AdvancedCopy Manager Copy Control Module	I	I	I
Count Method in Extended Copy Sessions and Default Filter on Session List Screen	C	C	C
Setting Method and Minimum Value for Copy Table Size	C	C	C
Screen Refresh Interval and Display/Input Unit of Web Console	C	C	C
Help Button Design and Online Help Display Procedures of Web Console	C	C	C
Changes Communication Port Default Value	I	I	I
Sanma.conf Configuration Checking for Device Registration	C	C	C
Customizing Configuration File	C	C	C
Online Manual in DVD Media	I	I	I
Online Help Feature	C	C	C
Changes Configuration File Path for Port Number	C	C	C
Name of Commands Related to Configuration Import	C	C	C
Holding of Checks Placed in Table Checkboxes and Table Radio Buttons	I	I	I
Displayed Strings for CA Type Information	C	C	C
Category Pane Related to NAS Management Operation in Web Console	C	C	C
Change of Input Condition for Shared Folder Name	C	C	C
Change of Web Console Dashboard	C	C	C

Functions and Compatibility Issues	Version Before Upgrade		
	14.0 or Earlier	14.1	14.2
Change of Column Name on Web Console Various Log Screens	C	C	C
Change of Action Name for Record Count Preference on Web Console	C	C	C
Displayed Contents Related to AntiVirus Function of Web Console	C	C	C
Change of Column Name on Web Console Thin Provisioning Screen	C	C	C
Change of the Display String Related to the Temperature on Web Console	C	C	C

Key
C: Compatible. No known compatibility issues.
I: Incompatible. Possible compatibility issues.

2.2　Incompatible Information of Express

This section describes the changes from the previous version of Express.

2.2.1　Changes for Supported Storage Devices

The following storage devices are no longer supported.

Version	Details
16.8 or later	ETERNUS DX60
16.4 or later	ETERNUS DX80/DX90

🔖 See
. . . .

Refer to "Supported Devices" in the *Installation and Setup Guide* for information on the devices that can be managed by this version of Express.
. . . .

2.2.2　Changes for Supported Web Browsers

The following web browsers are no longer supported.

Version	Details
16.9 or later	Internet Explorer 10 Microsoft Edge 44 Microsoft Edge 42 Microsoft Edge 25 Firefox ESR 68 Firefox ESR 60
16.8 or later	Internet Explorer 9 Firefox ESR 52

Version	Details
	Firefox ESR 45 Firefox ESR 38 Firefox ESR 31 Firefox ESR 24 Firefox ESR 17
16.4 or later	Internet Explorer 8
16.0 or later	Firefox 3.6 Firefox ESR 10
15.0 or later	Internet Explorer 7 Firefox 3.5

 See
....
Refer to "Supported Web Browsers" in the *Web Console Guide* for the version of the supported web browsers.
....

2.2.3 Changes for Supported Operating Systems

The following operating systems are no longer supported.

Version	Details
16.8 or later	Microsoft Windows Server 2008 R2 Standard SP1 Microsoft Windows Server 2008 R2 Enterprise SP1 Microsoft Windows Server 2008 R2 Datacenter SP1 Microsoft Windows Server 2008 R2 Standard Microsoft Windows Server 2008 R2 Enterprise Microsoft Windows Server 2008 R2 Datacenter Microsoft Windows Server 2008 Standard SP2 (64-bit) Microsoft Windows Server 2008 Standard SP2 without Hyper-V (64-bit) Microsoft Windows Server 2008 Enterprise SP2 (64-bit) Microsoft Windows Server 2008 Enterprise SP2 without Hyper-V (64-bit) Microsoft Windows Server 2008 Datacenter SP2 (64-bit) Microsoft Windows Server 2008 Datacenter SP2 without Hyper-V (64-bit) Microsoft Windows Server 2008 Standard (64-bit) Microsoft Windows Server 2008 Standard without Hyper-V (64-bit) Microsoft Windows Server 2008 Enterprise (64-bit) Microsoft Windows Server 2008 Enterprise without Hyper-V (64-bit) Microsoft Windows Server 2008 Datacenter (64-bit) Microsoft Windows Server 2008 Datacenter without Hyper-V (64-bit) Red Hat Enterprise Linux 5 (for Intel64)
16.0 or later	Microsoft Windows Server 2008 Standard SP2 (32-bit) Microsoft Windows Server 2008 Standard SP2 without Hyper-V (32-bit) Microsoft Windows Server 2008 Enterprise SP2 (32-bit) Microsoft Windows Server 2008 Enterprise SP2 without Hyper-V (32-bit) Microsoft Windows Server 2008 Datacenter SP2 (32-bit) Microsoft Windows Server 2008 Datacenter SP2 without Hyper-V (32-bit) Microsoft Windows Server 2008 Standard (32-bit) Microsoft Windows Server 2008 Standard without Hyper-V (32-bit) Microsoft Windows Server 2008 Enterprise (32-bit) Microsoft Windows Server 2008 Enterprise without Hyper-V (32-bit) Microsoft Windows Server 2008 Datacenter (32-bit) Microsoft Windows Server 2008 Datacenter without Hyper-V (32-bit) Microsoft Windows Server 2003 R2, Standard Edition SP2 Microsoft Windows Server 2003 R2, Enterprise Edition SP2

Version	Details
	Microsoft Windows Server 2003, Standard Edition SP2 Microsoft Windows Server 2003, Enterprise Edition SP2 Red Hat Enterprise Linux 6 (for x86) Red Hat Enterprise Linux 5 (for x86)
15.0 or later	Microsoft Windows Server 2003 R2, Standard Edition (non-SP) Microsoft Windows Server 2003 R2, Standard x64 Edition (non-SP and SP2) Microsoft Windows Server 2003 R2, Enterprise Edition (non-SP) Microsoft Windows Server 2003 R2, Enterprise x64 Edition (non-SP and SP2) Microsoft Windows Server 2003, Standard Edition (non-SP) Microsoft Windows Server 2003, Standard x64 Edition (non-SP and SP2) Microsoft Windows Server 2003, Enterprise Edition (non-SP) Microsoft Windows Server 2003, Enterprise x64 Edition (non-SP and SP2)

If Express is installed in the above operating systems, the upgrade to this version cannot be performed. If you wish to use Express of this version, it is necessary to install it newly in the operating systems supported by Express.

 See
....
Refer to "Operating Environment of ETERNUS SF Manager" in the *Installation and Setup Guide* for the operating systems supported by this version of Express.
....

2.2.4　Administrator's Belonging Group

The administrator's belonging group has been changed.

Version	Details
15.0 or later	System administrator: User in the ESFAdmin role group Business administrator: User in the ESFMon or ESFAdmin role group
14.2 or earlier	System administrator: User in the Administrators group Business administrator: User in the Administrators group

2.2.5　Specification of FQDN (Fully Qualified Domain Name)

The specification of FQDN has been changed.

Version	Details
15.0 or later	In Web Console, the following operations cannot specify FQDN. - Registering or changing ETERNUS Disk storage system - SMTP server setting in Contacts information settings
14.2 or earlier	In Web Console, the following operations can specify FQDN. - Registering or changing ETERNUS Disk storage system - SMTP server setting in Contacts information settings

2.2.6　Troubleshooting Information Sending Function

The function to send troubleshooting information by E-mail is no longer supported.

Version	Details
15.0 or later	The function is no longer supported.

Version	Details
14.2 or earlier	It is possible to send the troubleshooting information to the address specified by E-mail.

2.2.7 Copy Group Definition Export/Import Function

The copy group definition export/import function is no longer supported.

Version	Details
15.0 or later	The copy group definition export/import function is no longer supported. Instead, perform a forced cancel or forced suspend of the remote copy session without moving the copy group definition to the remote site.
14.2 or earlier	It is possible to use the copy group definition export/import function, and move the local site's copy group definition to the remote site. When performing a forced cancel or forced suspend operation to the remote copy session at the remote site, it is necessary to first export the copy group definition at the local site.

See
....
Refer to the following manuals for information on the forced cancel or forced suspend of remote copy sessions on this version:

- "Display/Forcible Suspend/Forcible Cancel Copy Session" in the *Web Console Guide*

- "Forcibly Stopping Copy Sessions" and "Forcibly Suspending REC Sessions" in the *AdvancedCopy Manager Operation Guide for Copy Control Module*
....

2.2.8 RAID Group Automatic Creation Function

The RAID group automatic creation function for some models is no longer supported.

Version	Details
15.0 or later	The RAID group automatic creation function is not supported for ETERNUS DX60/DX60 S2/DX80/DX90.
14.2 or earlier	It is possible to be selected required disks automatically and created RAID groups with the RAID group automatic creation function.

2.2.9 Different Name Setting Function for Device Information

The function to set different names from names on the devices is no longer supported.

Version	Details
15.0 or later	It is no longer supported to set different names (alias names) from names on the devices for servers, storage devices, and volumes.
14.2 or earlier	It is possible to set different names (alias names) from names on the devices for servers, storage devices, and volumes.

2.2.10 Web Console Connection Address

The address to connect to the Management Server has been changed.

Version	Details
15.0 or later	https://*ipAddress:portNumber*/
14.2 or earlier	https://*ipAddress:portNumber*/express/

See

Refer to "How to Start Web Console" in the *Web Console Guide* for details.

2.2.11 Changes License Management Operation

The license management process has been changed.

Version	Details
16.0 or later	- In order to use Express, the ETERNUS SF Express license is required.
15.0 or later	- The Advanced Copy license can be set from Web Console and command. - Product upgrades to Storage Cruiser and AdvancedCopy Manager are possible only through software license registration of the relevant products.
14.2 or earlier	- The Advanced Copy license is selected in install options. - For product upgrades to Storage Cruiser and AdvancedCopy Manager, it is necessary to uninstall/install each product.

See

Refer to "License Management" in the *Installation and Setup Guide* for details.

2.2.12 Messages and Event Logs

The messages and event logs have been changed.

Version	Details
15.0 or later	Output the messages and event logs the same as Storage Cruiser.
14.2 or earlier	Output the Express unique messages and event logs.

2.2.13 Express_diag Command

The "express_diag" command is no longer supported.

Version	Details
15.0 or later	The "express_diag" command is no longer supported. If a problem occurs with the Express's manager, collect the required troubleshooting information and contact Fujitsu Technical Support.
14.2 or earlier	It is possible to use the "express_diag" command.

2.2.14 Storageadm Perfdata Command Path Name (for Windows)

The path name of the "storageadm perfdata" command has been changed.

Version	Details
15.0 or later	*installDir*\ESC\Manager\opt\FJSVssmgr\sbin (*1)

Version	Details
14.2 or earlier	*installDir*\Express\Manager\bin (*2)

*1: The *installDir* is "Program Directory" specified at the ETERNUS SF Manager installation.
*2: The *installDir* is "Program Directory" specified at the Express installation.

2.2.15　Troubleshooting Information Collection Command Name and Path Name (for Windows)

The troubleshooting information collection command name and path have been changed.

Version	Details
15.0 or later	*installDir*\Common\bin\esfsnap (*1)
14.2 or earlier	*installDir*\Express\Manager\bin\express_managersnap (*2)

*1: The *installDir* is "Program Directory" specified at the ETERNUS SF Manager installation.
*2: The *installDir* is "Program Directory" specified at the Express installation.

2.2.16　Response Time Displayed by Performance Management

The response time of volumes and RAID groups has been changed.

Version	Details
16.1 or later	The response time of volumes and RAID groups is a value not influenced by I/O generated by operations of Advanced Copy. If Advanced Copy operates, it may be higher than values displayed on version 16.0 or earlier.
16.0 or earlier	The response time of volumes and RAID groups is a value influenced by I/O generated by operations of Advanced Copy.

2.2.17　Monitor Volume Range for Performance Management

The specification when "All" is selected for the range of the monitoring volume at the start of performance management has been changed.

Version	Details
16.2 or later	By detecting the creation or deletion of a volume, that volume is included as a target for performance management.
15.0 to 16.1	Even if a volume has been created or deleted, that volume is not included as a target for performance management.

2.2.18　Selectable RAID Type and Reliability When Using High-Capacity Disks

The selectable RAID type and reliability type when using a high-capacity disk (for example, 6 TB disk) in Web Console have been changed.

Version	Details

16.2 or later	The RAID levels that can be selected when creating a RAID group are as follows:
	
	  - RAID0
	
	  - RAID1
	
	  - RAID6

Version	Details
	- RAID6-FR The reliability types can be selected when creating/expanding a Thin Provisioning Pool and a Tier pool are as follows: - Striping (RAID0) - Mirroring (RAID1) - High Reliability (RAID6) - High Reliability (RAID6-FR)
16.1 or earlier	When creating a RAID group, all the RAID levels can be selected. When creating/expanding a Thin Provisioning Pool and a Tier pool, all reliability types can be selected.

2.2.19 Output Messages

The output messages of Express have been changed.

Message ID	Version	Details
ssmgr3411	16.2 or later	An unsupported volume is registered on the specified RAID group ({0}).
	16.1 or earlier	The volume of the unsupport is registered in specified RAID group ({0}).
ssmgr3417	16.2 or later	The type of the specified volume ({0}) is not supported.
	16.1 or earlier	The type of specified volume ({0}) is a unsupport.
ssmgr3421	16.2 or later	Connection AffinityGroup ({0}) is not supported.
	16.1 or earlier	Connection AffinityGroup({0}) is a unsupport.
ssmgr3450	16.2 or later	The specified device ({0}) does not support Thin Provisioning.
	16.1 or earlier	The specified device ({0}) is an unsupport Thin Provisioning.
ssmgr3458	16.2 or later	The specified port ({0}) is not supported.
	16.1 or earlier	The specified port({0}) is a unsupport.
ssmgr3552	16.2 or later	The specified REC buffer is not supported.
	16.1 or earlier	The specified REC buffer is an unsupport.
ssmgr3559	16.2 or later	CHAP setting is not supported.
	16.1 or earlier	CHAP setting is an unsupport.
ssmgr3561	16.2 or later	The specified device ({0}) does not support Flexible Tier function.
	16.1 or earlier	The specified device ({0}) is an unsupport Flexible Tier function.
ssmgr3616	16.3 or later	The specified quota setting does not exist.
	16.1 to 16.2	The specified quota setting does not exist. Quota Setting=(NAS Volume No.=*volumeNumber*, Type=*type*, Name=*name*), ...

2.3 Incompatible Information of Storage Cruiser

This section describes the changes from the previous version of Storage Cruiser.

2.3.1 First Argument Value to Be Handed Over to Event Linkage Function

In the trouble message handed by first argument, the product name of SN200 has been changed.

Version	Details
13.2 or later	"*productName*"
13.1 or earlier	"SilkWorm *productName*"

📘 Example
....

- For version 13.2 or later

  ```
  "AP:SSC: INFO: swsag4203:FC Port No.0 Online in M540(48000[192.0.2.1])"
  ```

- For version 13.1 or earlier

  ```
  "AP:SSC: INFO: swsag4203:FC Port No.0 Online in M540(SilkWorm 48000[192.0.2.1])"
  ```
....

2.3.2 Daemon Start/Stop Command

The daemon start/stop command is no longer supported.
When these commands are built in operation on the system of previous version, delete them before upgrading to this version.

For Solaris

Version	Details
16.0 or later	The daemon start/stop command is not provided.
13.2 to 15.3	"/opt/FJSVssmgr/sbin/managerctl" is provided.
13.1 or earlier	"/opt/FJSVrcxmr/sbin/rcxmgrctl" is provided.

For Linux

Version	Details
16.0 or later	The daemon start/stop command is not provided.
15.3 or earlier	"/opt/FJSVssmgr/sbin/managerctl" is provided.

2.3.3 Cmdline Resource for Clustered Systems

The Cmdline resource for clustered systems is no longer supported.
When these scripts are built in operation on the system of previous version, delete them before upgrading to this version.

For Solaris

Type of Script	Version	Details
Start script	16.0 or later	The Cmdline resource is not provided.
	13.2 to 15.3	"/opt/FJSVssmgr/cluster/cmd/rcxclstartcmd" is provided.
	13.1 or earlier	"/opt/FJSVrcxmr/cluster/cmd/rcxclstartcmd" is provided.
Stop script	16.0 or later	The Cmdline resource is not provided.
	13.2 to 15.3	"/opt/FJSVssmgr/cluster/cmd/rcxclstopcmd" is provided.
	13.1 or earlier	"/opt/FJSVrcxmr/cluster/cmd/rcxclstopcmd" is provided.
Check script	16.0 or later	The Cmdline resource is not provided.
	13.2 to 15.3	"/opt/FJSVssmgr/cluster/cmd/rcxclcheckcmd" is provided.

Type of Script	Version	Details
	13.1 or earlier	"/opt/FJSVrcxmr/cluster/cmd/rcxclcheckcmd" is provided.

For Linux

Type of Script	Version	Details
Start script	16.0 or later	The Cmdline resource is not provided.
	15.3 or earlier	"/opt/FJSVssmgr/cluster/cmd/rcxclstartcmd" is provided.
Stop script	16.0 or later	The Cmdline resource is not provided.
	15.3 or earlier	"/opt/FJSVssmgr/cluster/cmd/rcxclstopcmd" is provided.
Check script	16.0 or later	The Cmdline resource is not provided.
	15.3 or earlier	"/opt/FJSVssmgr/cluster/cmd/rcxclcheckcmd" is provided.

2.3.4   Displayed Contents for LVM (for HP-UX)

The integration icon name and basic information for LVM logical/physical volume have been changed.

Item	Version	Details
Integration icon name for logical volume	15.0 or later	The icon for integrating two or more volumes is not displayed. In Web Console, each volume is displayed individually.
	13.4 to 14.2	LVM Logical Volumes(*volumeName*)
	13.3 or earlier	PVLink Logical Volumes(*volumeName*)
Basic information of integration icon for logical volume	15.0 or later	The icon for integrating two or more volumes is not displayed. In Web Console, each volume is displayed individually.
	13.4 to 14.2	LVM Logical Volumes(*volumeName*)
	13.3 or earlier	PVLink Logical Volumes(*volumeName*)
Basic information of integration icon for physical volume	15.0 or later	The icon for integrating two or more volumes is not displayed. In Web Console, each volume is displayed individually.
	13.4 to 14.2	LVM Physical Volumes(*volumeName*)
	13.3 or earlier	PVLink Physical Volumes(*volumeName*)

Basic information of integration icon is displayed by clicking **Basic information** tab in property screen for the integration icon.

Example

- For version 13.4 to 14.2

  Integration icon name for logical volume: LVM Logical Volumes(vg01)
  Integration icon for logical volume - **Basic information** tab: LVM Logical Volumes(vg01)
  Integration icon for physical volume - **Basic information** tab: LVM Physical Volumes(c2t0d0-7)

- For version 13.3 or earlier

  Integration icon name for logical volume: PVLink Logical Volumes(vg01)
  Integration icon for logical volume - **Basic information** tab: PVLink Logical Volumes(vg01)
  Integration icon for physical volume - **Basic information** tab: PVLink Physical Volumes(c2t0d0-7)

2.3.5　Message of Communication Recovery Event

For the Managed devices using the "Communication status check" polling method, the messages of communication recovery event have been changed.

Version	Details
14.0 or later	Connection OK
13.4 or earlier	Unit status changed: OK Unit status changed: Warning Unit status changed: Error

📚 See
. . . .
Refer to "Device Polling" in the *Storage Cruiser Operation Guide* for information on the polling methods.
. . . .

2.3.6　Ssmgr3228 Message

The ssmgr3228 message output by storage management commands has been changed.

Version	Details
14.2 or later	The specified raid group cannot operate.
14.1 or earlier	The specified raid group number is used in the Thin Provisioning Pool.

2.3.7　SNMP Trap Reception Program Specification

The SNMP Trap reception program specification has been changed.

For Windows

Version	Details
14.2 or later	- The OS standard SNMP Trap monitoring service is used. 　For Microsoft Windows Server 2008 or later: SNMP Trap 　For Microsoft Windows Server 2003: SNMP Trap Service - If in use with ServerView AlarmService, the "mpmsts ON" command need not be executed. - If in use with Systemwalker Centric Manager, the settings indicating coexistence with ServerView AlarmService are required at the Systemwalker Centric Manager side.
14.1 or earlier	- SystemWalker MpWksttr is used as the SNMP Trap monitoring service. - If in use with ServerView AlarmService, the "mpmsts ON" command must be executed. - If in use with Systemwalker Centric Manager, no special settings are required.

For Linux

Version	Details
14.2 or later	- The snmptrapd in the OS standard net-snmp package is used as the SNMP Trap monitoring daemon. - The snmptrapd settings must be changed in order to use the snmptrapd. - If in use with ServerView AlarmService, the ServerView trap transfer program (SMAWtrpsv) is not required.

Version	Details
	- If in use with any of the Systemwalker Centric Manager versions or with ServerView Resource Coordinator VE Version 2.1.1 to 2.1.3, the settings indicating use with ServerView AlarmService are required at the Systemwalker Centric Manager or ServerView Resource Coordinator VE side.
14.1 or earlier	- FJSVswstt is used as the SNMP Trap monitoring daemon.
	- No special settings are required to use FJSVswstt.
	- If in use with ServerView AlarmService, the ServerView trap transfer program is required.
	- If in use with any of the Systemwalker Centric Manager versions or with ServerView Resource Coordinator VE Version 2.1.1 to 2.1.3, no special settings are required.

For Solaris

Version	Details
15.3 or later	- The coexistence with Systemwalker Centric Manager version 13.5 or earlier cannot be done.
	- If in use with Systemwalker Centric Manager version 13.6 or later, no special settings are required.
15.2 or earlier	- If in use with Systemwalker Centric Manager version 13.5 or earlier, no special settings are required.
	- The coexistence with Systemwalker Centric Manager version 13.6 or later cannot be done.

2.3.8 Default Installation Path of Programs (for Windows)

The default installation path for programs that include manager functions has been changed.

Version	Details
15.0 or later	C:\ETERNUS_SF\ESC\Manager
14.2 or earlier	C:\Program Files\ETERNUS-SSC\Manager

Example

When having installed a program to the default installation location, the absolute path for the shell script used with a shell linkage function is as follows.

- For version 15.0 or later

```
C:\ETERNUS_SF\ESC\Manager\opt\FJSVssmgr\lib\sample\trapop.bat
```

- For version 14.2 or earlier

```
C:\Program Files\ETERNUS-SSC\Manager\opt\FJSVssmgr\lib\sample\trapop.bat
```

2.3.9 Troubleshooting Information Collection Command Name and Path Name

The name and path name of the troubleshooting information collection command for the Storage Cruiser's manager have been changed.

For Windows

Version	Details
15.0 or later	*installDir*\Common\bin\esfsnap (*1)

Version	Details
14.2 or earlier	*installDir*\Manager\opt\FJSVssmgr\sbin\managersnap (*2)

*1: The *installDir* is "Program Directory" specified at the ETERNUS SF Manager installation.
*2: The *installDir* is "Program Directory" specified at the Storage Cruiser's manager installation.

For Solaris

Version	Details
15.0 or later	/opt/FJSVesfcm/bin/esfsnap
13.2 to 14.2	/opt/FJSVssmgr/sbin/managersnap
13.1 or earlier	/opt/FJSVrcxmr/sbin/rcxmgrsnap

For Linux

Version	Details
15.0 or later	/opt/FJSVesfcm/bin/esfsnap
14.2 or earlier	/opt/FJSVssmgr/sbin/managersnap

2.3.10 Changes for Supported Devices

The following devices are no longer supported.

Version	Details
16.9 or later	ETERNUS VS850 S2 ETERNUS CS800 S5/CS800 S4 NetApp V-Series Tintri VMstore series Brocade VDX 6710-54, VDX 6730-32, VDX 6730-76
16.8 or later	ETERNUS DX60, DX400 series, DX8000 series ETERNUS VS850 ETERNUS CS800 S3/CS800 S2/CS800 ETERNUS LT20, LT40, LT60, LT200, LT210, LT220, LT230, LT250, LT270 ETERNUS SN200 series Brocade DCX Brocade DCX-4S Brocade 8000 VDX 6720-24
16.4 or later	ETERNUS DX80/DX90 ETERNUS LT60
16.0 or later	ETERNUS2000 (all models) ETERNUS4000 (all models) ETERNUS8000 (all models) ETERNUS VD800 Virtual Disk Controller ETERNUS SN200MDS Cisco MDS McDATA Intrepid 6140 McDATA Sphereon 4500
15.0 or later	ETERNUS4000 models 80 and 100 ETERNUS3000 (all models) ETERNUS6000 (all models) ETERNUS GR series

Version	Details
	ETERNUS SX300, SX300S ETERNUS VS900 ETERNUS LT120, LT130, LT160 FibreCAT SX series EMC Symmetrix DMX, Clarix HITACHI HDS (HITACHI DATA SYSTEM) Disk array

 See

Refer to "Supported Devices" in the *Installation and Setup Guide* for information on the devices that can be managed by this version of Storage Cruiser.

2.3.11 Changes for Supported Operating Systems

The following operating systems are no longer supported.

Version	Details
16.9 or later	- For the Storage Cruiser's agent Red Hat Enterprise Linux 6 (for x86)
16.8 or later	- For the Storage Cruiser's manager Microsoft Windows Server 2008 R2 Standard SP1 Microsoft Windows Server 2008 R2 Enterprise SP1 Microsoft Windows Server 2008 R2 Datacenter SP1 Microsoft Windows Server 2008 R2 Standard Microsoft Windows Server 2008 R2 Enterprise Microsoft Windows Server 2008 R2 Datacenter Microsoft Windows Server 2008 Standard SP2 (64-bit) Microsoft Windows Server 2008 Standard SP2 without Hyper-V (64-bit) Microsoft Windows Server 2008 Enterprise SP2 (64-bit) Microsoft Windows Server 2008 Enterprise SP2 without Hyper-V (64-bit) Microsoft Windows Server 2008 Datacenter SP2 (64-bit) Microsoft Windows Server 2008 Datacenter SP2 without Hyper-V (64-bit) Microsoft Windows Server 2008 Standard (64-bit) Microsoft Windows Server 2008 Standard without Hyper-V (64-bit) Microsoft Windows Server 2008 Enterprise (64-bit) Microsoft Windows Server 2008 Enterprise without Hyper-V (64-bit) Microsoft Windows Server 2008 Datacenter (64-bit) Microsoft Windows Server 2008 Datacenter without Hyper-V (64-bit) Red Hat Enterprise Linux 5 (for Intel64) - For the Storage Cruiser's agent Microsoft Windows Server 2008 R2 Foundation SP1 Microsoft Windows Server 2008 R2 Standard SP1 Microsoft Windows Server 2008 R2 Enterprise SP1 Microsoft Windows Server 2008 R2 Datacenter SP1 Microsoft Windows Server 2008 R2 Foundation Microsoft Windows Server 2008 R2 Standard Microsoft Windows Server 2008 R2 Enterprise Microsoft Windows Server 2008 R2 Datacenter Microsoft Windows Server 2008 Standard SP2 (32-bit)(64-bit) Microsoft Windows Server 2008 Standard SP2 without Hyper-V (32-bit)(64-bit) Microsoft Windows Server 2008 Enterprise SP2 (32-bit)(64-bit) Microsoft Windows Server 2008 Enterprise SP2 without Hyper-V (32-bit)(64-bit)

Version	Details
	Microsoft Windows Server 2008 Datacenter SP2 (32-bit)(64-bit) Microsoft Windows Server 2008 Datacenter SP2 without Hyper-V (32-bit)(64-bit) Microsoft Windows Server 2008 Standard (32-bit)(64-bit) Microsoft Windows Server 2008 Standard without Hyper-V (32-bit)(64-bit) Microsoft Windows Server 2008 Enterprise (32-bit)(64-bit) Microsoft Windows Server 2008 Enterprise without Hyper-V (32-bit)(64-bit) Microsoft Windows Server 2008 Datacenter (32-bit)(64-bit) Microsoft Windows Server 2008 Datacenter without Hyper-V (32-bit)(64-bit) Red Hat Enterprise Linux 5 (for x86) Red Hat Enterprise Linux 5 (for Intel64) SUSE Linux Enterprise Server 12 Service Pack 1 for AMD64 & Intel64 AIX V6.1
16.6 or later	- For the Storage Cruiser's agent Solaris 9 Operating System
16.5 or later	- For the Storage Cruiser's agent SUSE Linux Enterprise Server 11 Service Pack 1 for x86 SUSE Linux Enterprise Server 11 Service Pack 1 for EM64T SUSE Linux Enterprise Server 11 Service Pack 2 for x86 SUSE Linux Enterprise Server 11 Service Pack 2 for EM64T
16.4 or later	- For the Storage Cruiser's agent HP-UX 11i v2(PA-RISC) HP-UX 11i v2(Itanium) HP-UX 11i v1
16.3 or later	- For the Storage Cruiser's agent Microsoft Windows Server 2003 R2, Standard Edition SP2 Microsoft Windows Server 2003 R2, Standard x64 Edition SP2 Microsoft Windows Server 2003 R2, Enterprise Edition SP2 Microsoft Windows Server 2003 R2, Enterprise x64 Edition SP2 Microsoft Windows Server 2003, Standard Edition SP2 Microsoft Windows Server 2003, Standard x64 Edition SP2 Microsoft Windows Server 2003, Enterprise Edition SP2 Microsoft Windows Server 2003, Enterprise x64 Edition SP2
16.2 or later	- For the Storage Cruiser's agent Red Hat Enterprise Linux AS (v.4 for x86) Red Hat Enterprise Linux AS (v.4 for EM64T) Red Hat Enterprise Linux ES (v.4 for x86) Red Hat Enterprise Linux ES (v.4 for EM64T)
16.0 or later	- For the Storage Cruiser's manager Microsoft Windows Server 2008 Standard SP2 (32-bit) Microsoft Windows Server 2008 Standard SP2 without Hyper-V (32-bit) Microsoft Windows Server 2008 Enterprise SP2 (32-bit) Microsoft Windows Server 2008 Enterprise SP2 without Hyper-V (32-bit) Microsoft Windows Server 2008 Datacenter SP2 (32-bit) Microsoft Windows Server 2008 Datacenter SP2 without Hyper-V (32-bit) Microsoft Windows Server 2008 Standard (32-bit) Microsoft Windows Server 2008 Standard without Hyper-V (32-bit) Microsoft Windows Server 2008 Enterprise (32-bit) Microsoft Windows Server 2008 Enterprise without Hyper-V (32-bit) Microsoft Windows Server 2008 Datacenter (32-bit) Microsoft Windows Server 2008 Datacenter without Hyper-V (32-bit) Microsoft Windows Server 2003 R2, Standard Edition SP2

Version	Details
	Microsoft Windows Server 2003 R2, Enterprise Edition SP2 Microsoft Windows Server 2003, Standard Edition SP2 Microsoft Windows Server 2003, Enterprise Edition SP2 Solaris 9 Operating System Red Hat Enterprise Linux 6 (for x86) Red Hat Enterprise Linux 5 (for x86) - For the Storage Cruiser's agent HP-UX 11.0 AIX 5L 5.3 VMware Infrastructure 3 Foundation VMware Infrastructure 3 Standard VMware Infrastructure 3 Enterprise
15.0 or later	- For the Storage Cruiser's manager Microsoft Windows Server 2008 R2 Foundation (non-SP and SP2) Microsoft Windows Server 2003 R2, Standard Edition (non-SP) Microsoft Windows Server 2003 R2, Standard x64 Edition (non-SP and SP2) Microsoft Windows Server 2003 R2, Enterprise Edition (non-SP) Microsoft Windows Server 2003 R2, Enterprise x64 Edition (non-SP and SP2) Microsoft Windows Server 2003, Standard Edition (non-SP) Microsoft Windows Server 2003, Enterprise Edition (non-SP) - For the Storage Cruiser's agent Microsoft Windows Server 2008 for Itanium-Based Systems (non-SP and SP2) Microsoft Windows Server 2003 R2, Standard Edition (non-SP) Microsoft Windows Server 2003 R2, Standard x64 Edition (non-SP) Microsoft Windows Server 2003 R2, Enterprise Edition (non-SP) Microsoft Windows Server 2003 R2, Enterprise x64 Edition (non-SP) Microsoft Windows Server 2003, Standard Edition (non-SP) Microsoft Windows Server 2003, Standard x64 Edition (non-SP) Microsoft Windows Server 2003, Enterprise Edition (non-SP) Microsoft Windows Server 2003, Enterprise x64 Edition (non-SP) Microsoft Windows Server 2003, Enterprise Edition for Itanium-based Systems SP2 Solaris 8 Operating System Red Hat Enterprise Linux 5 (for Intel Itanium) Red Hat Enterprise Linux AS (v.4 for Itanium) Red Hat Enterprise Linux AS (v.3 for x86) Red Hat Enterprise Linux ES (v.3 for x86) SUSE Linux Enterprise Server 9 for EM64T

If Storage Cruiser is installed in the above operating systems, the upgrade to this version cannot be performed. If you wish to use Storage Cruiser of this version, it is necessary to install it newly in the operating systems supported by Storage Cruiser.

See
....
Refer to "Operating Environment of ETERNUS SF Manager" and "Operating Environment of Storage Cruiser's Agent" in the *Installation and Setup Guide* for the operating systems supported by this version of Storage Cruiser.
....

2.3.12 Changes for Supported Web Browsers

The following web browsers are no longer supported.

Version	Details
16.9 or later	Internet Explorer 10 Microsoft Edge 44 Microsoft Edge 42 Microsoft Edge 25 Firefox ESR 68 Firefox ESR 60
16.8 or later	Internet Explorer 9 Firefox ESR 52 Firefox ESR 45 Firefox ESR 38 Firefox ESR 31 Firefox ESR 24 Firefox ESR 17
16.4 or later	Internet Explorer 8
16.0 or later	Firefox 3.6 Firefox ESR 10

 See
....
Refer to "Supported Web Browsers" in the *Web Console Guide* for the version of the supported web browsers.
....

2.3.13   Changes for Supported Agent Version

Connection to the following Storage Cruiser's agents is no longer supported.

Version	Details
16.8 or later	ETERNUS SF Storage Cruiser's agent version 14.x
16.0 or later	Softek Storage Cruiser's agent (all versions) ETERNUS SF Storage Cruiser's agent version 13.x

 See
....
Refer to "3.2 Notes on Combining Versions and Levels" for the supported combinations of the manager program and the agent program.
....

2.3.14   Storage Volume Configuration Navigator

Storage Volume Configuration Navigator is no longer supported.

Version	Details
15.0 or later	Storage Volume Configuration Navigator is no longer supported.
14.2 or earlier	It is possible to use the Storage Volume Configuration Navigator.

2.3.15   Supports of GUI Client

The GUI client has been replaced with Web Console. Uninstall the installed GUI client.

Version	Details
15.0 or later	When operating the Storage Cruiser function with a GUI, the operation is performed from a web browser.
14.2 or earlier	When operating the Storage Cruiser function with a GUI, the operation is performed from the Storage Cruiser GUI client installed on the PC.

📖 See
. . . .
Refer to the *Web Console Guide* for information on the usable web browsers and how to use Web Console.
. . . .

2.3.16 Changes for Login Account

The login account has been changed.

Version	Details
15.0 or later	In order to connect to the Management Server from Web Console, a dedicated Storage Cruiser account is not necessary. The Management Server's OS account is used.
14.2 or earlier	In order to connect to the Management Server from the Storage Cruiser client, a dedicated Storage Cruiser account is necessary.

2.3.17 Memo Information Table and Revolving Light Icon

The memo information table and the revolving light icon are no longer supported.

Version	Details
15.0 or later	- Display and edition of memo information is not possible. The memo information created with previous versions cannot be restored in the new version. - The revolving light icon is not displayed.
14.2 or earlier	- Display and edition of memo information is possible. - The revolving light icon is displayed on the Resource view.

2.3.18 Beacon Function for Solaris Server Node

The beacon function for the Solaris server node has been changed.

Version	Details
15.0 or later	The beacon function is not available.
14.2 or earlier	The beacon function is available.

2.3.19 Display Information of Correlation Management

The correlation management display has been changed.

Version	Details

15.0 or later	- List view is possible but not as a separate window element.
	- The following items relative to correlation management cannot be displayed:
	  - Business components (application) display
	  - DBMS display

Version	Details
	- File system (mount point) display
	- Mirror drive display
	- Multipath driver display
	- Raw Device display
	- IOB display
	- Router display
	- DE display
	- Battery display
	- Element integrated display
	- Connection display
	- Configuration information saving
14.2 or earlier	It is possible to display the detailed relational management configuration within the device as a separate window element.

2.3.20   Changes for Performance Management

The performance management processing has changed.

Version	Details
15.0 or later	- The processing for threshold monitoring of performance management function does not display the condition report. - The content displaying in the performance management graph is not available to output as a JPEG file.
14.2 or earlier	- The processing for threshold monitoring of performance management function displays the condition report. - The content displaying in the performance management graph is available to output as a JPEG file.

2.3.21   Information Required for ETERNUS Disk Storage System Registration

The information necessary for device registration of the following storage devices has been changed:

- ETERNUS DX60/DX60 S2/DX80/DX90

- ETERNUS DX400 series

- ETERNUS DX8000 series

- ETERNUS2000, ETERNUS4000, ETERNUS8000

Version	Details
15.0 or later	It is necessary to specify an account of the storage device.
14.2 or earlier	It is not necessary to specify an account of the storage device.

2.3.22　SNMP Trap Setup Function Checking at Device Registration

The setup function checking of SNMP Trap for registering ETERNUS Disk storage system and Fibre Channel switch has been changed.

Version	Details
15.0 or later	The automatic setting function for SNMP Trap destination address is not checked by default.
14.2 or earlier	The automatic setting function for SNMP Trap destination address is checked by default.

2.3.23　SNMP Trap Setup After Registering Fibre Channel Switch

Support for SNMP Trap setup after a Fibre Channel switch has been registered has changed.

Version	Details
16.0 or later	SNMP Trap setup can be enabled after a Fibre Channel switch has been registered.
15.0 to 15.3	If SNMP Trap settings are changed after a Fibre Channel switch has been registered, the device must be reregistered.
14.2 or earlier	SNMP Trap setup can be enabled after a Fibre Channel switch has been registered.

2.3.24　Thin Provisioning Pool Threshold Monitoring Icon

The icon displayed when the usage of Thin Provisioning Pool exceed "Warning threshold value" has been changed.

Version	Details
15.0 or later	Displays "⚠".
14.2 or earlier	Displays "🛑".

2.3.25　Display Method of Thin Provisioning Pool Capacity Chart

The display method for Capacity Chart of Thin Provisioning Pool has been changed.

Version	Details
15.0 or later	- The content to be displayed is only "Used Capacity". - The unit is only TB. - The following items that can be selected as the Duration: 　- Past 1 month 　- Past 1 Year 　- Past 10 years - One graph window of Thin Provisioning Pool can be displayed with one direction.
14.2 or earlier	- The following items that can be selected as the content to be displayed: 　- Used capacity 　- Remain capacity - The following items that can be selected as the unit: 　- TB 　- % - The following items that can be selected as the Duration:

Version	Details
	- Past 1 month - Past *n* year (*n* : 1 - 10) - Two or more graph windows of Thin Provisioning Pool can be displayed with one direction.

2.3.26   Managed Server Deletion Process

The process for deleting a Management Server with a set access path has been changed.

Version	Details
15.0 or later	In the case of the access path being set when deleting the Management Server, it is not possible to delete the access path at the same time.
14.2 or earlier	In the case of the access path being set when deleting the Management Server, the access path is deleted at the same time.

2.3.27   VM Host Deletion Procedure if VM Guests Exist on VM Host

The process for deleting a VM host if VM guests exist under this VM host has been changed.

Version	Details
15.0 or later	If a VM host with existing VM guests is deleted, all the VM guests must be first deleted from the ETERNUS SF system. The VM guests cannot be deleted as the same time as the VM host.
14.2 or earlier	When a VM host is deleted, all the VM guests under that VM host are deleted as well from the ETERNUS SF system.

2.3.28   Displayed Contents of End to End View

In the displayed contents of the End to End view, the mount points and multipath driver devices fetched from Storage Cruiser's agent are added. The same applies for CSV output.

Displayed Contents		Version of Storage Cruiser	
Category	Item	15.1 or Later	15.0 or Earlier
Server	Name	Displayed	Displayed
	Type	Displayed	Displayed
	Mount Point	Displayed	Not displayed
	Multipath Driver Device	Displayed	Not displayed
	Interface Type	Displayed	Displayed
	HBA WWPN	Displayed	Displayed
	HBA iSCSI Name / IP Address	Displayed	Displayed
Switch (connected to Server)	Name	Displayed	Displayed
	Port	Displayed	Displayed
Switch (connected to Storage)	Name	Displayed	Displayed
	Port	Displayed	Displayed
Storage	Name	Displayed	Displayed
	Port	Displayed	Displayed
	AG	Displayed	Displayed
	LUN	Displayed	Displayed

Displayed Contents		Version of Storage Cruiser	
Category	Item	15.1 or Later	15.0 or Earlier
	Volume	Displayed	Displayed
	TPP	Displayed	Displayed
	RG	Displayed	Displayed
	RG (Concatenated)	Displayed	Displayed

Note

The items [Mount Point] and [Multipath Driver Device] display a hyphen ("-") when:

- The OS of the Managed Server is Windows, and the version of Storage Cruiser's agent is version 15.0 or earlier.

2.3.29 Changes for Map View

The map view function has been changed.

Version	Details
15.1 or later	A map display and a list display are available. The map display allows for display of connecting lines between icons, statuses of access paths, and physical lines that are forming access paths. Drag-and-drop setting of access paths is not available.
15.0	Only a list display, but no map display is available. Settings for the map display (display of connecting lines between icons, statuses of access paths, and physical lines that are forming access paths, as well as drag-and-drop setting of access paths) are not available.
14.2 or earlier	A map (icon) display and a list display are available. The map display can display connecting lines between icons, statuses of access paths, and physical lines that are forming access paths, and allows for drag-and-drop setting of access paths.

2.3.30 Output Information of Storageadm Port Command and Storageadm Iscsiport Command

The output information of the "storageadm port" command and "storageadm iscsiport" command for the following devices has been changed.

Device Name	Number of CMs per Device	Number of ports per CM	Remarks
ETERNUS DX60 S2	1	2	
ETERNUS DX60 ETERNUS DX80	2	1	
ETERNUS DX90	1	4	The "storageadm port" command only

[Output information of the "storageadm port" command]

Version	Details

15.1 or later	Absent port information is not displayed. The command execution example is as follows.
	
	`# /opt/FJSVssmgr/sbin/storageadm port info -ipaddr 1.2.3.4 -csv`
	`PORT ID,PORT NAME,STATUS,TYPE,AFFINITY,PORT ADDRESS,SUPPLEMENT INFORMATION`

Version	Details
	`00,CM0Port0,Online,FC-CA,On,1234567890ABCDEE,-` `10,CM1Port0,Online,FC-CA,On,1234567890ABCDEF,-`

15.0 or earlier	Absent port information is displayed. The command execution example is as follows.
	
	`# /opt/FJSVssmgr/sbin/storageadm port info -ipaddr 1.2.3.4 -csv`
	`PORT ID,PORT NAME,STATUS,TYPE,AFFINITY,PORT ADDRESS,SUPPLEMENT INFORMATION`
	`00,CM0Port0,Online,FC-CA,On,1234567890ABCDEE,-`
	`01,CM0Port1,Undefined,FC-CA,Off,0000000000000000,-`
	`10,CM1Port0,Online,FC-CA,On,1234567890ABCDEF,-`
	`11,CM1Port1,Undefined,FC-CA,Off,0000000000000000,-`

[Output information of the "storageadm iscsiport" command]

Version	Details

15.1 or later	Absent port information is not displayed. The command execution example is as follows.
	
	`# /opt/FJSVssmgr/sbin/storageadm iscsiport info -ipaddr 1.2.3.4 -csv`
	`PORT ID,NAME,STATUS,TYPE,AFFINITY,ISCSI NAME,IP ADDRESS`
	`00,CM0Port0,Online,iSCSI-CA,On,iqn.2000-09.com.fujitsu:storage-`
	`system.e2000:0000000029,172.16.4.40`
	`10,CM1Port0,Online,iSCSI-CA,On,iqn.2000-09.com.fujitsu:storage-`
	`system.e2000:0000000029,172.16.4.41`

15.0 or earlier	Absent port information is displayed. The command execution example is as follows.
	
	`# /opt/FJSVssmgr/sbin/storageadm iscsiport info -ipaddr 1.2.3.4 -csv`
	`PORT ID,NAME,STATUS,TYPE,AFFINITY,ISCSI NAME,IP ADDRESS`
	`00,CM0Port0,Online,iSCSI-CA,On,iqn.2000-09.com.fujitsu:storage-`
	`system.e2000:0000000029,172.16.4.40`
	`01,CM0Port1,Undefined,iSCSI-CA,Off, ,-`
	`10,CM1Port0,Online,iSCSI-CA,On,iqn.2000-09.com.fujitsu:storage-`
	`system.e2000:0000000029,172.16.4.41`
	`11,CM1Port1,Undefined,iSCSI-CA,Off, ,-`

2.3.31 Firmware Version Notation of ETERNUS Disk Storage System

The firmware version notation of ETERNUS Disk storage system has been changed.

Version	Details	Remarks
15.2 or later	V*xx*L*yy*-*zzzz*	*xx*: Version, *yy*: Level, *zzzz*: Release
15.1 or earlier	V*xx*L*yy*P*zzzz*	

2.3.32 Sanadmsh Chtraprcvip Command Format

The values that can be specified for *DeviceID* operand of the "sanadmsh chtraprcvip" command have changed.

Version	Details
16.0 or later	The following can be specified as a device type: - -all - -host - -storage - -library - -switch

Version	Details
	If "-all" is specified as a device type, it is unnecessary to specify the way to identify a device. If a value other than "-all" is specified as the device type, specify either of the following as the way to specify a device: - ip: IP address of a device - sysname: SysName name of SNMP that is set to the device
15.3 or earlier	The following can be specified as a device type: - -host - -storage - -library - -switch - -hub - -bridge Specify one of the following as the way to identify a device: - ip: IP address of a device - sysname: SysName name of SNMP that is set to the device - nickname: Device management name that is set for this software

🔖 See
··
Refer to "Command References" in the *Storage Cruiser Operation Guide* for information on the command.
··

2.3.33　Changes Connection Method Between Storage Cruiser's Manager and Managed Switches

The communication method between the Storage Cruiser's manager and Fibre Channel switch has changed.

Version	Details
16.1 or later	SSH communication is used for Fibre Channel switches with Fabric OS v6.3 or later. Telnet communication is used for Fibre Channel switches with Fabric OS v6.2 or earlier.
16.0 or earlier	Telnet communication is used.

2.3.34　Response Time Displayed by Performance Management

The response time of volumes and RAID groups has been changed.

Version	Details
16.1 or later	The response time of volumes and RAID groups is a value not influenced by I/O generated by operations of Advanced Copy. If Advanced Copy operates, it may be higher than values displayed on version 16.0 or earlier.
16.0 or earlier	The response time of volumes and RAID groups is a value influenced by I/O generated by operations of Advanced Copy.

2.3.35　Tiering Policy Import Command Name

The Tiering policy import command name has been changed.

Version	Details
16.0 or later	The command name is "esfadm tierpolicy import".
15.2 to 15.3	The command name is "esfimporttierpolicy".

2.3.36 Output Message IDs of Storage Cruiser

The IDs of messages output by Storage Cruiser have been changed.

Message ID	Version	Details
ssmgr3210	16.0 or later	The ssmgr3210 or ssmgr3400 is output.
	13.3 to 15.3	The ssmgr3210 is output.
ssmgr3219	16.0 or later	The ssmgr3219 or ssmgr3405 is output.
	13.3 to 15.3	The ssmgr3219 is output.
ssmgr3401	16.0 or later	The ssmgr3021, ssmgr3401, or ssmgr3402 is output.
	13.4 to 15.3	The ssmgr3401 is output.
ssmgr3450	16.0 or later	The ssmgr3450 or ssmgr3490 is output.
	14.0 to 15.3	The ssmgr3450 is output.
ssmgr7003	16.0 or later	The ssmgr7003 or swsag0187 is output.
	14.0 to 15.3	The ssmgr7003 is output.

2.3.37 Output Messages of Automated Storage Tiering

The messages output by Automated Storage Tiering have been changed.

Message ID	Version	Details
esast0107	16.0 or later	Invalid internal processing has been detected. Unable to use the service ({0}) from any remote clients.
	15.3 or earlier	Illegal internal processing has been detected. Unable to use the service ({0}) from any remote clients.
esast0111	16.0 or later	Invalid internal processing has been detected. Unknown remote object ({3}) has been detected in communication between client and manager. The manager address is {0}:{1}/{2}.
	15.3 or earlier	Illegal internal processing has been detected. Unknown remote object ({3}) has been detected in communication between client and manager. The manager address is {0}:{1}/{2}.
esast0112	16.0 or later	Invalid internal processing has been detected on the manager. Unable to create the service ({0}).
	15.3 or earlier	Illegal internal processing has been detected on the manager. Unable to create the service ({0}).
esast0113	16.0 or later	Invalid internal processing has been detected: {0}
	15.3 or earlier	Illegal internal processing has been detected: {0}
esast0997	16.0 or later	Encoding string for ({0}) failed.
	15.3 or earlier	Encoding string list for ({0}) is failed.
esast1101	16.0 or later	Internal error occurred in license information settings.
	15.3 or earlier	Internal error. License information is not set.
esast1103	16.0 or later	Required license ({0}) to enable this function is expired.

Message ID	Version	Details
	15.3 or earlier	The expiration date of the license ({0}) has passed.
esast2001	16.1 or later	Loading Tiering policy data file failed.
	16.0	Loading tiering policy data file failed.
	15.3 or earlier	Reading the policy datafile is failed.
esast2002	16.1 or later	Making backup of Tiering policy data file failed.
	16.0	Making backup of tiering policy data file is failed.
	15.3 or earlier	Making backup of the policy datafile is failed.
esast2003	16.1 or later	Tiering policy ({0}) was not able to be added to Tiering policy data file.
	16.0	Tiering policy ({0}) was not able to be added to tiering policy data file.
	15.3 or earlier	The policy data ({0}) was not able to be added to the policy datafile.
esast2004	16.1 or later	Tiering policy ({0}) was not able to be updated to Tiering policy data file.
	16.0	Tiering policy ({0}) was not able to be updated to tiering policy data file.
	15.3 or earlier	The policy data ({0}) was not able to be updated to the policy datafile.
esast2005	16.1 or later	Tiering policy ({0}) was not able to be removed from Tiering policy data file.
	16.0	Tiering policy ({0}) was not able to be removed to tiering policy data file.
	15.3 or earlier	The policy data ({0}) was not able to be removed to the policy datafile.
esast2006	16.0 or later	Tiering policy ({0}) exists.
	15.3 or earlier	The policy data ({0}) is already existed.
esast2007	16.0 or later	Tiering policy ({0}) does not exist.
	15.3 or earlier	The policy data ({0}) does not exist.
esast2008	16.1 or later	Automated Storage Tiering ({0}) has already been started. Policy Name={1}
	16.0	The Automated Storage Tiering ({0}) has already been started. Policy Name={1}
	15.3 or earlier	The Auto tier service ({0}) has already been started. policy name={1}
esast2009	16.1 or later	The number of Tiering policies has reached maximum.
	16.0	The number of policy is already the maximum numbers.
	15.3 or earlier	The number of policy data is already the maximum numbers.
esast2010	16.1 or later	There is error in Data Range of Layer in Tiering policy ({0}). Data Range of Layer={1}
	16.0	There is error in Data Range of Tier Level in tiering policy ({0}). Data Range of Tier Level={1}
	15.3 or earlier	The policy data ({0}) has inaccurate the range of level. level={1}
esast2011	16.1 or later	Tier pool ({0}) using Tiering policy ({1}) exists.
	16.0	Tier pool ({0}) using tiering policy ({1}) exists.
	15.3 or earlier	The tier pool ({0}) used by policy data ({1}) is already existed.
esast2012	16.1 or later	There is error in specified Automated Storage Tiering Time Limit in Tiering policy ({0}). Evaluation Period(type)={1} Automated Storage Tiering Time Limit={2}
	16.0	There is error in specified Automated Storage Tiering Time Limit in tiering policy ({0}). Evaluation Period(type)={1} Automated Storage Tiering Time Limit={2}
	15.3 or earlier	The policy data ({0}) has inaccurate expire. type={1} expire={2}
esast2013	16.1 or later	There is error in specified Evaluation Period in Tiering policy ({0}). Evaluation Period(type)={1} Evaluation Period(interval)={2}

Message ID	Version	Details
	16.0	There is error in specified Evaluation Period in tiering policy ({0}). Evaluation Period(type)={1} Evaluation Period(interval)={2}
	15.3 or earlier	The policy data ({0}) has inaccurate interval. type={1} interval={2}
esast2999	16.1 or later	Internal error occurred in PolicyFileService.
	16.0 or earlier	PolicyFileService is internal error occurred.
esast3001	16.1 or later	Loading Tier pool data file ({0}) failed.
	16.0	Loading tier pool data file ({0}) failed.
	15.3 or earlier	Reading the tier datafile ({0}) is failed.
esast3002	16.1 or later	Making backup of Tier pool data file ({0}) failed.
	16.0	Making backup of tier pool data file ({0}) is failed.
	15.3 or earlier	Making backup of the tier datafile ({0}) is failed.
esast3003	16.1 or later	Tier pool ({0}) was not able to be added to Tier pool data file.
	16.0	Tier pool ({0}) was not able to be added to tier pool data file.
	15.3 or earlier	The tier data ({0}) was not able to be added to the tier datafile.
esast3004	16.1 or later	Tier pool ({0}) was not able to be updated to Tier pool data file.
	16.0	Tier pool ({0}) was not able to be updated to tier pool data file.
	15.3 or earlier	The tier data ({0}) was not able to be updated to the tier datafile.
esast3005	16.1 or later	Tier pool ({0}) was not able to be removed from Tier pool data file.
	16.0	Tier pool ({0}) was not able to be removed to tier pool data file.
	15.3 or earlier	The tier data ({0}) was not able to be removed to the tier datafile.
esast3006	16.1 or later	Tier pool ({0}) already exists.
	16.0	Tier pool ({0}) is already existed.
	15.3 or earlier	The tier data ({0}) is already existed.
esast3007	16.0 or later	Tier pool ({0}) does not exist.
	15.3 or earlier	The tier data ({0}) does not exist.
esast3012	16.1 or later	Tiering policy ({1}) is not applicable to the number of sub-pools set to Tier pool ({0}).
	16.0	Configuration of Sub Pool set to Tier pool ({0}) does not agree with level configuration of tiering policy ({1}).
	15.3 or earlier	Group setting of Flexible Tier Sub Pool set to the Tier pool ({0}) is not corresponding to the level setting of policy data ({1}).
esast3013	16.0 or later	FTSP Number ({1}) does not exist in Tier pool ({0}).
	15.3 or earlier	The tier data ({0}) is not exist Flexible tier sub pool number ({1}).
esast3014	16.0 or later	FTV Quota Share setting ({0}) is wrong.
	15.3 or earlier	Ratio setting of FTV ({0}) is wrong.
esast3015	16.1 or later	FTV Quota Share setting ({0}) is not corresponding to sub-pool setting of Tier pool ({1}).
	16.0	FTV Quota Share setting ({0}) is not corresponding to the sub pool setting of tier pool ({1}).
	15.3 or earlier	Ratio setting of FTV ({0}) is not corresponding to the Flexible tier sub pool setting of Tier pool ({1}).

Message ID	Version	Details
esast3016	16.0 or later	FTV Number(s) ({0}) does not exist.
	15.3 or earlier	FTV number(s) ({0}) does not exist.
esast3017	16.1 or later	FTV Quota Share setting is not allowed in Tier pool ({0}).
	16.0 or earlier	FTV Quota Share setting is not allowed in tier pool ({0}).
esast3018	16.1 or later	The groups of Tier pool ({0}) are not set at the {1} level.
	16.0 or earlier	The groups of tier pool ({0}) is not set at the {1} level.
esast3020	16.1 or later	ETERNUS SF information for Tier pool ({0}) is different from storage device information for Tier pool ({1}).
	16.0 or earlier	Tier pool ({0}) does not agree with tier pool ({1}) in the storage, in information.
esast3100	16.1 or later	Import Tier pool terminated normally.
	16.0 or earlier	Import tier pool terminated normally.
esast3101	16.1 or later	Warning occurred in Import Tier pool.({0}={1},{0}={1},...)
	16.0 or earlier	Warning occurred in Import tier pool.({0}={1},{0}={1},...)
esast3102	16.1 or later	Error occurred with Import Tier pool. ({0}={1},{0}={1},...)
	16.0 or earlier	Error occurred with Import tier pool. ({0}={1},{0}={1},...)
esast4900	16.1 or later	Automated Storage Tiering of specified Tier Pool Name ({0}) has already been started.
	16.0	The Automated storage tiering of specified Tier Pool Name ({0}) has already been started.
	15.3 or earlier	The Automated storage tiering of specified Tier pool name ({0}) has already been started.
esast4901	16.1 or later	Tier pool whose Operating Status is not Start was specified. Start Automated Storage Tiering for the Tier pool ({0}).
	16.0	The Tier Pool Name ({0}) which did not start was appointed. Please begin the Automated storage tiering.
	15.3 or earlier	The pool name ({0}) which did not start was appointed. Please begin the Automated storage tiering.
esast4902	16.1 or later	Automated Storage Tiering information related to Tier Pool Name ({0}) does not exist.
	16.0	The Automated storage tiering information related to Tier Pool Name ({0}) does not exist.
	15.3 or earlier	The Automated storage tiering information related to Tier pool name ({0}) does not exist.
esast4903	16.0 or later	Invalid Execution Mode ({1}) was specified.
	15.3 or earlier	Illegal start mode ({1}) was specified. Please confirm Tier pool definition ({0}).
esast4904	16.0 or later	Invalid start time ({0}) was specified.
	15.3 or earlier	Illegal start time ({1}) was specified. Please confirm Tier pool definition ({0}).
esast4905	16.0 or later	Obtaining definition related to specified Tier Pool Name ({0}) failed. Result ({1})
	15.3 or earlier	It failed in the acquisition of the definition that related to specified Tier pool name ({0}). Result({1})
esast4906	16.0 or later	Specified FTV Number does not exist in relocated volume list. Discontinue volume relocation. Tier Pool Name={0} FTV Number={1} Evaluation Date={2}

Message ID	Version	Details
	15.3 or earlier	The specified number of volume is not exists in a list of reallocation. The volume reallocation is discontinued. Tier pool name={0} volume number={1} evaluation date={2}
esast4907	16.1 or later	Specified FTV Number does not exist in relocated volume list. Discontinue volume deletion. Tier Pool Name={0} FTV Number={1} Evaluation Date={2}
	16.0	Specified FTV Number does not exist in relocated volume list. Discontinue volume clear. Tier Pool Name={0} FTV Number={1} Evaluation Date={2}
	15.3 or earlier	The specified number of volume is not exists in a list of reallocation. The volume clear is discontinued. Tier pool name={0} volume number={1} evaluation date={2}
esast4999	16.1 or later	Automated Storage Tiering failed. ({0}) CAUSE({1})
	16.0 or earlier	Automated storage tiering method failed. ({0}) CAUSE({1})
esast5000	16.1 or later	Failed to collect performance data of device ({0}).
	16.0 or earlier	Failed to collect the performance data of the device ({0}).
esast5001	16.1 or later	Extracting performance data for Tier pool ({0}) failed.
	16.0	Extracting performance data for tier pool ({0}) failed.
	15.3 or earlier	Failed to extract the performance data of Tier Pool ({0}).
esast5002	16.1 or later	Aggregating performance data for Tier pool ({0}) failed.
	16.0	Aggregating performance data for tier pool ({0}) failed.
	15.3 or earlier	Failed to aggregate the performance data of Tier Pool ({0}).
esast5003	16.1 or later	Unable to find performance data of Tier pool ({0}).
	16.0 or earlier	Unable to find the performance data of Tier Pool ({0}).
esast5004	16.1 or later	Failed to delete all the performance data of Tier pool ({0}).
	16.0 or earlier	Failed to delete all the performance data of Tier Pool ({0}).
esast5050	16.1 or later	Failed to evaluate performance data of Tier pool ({0}).
	16.0 or earlier	Failed to evaluate the performance data of Tier Pool ({0}).
esast5051	16.1 or later	Deleting all-tier performance information of Tier pool ({0}) failed.
	16.0	Deleting all-tier performances information of tier pool ({0}) failed.
	15.3 or earlier	Failed to delete all the performance data of Tier Pool ({0}).
esast5052	16.1 or later	Failed to get evaluation summary of Tier pool ({0}).
	16.0 or earlier	Failed to get the summary of evaluation of Tier Pool ({0}).
esast5053	16.1 or later	Failed to get details of evaluation of Tier pool ({0}).
	16.0 or earlier	Failed to get the details of evaluation of Tier Pool ({0}).
esast5054	16.1 or later	Failed to update relocation status of Tier pool ({0}).
	16.0	Failed to update the relocation status of Tier Pool ({0}).
	15.3 or earlier	Failed to update the reallocate status of Tier Pool ({0}).
esast5100	16.1 or later	Failed to create tier history of Tier pool ({0}).
	16.0 or earlier	Failed to create the history of tiers of Tier Pool ({0}).
esast5101	16.1 or later	Failed to delete tier history of Tier pool ({0}).
	16.0 or earlier	Failed to delete the history of tiers of Tier Pool ({0}).
esast5102	16.1 or later	Obtaining all-tier information history of Tier pool ({0}) failed.
	16.0	Obtaining all-tier information histories of tier pool ({0}) failed.

Message ID	Version	Details
	15.3 or earlier	Failed to get all the history of tiers of Tier Pool ({0}).
esast5950	16.1 or later	Failed to initialize performance management process.
	16.0 or earlier	Failed to initialize the performance management process.
esast5951	16.1 or later	Definition inconsistency occurred at Tier pool ({0}).
	16.0	Definition inconsistency occurred at tier pool ({0}).
	15.3 or earlier	Inconsistency definition has occurred at Tier Pool ({0}).
esccs02504	16.0 or later	Re-registration of tiering policy failed because some tier policies already exist.
	15.3 or earlier	Re-registration of tier policy failed because some tier policies already exist.
esccs02505	16.0 or later	There was no policy in tiering policy definition.
	15.3 or earlier	Tier policy does not exist in the definition file.

2.3.38   Item Name of Tiering Policy

Name of items in Tiering policy of Automated Storage Tiering has been changed.

Name in Version 16.1 or Later	Name in Version 16.0
Configure Evaluation Excluded Day	Configuration of Days to exclude from Evaluation
Data Range of Layer	Data Range of Tier Level

2.3.39   Action Name of Tier Pool

Name of actions related to Tier pool of Automated Storage Tiering has been changed.

Name in Version 16.1 or Later	Name in Version 16.0
Create(One Layer)	Create(One Tier)
Modify Layer	Modify Tier

2.3.40   Item Name of Tier Pool

Name of items related to Tier pool of Automated Storage Tiering has been changed.

Name in Version 16.1 or Later	Name in Version 16.0
Number of Layers	Number of Tiers

Name in Version 16.1 or Later	Name in Version 16.0	Name in Version 15.3
Assigned CM	CM	CM
Specify Assigned CM	Specify a CM	
Assigned CM	Master CM	Assigned CM
Specify Assigned CM	Specify a Master CM	

Name in Version 16.1 or Later	Name in Version 16.0	Name in Version 15.3 or Earlier
Used Capacity	Usage Capacity	Used Capacity

2.3.41   Item Name of FTV

Name of an item in FTV of Automated Storage Tiering has been changed.

Name in Version 16.1 or Later	Name in Version 16.0	Name in Version 15.3 or Earlier
Used Capacity	Usage Capacity	Used Capacity

2.3.42 Display Contents in TFO Group List Screen for Storage Cluster Function

In the TFO group list screen of the Storage Cluster function, the item display and the order of the display have been changed.

Version	Details
16.2 or later	The TFO group number is not displayed in the TFO group list screen. The TFO group information is displayed in ascending order of the TFO group name.
16.1	The TFO group number is displayed in the TFO group list screen. The TFO group information is displayed in ascending order of the TFO group number.

2.3.43 Output Messages of Storage Cluster Function

Detailed messages regarding the operation history of the Storage Cluster function have been changed.

Operation	Version	Details
Manual Failover	16.2 or later	Storage=%s, TFO Group Number=%s
	16.1	Primary Storage=%s, Primary TFO Group Number=%s
Manual Failback	16.2 or later	Storage=%s, TFO Group Number=%s
	16.1	Secondary Storage=%s, Secondary TFO Group Number=%s
Force-Failover	16.2 or later	Storage=%s, TFO Group Number=%s
	16.1	Primary Storage=%s, Primary TFO Group Number=%s

2.3.44 Monitor Volume Range for Performance Management

The specification when "All" is selected for the range of the monitoring volume at the start of performance management has been changed.

Version	Details
16.2 or later	By detecting the creation or deletion of a volume, that volume is included as a target for performance management.
15.0 to 16.1	Even if a volume has been created or deleted, that volume is not included as a target for performance management.

2.3.45 Selectable RAID Type and Reliability When Using High-Capacity Disks

The selectable RAID type and reliability type when using a high-capacity disk (for example, 6 TB disk) in Web Console have been changed.

Version	Details
16.2 or later	The RAID levels that can be selected when creating a RAID group are as follows: - RAID0 - RAID1 - RAID6

Version	Details

	- RAID6-FR
	
	The reliability types can be selected when creating/expanding a Thin Provisioning Pool and a Tier pool are as follows:
	
	  - Striping (RAID0)
	
	  - Mirroring (RAID1)
	
	  - High Reliability (RAID6)
	
	  - High Reliability (RAID6-FR)

16.1 or earlier	When creating a RAID group, all the RAID levels can be selected. When creating/expanding a Thin Provisioning Pool and a Tier pool, all reliability types can be selected.

2.3.46   Recognition Methods for VM Guests

Recognition methods for VM guests have been changed.

Version	Details
16.2 or later	- In case the VM guest is configured with VMFS When a new VM guest is created, and when a VM guest is moved between VM hosts using Storage vMotion or vSphere HA, a **Reload Conf.** operation is required on the destination VM host. - In case the VM guest is configured with a VMware Virtual Volume When a new VM guest is created, and when a VM guest is moved between VM hosts using Storage vMotion or vSphere HA, that VM guest is automatically recognized when powered on. At the same time, non-VMware Virtual Volumes VM guests that exist on the VM host are also automatically recognized.

13.4 to 16.1	- In case the VM guest is configured with VMFS
	
	When a new VM guest is created, and when a VM guest is moved between VM hosts using Storage vMotion or vSphere HA, the following operation is required on the destination VM host:
	
	    - For version 16.0 to 16.1: Reload Conf.
	
	    - For version 15.0 to 15.3: Register the VM host
	
	    - For version 13.4 to 14.2: Register virtual machines
	
	- In case the VM guest is configured with a VMware Virtual Volume
	
	Not supported.

2.3.47   Item Name of Automated QoS Function

Name of items related to Automated QoS function has been changed.

Name in Version 16.2 or Later	Name in Version 16.1
Tune by Quota Share	Automated QoS:Tier Control

2.3.48   Output Messages of Automated QoS Function

The output messages of the Automated QoS function have been changed.

Version	Details
16.2 or later	In place of the esqos0103 message, the esqos0104 message is output. In place of the esqos0270 message, the esqos0274 message is output.
16.1	The esqos0103 and esqos0270 messages are output.

2.3.49　Output Messages

The output messages of Storage Cruiser have been changed.

Message ID	Version	Details
ssmgr3411	16.2 or later	An unsupported volume is registered on the specified RAID group ({0}).
	16.1 or earlier	The volume of the unsupport is registered in specified RAID group ({0}).
ssmgr3417	16.2 or later	The type of the specified volume ({0}) is not supported.
	16.1 or earlier	The type of specified volume ({0}) is a unsupport.
ssmgr3421	16.2 or later	Connection AffinityGroup ({0}) is not supported.
	16.1 or earlier	Connection AffinityGroup({0}) is a unsupport.
ssmgr3450	16.2 or later	The specified device ({0}) does not support Thin Provisioning.
	16.1 or earlier	The specified device ({0}) is an unsupport Thin Provisioning.
ssmgr3458	16.2 or later	The specified port ({0}) is not supported.
	16.1 or earlier	The specified port({0}) is a unsupport.
ssmgr3552	16.2 or later	The specified REC buffer is not supported.
	16.1 or earlier	The specified REC buffer is an unsupport.
ssmgr3559	16.2 or later	CHAP setting is not supported.
	16.1 or earlier	CHAP setting is an unsupport.
ssmgr3561	16.2 or later	The specified device ({0}) does not support Flexible Tier function.
	16.1 or earlier	The specified device ({0}) is an unsupport Flexible Tier function.
ssmgr3616	16.3 or later	The specified quota setting does not exist.
	16.1 to 16.2	The specified quota setting does not exist. Quota Setting=(NAS Volume No.=*volumeNumber*, Type=*type*, Name=*name*), ...

2.3.50　Action Name for Enabling/Disabling Extreme Cache Function

In Web Console, the action name, the radio button on the configuration screen, and ETERNUS SF system behavior for enabling/disabling the Extreme Cache function have been changed.

Incompatibility Item	Version	
	16.3 or Later	16.0 - 16.2
Action name	Configure/Update capacity	Configure
Radio button name on the configuration screen	Enable/Update capacity	Enable
ETERNUS SF system behavior	When the above radio button is checked, the ETERNUS SF system enables the Extreme Cache function. In addition, the ETERNUS SF system updates	When the above radio button is checked, the ETERNUS SF system enables the Extreme Cache function.

Incompatibility Item	Version	
	16.3 or Later	16.0 - 16.2
	the Extreme Cache capacity that was added to the ETERNUS Disk storage system.	

2.3.51 Capacity Displayed for Automated Storage Tiering

To display capacities related to Automated Storage Tiering with Web Console, the capacity display units of 1,024 TB or more have been changed.

Version	Details
16.4 or later	For example, 1,024 TB is displayed as "1.00PB" with the petabyte unit value.
16.3 or earlier	For example, 1,024 TB is displayed as "1024.00TB" with the terabyte unit value.

2.3.52 Status Display of TFO Group Regarding Storage Cluster Function

In a Storage Cluster environment, when an inconsistency of the phase/status occurs in the Primary TFO group and the Secondary TFO group, the string that is displayed on the Storage Cluster Overview screen have been changed.

Item Name That Changed the Displayed String	Version	Displayed String
Phase	16.5 or later	Attention
	16.4 or earlier	Inconsistent
Status	16.5 or later	Disruption
	16.4 or earlier	Inconsistent

2.3.53 Port Selection Method for VVOL Access Path Settings in Web Console

On the **Select HBA and Port** screen (*1) for the VVOL access path settings, the method for selecting a port in the dialog box displayed by clicking **Connect** has been changed.

Version	Details
16.5 or later	Checkbox
16.2 to 16.4	Radio button

*1: The screen is displayed if you perform the steps 1 to 6 which are described in "VVOL Access Path Setting" in the *Web Console Guide*.

2.3.54 Port Display for VVOL Access Path Setting in Web Console

On the **Select HBA and Port** screen (*1) for the VVOL access path settings, the displayed content in the **Connected Port** field for each HBA has been changed.

Version	Details
16.5 or later	The ports that are selected in the dialog box are displayed.
16.2 to 16.4	The port that is selected in the dialog box, the port that the access path has set, or the port that the VVOL access path has set is displayed.

*1: The screen is displayed if you perform the steps 1 to 6 which are described in "VVOL Access Path Setting" in the *Web Console Guide*.

2.3.55 OS Information Displayed for Microsoft Windows Server 2019 and Microsoft Windows Server 2016

On Web Console, the displayed contents of the OS information (OS level and OS name) for Microsoft Windows Server 2019 and Microsoft Windows Server 2016 have been changed.

OS Type	Items to be Displayed on Web Console	Version	Displayed Strings
Microsoft Windows Server 2019	OS Level	16.8 or later	10.0
		16.7 or earlier	6.2
	OS Name	16.9 or later	Windows Server 2019
		16.8	Windows
		16.7 or earlier	Windows2012
Microsoft Windows Server 2016	OS Level	16.8 or later	10.0
		16.7 or earlier	6.2
	OS Name	16.9 or later	Windows Server 2016
		16.8	Windows
		16.7 or earlier	Windows2012

2.3.56 Behavior of Manual Failover/Failback in the Storage Cluster Function

For TFO groups whose phase is in the "Maintenance" state, the behavior of manual failover/failback has been changed.

Version	Storage Devices	
	ETERNUS DX S5 series, ETERNUS DX8900 S4, or ETERNUS AF S3 series with the firmware version V11L40-5000 or later, ETERNUS DX S4/S3 series (excluding the ETERNUS DX8900 S4), ETERNUS AF S2 series, AF series, or ETERNUS DX200F with the firmware version V10L90-1000 or later	Other Than Those on the Left
16.8 or later	Manual failover/failback cannot be performed.	- When the storage device is in a state where failover/failback can be performed Manual failover/failback can be performed. - When the storage device is in a state where failover/failback cannot be performed Manual failover/failback cannot be performed.
16.7 or earlier	-	

2.4 Incompatible Information of AdvancedCopy Manager

This section describes the changes from the previous version of AdvancedCopy Manager.

2.4.1 Registration Method for Remote ETERNUS Disk Storage System Using AdvancedCopy Manager Copy Control Module

In AdvancedCopy Manager Copy Control Module, the method for registering remote ETERNUS Disk storage system has been changed.

OS	Version	Details
Windows	14.1 or later	Register by specifying the Box ID of ETERNUS Disk storage system
	14.0 or earlier	Register by specifying a nonexistent drive letter as an access path (*1)
Solaris, Linux	14.2 or later	Register by specifying the Box ID of ETERNUS Disk storage system
	14.1 or earlier	Register by specifying a nonexistent drive letter as an access path (*1)

*1: The term "access path" is changed to "access volume" from version 15.0.

2.4.2   Host Affinity Group List Display Command Name of AdvancedCopy Manager Copy Control Module

In AdvancedCopy Manager Copy Control Module, the name of the host affinity group list display command has been changed.

Version	Details
14.2 or later	acinq hostag
14.1 or earlier	acinq hag

2.4.3   Output Messages of AdvancedCopy Manager Copy Control Module

The messages output by AdvancedCopy Manager Copy Control Module have been changed.

Message ID	Version 14.2 or Later	Version 14.1 or Earlier
ccm1001	An invalid argument was specified.	Input parameter is illegal.
ccm1002	An invalid option was specified. option=*option*	An invalid option is specified. option=*option*
ccm1003	An invalid parameter was specified. option=*option*, parameter=*parameter*	An invalid parameter is specified. option=*option*, parameter=*parameter*
ccm1004	An invalid option was specified for the copy type. copy group=*copyGroup*, copy type=*copyType*, option=*option*	An invalid option is specified. copy group=*copyGroup*, copy type=*copyType*, option=*option*
ccm2001	This command requires operating system's administrative privileges.	This program requires administrative privileges of the operation system.
ccm3001	The specified disk array is already registered. disk array=*arrayName*	The disk array already exists. disk array=*arrayName*
ccm3002	The specified copy group is already registered. Copy group=*copyGroup*	The copy group already exists. copy group=*copyGroup*
ccm3003	The specified copy pair is already registered. copy group=*copyGroup*, pair=*copyPair*	The pair already exists. copy group=*copyGroup*, pair=*copyPair*
ccm3004	An invalid copy pair was specified. pair=*copyPair*, detail=*detail*	An invalid pair is specified. pair=*copyPair*, detail=*detail*
ccm4001	The specified disk array does not exist. disk array=*arrayName*	The disk array does not exist. disk array=*arrayName*
ccm4002	The specified disk array does not exist. disk array=*boxID*	The disk array does not exist. disk array=*boxID*
ccm4003	The specified copy group was not found. copy group=*copyGroup*	The copy group is not found. copy group=*copyGroup*
ccm4004	No copy pair was found for the specified copy group. copy group=*copyGroup*	The pair is not found. copy group=*copyGroup*

Message ID	Version 14.2 or Later	Version 14.1 or Earlier
ccm4005	The specified copy pair was not found. copy group=*copyGroup*, pair=*copyPair*	The pair is not found. copy group=*copyGroup*, pair=*copyPair*
ccm4006	The specified logical volume was not found. logical volume=*volumeName*	The logical volume is not found. logical volume=*volumeName*
ccm4007	An invalid copy group was specified. copy group=*copyGroup*, copy type=*copyType*	An invalid copy group is specified. copy group=*copyGroup*, copy type=*copyType*
ccm5005	An invalid mount point was specified. mount point=*mountPoint*	An invalid mount point is specified. mount point=*mountPoint*
ccm5006	An invalid device was specified. device=*deviceName*	An invalid device is specified. device=*deviceName*

2.4.4 Name of Term Used with AdvancedCopy Manager Copy Control Module

The name of the logical volume used to access the ETERNUS Disk storage system via SAN has been changed.

Version	Details
15.0 or later	Access volume
14.2 or earlier	Access path

2.4.5 Supports of GUI Client

The GUI client has been replaced with Web Console.

Version	Details
15.0 or later	When operating the AdvancedCopy Manager function with a GUI, the operation is performed from a web browser.
14.2 or earlier	When operating the AdvancedCopy Manager function with a GUI, the operation is performed from the AdvancedCopy Manager GUI client installed on the PC.

 See
. . . .

Refer to the *Web Console Guide* for information on the usable web browsers and how to use Web Console.
. . . .

2.4.6 Changes for Supported Storage Devices

The following storage devices are no longer supported.

Version	Details
16.8 or later	ETERNUS DX60, DX400 series, DX8000 series ETERNUS VX700 series
16.4 or later	ETERNUS DX80/DX90
16.0 or later	ETERNUS2000 (all models) ETERNUS4000 (all models) ETERNUS8000 (all models)
15.0 or later	ETERNUS4000 models 100 ETERNUS3000 (all models)

Version	Details
	ETERNUS6000 (all models) ETERNUS GR series

![See icon] See
. . . .

Refer to "Supported Devices" in the *Installation and Setup Guide* for information on the devices that can be managed by this version of AdvancedCopy Manager.
. . . .

2.4.7 Changes for Supported Operating Systems

The following operating systems are no longer supported.

Version	Details
16.9 or later	- For the AdvancedCopy Manager's agent Red Hat Enterprise Linux 6 (for x86)

16.8 or later	- For the AdvancedCopy Manager's manager
	
	  Microsoft Windows Server 2008 R2 Standard SP1
	  Microsoft Windows Server 2008 R2 Enterprise SP1
	  Microsoft Windows Server 2008 R2 Datacenter SP1
	  Microsoft Windows Server 2008 R2 Standard
	  Microsoft Windows Server 2008 R2 Enterprise
	  Microsoft Windows Server 2008 R2 Datacenter
	  Microsoft Windows Server 2008 Standard SP2 (64-bit)
	  Microsoft Windows Server 2008 Standard SP2 without Hyper-V (64-bit)
	  Microsoft Windows Server 2008 Enterprise SP2 (64-bit)
	  Microsoft Windows Server 2008 Enterprise SP2 without Hyper-V (64-bit)
	  Microsoft Windows Server 2008 Datacenter SP2 (64-bit)
	  Microsoft Windows Server 2008 Datacenter SP2 without Hyper-V (64-bit)
	  Microsoft Windows Server 2008 Standard (64-bit)
	  Microsoft Windows Server 2008 Standard without Hyper-V (64-bit)
	  Microsoft Windows Server 2008 Enterprise (64-bit)
	  Microsoft Windows Server 2008 Enterprise without Hyper-V (64-bit)
	  Microsoft Windows Server 2008 Datacenter (64-bit)
	  Microsoft Windows Server 2008 Datacenter without Hyper-V (64-bit)
	  Red Hat Enterprise Linux 5 (for Intel64)
	
	- For the AdvancedCopy Manager's agent
	
	  Microsoft Windows Server 2008 R2 Standard SP1
	  Microsoft Windows Server 2008 R2 Enterprise SP1
	  Microsoft Windows Server 2008 R2 Datacenter SP1
	  Microsoft Windows Server 2008 R2 Standard
	  Microsoft Windows Server 2008 R2 Enterprise
	  Microsoft Windows Server 2008 R2 Datacenter
	  Microsoft Windows Server 2008 Standard SP2 (32-bit)(64-bit)
	  Microsoft Windows Server 2008 Standard SP2 without Hyper-V (32-bit)(64-bit)
	  Microsoft Windows Server 2008 Enterprise SP2 (32-bit)(64-bit)
	  Microsoft Windows Server 2008 Enterprise SP2 without Hyper-V (32-bit)(64-bit)
	  Microsoft Windows Server 2008 Datacenter SP2 (32-bit)(64-bit)
	  Microsoft Windows Server 2008 Datacenter SP2 without Hyper-V (32-bit)(64-bit)
	  Microsoft Windows Server 2008 Standard (32-bit)(64-bit)
	  Microsoft Windows Server 2008 Standard without Hyper-V (32-bit)(64-bit)
	  Microsoft Windows Server 2008 Enterprise (32-bit)(64-bit)
	  Microsoft Windows Server 2008 Enterprise without Hyper-V (32-bit)(64-bit)

Version	Details
	Microsoft Windows Server 2008 Datacenter (32-bit)(64-bit) Microsoft Windows Server 2008 Datacenter without Hyper-V (32-bit)(64-bit) Red Hat Enterprise Linux 5 (for x86) Red Hat Enterprise Linux 5 (for Intel64) SUSE Linux Enterprise Server 12 Service Pack 1 for AMD64 & Intel64 AIX V6.1 - For the AdvancedCopy Manager Copy Control Module Microsoft Windows Server 2008 R2 Standard SP1 Microsoft Windows Server 2008 R2 Enterprise SP1 Microsoft Windows Server 2008 R2 Datacenter SP1 Microsoft Windows Server 2008 R2 Standard Microsoft Windows Server 2008 R2 Enterprise Microsoft Windows Server 2008 R2 Datacenter Microsoft Windows Server 2008 Standard SP2 (64-bit) Microsoft Windows Server 2008 Standard SP2 without Hyper-V (64-bit) Microsoft Windows Server 2008 Enterprise SP2 (64-bit) Microsoft Windows Server 2008 Enterprise SP2 without Hyper-V (64-bit) Microsoft Windows Server 2008 Datacenter SP2 (64-bit) Microsoft Windows Server 2008 Datacenter SP2 without Hyper-V (64-bit) Microsoft Windows Server 2008 Standard (64-bit) Microsoft Windows Server 2008 Standard without Hyper-V (64-bit) Microsoft Windows Server 2008 Enterprise (64-bit) Microsoft Windows Server 2008 Enterprise without Hyper-V (64-bit) Microsoft Windows Server 2008 Datacenter (64-bit) Microsoft Windows Server 2008 Datacenter without Hyper-V (64-bit) Red Hat Enterprise Linux 5 (for Intel64) SUSE Linux Enterprise Server 12 Service Pack 1 for AMD64 & Intel64
16.6 or later	- For the AdvancedCopy Manager's agent Solaris 9 Operating System
16.5 or later	- For the AdvancedCopy Manager's agent SUSE Linux Enterprise Server 11 Service Pack 2 for x86 SUSE Linux Enterprise Server 11 Service Pack 2 for EM64T SUSE Linux Enterprise Server 11 Service Pack 1 for x86 SUSE Linux Enterprise Server 11 Service Pack 1 for EM64T - For the AdvancedCopy Manager Copy Control Module SUSE Linux Enterprise Server 11 Service Pack 2 for x86 SUSE Linux Enterprise Server 11 Service Pack 2 for EM64T SUSE Linux Enterprise Server 11 Service Pack 1 for x86 SUSE Linux Enterprise Server 11 Service Pack 1 for EM64T
16.4 or later	- For the AdvancedCopy Manager's agent HP-UX 11i v2(PA-RISC) HP-UX 11i v2(Itanium) HP-UX 11i v1
16.3 or later	- For the AdvancedCopy Manager's agent Microsoft Windows Server 2003 R2, Standard Edition SP2 Microsoft Windows Server 2003 R2, Standard x64 Edition SP2 Microsoft Windows Server 2003 R2, Enterprise Edition SP2 Microsoft Windows Server 2003 R2, Enterprise x64 Edition SP2 Microsoft Windows Server 2003, Standard Edition SP2 Microsoft Windows Server 2003, Standard x64 Edition SP2

Version	Details
	Microsoft Windows Server 2003, Enterprise Edition SP2 Microsoft Windows Server 2003, Enterprise x64 Edition SP2
16.2 or later	- For the AdvancedCopy Manager's agent Red Hat Enterprise Linux AS (v.4 for x86) Red Hat Enterprise Linux AS (v.4 for EM64T) Red Hat Enterprise Linux ES (v.4 for x86) Red Hat Enterprise Linux ES (v.4 for EM64T)
16.0 or later	- For the AdvancedCopy Manager's manager Microsoft Windows Server 2008 Standard SP2 (32-bit) Microsoft Windows Server 2008 Standard SP2 without Hyper-V (32-bit) Microsoft Windows Server 2008 Enterprise SP2 (32-bit) Microsoft Windows Server 2008 Enterprise SP2 without Hyper-V (32-bit) Microsoft Windows Server 2008 Datacenter SP2 (32-bit) Microsoft Windows Server 2008 Datacenter SP2 without Hyper-V (32-bit) Microsoft Windows Server 2008 Standard (32-bit) Microsoft Windows Server 2008 Standard without Hyper-V (32-bit) Microsoft Windows Server 2008 Enterprise (32-bit) Microsoft Windows Server 2008 Enterprise without Hyper-V (32-bit) Microsoft Windows Server 2008 Datacenter (32-bit) Microsoft Windows Server 2008 Datacenter without Hyper-V (32-bit) Microsoft Windows Server 2003 R2, Standard Edition SP2 Microsoft Windows Server 2003 R2, Enterprise Edition SP2 Microsoft Windows Server 2003, Standard Edition SP2 Microsoft Windows Server 2003, Enterprise Edition SP2 Solaris 9 Operating System Red Hat Enterprise Linux 6 (for x86) Red Hat Enterprise Linux 5 (for x86) - For the AdvancedCopy Manager's agent HP-UX 11.0 AIX 5L 5.3 AIX 5L 5.2 AIX 5L 5.1 - For the AdvancedCopy Manager Copy Control Module Microsoft Windows Server 2008 Standard SP2 (32-bit) Microsoft Windows Server 2008 Standard SP2 without Hyper-V (32-bit) Microsoft Windows Server 2008 Enterprise SP2 (32-bit) Microsoft Windows Server 2008 Enterprise SP2 without Hyper-V (32-bit) Microsoft Windows Server 2008 Datacenter SP2 (32-bit) Microsoft Windows Server 2008 Datacenter SP2 without Hyper-V (32-bit) Microsoft Windows Server 2008 Standard (32-bit) Microsoft Windows Server 2008 Standard without Hyper-V (32-bit) Microsoft Windows Server 2008 Enterprise (32-bit) Microsoft Windows Server 2008 Enterprise without Hyper-V (32-bit) Microsoft Windows Server 2008 Datacenter (32-bit) Microsoft Windows Server 2008 Datacenter without Hyper-V (32-bit) Microsoft Windows Server 2003 R2, Standard Edition SP2 Microsoft Windows Server 2003 R2, Standard x64 Edition SP2 Microsoft Windows Server 2003 R2, Enterprise Edition SP2 Microsoft Windows Server 2003 R2, Enterprise x64 Edition SP2 Microsoft Windows Server 2003, Standard Edition SP2 Microsoft Windows Server 2003, Standard x64 Edition SP2 Microsoft Windows Server 2003, Enterprise Edition SP2 Microsoft Windows Server 2003, Enterprise x64 Edition SP2

Version	Details
	Red Hat Enterprise Linux 6 (for x86) Red Hat Enterprise Linux 5 (for x86)
15.0 or later	- For the AdvancedCopy Manager's manager Microsoft Windows Server 2003 R2, Standard Edition (non-SP) Microsoft Windows Server 2003 R2, Enterprise Edition (non-SP) Microsoft Windows Server 2003, Standard Edition (SP1) Microsoft Windows Server 2003, Enterprise Edition (SP1) - For the AdvancedCopy Manager's agent Microsoft Windows Server 2008 for Itanium-Based Systems (non-SP and SP2) Microsoft Windows Server 2003 R2, Standard Edition (non-SP) Microsoft Windows Server 2003 R2, Standard x64 Edition (non-SP) Microsoft Windows Server 2003 R2, Enterprise Edition (non-SP) Microsoft Windows Server 2003 R2, Enterprise x64 Edition (non-SP) Microsoft Windows Server 2003, Standard Edition (SP1) Microsoft Windows Server 2003, Standard x64 Edition (SP1) Microsoft Windows Server 2003, Enterprise Edition (non-SP) Microsoft Windows Server 2003, Enterprise x64 Edition (non-SP) Microsoft Windows Server 2003, Enterprise Edition for Itanium-based Systems (non-SP and SP2) Solaris 8 Operating System Red Hat Enterprise Linux 5 (for Intel Itanium) Red Hat Enterprise Linux AS (v.4 for Itanium) - For the AdvancedCopy Manager Copy Control Module Microsoft Windows Server 2008 for Itanium-Based Systems (non-SP and SP2) Microsoft Windows Server 2003 R2, Standard Edition (non-SP) Microsoft Windows Server 2003 R2, Enterprise Edition (non-SP) Microsoft Windows Server 2003 R2, Standard x64 Edition (non-SP) Microsoft Windows Server 2003 R2, Enterprise x64 Edition (non-SP) Microsoft Windows Server 2003, Standard Edition (SP1) Microsoft Windows Server 2003, Standard x64 Edition (SP1) Microsoft Windows Server 2003, Enterprise Edition (non-SP) Microsoft Windows Server 2003, Enterprise x64 Edition (non-SP) Microsoft Windows Server 2003, Enterprise Edition for Itanium-based Systems (non-SP and SP2)

If AdvancedCopy Manager is installed in the above operating systems, the upgrade to this version cannot be performed. If you wish to use AdvancedCopy Manager of this version, it is necessary to install it newly in the operating systems supported by AdvancedCopy Manager.

 See
....
Refer to the following sections in the *Installation and Setup Guide* for the operating systems supported by this version of AdvancedCopy Manager:

- "Operating Environment of ETERNUS SF Manager"

- "Operating Environment of AdvancedCopy Manager's Agent"

- "Operating Environment of AdvancedCopy Manager CCM"
....

2.4.8   Changes for Supported Web Browsers

The following web browsers are no longer supported.

Version	Details
16.9 or later	Internet Explorer 10 Microsoft Edge 44 Microsoft Edge 42 Microsoft Edge 25 Firefox ESR 68 Firefox ESR 60
16.8 or later	Internet Explorer 9 Firefox ESR 52 Firefox ESR 45 Firefox ESR 38 Firefox ESR 31 Firefox ESR 24 Firefox ESR 17
16.4 or later	Internet Explorer 8
16.0 or later	Firefox 3.6 Firefox ESR 10

 See
. . . .
Refer to "Supported Web Browsers" in the *Web Console Guide* for the version of the supported web browsers.
. . . .

2.4.9 Changes for Supported Agent Version

Connection to the following AdvancedCopy Manager's agents is no longer supported.

Version	Details
16.8 or later	ETERNUS SF AdvancedCopy Manager's agent version 14.x
16.0 or later	ETERNUS SF AdvancedCopy Manager's agent version 13.x
15.0 or later	Softek AdvancedCopy Manager's agent (all versions)

 See
. . . .
Refer to "3.2 Notes on Combining Versions and Levels" for the supported combinations of the manager program and the agent program.
. . . .

2.4.10 Changes for Supported Software

The following software is no longer supported.

Version	Details
16.9 or later	Symfoware Server Enterprise Extended Edition V10.x or earlier Symfoware Server Advanced Backup Controller V10.x or earlier
16.8 or later	Exchange Server 2007 SP3 SQL Server 2008 R2 SP3 SQL Server 2008 SP4 Oracle 10g Oracle 9i Oracle 8i

Version	Details
16.4 or later	SQL Server 2005 SP1, SP2, SP3, SP4 SQL Server 2005
16.1 or later	Exchange Server 2003
16.0 or later	SQL Server 2000

💼 See

• •

Refer to "Operating Environment" in the chapter "Overview" in the *AdvancedCopy Manager Operation Guide* for information on the software supported by AdvancedCopy Manager.

• •

2.4.11   Default Installation Path of Programs (for Windows)

The default install path for programs that include manager functions has been changed.

Version	Details
15.0 or later	C:\ETERNUS_SF\ACM
14.2 or earlier	C:\Win32app\AdvancedCopyManager

📝 Example

• •

When having installed a program to the default installation location, the full path of the "stgcmmodnode" command is as follows.

- For version 15.0 or later

  ```
  C:\ETERNUS_SF\ACM\bin\stgcmmodnode
  ```

- For version 14.2 or earlier

  ```
  C:\Win32app\AdvancedCopyManager\bin\stgcmmodnode
  ```

• •

2.4.12   Installation Destination Directory of Program (for Solaris, Linux)

The installation destination directory specification for the ETERNUS SF Manager and AdvancedCopy Manager Copy Control Module has been changed.

Installation Destination Directory	Version 15.0 or Later	Version 14.2 or Earlier
Program install directory (Installation destination directory of packages)	Cannot be specified. The /opt is a fixed directory.	Specification is required. The default is /opt.
Fixed configuration directory (Installation destination directory of environment setting files)	Cannot be specified. The /etc/opt is a fixed directory.	Specification is required. The default is /etc/opt.
Modifying configuration directory (Installation destination directory of files to be modified; log file, temporary file, etc.)	Cannot be specified. The /var/opt is a fixed directory.	Specification is required. The default is /var/opt.

2.4.13   Command Preview

Command preview is no longer supported.

Version	Details
15.0 or later	There is no command preview.
14.2 or earlier	The command preview allows checking the available task operations (command options) prior to execution.

See

Refer to "Command References" in the *AdvancedCopy Manager Operation Guide* for information on the commands.

2.4.14 Stgmgrinfobkup Command Processing at -t Option Specification

The following changes have been made when the AuthData is specified to the -t option argument of the "stgmgrinfobkup" command.

Version	Details
15.0 or later	The command terminates abnormally because of the syntax error.
14.2 or earlier	The command backs up the authentication management file.

Information

After the change, when using the policy file settings and executing the "stgmgrinfobkup" command, even if the key name [AuthData] is at "Yes", the authentication management file is not backed up.

2.4.15 Output Information of Stgenvdisp Command

The information displayed on the Management Server has changed.

Version	Details
15.0 or later	Does not display "Authentication feature" and "IP address for GUI".
14.2 or earlier	Displays "Authentication feature" and "IP address for GUI".

2.4.16 Swstbackup Command Processing (for Windows)

For Windows, the "swstbackup" command processing under the following conditions has been changed:

- The -Xflush option is not specified.

- The BufferFlushOnly parameter is not described in the transaction volume locking specification file for backups, or when the transaction volume locking specification file for backups does not exist.

Version	Details
15.0 or later	Flushes the file system buffer for the transaction volume.
14.2 or earlier	Locks the transaction volume.

Information

For Windows, the relation between the -Xflush option of the "swstbackup" command and the transaction volume locking specification file for backups is as follows.

Version	-Xflush Option	If BufferFlushOnly Value Is On	If BufferFlushOnly Value Is Off	If BufferFlushOnly Parameter Is Not Described	If Transaction Volume Locking Specification File for Backups Does Not Exist
15.0 or later	Not specify	Flush	Lock	Flush	Flush
	Specify	Flush	Flush	Flush	Flush
14.2 or earlier	Not specify	Flush	Lock	Lock	Lock
	Specify	Flush	Flush	Flush	Flush

Lock: Locks the transaction volume.
Flush: Flushes the file system buffer for the transaction volume.

2.4.17 Swsrpmake Command and Swsrpcancel Command Processing (for Windows)

For Windows, the "swsrpmake" command processing and "swsrpcancel" command processing under the following conditions have been changed:

- The -Xflush option is not specified.

- The BufferFlushOnly parameter is not described in the copy source volume locking specification file, or when the copy source volume locking specification file does not exist.

Version	Details
15.0 or later	Flushes the file system buffer for the copy source volume.
14.2 or earlier	Locks the copy source volume.

Information

For Windows, the relation between the -Xflush option of the "swsrpmake" and "swsrpcancel" commands and the copy source volume locking specification file is as follows.

Version	-Xflush Option	If BufferFlushOnly Value Is On	If BufferFlushOnly Value Is Off	If BufferFlushOnly Parameter Is Not Described	If Copy Source Volume Locking Specification File Does Not Exist
15.0 or later	Not specify	Flush	Lock	Flush	Flush
	Specify	Flush	Flush	Flush	Flush
14.2 or earlier	Not specify	Flush	Lock	Lock	Lock
	Specify	Flush	Flush	Flush	Flush

Lock: Locks the copy source volume.
Flush: Flushes the file system buffer for the copy source volume.

Note

When using the server-to-server replication and AdvancedCopy Manager installed in the Management Server (where the replication source volume exists) is version 14.2 or earlier, the processing reverts to those of version 14.2 or earlier.

2.4.18 Environment Setup/Deletion Methods for PRIMECLUSTER (for Linux)

The methods for environment setup/deletion to PRIMECLUSTER for Linux have been changed.

Version	Details
15.0 or later	The following two commands are not supported. - "stgclset_lxprm" command - "stgclunset_lxprm" command Instead, environment setup and deletion are performed by the Linux/HP-UX version cluster setup and un-setup procedures.
14.2 or earlier	Environment setup and deletion are performed with the above commands.

2.4.19 Troubleshooting Information Collection Command Name and Path Name

The name and path name of the troubleshooting information collection command for the AdvancedCopy Manager's manager have been changed.

Version	Details

15.0 or later	- For Windows environments
	
	  installDir\Common\bin\esfsnap (*1)
	
	- For Solaris or Linux environments
	
	  /opt/FJSVesfcm/bin/esfsnap

14.2 or earlier	- For Windows environments
	
	  installDir\bin\acmcapture (*2)
	
	- For Solaris or Linux environments
	
	  /opt/FJSVswstf/bin/acmcapture

*1: The *installDir* is "Program Directory" specified at the ETERNUS SF Manager installation.
*2: The *installDir* is "Program Directory" specified at the AdvancedCopy Manager's manager installation.

The name and path name of the troubleshooting information collection command for the AdvancedCopy Manager Copy Control Module have been changed.

Version	Details

15.0 or later	- For Windows environments
	
	  installDir\Common\bin\esfsnap (*1)
	
	- For Solaris or Linux environments
	
	  /opt/FJSVesfcm/bin/esfsnap

14.2 or earlier	- For Windows environments
	
	  installDir\bin\acmcapture (*2)
	
	- For Solaris or Linux environments
	
	  /opt/FJSVccm/bin/acmcapture

*1: The *installDir* is "Program Directory" specified at the ETERNUS SF Manager installation.

*2: The *installDir* is "Program Directory" specified at the AdvancedCopy Manager Copy Control Module installation.

2.4.20 Swsrpmake Command Processing on Combining Cascade Copy and Concurrent OPC

The "swsrpmake" command processing under the following conditions has been changed:

- A volume used by cascade copy has been specified as a copy source.

- The -Xconcur-opc option has been specified.

Version	Details
15.1 or later	The sequence of data updates is preserved across multiple volumes.
15.0	The sequence of data updates is not preserved across multiple volumes.

 See

Refer to "Notes on Combining Cascade Copy and Concurrent OPC in Operation" in "Notes on Snapshot High-speed Backup" in the *AdvancedCopy Manager Operation Guide* for details.

2.4.21 Acopc Start Command and Acsnap Start Command Processing

The "acopc start" command processing and "acsnap start" command processing under the following conditions have been changed:

- A volume used by cascade copy has been specified as a copy source.

- The -concur option has been specified.

Version	Details
15.1 or later	The sequence of data updates is preserved across multiple volumes.
15.0	The sequence of data updates is not preserved across multiple volumes.

 See

Refer to "Notes on Combining Cascade Copy and Concurrent OPC in Operation" in the *AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

2.4.22 Environment Setup/Deletion Methods for Clustered Systems (for Solaris, HP-UX)

The methods for setting and deleting environments for the following clustered systems have been changed:

- For Solaris

  - SynfinityCLUSTER and PRIMECLUSTER

  - VERITAS Cluster Server

  - Sun Cluster

- For HP-UX

  - MC/ServiceGuard (A.11.17 or earlier)

  - VERITAS Cluster Server

Version	Details
15.1 or later	The following commands are not supported. - "stgclset_safe", "stgclset_vcs", "stgclset_sun", "stgclset_mcsg", "stgclset_hpvcs" - "stgclunset_safe", "stgclunset_vcs", "stgclunset_sun", "stgclunset_mcsg", "stgclunset_hpvcs" Refer to "Customization for Solaris/Linux/HP-UX Clustered System" and "Deletion of Cluster Environment for Solaris/Linux/HP-UX Clustered System" in the *Cluster Environment Setup Guide* to set and delete environments for clustered systems.
15.0 or earlier	The above commands serve to set and delete environments for clustered system.

2.4.23 AdvancedCopy Manager Copy Control Module Customization Procedure

The procedure of "Customization for AdvancedCopy Manager CCM" in the *Cluster Environment Setup Guide* has been changed.

Version	Details
15.1 or later	In the ".install.sys" file, modification of the value for "stxs_etcdir=" is not required.
15.0	In the ".install.sys" file, modification of the value for "stxs_etcdir=" is required.

2.4.24 Copy Progress Rate of QuickOPC

The information on the copying progress rate of QuickOPC, which is displayed when executing below commands, has been changed:

- AdvancedCopy Manager commands

    - For all platforms

        - **Execute** column of the "swstbackstat" command

        - **Execute** column of the "swsthistdisp" command

        - **Execute** column of the "swstexecstat" command

        - **Execute** column of the "swsttrkstat" command

        - **Execute** column of the "swsrpstat" command

    - For Windows only

        - **Execute** column of the "swsrpshadowadm_exchange" command

        - **Execute** column of the "swsrpvrq advcopy query" command

- AdvancedCopy Manager Copy Control Module command

    - **Progress** column of the "acopc query" command

Version	Details
15.1 or later	Excluding the following storage devices, if you write data onto a copy source volume while physical copying of QuickOPC is in progress, a progress rate of 100% is displayed after completing physical copying: - ETERNUS DX60 S2 - ETERNUS DX80 S2/DX90 S2 (Firmware version is earlier than V10L30) - ETERNUS DX400 S2 series (Firmware version is earlier than V10L30) - ETERNUS DX8000 S2 series (Firmware version is earlier than V10L30)

Version	Details
	- ETERNUS DX60/DX80/DX90
	- ETERNUS DX400 series
	- ETERNUS DX8000 series
	- ETERNUS2000, ETERNUS4000, ETERNUS8000
15.0 or earlier	If you write data onto a copy source volume while physical copying of QuickOPC is in progress, the displayed progress rate does not reach 100% after completing physical copying.

2.4.25   Information to Be Displayed If Hardware Error, etc. Occurs

In the following commands, the information to be displayed if a hardware error, etc. occurs has been changed:

- **Status** column of the "swstbackstat" command

- **Status** column of the "swstrestore" command

- **Status** column of the "swsthistdisp" command

- **Status** column of the "swstsyncstat" command

- **Execute** column of the "swstexecstat" command

- **Status** column of the "swsttrkstat" command

Version	Details
15.2 or later	If a hardware error, etc. occurs, "?????" is displayed.
15.1 or earlier	If a hardware error, etc. occurs, an error message is displayed.

 See
. . . .
Refer to "Troubleshooting: Hardware Error During Backup" in the *AdvancedCopy Manager Operation Guide* for details.
. . . .

2.4.26   Automatic Configuration of Maintenance Mode of MSCS or WSFC

In a clustered system environment using MSCS or WSFC, actions for when one disk holds one partition or when copy is performed on a per LUN basis have been changed.

Version	Details
16.1 or later	The maintenance mode of physical disk resources is automatically configured.
16.0 or earlier	The maintenance mode of physical disk resources is not automatically configured.

However, if either one of the following conditions is met, the maintenance mode is not automatically configured:

- The maintenance mode of physical disk resources has been configured in advance.

- "ClusterResourceMaint=off" is described in the volume lock operation specification file.

Refer to "Notes on Backup in Clustered System" or "Notes on Replication in Clustered System" in the *AdvancedCopy Manager Operation Guide (for Windows)* for details.

2.4.27   Database Backup/Restore Method

The backup/restore method of AdvancedCopy Manager database has been changed.

Version	Details
16.1 or later	- Backup Perform backup in the steps described in "Backup of Common Control and AdvancedCopy Manager Repository" in the *AdvancedCopy Manager Operation Guide*. - Restore Perform restore in the steps described in "Restore of Common Control and AdvancedCopy Manager Repository" in the *AdvancedCopy Manager Operation Guide*.
16.0 or earlier	- Backup Use "DB Setup Tool" for Windows environments or the "stgdbbackup" command for Solaris/Linux environments to perform backup. - Restore Use "DB Setup Tool" for Windows environments or the "stgdbrcv" command for Solaris/Linux environments to perform restore.

2.4.28 Database Save/Recovery Method

The save/recovery method of AdvancedCopy Manager database is no longer supported.

Version	Details
16.1 or later	The AdvancedCopy Manager database save/recovery method is not provided.
16.0 or earlier	- Save Use "DB Setup Tool" for Windows environments or the "stgdbdmp" command for Solaris/Linux environments to perform save. - Recovery Use "DB Setup Tool" for Windows environments or the "stgdbrcv" command for Solaris/Linux environments to perform recovery.

2.4.29 Target of Management Information Package Backup of AdvancedCopy Manager

The target of management information package backup of AdvancedCopy Manager has been changed.

Version	Details
16.1 or later	The AdvancedCopy Manager repository is not included. After executing the "stgmgrinfobkup" command, the steps in "Restore of Common Control and AdvancedCopy Manager Repository" in the *AdvancedCopy Manager Operation Guide* must be performed.
16.0 or earlier	The AdvancedCopy Manager repository is included.

2.4.30 Commands/Services/Daemons Related to AdvancedCopy Manager Database

The commands, services, and daemons related to AdvancedCopy Manager database are no longer supported.

For Windows

Version	Details
16.1 or later	The following tool, services, and commands are not provided.

Version	Details
	- DB Setup Tool
	- AdvancedCopy Manager GUI Service service
	- SymfoWARE RDA RDBSWSTF service
	- SymfoWARE RDB RDBSWSTF service
	- "stgdbdmp" (Database save command)
	- "stgdbloginf" (Repository update area busy rate check command)
	- "stguserset" (Repository access user change command)
16.0 or earlier	The above tool, services, and commands are provided.

For Solaris or Linux

Version	Details
16.1 or later	The following commands and daemons are not provided.
	- "stgdbdmp" (Database save command)
	- "stgdbrcv" (Database recovery command)
	- "stgdbbackup" (Database backup command)
	- "stgdbrestore" (Database restoration command)
	- "stgdbset" (Database integrated setup command)
	- "stgdbunset" (Database integrated unsetup command)
	- "stgdbloginf" (Repository update area busy rate check command)
	- "stgdbcom" (RDB daemon start/stop command)
	- "stgrmicom" (RMI daemon start/stop command)
	- "stguserset" (Repository access user change command)
	- RDB daemon
	- RMI daemon
16.0 or earlier	The above commands and daemons are provided.

2.4.31 Items Displayed by Stgenvdisp Command

The items displayed by the "stgenvdisp" command have been changed.

For Windows

Version	Details
16.1 or later	The following items are not displayed.
	- Repository user
	- DB log file
	- DB dictionary file
	- Repository database
	- Database size
	- Remote access

Version	Details
	- Exclusive control
	- Repository
16.0 or earlier	The above items are displayed.

For Solaris

Version	Details
16.1 or later	The following items are not displayed. - Repository user - DB file - RDB dictionary - RDB log file - Database space - Remote access - Exclusive control - Repository - Code
16.0 or earlier	The above items are displayed.

For Linux

Version	Details
16.1 or later	The following items are not displayed. - Repository user - DB file - RDB dictionary - RDB log file - Database space - Database size - Remote access - Exclusive control - Code
16.0 or earlier	The above items are displayed.

2.4.32 Meaning of -d Option of Stgrepocnv Command

The meaning of the -d option of the "stgrepocnv" command has been changed.

Version	Details
16.1 or later	Specify a directory that stores the migration target repository data of version 16.0 or earlier with an absolute path, or specify the migration target repository data file of version 16.1 or later with an absolute path.

Version	Details
16.0 or earlier	Specify a directory that stores the migration target repository data with an absolute path.

2.4.33 Meaning of -b Option of Stgforcedelsrv Command

The meaning of the -b option of the "stgforcedelsrv" command has been changed.

Version	Details
16.1 or later	Specify a file which has a backup of the database with a full path.
16.0 or earlier	Specify a directory which has a backup of the database with a full path.

2.4.34 Name of NAS Backup Volume and Copy Group Created by Setting of NAS Backup

The name of NAS backup volume and copy group created by the "Set NAS Backup" (creation of NAS backup volume) operation has been changed.

NAS Backup Volume Name

Version	Details	
	Name	Naming Rule
16.1 or later	*nasVolumeName*$bak_*N*	"*nasVolumeName*" is a name of NAS volume. "*N*" is a sequential number from 0. The number of digits varies.
16.0	*nasVolumeName*$bak*N*	"*nasVolumeName*" is a name of NAS volume. "N" is set automatically by the sequential number from 0. When the length of whole characters exceeds 16 characters, the end of the "nasVolumeName" is deleted so that the length of whole characters may become 16 characters.

Copy Group Name

Version	Details	
	Name	Naming Rule
16.2 or later	NAS_QuickOPC_*nasVolumeName_N*	"*N*" is a sequential number from 0. The number of digits varies. Characters other than those listed below in *nasVolumeName* are replaced with hash (#): - One-byte alphanumeric character, minus (-), underscore (_), hash (#), period (.), plus (+)
16.1	NAS_QuickOPC_*nasVolumeName_N*	"*N*" is a sequential number from 0. The number of digits varies.
16.0	NAS_QuickOPC_*N*	"*N*" is set automatically by the sequential number from 0.

2.4.35 Behavior When Specifying Copy Groups with Execution Type Commands of AdvancedCopy Manager Copy Control Module

For AdvancedCopy Manager Copy Control Module, the behavior of the execution type commands have changed for the following conditions:

- A copy group is specified, and

- The specified copy group has copy pairs for which the specified operation cannot be executed.

Version	Details
16.5 or later	The specified operation is executed in copy group units. There are times when it succeeds/fails and times when it fails in copy group units depending on the error conditions. Error messages are output in copy pair units or copy group units depending on the error conditions. When output in copy group units, the ccm5012 message is displayed.
16.4 or earlier	The specified operation is executed in copy pair units and succeeds/fails in copy pair units. Error messages are output in copy pair units.

2.5   Incompatible Information of Common for All Products

This section describes the changes from the previous version of common for all products.

2.5.1   Count Method in Extended Copy Sessions and Default Filter on Session List Screen

On the Advanced Copy Overview screen of Web Console, the counting method for the number of copy sessions in the **Session** and **Local Copy Session Count** columns has been changed.
Also, on the session list screen, the filter item for Copy Type that is selected by default when opening the screen has been changed.

Version	Details
15.1 or later	- The Extended Copy sessions are not included in the **Sessions** and **Local Copy Session Count** columns. - On the session list screen, "All Local or REC" is selected as the filter item for Copy Type by default when opening the screen.
15.0	- The Extended Copy sessions are included in the **Sessions** and **Local Copy Session Count** columns. - On the session list screen, "All" is selected as the filter item for Copy Type by default when opening the screen.

Information

How to Display the Advanced Copy Overview Screen

1. On the global navigation tab, click **Storage**.

2. On the Main pane, click the target ETERNUS Disk storage system name.

3. On the Category pane, click **Advanced Copy**.

How to Display the Session List Screen

1. On the global navigation tab, click **Storage**.

2. On the Main pane, click the target ETERNUS Disk storage system name.

3. On the Category pane, click **Advanced Copy**.
   The items of the Category pane change into the items concerning Advanced Copy.

4. On the Category pane, click **Copy Sessions**.

2.5.2 Setting Method and Minimum Value for Copy Table Size

On the Advanced Copy Configuration Wizard screen of Web Console, the method for specifying the custom Copy Table Size and the minimum value to be set in the custom Copy Table Size are changed.
In addition, on the Remote Copy Configuration wizard screen, the minimum value to be set in the Copy Table Size is changed.

Version	Details
15.1 or later	The custom Copy Table Size can be specified by a spin button or direct input. The minimum value that can be set is 8.
15.0	The custom Copy Table Size can be specified by a pull-down list. The minimum value that can be set is 0.

Information

How to Display the Advanced Copy Configuration Wizard Screen

1. On the global navigation tab, click **Storage**.

2. On the Main pane, click the target ETERNUS Disk storage system name.

3. On the Category pane, click **Advanced Copy**.
   The items of the Category pane change into the items concerning Advanced Copy.

4. On the Category pane, click **Configuration**.

5. On the Action pane, click **Advanced Copy** under **Wizard**.

How to Display the Remote Copy Configuration Wizard Screen

1. On the global navigation tab, click **Storage**.

2. On the Main pane, click the target ETERNUS Disk storage system name.

3. On the Category pane, click **Advanced Copy**.
   The items of the Category pane change into the items concerning Advanced Copy.

4. On the Category pane, click **REC Path** or **REC Buffer**.

5. On the Action pane, click **Remote Copy Conf.** under **Wizard**.

2.5.3 Screen Refresh Interval and Display/Input Unit of Web Console

The screen refresh interval of Web Console and its display/input unit have been changed.

Version	Details
15.2 or later	- The shortest screen refresh interval is 30 seconds. - Display/input unit of the screen refresh interval is "second".
15.1 or earlier	- The shortest screen refresh interval is 1 minute. - Display/input unit of the screen refresh interval is "minute".

2.5.4 Help Button Design and Online Help Display Procedures of Web Console

For Web Console, the design of Help button in the menu area and online help display procedures have been changed.

Version	Details
15.2 to 15.3	- The "Help" link to display the online help does not exist in the menu area. - To display the online help, click "**?**" icon in the menu area, and click **Help** displayed in drop-down list.
15.1 or earlier	- The "Help" link to display the online help exists in the menu area. - To display the online help, click "**?**" icon or the "Help" link in the menu area.

2.5.5   Changes Communication Port Default Value

In Express and AdvancedCopy Manager Copy Control Module, the port number communicating with storage devices by using SSH has been changed.

Version	Details
16.0 or later	The port number to be used is 32002/tcp.
15.3 or earlier	The port number to be used is 50002/tcp.

See
. . . .
Refer to "Storage Devices and Interface Settings" in "Supported Devices" in the *Installation and Setup Guide* for information on how to communicate with storage devices in this version.
. . . .

2.5.6   Sanma.conf Configuration Checking for Device Registration

The **Use existing settings from file: sanma.conf** checkbox when the following devices are registered has been deleted:

- ETERNUS Disk storage systems

- Fibre Channel switches (Storage Cruiser only)

Version	Details
16.0 or later	The checkbox is not displayed.
15.3 or earlier	The checkbox is displayed.

2.5.7   Customizing Configuration File

The parameters that are able to be customized with the "sanma.conf" file have been changed.

Version	Details
16.0 or later	The following parameters cannot be customized with the "sanma.conf" file. - AUTODISCOVER_SUBNET - SNMP_COMMUNITY_NAME_FOR_IP - SNMP_COMMUNITY_NAME_FOR_AUTODISCOVER - LOG_CYCLE (Storage Cruiser only) - LOG_MAX_SIZE (Storage Cruiser only) - SNMPTH_LOG_COUNT (Storage Cruiser only) - SNMPTH_LOG_LIMIT (Storage Cruiser only) Customize the Storage Cruiser log file settings with LOG_COUNT and LOG_LIMIT parameters of the "ssmgr.conf" file.

Version	Details
15.3 or earlier	The above-mentioned parameters can be customized with the "sanma.conf" file.

📚 See
....

Refer to "Customization" in the *Storage Cruiser Operation Guide* for information on the customizing the configuration file.
....

2.5.8 Operations for Host Response

In Web Console, operations related to host response (full-listed view, detailed view, add, change, delete) are no longer supported.

Version	Details
16.0 or later	The following operations related to host response cannot be performed with Web Console. - Full-listed view / Detailed view of host response - Add / Change / Delete host response - Detailed view of host response, by clicking on the displayed link in the **Host Response** column of the access path full-listed view screen
15.3 or earlier	The above operations related to host response can be performed with Web Console.

2.5.9 Changes Character Strings in Performance Chart Window

The character strings displayed in the **Series** column in the Performance Chart window of ETERNUS Disk storage systems and switches have been changed.

Performance Chart Window of ETERNUS Disk storage systems

Version 16.0 or Later	Version 15.3 or Earlier
Read	Read IOPS Read Data Transfer Throughput Read Response Time Read Cache Hit Rate
Sum of Read	Sum of Read IOPS Sum of Read Data Transfer Throughput Sum of Read Response Time Sum of Read Cache Hit Rate
Write	Write IOPS Write Data Transfer Throughput Write Response Time Write Cache Hit Rate
Sum of Write	Sum of Write IOPS Sum of Write Data Transfer Throughput Sum of Write Response Time Sum of Writed Cache Hit Rate
Pre-fetch	Pre-fetch Cache Hit Rate
Sum of Pre-fetch	Sum of Pre-fetch Cache Hit Rate

Performance Chart Window of Switches

Version 16.0 or Later	Version 15.3 or Earlier
Send Data	Transfer Throughput of Send Data
Receive Data	Transfer Throughput of Receive Data
Sum of Send Data	Sum of Transfer Throughput of Send Data
Sum of Receive Data	Sum of Transfer Throughput of Receive Data
Number of Errors	Number of CRC Errors
Sum of Number of Errors	Sum of Number of CRC Errors

2.5.10   Online Manual in DVD Media

The online manual included in the DVD media has been changed.

Version	Details

16.0 or later	The manuals included in the DVD media are only available in PDF format. However, as in the past, the manuals are available in HTML format online at the following our company's manual publication website.
	
	`http://www.fujitsu.com/global/support/software/manual/`
	
	A PDF portfolio is no longer provided. For a text search crossing multiple PDF manuals, use the searching function of Adobe(R) Reader(R) / Adobe(R) Acrobat(R) Reader(R) DC. Refer to the title "Find text in multiple PDFs" in the following URL of Adobe Systems Incorporated for details.
	
	`https://helpx.adobe.com/acrobat/using/searching-pdfs.html`

15.3 or earlier	The manuals included in the DVD media are provided in both PDF and HTML format. A PDF portfolio which has combined the online manuals of Express, Storage Cruiser, and AdvancedCopy Manager is provided (only for version 15.0 or later).

2.5.11   Online Help Feature

In Web Console, the online help is no longer provided.

Version	Details
16.0 or later	The **Help** entry of the drop down list displayed by clicking 🔽 in the menu area was changed to **Manual**. By clicking **Manual**, the manual index screen in HTML format is displayed.
15.3 or earlier	In the drop down list displayed by clicking 🔽 in the menu area, **Help** is displayed. By clicking **Help**, the online help is displayed.

2.5.12   Changes Configuration File Path for Port Number

The path name of the configuration file to be edited for changing the port number has been changed.

Version	Details
16.0 or later	*installDir*\Common\sys\tomcat\webapps\esf\WEB-INF\config\database.yml
15.3 or earlier	*installDir*\Common\sys\tomcat\webapps\esfv15\WEB-INF\config\database.yml

*1: The *installDir* is "Program Directory" specified at the ETERNUS SF Manager installation.

2.5.13　Name of Commands Related to Configuration Import

The name of the following commands has been changed:

- Configuration import command

- Configuration import status display command

Version	Details
16.0 or later	The configuration import command name is "esfadm devconf import". The configuration import status display command name is "esfadm devconf importstatus".
15.0 to 15.3	The configuration import command name is "esfimportdevconf". The configuration import status display command name is "esfimportdisplay".

2.5.14　Holding of Checks Placed in Table Checkboxes and Table Radio Buttons

In Web Console, the operation of table checkboxes and table radio buttons has been changed.

Version	Details
16.1 or later	When operating the table (*1) that a checkbox or a radio button is checked, the check is held. Therefore, checks of records that are not displayed on screen due to table operations are also processed.
16.0 or earlier	When operating the table (*1) that a checkbox or a radio button is checked, the check turns off. Therefore, checks of records that are not displayed on screen due to table operations are not processed.

*1: Refers to the following operations:

- Click **Filter** or **Clear** in **Filter Setting**.

- Click the links (**<<, <, >, >>**) for the displayed page in **Page Setting**.

- Click **Go** in **Page Setting**.

- Change the pull-down menu in **Display *xxx* records** of **Displayed Record Setting**.

- Click on the column of the table (sort the table).

2.5.15　Displayed Strings for CA Type Information

In Web Console, strings displayed in **Type** column of CA in the Controller Enclosure screen for ETERNUS DX100 S3/DX200 S3, DX500 S3/DX600 S3, ETERNUS DX200F with FC16G-CA have been changed.

Version	Details
16.1 or later	"FC-2ports" or "FC-4ports" is displayed.
16.0	"16GFC-2ports" or "16GFC-4ports" is displayed.

2.5.16　Category Pane Related to NAS Management Operation in Web Console

In Web Console, the contents of Category pane related to operations under the NAS management page (*1) have been changed.

Operations	Version	
	16.1 or Later	16.0
Configure Authentication Server	Environment Setting	NAS Interface
Set NAS Backup (Creation of NAS backup volume)	Backup Management	Shared Folder
Backup of NAS Volume		
Restore to NAS Volume		
Mount Backup Destination		
Unmount Backup Destination		

*1: The page is displayed with the following procedures:

1. On the global navigation tab, click **Storage**.

2. On the Main pane, click the target ETERNUS Disk storage system.

3. On the Category pane, click **NAS Management**.

2.5.17 Change of Input Condition for Shared Folder Name

In Web Console, the input conditions for shared folders that are configured in the Create Shared Folder screen of the NAS management has been changed.

Version	Details
16.2 or later	The input conditions are as follows: - 1 to 76 alphanumeric characters (excluding blank spaces, and **\ / : * ? " < > | = , ; [ ] % +**) - The following names are prohibited regardless of case sensitivity: ".snap", "global", "homes", "printers", "ipc$", "." (one dot character), and ".." (two dot characters) - Setting character strings with "$bak" as the suffix is prohibited.
16.1 or earlier	The input conditions are as follows: - 1 to 250 alphanumeric characters (excluding blank spaces, and **\ / : * ? " < > | = , ;**) - Setting character strings with "$bak" as the suffix is prohibited.

2.5.18 Change of Web Console Dashboard

The screen that is displayed after logging in to Web Console has been changed to the new Dashboard. Refer to "Web Console Screen Layout" and "Dashboard Operations" in the *Web Console Guide* for details.

In addition, the title of the **Main** tab screen that was provided until version 16.2 has been changed from "Dashboard" to "Overview". You can also use this Overview screen in version 16.3 or later.

Information
··

After a new installation of version 16.3 or an upgrade from version 16.2 or earlier, the new Dashboard is displayed when logging in to Web Console.
You can also configure the Overview screen to be displayed instead of the new Dashboard when logging in to Web Console. Refer to "Home Screen Settings" in the *Web Console Guide* for details.
··

2.5.19 Change of Column Name on Web Console Various Log Screens

The column name of the following screens for the various logs has been changed:

- Operation History

- Events

- Threshold Monitoring Alarms

- Quota Management (NAS Management)

Column Name in Version 16.3 or Later	Column Name in Version 16.2 or Earlier
Level	Type
Target	Device

2.5.20 Change of Action Name for Record Count Preference on Web Console

The message of action name for record count preference on Web Console has been changed.

Version	Details
16.3 or later	Display Preference
16.1 to 16.2	Record Count Preference

2.5.21 Displayed Contents of NAS Management Operation on Web Console

In Web Console, the contents of Action pane related to operations under the NAS management page (*1) have been changed.

Version	Details
16.3 or later	Modify Basic Setting Modify Access Setting
16.0 to 16.2	Modify

*1: The page is displayed with the following procedures:

1. On the global navigation tab, click **Storage**.

2. On the Main pane, click the target ETERNUS Disk storage system.

3. On the Category pane, click **NAS Management**.

See
. . . .
Refer to "Change Shared Folder" in the *Web Console Guide* for changeable items in each action.
. . . .

In Web Console, the name of columns related to capacity under the NAS management page have been changed.

Column Name in Version 16.3 or Later	Column Name in Version 16.0 to 16.2
Total Capacity	Total Size
Pool Total Capacity	Pool Total Size
Total Free Space	Total Free Size
Pool Total Free Space	Pool Total Free Size

In Web Console, the contents of Main pane and Action pane related to operations under the Quota management page (*2) have been changed.

Version	Details	
	Tabs in Main Pane	Content of Action Pane
16.3 or later	The following three tabs: - User/Group - Shared Folder - Log	The following actions under **Quota Setting (User/Group)** and **Quota Setting (Shared Folder)**: - Add - Delete - Modify
16.0 to 16.2	The following two tabs: - Quota Setting - Log	The following actions under **Quota Setting**: - Add - Delete - Modify

*2: The page is displayed with the following procedures:

1. On the global navigation tab, click **Storage**.

2. On the Main pane, click the target ETERNUS Disk storage system.

3. On the Category pane, click **NAS Management**.
   The items of the Category pane change into the items concerning the NAS Management.

4. On the Category pane, click **Quota Management**.

In Web Console, the contents of Action pane related to operations under the NAS Volume Backup management page (*3) have been changed.

Version	Details
16.3 or later	Automatic Snapshot
16.0 to 16.2	Snapshot

*3: The page is displayed with the following procedures:

1. On the global navigation tab, click **Storage**.

2. On the Main pane, click the target ETERNUS Disk storage system.

3. On the Category pane, click **NAS Management**.
   The items of the Category pane change into the items concerning the NAS Management.

4. On the Category pane, click **Backup Management**.

The displayed name on the following wizard screens for the snapshot of NAS management have been changed:

- Create Shared Folder

- Set Snapshot

- Start Snapshot

- Stop Snapshot

Version	Details
16.3 or later	Automatic Snapshot

Version	Details
16.0 to 16.2	Snapshot

2.5.22 Displayed Contents Related to AntiVirus Function of Web Console

Because the support of the antivirus function was stopped, the display content related to the antivirus function of Web Console was changed as follows.

NAS Management Screen (*1)

Version	Details
16.4 or later	**Anti-Virus** is not displayed in the Category pane.
16.2 to 16.3	**Anti-Virus** is displayed in the Category pane.

*1: The screen is displayed with the following procedures:

1. On the global navigation tab, click **Storage**.

2. On the Main pane, click the target ETERNUS Disk storage system.

3. On the Category pane, click **NAS Management**.

Configuration Dialog Box for Logs Panel in Dashboard (*2)

Version	Details
16.4 or later	The NAS antivirus log item is not displayed in the default filter settings.
16.3	The NAS antivirus log item is displayed in the default filter settings.

*2: A dialog box that is displayed by clicking **Modify** in the common menu of the Logs panel.

2.5.23 Change of Column Name on Web Console Thin Provisioning Screen

The column name of the Thin Provisioning screen has been changed.

Column Name in Version 16.7 or Later	Column Name in Version 16.6 or Earlier
Data Reduction Rate	Capacity Reduction Rate

2.5.24 Change of the Display String Related to the Temperature on Web Console

The column name on the Controller Enclosure screen, the Frontend Enclosure screen, and the Drive Enclosure screen has been changed.

Column Name in Version 16.9 or Later	Column Name in Version 16.8 or Earlier
Internal Temperature	Exhaust Temperature

Each screen is displayed with the following procedures:

1. On the global navigation tab, click **Storage**.

2. On the Main pane, click the target ETERNUS Disk storage system.

3. On the Category pane, click **Component**.

4. On the Category pane, click the target screen name.

Chapter 3   Upgrade Information

This chapter describes the information related to upgrading to this version.

🔷 Note

....

The "Upgrade" in the manuals for this product indicates the updating of the currently installed program with a new version. Accordingly, the content described in this chapter does not include the following migration information:

- Migrating the currently installed program to a different server on the same platform

- Migrating the currently installed program to a different platform

With these migrations, you must uninstall the currently installed program, re-install the program in a new environment, and set it up again.

....

3.1   Information on Available Upgrades

This section explains the upgrade possibilities to this version.
The points that are not described by the platform are shared information in platforms supported by this product.

Upgrade Possibilities for Express

Table 3.1 Upgrade Possibilities from Previous Versions (for Express)

Program	Version Before Upgrading	Possibility of Upgrading to This Version	Possibility of Performing the Upgrade Installation
Manager program	16.x	A	A
	15.x	A	A
	14.x	N/A	N/A

A=Available, N/A=Not Available

Upgrade Possibilities for Storage Cruiser

Table 3.2 Upgrade Possibilities from Previous Versions (for Storage Cruiser)

Program	Version Before Upgrading	Possibility of Upgrading to This Version	Possibility of Performing the Upgrade Installation
Manager program	16.x	A	A
	15.x	A	A
	14.x	N/A	N/A
Agent program	16.x	A	A (*1)
	15.x	A	A (*1)
	14.x	N/A	N/A

A=Available, N/A=Not Available
*1: Available for Windows, Solaris, or Linux environments only

Upgrade Possibilities for AdvancedCopy Manager

Table 3.3 Upgrade Possibilities from Previous Versions (for AdvancedCopy Manager)

Program	Version Before Upgrading	Possibility of Upgrading to This Version	Possibility of Performing the Upgrade Installation
Manager program	16.x	A	A

Program	Version Before Upgrading	Possibility of Upgrading to This Version	Possibility of Performing the Upgrade Installation
	15.x	A	A
	14.x	N/A	N/A
Agent program	16.x	A	A (*1)
	15.x	A	A (*1)
	14.x	N/A	N/A
AdvancedCopy Manager Copy Control Module program	16.x	A	A
	15.x	A	A
	14.x	N/A	N/A

A=Available, N/A=Not Available
*1: Available for Windows, Solaris, or Linux environments only

See
. . . .
Refer to the *Migration Guide* for information on the procedure to upgrade.
. . . .

3.2   Notes on Combining Versions and Levels

The possibility of combining versions of the manager program and the agent program with Storage Cruiser or AdvancedCopy Manager are as follows.

Table 3.4 Possibility of Combining Manager Programs and Agent Programs

Version of the Manager Program (Management Server)	Version of the Agent Program (Managed Server)			
	16.x	15.x	14.x	13.x
16.x	A (*1)	B	C	C
15.x	C	A	C	C
14.x	C	C	C	C
13.x	C	C	C	C

A: Operation is possible (however, refer to notes that are described later.)
B: Operation is possible (however, the functions that are supported by a version newer than the current agent program cannot be used.)
C: Operation is not possible

*1: To use licenses that include "Downgradable to V16.9 or higher" in their name, an operation environment where the version of the manager program and all agent programs is 16.9 or later is required. For details, refer to "3.3 Notes When Using Version 16.9 or Later Licenses".

The following notes apply if the manager program and the agent program are the same version but different levels:

- If the level of the manager program is newer than the level of the agent program (common to Version 16 and Version 15)

  Operation is possible. However, functions that are supported by a level newer than the current agent program cannot be used.

- If the current system is Version 16, and the level of the agent program is newer than the level of the manager program

  Operation is possible. However, functions that are supported by a level newer than the current manager program cannot be used.

- If the current system is Version 15, and the level of the agent program is newer than the level of the manager program

  Operation is not possible.

Information

Because there are functional differences according to the version level of Storage Cruiser or AdvancedCopy Manager, it is recommended that you use a manager program and an agent program that are the same version level.

3.3 Notes When Using Version 16.9 or Later Licenses

To operate a system using licenses that include "Downgradable to V16.9 or higher" in their name (hereinafter referred to as "version 16.9 or later licenses"), an operation environment of version 16.9 or later is required. In operation environments of version 16.8 or earlier, the version 16.9 or later licenses cannot be used.
If the existing operation environment is version 16.8 or earlier and the version 16.9 or later license is used, perform one of the following procedures to configure the operation environment with version 16.9 or later.

- Upgrading the existing operation environment to version 16.9 or later

  1. Upgrade the manager program and all the agent programs in the existing operation environment to version 16.9 or later.

  2. If necessary, register the devices to be managed by the version 16.9 or later licenses to the upgraded operation environment.

  3. Register the version 16.9 or later licenses to the upgraded operation environment.

Information

The licenses that are used in the previous operation environment remain usable after the upgrade. The licenses do not need to be re-registered.

- Configuring a new operation environment separately from the existing operation environment

  The following shows the procedure when a manager program or agent program in the existing operation environment cannot be upgraded to version 16.9 or later.

  1. Configure a new operation environment in which the version of the manager program and all the agent programs is 16.9 or later separately from the existing operation environment.

  2. Register the devices to be managed by the version 16.9 or later licenses to the operation environment of version 16.9 or later.

  3. Register the version 16.9 or later licenses to the operation environment of version 16.9 or later.

Chapter 4 Program Fix List

4.1 Program Fix List for Version 16.9A

The program fix list for version 16.9A is as follows.

Version Problem Reported	Problem Report Number	Issue/Problem	Product Name		
			EXP	SC	ACM
16.8	PH20910	The following storage devices whose firmware version is V11L50-1000 or V11L51-1000 can be used. - ETERNUS DX S5 series - ETERNUS DX8900 S4 - ETERNUS AF S3 series The following storage devices whose firmware version is V10L90-1000 or V10L91-1000 can be used. - ETERNUS DX S4/S3 series (excluding the ETERNUS DX8900 S4) - ETERNUS AF S2 series - ETERNUS AF series - ETERNUS DX200F	Yes	Yes	Yes
	PH21064	The following devices whose firmware version is Fabric OS 9.0.1b or later can be managed as a support level "A" device. - Brocade X7-4 - Brocade X7-8 - Brocade G720 - Brocade G620 (Switch Type 183)	-	Yes	-
	PH21065	VMware vSphere 7.0 Update 2 is supported as a Managed Server.	-	Yes	-
	PH21449	Microsoft Windows Server 2022 is supported as an operating environment.	Yes	Yes	Yes
	PH22534	Red Hat Enterprise Linux 9 (for Intel64) is supported as an operating environment for Storage Cruiser's agent and AdvancedCopy Manager's agent.	-	Yes	Yes
	PH22657	The incompatibilities of Fabric OS with the following devices has been addressed. - Brocade 7810 (firmware version is Fabric OS 9.0.1c or later) - Brocade 7840 (firmware version is Fabric OS 8.2.3a2 or later)	-	Yes	-
16.7	PH21447	User display settings may not be reflected on the Quick Launch screen or the Performance screen of Web Console.	Yes	Yes	Yes
16.3	PH21066	Registration of a device may terminate with an error if the default port number used for the ETERNUS SF Manager service in a Windows environment is changed.	Yes	Yes	Yes
16.2	PH11959	Virtual machines may fail to be backed up if REC is being operated in a storage device where VVOLs for virtual machines are stored.	-	-	Yes

Version Problem Reported	Problem Report Number	Issue/Problem	EXP	SC	ACM
	PH21294	If Automated Storage Tiering is being performed for Tier pools in an environment where Red Hat Enterprise Linux 8 or Red Hat Enterprise Linux 7 is used as the OS of the Management Server, Automated Storage Tiering may not start for Tier pools after the OS is restarted.	-	Yes	-
16.0	PH21628	If operations for a storage device are performed from Web Console, they may take some time to be completed or fail before completion.	Yes	Yes	Yes

"EXP" indicates Express, "SC" indicates Storage Cruiser, and "ACM" indicates AdvancedCopy Manager.

4.2 Program Fix List for Version 16.9

The program fix list for version 16.9 is as follows.

Version Problem Reported	Problem Report Number	Issue/Problem	EXP	SC	ACM
16.8	PH16013	The following functions are supported in operation environments where the Management Server OS is Red Hat Enterprise Linux 8. - Device monitoring using the SNMPv3 protocol - SNMP Trap monitoring with an IPv6 address - Device monitoring for the ETERNUS AB/HB series (only for Storage Cruiser)	Yes	Yes	-
	PH17060	The ETERNUS DX900 S5 can be used.	-	Yes	Yes
	PH17204	Improved the execution performance of the AdvancedCopy Manager Copy Control Module commands.	Yes	-	Yes
	PH17368	The following storage devices can be used. - ETERNUS DX60 S5/DX100 S5/DX200 S5 - ETERNUS AF150 S3/AF250 S3	Yes	Yes	Yes
	PH17579	Hardware failures that may occur in the Fibre Channel switch where Fabric OS v8.x is installed are avoided.	-	Yes	-
	PH17821	A function that can expand the event messages related to the threshold monitoring alarm of the ETERNUS DX S5 series, ETERNUS DX8900 S4, and ETERNUS AF S3 series has been added.	-	Yes	-
	PH17986	The following storage devices can be used. - ETERNUS AX/HX series - ETERNUS AB/HB series	-	Yes	-
	PH18025	In an environment that uses the VMware vSphere Virtual Volumes function, if a virtual machine backup is executed, unnecessary clone backups may be taken. In addition, the Compliance Status of the virtual machine storage policy may be displayed as "Noncompliant" in VMware vCenter Server.	-	-	Yes
	PH18213	VMware vSphere 7 is supported.	-	Yes	Yes
	PH18513	If the following functions are used, an incorrect message may be output.	-	-	Yes

Version Problem Reported	Problem Report Number	Issue/Problem	Product Name EXP	SC	ACM
		- Virtual machine backup using the VMware vSphere Virtual Volumes function - Backup Wizard for Exchange Server			
	PH18610	Any name can be specified for an ETERNUS SF role group that is created in the domain controller (Active Directory) or in the Management Server. In addition, Universal can be specified for the scope of an ETERNUS SF role group that is created in the domain controller (Active Directory).	Yes	Yes	Yes
	PH18981	The following storage devices whose firmware version is V11L40 or V11L41 can be used. - ETERNUS DX S5 series - ETERNUS DX8900 S4 - ETERNUS AF S3 series	Yes	Yes	Yes
	PH18998	Red Hat Enterprise Linux 8.2 (for Intel64) is supported.	-	-	Yes
	PH19085	The "accopy query" command may terminate abnormally.	Yes	-	Yes
	PH19340	The performance information of CA/CM Port#2 and #3 for the ETERNUS DX200 S5 and the ETERNUS AF250 S3 is not displayed.	Yes	Yes	-
	PH20141	In operation environments where the Management Server OS is Red Hat Enterprise Linux 8, E-mail notifications may terminate with an error.	Yes	Yes	-
16.5	PH17167	In an environment that uses the VMware vSphere Virtual Volumes function, if a virtual machine backup is executed, the backup history is not updated and a backup may not have been performed even if the result of the operation history is "Success".	-	-	Yes
	PH18871	If a virtual machine backup fails in an environment that uses the VMware vSphere Virtual Volumes function, an output of the information log is supported. This information log is required to investigate the cause.	-	-	Yes
16.4	PH17462	An evaluation process for Automated Storage Tiering may be skipped.	-	Yes	-
16.2	PH17437	Incorrect character strings are displayed for CECM in the "abnormal CM load" event message of the threshold monitoring alarm.	-	Yes	-
16.1	PH19603	The Backup Wizard for SQL Server or Restore Wizard for SQL Server may output the following messages and terminate abnormally. - esgui04214 - esgui04235	-	-	Yes
15.0	PH18974	In environments where Tier pools are used, the ssmgr3402 error message may be displayed for the operation result from Web Console.	-	Yes	-

"EXP" indicates Express, "SC" indicates Storage Cruiser, and "ACM" indicates AdvancedCopy Manager.

4.3   Program Fix List for Version 16.8

The program fix list for version 16.8 is as follows.

Version Problem Reported	Problem Report Number	Issue/Problem	Product Name		
			EXP	SC	ACM
16.7	PH15842	In Hyper-V environments of Microsoft Windows Server 2016 or later, the "swsrpvrq component add" command may terminate abnormally.	-	-	Yes
	PH15999	The following devices can be managed as a support level "A" device. - Brocade G630 - Brocade 7810	-	Yes	-
	PH16051	The following storage devices whose firmware version is V10L86 or V10L87 can be used. - ETERNUS DX S4 series (excluding the ETERNUS DX8900 S4) - ETERNUS AF S2 series	Yes	Yes	Yes
	PH16053	Microsoft Windows Server 2019 is supported.	Yes	Yes	Yes
	PH17001	In the performance chart of a storage device, a straight line may be drawn connecting the point when the performance monitoring is stopped to the point when it is resumed.	-	Yes	-
16.5	PH16432	Installation of the SNMP Trap transfer program may fail.	Yes	Yes	-
15.0	PH16062	The operation for registering Hyper-V hosts may terminate with an error.	-	Yes	-
	PH16577	The performance monitoring status of the storage device may be displayed as "Error".	-	Yes	-

"EXP" indicates Express, "SC" indicates Storage Cruiser, and "ACM" indicates AdvancedCopy Manager.

4.4   Program Fix List for Version 16.7

The program fix list for version 16.7 is as follows.

Version Problem Reported	Problem Report Number	Issue/Problem	Product Name		
			EXP	SC	ACM
16.6	PH14484	Event linkage with Systemwalker Centric Manager-M EE/SE (32-bit) is supported.	-	Yes	-
	PH14724	The following storage devices whose firmware version is V10L82 or V10L83 can be used. - ETERNUS DX S4/S3 series - ETERNUS AF All-Flash Arrays - ETERNUS DX200F	Yes	Yes	Yes
	PH14870	VMware vSphere 6.7 is supported.	-	Yes	Yes
	PH15026	The following commands may terminate abnormally with the swst0708 message. - "swstdevdisp" command - "swstdevinfoset" command - "swstrestore" command - "swstsrsemtch" command	-	-	Yes

Version Problem Reported	Problem Report Number	Issue/Problem	Product Name		
			EXP	SC	ACM

		- "swstresrst" command
		
		The following commands may terminate abnormally with the swsrp0708 message.
		
		  - "swsrpsetvol" command
		
		  - "swsrpdbinfo_symfoware" command
		
		The following commands may terminate abnormally with the swstf5040 message.
		
		  - "stgxfwcmdispdev" command
		
		  - "stgxfwcmdeldev" command
		
		  - "stgxfwcmsetdev" command
		
		  - "stgxfwcmdisppat" command			

16.5	PH14695	In the KVM guest operation, the device information may not be fetched.	-	-	Yes
	PH15710	If sub-pools with an FTSP total capacity of 2PB or more are in a Tier pool and Automated Storage Tiering is performed for that Tier pool, the performance evaluation may not be performed properly.	-	Yes	-

14.2	PH13739	If the performance management of multiple storage devices is being performed, the maximum number of volumes that can obtain the performance information may decrease or the performance management may stop due to an error.
		Here, "storage devices" indicate the following models.
		
		  - ETERNUS DX S4/S3 series
		
		  - ETERNUS DX80 S2/DX90 S2
		
		  - ETERNUS AF All-Flash Arrays
		
		  - ETERNUS DX200F
			Yes	Yes	-

"EXP" indicates Express, "SC" indicates Storage Cruiser, and "ACM" indicates AdvancedCopy Manager.

4.5 Program Fix List for Version 16.6

The program fix list for version 16.6 is as follows.

Version Problem Reported	Problem Report Number	Issue/Problem	Product Name		
			EXP	SC	ACM
16.5	PH12745	The VMware Virtual Machine Automatic Backup/Restore (Script) function supports VMware vSphere 6.5 and PowerCLI 6.5.	-	-	Yes
	PH13069	The "accopy fsuspend" command that is executed for the REC session may terminate abnormally with the ccm5004 message.	-	-	Yes
	PH13532	The capacity information of Thin Provisioning Pools, Tier pools, and sub-pools which belong to the Tier pools may not be displayed properly in Web Console.	Yes	Yes	-
16.2	PH13472	If the OS is RHEL6.8 or later, uninstalling the agent program outputs a warning.	-	Yes	Yes

Version Problem Reported	Problem Report Number	Issue/Problem	Product Name		
			EXP	SC	ACM
16.0	PH13094	In environments where an affinity group is set with two or more LUNs, and access paths, the following may occur: - An error message is output to the system log of the OS. - Creating the VVOL access path fails (if the VVOL support patch is applied in version 16.2 or if the version is 16.3 or later).	-	Yes	-
	PH13478	The initial evaluation of Automated Storage Tiering may terminate with an error.	-	Yes	-
	PH14077	The disk capacity of the server directory ("Work Directory" for Windows environments and the "/var/opt/FJSVesfcm" directory for Linux/Solaris environments) in which the ETERNUS SF Manager program is installed has been consumed more than the dynamic disk capacity required for operation.	Yes	Yes	Yes
15.2	PH13481	The commands of the backup management function or the replication management function may terminate abnormally with the swst3607 message.	-	-	Yes

"EXP" indicates Express, "SC" indicates Storage Cruiser, and "ACM" indicates AdvancedCopy Manager.

4.6   Program Fix List for Version 16.5

The program fix list for version 16.5 is as follows.

Version Problem Reported	Problem Report Number	Issue/Problem	Product Name		
			EXP	SC	ACM
16.4	PH11300	VMware vSphere 6.5 is supported.	-	Yes	-
	PH11448	Brocade G620 can be managed as a support level "A" device.	-	Yes	-
	PH11969	There may be cases in which "V" is not shown for the Management Server version level that is displayed with the "stgxfwcmdispsrv" command or Web Console. In addition, the "stgmgrinfobkup" command may terminate abnormally with the swstf3015 message.	-	-	Yes
16.3	PH11468	The backup management commands or the replication management commands that are executed in the Management Server may terminate abnormally by outputting the swst0687, the swst0693, the swsrp0687, or the swsrp3682 message or by outputting a core file.	-	-	Yes
	PH11573	The "swstbackup" command, the "swststartsync" command, or the "swstrestore" command that is executed in the Management Server may not respond.	-	-	Yes
	PH11959	In an environment using the VMware vSphere Virtual Volumes function, a virtual machine backup may terminate abnormally with the vmlink00080 message.	-	-	Yes
16.2	PH12254	In the AdvancedCopy Manager Copy Control Module environment using the Storage Cluster Continuous Copy function, even if the LU to Partition format is specified to add a copy pair, the copy pair may be added in the LU to LU format.	-	-	Yes
16.0	PH11721	If an expansion of the sub-pool capacity is performed, the CM of the RAID group might not be set in the round-robin method.	-	Yes	-

"EXP" indicates Express, "SC" indicates Storage Cruiser, and "ACM" indicates AdvancedCopy Manager.

4.7 Program Fix List for Version 16.4

The program fix list for version 16.4 is as follows.

Version Problem Reported	Problem Report Number	Issue/Problem	Product Name		
			EXP	SC	ACM
16.3	PH08329	The ETERNUS DX S3 series whose firmware version is V10L50, V10L51, or V10L52 can be used.	Yes	Yes	Yes
	PH08432	Brocade7840 Extension Switch can be managed as a support level "A" device.	-	Yes	-
	PH08676	Even if the ETERNUS SF SNMP Trap monitoring daemon is booted, it may not be started.	Yes	Yes	-
	PH08964	In Dashboard of Web Console, data other than for the latest generation is not displayed in the FTRP/FTV capacity graphs.	-	Yes	-
	PH09059	Web Console can be used in Safari 8 (iOS version), Safari 9 (iOS version), and Chrome 47 (Android version).	Yes	Yes	Yes
	PH09090	For the ETERNUS DX S3 series, encryption mode "AES-256" can be set and displayed from this product.	Yes	Yes	-
	PH09097	PRIMERGY BX Fibre Channel Switch 16Gbit/s 18/8(Brocade6545) can be managed as a support level "A" device.	-	Yes	-
	PH09390	Performing a replication for the GDS volume may cause the copy destination data to become inconsistent.	-	-	Yes
	PH09412	If Web Console is used with a tablet, after the screen rotates, the cursor may be displayed outside of the input area.	Yes	Yes	Yes
	PH09435	The screens related to VVOL and the Create Access Path screen of Web Console are improved.	Yes	Yes	Yes
	PH09437	In an environment using Automated Storage Tiering, even if the Tier pools in the ETERNUS DX S3 series (excluding DX60 S3) do not have about 10 % free space, it is improved so that the access status data can be evaluated/relocated.	-	Yes	-
	PH09556	The ETERNUS DX200F whose firmware version is from V10L30 to V10L50 can be used.	Yes	Yes	Yes
	PH09779	The ETERNUS DX100 S3/DX200 S3, DX500 S3/DX600 S3 whose firmware version is V10L53 can be used.	Yes	Yes	Yes
	PH09889	This product can work together with ETERNUS SF MA 8.5.	-	Yes	-
	PH09939	The "swsrpmake", "swsrpstartsync", or "swsrpcancel" command may output the swsrp0645 message or the swsrp0740 message and terminate abnormally.	-	-	Yes
	PH10722	The "stgmgrinfobkup" command may output the swstf3022 message and terminate abnormally.	-	-	Yes
	PH10926	If you perform the screen transition from Dashboard to Detail View when a panel on which information is being updated exists in Dashboard, the setting information of the panel area in the state to delete the panel may be saved.	Yes	Yes	Yes
16.2	PH08372	In an environment using VMware vSphere Virtual Volumes, virtual machines may not start after being restored from a Clone backup.	-	-	Yes

Version Problem Reported	Problem Report Number	Issue/Problem	Product Name		
			EXP	SC	ACM
	PH09274	In an environment using VMware vSphere Virtual Volumes, a virtual machine backup or a Single item restore may terminate abnormally with the vmlink00052 message.	-	-	Yes
	PH09419	The following unnecessary warning message is output once a day to the event log of Web Console and the system log of the operating system. `esflm10000 The number of CMs mounted on the storage device exceeds the number of CMs supported by the license.`	-	Yes	Yes
	PH09825	The collection of the performance information of the managed devices (ETERNUS Disk storage systems, switches) may be stopped.	Yes	Yes	-
	PH10006	In an environment using VMware vSphere Virtual Volumes, performing a virtual machine backup may output the esccs11002 message by mistake.	-	-	Yes
	PH10504	If the VMware vSphere Virtual Volumes function is used, the VVOL Type may be displayed as "Unknown" on Web Console.	-	Yes	-
	PH10557	If the VMware vSphere Virtual Volumes function and vMotion are used, the server status of the VM host may be displayed as "Warning" on Web Console.	-	Yes	-
	PH10796	If Automated Storage Tiering fails to evaluate the access status data, the status of the storage device is displayed as "Error".	-	Yes	-
	PH10970	In a Storage Cluster environment, the Storage Cluster Continuous Copy function may not be available after Automatic Failover.	-	-	Yes
16.1	PH08619	Upgrading the Management Server may fail.	Yes	Yes	Yes
	PH10002	Based on whether a pipeline is specified for the "stgxfwcmsetdev" command, the behavior of the command may differ.	-	-	Yes
	PH10470	If a NAS backup setting of the existing NAS backup volume specification is performed in Web Console, executing a restore and a NAS backup mount may not be available.	Yes	Yes	Yes
16.0	PH10940	If the **Status Update** operation for Automated Storage Tiering is performed, a message of different action may be displayed in the **Detail** column on the Operation History screen.	-	Yes	-
15.2	PH08509	In a replication operation, despite the settings in the copy source volume locking specification file, the copy source volume may not be locked.	-	-	Yes
15.0B	PH10001	The commands of the backup management function or the replication management function may output unrelated information.	-	-	Yes
14.2	PH10778	If 1,025 or more iSCSI hosts are registered in the ETERNUS Disk storage system, a device registration and a configuration reload may fail.	-	Yes	-
	PH10787	For Web Console, if you specify two or more for **Number of Volumes** to create volumes, the volume creation may fail.	Yes	Yes	-
13.0	PH09824	The collection of the performance information of the managed ETERNUS Disk storage systems may be stopped. (For Express, this problem occurs in version 14.1 or later.)	Yes	Yes	-

"EXP" indicates Express, "SC" indicates Storage Cruiser, and "ACM" indicates AdvancedCopy Manager.

4.8 Program Fix List for Version 16.3

The program fix list for version 16.3 is as follows.

Version Problem Reported	Problem Report Number	Issue/Problem	Product Name		
			EXP	SC	ACM
16.2	PH05076	On the Device Delete screen of AdvancedCopy Manager, deleting a device may display the following error message in the operation log. `esccs00191 Cannot accept the operation because a system error has occurred.` Performing a setting operation on the screen after the above error message was displayed causes the same error.	Yes	Yes	-
	PH05391	The NetApp FAS Series (with clustered Data ONTAP) can be managed as a support level "E" device.	-	Yes	-
	PH05404	A trial license of the following option licenses is supported: - ETERNUS SF AdvancedCopy Manager V16 for Exchange Server - ETERNUS SF AdvancedCopy Manager V16 for Microsoft SQL Server - ETERNUS SF Storage Cruiser V16 Optimization Option - ETERNUS SF Storage Cruiser V16 Quality of Service Management Option	Yes	Yes	Yes
	PH05587	After performing the Upgrade Installation, access to Web Console fails.	Yes	Yes	Yes
	PH06201	Nearline SED and SSD SED disks are supported.	Yes	Yes	-
	PH06220	When fetching device information, the GDS device may not be recognized as a device within the ETERNUS Disk storage system.	-	-	Yes
	PH06258	On the iSCSI name entry screen of Web Console, uppercase letters cannot be entered.	Yes	Yes	-
	PH06582	The ETERNUS DX8700 S3/DX8900 S3 is supported.	-	Yes	Yes
	PH06642	Evaluation and relocation of the access status data for Automated Storage Tiering may not work.	-	Yes	-
	PH07040	In an environment using VMware vSphere Virtual Volumes, Single Item restore, restore from Clone backup, or the **Reload Conf.** operation for VM host may fail.	-	-	Yes
	PH07430	The registration or the **Reload Conf.** operation of the ETERNUS DX8700 S3/DX8900 S3 may fail.	-	Yes	Yes
16.1	PH02593	The usable character string for the password that was added to the ETERNUS DX S3 series can also be specified when registering the ETERNUS DX S3 series on the ETERNUS SF system.	Yes	Yes	Yes
	PH05079	On the Copy Group Detail screen, the wrong information for the copy source/destination volumes of the copy pair may be displayed.	-	Yes	Yes
	PH06255	If an FTV where the total capacity exceeds 15.76 TB is created in a Tier pool, the evaluation and relocation of the access status data for Automated Storage Tiering may not work appropriately for that Tier pool.	-	Yes	-
	PH06556	The "stgxfwcmdispdev" command may display device information for servers other than the specified server.	-	-	Yes

Version Problem Reported	Problem Report Number	Issue/Problem	Product Name		
			EXP	SC	ACM
	PH06684	The "stgxfwcmsetdev" command may terminate abnormally.	-	-	Yes
	PH07313	The changing/deleting operation of quota settings may output the ssmgr3000 or ssmgr8025 message and fail.	Yes	Yes	-
	PH07354	If creating a shared folder fails, though NAS backup is not set, the information "NAS backup was set" may be displayed on Web Console.	Yes	Yes	-
16.0	PH05443	If the OS version of the Hyper-V host is Microsoft Windows Server 2012 R2, information related to Hyper-V host is not properly displayed on the End to End View (Hyper-V) screen of Web Console.	-	Yes	-
	PH05914	The status of the tape library that is displayed in Web Console is not properly recovered from "Unknown".	-	Yes	-
	PH07799	When FTV capacity quota share is set by relocation of Automated Storage Tiering, the evaluation may not work properly.	-	Yes	-
	PH07964	When silent installation is executed in an OS environment that is not supported by ETERNUS SF Manager or AdvancedCopy Manager Copy Control Module, installation fails. However, no error cause is output in the silent installation log.	Yes	Yes	Yes
15.0B	PH05233	The performance information (active disks, power consumption, and temperature) of the ETERNUS Disk storage system may not be obtained at the specified monitoring interval.	Yes	Yes	-
	PH05418	If the user/password of the Hyper-V host contains a certain special character, registering the Hyper-V host fails with the swsag9200 message.	-	Yes	-
	PH05904	The displayed time in the downloaded CSV file may differ from the graphically displayed performance chart.	Yes	Yes	-
	PH06259	When logging in to Web Console, the esccs10100 message may be output and cause an error (system error).	Yes	Yes	Yes
	PH06392	The processing instruction according to the AdvancedCopy Manager command or operation through Web Console may terminate abnormally without processing.	-	-	Yes
	PH06471	The "acrecbuff stat" command may output incorrect information.	Yes	-	Yes
	PH06643	Relocation of Automated Storage Tiering may become suspended (NORMAL_SUSPENDED) before reaching the time set in **Automated Storage Tiering Time Limit**.	-	Yes	-
	PH06939	Multiple information for the same volume may be displayed on the volume Threshold Monitoring Settings screen or the Threshold Monitoring Display screen.	-	Yes	-
	PH06982	There may be times when a copy using Concurrent OPC sometimes cannot be started.	Yes	-	Yes
	PH07144	When activating ETERNUS SF Manager, the esccs10001 message may be output to the OS log and cause the activation to fail.	Yes	Yes	Yes
	PH08045	When using Web Console, the esgui00003 message may be output and cause an error.	Yes	Yes	Yes
	PH08075	When the performance management is used, an invalid status may be displayed in the **Performance Monitoring Status** column on Web Console.	Yes	Yes	-

Version Problem Reported	Problem Report Number	Issue/Problem	Product Name		
			EXP	SC	ACM
14.2	PH05949	The processing instruction according to the AdvancedCopy Manager Copy Control Module command or operation through Web Console may terminate abnormally without processing.	Yes	-	Yes
	PH06672	The performance monitoring may stop for the ETERNUS DX8000 S2 series if 65,473 or more volumes exist.	-	Yes	-
	PH06673	An error may occur in the operation for the ETERNUS DX8000 S2 series that is set with 1,020 or more affinity groups.	-	Yes	Yes
13.1	PG93770	The error message that is displayed in Web Console may become garbled.	-	-	Yes
	PG93801	The mount point that is displayed in Web Console may become garbled.	-	-	Yes
	PH05044	The "stgxfwcmsetdev" command may output the swstf5405 message and terminate abnormally.	-	-	Yes
13.0	PH03107	When the performance management feature of the ETERNUS Disk storage systems is in use, a negative value may be output as the performance value of a RAID group and Logical volume.	Yes	Yes	-

"EXP" indicates Express, "SC" indicates Storage Cruiser, and "ACM" indicates AdvancedCopy Manager.

4.9   Program Fix List for Version 16.2

The program fix list for version 16.2 is as follows.

Version Problem Reported	Problem Report Number	Issue/Problem	Product Name		
			EXP	SC	ACM
16.1	PH02589	If a powered off database server was selected with the Backup Wizard for SQL Server, the esgui04023 message may have been output.	-	-	Yes
	PH02593	If an ETERNUS Disk storage system was registered with Web Console, the registration may have failed even if the password for the ETERNUS Disk storage system was correctly entered.	Yes	Yes	Yes
	PH02785	Host-LU QoS function settings and volume QoS performance settings that were configured on an ETERNUS Disk storage system by ETERNUS CLI or ETERNUS Web GUI were deleted and volume performance tuning did not work.	-	Yes	-
	PH03004	The status of port numbers 2 and 3 may not have been properly displayed in the Web Console screen.	Yes	Yes	-
	PH03847	After performing a Storage Cluster operation, "Halt" may have been displayed in the TFO group information **Status** column in Web Console.	-	Yes	Yes
	PH03848	If Storage Cluster was configured, the status of the server and access path may have been displayed as abnormal.	-	Yes	Yes
	PH03854	A value different from the actual TFO group name may have been displayed in the TFO group name of the "agtpatrol" command.	-	Yes	-
	PH03924	The cluster setup of the Management Server may have output the swstf8115 message and failed.	-	Yes	Yes

Version Problem Reported	Problem Report Number	Issue/Problem	Product Name		
			EXP	SC	ACM
	PH03974	If the platform of the Management Server is Solaris or Linux, the "swstsvrset" command may have output the swst0697 message and terminated abnormally.	-	-	Yes
	PH03990	If the Windows Management Server is in German, a version upgrade of the ETERNUS SF Manager may have failed.	Yes	Yes	Yes
	PH04465	The radio button name ("Exist" and "New") in the **IP Address Resource** was not displayed in the setup screen of the "stgclset_mscs" command.	-	Yes	Yes
16.0	PG99536	The **Reload Conf.** operation for the ETERNUS Disk storage system while operating a Logical Device Expansion (LDE) may have output the ssmgr3000 message and terminated abnormally.	Yes	Yes	-
	PH02381	The status of access path, although abnormal, may have been displayed as normal in the Access Path Detail screen and the Logical Path View screen of Web Console.	-	Yes	-
	PH02401	If the storage device was connected to the host with iSCSI, automatic tuning by using the Automated QoS function did not work.	-	Yes	-
	PH02811	If two or more replication pairs were created at one time from Web Console, the **Reload Conf.** operation for the server for where the replication pairs had been created terminated with error.	-	-	Yes
	PH03003	The ETERNUS CS800 S5 can be managed as a support level "E" device.	-	Yes	-
	PH03863	If a device where a large number of copy pairs had been created was operated from Web Console, the operation process took some time.	Yes	-	Yes
	PH03983	SNMP Traps or device polling could not be monitored for the manually embedded devices.	-	Yes	-
	PH04083	When Windows was shut down, the esqos1200 message may have been output to the Windows event log.	-	Yes	-
15.2	PH03561	If Storage Cruiser's agent was installed with Windows security patches applied, the installer output an error dialog box and the installation terminated in an incomplete state.	-	Yes	-
	PH04126	An internal error occurred during a Web Console operation and the functions of Express's manager or Storage Cruiser's manager may not have been available.	Yes	Yes	-
15.0B	PH02741	The "acsnap start" command may have output the ccm5004 message and terminated abnormally.	Yes	-	Yes
	PH03700	The operation for creating a copy group may have output the esgui00005 message and failed.	Yes	-	Yes
	PH04081	If the "esfsnap" command was executed by a user other than "Administrator" that belonged to Active Directory administrator group, the command output the esccs90013 message and terminated abnormally.	Yes	Yes	Yes
	PH04157	The character string of an event that was detected by Storage Cruiser's agent continued to be output to the event log of Web Console. Moreover, the esccs08001 message may have been output to the event log.	-	Yes	-

Version Problem Reported	Problem Report Number	Issue/Problem	Product Name		
			EXP	SC	ACM
14.2	PH04049	The procedure for changing an ETERNUS Disk storage system that was registered as a Copy Command via SAN or Copy Command via LAN to a remote ETERNUS Disk storage system has been improved.	-	-	Yes
13.4	PH01454	If a server was registered or a **Reload Conf.** operation was performed for the server, even if the operation was completed, the esccs02181 message was displayed and the operation status may have become "Warning".	-	Yes	-
13.1	PH03566	The "stgxfwcmmodsrv" command may have output the swstf2454 message and terminated abnormally.	-	-	Yes

"EXP" indicates Express, "SC" indicates Storage Cruiser, and "ACM" indicates AdvancedCopy Manager.

4.10　Program Fix List for Version 16.1

The program fix list for version 16.1 is as follows.

Version Problem Reported	Problem Report Number	Problem	Product Name		
			EXP	SC	ACM
16.0	PH00026	The "storageadm zone" command which operates host affinity and zoning may output the ssmgr3000 message and terminate abnormally.	-	Yes	-
	PH00432	In Automated Storage Tiering, the evaluation/relocation may be about the same as ETERNUS DX S2 series.	-	Yes	-
	PH00582	Results of the "storageadm zone delete" command which deletes host affinity and zoning may not be reflected on results of the "storageadm zone info" command which displays host affinity and zoning.	-	Yes	-
	PH00586	The status of manual embedded devices may display values that are different from the actual status.	-	Yes	-
	PH00927	In the Tiering policy creation screen of Automated Storage Tiering, past dates may be selected in the calendar which sets date of "Configuration of Evaluation Excluded Day".	-	Yes	-
	PH01953	When the "storageadm zone" command is concurrently executed from multiple terminals, the command may terminate abnormally.	-	Yes	-
	PH01954	When an event for performance management function occurs, a PostgreSQL error message may be output in the system log and PostgreSQL process may increase in number.	Yes	Yes	-
15.3	PH00360	The backup processing by the automated backup/restoration scripts of the VMware virtual machine may terminate abnormally.	-	-	Yes
	PH00568	In web console, copy pairs that pair an encrypted volume and an unencrypted volume cannot be created.	Yes	-	Yes
	PH00981	If the AdvancedCopy Manager's agent and the Java library apache log4j are applied on the system, launch of the Storage Cruiser's agent may fail.	-	Yes	-
15.2	PH01115	In a Microsoft Windows Server 2012 environment, the "acgetvolinfo" command may terminate abnormally.	-	-	Yes

Version Problem Reported	Problem Report Number	Problem	Product Name		
			EXP	SC	ACM
15.1	PH00932	Improved the Overview display performance on the Map View.	-	Yes	-
	PH01655	Improved the Logical Path View display performance on the Map View.	-	Yes	-
15.0	PG94114	The login to Web Console may fail with the esccs10100 message.	Yes	Yes	Yes
	PG95798	HBAs cannot be added to servers specified on **Server** tab of Web Console.	Yes	Yes	-
	PG97628	In Web Console, the following operations may output the ccm5004 message and terminate abnormally. - Reload ETERNUS Disk Storage System Configuration Information - Configure Connection Type for ETERNUS Disk Storage System	Yes	Yes	Yes
	PG99541	In Web Console, the reloading configuration operation may output the ssmgr8025 message and terminate abnormally.	Yes	Yes	Yes
14.0	PH01056	Plot points on capacity graphs (1-month graphs) of Thin Provisioning Pools may not be displayed. (Express applies from the first version)	Yes	Yes	-
13.4	PH01456	The registration of a server or "Reload Conf." operation for the server may fail.	-	Yes	-
13.0	PH00435	Improved response time values and QoS delay time displayed in the performance management function. (Express applies from the first version)	Yes	Yes	-
	PH01118	If communication with a storage device fails, performance monitoring may stop. (Express applies from the first version)	Yes	Yes	-

"EXP" indicates Express, "SC" indicates Storage Cruiser, and "ACM" indicates AdvancedCopy Manager.

4.11　Program Fix List for Version 16.0

The program fix list for version 16.0 is as follows.

Version Problem Reported	Problem Report Number	Problem	Product Name		
			EXP	SC	ACM
15.3	PG97250	When an error occurs during the server registration/change operation, an error message might not be displayed in Web Console.	-	-	Yes
	PG97629	When ETERNUS SF Manager is installed in a Solaris environment, "ERROR: Failed to create a RDB dictionary and RDB directory file" may be output and the installation may fail.	Yes	Yes	Yes
	PG98554	The restore processing by the automated backup/restoration scripts of the VMware virtual machine may terminate abnormally.	-	-	Yes
	PG99121	It is able to backup and replicate SDX objects that exceed 2TB in units of slices.	-	-	Yes
15.2	PG96354	When **Execute** is clicked on the "Checking the backup information" screen of the Backup Wizard, the detailed error information is not displayed. The esgui04014 message is displayed.	-	-	Yes

Version Problem Reported	Problem Report Number	Problem	Product Name		
			EXP	SC	ACM
	PG97074	When only WSV and/or concatenation volumes exist in a RAID group, the Eco-mode **Enable** button for the RAID group is not active (button is not clickable) in Web Console.	Yes	Yes	-
	PG99268	The operation executed with Web Console might not be reflected in the displayed information.	Yes	Yes	Yes
15.0	PG97249	The "stgdbloginf" command may display the incorrect usage rate.	-	-	Yes
	PG98347	The REC path status may be displayed incorrectly.	Yes	Yes	Yes
	PG98348	The access path status may be displayed incorrectly.	Yes	Yes	-
	PG98768	In the linkage function with Systemwalker Service Quality Coordinator, the performance management for NetApp FAS Series might not be able to be used.	-	Yes	-
14.2	PG95158	The backup management function commands may output the swst3648 message and terminate abnormally.	-	-	Yes
14.0	PG97123	The Emulex FC HBA device driver (Storport Miniport Driver V2.74.9.1) for Windows can be used.	-	Yes	-

"EXP" indicates Express, "SC" indicates Storage Cruiser, and "ACM" indicates AdvancedCopy Manager.