FUJITSU

Fujitsu Storage ETERNUS SF Express V16.9.1 / Storage Cruiser V16.9.1 / AdvancedCopy Manager V16.9.1

Installation and Setup Guide

B1FW-5999-12ENZ0(00)
June 2024

Preface

Purpose of This Manual

This manual provides information on installation and setup 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 of Express, Storage Cruiser, or AdvancedCopy Manager.
Before you read this manual, you should be sure to have a sufficient general knowledge and understanding of clustered systems and server virtualization.

In the case of upgrade from a previous version to the latest version, refer to the *ETERNUS SF Express / Storage Cruiser / AdvancedCopy Manager Migration Guide*.

Structure of This Manual

The structure of this manual is as follows.

Chapter 1 Product Structure and Programs

This chapter explains how Express, Storage Cruiser, and AdvancedCopy Manager are organized and various types of installation.

Chapter 2 Operating Environment

This chapter explains operating systems, hardware devices etc. that are supported by Express, Storage Cruiser, and AdvancedCopy Manager.

Chapter 3 Installation of ETERNUS SF Manager

This chapter explains the procedures for installing the ETERNUS SF Manager.

Chapter 4 Setup of ETERNUS SF Manager

This chapter explains how to set up the ETERNUS SF Manager.

Chapter 5 Installation of ETERNUS SF Agent

This chapter explains installation of Storage Cruiser's agent and AdvancedCopy Manager's agent.

Chapter 6 Setup of ETERNUS SF Agent

This chapter explains how to set up Storage Cruiser's agent and AdvancedCopy Manager's agent.

Chapter 7 Installation of AdvancedCopy Manager CCM

This chapter explains installation of the AdvancedCopy Manager Copy Control Module.

Chapter 8 Setup of AdvancedCopy Manager CCM

This chapter explains how to set up the AdvancedCopy Manager Copy Control Module.

Chapter 9 Uninstallation of ETERNUS SF Manager

This chapter explains the procedures for uninstalling of the ETERNUS SF Manager.

Chapter 10 Uninstallation of ETERNUS SF Agent

This chapter explains uninstallation of Storage Cruiser's agent and AdvancedCopy Manager's agent.

Chapter 11 Uninstallation of AdvancedCopy Manager CCM

This chapter explains uninstallation of the AdvancedCopy Manager Copy Control Module.

Chapter 12 Adding and Changing Products in Use

This chapter explains how to add and change products that are to be used or in use.

Appendix A License Management

This appendix explains license management function.

Appendix B Required Disk Space for Performance Management

This appendix explains the disk capacities that are required for performance management with ETERNUS SF Manager.

Appendix C Installation Parameters

This appendix describes the install parameter file and the details about each install parameter.

Appendix D Return Values for Silent Installation and Silent Uninstallation

This appendix describes return values for silent installation and silent uninstallation.

Appendix E Upper Limit of Manageable Environment

This appendix describes the upper limit of manageable environment.

Appendix F Consolidated Patch

This appendix describes how to apply a consolidated patch for ETERNUS SF Manager.

Appendix G Configuring Network Environment

This appendix describes the configuring network environment.

Appendix H Installation and Configuration of SNMP Trap Transfer Program

This appendix explains installation and setup of the SNMP Trap translation program.

Appendix I Adding Memory to ETERNUS SF Manager When Using Large Numbers of Volumes

This appendix explains adding memory to ETERNUS SF Manager when using large numbers of volumes.

Appendix J Adding Memory When Using the Reporting Function

This appendix explains adding memory when using the reporting function.

Appendix K Customizing Role Group Configuration File

This appendix explains how to customize the role group configuration file.

Appendix L Customizing Automated Storage Tiering Configuration File

This appendix explains how to customize the Automated Storage Tiering configuration file.

Appendix M List of Directories Used By This Product

This appendix describes the list of directories used when installing and using this product.

Appendix N Work Required After Device Deletion of the ETERNUS DX S2 series

This appendix describes the work required after device deletion of the ETERNUS DX S2 series.

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*.

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Notes

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Update History

Content of Update	Updated Section	Revision
The "FUJITSU Storage" part of the product name has been changed to "Fujitsu Storage".	Cover page	12
Information related to the following devices has been added. - ETERNUS DX S6 series Information related to the following devices and software has been deleted. - ETERNUS DX200F - ETERNUS VS850 S3 - ETERNUS CS800 S6 - PRIMERGY BX600 Fibre Channel Switch Blade - Microsoft Windows Server 2012 R2 - Microsoft Windows Server 2012 - Red Hat Enterprise Linux 6 (for Intel64) - SUSE Linux Enterprise Server 12 for AMD64 & Intel64 - AIX V7.1 - VMware vSphere 6 - VMware vCenter Server 6	General	
In a Solaris or Linux environment, the required disk space has been modified.	2.2.3.1	
In a Solaris environment, the required disk space has been modified.	2.3.3.1	
The work required when device registration or device deletion of the ETERNUS DX S2 series is performed has been described.	4.1.5, 8.4, Appendix N	
The version information has been changed to V16.9A.	Cover page	11
Information related to the following software has been added. - Red Hat Enterprise Linux 9 (for Intel64)	2.2.2.1, 2.2.2.2, 2.5.2.1, 2.5.3.1, 4.2.3.2, 4.3.3.2, 5.2.6, 5.2.7.1, 5.2.7.2, 9.1.6, 9.1.7, C.13	
Information related to the following software has been added. - Red Hat Enterprise Linux 9 (for Intel64) - VMware vSphere 8 - VMware vCenter Server Appliance 8	General	10.3
In [Note], the explanation has been added.	3.2, 3.3, 3.4, 3.5	
Information related to the following software has been added. - Microsoft Windows Server 2022	2.2.2.1, 2.3.2.1, 2.4.2.1, 2.5.2.1	10.2
The description has been modified.	4.1.1.2, 6.2.1.1, 8.2	

Content of Update	Updated Section	Revision
[Information] has been added.	3.2, 3.3, 3.4, 3.5, 3.6, 3.7	10.1
Information related to the following device has been added. - ETERNUS CS800 M1 Information related to the following devices and software has been deleted. - ETERNUS VS850 S2 - ETERNUS CS800 S5/CS800 S4 - NetApp V-Series - Tintri VMstore series - Red Hat Enterprise Linux 6 (for x86)	General	10
The title of the section has been changed.	1.1.2	
In [Information], the manual to be referred has been modified.	2.1	
[Point] has been added.	2.2.2.1, 2.3.2.1, 2.4.2.1, 2.5.2.1	
The version information of ETERNUS VASA Provider has been modified.	2.2.2.3	
[Note] has been added.	2.3.3	
The required disk space has been modified.	2.3.3.1	
*6 and *7 have been added in the table of "For Linux Environments".	2.4.2.1	
In [Point], the explanation has been added.	5.2.4, 5.2.6, 5.2.8, C.14	
Information related to Red Hat Enterprise Linux 8 has been added.	2.1, 4.2.3.2, 4.3.3.2, 9.1.7	9.4
Information related to the following devices and software has been added. - ETERNUS AX/HX series - ETERNUS AB/HB series - VMware vSphere 7 - VMware vCenter Server Appliance 7 In addition, the device name "NetApp AFF A series" has been changed to "NetApp AFF series".	General	9.3
In [Note], the explanation has been modified and added.	4.1.1.1	
To go to "Installation of SELinux Policy Module for SNMP Trap Daemon" after performing the SNMP Trap settings, the explanation has been added.	4.2.3.2, 4.3.3.2	
The explanation for customizing the role group configuration file has been described.	Appendix K	
The description has been corrected.	2.1, A.1	9.2
Information related to the following storage device has been added. - ETERNUS DX900 S5	General	9.1
The URL address of the *SNIA HBA API Library Installation Guide* has been modified.	6.1.3	
Information related to the following devices and software has been added. - ETERNUS DX S5 series (excluding the ETERNUS DX900 S5)	General	9

Content of Update	Updated Section	Revision
- ETERNUS AF S3 series - Red Hat Enterprise Linux 8 (for Intel64) - SUSE Linux Enterprise Server 15 for AMD64 & Intel64 - SUSE Linux Enterprise Server 12 Service Pack 4 for AMD64 & Intel64 Information related to the following devices and software has been deleted. - ETERNUS DX60, DX400 series, DX8000 series - ETERNUS VS850 - ETERNUS CS800 S3/CS800 S2/CS800 - ETERNUS SN200 series - ETERNUS LT20, LT40, LT60, LT200, LT210, LT220, LT230, LT250, LT270 - Microsoft Windows Server 2008 R2 - Microsoft Windows Server 2008 - 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 - VMware vSphere 5 - SynfinityDISK		
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	
The "Manual Organization and Reading Suggestions" section has been deleted from Preface.	Preface	
In [Note], unnecessary description has been deleted.	1.2	
The tcsh package required for Red Hat Enterprise Linux 7 environments has been described.	2.2.2.1, 2.4.2.1	
Information has been added to the [Explanation] column for glibc in the "For Linux Environments" table. In addition, the note under the table has been deleted.	2.2.2.2	
The version information of ETERNUS VASA Provider has been modified.	2.2.2.3	
Information about essential software has been added.	2.5.2.2	
In [Point] of step 9, information has been added.	3.2	
In [Point], Information has been added.	C.8	
The form of the installation parameter file has been modified.	C.9	
The description related to the SNMP Trap has been added or modified.	H1 - H5	
The chapter "Program Components" has been deleted.	-	
Information related to Microsoft Windows Server 2019 has been added.	"Notation" and "Others" in Preface, 2.2.2.1, 2.3.2.1, 2.4.2.1, 2.5.2.1, 5.2.2, 5.2.3.1	8.1

Content of Update	Updated Section	Revision
Information related to the ETERNUS LT140 has been added.	"Notation" in Preface	
The ETERNUS CS800 S7/CS800 S6/CS800 S5/CS800 S4 have been added in "Devices Supported by Storage Cruiser".	2.1	
The explanation of "*securedRAIDgroups*" has been modified.	2.2.4.1, Appendix C	
In [Note], the explanation has been modified.	3.2, 3.3	
The disk capacity formula required for outputting performance information with the "storageadm perfdata" command has been corrected.	Appendix C	
Information related to the ETERNUS DX8900 S4 has been added.	"Notation" in Preface, 2.1, 2.2.1, 2.2.5.1, 2.2.5.2, 2.2.6.2, Appendix C, F.1, F.2, Appendix J, Appendix L	8
Notation related to VDX has been modified.	"Others" in Preface, 2.1, Appendix C, F.1	
Information related to the required hotfix has been added.	2.2.2.1, 2.4.2.1, 2.5.2.1	
A note has been added.	2.2.2.1	
Information related to Solaris 11.4 has been added.	2.2.2.1, 2.3.2.1, 2.4.2.1	
The description related to the memory capacity has been modified.	2.2.4.2	
Required disk space for operation has been modified.	2.2.4.1, 2.2.6.1, 2.4.4.1, 2.5.4.1	
The description about the required disk space for the "storageadm perfdata" command has been added.	Appendix C	
The description for adding memory to use the Reporting function has been added.	Appendix K	
Information related to Solaris 9 has been deleted.	"Notation" in Preface, 2.3.2.1, 2.4.2.1	7
Information related to the ETERNUS DX500 S4/DX600 S4 has been added.	"Notation" in Preface, 2.1, 2.2.5.1, B.1, Appendix C, F.1	
Information related to the ETERNUS AF250 S2/AF650 S2 has been added.	"Notation" in Preface, 2.1, 2.2.4.1, 2.2.5.1, 4.2.2, 4.2.4, 4.3.1, 4.4.1, 8.1, B.1, B.3, Appendix C, F.1, F.2	
The description of #10 in the table has been modified.	2.2.2.3	
In [Note], the explanation has been modified.	2.2.2.3, Appendix G	
The explanation of *disks*, *RAIDGroups*, and *volumes* in "Estimation Formula for Repository Size for Common Control" has been modified.	2.2.4.1, 2.2.5.1, 2.2.6.1	
The description related to the expansion of platforms that support Storage Cluster Controller has been added.	2.3.2.1, 2.3.3.1, 2.3.4.1, 2.3.4.2	
In [Note], the explanation has been added.	2.4.2.1, 4.1.1, 4.3.3.1	
The operation procedure has been modified.	4.3.3.1	
Information related to Microsoft Windows Server 2016 has been added.	"Notation" and "Others" in Preface, 2.2.2.1, 2.3.2.1, 2.4.2.1, 2.5.2.1, 5.2.2, 5.2.3.1	6
Information related to Windows Vista has been deleted.	"Notation" in Preface	

Content of Update	Updated Section	Revision
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, 2.3.2.1, 2.4.2.1, 2.5.2.1, 5.2.6, 5.2.7.1, 5.2.7.2, A.2.2, D.13	
Information related to the ETERNUS DX60 S4/DX100 S4/DX200 S4 has been added.	"Notation" in Preface, 2.1, 2.2.4.1, 2.2.5.1, 4.2.2, 4.2.4, 4.3.1, 4.4.1, 8.1, B.1, B.3, Appendix C, F.1, F.2	
In "Table 2.6 Storage Devices and Compatible Firmware Version", the explanation for "*1" has been modified and an explanation for "*3" has been added.	2.1	
The description of the required disk space in a Windows environment has been modified.	2.3.4.1	
This section has been deleted because it is moved to the *ETERNUS SF Release Notes*.	2.6	
The description has been modified so that Microsoft Windows Server 2016 is listed.	4.2.3.1, 4.3.3.1, 6.1.2, 6.1.7, 9.1.9, 10.1.1.1, J.2	
[Note] has been added.	9.1.9	
A step has been added.	9.1.9	
The explanation has been added and modified.	F.2	
The explanation for the parameter MAXMEMORY has been modified.	Appendix K	
Information related to HP-UX 11i v1/v2 has been deleted.	"Notation" in Preface, 2.3.2.1, 2.3.3.1, 2.4.2.1, 5.1.8, A.2	5
Information related to VMware vSphere 4 has been deleted.	"Notation" in Preface, 2.1, F.1	
Information related to the ETERNUS DX80/DX90 has been deleted.	"Notation" in Preface, 2.1, 2.2.4.1, 4.2.2, 4.3.1, 4.4.1, 8.1, B.1, B.3, Appendix C	
Information related to the ETERNUS AF250/AF650 has been added.	"Notation" and "Others" in Preface, 2.1, 2.2.4.1, 2.2.5.1, 4.2.2, 4.2.4, 4.3.1, 4.4.1, 8.1, B.1 - B.3, Appendix C, F.1	
Information related to the ETERNUS LT60 has been deleted.	"Notation" in Preface	
The explanation related to the default install and custom install has been added.	1.4	
The section that is related to (and used together with) the antivirus software has been moved from section 1.2.	1.5	
"*2" has been added in "Table 2.6 Storage Devices and Compatible Firmware Version".	2.1	
In "Required Disk Space for Performance Management", a capacity has been added when enabling the use of the Deduplication/Compression function for the device.	2.2.4.1, Appendix C	
The description when using Automated Storage Tiering has been added.	2.2.5.2	
The description of the required memory size has been changed.	2.2.5.2, 2.2.6.2	
The description of the required disk space in an AIX environment has been changed.	2.3.3.1	
In [Note], the explanation of the "esfpostgres" account has been modified.	3.2, 3.3	

Content of Update	Updated Section	Revision
The explanation related to the default install and custom install has been deleted.	3.3.1, 3.5.1, 3.7.1, 5.1.3.1, 5.1.5.1, 5.2.3.1, 5.2.5.1, 5.2.7.1, 7.3.1	
Unnecessary description has been deleted.	5.1.7	
[Point] has been added.	5.1.7	
The method of determining earlier versions of AdvancedCopy Manager's manager/agent has been modified. (for Solaris/Linux)	5.2.1.2	
The procedure has been modified.	10.2.9	
[Note] has been added.	B.3.1	
The descriptions listed in Appendix F of the previous versions has been moved to Appendix E.	Appendix E	
The description related to the total value of the used capacity for Tier pools that can be evaluated at the same time has been modified.	F.2	
The explanation for the Automated Storage Tiering configuration file has been described.	Appendix K	
The list of directories used when installing and using this product has been described.	Appendix L	
The CM Expansion license has been added.	B.1	4.1
Information related to Microsoft Windows Server 2003 has been deleted.	"Notation" in Preface, 1.4, 2.3.2.1, 2.4.2.1, 5.1.1.2, 5.1.3, 5.2.1.2, 5.2.3, 6.2.1.1, 8.2.1, 10.1.2, 10.1.3, 10.2.2, 10.2.3	4
Information related to Windows 10 has been added.	"Notation" in Preface	
The description about mounting of the DVD media has been added or modified.	1.1.2, 3.6, 3.7.2, 5.1.1.2, 5.1.6, 5.1.7.1, 5.2.6, 5.2.7.2, 7.6, 7.7.1	
A description related to the JAVA license has been added.	1.2	
Information related to the Tintri VMstore series has been added.	2.1, B.1, B.2	
The description related to the adding memory to ETERNUS SF Manager has been added.	2.2.1, 2.2.5.2, 2.2.6.2, Appendix K	
An explanation of the Windows environment has been deleted.	2.2.2.2	
An explanation concerning the language package has been added.	2.2.2.2, 2.4.2.2	
The description related to the SNMP communication has been modified or added.	2.2.2.3, 4.2.3.1, 4.2.3.2, 4.2.4, 4.3.3.1, 4.3.3.2, 9.1.7, 9.1.9, Appendix J	
The formula for the calculation has been changed.	2.2.5.1	
The description for the Tier pool capacity has been modified.	2.2.5.1, G.2	
The description related to the 64bit ETERNUS SF Manager has been modified.	2.5.2.1	
A description related to the password change procedure for the "esfpostgres" user has been added.	3.2 - 3.7, 4.1.1.4	
The description related to the installation has been modified or added.	3.3.1, 3.3.2, 3.4, 3.5.1, 3.5.2, 3.6, 3.7.1, 3.7.2, 5.2.3.1, 5.2.3.2, D.1, D.2, D.5, D.6, D.9, D.10, Appendix H	
The description related to the user account setting has been modified or added.	4.1.1	

Content of Update	Updated Section	Revision
A note has been deleted.	4.2.2	
An explanation related to the history has been added.	4.5.1	
A bullet point has been deleted.	6.2.1.1	
A note has been added.	G.5	
Information related to the ETERNUS DX8700 S3/DX8900 S3 has been added.	"Notation" in Preface, 2.1, 2.2.5.1, B.1, Appendix C, G.1, G.2	3.2
Information related to the NetApp FAS Series and V-Series has been added.	"Notation" in Preface, 2.1, B.1	
The description of the upper limit of Tier pools has been changed.	G.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 6 has been added.	"Notation" in Preface	
The information related to Red Hat Enterprise Linux AS v.4 and Red Hat Enterprise Linux ES v.4 has been deleted.	2.3.2.1, 2.4.2.1, 5.2.6	3
Information related to the ETERNUS DX200F has been modified or added.	"Others" in Preface, 2.1, 2.2.4.1, 2.2.5.1, 2.2.6.1, 4.2.2, 4.2.4, 4.3.1, 4.4.1, 8.1, B.1, B.2, B.3, Appendix C, G.1	
Information related to the ETERNUS LT260 has been added.	"Notation" in Preface	
The description of installation method has been added.	1.4	
Information related to the ETERNUS DX60 S3 has been added.	2.1, 2.2.4.1, 2.2.5.1, 4.2.2, 4.2.4, 4.3.1, 4.4.1, 8.1, B.1, B.2, B.3, Appendix C	
Information related to essential software of ETERNUS SF Manager (for Linux) has been modified.	2.2.2.2	
Information related to Red Hat Enterprise Linux 7 has been added.	2.2.2.1, 2.2.2.2, 2.3.2.1, 2.4.2.1, 2.5.2.1, 4.3.3.2, Chapter 5, 5.1.7, 5.1.7.1, 5.2.6, 5.2.7, 5.2.7.1, 5.2.7.2, 9.1.6, Chapter 10, 10.1.7, 10.2.7, A.1, A.2.2, D.13	
The structure of the section has been changed.	2.2.4, 2.2.5, 2.2.6	
Information related to required disk space for performance management has been added.	2.2.4.1, Appendix C	
Required disk space for operation (for Windows) has been modified.	2.2.6.1	
The description related to installation and uninstallation of ETERNUS VMware Support Package has been added.	3.1.8, 3.2, 3.3.4, 9.1.8	
The uninstallation procedure of AdvancedCopy Manager's agent has been modified.	10.2.3.3, 10.2.4, 10.2.5.3, 10.2.6, 10.2.7, 10.2.8, 10.2.9	
The URL has been modified.	6.1.3	
Information related to an evaluated value of Storage Cluster function and an evaluated value of VMware vSphere Virtual Volumes function has been added.	G.1	
The description related to upper limit of Automated QoS function has been modified.	G.3	
The description of Storage Cluster Controller has been added.	1.2, 2.1, 2.3.2.1, 2.3.4.2, G.5	2

Content of Update	Updated Section	Revision
The size required for the repository of Storage Cruiser has been modified.	2.2.4.1, 2.2.5.1, 2.2.6.1	
How to apply a consolidated patch for ETERNUS SF Manager has been added.	3.1.8, 4.1.4, 9.2, 9.3.3, Appendix H	
Program components of AdvancedCopy Manager Copy Control Module for Windows have been added.	A.3	
"ETERNUS SF AdvancedCopy Manager for Microsoft SQL Server" and "ETERNUS SF Storage Cruiser Storage Cluster Option" have been added.	B.1	
The description of telnet connection has been changed.	B.3	
The NetApp FAS Series and the Brocade VDX series have been added.	Appendix C	
Description of total capacity and maximum number of Tier pools creatable per device has been modified.	G.2	
The configuring network environment has been added as appendix I.	Appendix I	
Information related to the ETERNUS DX200F has been added.	"Others" in Preface	1.1

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Chapter 1 Product Structure and Programs

This chapter explains how the product is organized and various installation patterns.

1.1 Product Structure

1.1.1 Software Structure

The product includes the following programs and manuals:

- Express
- Storage Cruiser
- AdvancedCopy Manager

1.1.2 DVD Contents

The product consists of three DVDs.

For Windows

DVD Name	Contained Contents
ETERNUS SF SC/ACM/Express Mediapack for Windows (V16.9 or higher) Manager Program (1/2)	- ETERNUS SF Manager program for Windows - Software Release Guide
ETERNUS SF SC/ACM/Express Mediapack for Windows (V16.9 or higher) Manager Program (2/2)	- ETERNUS SF Manager program for Linux, Solaris - Software Release Guide
ETERNUS SF SC/ACM/Express Mediapack for Windows (V16.9 or higher) Agent Program & Manual	- ETERNUS SF Agent program - Software Release Guide - Online Manuals

For Linux 64 bit

DVD Name	Contained Contents
ETERNUS SF SC/ACM/Express Mediapack for Linux 64bit (V16.9 or higher) Manager Program (1/2)	- ETERNUS SF Manager program for Windows - Software Release Guide
ETERNUS SF SC/ACM/Express Mediapack for Linux 64bit (V16.9 or higher) Manager Program (2/2)	- ETERNUS SF Manager program for Linux, Solaris - Software Release Guide
ETERNUS SF SC/ACM/Express Mediapack for Linux 64bit (V16.9 or higher) Agent Program & Manual	- ETERNUS SF Agent program - Software Release Guide - Online Manuals

For Solaris

DVD Name	Contained Contents
ETERNUS SF SC/ACM Mediapack for Solaris (V16.9 or higher) Manager Program (1/2)	- ETERNUS SF Manager program for Windows - Software Release Guide

DVD Name	Contained Contents
ETERNUS SF SC/ACM Mediapack for Solaris (V16.9 or higher) Manager Program (2/2)	- ETERNUS SF Manager program for Linux, Solaris - Software Release Guide
ETERNUS SF SC/ACM Mediapack for Solaris (V16.9 or higher) Agent Program & Manual	- ETERNUS SF Agent program - Software Release Guide - Online Manuals

Concerning Mounting of DVD Media (For Linux Only)

When mounting the DVD media of this product manually, specify the iso9660 file system explicitly when executing the "mount" command.
In command example, the device name of the DVD drive is mounted as "/dev/cdrom". The device name of the DVD drive may differ depending on the device.

```
# mount -t iso9660 -r /dev/cdrom dvdMountPoint
```

When automatic mount (autofs) is used for DVD media, specify the iso9660 file system for the "/etc/fstab" file.

Note

The DVD media of this product has been created in the UDF Bridge format. For this reason, it is possible to mount as the iso9660 or UDF file system. However, if you mount as the UDF file system, the execution privileges for the execution file may sometimes be removed. In this case, problems such as being unable to execute the installer may occur. Note that, depending on the operating system, the mount specification may sometimes be as shown below. The mount options for the mounted DVD media can be checked by executing the "mount" command with no argument.

- If you mount the DVD media using automatic mount, or using the "mount" command with no file system option, the DVD media is mounted as the UDF file system, Therefore, it is not possible to execute the command on the DVD media.

1.2 Determining Installation Programs

The table below shows the relationships between products to be used and programs to be installed.
Refer to this chart to determine which programs need to be installed.

Table 1.1 Relationships Between Products to Be Used and Programs to Be Installed

Product to Be Used	Program to Be Installed	Description
Express	ETERNUS SF Manager	Installation is required. (*1)
Storage Cruiser	ETERNUS SF Manager	If not installed, installation is required. If installed, register the license. Refer to "Chapter 12 Adding and Changing Products in Use" for details.
	Storage Cruiser's agent	Installation to the Managed Server is required if any of the following operations are used: - Using the functions that are available with Storage Cruiser's agent, e.g. access path setup, status monitoring or failure monitoring. - Using the Backup Wizard for Exchange Server or the Backup Wizard for SQL Server. (*3) - Using the Restore Wizard for Exchange Server or the Restore Wizard for SQL Server. (*3) - Using the Scheduler. (*3)

Product to Be Used	Program to Be Installed	Description
		When using Automatic Failover of Storage Cluster, installation to the server that operates the Storage Cluster Controller is required.
AdvancedCopy Manager (for Agent-based operation)	ETERNUS SF Manager	If not installed, installation is required. If installed, register the license. Refer to "Chapter 12 Adding and Changing Products in Use" for details.
	AdvancedCopy Manager's agent	Installation is required. To be installed on servers that has backup or replication resources.
AdvancedCopy Manager (for Agent-less operation)	ETERNUS SF Manager or AdvancedCopy Manager Copy Control Module	Installation of one of the programs listed on the left is required. For use of only the AdvancedCopy Manager Copy Control Module (hereafter abbreviated as "AdvancedCopy Manager CCM") functions provided by this product, install the AdvancedCopy Manager CCM. In all other cases, install the ETERNUS SF Manager (*2). However, if the ETERNUS SF Manager has been installed, register the license. Refer to "Chapter 12 Adding and Changing Products in Use" for details.

*1: Express cannot run on Solaris environments. Install it in Windows or Linux environments.
*2: The AdvancedCopy Manager CCM is included in the ETERNUS SF Manager, but can also be installed as a standalone program.
*3: It is the same when the Managed Server is also operated as Management Server.

Note

When you install the Storage Cruiser's manager and the AdvancedCopy Manager's manager on different Management Servers, note the following:

- Management Server where the Storage Cruiser's manager installed:
  - Register only the Storage Cruiser license.
  - The AdvancedCopy Manager's agent cannot be installed on this Management Server.
  - ETERNUS SF Manager is the integrated product structure that enables daemons/services for the AdvancedCopy Manager's manager to run.
  - Check the **SNMP Trap Setting** checkbox when registering an ETERNUS Disk storage system if necessary.
  - For registering servers, register as Managed Servers where the Storage Cruiser's agent is used.
- Management Servers where the AdvancedCopy Manager's manager installed:
  - Register only the AdvancedCopy Manager license.
  - Do not check the **SNMP Trap Setting** checkbox when registering an ETERNUS Disk storage system.
  - For registering server, register as Managed Servers where AdvancedCopy Manager's agent is used.

1.3 Product License Management

The use of these products and functions is managed and restricted by license.
Therefore, in order to use a product and function, besides installing the related programs, it is necessary to register the license for that product and function.

There are two methods to register licenses, i.e. Web Console and command.
The license keys to register are different for each ETERNUS Disk storage system.

See

Refer to "Appendix A License Management" for information on the types, functional ranges, and how to register licenses using command.
Refer to "Register License" in the *Web Console Guide* for information on how to register licenses using Web Console.

Note

Information of the ETERNUS Disk storage system registered the license using command, is not displayed on Web Console.

1.4 Installation Method

This product provides the following two installation methods.

Table 1.2 Installation Method of This Product

Installation Method	Explanation
Interactive installation	This method installs the program while necessary information (such as the installation directory and the communication port number) is input with the interactive mode.
Silent installation	This method installs the program using the installation parameter file that already describes the necessary information for the installation. Because the installer automatically installs the program by reading the necessary information from the installation parameter file, the operator is not queried during installation. To use this installation method, an installation parameter file must be created before installing the program. In this manual, the method of installing with the default installation parameters is called "default install" and the method of installing by editing the installation parameters is called "custom install".

Information

The necessary information for an installation varies depending on the program that is installed and the platform.
Refer to "Appendix C Installation Parameters" for details on the necessary information for an installation and the installation parameter file.

The environments that can use each installation method are as follows.

Table 1.3 Environments that Can Use Interactive Installation and Silent Installation

Installation Target Program	Installation Methods	Platforms				
		Windows	Solaris	Linux	HP-UX	AIX
ETERNUS SF Manager	Interactive installation	A	A	A	-	-
	Silent installation	A	A	A	-	-
Storage Cruiser's agent	Interactive installation	A	A	A	A	-
	Silent installation	A	A	A	N/A	-
AdvancedCopy Manager's agent	Interactive installation	A	A	A	A	-

Installation Target Program	Installation Methods	Platforms				
		Windows	Solaris	Linux	HP-UX	AIX
	Silent installation	A	A	A	N/A	-
AdvancedCopy Manager CCM	Interactive installation	A	A	A	-	-
	Silent installation	A	A	A	-	-

A: Available
N/A: Not available
-: Platforms that do not provide installation target programs

Information

Two methods, Interactive uninstallation and Silent uninstallation, are also available when uninstalling.
The environments that can use each uninstallation method are the same as those listed in "Table 1.3 Environments that Can Use Interactive Installation and Silent Installation".

1.5 Use of Software Together With Antivirus Software

There is no restriction on putting the following software under monitoring of antivirus software:

- Installation program
- Files under required disks for operation and required disks for installation used for installation program

However, depending on the type of antivirus software, the installation program behaviors may be affected or access to the files under required disks for operation and required disks for installation used for installation program may be restricted. In that case, put those files out of monitoring according to the instructions of the antivirus software.

Refer to "Chapter 2 Operating Environment" for details about required disks for operation and required disks for installation used for installation program.
Refer to "Appendix M List of Directories Used By This Product" for directories used when installing and using this product.

When Installing AdvancedCopy Manager to Perform Backup and Replication Operations

To secure the consistency of resources to be backed up and replicated, antivirus software must be prevented from accessing the resources. Refer to "Running Software" in "Notes on Backup and Replication Operation" in the *AdvancedCopy Manager Operation Guide* for details.

Chapter 2 Operating Environment

2.1 Supported Devices

This section describes devices that are supported by Express, Storage Cruiser and AdvancedCopy Manager.

Devices Supported by Express

Express supports the following storage devices:

- ETERNUS DX60 S5/DX100 S5/DX200 S5
- ETERNUS DX60 S4/DX100 S4/DX200 S4
- ETERNUS DX60 S3/DX100 S3/DX200 S3
- ETERNUS DX60 S2/DX80 S2/DX90 S2
- ETERNUS AF150 S3/AF250 S3
- ETERNUS AF250 S2
- ETERNUS AF250

Note

- Express supports the following firmware versions for the above storage devices. However, for the storage devices unlisted in the table below, there is no limit for the firmware version.

  Table 2.1 Storage Devices and Compatible Firmware Version

Storage Device Name	Compatible Firmware Version
ETERNUS DX60 S3/DX100 S3/DX200 S3	V10L60 or later
ETERNUS DX60 S2	V20L10 or later
ETERNUS DX80 S2/DX90 S2	V10L16 or later
ETERNUS AF250	V10L60 or later

- Enable the following settings for the interface to storage devices.

  Table 2.2 Storage Devices and Interface Settings

Storage Device Name	Interface Settings
ETERNUS DX60 S2	Telnet connection
Other than the above	SSH connection

Devices Supported by Storage Cruiser

Storage Cruiser supports the following devices.

Device Type	Device Name
Storage devices	ETERNUS DX series ETERNUS AF All-Flash Arrays ETERNUS AX/HX series ETERNUS AB/HB series ETERNUS CS800 M1/CS800 S7 NetApp FAS Series NetApp FAS Series (with clustered Data ONTAP) NetApp AFF series

Device Type	Device Name
Tape libraries	ETERNUS LT series ETERNUS CS2000
Fibre Channel switches	Brocade series
Converged Switches	VDX series PRIMERGY BX Ethernet Fabric Switch
Others	Solaris, Windows, Linux, and HP-UX server nodes VMware vSphere 8 VMware vCenter Server Appliance 8 VMware vSphere 7 VMware vCenter Server Appliance 7

Note

- Storage Cruiser supports the following firmware versions for the above storage devices. However, for the storage devices unlisted in the table below, there is no limit for the firmware version.

Table 2.3 Storage Devices and Compatible Firmware Version

Storage Device Name	Compatible Firmware Version
ETERNUS DX S3 series	V10L60 or later
ETERNUS DX80 S2/DX90 S2 ETERNUS DX400 S2 series	V10L16 or later
ETERNUS AF series	V10L60 or later
ETERNUS CS800 M1	v4.1 or later

- Enable the following settings for the interface to storage devices.

Table 2.4 Storage Devices and Interface Settings

Storage Device Name	Interface Settings
ETERNUS DX series (excluding the ETERNUS DX60 S2)	SSH connection
ETERNUS DX60 S2	Telnet connection
ETERNUS AF All-Flash Arrays	SSH connection

- When using the reporting function, use the following storage devices and firmware version.

Table 2.5 Storage Devices and Compatible Firmware Version

Storage Device Name	Compatible Firmware Version
ETERNUS DX S6/S5/S4/S3 series	Versions supported by the product
ETERNUS DX S2 series (excluding the ETERNUS DX60 S2)	V10L40 or later
ETERNUS AF All-Flash Arrays	Versions supported by the product

- When using the Storage Cluster function, use the following storage devices and firmware version. In addition, equalize the firmware version for Primary Storage and Secondary Storage constituting the Storage Cluster environment.

Table 2.6 Storage Devices and Compatible Firmware Version

Storage Device Name	Compatible Firmware Version
ETERNUS DX100 S5/S4 ETERNUS DX200 S5/S4 ETERNUS DX500 S5/S4 ETERNUS DX600 S6/S5/S4	All versions

Storage Device Name	Compatible Firmware Version
ETERNUS DX900 S6/S5 ETERNUS DX8900 S6/S4 (*1)	
ETERNUS DX100 S3 ETERNUS DX200 S3 ETERNUS DX500 S3 ETERNUS DX600 S3 ETERNUS DX8700 S3 ETERNUS DX8900 S3	Versions supported by the product (*2)
ETERNUS AF All-Flash Arrays	Versions supported by the product (*2)

*1: The Storage Cluster function cannot be used if "GS License" is registered in the storage device.

*2: To perform any of the following actions, the firmware version must be V10L70 or later:

- Setting or displaying the total capacity of TFOVs per storage device
- Expanding the number of creatable TFO groups up to 32
- Creating two or more TFO groups in the same direction
- Using the Automatic Failover function during a RAID close
- Using the Automatic Failover function triggered by CA port linkdown

Devices Supported by AdvancedCopy Manager

AdvancedCopy Manager supports the following ETERNUS Disk storage systems:

- ETERNUS DX series
- ETERNUS AF All-Flash Arrays

- AdvancedCopy Manager supports the following firmware versions for the above storage devices. However, for the storage devices unlisted in the table below, there is no limit for the firmware version.

Table 2.7 Storage Devices and Compatible Firmware Version

Storage Device Name	Compatible Firmware Version
ETERNUS DX S3 series	V10L60 or later
ETERNUS DX60 S2	V20L10 or later
ETERNUS DX80 S2/DX90 S2	V10L16 or later
ETERNUS AF series	V10L60 or later

- Enable the following settings for the interface to storage devices.

Table 2.8 Storage Devices and Interface Settings

Storage Device Name	Interface Settings
ETERNUS DX series (excluding the ETERNUS DX60 S2)	SSH connection
ETERNUS DX60 S2	Telnet connection
ETERNUS AF All-Flash Arrays	SSH connection

With the AdvancedCopy Manager CCM, the devices listed below can use Copy command via SAN and via LAN.

Table 2.9 ETERNUS Disk Storage Systems Supporting Copy Command via SAN and/or via LAN

Device Name	Copy Command via SAN	Copy Command via LAN
ETERNUS DX series (excluding the ETERNUS DX60 S2)	A	A
ETERNUS DX60 S2	A	N/A
ETERNUS AF All-Flash Arrays	A	A

(A=Available, N/A=Not Available)

Refer to "Agent-less Operating Model" in "Overview of AdvancedCopy Manager" of the *Overview* for information on Copy command via SAN and via LAN.

2.2 Operating Environment of ETERNUS SF Manager

2.2.1 Hardware Requirements

A Management Server in which ETERNUS SF Manager is installed and used should be a server in which "2.2.2.1 Supported Operating Systems" can be installed.
Also, the following server specification is required.

CPU Performance

- When using neither Automated Storage Tiering nor Automated QoS function:

  2 GHz * 2 cores or more

- Other than those above:

  2 GHz * 4 cores or more

When managing the following storage devices in which the number of volumes exceeds 18,000 per device, add 2 more cores to the above listed cores.

- ETERNUS DX900 S6/S5
- ETERNUS DX8900 S6/S4
- ETERNUS DX8000 S3/S2 series

Note

- When using the Automated Storage Tiering, the case of using one layer Tier pool is also included.
- The PRIMERGY FT model and HA model are not supported.

2.2.2 Software Requirements

This section describes the following software requirements:

- Supported operating systems
- Essential software
- Incompatible software

2.2.2.1 Supported Operating Systems

The operating system of the server on which to install ETERNUS SF Manager must be one of the following.

Point

For stable OS operation, applying the latest patch to the OS in advance is recommended to operate this product.

For Windows environments

Operating System Name	Required Hotfix	Remarks
Microsoft Windows Server 2022 Standard	-	*1, *2
Microsoft Windows Server 2022 Datacenter	-	*1, *2
Microsoft Windows Server 2019 Standard	-	*1, *2
Microsoft Windows Server 2019 Datacenter	-	*1, *2
Microsoft Windows Server 2016 Standard	-	*1, *2
Microsoft Windows Server 2016 Datacenter	-	*1, *2

*1: Cluster Shared Volumes (CSV) are not supported.
*2: The Server Core installation option and the Nano Server installation option are not supported.

For Solaris environments

Operating System Name	Required Patch	Remarks
Solaris 11 (11/11 or later)	-	*1, *2, *3
Solaris 10	141596-06	*3

*1: For Solaris 11.4 or later, add and install the "text/gnu-grep" and "package/svr4" packages. For Solaris 11.3 or earlier, add and install the "text/gnu-grep" package.
*2: For Solaris 11.3 or earlier, perform the following procedure.
Change the environment/TZ of the SMF service instance svc:/system/environment:init of the operating system to the appropriate timezone name instead of the local time and then refresh the service. After that, reboot the operating system.
Specify the appropriate timezone name to *timeZoneName*. For example, specify "US/Pacific" to *timeZoneName* to use this product in the Pacific Standard Time (PST) zone.
Note that this procedure must be performed before installing this product even if other methods such as the "nlsadm" command is used to set the timezone when the OS is installed.

```
# svccfg -s svc:/system/environment:init setprop environment/TZ = timeZoneName
# svcadm refresh svc:/system/environment:init
```

*3: The ETERNUS SF Manager process may stop due to OS problems. If this occurs, perform the following procedure.

1. Delete the second "security.provider.*n*" (where *n* is an integer) from the "/opt/FJSVesfcm/JRE/lib/security/java.security" file. After that, below the deleted line, decrease the number for each "security.provider.*n*" by one.
2. Restart the OS.

For Linux environments

Operating System Name	Remarks
Red Hat Enterprise Linux 9 (for Intel64)	*1, *2
Red Hat Enterprise Linux 8 (for Intel64)	*3
Red Hat Enterprise Linux 7 (for Intel64)	*4

*1: Requires Red Hat Enterprise Linux 9 (for Intel64) UpdateRelease2 or later.
*2: Requires the tcsh (tcsh-6.22.03-6.el9.x86_64.rpm or later), libnsl (libnsl-2.34-28.el9_0.x86_64.rpm or later), and libnsl2 (libnsl2-2.0.0-1.el9.x86_64.rpm or later) packages.

*3: Requires the tcsh (tcsh-6.20.00-9.el8.x86_64.rpm or later) and libnsl (libnsl-2.28-18.el8.x86_64.rpm or later) packages.
*4: Requires the tcsh (tcsh-6.18.01-3.el7.x86_64.rpm or later) package.

2.2.2.2 Essential Software

For operating ETERNUS SF Manager, the following software is required.

For Linux environments

Essential Software Name	Explanation
net-snmp	This is Linux standard SNMP package. It is included in the OS installation media. When installing this package, the lm-sensors package may be required. The lm-sensors package is also included in the OS installation media.
alsa-lib	This is the package which supports an audio and a MIDI function. It is included in the OS installation media. Install the following package version or later. - For Red Hat Enterprise Linux 9 environments alsa-lib-1.2.6.1-3.el9.x86_64.rpm - For Red Hat Enterprise Linux 8 environments alsa-lib-1.1.6-3.el8.x86_64.rpm - For Red Hat Enterprise Linux 7 environments alsa-lib-1.0.27.2-3.el7.x86_64.rpm When installing this package, another package may be required. Another package is also included in the OS installation media.
libX11	This is the package of X.Org X11 libX11 Runtime Library. It is included in the OS installation media. Install the following package version or later. - For Red Hat Enterprise Linux 9 environments libX11-1.7.0-7.el9.x86_64.rpm - For Red Hat Enterprise Linux 8 environments libX11-1.6.7-1.el8.x86_64.rpm - For Red Hat Enterprise Linux 7 environments libX11-1.6.0-2.1.el7.x86_64.rpm When installing this package, another package may be required. Another package is also included in the OS installation media.
libXext	This is the package of X.Org X11 libXext Runtime Library. It is included in the OS installation media. Install the following package version or later. - For Red Hat Enterprise Linux 9 environments libXext-1.3.4-8.el9.x86_64.rpm - For Red Hat Enterprise Linux 8 environments libXext-1.3.3-9.el8.x86_64.rpm - For Red Hat Enterprise Linux 7 environments libXext-1.3.2-2.1.el7.x86_64.rpm When installing this package, another package may be required. Another package is also included in the OS installation media.
libXi	This is the package of X.Org X11 libXi Runtime Library. It is included in the OS installation media. Install the following package version or later.

Essential Software Name	Explanation
	- For Red Hat Enterprise Linux 9 environments libXi-1.7.10-8.el9.x86_64.rpm - For Red Hat Enterprise Linux 8 environments libXi-1.7.9-7.el8.x86_64.rpm - For Red Hat Enterprise Linux 7 environments libXi-1.7.2-2.1.el7.x86_64.rpm When installing this package, another package may be required. Another package is also included in the OS installation media.
libXt	This is the package of X.Org X11 libXt Runtime Library. It is included in the OS installation media. Install the following package version or later. - For Red Hat Enterprise Linux 9 environments libXt-1.2.0-6.el9.x86_64.rpm - For Red Hat Enterprise Linux 8 environments libXt-1.1.5-8.el8.x86_64.rpm - For Red Hat Enterprise Linux 7 environments libXt-1.1.4-6.1.el7.x86_64.rpm When installing this package, another package may be required. Another package is also included in the OS installation media.
libXtst	This is the package of X.Org X11 libXtst Runtime Library. It is included in the OS installation media. Install the following package version or later. - For Red Hat Enterprise Linux 9 environments libXtst-1.2.3-16.el9.x86_64.rpm - For Red Hat Enterprise Linux 8 environments libXtst-1.2.3-7.el8.x86_64.rpm - For Red Hat Enterprise Linux 7 environments libXtst-1.2.2-2.1.el7.x86_64.rpm When installing this package, another package may be required. Another package is also included in the OS installation media.
libXrender	This is the package of X.Org X11 libXrender Runtime Library. It is included in the OS installation media. Install the following package version or later. - For Red Hat Enterprise Linux 9 environments libXrender-0.9.10-16.el9.x86_64.rpm - For Red Hat Enterprise Linux 8 environments libXrender-0.9.10-7.el8.x86_64.rpm - For Red Hat Enterprise Linux 7 environments libXrender-0.9.8-2.1.el7.x86_64.rpm When installing this package, another package may be required. Another package is also included in the OS installation media.
libgcc	This is the package of GCC shared support library. It is included in the OS installation media. Install the following package version or later. - For Red Hat Enterprise Linux 9 environments

Essential Software Name	Explanation
	libgcc-11.2.1-9.4.el9.x86_64.rpm - For Red Hat Enterprise Linux 8 environments libgcc-8.2.1-3.5.el8.x86_64.rpm - For Red Hat Enterprise Linux 7 environments libgcc-4.8.2-16.el7.x86_64.rpm When installing this package, another package may be required. Another package is also included in the OS installation media.
glibc	This is the package of GNU libc library. It is included in the OS installation media. Install the following package version or later. - For Red Hat Enterprise Linux 9 environments glibc-2.34-28.el9_0.i686.rpm glibc-2.34-28.el9_0.x86_64.rpm glibc-devel-2.34-28.el9_0.x86_64.rpm - For Red Hat Enterprise Linux 8 environments glibc-2.28-42.el8.i686.rpm glibc-2.28-42.el8.x86_64.rpm glibc-devel-2.28-42.el8.x86_64.rpm - For Red Hat Enterprise Linux 7 environments glibc-2.17-55.el7.i686.rpm glibc-2.17-55.el7.x86_64.rpm glibc-devel-2.17-55.el7.x86_64.rpm When installing this package, another package may be required. Another package is also included in the OS installation media.
libstdc++	This is the package of GNU Standard C++ Library. It is included in the OS installation media. Install the following package version or later. - For Red Hat Enterprise Linux 9 environments libstdc++-11.2.1-9.4.el9.x86_64.rpm - For Red Hat Enterprise Linux 8 environments libstdc++-8.2.1-3.5.el8.x86_64.rpm - For Red Hat Enterprise Linux 7 environments libstdc++-4.8.2-16.el7.x86_64.rpm When installing this package, another package may be required. Another package is also included in the OS installation media.
expat	This is the library package to analyze XML. It is included in the OS installation media. Install the following package version or later. - For Red Hat Enterprise Linux 9 environments expat-2.2.10-12.el9_0.x86_64.rpm - For Red Hat Enterprise Linux 8 environments expat-2.2.5-3.el8.x86_64.rpm - For Red Hat Enterprise Linux 7 environments expat-2.1.0-8.el7.x86_64.rpm

Essential Software Name	Explanation
	When installing this package, another package may be required. Another package is also included in the OS installation media.
readline	This is the package to edit text in a command line. It is included in the OS installation media. Install the following package version or later. - For Red Hat Enterprise Linux 9 environments readline-8.1-4.el9.x86_64.rpm - For Red Hat Enterprise Linux 8 environments readline-7.0-10.el8.x86_64.rpm - For Red Hat Enterprise Linux 7 environments readline-6.2-9.el7.x86_64.rpm When installing this package, another package may be required. Another package is also included in the OS installation media.
zlib	This is the library package to compress and uncompress zlib. It is included in the OS installation media. Install the following package version or later. - For Red Hat Enterprise Linux 9 environments zlib-1.2.11-31.el9.x86_64.rpm - For Red Hat Enterprise Linux 8 environments zlib-1.2.11-10.el8.x86_64.rpm - For Red Hat Enterprise Linux 7 environments zlib-1.2.7-13.el7.x86_64.rpm When installing this package, another package may be required. Another package is also included in the OS installation media.
zip	This is the library package to compress zip. It is included in the OS installation media. When installing this package, another package may be required. Another package is also included in the OS installation media.
unzip	This is the utility package for unzipping zip files. It is included in the OS installation media. When installing this package, another package may be required. Another package is also included in the OS installation media.
perl	This is the package for Perl Program Language. It is included in the OS installation media. When installing this package, another package may be required. Another package is also included in the OS installation media.
gawk	This is the package for Perl Program Language (GNU) of awk text manipulation utility. It is included in the OS installation media. When installing this package, another package may be required. Another package is also included in the OS installation media.
openldap	This is the package for header of Fnlib and static library. It is included in the OS installation media. When installing this package, another package may be required. Another package is also included in the OS installation media.
chkconfig	This is the package for system tools which control /etc/rc*.d hierarchy. It is included in the OS installation media.

Essential Software Name	Explanation
	When installing this package, another package may be required. Another package is also included in the OS installation media.
shadow-utils	This is the package for utilities which control shadow password files and user/group accounts. It is included in the OS installation media. When installing this package, another package may be required. Another package is also included in the OS installation media.
coreutils	This is the package for GNU Core Utilities. It is included in the OS installation media. When installing this package, another package may be required. Another package is also included in the OS installation media.

2.2.2.3 Incompatible Software

ETERNUS SF Manager cannot be used on servers that have any of the following software installed.

Incompatible Software Name	Remarks
Systemwalker Resource Coordinator	Excluding Systemwalker Resource Coordinator Virtual server Edition
SystemWalker/StorageMGR-M	-
SystemWalker/StorageMGR-A	-
Softek AdvancedCopy Manager-M	-
Softek AdvancedCopy Manager-A	-
Softek SANView	-
Softek Storage Cruiser	-
ETERNUS SF AdvancedCopy Manager's agent	-
Manager of Systemwalker Centric Manager V13.5.1 or earlier	For Solaris environments only
ETERNUS VASA Provider of all the versions earlier than 2.1.13 and of all the versions from 3.0 to 3.0.8	For Windows environments only

Note

- The IPv6 address device cannot be monitored if the manager program of Systemwalker Centric Manager V13.5.0 or earlier has been installed in a Linux environment.
- In a Windows environment, if the manager program of Systemwalker Centric Manager V13.5.1 or earlier is installed, device monitoring using the SNMPv3 protocol is not possible.

2.2.3 Required Resources for Installation

This section describes the resources that are required for installing ETERNUS SF Manager.

2.2.3.1 Required Disk Space for Installation

For installation of ETERNUS SF Manager on a server, the required free disk space on that server is as follows.

For Windows environments

Directory Name	Required Disk Space (Unit: MB)	Explanation
Program Directory	2,850	"Program Directory" as specified during installation

Directory Name	Required Disk Space (Unit: MB)	Explanation
Environment Directory	110	"Environment Directory" as specified during installation
Work Directory	40	"Work Directory" as specified during installation

For Solaris or Linux environments

Directory Name	Required Disk Space (Unit: MB)	Explanation
/opt	3,100	The directory to which the package is installed.
/etc/opt	5	The directory to which the files for the environment settings are installed.
/var/opt	1,250	The directory to which the variable files (log files, temporary files, etc.) are installed.

2.2.4 Required Resources for Operation (for Operation as Express's Manager)

2.2.4.1 Required Disk Space for Operation

For operating ETERNUS SF Manager, in addition to disk space described in "2.2.3.1 Required Disk Space for Installation", the server on which it is installed must have free disk space as described below.

For Windows environments

Directory Name	Required Disk Space (Unit: MB)	Explanation
Environment Directory	a + b	a: Database capacity of the repository for Manager. Refer to "3.1.3 Estimation of Database Size" for details. b: Repository size for common control. Refer to "Estimation Formula for Repository Size for Common Control" for details.
Work Directory	c + 20(*1)	c: Required for performance management. Refer to "Disk Space Required for Performance Management" as described below for details. *1: Disk space required for the license management function

For Linux environments

Directory Name	Required Disk Space (Unit: MB)	Explanation
/etc/opt/FJSVswstf	a	a: Database capacity of the repository. Refer to "3.1.3 Estimation of Database Size" for details.
/var/opt/FJSVssmgr	b	b: Required for performance management. Refer to "Disk Space Required for Performance Management" as described below for details.
/var/opt/FJSVesfcm	c	c: Repository size for common control. Refer to "Estimation Formula for Repository Size for Common Control" for details.
/var/opt/FJSVesflm	20	Disk space required for the license management function

Disk Space Required for Performance Management

When the performance management is being performed, add disk space as described in "Table 2.10 Required Capacity for Performance Management".

Point

- For "*securedLUs*", which is the actual number of LUs, performance management secures the performance information of the storage device.

  For example, if an instruction to secure the performance information of LU#15 to LU#200 is issued, the actual number of secured LUs is 256, which is LU#0 to LU#255. This is because the performance management secures the performance information of the storage device in units of 64 LUs.

- "*securedRAIDgroups*" is the sum total of the following RAID group numbers.
  - The number of RAID groups where the secured LUs exist
  - The number of RAID groups that configure the Thin Provisioning Pool where the secured LUs exist
  - The number of RAID groups that configure the Tier pool where the secured LUs exist

Table 2.10 Required Capacity for Performance Management

Storage Device	Required Disk Space (Unit: MB)
ETERNUS DX60 S5	5,600
ETERNUS DX100 S5 ETERNUS AF150 S3	18,000
ETERNUS DX200 S5 ETERNUS AF250 S3	- When disabling the Deduplication/Compression: 18,000 - When enabling the Deduplication/Compression: 55,000
ETERNUS DX60 S4/S3 ETERNUS AF250 S2 (*1) ETERNUS AF250 (*1)	8 * (475 + (1.2 + 0.7 * *DEs* + 0.4 * (*securedLUs* + *securedRAIDgroups*)) * 1440 + (290 * *DEs*) + (76 * (*securedLUs* + *securedRAIDgroups*))) / 1024 + 2.25
ETERNUS DX100 S4/S3 ETERNUS DX200 S4/S3 (*1)	8 * (774 + (2.2 + 0.7 * *DEs* + 0.2 * *NASVolumes* + 0.4 * (*securedLUs* + *securedRAIDgroups*)) * 1440 + (290 * *DEs*) + (38 * *NASVolumes*) + (76 * (*securedLUs* + *securedRAIDgroups*))) / 1024 + 2.25
ETERNUS DX60 S2 ETERNUS DX80 S2 ETERNUS DX90 S2	8 * (240 + (1.2 + 0.3 * *DEs* + 0.3 * (*securedLUs* + *securedRAIDgroups*)) * 1440 + (95 * *DEs*) + (50 * (*securedLUs* + *securedRAIDgroups*))) / 1024 + 2.61

*1: When enabling Deduplication/Compression to operate the device, add 170 MB to the capacity calculated by the formula.

Estimation Formula for Repository Size for Common Control

```
Required size (MB) = 400 + (servers + switches + devicesToBeManaged + disks + RAIDGroups +
volumes) / 100 + (servers + switches + devicesToBeManaged) * users / 500

- servers : Number of Managed Servers
- switches : Number of switches to be managed
- devicesToBeManaged : Number of ETERNUS Disk storage systems to be managed
- disks : Total number of disks to be managed (Total number of disks in each ETERNUS Disk storage
system to be managed)
- RAIDGroups : Total number of RAID groups to be managed (Total number of RAID groups that are
created in each ETERNUS Disk storage system to be managed)
- volumes : Total number of volumes to be managed (Total number of volumes that are created in each
ETERNUS Disk storage system to be managed)
- users : Number of users using Web Console (Number of user accounts)
```

2.2.4.2 Required Memory for Operation

For operating ETERNUS SF Manager, the server on which it is installed must add the following amount of memory.

- When Automated Storage Tiering is not used

  4.1 GB

- When Automated Storage Tiering is used

  6.2 GB

For the manageable environment by ETERNUS SF Manager, refer to "Appendix E Upper Limit of Manageable Environment".

Note

Set swap memory. For capacity, set the value that is recommended by the operating system.

2.2.5 Required Resources for Operation (for Operation as Storage Cruiser's Manager)

2.2.5.1 Required Disk Space for Operation

For operating ETERNUS SF Manager, in addition to disk space described in "2.2.3.1 Required Disk Space for Installation", the server on which it is installed must have free disk space as described below.

For Windows environments

Directory Name	Required Disk Space (Unit: MB)	Explanation
Environment Directory	5 + 1(*1) + 1.2(*2) + 65(*3) + a	a: Repository size for common control. Refer to "Estimation Formula for Repository Size for Common Control" for details. *1: Configuration definition file *2: Database (co-operation with middleware) *3: Database capacity of the repository for Manager - Calculated assuming a maximum of a 100 products.
Work Directory	55(*4) + 20(*5) + a + b + c	a: Repository size for common control. Refer to "Estimation Formula for Repository Size for Common Control" for details. b: Repository for Storage Cruiser c: Disk space required when using Automated Storage Tiering. Refer to "Disk Space Required When Using Automated Storage Tiering" for details. *4: Log *5: Disk space required for the license management function

For Solaris or Linux environments

Directory Name	Required Disk Space (Unit: MB)	Explanation
/etc/opt/FJSVssmgr	5 + 1(*1) + 1.2(*2) + 65(*3)	*1: Configuration definition file *2: Database (co-operation with middleware) *3: Database capacity of the repository for Manager - Calculated assuming a maximum of a 100 products.
/var/opt/FJSVssmgr	55(*4) + a	a: Repository for Storage Cruiser *4: Log
/var/opt/FJSVesfcm	b	b: Repository size for common control. Refer to "Estimation Formula for Repository Size for Common Control" for details.
/var/opt/FJSVesflm	20	Disk space required for the license management function

Directory Name	Required Disk Space (Unit: MB)	Explanation
/var/opt/FJSVssast	c	c: Disk space required when using Automated Storage Tiering. Refer to "Disk Space Required When Using Automated Storage Tiering" for details.

Repository for Storage Cruiser

Add the total of disk space as described below, depending on the numbers of storage devices to be managed.

Storage Devices	Required Size (Unit: MB)
ETERNUS DX60 S5 ETERNUS DX100 S5 ETERNUS DX200 S5	*devicesToBeManaged* * 140
ETERNUS DX500 S5 ETERNUS DX600 S6/S5	*devicesToBeManaged* * 394
ETERNUS DX60 S4/S3 ETERNUS DX100 S4/S3 ETERNUS DX200 S4/S3 ETERNUS DX80 S2 (firmware version V10L40 or later) ETERNUS DX90 S2 (firmware version V10L40 or later)	*devicesToBeManaged* * 135
ETERNUS DX500 S4/S3 ETERNUS DX600 S4/S3 ETERNUS DX400 S2 series (firmware version V10L40 or later)	*devicesToBeManaged* * 389
ETERNUS DX900 S6/S5 ETERNUS DX8900 S6/S4	*devicesToBeManaged* * 13,774
ETERNUS DX8000 S3 series	*devicesToBeManaged* * 13,772
ETERNUS DX8000 S2 series (firmware version V10L40 or later)	*devicesToBeManaged* * 406
ETERNUS AF150 S3 ETERNUS AF250 S3	*devicesToBeManaged* * 140
ETERNUS AF650 S3	*devicesToBeManaged* * 394
ETERNUS AF250 S2 ETERNUS AF250	*devicesToBeManaged* * 135
ETERNUS AF650 S2 ETERNUS AF650	*devicesToBeManaged* * 389
Other than the above	0

Additionally, for performing the performance management, disk space is necessary depending on the number of devices from which to collect performance data and the number of days for which performance data are to be stored. Refer to "Appendix B Required Disk Space for Performance Management" for details.

Estimation Formula for Repository Size for Common Control

```
Required size (MB) = 400 + (servers + switches + devicesToBeManaged + disks + RAIDGroups +
volumes) / 100 + (servers + switches + devicesToBeManaged) * users / 500

- servers : Number of Managed Servers
- switches : Number of switches to be managed
- devicesToBeManaged : Number of ETERNUS Disk storage systems to be managed
- disks : Total number of disks to be managed (Total number of disks in each ETERNUS Disk storage
system to be managed)
- RAIDGroups : Total number of RAID groups to be managed (Total number of RAID groups that are
created in each ETERNUS Disk storage system to be managed)
- volumes : Total number of volumes to be managed (Total number of volumes that are created in each
```

```
ETERNUS Disk storage system to be managed)
- users : Number of users using Web Console (Number of user accounts)
```

Disk Space Required When Using Automated Storage Tiering

Depending on the total capacity of the target Tier pool, add the following capacity when performing an Automated Storage Tiering.

```
Required size (MB) = 27 * Total capacity of Tier pools (unit: TB)
```

Resource Information When Using Reporting Function

The following is a description of the resources such as size and tuning required to use this function:

Resource	Condition
Information stack file	There is no upper limit to accumulated data size (dependent on disk space). Retention period can be set in the policy file. Data can be retained up to 10 years. If the retention period set in the policy file is exceeded, the data is deleted when creating a report.
Report file	There is no upper limit to file size.

Estimate of Resources

It is required to estimate the sizes of the following files:

- Information stack file: File in which report information is accumulated by the reporting information collection command.
- Report file: File output by the report creation command.

Estimate of Information Stack File

File size can be roughly estimated from data amount per month and retention period as shown in the following estimate formula.
Data amount per month can be found by adding up the sum of volume configuration information size at month's outset per volume and the sum of one-month updated/added volume configuration information size per volume.
In the following estimate formula, the sum per volume is expressed as "SIGMA".
In addition, volume configuration information size can be found by the following calculation formula.

[Estimate Formula]

```
Information stack file capacity = (data amount per month) * retention period [month]
  (unit: byte)

Data amount per month = SIGMA(volume configuration information size at month's outset) +
                      SIGMA(one-month updated/added(*1) volume configuration information size)

  *1: Even if the volume is deleted halfway, the target volume information for the month
     is not deleted.

Volume configuration information size = 1862 +
                           (32 * number of Thin Provisioning Pools) +
                           (80 * number of Tier pools) +
                           (115 * number of Tier sub-pools) +
                           (100 * number of RAID groups) +
                           (306 * number of disks)
```

The breakdown of volume configuration information size is as follows.

Item	Size (byte)	Number of Records
Basic information	1,862	Fixed
Thin Provisioning information	32	Number of Thin Provisioning Pools

Item	Size (byte)	Number of Records
Tier pool information	80	Number of Tier pools
Tier sub-pool information	115	Number of Tier sub-pools
RAID information	100	Number of RAID groups
Disk information	306	Number of disks allocated to RAID groups

Example

The following is an estimate example of one-month file size when Volumes a and b are already created at month's outset and Volume c is added halfway:

a : 100 standard volumes in 1 RAID group which has 2 disks:
(1,862 + (32 * 0) + (80 * 0) + (115 * 0) + (100 * 1) + (306 * 2)) * 100

b: 100 TPV volumes in 1 Thin Provisioning Pool comprised of 2 RAID groups each with 4 disks:
(1,862 + (32 * 1) + (80 * 0) + (115 * 0) + (100 * 2) + (306 * 4)) * 100

c: 10 standard volumes in 1 RAID group which has 1 disk:
(1,862 + (32 * 0) + (80 * 0) + (115 * 0) + (100 * 1) + (306 * 1)) * 10

a + b + c = 257,400 bytes + 331,800 bytes + 22,680 bytes = 611,880 bytes = about 598 KB

Estimate of Report File

File size depends on storage configuration (on the number of disks and volumes allocated to RAID groups). Report file size can be roughly estimated from basic information and sum of volume configuration resource size per volume as shown below.

In the following estimate formula, the sum per volume is expressed as "SIGMA":

[Estimate Formula]

```
Report file capacity = basic information + SIGMA(volume configuration resource size)
(unit: byte)

- Basic information = header information +
             (server information * number of servers connected to volumes) +
             (disk storage system information * number of disk storage systems (*1))

    *1: Where one disk storage system is being allocated to multiple server volumes,
       the disk storage systems are counted in terms of the number of servers.

- Volume configuration resource size =
            (disk information * number of disks in volume allocated
            RAID group + volume type information + volume information) * number of volumes
            connected to server.
```

The size and number of records are roughly estimated as follows.

Category	Record Name	Size (byte)	Number of Records
Basic information	Header information	10,499	1 (fixed)
	Server information	630	Number of servers connected to volumes
	Disk storage system information	646	Number of disk storage systems including volumes used by server
Volume config. resources	Disk information	383	Number of disks allocated to RAID groups

Category	Record Name	Size (byte)	Number of Records
	Volume type information	234 (Standard/SDV/WSV) 356 (TPV) 487 (one layer Tier pool) 915 (2 layers Tier pool) 1,343 (3 layers Tier pool)	Number of RAID groups/Thin Provisioning Pools/Tier pools
	Volume information	895	Number of volumes connected to server

Example

The following is an estimate example of report file size when creating volumes under the following conditions:

- The number of servers connected to volumes is 1.
- The number of disk storage systems is 1.
- "Volume configuration resource1": Create 4 standard volumes in a RAID group using 2 disks.
- "Volume configuration resource2": Create a RAID group using 4 disks in Thin Provisioning Pool and create 10 TPV volumes.
- Connect the created volumes to the server.

Basic information = 10,499 + (630 * 1) + (646 * 1) = 11,775
Volume configuration information1 = (383 * 2 + 234 + 895) * 4 = 7,580
Volume configuration information2 = (383 * 4 + 356 + 895) * 10 = 27,830
Report file size = 11,775 + 7,580 + 27,830 = 47,185 bytes = about 46.1 KB

2.2.5.2 Required Memory for Operation

For operating ETERNUS SF Manager, the server on which it is installed must add the following amount of memory.

- When either Automated Storage Tiering, the Automated QoS function, or the VMware vSphere Virtual Volumes function is not used
  4.1 GB
- Other than the above
  6.2 GB

For the manageable environment by ETERNUS SF Manager, refer to "Appendix E Upper Limit of Manageable Environment".

When managing the following storage devices in which the number of volumes exceeds 18,000 per device, it is required to add more memory to the above listed memory. Refer to "Appendix I Adding Memory to ETERNUS SF Manager When Using Large Numbers of Volumes" for information on how to estimate and set up memory size.

- ETERNUS DX900 S6/S5
- ETERNUS DX8900 S6/S4
- ETERNUS DX8000 S3/S2 series

If Automated Storage Tiering is used, in addition to the above memory size, additional memory must be added to the install target server in accordance with the total value of the total capacity of Tier pools. Refer to "E.2 Upper Limit of Automated Storage Tiering" for information on how to estimate and set up memory size.

Note

- When using the Automated Storage Tiering, the case of using one layer Tier pool is also included.
- Set swap memory. For capacity, set the value that is recommended by the operating system.

2.2.6 Required Resources for Operation (for Operation as AdvancedCopy Manager's Manager)

2.2.6.1 Required Disk Space for Operation

For operating ETERNUS SF Manager, in addition to disk space described in "2.2.3.1 Required Disk Space for Installation", the server on which it is installed must have free disk space as described below.

For Windows environments

Directory Name	Required Disk Space (Unit: MB)	Explanation
Environment Directory	For performing the backup operation: - If not backing up the Symfoware: (a + 35 * b) / 1,024 + e + f - If backing up the Symfoware: ((a + 35 * b) + (b + 0.5 * c)) / 1,024 + e + f	a: Number of backup volumes b: Number of transaction volumes c: Number of DSIs of all database spaces to be backed up d: Number of volume pairs for replication management e: Repository size for common control. Refer to "Estimation Formula for Repository Size for Common Control" for details. f: Database size for repository. Refer to "3.1.3 Estimation of Database Size" for details.
	For performing the replication operation: (1.1 * d) / 1,024 + e + f	
Work Directory	1,128 + g + 20(*1)	g: Capacity of saved file that is output according to "Volume Lock Error Investigation Function" in the *AdvancedCopy Manager Operation Guide (for Windows)*. The output for each number of backup and transaction volumes and for each volume pair for replication management is made in sizes between several hundred KB and 2 MB each time an "in-use lock error" occurs. Assuming a size of 2 MB per saved volume file, for n times an "in-use lock error" occurs, capacity "g" is determined by the following formula: g = (a + b + 2 * c) * 2(MB) * n(times) *1: Disk space required for the license management function

For Solaris environments

Directory Name	Required Disk Space (Unit: MB)	Explanation
/etc/opt	For performing the backup operation: (a + 35 * b) / 1,024 + 0.4	Add required disk space depending on your operation. a: Number of backup volumes b: Number of transaction volumes c: Number of volume pairs for replication management
	For performing the replication operation: (1.1 * c) / 1,024 + 0.4	
/var	1,127	-
/var/opt	- For non-clustered systems: 13 + e + f + 20(*1)	d: Number of transactions (including local transactions) e: Database capacity of the repository. Refer to "3.1.3 Estimation of Database Size" for details. f: Repository size for common control. Refer to

Directory Name	Required Disk Space (Unit: MB)	Explanation
	- For clustered systems: 26 + 4 * d + e + f + 20(*1)	"Estimation Formula for Repository Size for Common Control" for details. *1: Disk space required for the license management function

For Linux environments

Directory Name	Required Disk Space (Unit: MB)	Explanation
/etc/opt	For performing the backup operation: - If not backing up the Symfoware: (a + 35 * b) / 1,024 + 0.4 - If backing up the Symfoware: ((a + 35 * b) + (b + 0.5 * c)) / 1,024 + 0.4	Add required disk space depending on your operation. a: Number of backup volumes b: Number of transaction volumes c: Number of DSIs of all database spaces to be backed up d: Number of volume pairs for replication management
	For performing the replication operation: (1.1 * d) / 1,024 + 0.4	
/var	1,127	-
/var/opt	- For non-clustered systems: 13 + f + g + 20(*1) - For clustered systems: 26 + 4 * e + f + g + 20(*1)	e: Number of transactions (including local transactions) f: Database capacity of the repository. Refer to "3.1.3 Estimation of Database Size" for details. g: Repository size for common control. Refer to "Estimation Formula for Repository Size for Common Control" for details. *1: Disk space required for the license management function

Estimation Formula for Repository Size for Common Control

```
Required size (MB) = 400 + (servers + switches + devicesToBeManaged + disks + RAIDGroups +
volumes) / 100 + (servers + switches + devicesToBeManaged) * users / 500

- servers : Number of Managed Servers
- switches : Number of switches to be managed
- devicesToBeManaged : Number of ETERNUS Disk storage systems to be managed
- disks : Total number of disks to be managed (Total number of disks in each ETERNUS Disk
storage system to be managed)
- RAIDGroups : Total number of RAID groups to be managed (Total number of RAID groups that are
created in each ETERNUS Disk storage system to be managed)
- volumes : Total number of volumes to be managed (Total number of volumes that are created in
each ETERNUS Disk storage system to be managed)
- users : Number of users using Web Console (Number of user accounts)
```

2.2.6.2 Required Memory for Operation

For operating ETERNUS SF Manager, the server on which it is installed must add the following amount of memory.

- When the VMware vSphere Virtual Volumes function is not used

  4.1 GB

- When the VMware vSphere Virtual Volumes function is used

  6.2 GB

For the manageable environment by ETERNUS SF Manager, refer to "Appendix E Upper Limit of Manageable Environment". When also operating Storage Cruiser's manager in the installation target server, refer to "2.2.5.2 Required Memory for Operation" in "Required Resources for Operation (for Operation as Storage Cruiser's Manager)".

When managing the following storage devices in which the number of volumes exceeds 18,000 per device, it is required to add more memory to the above listed memory. Refer to "Appendix I Adding Memory to ETERNUS SF Manager When Using Large Numbers of Volumes" for information on how to estimate and set up memory size.

- ETERNUS DX900 S6/S5
- ETERNUS DX8900 S6/S4
- ETERNUS DX8000 S3/S2 series

Note

Set swap memory. For capacity, set the value that is recommended by the operating system.

2.3 Operating Environment of Storage Cruiser's Agent

2.3.1 Hardware Requirements

Servers on which to install the Storage Cruiser's agent must be servers on which the "2.3.2.1 Supported Operating Systems" can be installed.

For Windows environments

The server must fulfill one of the following conditions:

- The server is PRIMEQUEST model.
- The server CPU performance is Intel(R) Pentium(R) III processor, 1 GHz or higher.

For Solaris environments

The server must be as follows:

- Any one of sparc/SUN servers

For Linux environments

The server must fulfill one of the following conditions:

- The server is PRIMEQUEST model.
- The server CPU performance is Intel(R) Pentium(R) III processor, 1 GHz or higher.

For HP-UX environments

The server must be as follows:

- Any one of HP-UX servers

2.3.2 Software Requirements

This section describes the following software requirements:

- Supported operating systems
- Essential software
- Incompatible software

2.3.2.1 Supported Operating Systems

The operating system of the server on which to install the Storage Cruiser's agent must be one of operating systems described in this section.

Point

For stable OS operation, applying the latest patch to the OS in advance is recommended to operate this product.

When using Storage Cluster Controller, install the Storage Cruiser's agent in one of the following operating systems. In addition, Storage Cluster Controller can be operated on a guest OS in a server virtualization environment.

- Operating systems that are described in "For Windows environments"
- Operating systems that are described in "For Solaris environments"
- Among the supported operating systems that are described in "For Linux environments", Red Had Enterprise Linux 7 or later

For Windows environments

Operating System Name	Required Hotfix	Remarks
Microsoft Windows Server 2022 Standard	-	*1, *2
Microsoft Windows Server 2022 Datacenter	-	*1, *2
Microsoft Windows Server 2019 Standard	-	*1, *2
Microsoft Windows Server 2019 Datacenter	-	*1, *2
Microsoft Windows Server 2016 Standard	-	*1, *2
Microsoft Windows Server 2016 Datacenter	-	*1, *2

*1: The Server Core installation option and the Nano Server installation option are not supported.
*2: Guest OS is not supported in a Hyper-V environment. However, only the Storage Cluster Controller can be used for guest OSs in a Hyper-V environment.

For Solaris environments

Operating System Name	Required Patch	Remarks
Solaris 11 (11/11 or later)	-	*1. *2
Solaris 10	-	-

*1: For Solaris 11.4 or later, add and install the "package/svr4" package.
*2: For Solaris 11.3 or earlier, perform the following procedure.
Change the environment/TZ of the SMF service instance svc:/system/environment:init of the operating system to the appropriate timezone name instead of the local time and then refresh the service. After that, reboot the operating system.
Specify the appropriate timezone name to *timeZoneName*. For example, specify "US/Pacific" to *timeZoneName* to use this product in the Pacific Standard Time (PST) zone.
Note that this procedure must be performed before installing this product even if other methods such as the "nlsadm" command is used to set the timezone when the OS is installed.

```
# svccfg -s svc:/system/environment:init setprop environment/TZ = timeZoneName
# svcadm refresh svc:/system/environment:init
```

For Linux environments

Operating System Name	Required Patch	Remarks
Red Hat Enterprise Linux 9 (for Intel64)	-	*1
Red Hat Enterprise Linux 8 (for Intel64)	-	*1

Operating System Name	Required Patch	Remarks
Red Hat Enterprise Linux 7 (for Intel64)	-	*1
SUSE Linux Enterprise Server 15 for AMD64 & Intel64	-	*1

*1: Running as a 64 bit native application

For HP-UX environments

Operating System Name	Required Patch	Remarks
HP-UX 11i v3(PA-RISC)	-	*1
HP-UX 11i v3(Itanium)	-	*2

*1: Only HP 9000 servers
*2: Only HP Integrity servers

2.3.2.2 Essential Software

For operating the Storage Cruiser's agent, the following software is required.

For Windows, Solaris, or Linux environments

Essential Software Name	Remarks
SNIA HBA API library	Necessary for managing RAID devices with Storage Cruiser. Prepare the required libraries for the HBA and OS versions being used. Additionally, the preparation methods vary depending on the HBA and driver versions. Refer to "6.1.3 SNIA HBA API Library Installation (Excluding HP-UX)" for details.

For HP-UX environments

There is no essential software.

2.3.2.3 Incompatible Software

The Storage Cruiser's agent cannot be used on servers that have any of the following software installed.

For Windows environments

Incompatible Software Name	Version	Remarks
Systemwalker Resource Coordinator	All versions	Excluding Systemwalker Resource Coordinator Virtual server Edition
Softek Storage Cruiser	All versions	-

For Solaris environments

Incompatible Software Name	Version	Remarks
Systemwalker Resource Coordinator	All versions	-
Softek Storage Cruiser	All versions	-

For Linux environments

Incompatible Software Name	Version	Remarks
Systemwalker Resource Coordinator	All versions	Excluding Systemwalker Resource Coordinator Virtual server Edition
Softek Storage Cruiser	All versions	-

For HP-UX environments

Incompatible Software Name	Version	Remarks
Softek Storage Cruiser	All versions	-

2.3.3 Required Resources for Installation

This section describes the resources that are required for installing the Storage Cruiser's agent.

Note

If the Storage Cruiser's agent is used as the Storage Cluster Controller, do not install the Storage Cruiser's agent in the storage device volume which configures Storage Cluster. If it is installed, problems such as the Automatic Failover function of the storage not working and Storage Cluster not operating correctly may occur.
For details about the storage devices that can configure Storage Cluster, refer to "Table 2.6 Storage Devices and Compatible Firmware Version".

2.3.3.1 Required Disk Space for Installation

For installation of the Storage Cruiser's agent on a server, the required free disk space on that server is as follows.

For Windows environments

Directory Name	Required Disk Space (Unit: MB)	Explanation
Program Directory	160	"Program Directory" as specified during installation. Default is "C:\ETERNUS_SF".
Environment Directory	2	"Environment Directory" as specified during installation. Default is "C:\ETERNUS_SF".
Work Directory	2	"Work Directory" as specified during installation. Default is "C:\ETERNUS_SF".

For Solaris environments

Directory Name	Required Disk Space (Unit: MB)	Explanation
program install directory	190	Directory into which to install the package. Default is "/opt".
fixed configuration directory	3	Directory into which to install the files for the environment settings. Default is "/etc/opt".
variable configuration directory	240	Directory into which to install variable files (log files, temporary files, etc.) Default is "/var/opt".

For Linux environments

Directory Name	Required Disk Space (Unit: MB)	Explanation
/opt	160	Directory into which to install the package
/etc/opt	1	Directory into which to install the files for the environment settings
/var/opt	205	Directory into which to install variable files (log files, temporary files, etc.)

For HP-UX environments

Directory Name	Required Disk Space (Unit: MB)	Explanation
/opt	150	Directory into which to install the package
/etc/opt	0.02	Directory into which to install the files for the environment settings
/var/opt	0.02	Directory into which to install variable files (log files, temporary files, etc.)

2.3.4 Required Resources for Operation

2.3.4.1 Required Disk Space for Operation

For operating the Storage Cruiser's agent, in addition to disk space described in "2.3.3.1 Required Disk Space for Installation", the server on which it is installed must have free disk space as described below.

For Windows environments

Directory Name	Required Disk Space (Unit: MB)	Explanation
Environment Directory	0.1	"Environment Directory" as specified during installation
Work Directory	50	"Work Directory" as specified during installation
	65	"Work Directory" as specified during installation This capacity is required when the server is used as the Storage Cluster Controller.

For Solaris, Linux, or HP-UX environments

Directory Name	Required Disk Space (Unit: MB)			Explanation
	Solaris	Linux	HP-UX	
fixed configuration directory	1	0.3	0.1	Directory into which to install the files for the environment settings
variable configuration directory	62	48	20	Directory into which to install variable files (log files, temporary files, etc.)
	95	81	-	Directory into which to install variable files (log files, temporary files, etc.) This capacity is required when the server is used as the Storage Cluster Controller.

2.3.4.2 Required Memory for Operation

For operating the Storage Cruiser's agent, the server on which it is installed must have the following amount of memory.

Operating System	Required Memory (Unit: MB)
Windows	256
	544(*1)
Solaris	300
	638(*1)
Linux	256
	544(*1)
HP-UX	32

*1: When using as the Storage Cluster Controller.

2.3.4.3 Required Swap Size for Operation

For operating the Storage Cruiser's agent, the following amount of swap memory is necessary.

Operating System	Required Memory (Unit: MB)
Windows	-
Solaris	250
Linux	-
HP-UX	32

2.4 Operating Environment of AdvancedCopy Manager's Agent

2.4.1 Hardware Requirements

Servers on which to install the AdvancedCopy Manager's agent must be servers on which the "2.4.2.1 Supported Operating Systems" can be installed.

Also, these servers must fulfill the specifications described in "2.4.3 Required Resources for Installation" and "2.4.4 Required Resources for Operation".

Note

For Windows environments, the PRIMERGY FT model and HA model are not supported.

2.4.2 Software Requirements

This section describes the following software requirements:

- Supported operating systems
- Essential software
- Incompatible software

2.4.2.1 Supported Operating Systems

The operating system of the server on which to install the AdvancedCopy Manager's agent must be one of the following.

Point

For stable OS operation, applying the latest patch to the OS in advance is recommended to operate this product.

For Windows environments

Operating System Name	Required Hotfix	Remarks
Microsoft Windows Server 2022 Standard	-	*1
Microsoft Windows Server 2022 Datacenter	-	*1
Microsoft Windows Server 2019 Standard	-	*1
Microsoft Windows Server 2019 Datacenter	-	*1
Microsoft Windows Server 2016 Standard	-	*1
Microsoft Windows Server 2016 Datacenter	-	*1

*1: The Server Core installation option and the Nano Server installation option are not supported.

Note

Installation in Windows is not possible if it has the role of Active Directory domain services. However, it is possible to add and use the role of Active Directory domain services after installing the AdvancedCopy Manager's agent.

For Solaris environments

Operating System Name	Required Patch	Remarks
Solaris 11 (11/11 or later)	-	*1
Solaris 10	141596-06	*2

*1: For Solaris 11.4 or later, add and install the "system/xopen/xcu4" and "package/svr4" packages. For Solaris 11.3 or earlier, add and install the "system/xopen/xcu4" package.
*2: Add and install the "SUNWxcu4" package.

For Linux environments

Operating System Name	Remarks
Red Hat Enterprise Linux 9 (for Intel64)	*1
Red Hat Enterprise Linux 8 (for Intel64)	*2
Red Hat Enterprise Linux 7 (for Intel64)	*3, *4
SUSE Linux Enterprise Server 15 for AMD64 & Intel64	*5

*1: Requires the tcsh (tcsh-6.22.03-6.el9.x86_64.rpm or later), libnsl (libnsl-2.34-28.el9_0.x86_64.rpm or later), and libnsl2 (libnsl2-2.0.0-1.el9.x86_64.rpm or later) packages.
*2: Requires the tcsh (tcsh-6.20.00-9.el8.x86_64.rpm or later) and libnsl (libnsl-2.28-18.el8.x86_64.rpm or later) packages.
*3: Running as a 32 bit application.
*4: Requires the tcsh (tcsh-6.18.01-3.el7.x86_64.rpm or later), glibc (glibc-2.17-55.el7.i686.rpm or later), libstdc++ (libstdc++-4.8.2-16.el7.i686.rpm or later), and libgcc (libgcc-4.8.2-16.el7.i686.rpm or later) packages.
*5: Requires the tcsh (tcsh-6.20.00-2.27.x86_64.rpm or later).

For HP-UX environments

Operating System Name	Remarks
HP-UX 11i v3(PA-RISC)	*1, *2
HP-UX 11i v3(Itanium)	*1

*1: The volume of 2 TB and over is not supported.
*2: Only HP 9000 servers

2.4.2.2 Essential Software

There is no essential software.

2.4.2.3 Incompatible Software

The AdvancedCopy Manager's agent cannot be used on servers that have any of the following software installed.

For Windows environments

Incompatible Software Name	Version	Remarks
SystemWalker/StorageMGR-M	All versions	-
SystemWalker/StorageMGR-A	All versions	-

Incompatible Software Name	Version	Remarks
Softek AdvancedCopy Manager-M	All versions	-
Softek AdvancedCopy Manager-A	All versions	-
ETERNUS SF AdvancedCopy Manager's manager	All versions	-
ETERNUS SF Manager	All versions	-

For Solaris environments

Incompatible Software Name	Version	Remarks
SystemWalker/StorageMGR-M	All versions	-
SystemWalker/StorageMGR-A	All versions	-
Softek AdvancedCopy Manager-M	All versions	-
Softek AdvancedCopy Manager-A	All versions	-
ETERNUS SF AdvancedCopy Manager's manager	All versions	-
ETERNUS SF Manager	All versions	-

For Linux environments

Incompatible Software Name	Version	Remarks
Softek AdvancedCopy Manager-M	All versions	-
Softek AdvancedCopy Manager-A	All versions	-
ETERNUS SF AdvancedCopy Manager's manager	All versions	-
ETERNUS SF Manager	All versions	-

For HP-UX environments

Incompatible Software Name	Version	Remarks
SystemWalker/StorageMGR-A	All versions	-
Softek AdvancedCopy Manager-A	All versions	-

2.4.3 Required Resources for Installation

This section describes the resources that are required for installing the AdvancedCopy Manager's agent.

2.4.3.1 Required Disk Space for Installation

For installation of the AdvancedCopy Manager's agent on a server, the required free disk space on that server is as follows.

For Windows environments

Directory Name	Required Disk Space (Unit: MB)	Explanation
Program Directory	100	"Program Directory" as specified during installation
Environment Directory	1	"Environment Directory" as specified during installation
Work Directory	50	"Work Directory" as specified during installation

For Solaris, Linux, or HP-UX environments

Directory Name	Required Disk Space (Unit: MB)			Explanation
	Solaris	Linux	HP-UX	
Program install directory	130	120	140	Directory into which to install the package
Fixed configuration directory	0.2	0.2	0.2	Directory into which to install the files for the environment settings
Modifying configuration directory	2.2	2.2	2.2	Directory into which to install variable files (log files, temporary files, etc.)
/opt	0.2	0.2	0.2	Directory of operating system

2.4.4 Required Resources for Operation

2.4.4.1 Required Disk Space for Operation

For operating the AdvancedCopy Manager's agent, in addition to disk space described in "2.4.3.1 Required Disk Space for Installation", the server on which it is installed must have free disk space as described below.

For Windows environments

Directory Name	Required Disk Space (Unit: MB)	Explanation
Environment Directory	For performing the backup operation on the Managed Server: - If not backing up the Symfoware: (a + 35 * b) / 1,024 - If backing up the Symfoware: ((a + 35 * b) + (b + 0.5 * d)) / 1,024	a: Number of backup volumes b: Number of transaction volumes c: Number of DSIs of all database spaces to be backed up d: Number of volume pairs for replication management
	For performing the replication operation on the Managed Server: (1.1 * c) / 1,024	
Work Directory	1,128 + e	e: Capacity of saved file that is output according to "Volume Lock Error Investigation Function" in the *AdvancedCopy Manager Operation Guide (for Windows)*. The output for each number of backup and transaction volumes and for each volume pair for replication management is made in sizes between several hundred KB and 2 MB each time an "in-use lock error" occurs. Assuming a size of 2 MB per saved volume file, for n times an "in-use lock error" occurs, capacity "e" is determined by the following formula: e = (a + b + 2 * c) * 2(MB) * n(times)

For Solaris, Linux, or HP-UX environments

Directory Name	Required Disk Space (Unit: MB)			Explanation
	Solaris	Linux	HP-UX	
Fixed configuration directory	(a + 35 * b) / 1,024			a: Number of backup volumes b: Number of transaction volumes

Directory Name	Required Disk Space (Unit: MB)			Explanation
	Solaris	Linux	HP-UX	
				It is required for performing the backup operation on the Managed Server, not backing up the Symfoware.
	((a + 35 * b) + (b + 0.5 * c)) / 1,024		Not Applicable	a: Number of backup volumes b: Number of transaction volumes c: Number of DSIs of all database spaces to be backed up It is required for performing the backup operation on the Managed Server, backing up the Symfoware.
	(1.1 * d) / 1,024			d: Number of volume pairs for replication management
	0.1			-
Modifying configuration directory	7		5	-
/var	1,070		49	-

- "Fixed configuration directory" is the installation destination directory for environment settings which is specified during installing this software.
- "Modifying configuration directory" is the installation destination directory for work files (log file, temporary file and so on) which is specified during installing this software.

2.4.4.2 Required Memory for Operation

For operating the AdvancedCopy Manager's agent, the server on which it is installed must have the following amount of memory.

Operating System	Required Memory (Unit: MB)
Windows Solaris Linux HP-UX	64

2.4.4.3 Required Swap Size for Operation

For operating the AdvancedCopy Manager's agent, the following amount of swap memory is necessary.

Operating System	Required Memory (Unit: MB)
Windows	-
Solaris Linux HP-UX	15

2.5 Operating Environment of AdvancedCopy Manager CCM

This section explains the operating environment for standalone use of the AdvancedCopy Manager CCM.

2.5.1 Hardware Requirements

Servers on which to install the AdvancedCopy Manager CCM must be servers on which the "2.5.2.1 Supported Operating Systems" can be installed.

Also, these servers must fulfill the specifications described in "2.5.3 Required Resources for Installation" and "2.5.4 Required Resources for Operation".

Note

For Windows environments, the PRIMERGY FT model and HA model are not supported.

2.5.2 Software Requirements

This section describes the following software requirements:

- Supported operating systems
- Essential software
- Incompatible software

2.5.2.1 Supported Operating Systems

The operating system of the server on which to install the AdvancedCopy Manager CCM must be one of the following.

Point

For stable OS operation, applying the latest patch to the OS in advance is recommended to operate this product.

For Windows environments

Operating System Name	Required Hotfix	Remarks
Microsoft Windows Server 2022 Standard	-	*1, *2
Microsoft Windows Server 2022 Datacenter	-	*1, *2
Microsoft Windows Server 2019 Standard	-	*1, *2
Microsoft Windows Server 2019 Datacenter	-	*1, *2
Microsoft Windows Server 2016 Standard	-	*1, *2
Microsoft Windows Server 2016 Datacenter	-	*1, *2

*1: The Cluster Shared Volume is not supported.
*2: The Server Core installation option and the Nano Server installation option are not supported.

For Solaris environments

Operating System Name	Required Patch	Remarks
Solaris 11 (11/11 or later)	-	*1
Solaris 10	-	*2

*1: For Solaris 11.3 or earlier, perform the following procedure.
Change the environment/TZ of the SMF service instance svc:/system/environment:init of the operating system to the appropriate timezone name instead of the local time and then refresh the service. After that, reboot the operating system.
Specify the appropriate timezone name to *timeZoneName*. For example, specify "US/Pacific" to *timeZoneName* to use this product in the Pacific Standard Time (PST) zone.

Note that this procedure must be performed before installing this product even if other methods such as the "nlsadm" command is used to set the timezone when the OS is installed.

```
# svccfg -s svc:/system/environment:init setprop environment/TZ = timeZoneName
# svcadm refresh svc:/system/environment:init
```

*2: Supported only within the global zone.

For Linux environments

Operating System Name	Remarks
Red Hat Enterprise Linux 9 (for Intel64)	*1
Red Hat Enterprise Linux 8 (for Intel64)	-
Red Hat Enterprise Linux 7 (for Intel64)	*2, *3
SUSE Linux Enterprise Server 15 for AMD64 & Intel64	-

*1: Requires Red Hat Enterprise Linux 9 (for Intel64) UpdateRelease2 or later.
*2: Running as a 64 bit native application.
*3: Requires the glibc (glibc-2.17-55.el7.i686.rpm or later), libstdc++ (libstdc++-4.8.2-16.el7.i686.rpm or later) and libgcc (libgcc-4.8.2-16.el7.i686.rpm or later) packages.

2.5.2.2 Essential Software

For operating the AdvancedCopy Manager CCM, the following software is required.

For Linux environments

Essential Software Name	Explanation
zip	This is the library package to compress zip. It is included in the OS installation media. When installing this package, another package may be required. Another package is also included in the OS installation media.

2.5.2.3 Incompatible Software

Concurrent use with below software is not possible.

- ETERNUS SF Express

2.5.3 Required Resources for Installation

This section describes the resources that are required for installing the AdvancedCopy Manager CCM.

2.5.3.1 Required Disk Space for Installation

For installation of the AdvancedCopy Manager CCM on a server, the required free disk space on that server is as follows.

For Windows environments

Directory Name	Required Disk Space (Unit: MB)	Explanation
Program Directory	200	"Program Directory" as specified during installation
Environment Directory	1	"Environment Directory" as specified during installation
Work Directory	1	"Work Directory" as specified during installation

For Solaris environments

Directory Name	Required Disk Space (Unit: MB)	Explanation
/opt	200	"Program Directory" as specified during installation
/etc/opt	1	"Environment Directory" as specified during installation
/var/opt	1	"Work Directory" as specified during installation

For Linux environments

Directory Name	Required Disk Space (Unit: MB)		Explanation
	Red Hat Enterprise Linux 9, Red Hat Enterprise Linux 8, SUSE Linux Enterprise Server 15	Red Hat Enterprise Linux 7	
/opt	400	200	"Program Directory" as specified during installation
/etc/opt	1	1	"Environment Directory" as specified during installation
/var/opt	1	1	"Work Directory" as specified during installation

2.5.4 Required Resources for Operation

2.5.4.1 Required Disk Space for Operation

For operating the AdvancedCopy Manager CCM, in addition to disk space described in "2.5.3.1 Required Disk Space for Installation", the server on which it is installed must have free disk space as described below.

For Windows environments

Directory Name	Required Disk Space (Unit: MB)	Explanation
Environment Directory	100	"Environment Directory" as specified during installation
Work Directory	110	"Work Directory" as specified during installation

For Solaris or Linux environments

Directory Name	Required Disk Space (Unit: MB)	Explanation
/etc/opt	100	"Environment Directory" as specified during installation
/var/opt	110	"Work Directory" as specified during installation

2.5.4.2 Required Memory for Operation

For operating the AdvancedCopy Manager CCM, the server on which it is installed must add the following amount of memory.

For Windows environments

640 MB

For Solaris or Linux environments

640 MB

Chapter 3 Installation of ETERNUS SF Manager

This chapter explains methods for installation of ETERNUS SF Manager.

3.1 Before Installation

The following preparation is necessary before starting the ETERNUS SF Manager installation.

3.1.1 Available Disk Space Verification

Make sure that there is enough available disk space on the server where the installation is performed.
Refer to "2.2.3.1 Required Disk Space for Installation" for information on the disk space required for installation.

If there is not enough available disk space, perform any of the following actions in order to secure the disk space required for installation:

- Increase disks
- Reconfigure the disk partitions

3.1.2 Incompatible Software Uninstallation

Check if any incompatible software is installed on the server where the installation is performed.
If the incompatible software is found, refer to that software manual and uninstall it before starting the installation.

3.1.3 Estimation of Database Size

To install ETERNUS SF Manager, the following database is required.

- Repository

  This is used for the managing the information of the operating environment by ETERNUS SF Manager.

For Windows environments

The database areas must reside on a drive with NTFS format.

The required size of the repository database must be calculated by the following formula.

Formula for Calculating Repository Database

```
Required size (MB) = (750 + servers * 35 + devices * 9 + backupVolumes * 0.3 + volumePairs * 1.7) / 1024
```

- *servers*

  This is the total number of Management Server and Managed Servers.
  For servers that perform the cluster operation, calculate with the number of physical nodes that compose the clustered system.

- *devices*

  - For AdvancedCopy Manager

    This is the total number of devices (partitions) that are managed by AdvancedCopy Manager. This is not to be confused with the total number of devices that are connected to a Managed Server. For AdvancedCopy Manager, the meaning of "device" is as follows.

OS Type of Managed Server	Meaning of "device"
Windows Linux	Partition
Solaris	Slice

OS Type of Managed Server	Meaning of "device"
HP-UX	Logical Unit (LU)

- For Express

  This is the total number of partitions. This is not to be confused with the total number of devices that are connected to a Managed Server.

If a Managed Server is mirrored by PRIMECLUSTER GD, the number of devices is the total number of mirror slices. The total number of mirror slices is the result of multiplying the number of devices by the number of disks composing each mirror group.

- *backupVolumes*

  This is the total number of backup volumes.
  Resources created when performing backup operation.

- *volumePairs*

  This is the total number of copy source/destination volume pairs.
  Resources created when performing replication operation.

Point

If there is any possibility that the number of servers and/or devices increases in the future, specify a larger disk space than calculated.

For Solaris or Linux environments

Formula for Calculating Repository Database

```
Required size (MB) = (750 + servers * 35 + devices * 9 + backupVolumes * 0.3 + volumePairs * 1.7) /
1024
```

- *servers*

  This is the total number of Management Server and Managed Servers.
  For servers that perform the cluster operation, calculate with the number of physical nodes that compose the clustered system.

- *devices*

  - For AdvancedCopy Manager

    This is the total number of devices (partitions) that are managed by AdvancedCopy Manager. This is not to be confused with the total number of devices that are connected to a Managed Server. For AdvancedCopy Manager, the meaning of "device" is as follows.

OS Type of Managed Server	Meaning of "device"
Windows Linux	Partition
Solaris	Slice
HP-UX	Logical Unit (LU)

  - For Express

    This is the total number of partitions. This is not to be confused with the total number of devices that are connected to a Managed Server.

When the Managed Server to be managed is using mirroring with PRIMECLUSTER GD, the number of devices is equivalent to the total of mirror slices.

The total number of mirror slices is the number of devices multiplied by the number of disks comprising the mirror group.

- *backupVolumes*

  This is the total number of backup volumes.
  Resources created when performing backup operation.

- *volumePairs*

  This is the total number of copy source/destination volume pairs.
  Resources created when performing replication operation.

Point

If there is a possibility that the number of servers or number of partitions is increased in future, specify a size that is greater than the estimated size.

If there is a possibility that the number of mirrors or number of devices is increased in future and PRIMECLUSTER GD are used, also specify a size that is greater than the estimated size.

3.1.4 Kernel Parameter Tuning (for Solaris and Linux)

Tune the kernel parameters, which are required for operation.

3.1.4.1 Kernel Parameter Tuning (for Solaris)

For Solaris kernel parameters required tuning, their values, and how to set the values, refer to the following description.

There are two different tuning methods: writing to the "/etc/system" file and writing to the "/etc/project" file. Implement one of these tuning methods as suitable for the installation environment.

- Tuning Using /etc/system
- Tuning Using /etc/project

Point

If the parameters listed in Table have already been set, perform the following. For a parameter listed with a "Maximum value" in the "Standard configuration" column, specify the larger of the current value and the default value. For a parameter listed with an "Addition", specify the larger of the value obtained by adding the value shown to the default value or the current value.

Tuning Using /etc/system

Table 3.1 Tuning Values for Solaris Kernel Parameters

Resource	Parameter	Value	Standard Configuration
Shared memory	shmsys:shminfo_shmmax	40000000	Maximum value
	shmsys:shminfo_shmmni	80	Addition
Semaphore	semsys:seminfo_semmni	320	Addition
	semsys:seminfo_semmsl	35	Maximum value

Edit the kernel parameters using the following methods.

- Add the tuning record to the "/etc/system" file.
- Change the current record value.

The procedure to edit the kernel parameter is mentioned below.

1. Use the following command to check the settings of the parameters in this table that are currently set in the system:

```
# /usr/sbin/sysdef
```

2. Refer to "Table 3.1 Tuning Values for Solaris Kernel Parameters" for comparing the current value to the value in the table. Calculate the appropriate value to set by either adding the two values or taking the maximum value, as indicated in the table.

3. Edit the "/etc/system" file.

   An example of editing the "/etc/system" file is shown below. Use suitable values for your environment.

```
set shmsys:shminfo_shmmax = 40000000
set shmsys:shminfo_shmmni = 180
set semsys:seminfo_semmni = 320
set semsys:seminfo_semmsl = 35
```

4. Reboot the system to register the new kernel parameter values in the system.

   Use the following command to reboot the system.

```
# cd /
# /usr/sbin/shutdown -y -i6 -g0
```

5. Check that the new settings are applied executing the following command after rebooting.

```
# /usr/sbin/sysdef
```

Tuning Using /etc/project

Note

- Care is required when setting values if other software that only supports tuning using the "/etc/system" file is used on a server where this product is used.
- If the "/etc/system" file and the "/etc/project" file are both used for tuning, refer to the operating system documentation to set the appropriate values.
- If the "/etc/project" file is used for tuning, ensure that you do not set values that are lower than the Solaris default values.

ETERNUS SF Manager runs under the following project:

- system project

  Project in which daemons existing in the initialized operating system status run.

- user.root project

  Project to which processes operated by a root user in the initialized operating system status belong.

Table 3.2 Tuning Values for Resource Control

Resource	Parameter	Required Value	Standard Configuration	Privilege Level
Shared memory	project.max-shm-memory	172000000	Addition	privileged
	project.max-shm-ids	80	Addition	privileged
Semaphore	project.max-sem-ids	320	Addition	privileged
	process.max-sem-nsems	35	Maximum value	privileged

For "privileged" in the "Privilege level"column, specify "privileged" in the "/etc/project" file.

Edit the "/etc/project" file to change the parameters.The procedure mentioned below.

1. Check the initial values and the upper limits of the values that can be set in a system project and a user.root project, as shown below.

```
# newtask -p system
# prctl $$
NAME    PRIVILEGE       VALUE    FLAG   ACTION                       RECIPIENT
process.max-port-events
privileged      65.5K       -   deny                                 -
system          2.15G     max   deny                                 -
process.max-msg-messages
privileged      8.19K       -   deny                                 -
system          4.29G     max   deny                                 -
      :
zone.cpu-shares
privileged          1       -   none                                 -
system          65.5K     max   none                                 -
# newtask -p user.root
# prctl $$
NAME    PRIVILEGE       VALUE    FLAG   ACTION                       RECIPIENT
process.max-port-events
privileged      65.5K       -   deny
system          2.15G     max   deny
process.max-msg-messages
privileged      8.19K       -   deny                                 -
system          4.29G     max   deny                                 -
      :
zone.cpu-shares
privileged          1       -   none                                 -
system          65.5K     max   none                                 -
```

2. Refer to "Table 3.2 Tuning Values for Resource Control" for comparing the current value to the value in the table. Calculate the appropriate value to set by either adding the two values or taking the maximum value, as indicated in the table.

3. Use the "projmod" command to set values for the system project and for the user.root project.

   The following example shows how to edit the "/etc/project" file. Use suitable values for your environment.

```
# projmod -s -K 'project.max-shm-memory=(privileged,270585456,deny)' system
# projmod -s -K 'project.max-shm-ids=(privileged,208,deny)' system
# projmod -s -K 'project.max-sem-ids=(privileged,438,deny)' system
# projmod -s -K 'process.max-sem-nsems=(privileged,35,deny)' system
# projmod -s -K 'project.max-shm-memory=(privileged,270585456,deny)' user.root
# projmod -s -K 'project.max-shm-ids=(privileged,208,deny)' user.root
# projmod -s -K 'project.max-sem-ids=(privileged,438,deny)' user.root
# projmod -s -K 'process.max-sem-nsems=(privileged,35,deny)' user.root
```

4. Configuration information can be displayed by executing the following command.

   The example for executing the confirmation command is shown below.

```
# projects -l
system
        projid : 0
        comment: ""
        users  : (none)
        groups : (none)
        attribs: process.max-sem-nsems=(privileged,35,deny)
                 project.max-shm-ids=(privileged,208,deny)
                 project.max-sem-ids=(privileged,438,deny)
                 project.max-shm-memory=(privileged,270585456,deny)
```

```
user.root
        projid : 1
        comment: ""
        users  : (none)
        groups : (none)
        attribs: process.max-sem-nsems=(privileged,35,deny)
                 project.max-shm-ids=(privileged,208,deny)
                 project.max-sem-ids=(privileged,438,deny)
                 project.max-shm-memory=(privileged,270585456,deny)
noproject
        projid : 2
        comment: ""
        users  : (none)
        groups : (none)
        attribs:
default
        projid : 3
        comment: ""
        users  : (none)
        groups : (none)
        attribs:
group.staff
        projid : 10
        comment: ""
        users  : (none)
        groups : (none)
        attribs:
#
```

5. Enable tuning of the kernel parameters.

   The executing example is shown below. Refer to Solaris manuals for information on the command.

   - system project

   ```
   # newtask -p system
   ```

   - user.root project

   ```
   # newtask -p user.root
   ```

6. Confirm the changed kernel parameter value.

   The executing example is shown below. Refer to Solaris manuals for information on the command.

   - system project

   ```
   # prctl -i project system
   ```

   - user.root project

   ```
   # prctl -i project user.root
   ```

3.1.4.2 Kernel Parameter Tuning (for Linux)

Refer to "Table 3.3 Tuning Values for Linux Kernel Parameters" for the kernel parameters to be tuned and their values.

To edit a kernel parameter, add an entry to the "/etc/sysctl.conf" file or modify the current record value.

Point

- If a parameter value is not set in the "/etc/sysctl.conf" file, the operating system default value is used for the parameter. In such a case, make an addition or change based on the operating system default value. To display the

values used by the operating system, execute the "sysctl" command. Refer to the section about the "man" command of the operating system for information on the "sysctl" command.

- For a parameter described as "Maximum value" under "Parameters already set" in the "Table 3.3 Tuning Values for Linux Kernel Parameters" below, specify the larger value of the specified value or the default value. For a parameter listed with an "Addition", specify the larger of the value obtained by adding the value shown to the specified or default value.

Table 3.3 Tuning Values for Linux Kernel Parameters

Resource	Parameter	Required Value	Parameters Already Set
Shared memory	kernel.shmmax	40000000	Maximum value
	kernel.shmmni	50	Addition
Semaphore	First value of kernel.sem (*1)	30	Maximum value
	Second value of kernel.sem (*1)	690	Addition
	Fourth value of kernel.sem (*1)	310	Addition

*1: The kernel.sem parameter has four tokens. The following shows the order of the tokens. For the third token, use the current value or the default value.

```
kernel.sem = parameter1 parameter2 parameter3 parameter4
```

The following example shows how to edit the "/etc/sysctl.conf" file.

```
kernel.shmmax = 40000000
kernel.shmmni = 4200
kernel.sem = 30 32600 32 428
```

Reboot the system or execute the "sysctl" command to apply kernel parameter tuning.
The following shows the command for rebooting the system.

```
# cd /
# /sbin/shutdown -r now
```

The following provides an entry example where the "sysctl" command is executed to apply the tuning.

```
# /sbin/sysctl -p /etc/sysctl.conf
```

3.1.5 Confirmation of Port Numbers for Various Communication Services (for Solaris and Linux)

ETERNUS SF Manager uses the following port numbers.
Check the contents of the "/etc/services" file and make sure that the port numbers which are to be used by ETERNUS SF Manager are not registered.

If any service other than "Table 3.4 Communication Port Numbers for ETERNUS SF Manager (for Solaris or Linux)" are using the same port number, edit the installation parameter file to change the port number to the appropriate value that is not used by other services. A port number between 1024 and 65535 can be entered.

Refer to "C.9 Installation Parameter File (for ETERNUS SF Manager for Solaris/Linux)" for information on the installation parameter file.

Table 3.4 Communication Port Numbers for ETERNUS SF Manager (for Solaris or Linux)

Service	Service Name	Port Number	Installation Parameter
Web Console service	esfmanagerweb	9855/tcp	ETERNUS_SF_Manager_apache_service
communication service 1	stgxfws	1226/tcp	Communications_service_1
communication service 2	sscruisera	4917/tcp	Communications_service_2

Service	Service Name	Port Number	Installation Parameter
Repository service	esfpostgres	15432/tcp	Repository_service
Internal use	esfmanagertomcat1	28005/tcp	Internal_port_1
	esfmanagertomcat2	28009/tcp	Internal_port_2
	esfmanagertomcat3	28443/tcp	Internal_port_3
	sscruiserm	24916/tcp	Internal_port_4
	astm	24917/tcp	Internal_port_5

3.1.6 IP Address Confirmation

Confirm the IP address used in Management Server operation and the IP address specified at installation. The version of the IP address used in Management Server operation depends on the ETERNUS SF system operation environment.

- If All Managed Servers Use Only IPv4 Address
- If All Managed Servers Use Only IPv6 Address
- If Managed Servers Using IPv4 and Managed Servers Using IPv6 Are Combined

If All Managed Servers Use Only IPv4 Address

IPv4 is the version of the IP address used by the Management Server. Confirm that the IPv4 address has been set up on the server where the ETERNUS SF Manager is installed.

Specify the confirmed IPv4 address as the Management Server IP address when installing the ETERNUS SF Manager.

- For Solaris or Linux environments

  Edit the installation parameter file as needed and set up the Management Server IP address.

If All Managed Servers Use Only IPv6 Address

IPv6 is the version of the IP address used by the Management Server. Confirm that the IPv6 address has been set up on the server where the ETERNUS SF Manager is installed.

The IPv4 address must temporarily be specified in installing the ETERNUS SF Manager. As such, specify a temporary IPv4 address (for example, 127.0.0.1) as the Management Server IP address when installing the ETERNUS SF Manager. Change the address to the appropriate IPv6 address once installation is complete, referring to "4.4.5 Updating Management Server IP Address Information".

- For Solaris or Linux environments

  Edit the installation parameter file and set up the temporary IPv4 address for the Management Server IP address.

If Managed Servers Using IPv4 and Managed Servers Using IPv6 Are Combined

IPv4 and IPv6 are the versions of the IP address used by the Management Server. Confirm that the IPv4 and IPv6 addresses have been set up on the server where the ETERNUS SF Manager is installed.

Of the confirmed IP addresses, specify the IPv4 address as the Management Server IP address when installing the ETERNUS SF Manager.
Add the IPv6 address once installation is complete, referring to "4.4.5 Updating Management Server IP Address Information".

- For Solaris or Linux environments

  Edit the installation parameter file and set up the IPv4 address for the Management Server IP address.

See

Refer to "C.9 Installation Parameter File (for ETERNUS SF Manager for Solaris/Linux)" for information on the installation parameter file.

Note

For Express, only IPv4 is the version of the IP address that can be used by the Management Server. IPv6 is not available.

3.1.7 Confirmation of UpdateAdvisor for Middleware (for Windows)

UpdateAdvisor for Middleware is included with ETERNUS SF Manager (for Windows).
This section describes the points to be confirmed when installing ETERNUS SF Manager on a server with UpdateAdvisor for Middleware already installed. If UpdateAdvisor for Middleware is not installed, confirmation is not required.

Check the version of the installed UpdateAdvisor for Middleware.
To determine the version of the UpdateAdvisor for Middleware included with ETERNUS SF Manager, refer to "Program Components of Manager" in the *Software Release Guide*.

- When the installed UpdateAdvisor for Middleware is older than the version of the UpdateAdvisor for Middleware included with ETERNUS SF Manager
  The installed UpdateAdvisor for Middleware is updated to the version of the UpdateAdvisor for Middleware included with ETERNUS SF Manager.
- When the installed UpdateAdvisor for Middleware is equal to or later than the version of the UpdateAdvisor for Middleware included with ETERNUS SF Manager
  The installed UpdateAdvisor for Middleware is used.

Get the most up-to-date setup file for the update application management ledger from UpdateSite.
When setting up ETERNUS SF Manager, the update application management ledger must be refreshed.

3.1.8 Download of ETERNUS VMware Support Package

When linking VMware with ETERNUS SF Manager with functions such as VMware vSphere Virtual Volumes, in addition to ETERNUS SF Manager, the ETERNUS VMware Support Package must be installed. The ETERNUS VMware Support Package is software that includes the VASA Provider function to link VMware with ETERNUS SF Manager.
When linking VMware, download ETERNUS VASA Provider from the following website:

```
http://www.fujitsu.com/global/support/products/computing/storage/download/
```

Note

ETERNUS VMware Support Package must be installed after installing ETERNUS SF Manager.

3.2 Interactive Installation Procedure of ETERNUS SF Manager (for Windows)

There are two methods of performing the interactive installation of ETERNUS SF Manager (for Windows).

- Default installation

  The following configuration is used without the need to input any values.

  - Installation destination

    The "*systemDrive*:\ETERNUS_SF" directory is used as the base location for the Program Directory, Environment Directory, and Work Directory.

- Port numbers for the various communication services

  9 port numbers are used, as follows.

  Table 3.5 Services and Port Numbers of ETERNUS SF Manager for Windows (Default)

Service	Display Name on [Port Registration] Screen	Used Port Number
Web Console service	ETERNUS SF Manager Apache service	9855
Communication service 1	Communications service 1	1226
Communication service 2	Communications service 2	4917
Repository service	Repository service	15432
Internal use	Internal Port 1	28005
	Internal Port 2	28009
	Internal Port 3	28443
	Internal Port 4	24916
	Internal Port 5 (No screen display)	24917

- Custom installation

  Installation is done by entering the configuration information on the screen (installation destination, communication service port numbers).

Note

- Because a symbolic link is created during the installation process of this product, the user account of the OS where the installation is performed must have the privilege to create symbolic links. If the installation terminates with an error, check the privilege of the user account used to perform the installation. In addition, perform the installation again with a user account that has the privilege to create symbolic links.
- Do not rename, change, and delete the install directory after the installation.
- During the installation of this product, the "esfpostgres" OS user account that the "Log on as a service" privilege is added is created.
  The "esfpostgres" account is used to start the ETERNUS SF Manager Postgres Service, which is required to operate this software. For this reason, do not change the account information excluding the password and do not delete the account.
  For information on how to change the password, refer to "4.1.1.4 Esfpostgres User Password Change Procedure".
  For Windows servers with the Active Directory domain service role and when operating by defining the group policy "Log on as a service", add the "esfpostgres" account to the definition for "Log on as a service". Refer to the operating system manual for details about handling group policies.
- When reinstalling the ETERNUS SF Manager, if you change the port number of the following services of ETERNUS SF Manager, delete the following service names that are defined in the %SystemRoot%\system32\drivers\etc\services file, and then reinstall.
  - stgxfws

Information

If the following definition line is in the %SystemRoot%\system32\drivers\etc\services file, although it is deleted during the installation, the operation of this product is not affected.

```
stgxfws    1226/udp
```

The interactive installation is performed as follows:

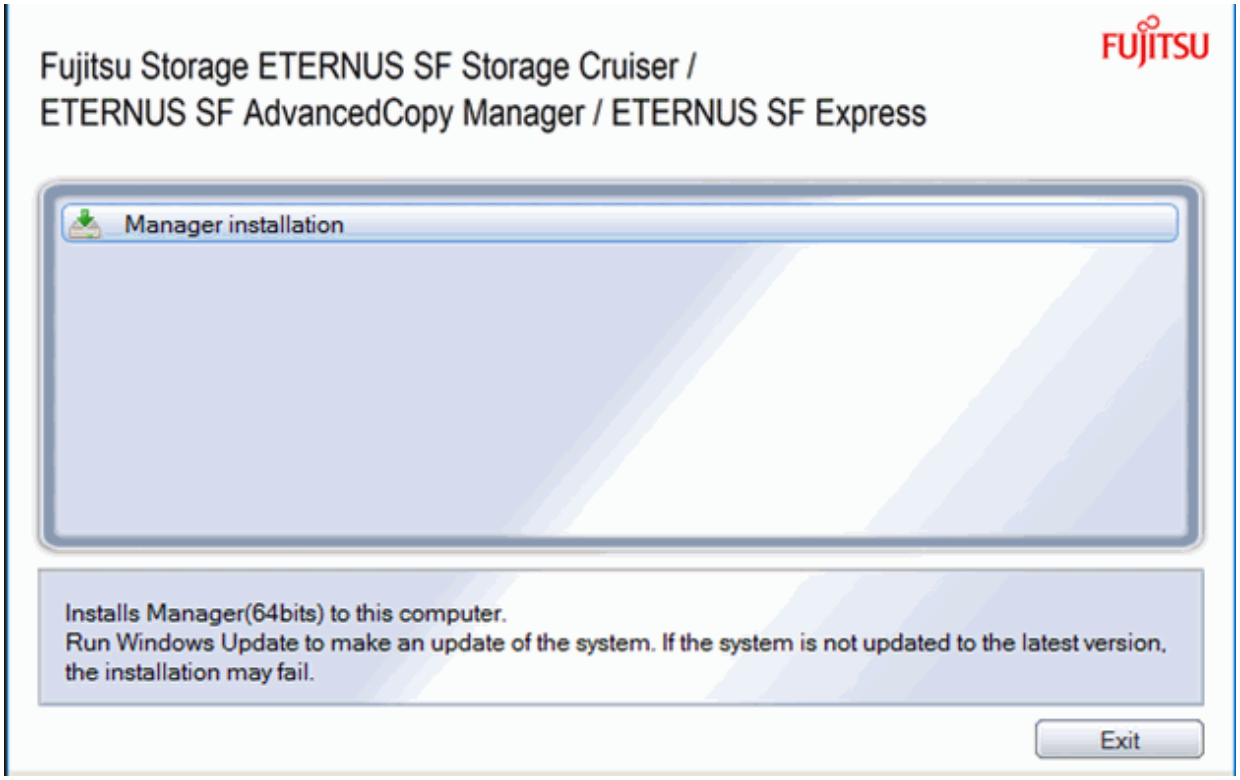
1. Log on to the server using Administrator privileges.

Information

Specify a user that corresponds to the using server type.

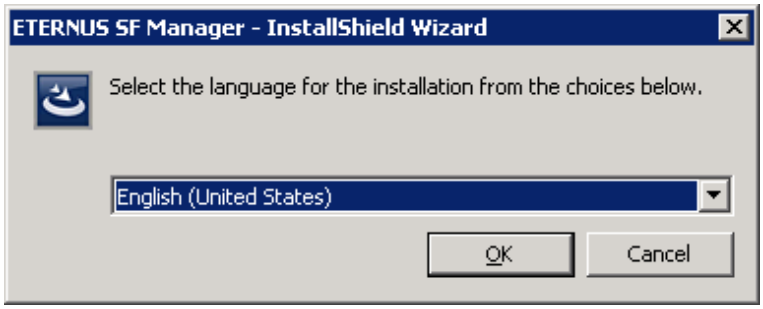
Server Type	User to Be Specified
Domain Controller	Domain user
Machine that belongs to the domain	Local user
WORKGROUP (does not belong to the domain)	

2. Insert the DVD "ETERNUS SF SC/ACM/Express Mediapack for Windows (V16.9 or higher) Manager Program (1/2)" of this version into the DVD drive.
3. The following window is displayed. Click **Manager installation**.
   To cancel the installation at this point, click **Exit**.

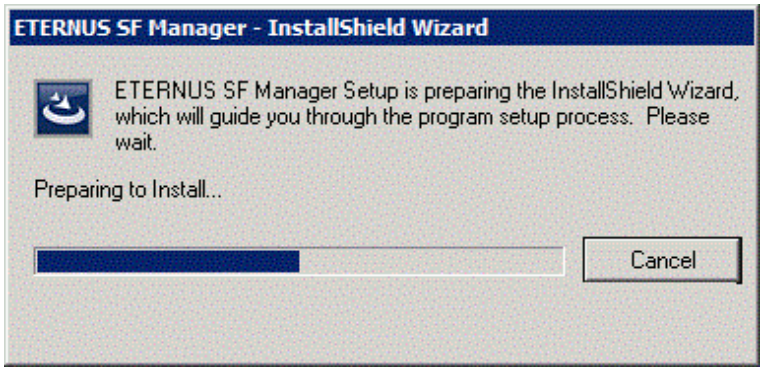


4. The following dialog box is displayed. Select the appropriate language and click **OK**.

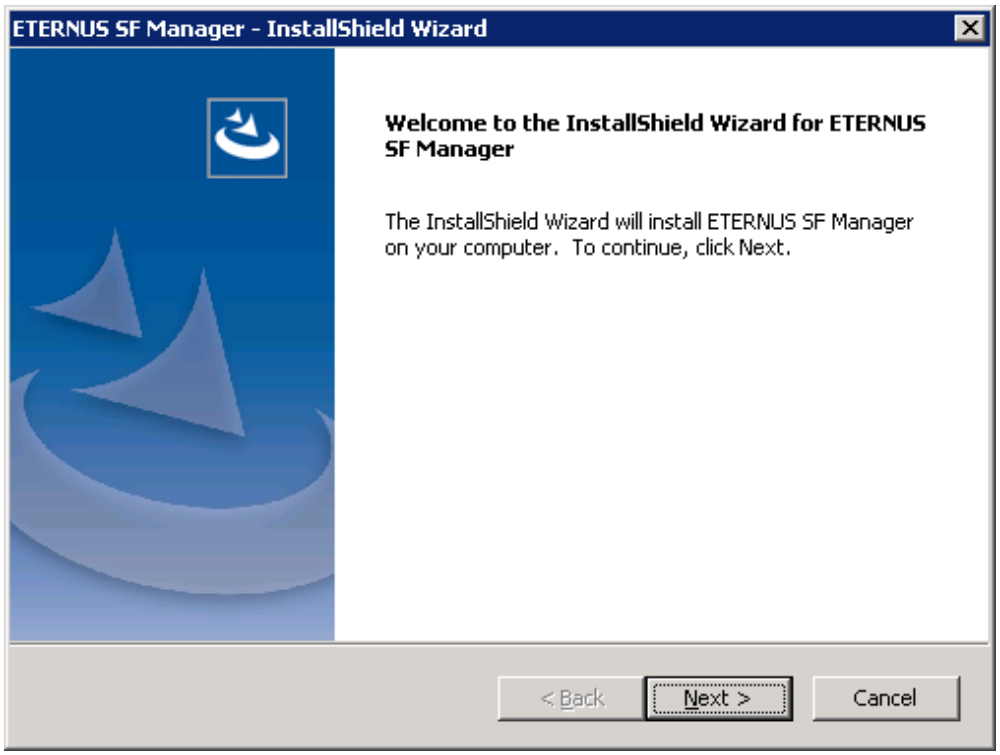
   The language selected in this dialog box is used during the installation and uninstallation.



5. The following progress bar is displayed. To cancel the installation, click **Cancel**.

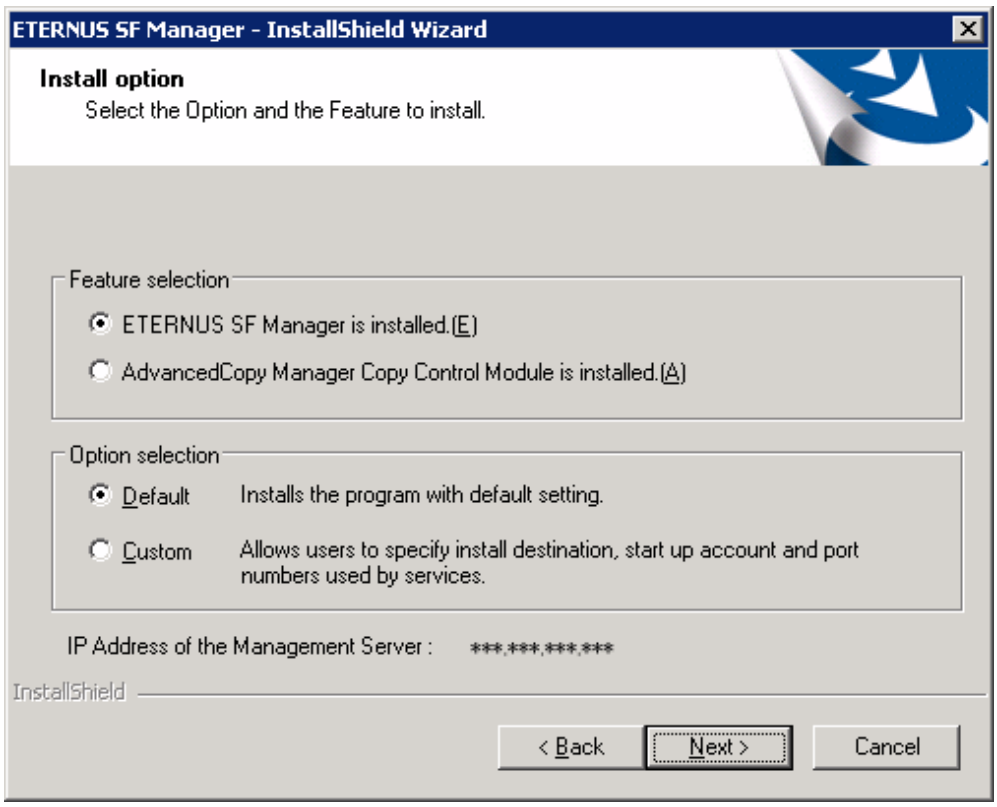


6. The installation wizard page is displayed. Click **Next**.



7. Read the terms and conditions of the **License Agreement** page.
   If the conditions are agreeable, select [I accept the terms of the license agreement] and then click **Next**.

8. Select the features and options to install from the **Install option** page.



Feature selection

Select [ETERNUS SF Manager is installed.].

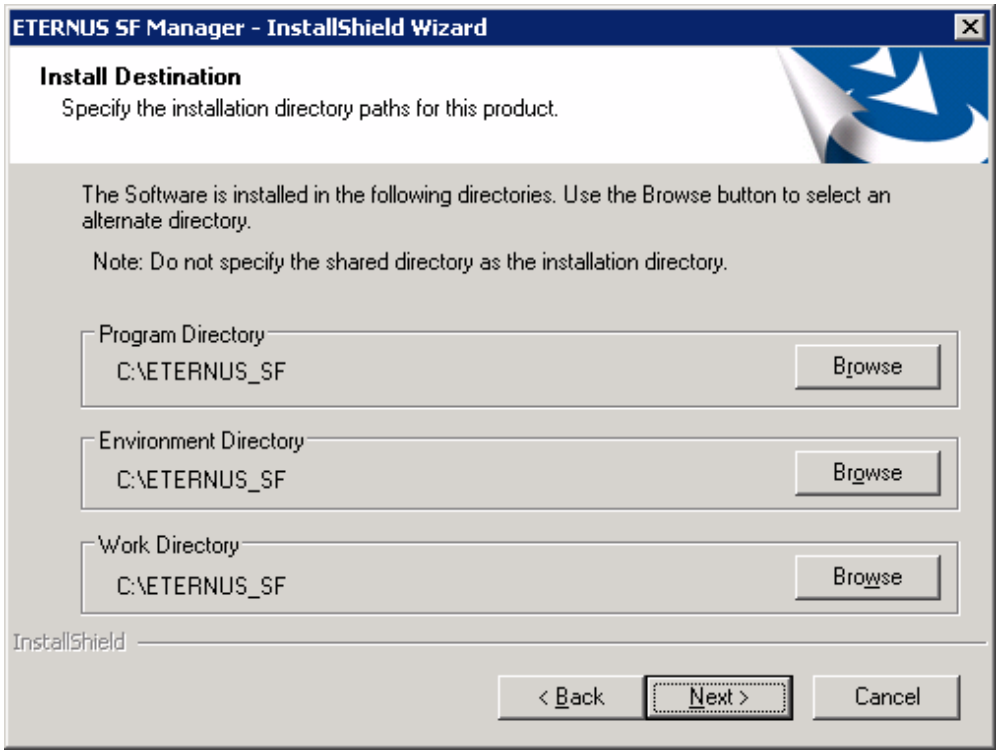
Option selection

Select the desired options according to the following information.

Install Option	Explanation
Default	Changing values in the **Installation Destination** page and **Port Registration** page is optional. In this case, steps 9 and 10 can be skipped. For this installation method, the following checks are automatically performed relating to the information provided by default: - Is there enough disk space for the installation in the default directory? - Are the default port numbers available? If an error is detected at this stage, a warning dialog box is displayed. If no error is detected, the **Start Copying Files** page is displayed.
Custom	The installation information must be manually entered in the pages for step 9 and later.

9. Specify the installation directory in the **Install Destination** page.

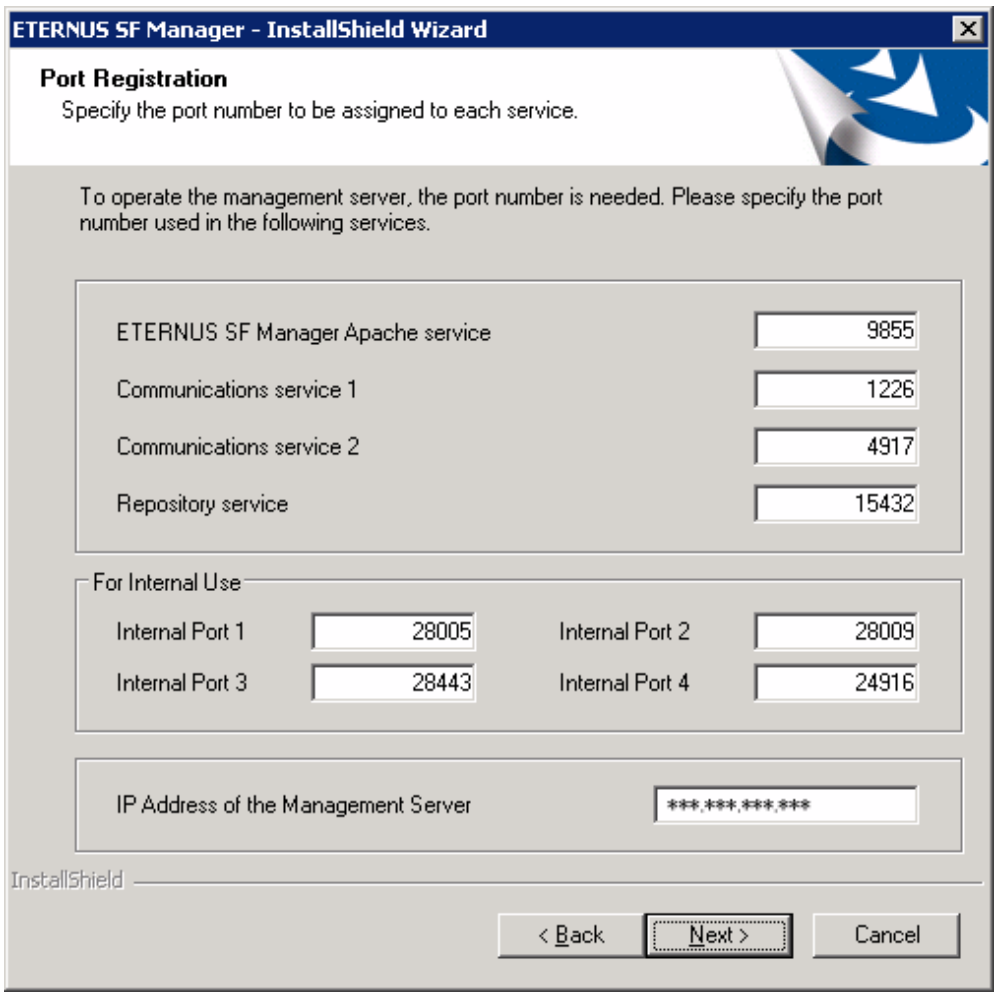
   If installing to a directory other than the default directory, click **Browse** and change the install location. After designating all of the directories, click **Next**.



Point

- Do not specify the shared directory as the installation directory.
- Spaces and the characters " | : * ? / . < > , % & ^ = ! ; # ' @ ( ) + are not supported for file name.
- The number of characters in a directory name must be between 4 and 70.

10. Specify the port number for the services in the **Port Registration** page.



The default values are displayed. If necessary, enter alternative port numbers suitable for your environment. Values between 1024 and 65535 are valid.

When changing the port number for Internal Port 5, edit the %SystemRoot%\system32\drivers\etc\services file manually, and define the following service name and unused port number in the range 1024-65535.

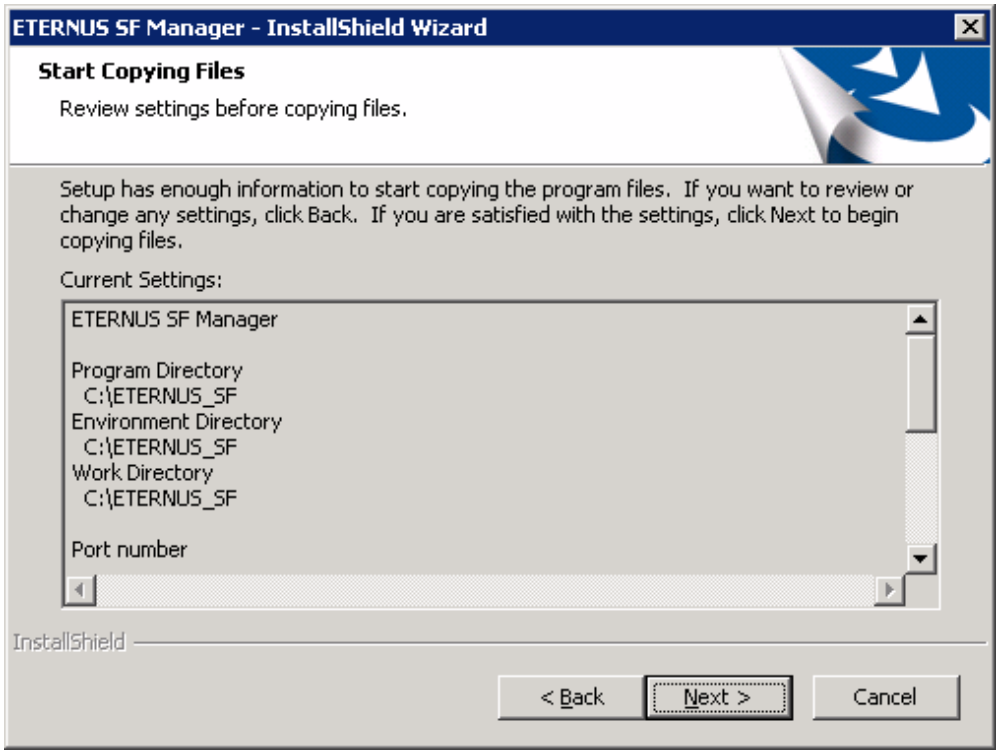
Service Name	Port Number / Protocol (Default)	Used Purpose
astm	24917/tcp	Internal communications for Automated Storage Tiering

For the IP address of Management Server (Self-system), specify the IPv4 address checked in "3.1.6 IP Address Confirmation".

Then, click **Next**. If an entered value is already being used, the page is displayed again.

11. Check the settings information in the **Start Copying Files** page.

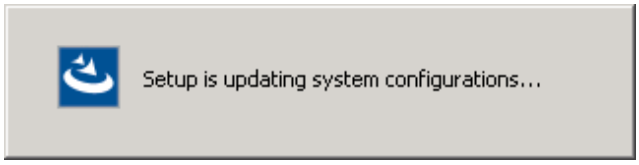
    If the settings are correct, click **Next**.
    To change a setting, click **Back**.



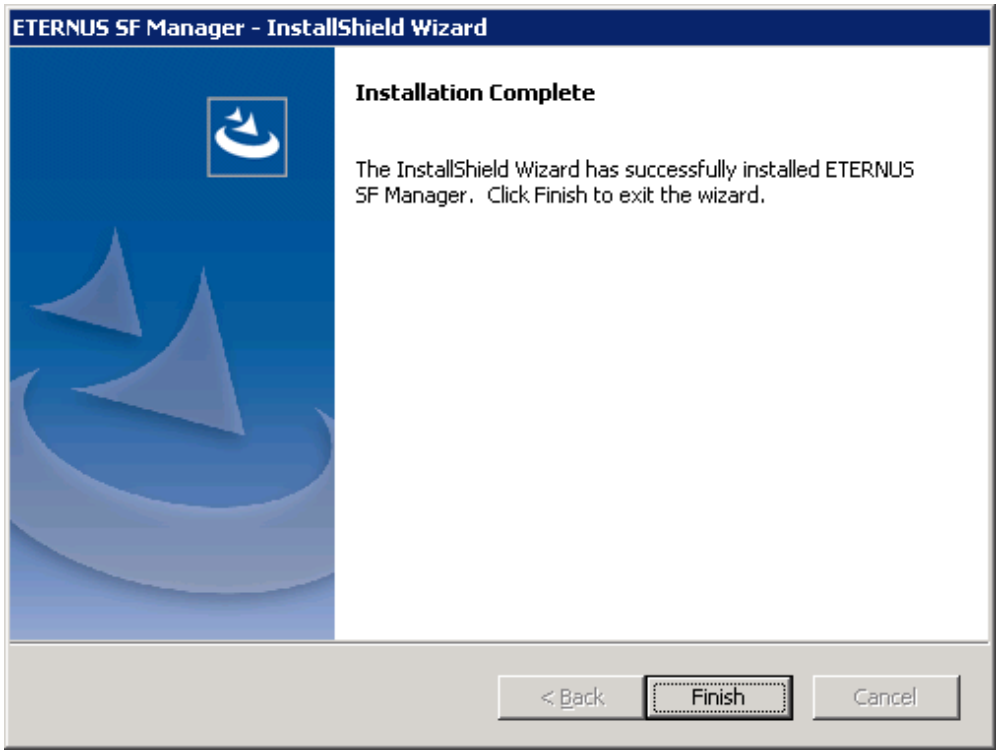
12. Copying the program is started.

    During this process, the file copy completion status is displayed in the **Setup Status** page.

13. When the copying process is completed, the system configuration is updated. Wait for the configuration update process to complete.



14. The following installation wizard page is displayed. The installation process is completed. Click **Finish**.



15. Eject the DVD media.

The ETERNUS SF Manager (for Windows) installation is completed.
When linking VMware, following the above operation, install the ETERNUS VMware Support Package that was downloaded in "3.1.8 Download of ETERNUS VMware Support Package". Refer to the *ETERNUS VASA Provider User's Guide* for installation.

3.3 Silent Installation Procedure of ETERNUS SF Manager (for Windows)

Take the following steps for silent installation:

1. Edit an installation parameter file.
2. Run a silent installation.

Note

- Because a symbolic link is created during the installation process of this product, the user account of the OS where the installation is performed must have the privilege to create symbolic links. If the installation terminates with an error, check the privilege of the user account used to perform the installation. In addition, perform the installation again with a user account that has the privilege to create symbolic links.
- After installation, do not rename, move or delete the installation destination directory.
- During the installation of this product, the "esfpostgres" OS user account that the "Log on as a service" privilege is added is created.
  The "esfpostgres" account is used to start the ETERNUS SF Manager Postgres Service, which is required to operate this software. For this reason, do not change the account information excluding the password and do not delete the account.
  For information on how to change the password, refer to "4.1.1.4 Esfpostgres User Password Change Procedure".
  For Windows servers with the Active Directory domain service role and when operating by defining the group

policy "Log on as a service", add the "esfpostgres" account to the definition for "Log on as a service". Refer to the operating system manual for details about handling group policies.

- When reinstalling the ETERNUS SF Manager, if you want to change the following port numbers in ETERNUS SF Manager, delete the following service names defined in the %SystemRoot%\system32\drivers\etc\services before reinstalling:
  - stgxfws

Information

If the following definition line is in the %SystemRoot%\system32\drivers\etc\services file, although it is deleted during the installation, the operation of this product is not affected.

```
stgxfws    1226/udp
```

3.3.1 Editing Installation Parameter File

When using default install, it is not necessary to edit an installation parameter file.

An installation parameter file is a file in which to specify installation parameters such as installation destination directory and port number. This file is stored on DVD media and default values are set for respective installation parameters. In addition, this file has both automatic service activation and automatic service activation prevention. For details on the installation parameter file, refer to "C.1 Installation Parameter File (for ETERNUS SF Manager for Windows)".

The installation parameter file is stored on the DVD "ETERNUS SF SC/ACM/Express Mediapack for Windows (V16.9 or higher) Manager Program (1/2)" of this version.

- Storage location
  - For automatic service activation

    ```
    dvdDrive:\Manager_windows\install_parameter.ini
    ```

  - For prevention of automatic service activation

    ```
    dvdDrive:\Manager_windows\install_parameter_not_start_service.ini
    ```

When changing installation parameters, copy the installation parameter file on the DVD media to an optional location and edit the copied file. For description of each installation parameter, refer to "C.2 Installation Parameters (for ETERNUS SF Manager for Windows)".

Information

The file for automatic service activation (install_parameter.ini) is used to activate the ETERNUS SF Manager services after the installation is complete. The file for the prevention of automatic service activation (install_parameter_not_start_service.ini) is used to prevent the ETERNUS SF Manager services from being activated after the installation is complete.

3.3.2 Running Silent Installation

The silent installation procedure of ETERNUS SF Manager (for Windows) is as follows:

1. Log on to the target server as a user with administrator privileges.

   Information

   Specify a user that corresponds to the using server type.

Server Type	User to Be Specified
Domain Controller	Domain user
Machine that belongs to the domain	Local user
WORKGROUP (does not belong to the domain)	

2. Install the DVD "ETERNUS SF SC/ACM/Express Mediapack for Windows (V16.9 or higher) Manager Program (1/2)" of this version into the DVD drive. If the Installer screen is displayed by autorun, exit the installer.
3. Start the command prompt.
4. Execute the following command for silent installation.

   - For automatic service activation with the default install

     For the *installLogFile*, specify a file to output the installation log with an absolute path. It is optional to specify *installLogFile*.

     ```
     dvdDrive:\Manager_windows\esfsilentinstall.bat -eula agreed [-l installLogFile]
     ```

   - For preventing automatic service activation in default install

     Specifying the *installParameterFile* is required.
     For the *installParameterFile*, specify the file stored on the DVD media (install_parameter_not_start_service.ini) with an absolute path.
     For the *installLogFile*, specify a file to output the installation log with an absolute path. It is optional to specify *installLogFile*.

     ```
     dvdDrive:\Manager_windows\esfsilentinstall.bat -eula agreed -s installParameterFile [-l
     installLogFile]
     ```

     The following is an execution example.

     - When the DVD drive is "D" and the install log file is "C:\silentinstall.log"

       ```
       D:\Manager_windows\esfsilentinstall.bat -eula agreed -s D:\Manager_windows
       \install_parameter_not_start_service.ini -l C:\silentinstall.log
       ```

   - For custom install

     Specify for *installParameterFile* with an absolute path. It is mandatory to specify for *installParameterFile*.
     For the *installLogFile*, specify a file to output the installation log with an absolute path. It is optional to specify *installLogFile*.

     ```
     dvdDrive:\Manager_windows\esfsilentinstall.bat -eula agreed -s installParameterFile [-l
     installLogFile]
     ```

Point

- The -eula option is specified to agree to licensing. Only when "agreed" is specified for option parameter is installation enabled. The -eula option must be specified before other options.
- If nothing is specified for *installLogFile*, an install log file named "esfsilentinstall.log" is created in the working directory specified by the environment variable TEMP.
- If there is any file of the same name as the specified install log file exists, it is overwritten.
- It is required to specify an existing directory with write permission for the directory in which to store the install log file. If it has no write permission, no error message is output in the command prompt or screen and the process terminates with error.
- If the paths to the installation parameter file and install log file contain any spaces, they should be surrounded by double quote characters.

- The characters " | : * ? / . < > , % & ^ ; ! are not supported for path name for installation parameter file or install log file.

Note

- If an invalid option is specified, its corresponding error message is output in the install log file and the process exits. No error message is output in the command prompt or screen.
- Do not execute multiple silent install commands at the same time. If a silent install starts while a silent install is executing, the silent install terminates abnormally without creating an install log file.

5. On completion of installation, a command prompt is displayed.
   Remove the DVD media used for installation out of the device.

3.3.3 Checking Silent Installation Result

Check the return value from the silent installation command. If necessary, check the install log file. However, if the return value from the silent installation command is 3 or 9, no install log file is created. For details, refer to "D.1 Return Values for Silent Installation (for ETERNUS SF Manager, AdvancedCopy Manager CCM)".

The installation result can be viewed in the install log file, too.
Open the install log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent installation command.

3.3.4 Installation of ETERNUS VMware Support Package

When linking VMware, install the ETERNUS VMware Support Package that was downloaded in "3.1.8 Download of ETERNUS VMware Support Package". Refer to the *ETERNUS VASA Provider User's Guide* for installation.

3.4 Interactive Installation Procedure of ETERNUS SF Manager (for Solaris)

The following two interactive installation methods of ETERNUS SF Manager (for Solaris) are available:

- Default install

  Install ETERNUS SF Manager by using the default values described in "C.10 Installation Parameters (for ETERNUS SF Manager for Solaris/Linux)".

- Custom install

  Install ETERNUS SF Manager by using the modified default values of the installation information (port number for the communications service, and so on).

  Define the installation information to the installation parameter file. Specify the installation parameter file to which the installation information has been defined when executing the install shell.

  Refer to "C.9 Installation Parameter File (for ETERNUS SF Manager for Solaris/Linux)" for information on the installation parameter file.
  Refer to "C.10 Installation Parameters (for ETERNUS SF Manager for Solaris/Linux)" for information on the installation parameter.

Note

- Perform the following operation before installing ETERNUS SF Manager.
  - If the value of the environment variable PATH exceeds 800 characters, change it to 800 or less characters.
  - Set "C" to the environment variable LANG.

- You cannot change the install directory during the installation.
- Do not rename, change, and delete the install directory after the installation.
- In the process of the installation, a user account "esfpostgres" is created on the operating system. This account is internally used by the ETERNUS SF system.
  Do not change other than the password or delete the account because it is necessary to operate the ETERNUS SF system.
  When changing the password, refer to "4.1.1.4 Esfpostgres User Password Change Procedure".

Information

If the following definition line is in the "/etc/services" file, although it is deleted during the installation, the operation of this product is not affected.

```
stgxfws    1226/udp
```

The interactive installation procedure of ETERNUS SF Manager (for Solaris) is performed as follows:

1. Log in to the server as a superuser.
2. Make sure that the local file system is mounted.
   If the local file system is not mounted, execute the following command to mount the local file system.
   - For Solaris 10

     ```
     # /usr/sbin/mountall -l
     ```

   - For Solaris 11

     ```
     # /usr/sbin/zfs mount -a
     ```

3. Insert the DVD "ETERNUS SF SC/ACM Mediapack for Solaris (V16.9 or higher) Manager Program (2/2)" of this version into the DVD drive.
4. Mount the DVD media.
   In the following command execution example, the device name of DVD drive is /dev/dsk/c0t4d0s0. The device name for the DVD drive, however, may be different for your particular device.

   ```
   # mount -F hsfs -o ro /dev/dsk/c0t4d0s0 dvdMountPoint
   ```

5. Change directory in which the install shell is stored.

   ```
   # cd dvdMountPoint/Manager_unix
   ```

6. Execute the install shell.
   - For default install

     ```
     # ./esfinstall.sh
     ```

   - For custom install
     Specify the absolute path name of the installation parameter file edited in advance for *installParamFile*.

     ```
     # ./esfinstall.sh -s installParamFile
     ```

7. The license agreement information is displayed.
   If the conditions are agreeable, enter "y".

   ```
   Do you accept the terms of the above License Agreement? (default: n) [y,n]:
   ```

8. The installation information is displayed.
   To continue installation, enter "y". To cancel the installation, enter "q".

```
  Setting of installation parameter file.

    Installation_function:   ETERNUS SF Manager
    Port number
      ETERNUS_SF_Manager_Apache_service: 9855
      Communications_service_1:          1226
      Communications_service_2:          4917
      Repository_service:                15432
      Internal_port_1:                   28005
      Internal_port_2:                   28009
      Internal_port_3:                   28443
      Internal_port_4:                   24916
      Internal_port_5:                   24917
    Management_server_IP_address:
    esfpostgres_UID:
    StartService: yes

Do you want to continue the installation? [y,q]:
```

9. After installation is completed successfully, the following message is displayed.

```
INFO: ETERNUS SF was installed successfully.
```

   If an error occurs during installation, the following message is displayed and no software that configures ETERNUS SF Manager are installed.

   - When port numbers are overlapping.

```
ERROR: The specified port number is duplicate with following service.:
        foo  9855/tcp
ERROR: Installation has failed.
```

     Way of handling: Set the installation parameter file not to overlap the port number and perform the custom install (Refer to step 6).

   - When FJSVccm, for example, is already installed.

```
ERROR: The following product has been already installed on this system.:
        ETERNUS SF AdvancedCopy Manager Copy Control Module

ERROR: Installation has failed.
```

     Way of handling: Uninstall the installed software (In this case, FJSVccm).

10. Change directory into other than DVD media. The example is shown below.

```
# cd
```

11. Unmount the DVD media.

```
# umount dvdMountPoint
```

12. Eject the DVD media.

The ETERNUS SF Manager (for Solaris) installation is completed.

Point

If an IP address for Management Server is not specified in the installation parameter file, the IP address for Management Server is set automatically during the installation. After the installation is completed, change the IP address if required.

For the information on how to change an IP address, refer to "Changing IP Address of Management Server" in the *AdvancedCopy Manager Operation Guide (for Solaris)*.

3.5 Silent Installation Procedure of ETERNUS SF Manager (for Solaris)

Take the following steps for silent installation:

1. Edit an installation parameter file.
2. Run a silent installation.

Note

- Perform the following procedure before installing:
  - If the value of the environment variable PATH exceeds 800 characters, change the value to 800 or less characters.
  - Set "C" to the environment variable LANG.
- At the time of installation, an installation destination directory cannot be changed.
- After installing, do not rename, move or delete the installation destination directory.
- During installation, the operating system user account (esfpostgres) is added.
  Do not change other than the password or delete the account because it is necessary to operate the ETERNUS SF system.
  When changing the password, refer to "4.1.1.4 Esfpostgres User Password Change Procedure".

Information

If the following definition line is in the "/etc/services" file, although it is deleted during the installation, the operation of this product is not affected.

```
stgxfws    1226/udp
```

3.5.1 Editing Installation Parameter File

When using default install, it is not necessary to edit an installation parameter file.

An installation parameter file is a file in which to specify installation parameters such as installation destination directory and port number. This file is stored on DVD media and default values are set for respective installation parameters. In addition, this file has both automatic service activation and automatic service activation prevention. For details on the installation parameter file, refer to "C.9 Installation Parameter File (for ETERNUS SF Manager for Solaris/Linux)".

The installation parameter file is stored on the DVD "ETERNUS SF SC/ACM Mediapack for Solaris (V16.9 or higher) Manager Program (2/2)" of this version.

- Storage location
  - For automatic service activation

    ```
    dvdMountDir/Manager_unix/install_parameter.txt
    ```

  - For prevention of automatic service activation

    ```
    dvdMountDir/Manager_unix/install_parameter_not_start_service.txt
    ```

When changing installation parameters, copy the installation parameter file on the DVD media to an optional location and edit the copied file. For description of each installation parameter, refer to "C.10 Installation Parameters (for ETERNUS SF Manager for Solaris/Linux)".

Information

The file for automatic service activation (install_parameter.txt) is used to activate the ETERNUS SF Manager services after the installation is complete. The file for the prevention of automatic service activation (install_parameter_not_start_service.txt) is used to prevent the ETERNUS SF Manager services from being activated after the installation is complete.

3.5.2 Running Silent Installation

The silent installation procedure of ETERNUS SF Manager (for Solaris) is as follows:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Make sure that a local file system is mounted.
   If not, run the following command to mount a local system.
   - For Solaris 11

     ```
     # /usr/sbin/zfs mount -a
     ```

   - For Solaris 10

     ```
     # /usr/sbin/mountall -l
     ```

3. Install the DVD "ETERNUS SF SC/ACM Mediapack for Solaris (V16.9 or higher) Manager Program (2/2)" of this version into the DVD drive.
4. Mount the DVD media.
   In the following example of command execution, the device name of the DVD drive is mounted as "/dev/dsk/c0t4d0s0". The device name of a DVD drive varies with the device.

   ```
   # mount -F hsfs -o ro /dev/dsk/c0t4d0s0 dvdMountPoint
   ```

5. Execute the following silent installation command.
   - For automatic service activation with the default install

     For the *installLogFile*, specify a file to output the installation log with an absolute path. It is optional to specify *installLogFile*.

     ```
     # dvdMountPoint/Manager_unix/esfsilentinstall.sh -eula agreed [-l installLogFile]
     ```

   - For preventing automatic service activation in default install

     Specifying the *installParameterFile* is required.
     For the *installParameterFile*, specify the file stored on the DVD media (install_parameter_not_start_service.txt) with an absolute path.
     For the *installLogFile*, specify a file to output the installation log with an absolute path. It is optional to specify *installLogFile*.

     ```
     # dvdMountPoint/Manager_unix/esfsilentinstall.sh -eula agreed -s installParameterFile [-l
     installLogFile]
     ```

     The following is an execution example.

     - When the mount point of the DVD media is "/mnt" and the install log file is "/tmp/silentinstall.log"

       ```
       # /mnt/Manager_unix/esfsilentinstall.sh -eula agreed -s /mnt/Manager_unix/
       install_parameter_not_start_service.txt -l /tmp/silentinstall.log
       ```

- For custom install

  Specify for *installParameterFile* with an absolute path. It is mandatory to specify for *installParameterFile*. For the *installLogFile*, specify a file to output the installation log with an absolute path. It is optional to specify *installLogFile*.

```
# dvdMountPoint/Manager_unix/esfsilentinstall.sh -eula agreed -s installParameterFile [-l
installLogFile]
```

Point

- The -eula option is specified to agree to licensing. Only when "agreed" is specified for optional parameter is installation enabled. The -eula option must be specified before other options.
- If nothing is specified for *installLogFile*, an install log file named "esfsilentinstall.log" is created in the "/var/tmp" directory.
- If any file of the same name as the specified install log file exists, it is overwritten.
- It is required to specify an existing directory with write permission for the directory in which to store the install log file. If it has no write permission, no error message is output in the command prompt or screen and the process terminates with error.
- If the paths to the installation parameter file and install log file contain any spaces, they should be surrounded by double quote characters.
- The characters " ! $ are not supported for path name for install log file.

Note

- If an invalid option is specified, its corresponding error message is output in the install log file and the process exits. No error message is output in the command prompt or screen.
- Do not execute multiple silent install commands at the same time. If a silent install starts while a silent install is executing, the silent install terminates abnormally without creating an install log file.

6. On completion of installation, a command prompt is displayed.
7. Unmount the DVD media.

```
# umount dvdMountPoint
```

8. Remove the DVD media out of the DVD drive.

This is the end of the installation of ETERNUS SF Manager (for Solaris).

Point

If the IP address of the Management Server is not specified for the installation parameter file, it is automatically set at the time of installation. On completion of installation, change the IP address as required. For the change method, refer to "Changing IP Address of Management server" in the *AdvancedCopy Manager Operation Guide (for Solaris)*.

3.5.3 Checking Silent Installation Result

Check the return value from the silent installation command. If necessary, check the install log file. However, if the return value from the silent installation command is 3 or 9, no install log file is created. For details, refer to "D.1 Return Values for Silent Installation (for ETERNUS SF Manager, AdvancedCopy Manager CCM)".

The installation result can be viewed in the install log file, too.
Open the install log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent installation command.

3.6 Interactive Installation Procedure of ETERNUS SF Manager (for Linux)

The following two interactive installation methods of ETERNUS SF Manager (for Linux) are available:

- Default install

  Install ETERNUS SF Manager by using the default values described in "C.10 Installation Parameters (for ETERNUS SF Manager for Solaris/Linux)".

- Custom install

  Install ETERNUS SF Manager by using the modified default values of the installation information (port number for the communications service, and so on).

  Define the installation information to the installation parameter file. Specify the installation parameter file to which the installation information has been defined when executing the install shell.

  Refer to "C.9 Installation Parameter File (for ETERNUS SF Manager for Solaris/Linux)" for information on the installation parameter file.
  Refer to "C.10 Installation Parameters (for ETERNUS SF Manager for Solaris/Linux)" for information on the installation parameter.

Note

- If the value of the environment variable PATH exceeds 800 characters, change it to 800 or less characters to install ETERNUS SF Manager (for Linux).
- You cannot change the install directory during the installation.
- Do not rename, change, and delete the install directory after the installation.
- In the process of the installation, a user account "esfpostgres" is created on the operating system. This account is internally used by the ETERNUS SF system.
  Do not change other than the password or delete the account because it is necessary to operate the ETERNUS SF system.
  When changing the password, refer to "4.1.1.4 Esfpostgres User Password Change Procedure".

Information

If the following definition line is in the "/etc/services" file, although it is deleted during the installation, the operation of this product is not affected.

```
stgxfws    1226/udp
```

The interactive installation procedure of ETERNUS SF Manager (for Linux) is performed as follows:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Make sure that the local file system is mounted.
   If the local file system is not mounted, execute the following command to mount the local file system.

   ```
   # mount -a
   ```

3. Insert the DVD "ETERNUS SF SC/ACM/Express Mediapack for Linux 64bit (V16.9 or higher) Manager Program (2/2)" of this version into the DVD drive.

4. Mount the DVD media.

```
# mount -t iso9660 -r /dev/cdrom dvdMountPoint
```

5. Change directory in which the command for installation is stored.

```
# cd dvdMountPoint/Manager_unix
```

6. Execute the install shell.

   - For default install

   ```
   # ./esfinstall.sh
   ```

   - For custom install
     Specify the absolute path name of the installation parameter file edited in advance for *installParamFile*.

   ```
   # ./esfinstall.sh -s installParamFile
   ```

7. The license agreement information is displayed.
   If the conditions are agreeable, enter "y".

```
Do you accept the terms of the above License Agreement? (default: n) [y,n]:
```

8. The installation information is displayed.
   To continue installation, enter "y". To cancel the installation, enter "q".

```
  Setting of installation parameter file.

    Installation_function:   ETERNUS SF Manager
    Port number
      ETERNUS_SF_Manager_Apache_service: 9855
      Communications_service_1:          1226
      Communications_service_2:          4917
      Repository_service:                15432
      Internal_port_1:                   28005
      Internal_port_2:                   28009
      Internal_port_3:                   28443
      Internal_port_4:                   24916
      Internal_port_5:                   24917
    Management_server_IP_address:
    esfpostgres_UID:
    StartService: yes

Do you want to continue the installation? [y,q]:
```

9. After installation is completed successfully, the following message is displayed.

```
INFO: ETERNUS SF was installed successfully.
```

   If an error occurs during installation, the following message is displayed and no software that configures ETERNUS SF Manager are installed.

   - When port numbers are overlapping.

   ```
   ERROR: The specified port number is duplicate with following service.:
           foo  9855/tcp
   ERROR: Installation has failed.
   ```

     Way of handling: Set the installation parameter file not to overlap the port number and perform the custom install (Refer to step 6).

- When FJSVccm, for example, is already installed.

```
ERROR: The following product has been already installed on this system.:
        ETERNUS SF AdvancedCopy Manager Copy Control Module

ERROR: Installation has failed.
```

  Way of handling: Uninstall the installed software (In this case, FJSVccm).

10. Change directory into other than DVD media. The example is shown below.

```
# cd
```

11. Unmount the DVD media.

```
# umount /dev/cdrom
```

12. Remove the DVD media out of the DVD drive.

The ETERNUS SF Manager (for Linux) installation is completed.

Point

If an IP address for Management Server is not specified in the installation parameter file, the IP address for Management Server is set automatically during the installation. After the installation is completed, change the IP address if required. For the information on how to change an IP address, refer to "Changing IP Address of Management Server" in the *AdvancedCopy Manager Operation Guide (for Linux)*.

3.7 Silent Installation Procedure of ETERNUS SF Manager (for Linux)

Take the following steps for silent installation:

1. Edit an installation parameter file.
2. Run a silent installation.

Note

- If the value of the environment variable PATH exceeds 800 characters, change it to 800 or less characters and run a silent installation.
- At the time of installation, the installation destination directory cannot be changed.
- After installing, do not rename, move or delete the installation destination directory.
- During installation, the operating system user account (esfpostgres) is added.
  Do not change other than the password or delete the account because it is necessary to operate the ETERNUS SF system.
  When changing the password, refer to "4.1.1.4 Esfpostgres User Password Change Procedure".

Information

If the following definition line is in the "/etc/services" file, although it is deleted during the installation, the operation of this product is not affected.

```
stgxfws    1226/udp
```

3.7.1 Editing Installation Parameter File

When using default install, it is not necessary to edit an installation parameter file.

An installation parameter file is a file in which installation parameters such as installation destination directory and port number are specified. This file is store on DVDD-ROM and default values are set for respective installation parameters. In addition, this file has both automatic service activation and automatic service activation prevention. For details on the installation parameter file, refer to "C.9 Installation Parameter File (for ETERNUS SF Manager for Solaris/Linux)".

The installation parameter file is stored on the DVD "ETERNUS SF SC/ACM/Express MediaPack for Linux 64bit (V16.9 or higher) Manager Program (2/2)" of this version".

- Storage location
  - For automatic service activation

```
dvdMountDir/Manager_unix/install_parameter.txt
```

  - For prevention of automatic service activation

```
dvdMountDir/Manager_unix/install_parameter_not_start_service.txt
```

When changing installation parameters, copy the installation parameter file on the DVD media to an optional location and edit the copied file. For descriptions of respective installation parameters, refer to "C.10 Installation Parameters (for ETERNUS SF Manager for Solaris/Linux)".

Information

The file for automatic service activation (install_parameter.txt) is used to activate the ETERNUS SF Manager services after the installation is complete. The file for the prevention of automatic service activation (install_parameter_not_start_service.txt) is used to prevent the ETERNUS SF Manager services from being activated after the installation is complete.

3.7.2 Running Silent Installation

The silent installation procedure of ETERNUS SF Manager (for Linux) is as follows:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Make sure that a local file system is mounted.
   If not, run the following command to mount a local file system.

```
# mount -a
```

3. Install the DVD "ETERNUS SF SC/ACM/Express Mediapack for Linux 64bit (V16.9 or higher) Manager Program (2/2)" of this version into the DVD drive.
4. Mount the DVD media.

```
# mount -t iso9660 -r /dev/cdrom dvdMountPoint
```

5. Execute the following silent installation command.
   - For preventing automatic service activation in default install

     For the *installLogFile*, specify a file to output the installation log with an absolute path. It is optional to specify *installLogFile*.

```
# dvdMountPoint/Manager_unix/esfsilentinstall.sh -eula agreed [-l installLogFile]
```

   - For preventing automatic service activation in default install

     Specifying the *installParameterFile* is required.
     For the *installParameterFile*, specify the file stored on the DVD media

(install_parameter_not_start_service.txt) with an absolute path.
For the *installLogFile*, specify a file to output the installation log with an absolute path. It is optional to specify *installLogFile*.

```
# dvdMountPoint/Manager_unix/esfsilentinstall.sh -eula agreed -s installParameterFile [-l
installLogFile]
```

The following is an execution example.

- When the mount point of the DVD media is "/mnt" and the install log file is "/tmp/silentinstall.log"

```
# /mnt/Manager_unix/esfsilentinstall.sh -eula agreed -s /mnt/Manager_unix/
install_parameter_not_start_service.txt -l /tmp/silentinstall.log
```

- For custom install

For the *installParameterFile*, specify with an absolute path. It is mandatory to specify for *installParameterFile*.
For the *installLogFile*, specify a file to output the installation log with an absolute path. It is optional to specify *installLogFile*.

```
# dvdMountPoint/Manager_unix/esfsilentinstall.sh -eula agreed -s installParameterFile [-l
installLogFile]
```

Point

- The -eula option is specified to agree to licensing. Only when "agreed" is specified for option parameter is installation enabled. The -eula option must be specified before other options.
- If nothing is specified for *installLogFile*, an install log file named "esfsilentinstall.log" is created in the "/var/tmp" directory.
- If any file of the same name as the specified install log file exists, it is overwritten.
- It is required to specify an existing directory with write permission for the directory in which to store the install log file. If it has no write permission, no error message is output in the command prompt or screen and the process terminates with error.
- If the paths to the installation parameter file and install log file contain any spaces, they should be surrounded by double quote characters.
- The characters " ! $ are not supported for path name for install log file.

Note

- If an invalid option is specified, its corresponding error message is output in the install log file and the process exits. No error message is output in the command prompt or screen.
- Do not execute multiple silent install commands at the same time. If a silent install starts while a silent install is executing, the silent install terminates abnormally without creating an install log file.

6. On completion of installation, a command prompt is displayed.
7. Unmount the DVD media.

```
# umount dvdMountPoint
```

8. Remove the DVD media out of the DVD drive.

This is the end of the installation of ETERNUS SF Manager (for Linux).

Point

If the IP address of the Management Server is not specified for the installation parameter file, it is automatically set at the time of installation. On completion of installation, change the IP address as required. For the change method, refer the "Changing IP Address of Management server" in the *AdvancedCopy Manager Operation Guide (for Linux)*.

3.7.3 Checking Silent Installation Result

Check the return value from the silent installation command. If necessary, check the install log file. However, if the return value from the silent installation command is 3 or 9, no install log file is created. For details, refer to "D.1 Return Values for Silent Installation (for ETERNUS SF Manager, AdvancedCopy Manager CCM)".

The installation result can be viewed even by the install log file.
Open the install log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent installation command.

Chapter 4 Setup of ETERNUS SF Manager

This chapter explains procedures and methods for setting up ETERNUS SF Manager.

4.1 Product Common Settings

This section explains the common settings for the managers of Express, Storage Cruiser and AdvancedCopy Manager.

4.1.1 Setting Up User Account

Set up a user account in order to use the ETERNUS SF Manager functions.
The privileges granted to the Web Console user and the command execution user accounts, and their controllable ranges are shown in the table below.

ETERNUS SF Role	Administrator Privilege of Operating System	
	Yes	No
Yes	Operations are possible from Web Console and the command line.	Operations are possible only from Web Console.
No	Operations are possible only from the command line.	Operations are neither possible from Web Console nor from the command line.

The following section explains how to create and set up the Web Console user and the command execution user accounts, and how to change the user (esfpostgres) password internally using the ETERNUS SF system.

Note

- As the user (esfpostgres) used internally by the ETERNUS SF system is required to run the ETERNUS SF system, do not delete the user account. When the product is installed, a default value is set to a password, so change the password before using the ETERNUS SF system. Also, change the password periodically when running the ETERNUS SF system, as well.
- If ETERNUS SF Manager is installed in multiple servers, the esfpostgres user cannot be shared between those servers. For example, if multiple servers with the domain controller role exist in a single domain under the Windows environment and the domain controllers share the user information with the replication function, ETERNUS SF Manager can only be installed in a single domain controller. Install the second and subsequent ETERNUS SF Managers in the member servers.
- Periodically change the account name and password for the Web Console user and the command execution user.

4.1.1.1 Creating User Accounts for Operating from Web Console

For user authentication when logging in on Web Console, ETERNUS SF product uses the authentication system of the OS on the Management Server.

In order to give a user the privilege ("role") to use ETERNUS SF product, you must create ETERNUS SF role groups to which each user account is allocated.

The table below shows the relationships between the ETERNUS SF roles that are given to ETERNUS SF role groups and the Web Console control actions that are permitted to users belonging to the respective role group.

Table 4.1 For Windows environments

ETERNUS SF Role Group	ETERNUS SF Role	Permitted Web Console Controls
ESFAdmin	Administrator	All operations
ESFMon	Monitor	Only display-related operations

Table 4.2 For Solaris or Linux environments

ETERNUS SF Role Group	ETERNUS SF Role	Permitted Web Console Controls
esfadmin	Administrator	All operations
esfmon	Monitor	Only display-related operations

1. Create the following two ETERNUS SF role groups.

   For Windows environments

   Create the following two groups.

   - ESFAdmin
   - ESFMon

   If using Windows domain authentication, create the ETERNUS SF role groups in the domain controller (Active Directory).
   If not using Windows domain authentication, create the ETERNUS SF role groups on the Management Server.

   Note

   - Set the Windows security policy, to permit local logon for the ETERNUS SF role groups.
   - For creating the ETERNUS SF role groups in the domain controller (Active Directory), the scope and type of each group must be specified. Make sure to specify the following values:

     Group scope: Domain local or Universal

     Group type: Security
   - If any name is specified to create an ETERNUS SF role group or if a group whose scope is specified with Universal is used as the ETERNUS SF role group, perform the operation described in "Appendix K Customizing Role Group Configuration File".

   For Solaris or Linux environments

   Create the following two groups using the "groupadd" command and so on.

   - esfadmin
   - esfmon

2. Create user accounts for operating from Web Console.

   For Windows environments

   If using Windows domain authentication, create user accounts in the domain controller (Active Directory).
   If not using Windows domain authentication, create user accounts on the Management Server.

   For Solaris or Linux environments

   Create a user account on Management Server using the "useradd" command and so on.

3. Assign the created user accounts to ETERNUS SF role groups.

   For Windows environments

   Use [Computer Management] and so on.

   For Solaris environments

   Configure one of the following to the target user accounts by using a command such as the "usermod" command.

   - Set ETERNUS SF role groups as primary group.
   - Add ETERNUS SF role groups to secondary group.

For Linux environments

Configure one of the following to the target user accounts by using a command such as the "usermod" command.

- Set ETERNUS SF role groups as main group.
- Add ETERNUS SF role groups to supplementary group.

An ETERNUS SF role is assigned to each user account.

Point

ETERNUS SF role groups can also be created via command line input. The example below shows a batch file for creating a role group.
Execute the batch file on the domain controller when using Windows domain authentication. Otherwise execute the batch file on the Management Server.

```
@echo off

REM # ----------------------
REM # Creating the ESFAdmin group
REM # ----------------------
net localgroup ESFAdmin > NUL 2>&1
if errorlevel 1 (
   echo ESFAdmin group add.
   net localgroup ESFAdmin /add /comment:"ETERNUS SF Administrator"
)

REM # ----------------------
REM # Creating the ESFMon group
REM # ----------------------
net localgroup ESFMon > NUL 2>&1
if errorlevel 1 (
   echo ESFMon group add.
   net localgroup ESFMon /add /comment:"ETERNUS SF Monitor"
)
```

4.1.1.2 User Account of Windows

Commands for Express, Storage Cruiser, AdvancedCopy Manager and AdvancedCopy Manager CCM can only be executed by users with administrator privileges for the operating system.

This section explains how to create accounts for users who can execute commands.

Point

By assigning a user account created here to an ETERNUS SF role group, you can enable the same user to both operate from Web Console and execute commands.

The cases where User Account Control (hereafter referred to as "UAC") of Windows operating system is enabled and disabled are explained below.

- When UAC is enabled

  When any user other than the Administrator account (including accounts in the Administrators group) executes a process or program that requires administrator privileges, the "Permissions granted/authorized dialog" is displayed. Permissions granted or authorized must be confirmed.

- When UAC is disabled

  A process or program that requires administrator privileges must be executed by either an Administrator account or a user account in the Administrators group.

The operating conditions are shown below.

Table 4.3 Relationship Between Account and UAC

Account Type	UAC: Enabled	UAC: Disabled
Administrator account	Y	Y
User account in the Administrators group	N (*1)	Y
Standard user account	N (*1)	N

Y: A process or program runs without displaying the permissions granted/authorized dialog.
N: A process or program does not run because the user does not have administrator privileges.
*1: The permissions granted/authorized dialog is displayed and the process or program runs if the user is authorized. However, the message output by the process or program is not displayed.

When UAC is enabled and a process or program is executed by any user other than the Administrator account, use one of the methods below to execute that process or program with administrator privileges:

Table 4.4 How to Disable Interactive Processes in the Permissions Granted/Authorized Dialog

Disabling Interactive Processes	User Account in the Administrators Group	Standard User Account
Specify "Command Prompt (Admin)" to run the Command Prompt. Execute the program from the Command Prompt.	Can Disable	Can Disable
In the task scheduler, start the process with "Execute with maximum permissions" specified.	Can Disable	Cannot Disable

4.1.1.3 User Account of Linux/Solaris

Express (for Linux environments only), Storage Cruiser, AdvancedCopy Manager and AdvancedCopy Manager CCM commands can only be executed as a root, so operate root user.

4.1.1.4 Esfpostgres User Password Change Procedure

Change the esfpostgres user password with the following procedure.

For Windows environments

1. Log on with a user that has Administrator privileges.
2. Activate the command prompt with "Run as Administrator".
3. Execute the following batch to stop the ETERNUS SF Manager service.

   ```
   > $INS_DIR\Common\bin\Stop_ESFservice.bat
   ```

   $INS_DIR is "Program Directory" specified at the ETERNUS SF Manager installation.
4. Execute the following command to change the esfpostgres user password.

   ```
   > net user esfpostgres *
   ```
5. Open ETERNUS SF Manager Postgres Service from Service Control Manager and change the password used when logging on.
   Set the same password as the esfpostgres user for the password.

6. Execute the following batch to start the ETERNUS SF Manager service.

```
> $INS_DIR\Common\bin\Start_ESFservice.bat
```

$INS_DIR is the "Program Directory" that was specified when ETERNUS SF Manager was installed.

For Solaris or Linux environments

1. Log in to the server as "root" (superuser).
2. Execute the following command to stop the ETERNUS SF Manager daemon.

```
# /opt/FJSVesfcm/bin/stopesf.sh
```

3. Execute the following command to change esfpostgres user password.

```
# passwd esfpostgres
```

4. Execute the following command to start the ETERNUS SF Manager daemon.

```
# /opt/FJSVesfcm/bin/startesf.sh
```

4.1.2 Setting Up for Using Web Console

If you set up firewalls between the PC on which Web Console is launched and the Management Server, set the following port number so as to allow transmission to pass the firewalls. When changing the port number from the default variable, set the port number after the change.

Port Number/Protocol	Communication Start Direction	Function
9855 (default)/tcp	From Web Console to Management Server	Screen display and operate from Web Console

In addition, it is necessary to have JavaScript-enabled and cookie-enabled in the web browser using Web Console.

See

Refer to "Operating Environment and Environment Settings" in the *Web Console Guide* for information on compatible web browsers and their versions, as well as on methods for setting to JavaScript-enabled and cookie-enabled.

4.1.3 Checking Connection from Web Console

The settings described hereafter use Web Console. Therefore, launch Web Console and check that the initial screen is displayed.

See

Refer to "Starting and Stopping Web Console" in the *Web Console Guide* for information on methods for launching and logging into Web Console.

4.1.4 Configuring UpdateAdvisor for Middleware Environment (for Windows)

Configure UpdateAdvisor for Middleware in order to apply the Consolidated Patch via Web Console.
If ETERNUS SF Manager has been installed on a server with UpdateAdvisor for Middleware already installed, refresh the update application management ledger of UpdateAdvisor for Middleware.
If ETERNUS SF Manager has been installed on a server without UpdateAdvisor for Middleware installed, it is not necessary to refresh the update application management ledger of UpdateAdvisor for Middleware.

Refer to the UpdateAdvisor for Middleware manual for how to refresh the update application management ledger.

4.1.5 Settings Required to Register Storage Devices (When Using the ETERNUS DX S2 series Only)

The required settings procedure for device registration of the ETERNUS DX S2 series is as follows.

Point

To delete the registration of the ETERNUS DX S2 series from the product after the settings in this section are performed and operations are started, the settings content must be restored. For the procedure to restore the settings content, refer to "Appendix N Work Required After Device Deletion of the ETERNUS DX S2 series".

For Windows environments

1. Log on to the Management Server using Administrator privileges.
2. Stop the ETERNUS SF Manager service.
   - When the Management Server is in a non-clustered system

     Execute the following batch to stop the ETERNUS SF Manager service.

     ```
     > $INS_DIR\Common\bin\Stop_ESFservice.bat
     ```

     From this step onward, $INS_DIR is "Program Directory" specified at the ETERNUS SF Manager installation.
   - When the Management Server is in a clustered system

     Use the Failover Cluster Manager to stop the ETERNUS SF Manager service.
3. Back up the settings file. Copy the following file to the backup destination directory.
   To use the Management Server in a clustered system, perform this step on both the primary node and secondary node.

File to be Backed up	Backup Destination Directory
$INS_DIR\Common\jre\conf\security\java.security	$INS_DIR\Common\sys\tomcat\webapps\esf\WEB-INF\config
$INS_DIR\CCM\jre\conf\security\java.security	$INS_DIR\CCM\tools

4. Copy the following file over the copy destination file.
   To use the Management Server in a clustered system, perform this step on both the primary node and secondary node.

Copy Source File	Copy Destination File
$INS_DIR\Common\sys\tomcat\webapps\esf\WEB-INF\config\java.security.forS2.windows	$INS_DIR\Common\jre\conf\security\java.security
$INS_DIR\CCM\tools\java.security.forS2.windows	$INS_DIR\CCM\jre\conf\security\java.security

5. Start the ETERNUS SF Manager service.
   - When the Management Server is in a non-clustered system

     Execute the following batch to start the ETERNUS SF Manager service.

     ```
     > $INS_DIR\Common\bin\Start_ESFservice.bat
     ```
   - When the Management Server is in a clustered system

     Use the Failover Cluster Manager to start the ETERNUS SF Manager service.

For Solaris or Linux environments

1. Log in to the Management Server as a superuser.
2. Stop the ETERNUS SF Manager daemon.
   - When the Management Server is in a non-clustered system

     Execute the following command to stop the ETERNUS SF Manager daemon.

     ```
     # /opt/FJSVesfcm/bin/stopesf.sh
     ```

   - When the Management Server is in a clustered system

     Use the cluster software in use to stop ETERNUS SF Manager daemon.
3. Back up the settings file. Copy the following file to the backup destination directory.
   To use the Management Server in a clustered system, perform this step on both the primary node and secondary node.
   - For Solaris environments

File to be Backed up	Backup Destination Directory
/opt/FJSVesfcm/JRE/lib/security/java.security	/opt/FJSVesfcm/tomcat/webapps/esf/WEB-INF/config
/opt/FJSVccm/jre/lib/security/java.security	/opt/FJSVccm/tools

     The command execution example is as follows.

     ```
     # cp -p /opt/FJSVesfcm/JRE/lib/security/java.security /opt/FJSVesfcm/tomcat/webapps/esf/WEB-INF/config/
     # cp -p /opt/FJSVccm/jre/lib/security/java.security /opt/FJSVccm/tools/
     ```

   - For Linux environments

File to be Backed up	Backup Destination Directory
/opt/FJSVesfcm/JRE/conf/security/java.security	/opt/FJSVesfcm/tomcat/webapps/esf/WEB-INF/config
/opt/FJSVccm/jre/conf/security/java.security	/opt/FJSVccm/tools

     The command execution example is as follows.

     ```
     # cp -p /opt/FJSVesfcm/JRE/conf/security/java.security /opt/FJSVesfcm/tomcat/webapps/esf/WEB-INF/config/
     # cp -p /opt/FJSVccm/jre/conf/security/java.security /opt/FJSVccm/tools/
     ```
4. Copy the following file over the copy destination file.
   To use the Management Server in a clustered system, perform this step on both the primary node and secondary node.
   - For Solaris environments

Copy Source File	Copy Destination File
/opt/FJSVesfcm/tomcat/webapps/esf/WEB-INF/config/java.security.forS2.solaris	/opt/FJSVesfcm/JRE/lib/security/java.security
/opt/FJSVccm/tools/java.security.forS2.solaris	/opt/FJSVccm/jre/lib/security/java.security

     The command execution example is as follows.

     ```
     # cp -p /opt/FJSVesfcm/tomcat/webapps/esf/WEB-INF/config/java.security.forS2.solaris /opt/FJSVesfcm/JRE/lib/security/java.security
     ```

```
# cp -p /opt/FJSVccm/tools/java.security.forS2.solaris /opt/FJSVccm/jre/lib/security/
java.security
```

- For Linux environments

Copy Source File	Copy Destination File
/opt/FJSVesfcm/tomcat/webapps/esf/WEB-INF/config/java.security.forS2.linux	/opt/FJSVesfcm/JRE/conf/security/java.security
/opt/FJSVccm/tools/java.security.forS2.linux	/opt/FJSVccm/jre/conf/security/java.security

The command execution example is as follows.

```
# cp -p /opt/FJSVesfcm/tomcat/webapps/esf/WEB-INF/config/java.security.forS2.linux /opt/
FJSVesfcm/JRE/conf/security/java.security
# cp -p /opt/FJSVccm/tools/java.security.forS2.linux /opt/FJSVccm/jre/conf/security/
java.security
```

5. Start the ETERNUS SF Manager daemon.

   - When the Management Server is in a non-clustered system

     Execute the following command to start the ETERNUS SF Manager daemon.

```
# /opt/FJSVesfcm/bin/startesf.sh
```

   - When the Management Server is in a clustered system

     Use the cluster software in use to start ETERNUS SF Manager daemon.

4.2 Setup of Express's Manager

This section explains how to set up the ETERNUS SF Manager as the Express's manager.

4.2.1 Registering User Account for Using Express

Register Express users to be able to use a storage system.
Refer to the following table to create user accounts of system administrator and business administrator.

Table 4.5 Privileges Given to Administrator User Account

Administrator	Privileges
System administrator	User with administrator privileges on the Management Server operating system. Grant the Administrator role from the ETERNUS SF roles. (Add the user account designated for administrative tasks to the ESFAdmin role group)
Business administrator	User that is registered to the Management Server operating system and manages business operation. Grant the Monitor role from the ETERNUS SF roles if performing solely for monitoring storage system or displaying status. Grant the Administrator role from the ETERNUS SF roles if permitting change the configuration or data copying. (Add the user account designated for administrative tasks to the ESFMon or ESFAdmin role group)

Refer to "4.1.1.1 Creating User Accounts for Operating from Web Console" for information on the ETERNUS SF roles.

Any user with privileges described in "Table 4.5 Privileges Given to Administrator User Account" can use Express.
Create user accounts used only for Express to prevent unexpected users from using it.

Information

Refer to "Flow from Installation to Operation" in the *Express Operation Guide* for information on the roles of system administrator and business administrator.

4.2.2 Configuring Network Environment

If you set up firewalls between the Management Server and ETERNUS Disk storage system, set the following port numbers so as to allow transmissions to pass the firewalls.

Port Number/Protocol	Communication Start Direction	Function
161/udp	From Management Server to ETERNUS Disk storage system	Configuration management, Performance management, Polling
162/udp	From ETERNUS Disk storage system to Management Server	Fault management
1372/tcp (*1)	From Management Server to ETERNUS Disk storage system	Configuration management (*3), Performance management (*3), Advanced Copy (*3)
1999/tcp (*2)	From Management Server to ETERNUS Disk storage system	Configuration management, Advanced Copy (*4)
22/tcp	From Management Server to ETERNUS Disk storage system	Configuration management (*3), Performance management (*3)
23/tcp	From Management Server to ETERNUS Disk storage system	Configuration management (*4)

*1: For Maintenance-Secure connection
*2: For Maintenance connection
*3: For the ETERNUS DX60 S5/DX100 S5/DX200 S5, DX60 S4/DX100 S4/DX200 S4, DX60 S3/DX100 S3/DX200 S3, DX80 S2/DX90 S2, and the ETERNUS AF150 S3, AF250 S3/AF250 S2/AF250
*4: For the ETERNUS DX60 S2

Express uses SNMP to register ETERNUS Disk storage system. Therefore, before registering devices, it is required to start SNMP Agent of ETERNUS Disk storage system. ETERNUS Disk storage system that has no SNMP Agent started cannot be registered.

Check the network environment, access privileges and settings of communication mode between Management Server and ETERNUS Disk storage system. If either communication mode of the Management Server or the ETERNUS Disk storage system is set to "Full (full duplex)", do not set the other to "Auto Negotiation".
Refer to the manual for each ETERNUS Disk storage system and check the network environment settings.

Point

The telnet connection and the Maintenance connection should be available on the ETERNUS Disk storage system.

4.2.3 SNMP Trap Setting

Set SNMP Trap to receive SNMP Traps on the Management Server.

4.2.3.1 SNMP Trap Setting (for Windows)

Management Server SNMP Trap settings differs from when monitoring devices only with SNMPv1 protocol in either of the following cases:

- When monitoring devices using only SNMPv3 protocol
- When monitoring devices using SNMPv1 protocol and SNMPv3 protocol

Configure according to the operating environment.

When Monitoring Devices Using Only SNMPv1 Protocol

Install a Windows standard SNMP Trap receiver service (SNMP Trap).
This service is included in the install media of OS.

When Monitoring Devices Using Only SNMPv3 Protocol or When Monitoring Devices Using SNMPv1 Protocol and SNMPv3 Protocol

When Other Applications (Systemwalker Centric Manager, ServerView Resource Orchestrator, etc.) Using SNMP Traps Do Not Coexist

1. Take the following steps to stop Express's manager.
   a. Click **Control Panel** > **System and Security** > **Administrative Tools** > **Services** to open the **Services** screen.
   b. Select "ETERNUS SF Manager Tomcat Service" to click **Stop**.
2. Execute the following command from the command prompt and install the ETERNUS SF SNMP Trap Service.
   $INS_DIR is "Program Directory" specified at the ETERNUS SF Manager installation.

```
> powershell -ExecutionPolicy Unrestricted $INS_DIR\ESC\Manager\opt\FJSVssmgr\sbin
\swsttctr.ps1 -install
```

3. Take the following steps to start ETERNUS SF SNMP Trap Service.
   a. Open the **Services** screen.
   b. Select "ETERNUS SF SNMP Trap Service" to click **Start**.
4. Take the following steps to start Express's manager.
   a. Open the **Services** screen.
   b. Select "ETERNUS SF Manager Tomcat Service" to click **Start**.

When Other Applications (Systemwalker Centric Manager, ServerView Resource Orchestrator, etc.) Using SNMP Traps Coexist

Note

If other applications using SNMP Traps coexist, use only IPv4 address for IP address of managed devices.

If IPv6 address is included in the IP addresses of managed devices, ETERNUS SF Manager cannot coexist with other applications using SNMP Traps.

1. Take the following steps to stop Express's manager.
   a. Click **Control Panel** > **System and Security** > **Administrative Tools** > **Services** to open the **Services** screen.
   b. Select "ETERNUS SF Manager Tomcat Service" to click **Stop**.
2. Execute the following command from the command prompt and install the ETERNUS SF SNMP Trap Service.
   $INS_DIR is "Program Directory" specified at the ETERNUS SF Manager installation.

```
> powershell -ExecutionPolicy Unrestricted $INS_DIR\ESC\Manager\opt\FJSVssmgr\sbin
\swsttctr.ps1 -install
```

3. Refer to "Appendix H Installation and Configuration of SNMP Trap Transfer Program" to install the SNMP Trap transfer program.

4.2.3.2 SNMP Trap Setting (for Linux)

Management Server SNMP Trap settings differs from when monitoring devices only with SNMPv1 protocol in either of the following cases:

- When monitoring devices using only SNMPv3 protocol
- When monitoring devices using SNMPv1 protocol and SNMPv3 protocol

Configure according to the operating environment.

When Monitoring Devices Using Only SNMPv1 Protocol

Customize the snmptrapd configuration file that is in the OS-standard net-snmp package to receive SNMP Trap in Management Server.

Execute the following commands.

```
# systemctl enable snmptrapd.service
# systemctl start snmptrapd.service
```

Point

The snmptrapd file is located at the "/etc/snmp/snmptrapd.conf" file, but the "/usr/share/snmp/snmptrapd.conf" file is also used in some other products.
Check the settings in both files to ensure they are correct for the sake of coexistence with other products.

Check Access Control Settings

Check the status of the access control settings.
If the following setting is not in the "snmptrapd.conf" file, access control is enabled.

```
disableAuthorization yes
```

Note

- Check the status of access control settings for both the "/etc/snmp/snmptrapd.conf" and "/usr/share/snmp/snmptrapd.conf" files.
- If there are no requests from other products, set the above "disableAuthorization yes" in the "/etc/snmp/snmptrapd.conf" file to disable access control.

SNMP Trap Reception Settings (If Access Control Is Disabled)

Add the following setting to the "/etc/snmp/snmptrapd.conf" file.

```
forward default unix:/var/opt/FJSVssmgr/trap_socket
```

SNMP Trap Reception Settings (If Access Control Is Enabled)

Add the following setting.

```
authCommunity net public
authCommunity net SANMA
forward default unix:/var/opt/FJSVssmgr/trap_socket
```

Check both the "/etc/snmp/snmptrapd.conf" and "/usr/share/snmp/snmptrapd.conf" files, and edit the "snmptrapd.conf" file in which authCommunity has been set by other products. If it is not set in either file, edit the "/etc/snmp/snmptrapd.conf" file.

Information

- authCommunity is an editable item when access control is enabled.

  The format is as follows.

```
authCommunity TYPES COMMUNITY [SOURCE [OID | -v VIEW ]]

  TYPES: log,execute,net
  COMMUNITY: SNMP trap community name for a device to be monitored
```

  Set log, execute and net in the TYPES field.
  Set the SNMP Trap community name for a device to be monitored, in the COMMUNITY field.
  Do not set SOURCE, OID and VIEW fields for Express.

  For example, set as follows.

```
authCommunity net public
authCommunity net SANMA
```

- If an ETERNUS Disk storage system with an SNMP Trap community name other than "public" or "SANMA" is to be monitored, add an authCommunity setting.
  For example, if an ETERNUS Disk storage system to be monitored has the community name "common", set this parameter as below. Note that the "public" and "SANMA" settings are mandatory.

```
authCommunity net public
authCommunity net SANMA
authCommunity net common
forward default unix:/var/opt/FJSVssmgr/trap_socket
```

- If authCommunity log or authCommunity execute has already been set by another product, add a comma and "net".
  For example, if authCommunity execute public is already set, set it as follows.

```
authCommunity execute,net public
authCommunity net SANMA
forward default unix:/var/opt/FJSVssmgr/trap_socket
```

Reflect Configuration File

After having changed the "snmptrapd.conf" file, execute the following command to restart snmptrapd:
The changed content is reflected to the SNMP Trap configuration.

```
# systemctl restart snmptrapd.service
```

Note

If ServerView AlarmService or any other application that uses snmptrapd has been installed, uninstalled, or had its settings changed after the "snmptrapd.conf" file has been customized, check that these procedures have not changed the customized content of the "snmptrapd.conf" file.

Point

In an environment using ServerView trap transfer program, reactivate the snmptrapd daemon and the trpsrvd daemon.

See

Refer to "snmptrapd.conf Configuration File" in the *Storage Cruiser Operation Guide* for information on the "snmptrapd.conf" file.

Subsequently, perform the task that is described in "Installation of SELinux Policy Module for SNMP Trap Daemon".

When Monitoring Devices Using Only SNMPv3 Protocol or When Monitoring Devices Using SNMPv1 Protocol and SNMPv3 Protocol

Immediately after ETERNUS SF Manager is installed, the setting is to monitor only SNMPv1 protocol devices. For this reason, change from the snmptrapd that contains the OS-standard net-snmp package using the following procedure:

1. Execute the following command to stop ETERNUS SF Manager.

```
# /opt/FJSVesfcm/bin/stopesf.sh
```

2. If the OS-standard SNMP Trap daemon (snmptrapd of the net-snmp package) has started, execute the following command to stop it.

```
# systemctl stop snmptrapd.service
```

3. If the OS-standard SNMP Trap daemon automatically starts when the system starts, execute the following command to stop automatic start.

```
# systemctl disable snmptrapd.service
```

4. Perform an installation and configuration of the SNMP Trap daemon package.

   a. Installation of the package

   Execute the following command to install the FJSVswstt-*XXXX*.rpm package in the "/opt/FJSVssmgr/etc/pkg" directory.

```
# rpm -i /opt/FJSVssmgr/etc/pkg/FJSVswstt-XXXX.rpm
```

   The *XXXX* part of the package file is depends on the operating system.

OS	Name of Package File
Red Hat Enterprise Linux 9 Red Hat Enterprise Linux 8	FJSVswstt-V15.3.0-1.x86_64.rpm
Red Hat Enterprise Linux 7	FJSVswstt-V13.7.0-1.x86_64.rpm

   b. Configuring automatic startup

   Execute the following commands to configure the automatic startup of the SNMP Trap daemon.

```
# cp -p /opt/FJSVssmgr/etc/pkg/startsc-snmptrapd.service /usr/lib/systemd/system
# systemctl enable startsc-snmptrapd.service
```

5. Execute the following command to start ETERNUS SF Manager.

```
# /opt/FJSVesfcm/bin/startesf.sh
```

Note

For environments mixed with Systemwalker Centric Manager on the same server, the SNMP Trap daemon may stop if Systemwalker Centric Manager is uninstalled.

If Systemwalker Centric Manager was uninstalled from the mixed environment, take the following actions:

1. Execute the following command to confirm that nwsnmp-trapd is running.

```
# systemctl status startsc-snmptrapd.service
```

2. If nwsnmp-trapd is not running, restart the system or execute the following command.

```
# systemctl start startsc-snmptrapd.service
```

Subsequently, perform the task that is described in "Installation of SELinux Policy Module for SNMP Trap Daemon".

Installation of SELinux Policy Module for SNMP Trap Daemon

For SELinux is set to "enforcing", apply the policy module, according to the following procedure.
If the operating system is Red Hat Enterprise Linux 7 or later, default is SELinux = Enforcing.
By executing this procedure, the SELinux policy module for the snmptrapd daemon is automatically installed, and it is possible to receive events via SNMP Traps.

Note

Check that other products have changed the policy setting for snmptrapd daemon before applying the policy of this product to snmptrapd daemon. Customize the policy setting if necessary.
If the policy is not set correctly, snmptrapd daemon may not work.

- If customizations are not made to the SELinux policy module

  Execute the following command to apply the SELinux policy module.

```
# /opt/FJSVssmgr/etc/selinux/esfsepolicy_setup.sh
```

- If customizations are made to the SELinux policy module

  By performing this procedure, the SELinux policy for the snmptrapd daemon can be changed.
  The policy definition file that corresponds to the SELinux policy module is as follows.

  Table 4.6 SELinux Policy Module Customization File

IP Address Environment of Monitoring Device	Protocol Used by Device Fault Monitoring	Policy Definition File	SELinux Policy Module Name	File Context Name
IPv4	SNMPv1	/opt/FJSVssmgr/etc/selinux/snmptrapd.te	snmptrapd.pp	snmptrapd.fc
	SNMPv3	/opt/FJSVssmgr/etc/selinux/nwsnmp-trapd.te	nwsnmp-trapd.pp	nwsnmp-trapd.fc

  The contents of the default SELinux policy module definition file are as follows.

  - For a Red Hat Enterprise Linux 9 environment

```
module policyModuleName 1.0;

require {
        type unconfined_t;
        type unconfined_service_t;
        type snmpd_t;
        type var_t;
        type initrc_t;
        type init_t;
        class sock_file write;
        class unix_stream_socket connectto;
}
```

```
#============= snmpd_t ==============
allow snmpd_t initrc_t:unix_stream_socket connectto;
allow snmpd_t init_t:unix_stream_socket connectto;
allow snmpd_t unconfined_t:unix_stream_socket connectto;
allow snmpd_t unconfined_service_t:unix_stream_socket connectto;
allow snmpd_t var_t:sock_file write;
```

- For a Red Hat Enterprise Linux 8 or Red Hat Enterprise Linux 7 environment

```
module policyModuleName 1.0;

require {
        type unconfined_t;
        type snmpd_t;
        type var_t;
        type initrc_t;
        type init_t;
        class sock_file write;
        class unix_stream_socket connectto;
}

#============= snmpd_t ==============
allow snmpd_t initrc_t:unix_stream_socket connectto;
allow snmpd_t init_t:unix_stream_socket connectto;
allow snmpd_t unconfined_t:unix_stream_socket connectto;
allow snmpd_t var_t:sock_file write;
```

Implement the following procedure to customize:

1. Refer to "Table 4.6 SELinux Policy Module Customization File" and check the file name to use.
2. Copy and correct the policy definition file that corresponds to the system in an optional directory.
3. When changing the file context definition, create a file context.
   Store the file context that was created in the directory with the corrected policy definition file.
4. Move to the directory with the corrected policy definition file.
5. Execute the following command. SELinux policy module is created in the current directory.

   ```
   # make -f /usr/share/selinux/devel/Makefile
   ```

6. Execute the following command to change the setting to "SELinux=Permissive".

   ```
   # setenforce 0
   ```

7. Execute the following command to apply the policy module.

   ```
   # /usr/sbin/semodule -i policyModuleName
   ```

8. Execute the following command to check that the policy module name is displayed.
   - For Red Hat Enterprise Linux 9 or Red Hat Enterprise Linux 8 environments

     ```
     # /usr/sbin/semodule -l | grep policyModuleName
     ```

   - For Red Hat Enterprise Linux 7 environments

     ```
     # ls /etc/selinux/targeted/modules/active/modules/ | grep policyModuleName
     ```

9. Execute the following command to revert the setting to "SELinux=Enforcing":

   ```
   # setenforce 1
   ```

Note

For creating the SELinux policy, selinux-policy-devel package is required.
If a package has not been installed, create a policy after installing the package.

4.2.4 Registering Disk Storage System

With Web Console, it is necessary to register ETERNUS Disk storage system to be used.

The following procedure is required to register the target ETERNUS Disk storage system. This procedure should be performed by the system administrator.

1. Execute the following preparations for each ETERNUS Disk storage system to be registered.

   Using ETERNUS Web GUI, perform the following settings. Refer to the ETERNUS Web GUI manual for information on each setting.

   - Check the IP address of the Management Server.

     If there is a Management Server on a subnet different from the subnet for which ETERNUS Disk storage system is set up, check that the IP address of the Management Server is registered to the "Allowed IP List" in the Set Network Environment screen on ETERNUS Web GUI.
     If it is not registered to the list, register the IP address of the Management Server to the "Allowed IP List".

   - Enable the SNMP function of MNT port on the following screen.

Target Device	Name of Screen
ETERNUS DX60 S5/S4/S3 ETERNUS DX100 S5/S4/S3 ETERNUS DX200 S5/S4/S3 ETERNUS AF150 S3 ETERNUS AF250 S3/S2 ETERNUS AF250	Setup SNMP Agent User
ETERNUS DX60 S2 ETERNUS DX80 S2 ETERNUS DX90 S2	Setup SNMP Agent (Basic Interface)

   - Check the ETERNUS Disk storage system name displayed in the **Name** column on the Modify Storage System Name screen.

     When using Advanced Copy functions, specify 16 or less alphanumeric characters for ETERNUS Disk storage system name.

   - If you connect iSCSI, specify "Enable" the use of iSNS server in the target port.

   Additionally perform the following settings for the storage devices other than the ETERNUS DX60 S2:

   - On the following screen of ETERNUS Web GUI, create a new SSH server key. The number of bits for the key is at your discretion.

Target Device	Name of Screen
ETERNUS DX60 S5/S4/S3 ETERNUS DX100 S5/S4/S3 ETERNUS DX200 S5/S4/S3 ETERNUS AF150 S3 ETERNUS AF250 S3/S2 ETERNUS AF250	Setup SSH Server Key
ETERNUS DX80 S2 ETERNUS DX90 S2	Create SSH Server Key

- On the Setup User Account screen of ETERNUS Web GUI, create a Software Role Account.
  In later procedures, specify the account information you created here.
- When managing devices using SNMPv1, you must set the SNMP community name on the ETERNUS Disk storage system. Set the SNMP community name on the Setup SNMP Agent Community screen of ETERNUS Web GUI.
- When managing devices using SNMPv3, you must set the SNMP user name on the ETERNUS Disk storage system. Set the SNMP user name on the Setup SNMP Agent User screen of ETERNUS Web GUI.

2. Launch Web Console, and then register the target ETERNUS Disk storage system.

See

Refer to "Register ETERNUS Disk Storage System" in the *Web Console Guide* for information on the procedure.

4.2.5 Registering Express License

Register the Express use license for all ETERNUS Disk storage systems managed by Express.

For the relation between licenses and available functions, refer to "A.2 Functions Provided by Licenses".

For the license registration method, refer to "A.3.1 Registration of License".

4.2.6 Setting Environment Variable PATH

For using Advanced Copy functions, add the "bin" directory of AdvancedCopy Manager CCM to the environment variable PATH.

For Windows environments

1. Right-click on **Computer** on the **Start** menu, and select the **Properties** from the pop-up menu.
2. Click **Advanced system settings** on the left side of **System** dialog box.
3. Click **Advanced** tab in the **System Properties** dialog box, and then click **Environment Variables**.
4. Add the following value to the environment variable PATH.

```
installDir\CCM\bin
```

Point

When listing multiple directories, separate them with semicolons (;).

For Linux environments

When using Bourne shell, add a value to the environment variable PATH as below.

```
# PATH=$PATH:/opt/FJSVccm/bin
# export PATH
```

Point

When listing multiple directories, separate them with colons (:).

4.3 Setup of Storage Cruiser's Manager

This section explains how to set up the ETERNUS SF Manager as the Storage Cruiser's manager.

4.3.1 Configuring Network Environment

If you set up firewalls between the Management Server and Managed Servers, as well as between the Management Server and an ETERNUS Disk storage system, set the following port numbers so as to allow transmissions to pass the firewalls.

Port Number/Protocol	Communication Start Direction	Function
161/udp	From Management Server to ETERNUS Disk storage system	Configuration management, Performance management, Polling
162/udp	From ETERNUS Disk storage system to Management Server	Fault management
1372/tcp (*1)	From Management Server to ETERNUS Disk storage system	Configuration management (*3), Performance management (*3)
1999/tcp (*2)	From Management Server to ETERNUS Disk storage system	Configuration management
22/tcp	From Management Server to ETERNUS Disk storage system	Configuration management (*3), Performance management (*3)
23/tcp	From Management Server to ETERNUS Disk storage system	Configuration management (*4)

*1: For Maintenance-Secure connection
*2: For Maintenance connection
*3: For the ETERNUS DX series (excluding the ETERNUS DX60 S2) and the ETERNUS AF All-Flash Arrays
*4: For the ETERNUS DX60 S2

Note

- For registering a license to ETERNUS Disk storage system, enable the ssh connection or the telnet connection in setting up interface on the ETERNUS Disk storage system.
  Available types of connections vary with the model of ETERNUS Disk storage system. Refer to [Note] in "A.3 Operation of License Management Function" for details.
- To start Storage Cruiser's manager, map the host name of Storage Cruiser's manager to the corresponding IP address of it for host name resolution. There are methods to map them such as registering them to DNS or describing them in the "hosts" file.
- Check the settings of communication mode between Management Server and ETERNUS Disk storage system. If either communication mode of the Management Server or the ETERNUS Disk storage system is set to "Full (full duplex)", do not set the other to "Auto Negotiation".

See

Refer to "Network Requirements" in the *Storage Cruiser Operation Guide* for information on port numbers used by Storage Cruiser's manager.

4.3.2 Registering Storage Cruiser License

The Storage Cruiser licenses must be registered for each of the ETERNUS Disk storage systems managed in Storage Cruiser.

Refer to "A.1 Types of License" for information on licenses and their respectively available functions.
Refer to "A.3.1 Registration of License" for information on how to register licenses.

Point

There are two methods to register licenses, i.e. Web Console and command.
To be able to use Web Console, the ETERNUS Disk storage system must be registered in Storage Cruiser beforehand.
Refer to "4.2.4 Registering Disk Storage System" for information on how to register the ETERNUS Disk storage system.
By using command, the license can be registered on ETERNUS Disk storage system that is not registered in Storage Cruiser.

4.3.3 SNMP Trap Setting

Set SNMP Trap to receive SNMP Traps on the Management Server.

4.3.3.1 SNMP Trap Setting (for Windows)

The SNMP Trap settings of the Management Server differ depending on the protocol used with the device fault monitoring. Perform a configuration according to the operating environment by referring to the following table.

Combination of Protocols (*1) Used with Device Fault Monitoring			SNMP Trap Settings Method
SNMPv1	SNMPv2c	SNMPv3	
Y	N	N	Refer to "When Using OS-standard SNMP Trap Monitoring Service".
N	Y	N	
Y	Y	N	
N	N	Y	Refer to "When Using ETERNUS SF SNMP Trap Monitoring Service".
Y	N	Y	
N	Y	Y	
Y	Y	Y	

Y: Used. N: Not used.

*1: For the relationship between the Managed device and the protocol used for fault monitoring of that device, refer to the table of protocols used with SNMP Trap monitoring described in "Support Levels" of the *Storage Cruiser Operation Guide*.

When Using OS-standard SNMP Trap Monitoring Service

Install a Windows standard SNMP Trap receiver service (SNMP Trap).
This service is included in the install media of OS.

When Using ETERNUS SF SNMP Trap Monitoring Service

When Other Applications (Systemwalker Centric Manager, ServerView Resource Orchestrator, etc.) Using SNMP Traps Do Not Coexist

1. Take the following steps to stop Storage Cruiser's manager.

    a. Click **Control Panel** > **System and Security** > **Administrative Tools** > **Services** to open the **Services** screen.

b. Select "ETERNUS SF Manager Tomcat Service" to click **Stop**.

2. Check the status of the SNMP Trap monitoring service that is an OS standard service. If the service is started, take the following steps to stop it.

   a. Open the **Services** screen.

   b. Check the status of the SNMP Trap monitoring service.

   c. If the **Status** column of the SNMP Trap monitoring service is "Started", select the SNMP Trap monitoring service and click **Stop**.

3. Execute the following command from the command prompt and install the ETERNUS SF SNMP Trap Service. $INS_DIR is "Program Directory" specified at the ETERNUS SF Manager installation.

```
> powershell -ExecutionPolicy Unrestricted $INS_DIR\ESC\Manager\opt\FJSVssmgr\sbin
\swsttctr.ps1 -install
```

4. Take the following steps to start ETERNUS SF SNMP Trap Service.

   a. Open the **Services** screen.

   b. Select "ETERNUS SF SNMP Trap Service" to click **Start**.

5. Take the following steps to start Storage Cruiser's manager.

   a. Open the **Services** screen.

   b. Select "ETERNUS SF Manager Tomcat Service" to click **Start**.

When Other Applications (Systemwalker Centric Manager, ServerView Resource Orchestrator, etc.) Using SNMP Traps Coexist

Note

- If other applications using SNMP Traps coexist, use only IPv4 address for IP address of managed devices. If IPv6 address is included in the IP addresses of managed devices, ETERNUS SF Manager cannot coexist with other applications using SNMP Traps.
- The SNMP Trap monitoring service is an OS standard service. Make sure that when you stop the SNMP Trap monitoring service, it does not affect other products such as ServerView AlarmService and ServerView Resource Coordinator VE before performing the following procedure.

1. Take the following steps to stop Storage Cruiser's manager.

   a. Click **Control Panel** > **System and Security** > **Administrative Tools** > **Services** to open the **Services** screen.

   b. Select "ETERNUS SF Manager Tomcat Service" to click **Stop**.

2. Check the status of the SNMP Trap monitoring service that is an OS standard service. If the service is started, take the following steps to stop it.

   a. Open the **Services** screen.

   b. Check the status of the SNMP Trap monitoring service.

   c. If the **Status** column of the SNMP Trap monitoring service is "Started", select the SNMP Trap monitoring service and click **Stop**.

3. Execute the following command from the command prompt and install the ETERNUS SF SNMP Trap Service. $INS_DIR is "Program Directory" specified at the ETERNUS SF Manager installation.

```
> powershell -ExecutionPolicy Unrestricted $INS_DIR\ESC\Manager\opt\FJSVssmgr\sbin
\swsttctr.ps1 -install
```

4. Refer to "Appendix H Installation and Configuration of SNMP Trap Transfer Program" to install the SNMP Trap transfer program.

4.3.3.2 SNMP Trap Setting (for Linux)

The SNMP Trap settings of the Management Server differ depending on the IP address of the managed device or the protocol used for device fault monitoring. Perform a configuration according to the operating environment by referring to the following table.

IP Address of Managed Device	Combination of Protocols (*1) Used with Device Fault Monitoring			SNMP Trap Settings Method
	SNMPv1	SNMPv2c	SNMPv3	
IPv4 address only	Y	N	N	Refer to "When Using OS-standard SNMP Trap Monitoring Daemon".
Either of the following: - IPv4 address only - IPv4 address and IPv6 address	N	Y	N	Refer to "When Using ETERNUS SF SNMP Trap Monitoring Daemon".
	Y	Y	N	
	N	N	Y	
	Y	N	Y	
	N	Y	Y	
	Y	Y	Y	

Y: Used. N: Not used.

*1: For the relationship between the Managed device and the protocol used for fault monitoring of that device, refer to the table of protocols used with SNMP Trap monitoring described in "Support Levels" of the *Storage Cruiser Operation Guide*.

When Using OS-standard SNMP Trap Monitoring Daemon

Customize the snmptrapd configuration file that is in the OS-standard net-snmp package to receive SNMP Trap in Management Server.

Execute the following commands.

```
# systemctl enable snmptrapd.service
# systemctl start snmptrapd.service
```

Point

The snmptrapd file is located at the "/etc/snmp/snmptrapd.conf" file, but the "/usr/share/snmp/snmptrapd.conf" file is also used in some other products.
Check the settings in both files to ensure they are correct for the sake of coexistence with other products.

Check Access Control Settings

Check the status of the access control settings.
If the following setting is not in the "snmptrapd.conf" file, access control is enabled.

```
disableAuthorization yes
```

Note

- Check the status of access control settings for both the "/etc/snmp/snmptrapd.conf" and "/usr/share/snmp/snmptrapd.conf" files.

- If there are no requests from other products, set the above "disableAuthorization yes" in the "/etc/snmp/snmptrapd.conf" file to disable access control.

SNMP Trap Reception Settings (If Access Control Is Disabled)

Add the following setting to the "/etc/snmp/snmptrapd.conf" file.

```
forward default unix:/var/opt/FJSVssmgr/trap_socket
```

SNMP Trap Reception Settings (If Access Control Is Enabled)

Add the following setting.

```
authCommunity net public
authCommunity net SANMA
forward default unix:/var/opt/FJSVssmgr/trap_socket
```

Note

- Check both the "/etc/snmp/snmptrapd.conf" and "/usr/share/snmp/snmptrapd.conf" files, and edit the "snmptrapd.conf" file in which authCommunity has been set by other products. If it is not set in either file, edit the "/etc/snmp/snmptrapd.conf" file.
- If a device with an SNMP Trap community name other than "public" or "SANMA" is to be monitored, add an authCommunity setting.
  For example, if a device to be monitored has the community name "common", set this parameter as below. Note that the "public" and "SANMA" settings are mandatory.

  ```
  authCommunity net public
  authCommunity net SANMA
  authCommunity net common
  forward default unix:/var/opt/FJSVssmgr/trap_socket
  ```

- If authCommunity log or authCommunity execute has already been set by another product, add a comma and "net".
  For example, if authCommunity execute public is already set, set it as follows:

  ```
  authCommunity execute,net public
  authCommunity net SANMA
  forward default unix:/var/opt/FJSVssmgr/trap_socket
  ```

Reflect Configuration File

After having changed the "snmptrapd.conf" file, execute the following command to restart snmptrapd:
The changed content is reflected to the SNMP Trap configuration.

```
# systemctl restart snmptrapd.service
```

Point

In an environment using ServerView trap transfer program, restart the snmptrapd daemon and the trpsrvd daemon.

Note

If ServerView AlarmService or any other application that uses snmptrapd has been installed, uninstalled, or had its settings changed after the "snmptrapd.conf" file has been customized, check that these procedures have not changed the customized content of the "snmptrapd.conf" file.

See

Refer to "snmptrapd.conf Configuration File" in the *Storage Cruiser Operation Guide* for information on the "snmptrapd.conf" file.

Subsequently, perform the task that is described in "Installation of SELinux Policy Module for SNMP Trap Daemon".

When Using ETERNUS SF SNMP Trap Monitoring Daemon

Immediately after installing ETERNUS SF Manager, the system is set to use the OS-standard SNMP Trap monitoring daemon. For this reason, change from the snmptrapd that contains the OS-standard net-snmp package using the following procedure:

1. Execute the following command to stop ETERNUS SF Manager.

```
# /opt/FJSVesfcm/bin/stopesf.sh
```

2. If the OS-standard SNMP Trap daemon (snmptrapd of net-snmp package) has started, execute the following command to stop it.

```
# systemctl stop snmptrapd.service
```

3. If the OS-standard SNMP Trap daemon has automatically started when the system started, execute the following command to stop automatic start.

```
# systemctl disable snmptrapd.service
```

4. Perform an installation and configuration of the SNMP Trap daemon package.

   a. Installation of package

   Execute the following command to install the FJSVswstt-*XXXX*.rpm package in the "/opt/FJSVssmgr/etc/pkg" directory.

```
# rpm -i /opt/FJSVssmgr/etc/pkg/FJSVswstt-XXXX.rpm
```

   XXXX part of the package file is depending on the operating system.

OS	Name of Package File
Red Hat Enterprise Linux 9 Red Hat Enterprise Linux 8	FJSVswstt-V15.3.0-1.x86_64.rpm
Red Hat Enterprise Linux 7	FJSVswstt-V13.7.0-1.x86_64.rpm

   b. Configuration of automatic startup

   Execute the following commands to configure the automatic startup of the SNMP Trap daemon.

```
# cp -p /opt/FJSVssmgr/etc/pkg/startsc-snmptrapd.service /usr/lib/systemd/system
# systemctl enable startsc-snmptrapd.service
```

5. Execute the following command to start ETERNUS SF Manager.

```
# /opt/FJSVesfcm/bin/startesf.sh
```

Note

It can be mixed with the following products on the same server if monitoring the IPv6 address device:

- Systemwalker Centric Manager Management Server (V13.6.0 or later)
- Systemwalker Centric Manager Section control server (V13.6.0 or later)

Uninstalling the above products may stop the SNMP Trap daemon. Execute the following when the above products have been uninstalled from the mixed environment.

1. Execute the following command and confirm that nwsnmp-trapd is running.

```
# systemctl status startsc-snmptrapd.service
```

2. If nwsnmp-trapd is not running, restart the system or execute the following command.

```
# systemctl start startsc-snmptrapd.service
```

Subsequently, perform the task that is described in "Installation of SELinux Policy Module for SNMP Trap Daemon".

Installation of SELinux Policy Module for SNMP Trap Daemon

For environments in which SELinux is set to "Enforcing", apply the policy module, according to the following procedure.
If the operating system is Red Hat Enterprise Linux 7 or later, default is SELinux = Enforcing.
By performing this procedure, the SELinux policy module for the snmptrapd daemon or the nwsnmp-trapd daemon is automatically installed, and event notifications can be received depending on the SNMP Trap.

Note

Check that other products have changed the policy setting for snmptrapd daemon or nwsnmp-trapd daemon before applying the policy of this product to snmptrapd daemon or nwsnmp-trapd daemon. Customize the policy settings if necessary.
If the policy is not set correctly, snmptrapd daemon or nwsnmp-trapd daemon may not work.

- If customizations are not made to the SELinux policy module

  Execute the following command to apply the SELinux policy module.

```
# /opt/FJSVssmgr/etc/selinux/esfsepolicy_setup.sh
```

- If customizations are made to the SELinux policy module

  By performing this procedure, the SELinux policy for the snmptrapd daemon or the nwsnmp-trapd daemon can be changed.
  The policy definition file that corresponds to the SELinux policy module is as follows.

  Table 4.7 SELinux Policy Module Customization File

IP Address Environment of Monitoring Device	Protocol Used by Device Fault Monitoring	Policy Definition File	SELinux Policy Module Name	File Context Name
IPv4	SNMPv1	/opt/FJSVssmgr/etc/selinux/snmptrapd.te	snmptrapd.pp	snmptrapd.fc
	SNMPv2c	/opt/FJSVssmgr/etc/selinux/nwsnmp-trapd.te	nwsnmp-trapd.pp	nwsnmp-trapd.fc
	SNMPv3			
IPv6	SNMPv1			
	SNMPv3			

  The contents of the default SELinux policy module definition file are as follows.

  - For a Red Hat Enterprise Linux 9 environment

```
module policyModuleName 1.0;

require {
```

```
        type unconfined_t;
        type unconfined_service_t;
        type snmpd_t;
        type var_t;
        type initrc_t;
        type init_t;
        class sock_file write;
        class unix_stream_socket connectto;
}

#============= snmpd_t ==============
allow snmpd_t initrc_t:unix_stream_socket connectto;
allow snmpd_t init_t:unix_stream_socket connectto;
allow snmpd_t unconfined_t:unix_stream_socket connectto;
allow snmpd_t unconfined_service_t:unix_stream_socket connectto;
allow snmpd_t var_t:sock_file write;
```

- For a Red Hat Enterprise Linux 8 or Red Hat Enterprise Linux 7 environment

```
module policyModuleName 1.0;

require {
        type unconfined_t;
        type snmpd_t;
        type var_t;
        type initrc_t;
        type init_t;
        class sock_file write;
        class unix_stream_socket connectto;
}

#============= snmpd_t ==============
allow snmpd_t initrc_t:unix_stream_socket connectto;
allow snmpd_t init_t:unix_stream_socket connectto;
allow snmpd_t unconfined_t:unix_stream_socket connectto;
allow snmpd_t var_t:sock_file write;
```

Implement the following procedure to customize:

1. Refer to "Table 4.7 SELinux Policy Module Customization File" and check the file name to use.
2. Copy and correct the policy definition file that corresponds to the system in an optional directory.
3. When changing the file context definition, create a file context.
   The created file context is stored in the directory with the corrected policy definition file.
4. Move to the directory with the corrected policy definition file.
5. Execute the following command. SELinux policy module is created in the current directory.

   ```
   # make -f /usr/share/selinux/devel/Makefile
   ```

6. Execute the following command to change the setting to "SELinux=Permissive".

   ```
   # setenforce 0
   ```

7. Execute the following command to apply the policy module.

   ```
   # /usr/sbin/semodule -i policyModuleName
   ```

8. Execute the following command to check that the policy module name is displayed.

   - For Red Hat Enterprise Linux 9 or Red Hat Enterprise Linux 8 environments

     ```
     # /usr/sbin/semodule -l | grep policyModuleName
     ```

- For Red Hat Enterprise Linux 7 environments

```
# ls /etc/selinux/targeted/modules/active/modules/ | grep policyModuleName
```

9. Execute the following command to revert the setting to "SELinux=Enforcing".

```
# setenforce 1
```

Note

For creating the SELinux policy, selinux-policy-devel package is required.
If a package has not been installed, create a policy after installing the package.

4.3.3.3 SNMP Trap Setting (for Solaris)

There are no specific settings for receiving the SNMP Trap in Management Server.

Note

This software can be used in the mixed environment with the following software. When uninstalled, the SNMP Trap monitoring daemon may be stopped.

- Systemwalker Centric Manager Management Server
- Systemwalker Centric Manager Section control server
- Systemwalker Network Assist
- Systemwalker Network Topology Manager

When above software is uninstalled in the mixed environment, execute the following commands:

1. Check whether nwsnmp-trapd is running by executing the following command.

```
# /bin/ps -ef | grep nwsnmp-trapd
```

2. If nwsnmp-trapd is not running, reboot the system or execute the following commands.

```
# /opt/FJSVswstt/bin/mpnm-trapd stop
# /opt/FJSVswstt/bin/mpnm-trapd start
```

4.3.4 Setting Up End to End List Display for Hyper-V (for Windows)

To display the End to End list for the VM guest on the Hyper-V host, set up the Management Server with referring to "End to End List Display" in the *Storage Cruiser Operation Guide*.

4.4 Setup of AdvancedCopy Manager's Manager

This section explains how to set up the ETERNUS SF Manager as the AdvancedCopy Manager's manager for using Agent-based operating model.

Refer to "Chapter 8 Setup of AdvancedCopy Manager CCM" for information on the setup for Agent-less operating model.

4.4.1 Configuring Network Environment

If you set up firewalls between the Management Server and Managed Servers, as well as between the Management Server and an ETERNUS Disk storage system, set the following port numbers so as to allow transmissions to pass the firewalls. When changing the port number from the default variable, set the port number after the change.

Port Number/Protocol	Communication Start Direction	Function
1226 (default)/tcp	From Management Server to Managed Server From Managed Server to Management Server From Managed Server to Managed Server	For communication
X/tcp	From Management Server to Managed Server From Managed Server to Management Server From Managed Server to Managed Server	For communication on the clustered system
22/tcp	From Management Server to ETERNUS Disk storage system	Configuration management (*1)
23/tcp	From Management Server to ETERNUS Disk storage system	Configuration management (*2)

X: Any number can be specified.

*1: For the ETERNUS DX series (excluding the ETERNUS DX60 S2) and the ETERNUS AF All-Flash Arrays
*2: For the ETERNUS DX60 S2

Note

For registering a license to ETERNUS Disk storage system, enable the ssh connection or the telnet connection in setting up interface on the ETERNUS Disk storage system.
Available types of connections vary with the model of ETERNUS Disk storage system. Refer to Note in "A.3 Operation of License Management Function" for details.

4.4.2 Registering AdvancedCopy Manager License

Using the command of the license management function, the AdvancedCopy Manager licenses must be registered for each of ETERNUS Disk storage systems managed in AdvancedCopy Manager.

Refer to "A.1 Types of License" for information on licenses and their respectively available functions.
Refer to "A.3.1 Registration of License" for information on how to register licenses.

Point

There are two methods to register licenses, i.e. Web Console and command. To be able to use Web Console, the ETERNUS Disk storage system must be registered in AdvancedCopy Manager beforehand. Refer to "4.2.4 Registering Disk Storage System" for information on how to register the ETERNUS Disk storage system.

4.4.3 Advanced Copy Settings

It is necessary to configure the copy table size of Advanced Copy for each of ETERNUS Disk storage systems managed in AdvancedCopy Manager.

Refer to "Configure Copy Table Size for Advanced Copy" in the *Web Console Guide* for information on the operation procedures.

4.4.4 Path Settings for Remote Advanced Copy

When the REC is performed using AdvancedCopy Manager, it is necessary to set the REC path for all of ETERNUS Disk storage systems which the REC is performed.

Refer to "Display/Set REC Path" in the *Web Console Guide* for information on the operation procedures.

4.4.5 Updating Management Server IP Address Information

Update Management Server IP address information.

The work required differ depending on the version of the IP address used in Management Server operation.

- If only IPv4 address is used

  No work is necessary.

- If only IPv6 address is used

  Change the version of the Management Server IP address to IPv6.
  Change the temporary IPv4 address set up when installing ETERNUS SF Manager to the IPv6 address.
  Execute the "stgxfwcmmodsrv" command with the -f option to update IP address information. Describe only the IPv6 address for the IP address.

- If both IPv4 and IPv6 addresses are used

  Add the IPv6 address as the Management Server IP address.
  Execute the "stgxfwcmmodsrv" command with the -f option to update IP address information. Describe both the IPv4 and IPv6 addresses for the IP address.

Information

Refer to "Changing IP Address of Management Server" in the *AdvancedCopy Manager Operation Guide* for the operating system of the Management Server for the update procedure of IP address information.

4.5 Setup of Various Information

This section explains the settings for the following information to be managed by ETERNUS SF Manager.

After the completion of the manager setting, perform the following information setting by using Web Console.

- History information
  - Operation history
  - Events
  - Login/Logout history
  - Threshold monitoring alarm
- Screen refresh information
  - Screen refresh interval
- Session information
  - session timeout

The following section explains the settings for each type of information.

4.5.1 Setting for History Information

Set the number of days and capacity to retain the following four history information that is collected by ETERNUS SF Manager.

- Operation history
- Events
- Login/Logout history
- Threshold monitoring alarm

Refer to "Change Value for Log Preference" in the *Web Console Guide* for the method of settings.

The value range and initial values are as follows.
Either the "Number of days kept" or "File size" can be specified for the save definition.

History Type	Save Definition	Value Range	Initial Value
Events	Number of days kept	between 1 and 365 days	30 days
	file size	between 10 and 100 MB	
Operation history	Number of days kept	between 1 and 365 days	30 days
	file size	between 10 and 100 MB	
Login/Logout history	Number of days kept	between 1 and 365 days	60 days
	file size	between 10 and 100 MB	
Threshold monitoring alarm	Number of days kept	between 1 and 365 days	60 days

Note

Since Express and AdvancedCopy Manager do not support threshold monitoring, settings for information on threshold monitoring alarm cannot be made.

4.5.2 Setting for Screen Refresh Information

Set the interval for automatic refreshment of the Web Console screen.
Refer to "Change Value for Screen Refresh Preference" in the *Web Console Guide* for the method of settings.

4.5.3 Setting for Session Information

Set the session timeout time.
Refer to "Change Value for Session Timeout" in the *Web Console Guide* for the method of settings.

4.5.4 Settings for Event Notification E-mails

Any trouble occurring on any device managed by ETERNUS SF Manager is indicated as an event. Administrators can be notified of events by e-mail.
For receiving event notifications by E-mail, the contact e-mail address must be set by using Web Console.
Refer to "Display/Change Contact Information" in the *Web Console Guide* for the method of settings.

After setting the contact e-mail address, use Web Console to send a test E-mail and check whether it arrives at the specified E-mail address.
Refer to "Send Test E-mail" in the *Web Console Guide* for the method of sending a test E-mail.

Chapter 5 Installation of ETERNUS SF Agent

ETERNUS SF Agent has the following two types of agents:

- Storage Cruiser's agent
- AdvancedCopy Manager's agent

This chapter explains methods for installation of each agent.

5.1 Installation of Storage Cruiser's Agent

This section explains how to install the Storage Cruiser's agent.

5.1.1 Before Installation

The following preparation is necessary before starting the Storage Cruiser's agent installation.

5.1.1.1 Available Disk Space Verification

Make sure that there is enough available disk space on the server where the installation is performed.
Refer to "2.3.3.1 Required Disk Space for Installation" for information on the disk space required for installation.

If there is not enough available disk space, perform either of the following actions in order to secure the disk space required for installation:

- Increase disks
- Reconfigure the disk partitions

5.1.1.2 Previous Version and Incompatible Software Uninstallation

Check if Storage Cruiser at older version or any incompatible software is installed on the server where the installation is performed.
If found, refer to the following manual and uninstall it before starting the installation.

Refer to "2.3.2.3 Incompatible Software" for information on the incompatible software for Storage Cruiser's agent.

Software to Be Uninstalled	Reference Manual
Incompatible software	Manual for incompatible software

Check the installation progress for older version Storage Cruiser using the following method:

For Windows environments

From the **Control Panel**, open the **Programs and Features** page to check whether components of an older version of Storage Cruiser are displayed.
If any component of Storage Cruiser is displayed, confirm the version.

For Solaris environments

Perform the following procedure:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Insert the DVD "ETERNUS SF SC/ACM Mediapack (V16.9 or higher) Agent Program and Manual" of this version into the DVD drive and mount the DVD media.

   In below example of command execution, the device name of the DVD drive is mounted as /dev/dsk/c0t4d0s0. The device name for the DVD drive, however, may be different for your particular device.

```
# mount -F hsfs -o ro /dev/dsk/c0t4d0s0 dvdMountPoint
```

3. Execute the following command.

```
# cd dvdMountPoint/Agent_unix/Storage_Cruiser/Solaris
# ./scagtinstall.sh -check
```

If there is any incompatible software installed, a corresponding message is output.
If this output states a Storage Cruiser's agent package, check the version.

For Linux environments

Perform the following procedure:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Insert the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version into the DVD drive and mount the DVD media.

   In below example of command execution, the device name of the DVD drive is mounted as /dev/cdrom. The device name for the DVD drive, however, may be different for your particular device.

```
# mount -t iso9660 -r /dev/cdrom dvdMountPoint
```

3. Execute the following command.

```
# cd dvdMountPoint/Agent_unix/Storage_Cruiser/Linux
# /bin/sh ./scagtinstall.sh -check
```

If there is any incompatible software installed, a corresponding message is output.
If this output states a Storage Cruiser's agent package, check the version.

For HP-UX environments

Perform the following procedure:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Execute the following command to launch the daemon required for this task.

```
# /usr/sbin/pfs_mountd &
# /usr/sbin/pfsd &
```

3. Insert the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version into the DVD drive and mount the DVD media.

   In below example of command execution, the device name of the DVD drive is mounted as /dev/dsk/c1t2d0. The device name for the DVD drive, however, may be different for your particular device.

   - For earlier than v11.23

```
# /usr/sbin/pfs_mount -t rrip -x unix /dev/dsk/c1t2d0 dvdMountPoint
```

   - For v11.23 or later

```
# mount -F cdfs /dev/dsk/c1t2d0 dvdMountPoint
```

4. Execute the following command.

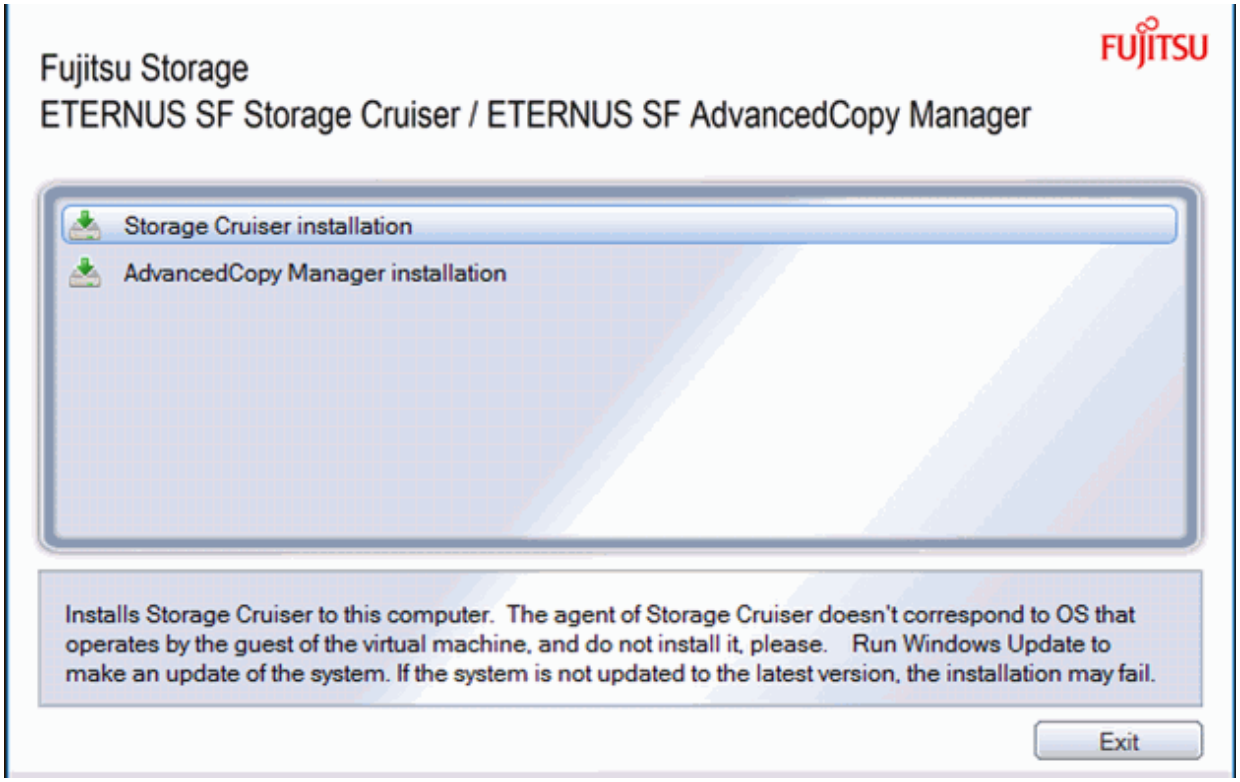
```
# /usr/sbin/swlist | /usr/bin/grep FJSVssage
```

If this output states a Storage Cruiser's agent package, check the version.

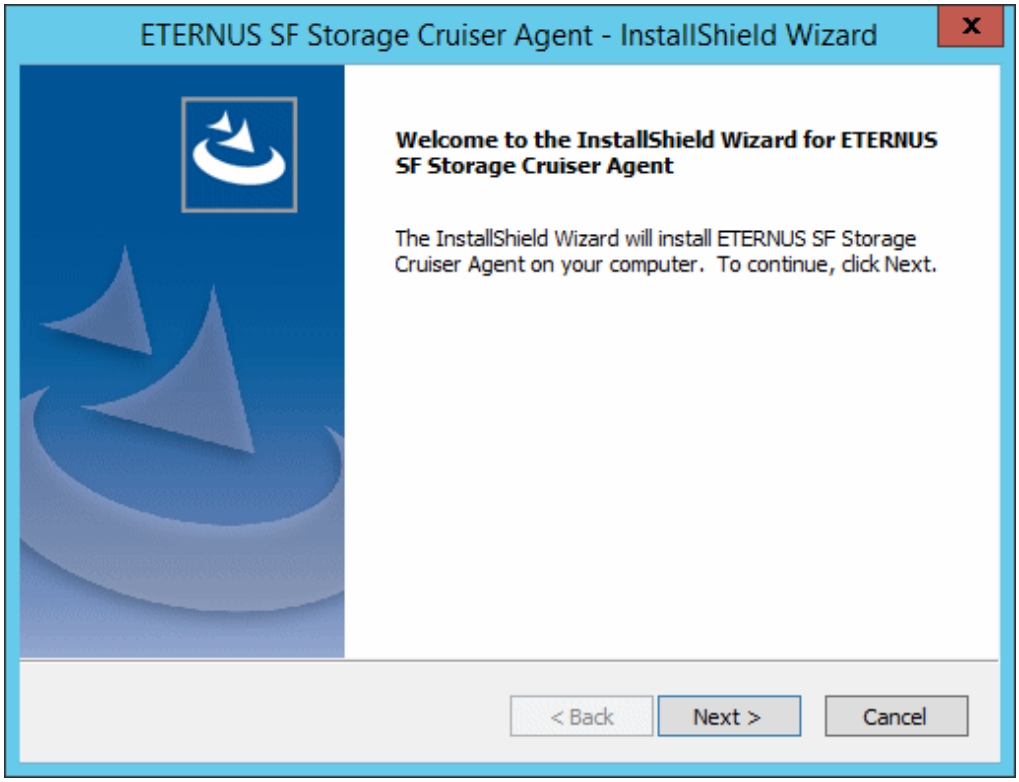
5.1.2 Interactive Installation Procedure of Storage Cruiser's Agent (for Windows)

The interactive installation procedure of Storage Cruiser's agent (for Windows) is performed as follows:

1. Log on to the server using Administrator privileges.
2. Insert the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version into the DVD drive.
3. The following window is displayed. Click **Storage Cruiser installation**.



4. The installation wizard page is displayed. Click **Next**.



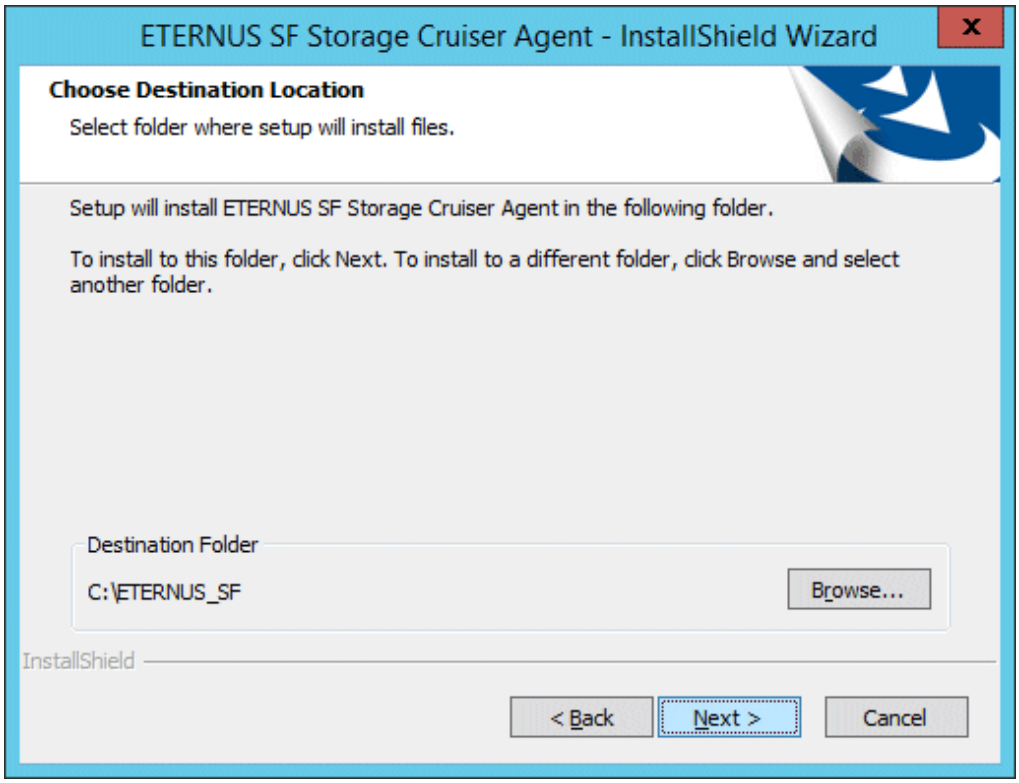
Information

When the installation wizard page is minimized, maximize it by using the task manager. The procedure is as follows:

1. Push the [Ctrl] + [Alt] + [Del] key and start the task manager.
2. Select task manager's **Applications** tag.
3. Select this installer application from the list of the task, and click **Switch To**.

5. Read the terms and conditions of the **License Agreement** page.
   If the conditions are agreeable, click **Yes**.
6. Specify the installation directory in the **Choose Destination Location** page.

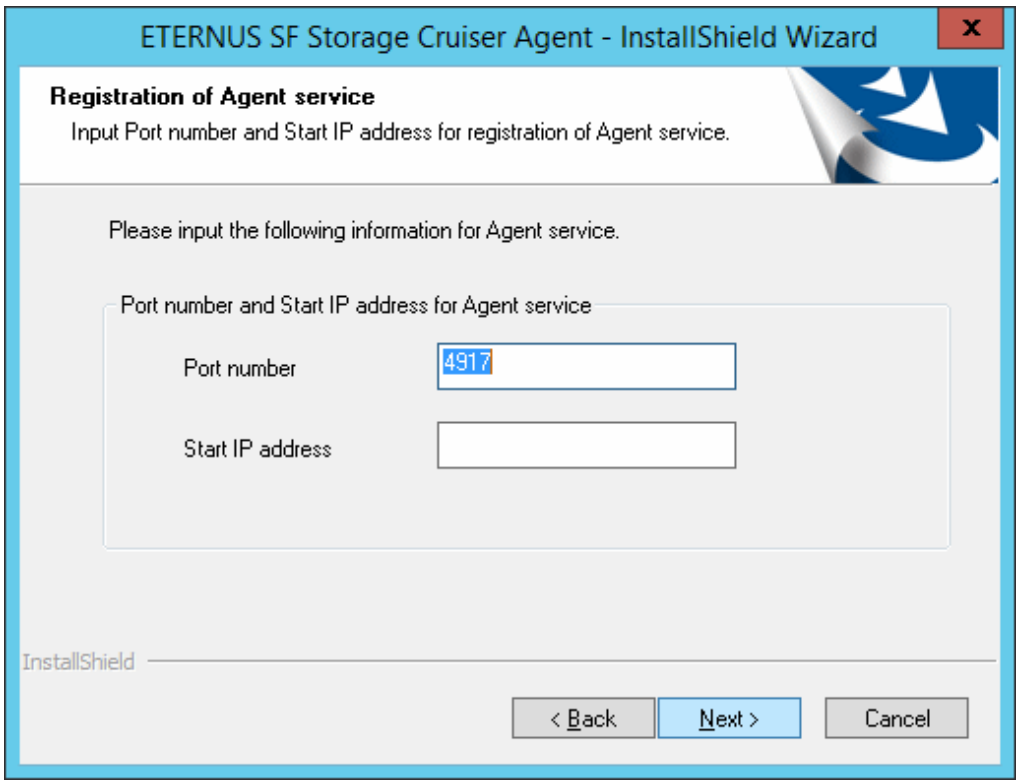
   If installing to a directory other than the default directory, click **Browse** and change the install location. After designating all of the directories, click **Next**.



Point

The characters " | : * ? / . < > , % & ^ = ! ; are not supported for file name.

7. Specify the port number and start IP address used by agent services in the **Registration of Agent service** page.



The explanation of each tab is as follows.

Tab Name	Explanation
Port number	This port number is used for transmission between the Storage Cruiser's agent and the manager. Enter the same number as specified in the Management Server configuration. The default value is 4917, and there is usually no need to change this value. However, if the system is already using this port number, enter an unused port number. Values between 1024 and 65535 are valid. In this case, it is necessary to change the port number of "sscruisera" service in the Management Server to same number. The used port number can be checked with %SystemRoot%\system32\drivers\etc\services file.
Start IP address	In order to have Storage Cruiser's agent communicate with Storage Cruiser's manager on the correct LAN path, set the Start IP address as the IP address to be used for data communication by the Managed Server (an IP address in the administrative LAN). Depending on the IP addresses that are set on the Managed Server, make this setting as follows: - If the Managed Server has only one IP address, enter its IP address. - If multiple IP addresses are set up on the Managed Server, select and specify a Start IP address from the network configuration of the Managed Server and the Management Server. Basically, you should specify an IP address that is set up in the LAN on the route side of the Management Server. - If the Managed Server is under firewall or IP of the Managed Server is converted by NAT, enter the IP address to be able to communicate from the Management Server.

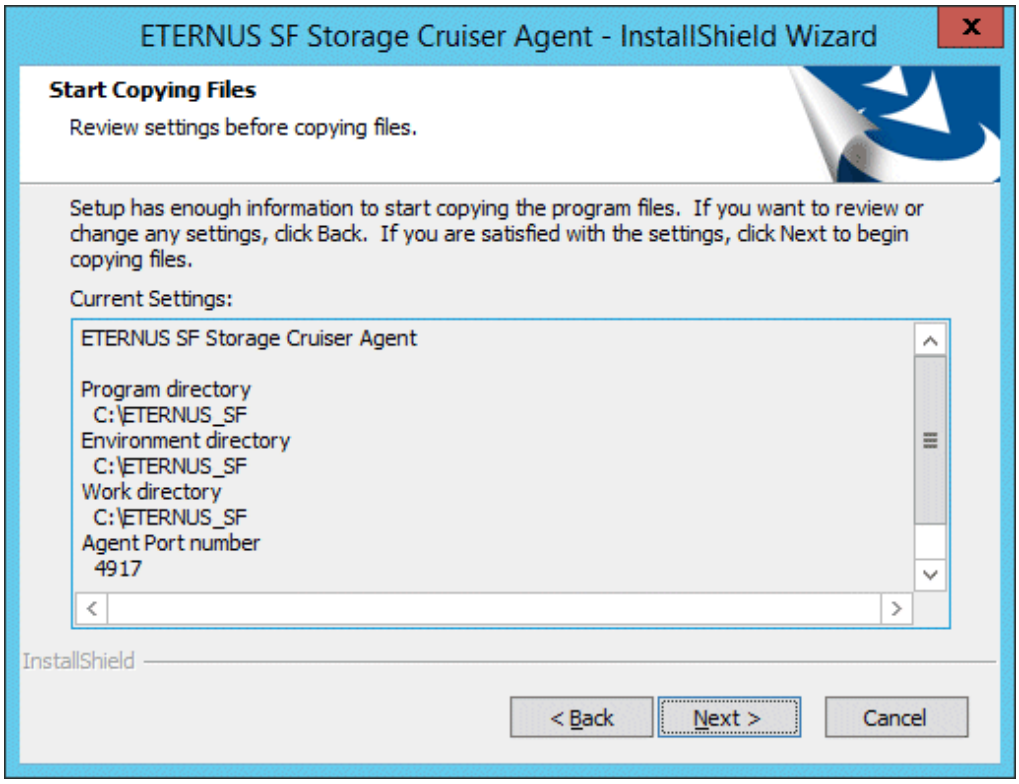
Note

The following notes apply when using the IPv6 address.

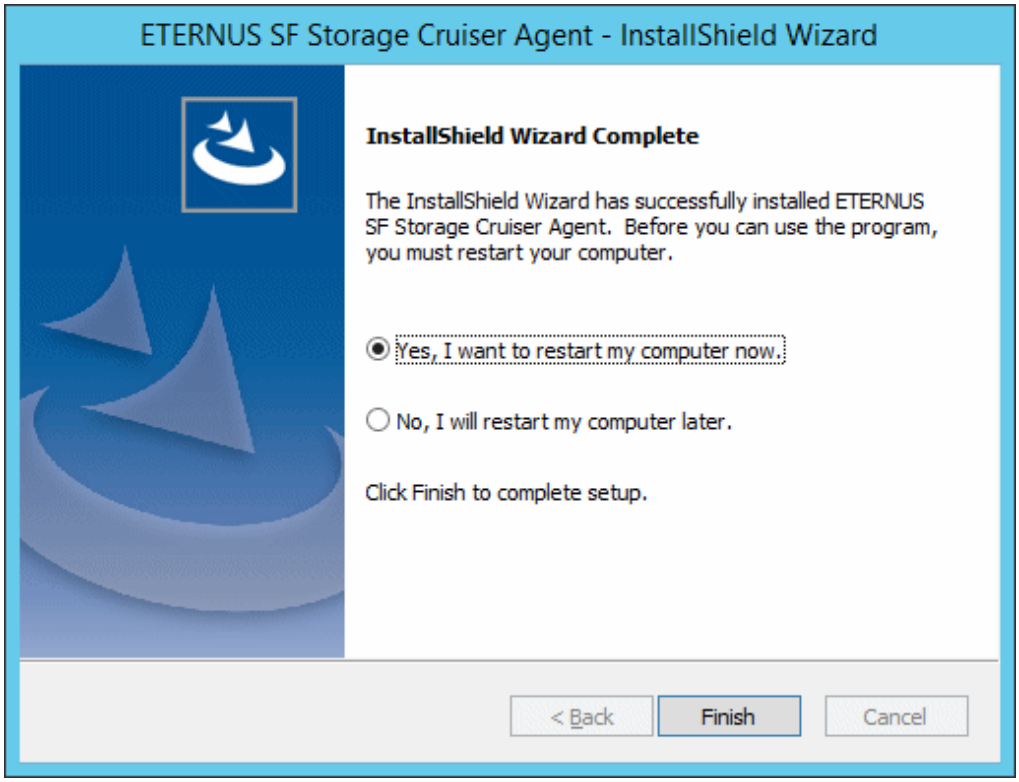
- Only the global address is supported.
- Web Console displays the IP address in accordance with RFC5952. As such, the format displayed by Web Console may differ from the format entered using this procedure. Refer to "Note for IPv6" in the *Web Console Guide* for the IPv6 address display rules of Web Console.

8. Check the settings information in the **Start Copying Files** page.

   If the settings are correct, click **Next**. The copy processing starts.
   To change a setting, click **Back**.



9. When the copying process is completed, the following installation wizard page is displayed. Click **Finish**, and then eject the DVD media.



10. Restart the system.

The Storage Cruiser's agent (for Windows) installation is completed.
Refer to "6.1 Setup of Storage Cruiser's Agent" to set up the Storage Cruiser's agent.

5.1.3 Silent Installation Procedure of Storage Cruiser's Agent (for Windows)

Take the following steps to run a silent installation:

1. Edit an installation parameter file.
2. Run a silent installation.

For the upgrade installation, refer to the *Migration Guide* of this version.

5.1.3.1 Editing Installation Parameter File

When using default install, it is not necessary to edit an installation parameter file.

An installation parameter file is a file in which to specify installation parameters such as installation destination directory and port number. This file is stored on the DVD media and default values are set to respective installation parameters. For details on the installation parameter file, refer to "C.3 Installation Parameter File (for Storage Cruiser's Agent for Windows)".

The installation parameter file is stored on the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version.

- Storage location

```
dvdDrive:\Agent_windows\Storage_Cruiser\windows_x86\scagt_parameter.ini
```

When changing installation parameters, copy the installation parameter file on the DVD media to an optional location and edit the copied file. For description of each installation parameter, refer to "C.4 Installation Parameters (for Storage Cruiser's Agent for Windows)".

5.1.3.2 Running Silent Installation

The silent installation procedure of Storage Cruiser's agent (Windows) is as follows:

1. Log on to the target server as a user with administrator privileges.
2. Install the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version into the DVD drive. If the Installer screen is displayed by autorun, exit the installer.
3. Start the command prompt with "Run as administrator".
4. Run the following commands for silent installation of the Storage Cruiser's agent.
   - For default install

     For *installLogFile*, specify the file in which to output installation log with an absolute path. It is optional to specify for *installLogFile*.

     ```
     dvdDrive:\Agent_windows\Storage_Cruiser\windows_x86\scagtsilentinstall.bat [-l
     installLogFile]
     ```

   - For custom install

     For *installParameterFile*, specify with an absolute path. It is mandatory to specify for *installParameterFile*. For *installLogFile*, specify the file in which to output installation log with an absolute path. It is optional to specify for *installLogFile*.

     ```
     dvdDrive:\Agent_windows\Storage_Cruiser\windows_x86\scagtsilentinstall.bat -s
     installParameterFile [-l installLogFile]
     ```

Point

- If nothing is specified for *installLogFile*, an install log file named "scagtsilentinstall.log" is created in the working directory specified for the environment variable TEMP.
- If there is any file of the same name as the specified install log file exists, it is overwritten.
- It is required to specify an existing directory with write permission for the directory in which to store the install log file. If it has no write permission, no error message is output onto the command prompt or screen and the process terminates with error.
- If the paths to the installation parameter file and install log file contain any spaces, they should be surrounded by double quote characters.
- The characters " | : * ? / . < > % & ^ ; ! are not supported for path name for installation parameter file or install log file.

Note

- If an invalid option is specified, its corresponding error message is output in the install log file and the process exits. No error message is output in the command prompt or screen.
- Do not execute multiple silent install commands at the same time. If a silent install starts while a silent install is executing, the silent install terminates abnormally without creating an install log file.
- In the case of default install or in the case the IP address is not specified for "Agent_server_IP_address" of the installation parameter file at custom install, on completion of installation, agent information should be set by the "setagtip" command.

5. On completion of installation, a command prompt is displayed.
   Remove the DVD media used for installation out of the device.

5.1.3.3 Checking Silent Installation Result

Check the return value from the silent installation command. If necessary, check the install log file. However, if the return value from the silent installation command is 3 or 9, no install log file is created. For details, refer to "D.2 Return Values for Silent Installation (for Storage Cruiser's Agent)".

The installation result can be viewed in the install log file, too.
Open the install log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent installation command.

The Storage Cruiser's agent (for Windows) installation is completed.
Refer to "6.1 Setup of Storage Cruiser's Agent" to set up the Storage Cruiser's agent.

5.1.4 Interactive Installation Procedure of Storage Cruiser's Agent (for Solaris)

The interactive installation procedure of Storage Cruiser's agent (for Solaris) is performed as follows:

1. Log in to the server as a superuser.
2. Insert the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version into the DVD drive and mount the DVD media.

   In below example of command execution, the device name of the DVD drive is mounted as /dev/dsk/c0t4d0s0. The device name for the DVD drive, however, may be different for your particular device.

```
# mount -F hsfs -o ro /dev/dsk/c0t4d0s0 dvdMountPoint
```

3. Execute the following command.

```
# cd dvdMountPoint/Agent_unix/Storage_Cruiser/Solaris
# ./scagtinstall.sh
```

4. The following message is output. To execute the installation, enter 'y'. To discontinue the installation, enter any key except 'y'.

```
ETERNUS SF Storage Cruiser 16.9.1
Copyright Fujitsu Limited 2013-2024
This program will install "ETERNUS SF Storage Cruiser" Agent on your system.

Do you want to continue the installation of this package? [y,n,?,q]
```

5. If 'y' was entered in step 4, specify the program install directory for the following question.

```
Please enter install directory. (default: /opt) [?,q]

Please enter variable configuration directory. (default: /var/opt) [?,q]

Please enter fixed configuration directory. (default: /etc/opt) [?,q]
```

   The directory names in above message have the following meanings.

Directory Name	Meaning
install directory	This is the directory to which the package is installed. The default is /opt.
variable configuration directory	This is the directory to which the variable files (log files, temporary files, etc.) are installed. The default is /var/opt.

Directory Name	Meaning
fixed configuration directory	This is the directory to which the files for the environment settings are installed. The default is /etc/opt.

Point

Spaces and the characters " ' * ; = \ are not supported for directory name.

6. After all the directories are specified, the following message is output. To continue the installation, enter 'y'. To discontinue the installation, enter 'n'.

```
Using </opt> as the package base directory.
## Processing package information.
## Processing system information.
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.
## Checking for setuid/setgid programs.

This package contains scripts which will be executed with super-user
permission during the process of installing this package.

Do you want to continue with the installation of <FJSVssage> [y,n,?]
```

7. If 'y' was entered in step 6, the installation continues.

   When installation is completed normally, the following message is displayed.

```
Installing ETERNUS SF Storage Cruiser Storage System Agent as <FJSVssage>
...
Installation of <FJSVssage> was successful.
INFO  : "ETERNUS SF Storage Cruiser" Agent was installed successfully.
```

   If there is any error during installation, the following message is displayed.

```
ERROR : not privileged
or
ERROR : Installing FJSVssage was failed.
```

The Storage Cruiser's agent (for Solaris) installation is completed.
Refer to "6.1 Setup of Storage Cruiser's Agent" to set up the Storage Cruiser's agent.

5.1.5 Silent Installation Procedure of Storage Cruiser's Agent (for Solaris)

Take the following steps for silent installation:

1. Edit an installation parameter file
2. Run a silent installation.

For the upgrade installation, refer to the *Migration Guide* of this version.

5.1.5.1 Editing Installation Parameter File

When using default install, it is not necessary to edit an installation parameter file.

An installation parameter file is a file in which to specify an installation destination directory. This file is stored on the DVD media and default values are set to respective installation parameters. For details on the installation parameter file, refer to "C.11 Installation Parameter File (for Storage Cruiser's Agent for Solaris)".

The installation parameter file is stored on the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version.

- Storage location

```
dvdMountDir/Agent_unix/Storage_Cruiser/Solaris/scagt_parameter.txt
```

When changing installation parameters, copy the installation parameter file on the DVD media to an optional location and edit the copied file. For description of each installation parameter, refer to "C.12 Installation Parameters (for Storage Cruiser's Agent for Solaris).

5.1.5.2 Running Silent Installation

The silent installation procedure of Storage Cruiser's agent (for Solaris) is as follows:

1. Log in to the target server. Perform the post-login operation as root (superuser).
2. Install the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version into the DVD drive to mount the DVD media.

   In the following example of command execution, the device name of the DVD drive is mounted as /dev/dsk/c0t4d0s0. The device name of a DVD drive varies with the device.

   ```
   # mount -F hsfs -o ro /dev/dsk/c0t4d0s0 dvdMountPoint
   ```

3. Execute the following silent installation command.

   - For default install

     For *installLogFile*, specify the file in which to output installation log with an absolute path. It is optional to specify for *installLogFile*.

     ```
     # dvdMountPoint/Agent_unix/Storage_Cruiser/Solaris/scagtsilentinstall.sh [-l installLogFile]
     ```

   - For custom install

     Specify for *installParameterFile* with an absolute path. It is mandatory to specify for *installParameterFile*. For *installLogFile*, specify the file in which to output installation log with an absolute path. It is optional to specify for *installLogFile*.

     ```
     # dvdMountPoint/Agent_unix/Storage_Cruiser/Solaris/scagtsilentinstall.sh -s
     installParameterFile [-l installLogFile]
     ```

   Point

   - If nothing is specified for *installLogFile*, an install log file named "scagtsilentinstall.log" is created in the "/var/tmp" directory.
   - If there is any file of the same name as the specified install log file exists, it is overwritten.
   - It is required to specify an existing directory with write permission for the directory in which to store the install log file. If it has no write permission, no error message is output in the command prompt or screen, and the process terminates with error.

   Note

   - If an invalid option is specified, its corresponding error message is output in the install log file and the process exits. No error message is output in the command prompt or screen.
   - Do not execute multiple silent install commands at the same time. If a silent install starts while a silent install is executing, the silent install terminates abnormally without creating an install log file.

4. On completion of installation, a command prompt is displayed.

5. Unmount the DVD media.

```
# umount dvdMountPoint
```

6. Remove the DVD media out of the DVD drive.

5.1.5.3 Checking Silent Installation Result

Check the return value from the silent installation command. If necessary, check the install log file. However, if the return value from the silent installation command is 3 or 9, no install log file is created. For details, refer to "D.2 Return Values for Silent Installation (for Storage Cruiser's Agent)".

The installation result can be viewed in the install log file, too.
Open the install log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the value from the silent installation command.

The Storage Cruiser's agent (for Solaris) installation is completed.
Refer to "6.1 Setup of Storage Cruiser's Agent" to set up the Storage Cruiser's agent.

5.1.6 Interactive Installation Procedure of Storage Cruiser's Agent (for Linux)

The interactive installation procedure of Storage Cruiser's agent (for Linux) is as follows:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Insert the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version into the DVD drive and mount the DVD media.

   In below example of command execution, the device name of the DVD drive is mounted as /dev/cdrom. The device name for the DVD drive, however, may be different for your particular device.

```
# mount -t iso9660 -r /dev/cdrom dvdMountPoint
```

3. Execute the following command.

```
# cd dvdMountPoint/Agent_unix/Storage_Cruiser/Linux
# /bin/sh ./scagtinstall.sh
```

4. The following message is output. To execute the installation, enter 'y'. To discontinue the installation, enter any key except 'y'.

```
ETERNUS SF Storage Cruiser 16.9.1
Copyright Fujitsu Limited 2013-2024
This program will install "ETERNUS SF Storage Cruiser" Agent on your system.

Do you want to continue the installation of this package? [y,n,?,q]
```

5. If 'y' was entered in step 4, the installation continues.

   When installation is completed normally, the following message is displayed.

```
INFO : Starting Installation of ETERNUS SF Storage Cruiser ...

INFO : Installation of <FJSVssage> was successful.

INFO : "ETERNUS SF Storage Cruiser" Agent was installed successfully.
```

   If there is any error during installation, the following message is displayed.

```
ERROR : not privileged
or
INFO  : Installation is terminated.
```

```
or
ERROR : Installing FJSVssage was failed.
```

The Storage Cruiser's agent (for Linux) installation is completed.
Refer to "6.1 Setup of Storage Cruiser's Agent" to set up the Storage Cruiser's agent.

5.1.7 Silent Installation Procedure of Storage Cruiser's Agent (for Linux)

Point

No needs to modify the installation parameter file for Storage Cruiser's agent (for Linux).

For the upgrade installation, refer to the *Migration Guide* of this version.

5.1.7.1 Running Silent Installation

The following is the procedure to silently install Storage Cruiser's agent (for Linux):

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Install the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version into the DVD drive to mount the DVD media.

   In the following example of command execution, the device name of the DVD drive is mounted as /dev/cdrom. The device name of a DVD drive varies with the device.

   ```
   # mount -t iso9660 -r /dev/cdrom dvdMountPoint
   ```

3. Execute the following silent installation command.

   For *installLogFile*, specify the file in which to output installation log with a full path. It is optional to specify for *installLogFile*.

   ```
   # dvdMountPoint/Agent_unix/Storage_Cruiser/Linux/scagtsilentinstall.sh  [-l installLogFile]
   ```

   Point

   - If nothing is specified for *installLogFile*, an install log file named "scagtsilentinstall.log" is created in the "/var/tmp" directory.
   - If there is any file of the same name as the specified install log file exists, it is overwritten.
   - It is required to specify an existing directory with write permission for the directory in which to store the install log file. If it has no write permission, no error message is output in the command prompt or screen, and the process terminates with error.

   Note

   - If an invalid option is specified, its corresponding error message is output in the log file and the process exits. No error message is output in the command prompt or screen.
   - Do not execute multiple silent install commands at the same time. If a silent install starts while a silent install is executing, the silent install terminates abnormally without creating an install log file.

4. On completion of installation, a command prompt is displayed.
5. Unmount the DVD media.

   ```
   # umount dvdMountPoint
   ```

6. Remove the DVD media out of the DVD drive.

5.1.7.2 Checking Silent Installation Result

Check the return value from the silent installation command. If necessary, check the install log file. However, if the return value from the silent installation command is 3 or 9, no install log file is created. For details, refer to "D.2 Return Values for Silent Installation (for Storage Cruiser's Agent)".

The installation result can be viewed in the install log file, too.
Open the install log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent installation command.

The Storage Cruiser's agent (for Linux) installation is completed.
Refer to "6.1 Setup of Storage Cruiser's Agent" to set up the Storage Cruiser's agent.

5.1.8 Interactive Installation Procedure of Storage Cruiser's Agent (for HP-UX)

The interactive installation procedure of Storage Cruiser's agent (for HP-UX) is as follows:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Execute the following command to launch the daemon required for this task.

```
# /usr/sbin/pfs_mountd &
# /usr/sbin/pfsd &
```

3. Insert the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version into the DVD drive and mount the DVD media.

   In below example of command execution, the device name of the DVD drive is mounted as /dev/dsk/c1t2d0. The device name for the DVD drive, however, may be different for your particular device.

   - For earlier than v11.23

```
# /usr/sbin/pfs_mount -t rrip -x unix /dev/dsk/c1t2d0 dvdMountPoint
```

   - For v11.23 or later

```
# mount -F cdfs /dev/dsk/c1t2d0 dvdMountPoint
```

Note

There are the following cautions about mounting the DVD media:

- If the user (usually "root") who executes the "pfs_mount" command belongs to 9 or more groups, the following error message is output.

```
pfs_mount /dev/dsk/deviceName not owner.
pfs_mount giving up on cdrom.
```

  If the user who executes the "pfs_mount" command belongs to 9 or more groups, in the "/etc/group" file, modify the number of groups to which the user belongs to 8 or less.

- On executing the "pfs_mount" command, the following error message may be output.

```
/usr/sbin/pfs_mount:/etc/pfs_fstab:No such file or directory
```

  In this case, create the "/etc/pfs_fstab" file in the "/etc" directory.

```
# touch /etc/pfs_fstab
# chown root:root /etc/pfs_fstab
# chmod 644 /etc/pfs_fstab
```

- If the "/etc/resolv.conf" file exists, executing the "pfs_mount" command may result in an error. Use the following method to temporarily move the "/etc/resolv.conf" file out of the way and then execute the "pfs_mount" command.

  1. After temporarily moving the file out of the way, execute the "pfs_mount" command.

     ```
     # mv resolv.conf resolv.conf.org
     ```

  2. After installing Storage Cruiser's agent, restore the environment.

     ```
     # mv resolv.conf.org resolv.conf
     ```

4. Install the package.

   Copy the compressed target operating system package from the DVD media to the *workDir* directory, and uncompress it. Execute the "swinstall" command. Examples for executing the command are as follows:

   - For HP-UX 11i v3(Itanium)

     ```
     # cp dvdMountPoint/Agent_unix/Storage_Cruiser/HP-UX/pkg/FJSVssage-15.1.0_ia64.depot.Z workDir
     # uncompress workDir/FJSVssage-15.1.0_ia64.depot.Z
     # swinstall -s workDir/FJSVssage-15.1.0_ia64.depot
     ```

   - For HP-UX 11i v3(PA-RISC)

     ```
     # cp dvdMountPoint/Agent_unix/Storage_Cruiser/HP-UX/pkg/FJSVssage-15.1.0_pa.depot.Z workDir
     # uncompress workDir/FJSVssage-15.1.0_pa.depot.Z
     # swinstall -s workDir/FJSVssage-15.1.0_pa.depot
     ```

5. The screen is displayed. Select "FJSVssage" from the list, and click **Actions** > **install**.
6. The **Install Analysis** screen is displayed, and package is checked. After checking package, click **OK**.
7. The install information is displayed in the **Install Window** screen.
   When "Completed" is displayed in **Status** field, the installation is completed. For detailed information, click **Logfile**.
   Click **Done** to go back to the initial screen.
8. The installation is completed. Delete the package copied in step 4, as it is no longer needed.

The Storage Cruiser's agent (for HP-UX) installation is completed.
Refer to "6.1 Setup of Storage Cruiser's Agent" to set up the Storage Cruiser's agent.

5.2 Installation of AdvancedCopy Manager's Agent

This section explains how to install the AdvancedCopy Manager's agent.

5.2.1 Before Installation

The following preparation is necessary before starting the AdvancedCopy Manager's agent installation.

5.2.1.1 Available Disk Space Verification

Make sure that there is enough available disk space on the server where the installation is performed.
Refer to "2.4.3.1 Required Disk Space for Installation" for information on the disk space required for installation.

If there is not enough available disk space, perform either of the following actions in order to secure the disk space required for installation:

- Increase disks
- Reconfigure the disk partitions

5.2.1.2 Previous Version and Incompatible Software Uninstallation

Check if SystemWalker/StorageMGR, AdvancedCopy Manager at older version or any incompatible software is installed on the server where the installation is performed.
If found, refer to the following manual and uninstall it before starting the installation.

Refer to "2.4.2.3 Incompatible Software" for information on the incompatible software for AdvancedCopy Manager's agent.

Software to Be Uninstalled	Reference Manual
SystemWalker/StorageMGR	Installation manual of SystemWalker/StorageMGR for relevant version and types of M/A and SE/EE
Incompatible software other than listed above	Manual for incompatible software

Check the installation progress for SystemWalker/StorageMGR or previous version AdvancedCopy Manager using the following method:

For Windows environments

From the **Control Panel**, open the **Programs and Features** page to check whether components of SystemWalker/StorageMGR or older version AdvancedCopy Manager are displayed.

If any component is displayed, perform the actions described below.

- If the component of SystemWalker/StorageMGR is displayed

  SystemWalker/StorageMGR is installed. Referring to the displayed result, confirm the version and types of M/A and SE/EE.

- If the component of AdvancedCopy Manager is displayed

  An older version of AdvancedCopy Manager is installed. Confirm the version.

For Solaris environments

Execute the following command.

```
# pkginfo -l FJSVswsts
```

If the package information is displayed, SystemWalker/StorageMGR or an older version of AdvancedCopy Manager is installed.

- If the package information displays "SystemWalker/StorageMGR"

  SystemWalker/StorageMGR is installed. Referring to the displayed result, confirm the version and types of M/A and SE/EE.

- If the package information displays "AdvancedCopy Manager"

  An older version of AdvancedCopy Manager is installed. Confirm the version.
  The type of installed component (manager or agent) can be checked by executing the following command.

  ```
  # pkginfo -l FJSVswssc FJSVssmge
  ```

  If one or more of the following package information are output, the AdvancedCopy Manager's manager is installed. However, if neither is output, the AdvancedCopy Manager's agent is installed:

  - Package information for FJSVswssc
  - Package information for FJSVssmge (package version 15.0.0 or later)

For Linux environments

Execute the following command.

```
# rpm -qi FJSVswsts
```

If "AdvancedCopy Manager" is displayed in the command result, an older version of AdvancedCopy Manager is installed. Confirm the version.
The type of installed component (manager or agent) can be checked by the following command.

```
# rpm -qi FJSVswssc FJSVssmge
```

If one or more of the following package information are output, the AdvancedCopy Manager's manager is installed. However, if neither is output, the AdvancedCopy Manager's agent is installed:

- Package information for FJSVswssc
- Package information for FJSVssmge (package version 15.0.0 or later)

For HP-UX environments

Check whether any of the following files are on the server:

- /opt/swstorage/etc/swstg.ini
- /etc/opt/swstorage/swstg.ini

If any of the above files are on the server, SystemWalker/StorageMGR or an older version of AdvancedCopy Manager is installed.

- If "SystemWalker/StorageMGR" is described in the "/opt/swstorage/setup/stg/swsetup.ini" file, SystemWalker/StorageMGR is installed. Referring to the file, confirm the version and types of SE/EE.
- If "AdvancedCopy Manager" is described in the "/opt/swstorage/setup/stg/swsetup.ini" file, an older version of AdvancedCopy Manager is installed. Confirm the version.

5.2.2 Interactive Installation Procedure of AdvancedCopy Manager's Agent (for Windows)

There are two methods of performing the interactive installation of AdvancedCopy Manager's agent (for Windows).

- Default installation

  Default installation uses the following configuration information. You can skip those entries.

  - Installation destination

    The "*systemDrive*:\Win32app\AdvancedCopyManager" directory is used as the base location for the Program Directory, Environment Directory, and Work Directory.

  - Port number for the communication service

    "1226" is used.

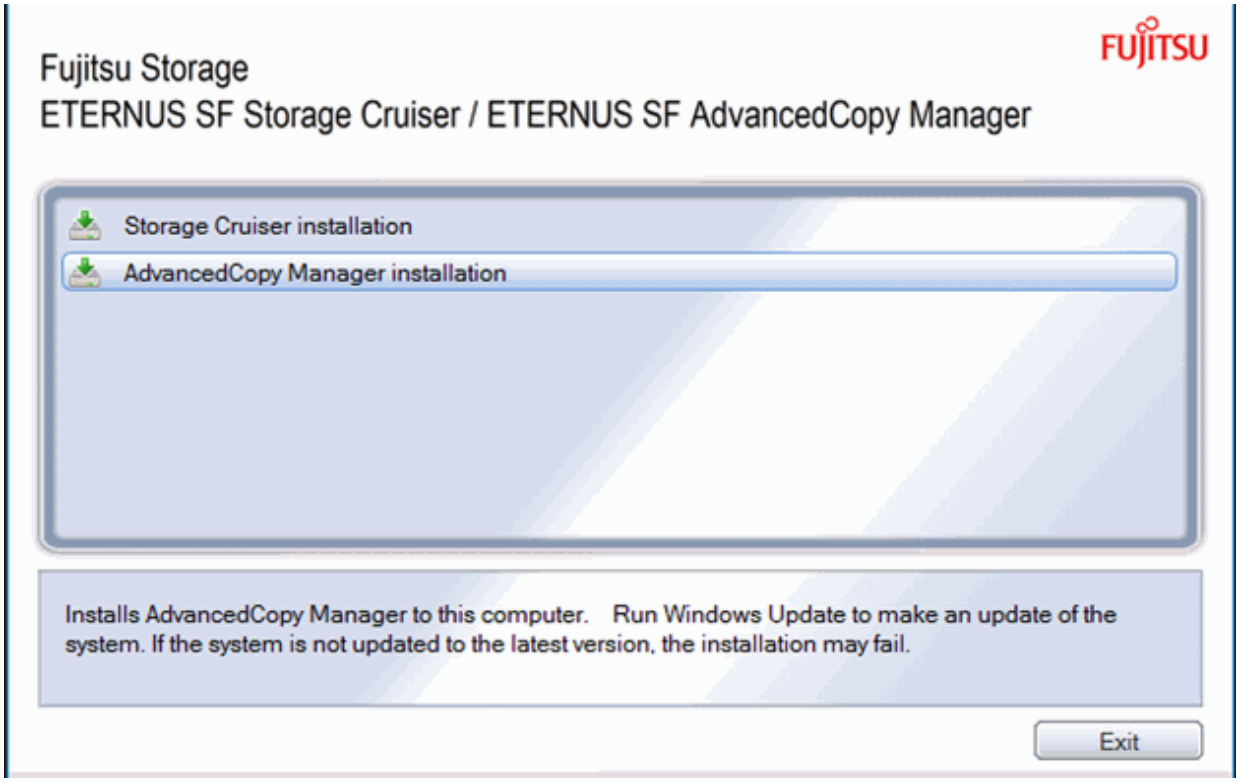
- Custom installation

  You must enter the configuration information for installation on the screen (installation destination, communication service port number).

- Refer to "Installation of ETERNUS SF Agent" in the *Cluster Environment Setup Guide* to install AdvancedCopy Manager's agent on a clustered system.
- When reinstalling the AdvancedCopy Manager's agent, if you change the port number of the following service of AdvancedCopy Manager's agent, delete the following service name that is defined in the %SystemRoot%\system32\drivers\etc\services file, and then reinstall.
  - stgxfws

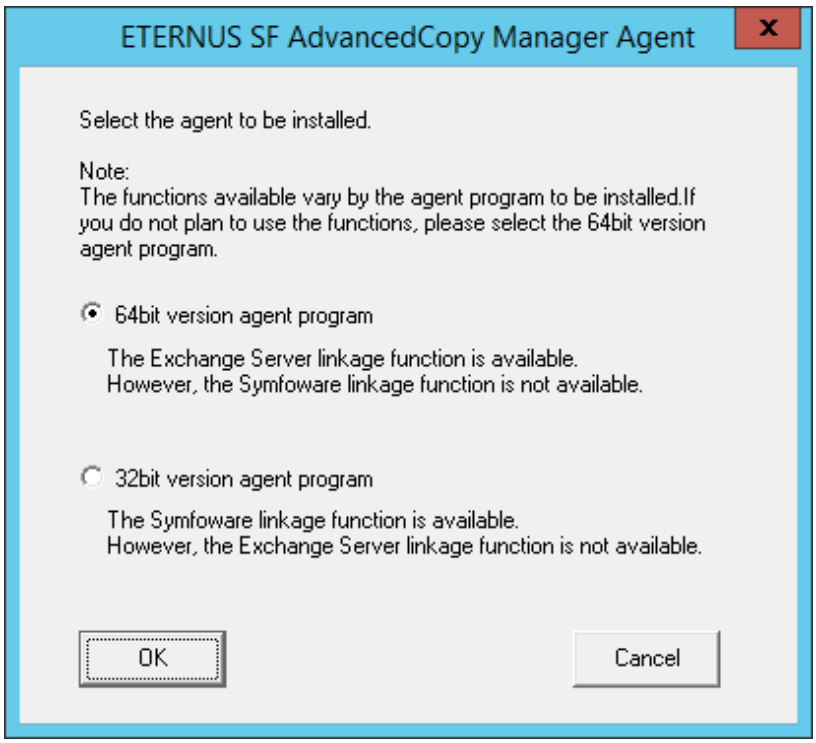
The interactive installation procedure of AdvancedCopy Manager's agent (for Windows) is as follows:

1. Log on to the server using Administrator privileges.
2. Insert the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version into the DVD drive.
3. The following window is displayed. Click **AdvancedCopy Manager installation**.



4. The following page is displayed. Click **Installation of the Agent**.

5. The following page is displayed. Select the agent to be installed.

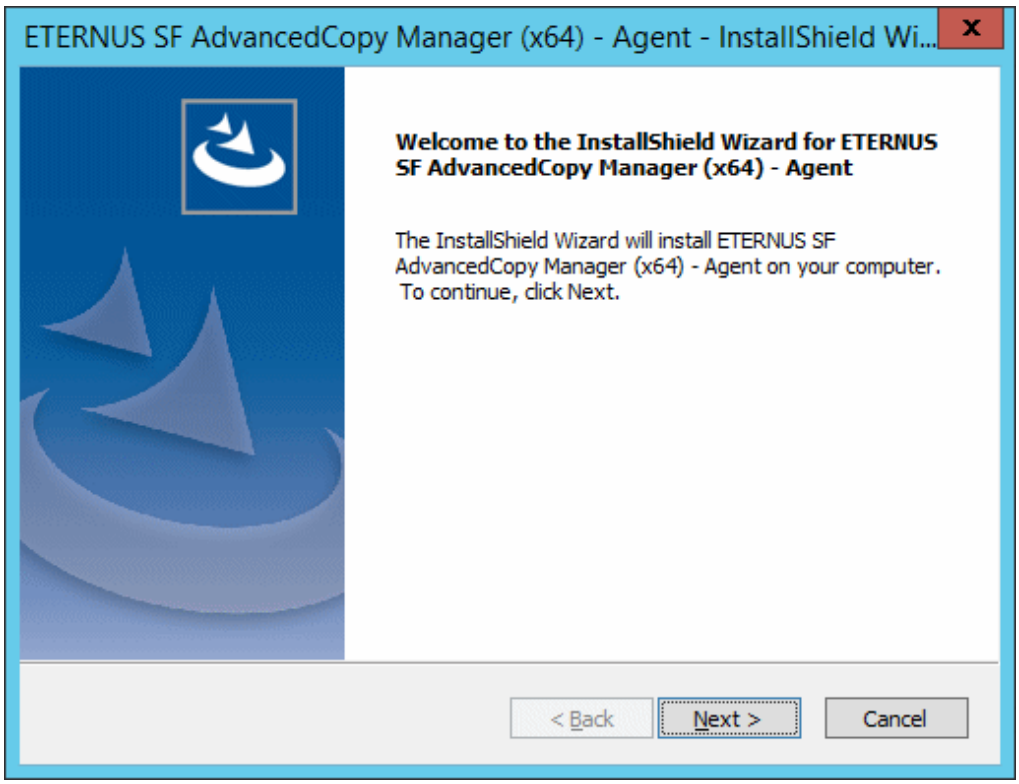


Make your selection according to the following reference criteria.

Function Intended to Be Used	Explanation
Exchange Server linkage online backup function	Select "64bit version agent program". "ETERNUS SF AdvancedCopy Manager (x64) - Agent" is installed. The Symfoware linkage function is not available.
Symfoware linkage function	Select "32bit version agent program". "ETERNUS SF AdvancedCopy Manager (x86) - Agent" is installed. The Exchange Server linkage online backup function is not available.
Not intending to use any of the above	Select "64bit version agent program". "ETERNUS SF AdvancedCopy Manager (x64) - Agent" is installed.

The following steps are explained using screen examples if you select "64bit version agent program".

6. The installation wizard page is displayed. Click **Next**.

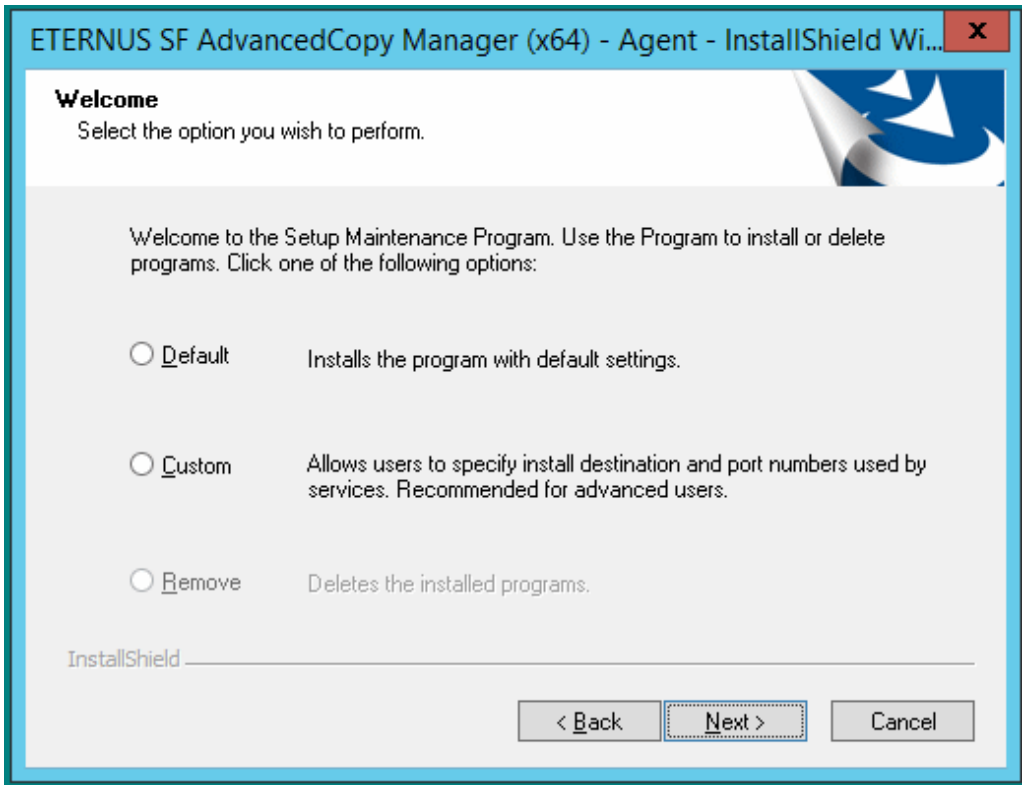


7. Read the terms and conditions of the **License Agreement** page.
   If the conditions are agreeable, click **Yes**.

8. The following page is displayed.

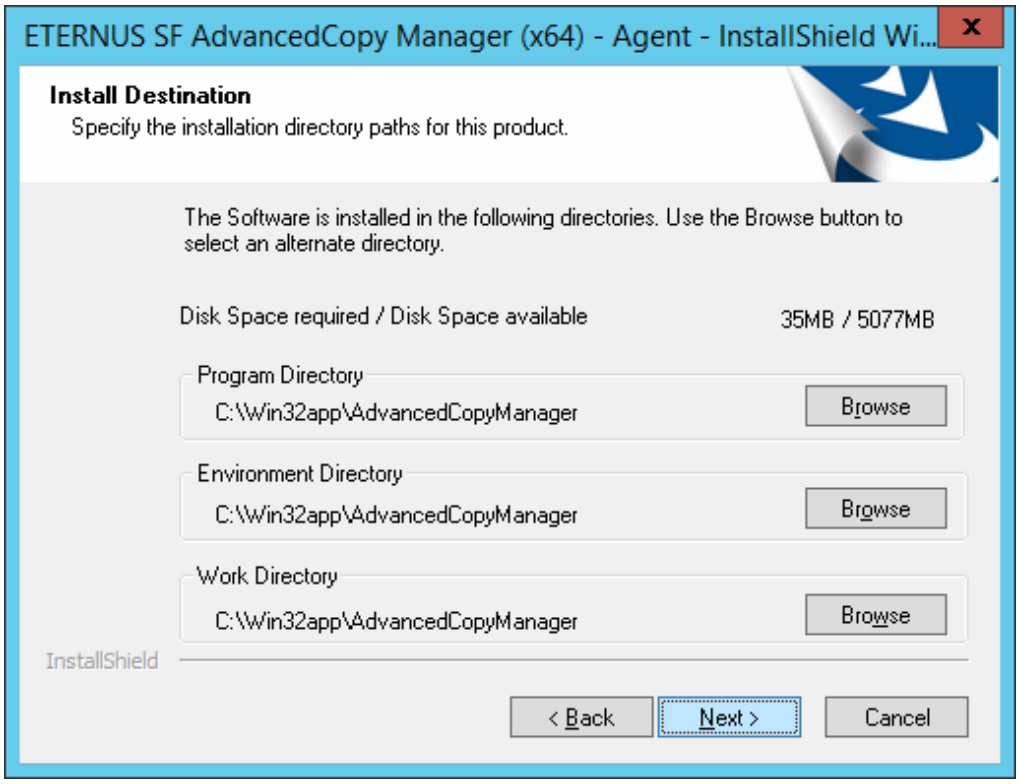
   Select the desired options according to the following information.

Install Option	Explanation
Default	For this installation method, the following checks are automatically performed relating to the information provided by default: - Is there enough disk space for the installation in the default directory? - Is the default port number (1226) available? Consequently, steps 8 and 9 are skipped. If an error is detected at this stage, a warning dialog box is displayed. If no error is detected, the **Start Copying Files** page is displayed.
Custom	The installation information must be manually entered in the pages for step 8 and later.



9. Specify the installation directory in the **Install Destination** page.

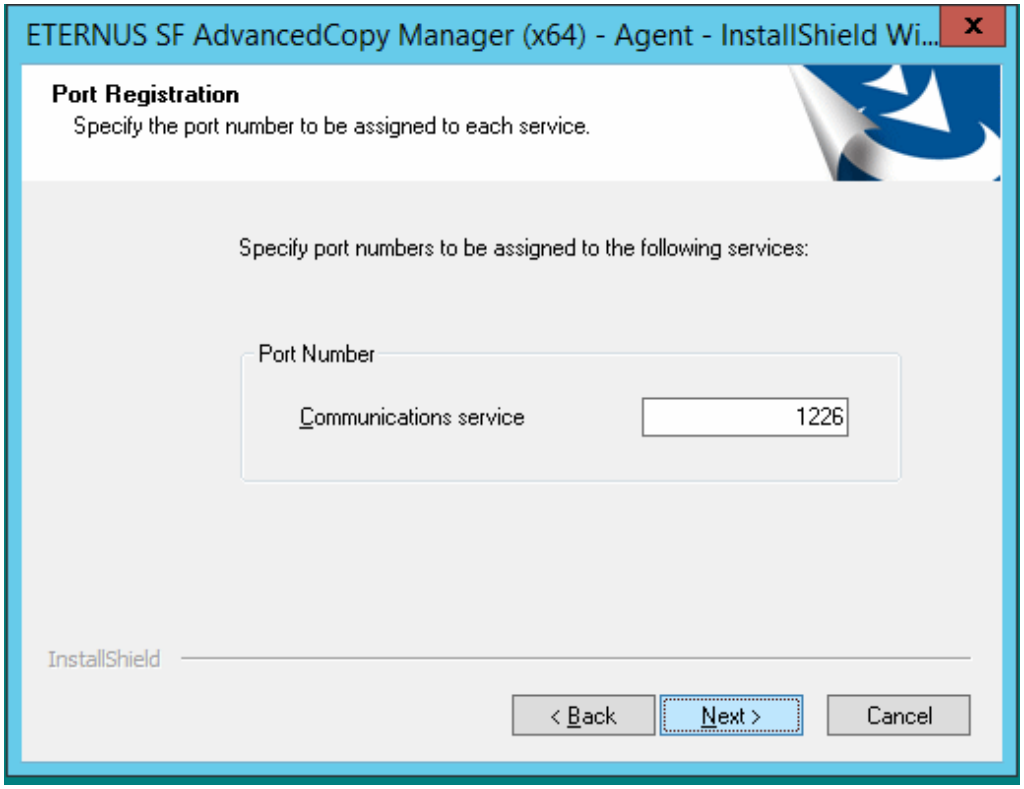
   If installing to a directory other than the default directory, click **Browse** and change the install location. After designating all of the directories, click **Next**.



Point

- Spaces and the characters " | : * ? / . < > ; & ( ) + , = ^ are not supported for directory names.

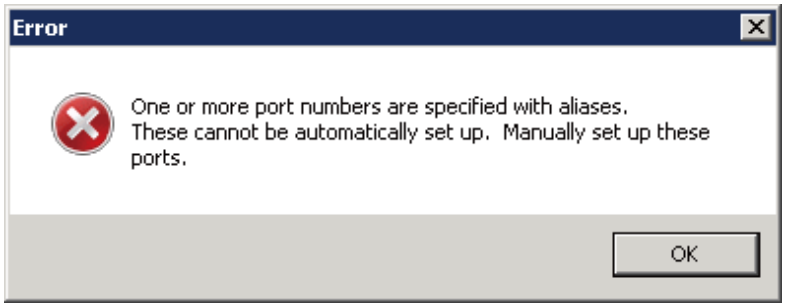
10. Specify the port number for the service in the **Port Registration** page.



The recommended value for non-clustered systems is displayed.
To change the port number, enter an unused port number. Values between 1024 and 65535 are valid.
For clustered systems in Windows Server 2003, it is necessary to change the number to the above range.

After entering an alternative port number, click **Next**. If an entered value is already being used, this page is displayed again.

If the AdvancedCopy Manager service name is defined with alias name, the following dialog box is displayed and the port number specified on the previous page is ignored. However, processing for installation continues.

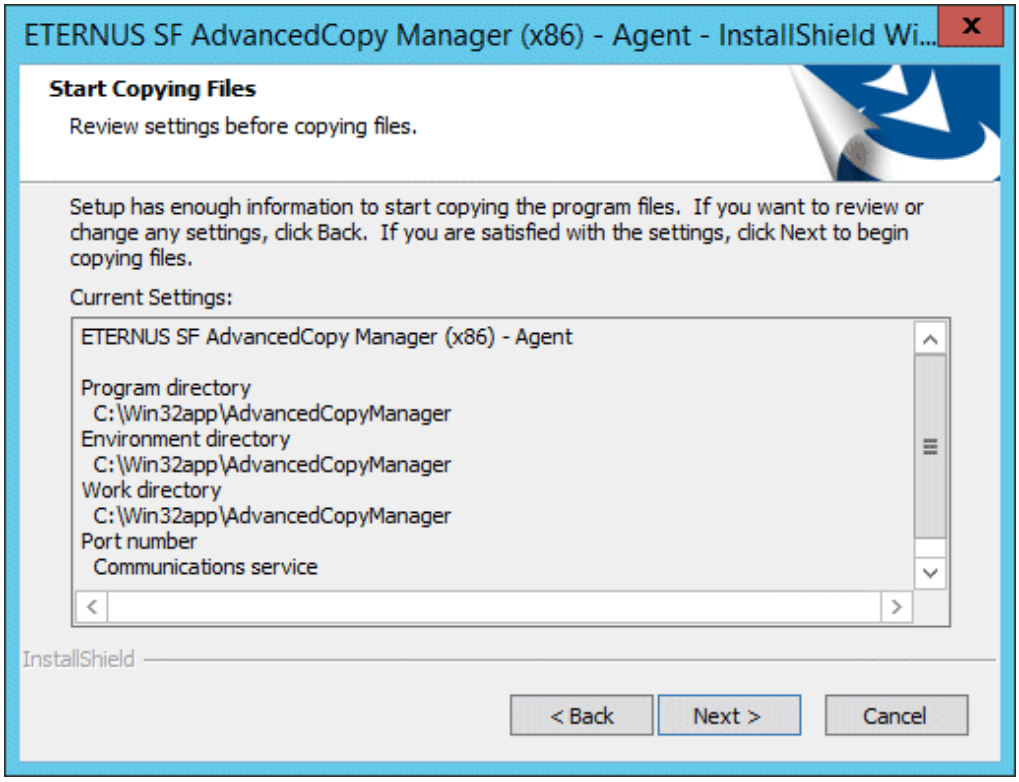


Point

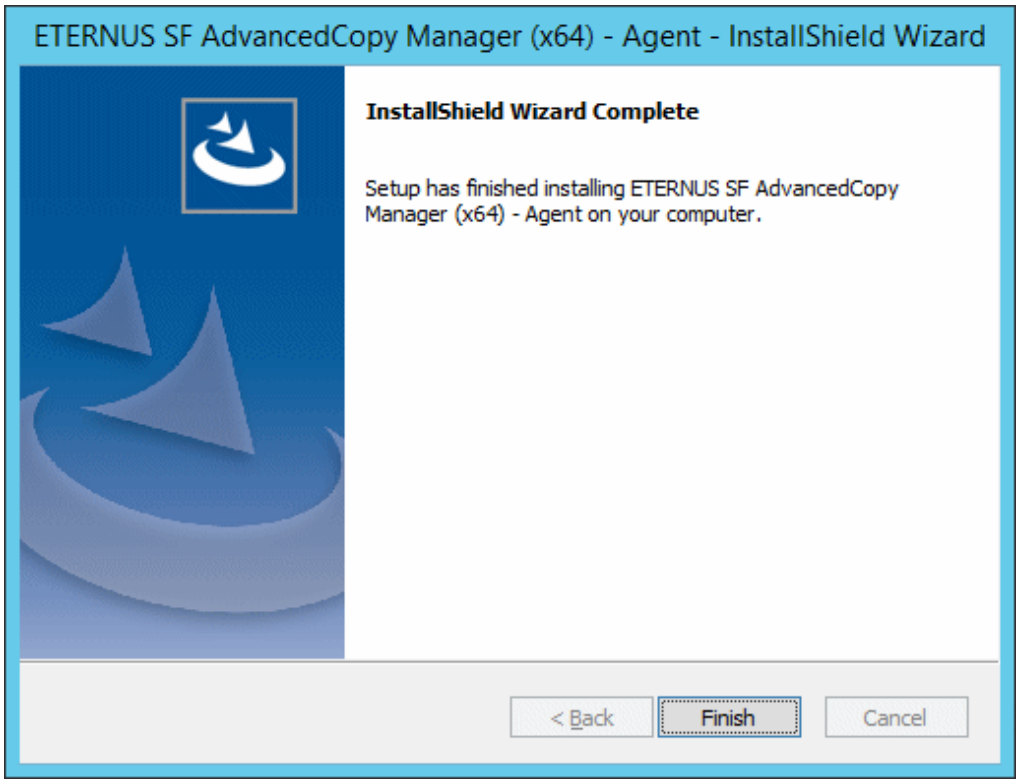
For setting the port number manually, edit the %SystemRoot%\system32\drivers\etc\services file.

11. Check the settings information in the **Start Copying Files** page.

    If the settings are correct, click **Next**. The copy processing starts.
    To change a setting, click **Back**.



12. When the copying process is completed, the following installation wizard page is displayed. Click **Finish** on the window and page which displayed in steps 3 and 4.



13. Eject the DVD media.

The AdvancedCopy Manager's agent (for Windows) installation is completed.
Refer to "6.2 Setup of AdvancedCopy Manager's Agent" to set up the AdvancedCopy Manager's agent.

5.2.3 Silent Installation Procedure of AdvancedCopy Manager's Agent (for Windows)

Take the following steps for silent installation:

1. Edit an installation parameter file.
2. Run a silent installation.

For the upgrade installation, refer to the *Migration Guide* of this version.

5.2.3.1 Editing Installation Parameter File

When using default install, it is not necessary to edit an installation parameter file.

An installation parameter file is a file in which to specify installation parameters such as installation destination directory and port number. This file is stored on the DVD media and default values are set for respective installation parameters. In addition, this file has both automatic service activation and automatic service activation prevention. For details on the installation parameter file, refer to "C.5 Installation Parameter File (for AdvancedCopy Manager's Agent for Windows)".

The installation parameter file is stored on the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version.

Based on the following criteria, select an agent to be installed.

Function to Be Used	Description
When using online backup function working with Exchange Server	Select the 64 bit agent. "ETERNUS SF AdvancedCopy Manager (x64) - Agent" is installed. The Symfoware linkage function is not available (copy and replication functions).
When using Symfoware linkage function	Select the 32 bit agent. "ETERNUS SF AdvancedCopy Manager (x86) - Agent" is installed. The function working with Exchange Server is not available.
When using neither of those above	Select the 64 bit agent. "ETERNUS SF AdvancedCopy Manager (x64) - Agent" is installed.

- Storage location
  - For automatic service activation
    - For 32 bit agent

```
dvdDrive:\Agent_windows\AdvancedCopy_Manager\agent\windows_x86\install_parameter.ini
```

    - For 64 bit agent

```
dvdDrive:\Agent_windows\AdvancedCopy_Manager\agent\windows_x64\install_parameter.ini
```

  - For prevention of automatic service activation
    - For 32 bit agent

```
dvdDrive:\Agent_windows\AdvancedCopy_Manager\agent\windows_x86\
install_parameter_not_start_service.ini
```

    - For 64 bit agent

```
dvdDrive:\Agent_windows\AdvancedCopy_Manager\agent\windows_x64\
install_parameter_not_start_service.ini
```

When changing installation parameters, copy the installation parameter file on DVD media to an optional location and edit the copied file. For description of each installation parameter, refer to "C.6 Installation Parameters (for AdvancedCopy Manager's agent for Windows)".

Information

The file for automatic service activation (install_parameter.ini) is used to activate the AdvancedCopy Manager's agent services after the installation is complete. The file for the prevention of automatic service activation (install_parameter_not_start_service.ini) is used to prevent the AdvancedCopy Manager's agent services from being activated after the installation is complete.

5.2.3.2 Running Silent Installation

The silent installation procedure of AdvancedCopy Manager's agent (for Windows) is as follows:

1. Log on to the target server as a user with administrator privileges.
2. Install the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version into the DVD drive. If the Installer screen is displayed by autorun, exit the installer.
3. Start the command prompt with "Run as administrator".
4. Execute the following silent installation command.
   - For automatic service activation in default install

     For *installLogFile*, specify the file in which to output installation log with an absolute path. It is optional to specify for *installLogFile*.

     - For 32 bit agent

       ```
       dvdDrive:\Agent_windows\AdvancedCopy_Manager\agent\windows_x86\acmagtsilentinstall.bat [-l installLogFile]
       ```

     - For 64 bit agent

       ```
       dvdDrive:\Agent_windows\AdvancedCopy_Manager\agent\windows_x64\acmagtsilentinstall.bat [-l installLogFile]
       ```

   - For preventing automatic service activation in default install

     It is mandatory to specify *installParameterFile*.
     For *installParameterFile*, specify the file stored on the DVD media (install_parameter_not_start_service.ini) with an absolute path.
     For *installLogFile*, specify a file in which to output an installation log with an absolute path. It is optional to specify *installLogFile*.

     - For 32 bit agent

       ```
       dvdDrive:\Agent_windows\AdvancedCopy_Manager\agent\windows_x86\acmagtsilentinstall.bat -s installParameterFile [-l installLogFile]
       ```

     - For 64 bit agent

       ```
       dvdDrive:\Agent_windows\AdvancedCopy_Manager\agent\windows_x64\acmagtsilentinstall.bat -s installParameterFile [-l installLogFile]
       ```

     The following is an execution example of a 64 bit agent.

     - When the DVD drive is "D" and the install log file is "C:\silentinstall.log"

       ```
       D:\Agent_windows\AdvancedCopy_Manager\agent\windows_x64\acmagtsilentinstall.bat -s D:
       \Agent_windows\AdvancedCopy_Manager\agent
       \windows_x64\install_parameter_not_start_service.ini -l C:\silentinstall.log
       ```

- For custom install

  For *installParameterFile*, specify with an absolute path. It is mandatory to specify for *installParameterFile*.
  For *installLogFile*, specify the file in which to output installation log with an absolute path. It is optional to specify for *installLogFile*.

  - For 32 bit agent

    ```
    dvdDrive:\Agent_windows\AdvancedCopy_Manager\agent\windows_x86\acmagtsilentinstall.bat -s
    installParameterFile [-l installLogFile]
    ```

  - For 64 bit agent

    ```
    dvdDrive:\Agent_windows\AdvancedCopy_Manager\agent\windows_x64\acmagtsilentinstall.bat -s
    installParameterFile [-l installLogFile]
    ```

Point

- If nothing is specified for *installLogFile*, an install log file named "acmagtsilentinstall.log" is created in the working directory specified by the environment variable TEMP.
- If there is any file of the same name as the specified install log file exists, it is overwritten.
- It is required to specify an existing directory with write permission for the directory in which to store the install log file. If it has no write permission, no error message is output in the command prompt or screen and the process terminates with error.
- If the paths to the installation parameter file and install log file contain any spaces, they should be surrounded by double quote characters.
- The characters " | : * ? / . < > % & ^ ; ! are not supported for path name for installation parameter file or install log file.

Note

- If an invalid option is specified, its corresponding error message is output in the install log file and the process exits. No error message is output in the command prompt or screen.
- When reinstalling the AdvancedCopy Manager's agent, if you change following port number for service in AdvancedCopy Manager's agent, delete the following service name defined in the %SystemRoot% \system32\drivers\etc\services file before reinstalling:
  - stgxfws
- Do not execute multiple silent install commands at the same time. If a silent install starts while a silent install is executing, the silent install terminates abnormally without creating an install log file.

5. On completion of installation, a command prompt is displayed.
   Remove the DVD media used for installation out of the device.

5.2.3.3 Checking Silent Installation Result

Check the return value from the silent installation command. If necessary, check the install log file. However, if the return value from the silent installation command is 3 or 9, no install log file is created. For details, refer to "D.3 Return Values for Silent Installation (for AdvancedCopy Manager's Agent)".

The installation result can be viewed in the install log file, too.
Open the install log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent installation command. Refer to "6.2 Setup of AdvancedCopy Manager's Agent" and set up AdvancedCopy Manager's agent.

5.2.4 Interactive Installation Procedure of AdvancedCopy Manager's Agent (for Solaris)

The interactive installation procedure of AdvancedCopy Manager's agent (for Solaris) is as follows:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Insert the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version into the DVD drive and mount the DVD media.

   In below example of command execution, the device name of the DVD drive is mounted as /dev/dsk/c0t4d0s0. The device name for the DVD drive, however, may be different for your particular device.

```
# mount -F hsfs -o ro /dev/dsk/c0t4d0s0 dvdMountPoint
```

3. Install AdvancedCopy Manager's agent.

   By executing the following command, multiple packages are installed at one time.

```
# cd dvdMountPoint/Agent_unix/AdvancedCopy_Manager/Solaris
# ./swsetup
```

Information

If, instead of the "swsetup" command, you execute the "easysetup" command, specifying the installation directory and registering the port number in the "/etc/services" file is not necessary.

- Example of executing the command.

```
# cd dvdMountPoint/Agent_unix/AdvancedCopy_Manager/Solaris
# ./easysetup [-o]
```

  or

```
# ./easysetup -p port-number [-o]
```

- Operation overview depending on specified options.

Specified Option	Overview of Operation
None	The port number used on the Managed Server is 1226 (default). If the port number for the stgxfws service is already registered in the "/etc/services" file, this registered port number is used for installation, so that registration of the port number can be omitted.
-p	Use this option to change the port number used on the Managed Server. The port number must be specified within a range from 1024 to 65535. If the port number for the stgxfws service is already registered in the "/etc/services" file, the registered port number is used for installation, so that registration of the port number can be omitted.
-o	Use this option if the port number and installation destination directory are to be specified by the interactive setup. If the port number for the stgxfws service is already registered in the "/etc/services" file, or if this option is specified at the same time as the -p option, the registered port number is used for installation, so the port number is not requested.

- Cautions for executing the "easysetup" command
  - A default value is used for the destination directory of installation. Refer to step 8 of this procedure for information on this default value.

- The port number is not registered if the stgxfws service port number or the port number specified by the -p option is already registered by other software. Refer to "6.2.2 Port Number Setting" to register the port number manually.

4. If an older version of AdvancedCopy Manager is installed, the following message is displayed and installation processing is terminated.

```
# swsetup: ERROR: AdvancedCopy Manager is already installed.
```

5. When the following message is displayed, enter the installation destination directory.

```
# ./swsetup
swsetup: Installer is preparing for installation...
+-------------------------------------------------------------+
|            ETERNUS SF AdvancedCopy Manager                  |
|                          16.9.1                             |
|                  Copyright Fujitsu Limited 2013-2024        |
+-------------------------------------------------------------+

Welcome to Setup.
This program will install "AdvancedCopy Manager" on your system.

Agent setup...
Default installation settings for this setup are as follows:
        Program install directory           : /opt
        Fixed configuration directory       : /etc/opt
        Modifying configuration directory   : /var/opt

Do you want to change the installation settings? (default: n) [y,n,?,q]
```

The directory names in above message have the following meanings.

Directory Name	Meaning
Program install directory	This is the directory to which the package is installed. The default directory is /opt.
Fixed configuration directory	This is the directory to which the files for the environment settings are installed. The default directory is /etc/opt.
Modifying configuration directory	This is the directory to which the modified files (log files, temporary files, etc.) are installed. The default directory is /var/opt.

For modifying any installation destination directory, enter 'y' and proceed to step 9.
For not modifying, enter 'n' or press the [Return] key and proceed to step 10.

6. Specify the installation destination directory.

When the message below is displayed, enter the directory into which to install.

```
Please specify install directory: (default: /opt) [?,q] /acm/opt

Please specify fixed configuration directory: (default: /etc/opt) [?,q] /acm/etc/opt

Please specify variable configuration directory: (default: /var/opt) [?,q] /acm/var/opt
```

Point

- Spaces and the characters " ' * = are not supported for directory names.
- Specify different directories for each of the above directories.

When input is complete, a confirmation message like the one below is displayed.
To confirm the message, enter 'n' or press the [Return] key.
To make any other changes, enter 'y' and then modify.

```
Installation settings for this setup are as follows:
        Program install directory           : /acm /opt
        Fixed configuration directory       : /acm /etc/opt
        Modifying configuration directory   : /acm /var/opt

Do you want to change the installation settings? (default: n) [y,n,?,q]
```

7. On entering the installation destination directory, a message like the one below is displayed. Enter 'y' to continue, or 'n' to cancel the installation.

```
Do you want to continue with the installation of this package? [y,n,?]
```

8. If 'y' is entered in step 7, the installation continues.
   When the installation completes successfully, the following message is displayed.

```
swsetup: AdvancedCopy Manager was installed successfully.
```

9. Execute the following commands, and then eject the DVD media.

```
# cd /
# umount dvdMountPoint
```

The AdvancedCopy Manager's agent (for Solaris) installation is completed.
Refer to "6.2 Setup of AdvancedCopy Manager's Agent" to set up the AdvancedCopy Manager's agent.

5.2.5 Silent Installation Procedure of AdvancedCopy Manager's Agent (for Solaris)

Take the following steps for silent installation:

1. Edit an installation parameter file.
2. Run a silent installation.

For the upgrade installation, refer to the *Migration Guide* of this version.

5.2.5.1 Editing Installation Parameter File

When using default install, it is not necessary to edit an installation parameter file.

An installation parameter file is a file in which to specify installation parameters such as installation destination directory or port number. This file is stored on the DVD media and default values are set for respective installation parameters. For details on the installation parameter file, refer to "C.13 Installation Parameter File (for AdvancedCopy Manager's Agent for Solaris/Linux)".

The installation parameter file is stored on the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version.

- Storage location

```
dvdMountDir/Agent_unix/AdvancedCopy_Manager/Solaris/install_parameter.txt
```

When changing installation parameters, copy the installation parameter file on the DVD media to an optional location and edit the copied file. For description of each installation parameter, refer to "C.14 Installation Parameters (for AdvancedCopy Manager's Agent for Solaris/Linux)".

5.2.5.2 Running Silent Installation

The silent installation procedure of AdvancedCopy Manager's agent is as follows:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Install the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version in the DVD drive to mount the DVD media.

   In the following example of command execution, the device name of the DVD drive is mounted as /dev/dsk/c0t4d0s0. The device name of a DVD drive varies with the device.

```
# mount -F hsfs -o ro /dev/dsk/c0t4d0s0 dvdMountPoint
```

3. Execute the following silent installation command.

   - For default install

     For *installLogFile*, specify the file in which to output installation log with an absolute path. It is optional to specify for *installLogFile*.

```
# dvdMountPoint/Agent_unix/AdvancedCopy_Manager/Solaris/acmagtsilentinstall.sh [-l
installLogFile]
```

   - For custom install

     Specify for *installParameterFile* with an absolute path. It is mandatory to specify for *installParameterFile*. For *installLogFile*, specify the file in which to output installation log with an absolute path. It is optional to specify for *installLogFile*.

```
# dvdMountPoint/Agent_unix/AdvancedCopy_Manager/Solaris/acmagtsilentinstall.sh -s
installParameterFile [-l installLogFile]
```

Point

- If nothing is specified for *installLogFile*, an install log file named "acmagtsilentinstall.log" is created in the "/var/tmp" directory.
- If there is any file of the same name as the specified install log file exists, it is overwritten.
- It is required to specify an existing directory with write permission for the directory in which to store the install log file. If it has no write permission, no error message is output in the command prompt or screen and the process terminates with error.

Note

- If an invalid option is specified, its corresponding error message is output in the install log file and the process exits. No error message is output in the command prompt or screen.
- Do not execute multiple silent install commands at the same time. If a silent install starts while a silent install is executing, the silent install terminates abnormally without creating an install log file.

4. On completion of installation, a command prompt is displayed.
   After running the following command, remove the DVD media used for installation, out of the device.

```
# umount dvdMountPoint
```

5.2.5.3 Checking Silent Installation Result

Check the return value from the silent installation command. If necessary, check the install log file. However, if the return value from the silent installation command is 3 or 9, no install log file is created. For details, refer to "D.3 Return Values for Silent Installation (for AdvancedCopy Manager's Agent)".

The installation result can be viewed in the install log file, too.
Open the install log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value

from the silent installation command. Refer to "6.2 Setup of AdvancedCopy Manager's Agent" to set up AdvancedCopy Manager's agent.

5.2.6 Interactive Installation Procedure of AdvancedCopy Manager's Agent (for Linux)

The interactive installation procedure of AdvancedCopy Manager's agent (for Linux) is as follows:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Insert the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version into the DVD drive and mount the DVD media.

   In below example of command execution, the device name of the DVD drive is mounted as /dev/cdrom. The device name for the DVD drive, however, may be different for your particular device.

   ```
   # mount -t iso9660 -r /dev/cdrom dvdMountPoint
   ```

3. Install AdvancedCopy Manager's agent.

   By executing the following command, multiple packages are installed at one time.

   ```
   # cd environmentDir
   # ./swsetup
   ```

   The *environmentDir* is as follows.

OS Type	Directory
Red Hat Enterprise Linux 9 (for Intel64)	*dvdMountPoint*/Agent_unix/AdvancedCopy_Manager/rhel9_x64
Red Hat Enterprise Linux 8 (for Intel64)	*dvdMountPoint*/Agent_unix/AdvancedCopy_Manager/rhel8_x64
Red Hat Enterprise Linux 7 (for Intel64)	*dvdMountPoint*/Agent_unix/AdvancedCopy_Manager/rhel7_x86
SUSE Linux Enterprise Server 15 for AMD64 & Intel64	*dvdMountPoint*/Agent_unix/AdvancedCopy_Manager/sles15_x64

Information

If, instead of the "swsetup" command, you execute the "easysetup" command, specifying the installation directory and registering the port number in the "/etc/services" file is not necessary.

- Example of executing the command.

  ```
  # cd environmentDir
  # ./easysetup [-o]
  ```

  or

  ```
  # ./easysetup -p port-number [-o]
  ```

- Operation overview depending on specified options

Specified Option	Overview of Operation
None	The port number used on the Managed Server is 1226 (default). If the port number for the stgxfws service is already registered in the "/etc/services" file, the registered port number is used for installation, so that registration of the port number can be omitted.
-p	Use this option to change the port number used on the Managed Server. The port number must be specified within a range from 1024 to 65535. If the port number for the stgxfws service is already registered in the "/etc/services"

Specified Option	Overview of Operation
	file, the registered port number is used for installation, so that registration of the port number can be omitted.
-o	Use this option if the port number and installation destination directory are to be specified by the interactive setup. If the port number for the stgxfws service is already registered in the "/etc/services" file, or if this option is specified at the same time as the -p option, the registered port number is used for installation, so the port number is not requested.

- Cautions for executing the "easysetup" command
  - A default value is used for the destination directory of installation. Refer to step 3 of this procedure for information on this default value.
  - The port number is not registered if the stgxfws service port number or the port number specified by the -p option is already registered by other software. Refer to "6.2.2 Port Number Setting" to register the port number manually.

4. When the following message is displayed, enter the installation destination directory.

```
# ./swsetup
swsetup: Installer is preparing for installation...
+-------------------------------------------------------------+
|            ETERNUS SF AdvancedCopy Manager                  |
|                          16.9.1                             |
|                  Copyright Fujitsu Limited 2013-2024        |
+-------------------------------------------------------------+

Welcome to Setup.
This program will install "AdvancedCopy Manager" on your system.

Agent setup...
Default installation settings for this setup are as follows:
        Program install directory           : /opt
        Fixed configuration directory       : /etc/opt
        Modifying configuration directory   : /var/opt

Do you want to change the installation settings? (default: n) [y,n,?,q]
```

The directory names in above message have the following meanings.

Directory Name	Meaning
Program install directory	This is the directory to which the package is installed. The default is /opt.
Fixed configuration directory	This is the directory to which the files for the environment settings are installed. The default is /etc/opt.
Modifying configuration directory	This is the directory to which the modified files (log files, temporary files, etc.) are installed. The default is /var/opt.

For modifying any installation destination directory, enter 'y' and proceed to step 5.
For not modifying, enter 'n' or press the [Return] key, and proceed to step 6.

5. Specify the installation destination directory.

   When the message below is displayed, enter the directory into which to install.

```
Please specify install directory: (default: /opt) [?,q] /acm/opt

Please specify fixed configuration directory: (default: /etc/opt) [?,q] /acm/etc/opt
```

```
Please specify variable configuration directory: (default: /var/opt) [?,q] /acm/var/opt
```

Point

- Spaces and the characters " ' * = are not supported for directory names.
- Specify different directories for each of the above directories.

When input is complete, a confirmation message like the one below is displayed.
To confirm the message, enter 'n' or press the [Return] key.
To make any other changes, enter 'y' and then modify.

```
Installation settings for this setup are as follows:
        Program install directory           : /acm /opt
        Fixed configuration directory       : /acm /etc/opt
        Modifying configuration directory   : /acm /var/opt

Do you want to change the installation settings? (default: n) [y,n,?,q]
```

6. On entering the installation destination directory, a message like the one below is displayed. Enter 'y' to continue, or 'n' to cancel the installation.

```
Do you want to continue with the installation of this package? [y,n,?]
```

7. If 'y' is entered in step 6, the installation continues.
   When the installation completes successfully, the following message is displayed.

```
swsetup: AdvancedCopy Manager was installed successfully.
```

8. Execute the following commands, and then eject the DVD media.

```
# cd /
# umount dvdMountPoint
```

The AdvancedCopy Manager's agent (for Linux) installation is completed.
Refer to "6.2 Setup of AdvancedCopy Manager's Agent" to set up the AdvancedCopy Manager's agent.

5.2.7 Silent Installation Procedure of AdvancedCopy Manager's Agent (for Linux)

Take the following steps for silent installation:

1. Edit an installation parameter file.
2. Run a silent installation.

For the upgrade installation, refer to the *Migration Guide* of this version.

5.2.7.1 Editing Installation Parameter File

When using default install, it is not necessary to edit an installation parameter file.

An installation parameter file is a file in which to specify installation parameters such as installation destination directory or port number. This file is stored on the DVD media and default values are set for respective installation parameters. For details on the installation parameter file, refer to "C.13 Installation Parameter File (for AdvancedCopy Manager's Agent for Solaris/Linux)".

The installation parameter file is stored on the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version.

- Storage location

Environment	Storage Location
Red Hat Enterprise Linux 9 (for Intel64)	*dvdMountDir*/Agent_unix/AdvancedCopy_Manager/rhel9_x64/install_parameter.txt
Red Hat Enterprise Linux 8 (for Intel64)	*dvdMountDir*/Agent_unix/AdvancedCopy_Manager/rhel8_x64/install_parameter.txt
Red Hat Enterprise Linux 7 (for Intel64)	*dvdMountDir*/Agent_unix/AdvancedCopy_Manager/rhel7_x86/install_parameter.txt
SUSE Linux Enterprise Server 15 for AMD64 & Intel64	*dvdMountDir*/Agent_unix/AdvancedCopy_Manager/sles15_x64/install_parameter.txt

When changing installation parameters, copy the installation parameter file on the DVD media to an optional location and edit the copied file. For description of each installation parameter, refer to "C.14 Installation Parameters (for AdvancedCopy Manager's Agent for Solaris/Linux)".

5.2.7.2 Running Silent Installation

The silent installation procedure of AdvancedCopy Manager's agent (for Linux) is as follows:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Install the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version in the DVD drive to mount the DVD media.

   In the following example of command execution, the device name of the DVD drive is mounted as /dev/dsk/c0t4d0s0. The device name of a DVD drive varies with the device.

   ```
   # mount -t iso9660 -r /dev/cdrom dvdMountPoint
   ```

3. Execute the following silent installation command.

   - For default install

     For *installLogFile*, specify the file in which to output installation log with an absolute path. It is optional to specify for *installLogFile*.

     ```
     # eachEnvironmentDir/acmagtsilentinstall.sh [-l installLogFile]
     ```

   - For custom install

     Specify for *installParameterFile* with an absolute path. It is mandatory to specify for *installParameterFile*. For *installLogFile*, specify the file in which to output installation log with an absolute path. It is optional to specify for *installLogFile*.

     ```
     # eachEnvironmentDir/acmagtsilentinstall.sh -s installParameterFile [-l installLogFile]
     ```

   Refer to the following table in regard to *eachEnvironmentDir* above.

Environment	Directory
Red Hat Enterprise Linux 9 (for Intel64)	*dvdMountPoint*/Agent_unix/AdvancedCopy_Manager/rhel9_x64
Red Hat Enterprise Linux 8 (for Intel64)	*dvdMountPoint*/Agent_unix/AdvancedCopy_Manager/rhel8_x64
Red Hat Enterprise Linux 7 (for Intel64)	*dvdMountPoint*/Agent_unix/AdvancedCopy_Manager/rhel7_x86
SUSE Linux Enterprise Server 15 for AMD64 & Intel64	*dvdMountPoint*/Agent_unix/AdvancedCopy_Manager/sles15_x64

Point

- If nothing is specified for *installLogFile*, an install log file named "acmagtsilentinstall.log" is created in the "/var/tmp" directory.

- If there is any file of the same name as the specified install log file exists, it is overwritten.
- It is required to specify an existing directory with write permission for the directory in which to store the install log file. If it has no write permission, no error message is output in the command prompt or screen and the process terminates with error.

Note

- If an invalid option is specified, its corresponding error message is output in the install log file and the process exits. No error message is output in the command prompt or screen.
- Do not execute multiple silent install commands at the same time. If a silent install starts while a silent install is executing, the silent install terminates abnormally without creating an install log file.

4. On completion of installation, a command prompt is displayed.
   After running the following command, remove the DVD media used for installation, out of the device.

```
# umount dvdMountPoint
```

5.2.7.3 Checking Silent Installation Result

Check the return value from the silent installation command. If necessary, check the install log file. However, if the return value from the silent installation command is 3 or 9, no install log file is created. For details, refer to "D.3 Return Values for Silent Installation (for AdvancedCopy Manager's Agent)".

The installation result can be viewed in the install log file, too.
Open the install log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent installation command. Refer to "6.2 Setup of AdvancedCopy Manager's Agent" to set up AdvancedCopy Manager's agent.

5.2.8 Interactive Installation Procedure of AdvancedCopy Manager's Agent (for HP-UX)

The interactive installation procedure of AdvancedCopy Manager's agent (for HP-UX) is as follows:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Execute the following command to launch the daemon required for this task. This task is not necessary for OS v11.23 or later.

```
# /usr/sbin/pfs_mountd &
# /usr/sbin/pfsd &
```

3. Insert the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version into the DVD drive and mount the DVD media.

   In below example of command execution, the device name of the DVD drive is mounted as /dev/dsk/c1t2d0. The device name for the DVD drive, however, may be different for your particular device.

   - For earlier than v11.23

```
# /usr/sbin/pfs_mount -t rrip -x unix /dev/dsk/c1t2d0 dvdMountPoint
```

   - For v11.23 or later

```
# mount -F cdfs /dev/dsk/c1t2d0 dvdMountPoint
```

Note

Cautions about mounting the DVD media:

- If the user (usually "root") who executes the "pfs_mount" command belongs to 9 or more groups, the following error message is output

```
pfs_mount /dev/dsk/deviceName not owner.
pfs_mount giving up on cdrom.
```

If the user who executes the "pfs_mount" command belongs to 9 or more groups, in the "/etc/group" file, modify the number of groups to which the user belongs to 8 or less.

- On executing the "pfs_mount" command, the following error message may be output

```
/usr/sbin/pfs_mount:/etc/pfs_fstab:No such file or directory
```

In this case, create the "/etc/pfs_fstab" file in the "/etc" directory.

```
# touch /etc/pfs_fstab
# chown root:root /etc/pfs_fstab
# chmod 644 /etc/pfs_fstab
```

- If the "/etc/resolv.conf" file exists, executing the "pfs_mount" command may result in an error. Use the following method to temporarily move the "/etc/resolv.conf" file out of the way and then execute the "pfs_mount" command.

1. After temporarily moving the file out of the way, execute the "pfs_mount" command.

```
# mv resolv.conf resolv.conf.org
```

2. After installing AdvancedCopy Manager's agent, restore the environment.

```
# mv resolv.conf.org resolv.conf
```

4. Install AdvancedCopy Manager's agent.

By executing the following command, multiple packages are installed at one time.

```
# cd dvdMountPoint/Agent_unix/AdvancedCopy_Manager/HP-UX
# ./swsetup
```

Information

If, instead of the "swsetup" command, you execute the "easysetup" command, specifying the installation directory and registering the port number in the "/etc/services" file is not necessary.

- Example of executing the command

```
# cd dvdMountPoint/Agent_unix/AdvancedCopy_Manager/HP-UX
# ./easysetup [-o]
```

or

```
# ./easysetup -p port-number [-o]
```

- Operation overview depending on specified options

Specified Option	Overview of Operation
None	The port number used on the Managed Server is 1226 (default). If the port number for the stgxfws service is already registered in the "/etc/services" file, the registered port number is used for installation, so that registration of the port number can be omitted.
-p	Use this option to change the port number used on the Managed Server. The port number must be specified within a range from 1024 to 65535.

Specified Option	Overview of Operation
	If the port number for the stgxfws service is already registered in the "/etc/services" file, the registered port number is used for installation, so that registration of the port number can be omitted.
-o	Use this option if the port number and installation destination directory are to be specified by the interactive setup. If the port number for the stgxfws service is already registered in the "/etc/services" file, or if this option is specified at the same time as the -p option, the registered port number is used for installation, so the port number is not requested.

- Cautions for executing the "easysetup" command
  - A default value is used for the destination directory of installation. Refer to step 6 of this procedure for information on this default value.
  - The port number is not registered if the stgxfws service port number or the port number specified by the -p option is already registered by other software. Refer to "6.2.2 Port Number Setting" to register the port number manually.

5. If an older version of AdvancedCopy Manager is installed, the following message is displayed and installation processing is terminated.

```
# swsetup: ERROR: AdvancedCopy Manager is already installed.
```

6. When the following message is displayed, enter the installation destination directory.

```
# ./swsetup
swsetup: Installer is preparing for installation...

+-------------------------------------------------------------+
|             ETERNUS SF AdvancedCopy Manager                 |
|                         16.9.1                              |
|                  Copyright Fujitsu Limited 2013-2024        |
+-------------------------------------------------------------+

Welcome to Setup.
This program will install "AdvancedCopy Manager" on your system.

Agent setup...
Default installation settings for this setup are as follows:
        Program install directory          : /opt
        Fixed configuration directory      : /etc/opt
        Modifying configuration directory  : /var/opt

Do you want to change the installation settings? (default: n) [y,n,?,q]
```

The directory names in above message have the following meanings.

Directory Name	Meaning
Program install directory	This is the directory to which the package is installed. The default is /opt.
Fixed configuration directory	This is the directory to which the files for the environment settings are installed. The default is /etc/opt.
Modifying configuration directory	This is the directory to which the modified files (log files, temporary files, etc.) are installed. The default is /var/opt.

For modifying any installation destination directory, enter 'y' and proceed to step 7.
For not modifying, enter 'n' or press the [Return] key, and proceed to step 8.

7. Specify the installation destination directory.

   When below message is displayed, enter the directory into which to install.

```
Please specify install directory: (default: /opt) [?,q] /acm/opt

Please specify fixed configuration directory: (default: /etc/opt) [?,q] /acm/etc/opt

Please specify variable configuration directory: (default: /var/opt) [?,q] /acm/var/opt
```

   Point

   - Spaces and the characters " ' * = are not supported for directory names.
   - Specify different directories for each of the above directories.

   When input is complete, a confirmation message like the one below is displayed.
   To confirm the message, enter 'n' or press the [Return] key.
   To make any other changes, enter 'y' and then modify.

```
Installation settings for this setup are as follows:
        Program install directory           : /acm /opt
        Fixed configuration directory       : /acm /etc/opt
        Modifying configuration directory   : /acm /var/opt

Do you want to change the installation settings? (default: n) [y,n,?,q]
```

8. On entering the installation destination directory, a message like the one below is displayed. Enter 'y' to continue, or 'n' to cancel the installation.

```
Do you want to continue with the installation of this package? [y,n,?]
```

9. If 'y' is entered in step 8, the installation continues.
   When the installation completes successfully, the following message is displayed.

```
swsetup: AdvancedCopy Manager was installed successfully.
```

10. Execute the following commands, and then eject the DVD media.

```
# cd /
# umount dvdMountPoint
```

The AdvancedCopy Manager's agent (for HP-UX) installation is completed.
Refer to "6.2 Setup of AdvancedCopy Manager's Agent" to set up the AdvancedCopy Manager's agent.

Chapter 6 Setup of ETERNUS SF Agent

This chapter explains procedures and methods for setting up Storage Cruiser's agent and AdvancedCopy Manager's agent.

6.1 Setup of Storage Cruiser's Agent

This section explains how to set up Storage Cruiser's agent.

6.1.1 Port Number Setting

By default, Storage Cruiser's agent uses LAN port number 4917 to communicate with Storage Cruiser's manager (Management Server). The relationship of service name, port number, protocol name, sender and receiver is as follows.

Service Name	Port Number / Protocol	Sender	Receiver
sscruisera	4917/tcp	Storage Cruiser's manager	Storage Cruiser's agent

Point

If this port number is already being used in the system, allocate an unused port number. In this case, it is necessary to change the port number of "sscruisera" service in the Management Server to same number.

Methods for setting the port number to be used are described below. If no other port number is specified, port number 4917 is applied when launching Storage Cruiser's agent.

For Windows environments

This information reflects the port number that was entered during installation of Storage Cruiser's agent, in the **Registration of Agent service** page to the "services" file. Check that the setting for the specified port number is applied, and that the port number is not being used for other purposes.

```
#Service name   Port number/protocol name
sscruisera      4917/tcp
```

Point

- If the specified port number is already being used for other purposes, edit the %SystemRoot%\system32\drivers\etc\services file manually and change to an unused port number. Values between 1024 and 65535 are valid.
- The firewall is active by default. For this reason, the port number settings on the side where the agents receive data must be configured so that communications can pass through the firewall. If a port number is modified, adapt these settings accordingly.

For Solaris, Linux, or HP-UX environments

Enter the service name, the port number to be used, and the protocol name into the "/etc/services" file.
The example below shows how to set "4917" for the port number to be used.

```
#Service name   Port number/protocol name
sscruisera      4917/tcp
```

Point

- If the specified port number is already being used for other purposes, change to an unused port number. Values between 1024 and 65535 are valid.

- If a firewall is active for a port number on the side where the agents receive data, the settings must be configured so that communications can pass through the firewall. If a port number is modified, adapt these settings accordingly.

6.1.2 Start IP Address Setting

In order to have Storage Cruiser's agent communicate with Storage Cruiser's manager on the correct LAN path, set the "Start IP address" as the IP address (IP address in the administrative LAN) to be used for data communication by the Managed Server.

For Solaris, Linux, or HP-UX environments, set the Start IP address as described in procedure below.
For Windows environments, this procedure is required only when Storage Cruiser's agent was installed in either of the following ways:

- The Silent Installation function was installed by default.
- The Silent Installation function was customized and installed without specifying any IP address for "Agent_server_IP_address" in the installation parameter file.

For Windows environments

1. If Storage Cruiser's agent is currently running, stop its services.
   a. Click **Control Panel** > **System and Security** > **Administrative Tools** > **Services** to open the **Services** screen.
   b. Select "ETERNUS SF Storage Cruiser Agent" and then click **Stop**.
2. Set the Start IP address to Storage Cruiser's agent.

```
> $INS_DIR\ESC\Agent\bin\setagtip -i ipAddress
```

   $INS_DIR is "Program Directory" specified at the Storage Cruiser's agent installation.

For Solaris, Linux, or HP-UX environments

1. If Storage Cruiser's agent is currently running, execute the following command to stop it.

```
# /opt/FJSVssage/bin/pstorageagt
```

2. Set the Start IP address to Storage Cruiser's agent.

```
# /opt/FJSVssage/bin/setagtip -i ipAddress
```

Point

About Setting Values for Start IP Address

Depending on the IP address configuration on the Managed Server, make the following settings:

- If only one IP address is set up on the Managed Server, specify that IP address.
- If multiple IP addresses are set up on the Managed Server, select and specify a Start IP address from the network configuration of the Managed Server and the Management Server. Basically, you should specify an IP address that is set up in the LAN on the route side of the Management Server.
- In firewall and other environments applying IP address translation (e.g. NAT), do not set up the IP address of the server itself but an IP address that can receive transmissions from the Management Server.

Note

The following notes apply when using the IPv6 address.

- Only the global address is supported.

- Web Console displays the IP address in accordance with RFC5952. As such, the IP address format displayed may differ from the content specified using this command.

6.1.3 SNIA HBA API Library Installation (Excluding HP-UX)

For managing an HBA that is mounted on a Managed Server, it is necessary to install the SNIA HBA API library distributed by the HBA vendor.
Refer to the *Storage Cruiser SNIA HBA API Library Installation Guide* at the following website for information on how to install the HBA API library:

`https://www.fujitsu.com/global/support/products/computing/storage/manuals-list.html`

6.1.4 Correlation.ini File Modification (for Solaris)

When an OS standard HBA driver is in use, it is necessary to modify the "correlation.ini" file that sets the details about the Storage Cruiser's agent using the following commands.

```
# cp -p /etc/opt/FJSVssage/Correlation.ini /etc/opt/FJSVssage/Correlation.ini.org
# cp -p /etc/opt/FJSVssage/Correlation.ini.sun /etc/opt/FJSVssage/Correlation.ini
```

When following HBA is used, the change in "Correlation.ini" is unnecessary because the HBA driver of OS standard is not used:

- SE0X7F11F
- SE0X7F12F
- SE0X7F11L
- SE0X7F12L

Point

When "Correlation.ini" is changed, information on the following server node middleware is displayed:

- Multipath driver (MPxIO only)
- File system

6.1.5 System Rebooting (Excluding Windows)

After completing the settings, reboot the system. Storage Cruiser's agent starts automatically.
The following are command examples for rebooting the system.

- For Solaris environments

```
# /usr/sbin/shutdown -y -g0 -i6
```

- For Linux environments

```
# /sbin/shutdown -r now
```

- For HP-UX environments

```
# /sbin/shutdown -r -y 0
```

6.1.6 Restart/Start of Storage Cruiser's Agent (for Windows)

After completing the settings, execute the following steps to restart or start the Storage Cruiser's agent.

1. Click **Control Panel** > **System and Security** > **Administrative Tools** > **Services** to open the **Services** screen.

2. Select "ETERNUS SF Storage Cruiser Agent".

   - When the service status of Storage Cruiser's agent is "Executing" or "Started"

     Click **Restart Service**.

   - When the service status of Storage Cruiser's agent is "Blank Space (Stopped)"

     Click **Start Service**.

6.1.7 Setting Up End to End List Display for Hyper-V (for Windows)

To display the End to End list for the VM guest on the Hyper-V host, refer to "End to End List Display" in the *Storage Cruiser Operation Guide* to set up the Hyper-V host.

6.2 Setup of AdvancedCopy Manager's Agent

This section explains how to set up AdvancedCopy Manager's agent.

6.2.1 Setting Up User Account

Set up a user account in order to use the AdvancedCopy Manager's agent functions.

6.2.1.1 User Account of Windows

AdvancedCopy Manager commands can only be executed by users with administrator privileges for the operating system.

This section explains how to create accounts for users who can execute commands.

The cases where User Account Control (hereafter referred to as "UAC") of Windows operating system is enabled and disabled are explained below.

- When UAC is enabled

  When any user other than the Administrator account (including accounts in the Administrators group) executes a process or program that requires administrator privileges, the "Permissions granted/authorized dialog" is displayed. Permissions granted or authorized must be confirmed.

- When UAC is disabled

  A process or program that requires administrator privileges must be executed by either an Administrator account or a user account in the Administrators group.

The operating conditions are shown below.

Table 6.1 Relationship Between Account and UAC

Account Type	UAC: Enabled	UAC: Disabled
Administrator account	Y	Y
User account in the Administrators group	N (*1)	Y
Standard user account	N (*1)	N

Y: A process or program runs without displaying the permissions granted/authorized dialog.
N: A process or program does not run because the user does not have administrator privileges.
*1: The permissions granted/authorized dialog is displayed and the process or program runs if the user is authorized. However, the message output by the process or program is not displayed.

When UAC is enabled and a process or program is executed by any user other than the Administrator account, use one of the methods below to execute that process or program with administrator privileges:

Table 6.2 How to Disable Interactive Processes in the Permissions Granted/Authorized Dialog

Disabling Interactive Processes	User Account in the Administrators Group	Standard User Account
Specify "Command Prompt (Admin)" to run the Command Prompt. Execute the program from the Command Prompt.	Can Disable	Can Disable
In the task scheduler, start the process with "Execute with maximum permissions" specified.	Can Disable	Cannot Disable

6.2.1.2 User Account of Linux/Solaris

AdvancedCopy Manager commands can only be executed as a root, so operate root user.

6.2.2 Port Number Setting

For operation of the Managed Server, port numbers must be specified.

For Windows environments

This information reflects the port number that was entered during installation of AdvancedCopy Manager's agent, in the **Port Registration** page to the "services" file. Check that the setting for the specified port number is applied, and that the port number is not being used for other purposes.

```
#Service name   Port number/protocol name
stgxfws         1226/tcp
```

Point

If the specified port number is already being used for other purposes, edit the %SystemRoot%\system32\drivers\etc\services file manually and change to an unused port number. Values between 1024 and 65535 are valid.

The table below shows the intended purposes of port numbers. If settings for port filtering are required, refer to the information described in the Purpose in the following table to check the objects to be connected to the ports before you make the settings.

Service Name	Reception Port	Purpose
Communication service	1226/tcp	Used for the followings: - Communication with Management Server - Communication with other Managed Servers for performing the replication between servers
Communication service for cluster transactions (*1)	*anyNumber*/tcp	

*1: For clustered systems, this service is required for each transaction that is created during the cluster setup. The reception port is any port number that was specified for that transaction.

Note

If, when you installed AdvancedCopy Manager's agent, you entered a port number other than the default one, replace the port number listed above by the one you actually entered.

For Solaris, Linux, or HP-UX environments

Prepare the port numbers to be used on the Managed Servers and enter them into the "/etc/services" file.

The table below shows the intended purposes of port numbers. If settings for port filtering are required, refer to the information described in the Purpose in the following table to check the objects to be connected to the ports before you make the settings.

Service Name	Reception Port	Purpose
stgxfws	1226/tcp	Used for the followings: - Communication with Management Server - Communication with other Managed Servers for performing the replication between servers
stgxfws_*logicalNodeName* (*1)	*anyNumber*/tcp	

*1: For clustered systems, this service is required for each transaction that is created during the cluster setup. The *logicalNodeName* is the name that was specified during the cluster setup, and the reception port is any port number that was specified for that transaction.

Enter the service name, the port number to be used, and the protocol name into the "/etc/services" file.
The example below shows how to set "1226" for the port number to be used.

```
#Service name   Port number/protocol name
stgxfws         1226/tcp
```

Point

If the specified port number is already being used for other purposes, change to an unused port number. Values between 1024 and 65535 are valid.

6.2.3 ETERNUS Disk Storage System Setting Verification

To use the Advanced Copy function of an ETERNUS Disk storage system, it is required to set a copy table size in the ETERNUS Disk storage system. For the procedure to set copy table size, refer to "Configure Copy Table Size for Advanced Copy" in the *Web Console Guide*.

6.2.4 Firewall Setting (for Windows)

Follow the steps in the procedure below to modify the firewall settings. Alternatively, disable the firewall.

1. Click **Control Panel** > **Check firewall status** to open the **Windows Firewall** screen.
2. On the left side pane, click **Advanced settings** to open the **Windows Firewall with Advanced Security** screen.
3. In the list at the left of the screen, select **Inbound Rules**.
4. In the **Action** menu, select **New Rule** to open the **New Inbound Rule Wizard** screen.
5. In the **Rule Type** step, select **Port** and then click **Next**.
6. In the **Protocol and Ports** step, select **TCP** and **Specific local ports:**.
   Enter the port number for the communication service into the **Specific local ports:** field, and then click **Next**.
7. In the **Action** step, select **Allow the connection** and then click **Next**.
8. In the **Profile** step, check **Domain**, **Private** and **Public** depending on your network environment, and then click **Next**.
9. In the **Name** step, specify the **Name** and **Description** of the new rule as necessary, and then click the **Finish**.
10. If you want to modify a scope, display the properties of the **Inbound Rules** for which to modify the scope.
    Specify the permitted scope for communication with other servers that are not operating AdvancedCopy Manager on the **Scope** tab in the **Properties** screen.
11. On the **Windows Firewall** screen, click **OK** to finish your settings.

6.2.5 Start Daemon (Excluding Windows)

After completing the settings, start the daemon. Refer to "Starting Daemons" in the *AdvancedCopy Manager Operation Guide* for the method of starting daemon.

Chapter 7 Installation of AdvancedCopy Manager CCM

This chapter explains how to install AdvancedCopy Manager CCM.

Point

This chapter explains the tasks to be conducted for installing only the AdvancedCopy Manager CCM.
In the case you also want to use other products than the AdvancedCopy Manager CCM (e.g. Express and Storage Cruiser), refer to "Chapter 3 Installation of ETERNUS SF Manager".

7.1 Before Installation

The following preparation is necessary before starting the AdvancedCopy Manager CCM installation.

7.1.1 Available Disk Space Verification

Make sure that there is enough available disk space on the server where the installation is performed.
Refer to "2.5.3.1 Required Disk Space for Installation" for information on the disk space required for installation.

If there is not enough available disk space, perform any of the following actions in order to secure the disk space required for installation:

- Increase disks
- Reconfigure the disk partitions

7.1.2 Incompatible Software Uninstallation

Check if any incompatible software is installed on the server where the installation is performed.
If the incompatible software is found, refer to that software manual and uninstall it before starting the installation.

7.2 Interactive Installation Procedure of AdvancedCopy Manager CCM (for Windows)

There are two methods of performing the interactive installation of AdvancedCopy Manager CCM (for Windows).

- Default installation

  The following configuration is used without the need to input any values.

  - Installation destination

    The "*systemDrive*:\ETERNUS_SF" directory is used as the base location for the Program Directory, Environment Directory and Work Directory.

- Custom installation

  Installation is done by entering the configuration information on the screen (installation destination).

The interactive installation procedure of AdvancedCopy Manager CCM (for Windows) is as follows:

1. Log on to the server using Administrator privileges.

   Information

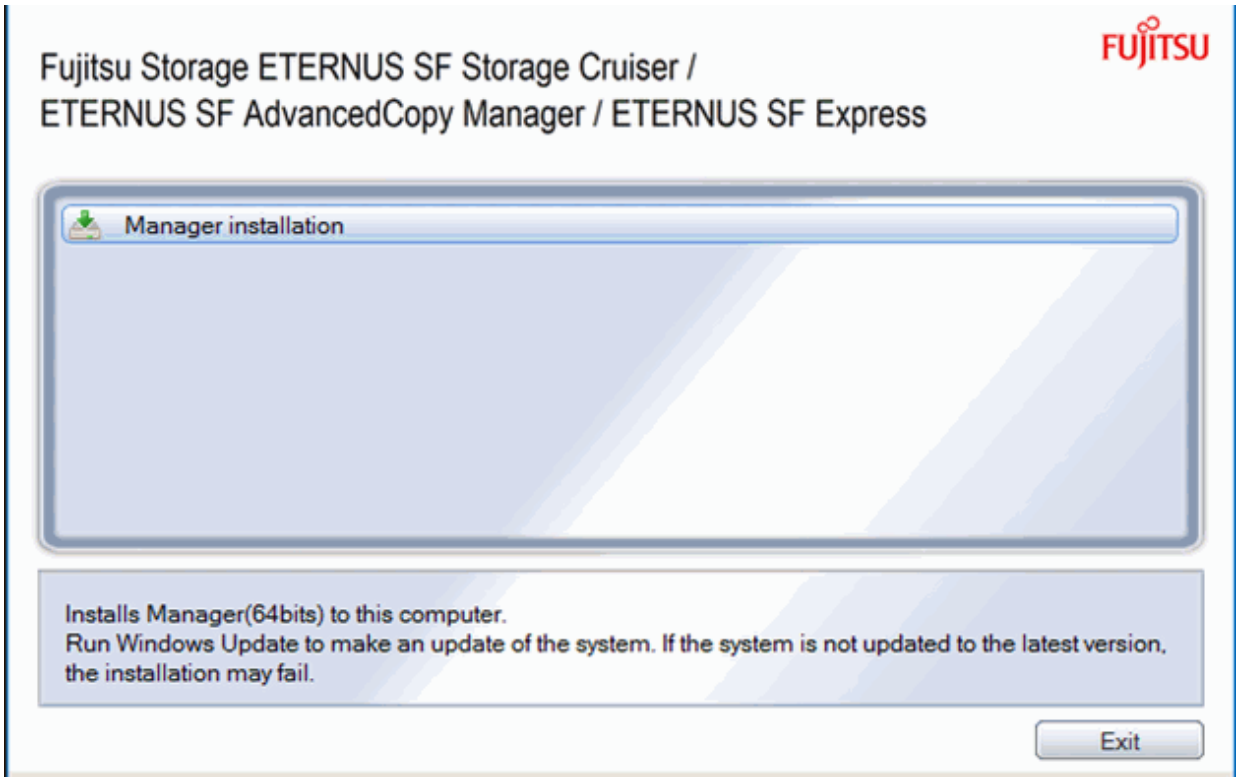
   Specify a user that corresponds to the using server type.

Server Type	User to Be Specified
Domain Controller	Domain user

Server Type	User to Be Specified
Machine that belongs to the domain	Local user
WORKGROUP (does not belong to the domain)	

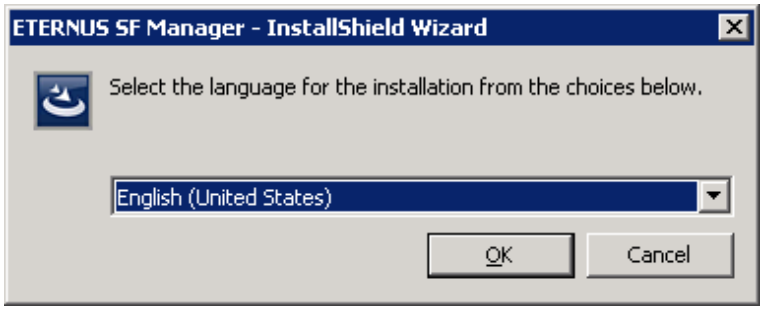
2. Insert the DVD "ETERNUS SF SC/ACM/Express Mediapack for Windows (V16.9 or higher) Manager Program (1/2)" of this version into the DVD drive.

3. The following window is displayed. Click **Manager installation**.
   To cancel the installation at this point, click **Exit**.

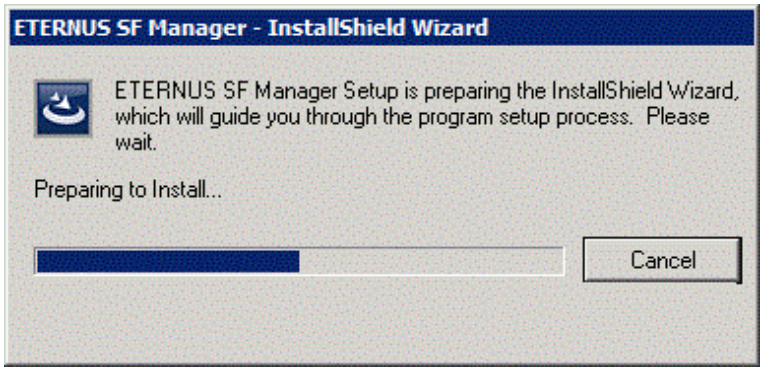


4. The following dialog box is displayed. Select the appropriate language and click **OK**.

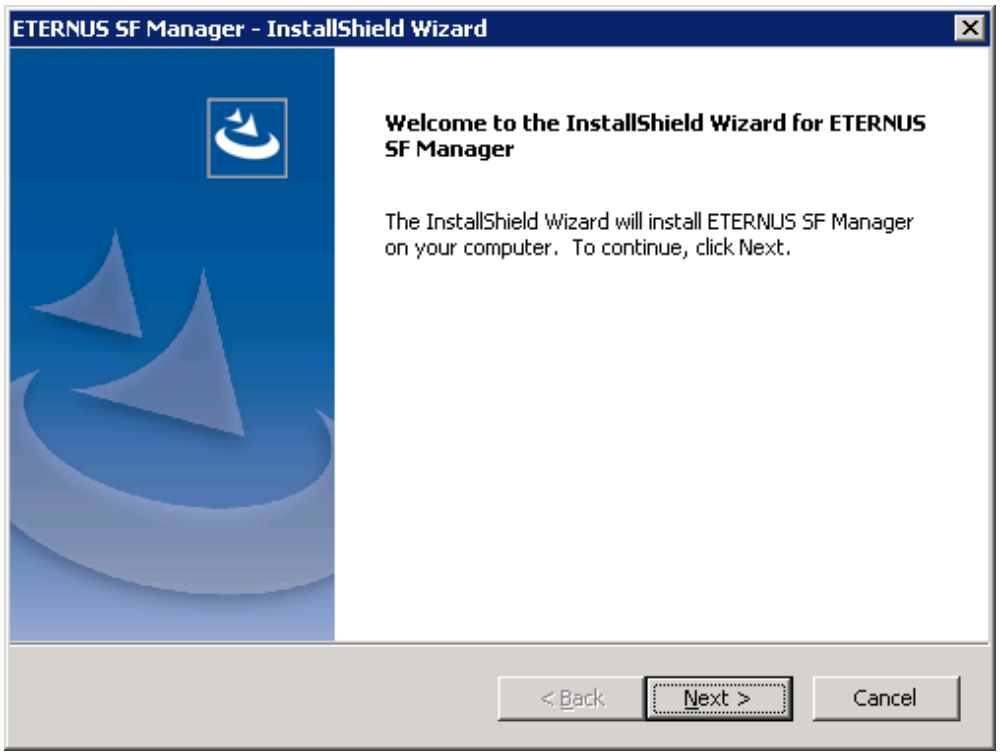
   The language selected in this dialog box is used during the installation and uninstallation.



5. The following progress bar is displayed. To cancel the installation, click **Cancel**.

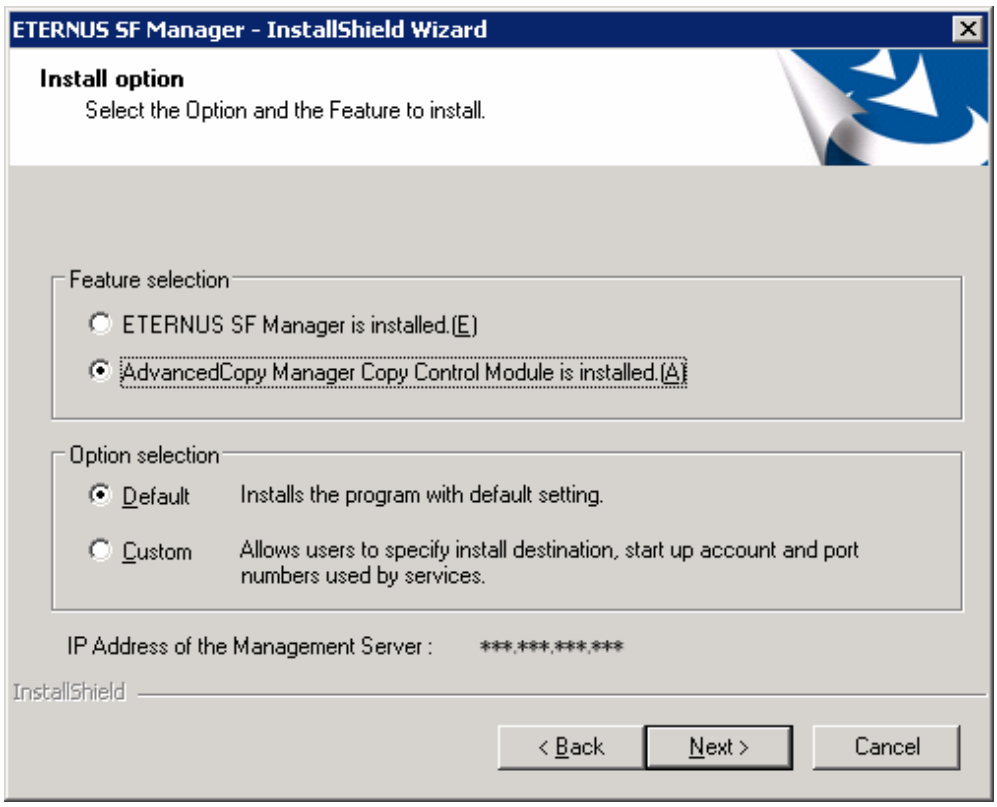


6. The installation wizard page is displayed. Click **Next**.



7. Read the terms and conditions of the **License Agreement** page.
   If the conditions are agreeable, select [I accept the terms of the license agreement] and then click **Next**.

8. Select the features and options to install from the **Install option** page.



Feature selection

Select [AdvancedCopy Manager Copy Control Module is installed.].
The component configured AdvancedCopy Manager CCM is installed.

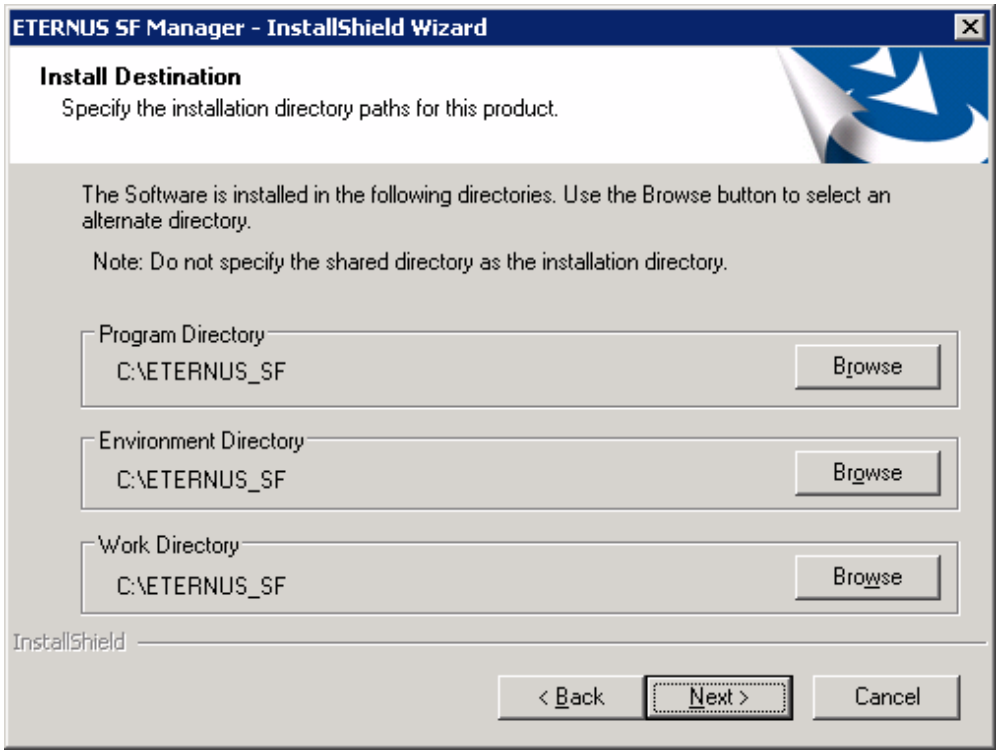
Option selection

Select the desired options according to the following information.

Install Option	Explanation
Default	Changing values in the **Installation Destination** page is optional. In this case, step 9 can be skipped. For this installation method, the following checks are automatically performed relating to the information provided by default: - Is there enough disk space for the installation in the default directory? If an error is detected at this stage, a warning dialog box is displayed. If no error is detected, the **Start Copying Files** page is displayed.
Custom	The installation information must be manually entered in the page for step 9.

9. Specify the installation directory in the **Installation Destination** page.

   If installing to a directory other than the default directory, click **Browse** and change the install location. After designating all of the directories, click **Next**.

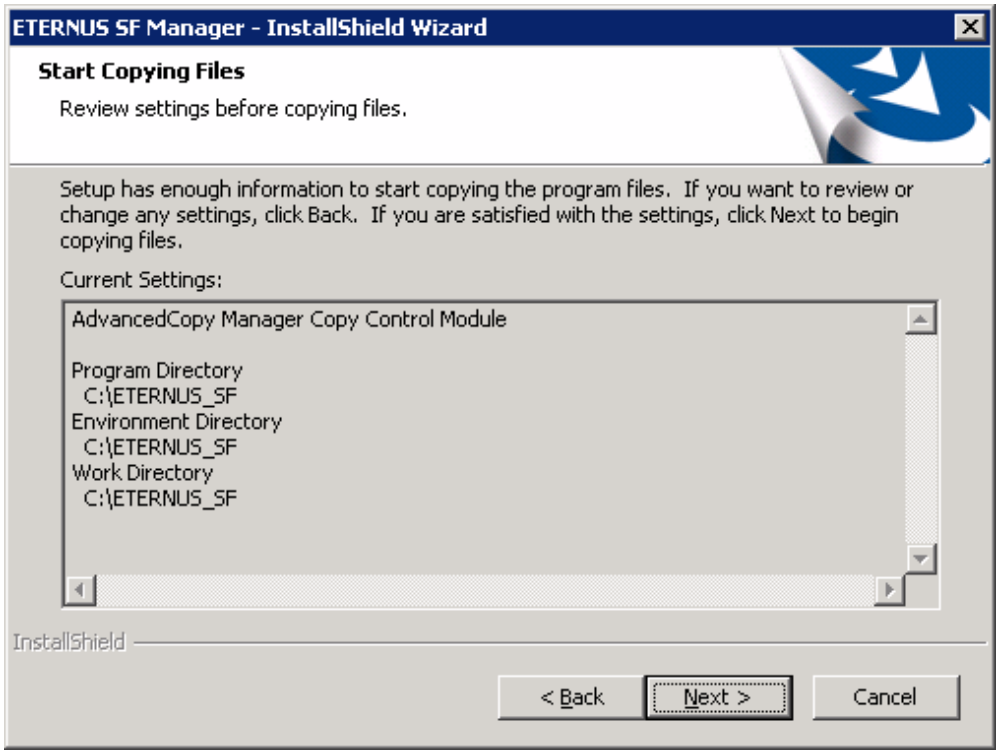


Point

- Do not specify the shared directory as the installation directory.
- Spaces and the characters " | : * ? / . < > , % & ^ = ! ; # ' @ ( ) + are not supported for file name.
- The number of characters in a directory name must be between 4 and 70.

10. Check the settings information in the **Start Copying Files** page.

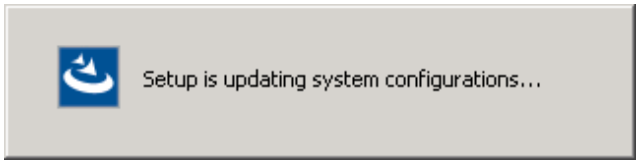
    If the settings are correct, click **Next**.
    To change a setting, click **Back**.



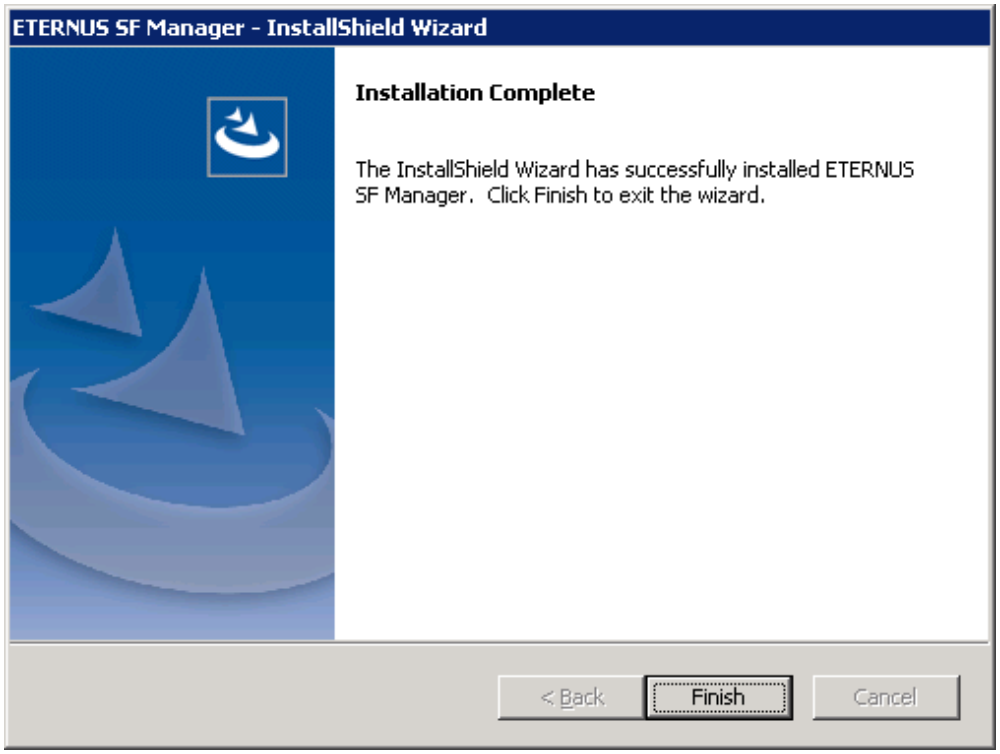
11. Copying of the program is started.

    During this process, the file copy completion status is displayed in the **Setup Status** page.

12. When the copying process is completed, the system configuration is updated. Wait for the configuration update process to complete.



13. The following installation wizard page is displayed. The installation process is completed. Click **Finish**.



14. Eject the DVD media.

The AdvancedCopy Manager CCM (for Windows) installation is completed.

7.3 Silent Installation Procedure of AdvancedCopy Manager CCM (for Windows)

Take the following steps for silent installation:

1. Edit an installation parameter file.
2. Run a silent installation.

7.3.1 Editing Installation Parameter File

When using default install, it is not necessary to edit an installation parameter file.

An installation parameter file is a file in which to specify installation parameters such as installation destination directory and port number. This file is stored on the DVD media and default values are set for respective installation parameters. For details on the installation parameter file, refer to "C.7 Installation Parameter File (for AdvancedCopy Manager CCM for Windows)".

The installation parameter file is stored on the DVD "ETERNUS SF SC/ACM/Express Mediapack for Windows (V16.9 or higher) Manager Program (1/2)" of this version.

- Storage location

```
dvdDrive:\Manager_windows\install_parameter_ccm.ini
```

When changing installation parameters, copy the installation parameter file on the DVD media to an optional location and edit the copied file. For description of each installation parameter, refer to "C.8 Installation Parameters (for AdvancedCopy Manager CCM for Windows)".

7.3.2 Running Silent Installation

The silent installation procedure of AdvancedCopy Manager CCM (for Windows) is as follows:

1. Log on to the target server as a user with administrator privileges.

   Information

   Specify a user that corresponds to the using server type.

Server Type	User to Be Specified
Domain Controller	Domain user
Machine that belongs to the domain	Local user
WORKGROUP (does not belong to the domain)	

2. Install the DVD "ETERNUS SF SC/ACM/Express Mediapack for Windows (V16.9 or higher) Manager Program (1/2)" of this version into the DVD drive. If the Installer screen is displayed by autorun, exit the installer.
3. Start the command prompt.
4. Execute the following silent installation command.

   - For default install

     For *installLogFile*, specify the file in which to output installation log with an absolute path. It is optional to specify for *installLogFile*.

     ```
     dvdDrive:\Manager_windows\esfsilentinstall_ccm.bat -eula agreed [-l installLogFile]
     ```

   - For custom install

     Specify for *installParameterFile* with an absolute path. It is mandatory to specify for *installParameterFile*. For *installLogFile*, specify the file in which to output installation log with an absolute path. It is optional to specify for *installLogFile*.

     ```
     dvdDrive:\Manager_windows\esfsilentinstall_ccm.bat -eula agreed -s installParameterFile [-l
     installLogFile]
     ```

   Point

   - The -eula option is specified to agree to licensing. Only when "agreed" is specified for optional parameter is installation enabled. The -eula option must be specified before other options.
   - If nothing is specified for *installLogFile*, an install log file named "esfsilentinstall.log" is created in the working directory specified with the environment variable TEMP.
   - If any file of the same name as the specified install log file exists, it is overwritten.
   - It is required to specify an existing directory with write permission for the directory in which to store the install log file. If it has no write permission, no error message is output in the command prompt or screen, and the process terminates with error.
   - If the paths to the installation parameter file and install log file contain any spaces, they should be surrounded by double quote characters.
   - The characters " | : * ? / . < > , % & ^ ; ! are not supported for path name for installation parameter file or install log file.

Note

- If an invalid option is specified, its corresponding error message is output in the install log file and the process exits. No error message is output in the command prompt or screen.
- Do not execute multiple silent install commands at the same time. If a silent install starts while a silent install is executing, the silent install terminates abnormally without creating an install log file.

5. On completion of installation, a command prompt is displayed.
   Remove the DVD media used for installation out of the device.

7.3.3 Checking Silent Installation Result

Check the return value from the silent installation command. If necessary, check the install log file. However, if the return value from the silent installation command is 3 or 9, no install log file is created. For details, refer to "D.1 Return Values for Silent Installation (for ETERNUS SF Manager, AdvancedCopy Manager CCM).

The installation result can be viewed in the install log file, too.
Open the install log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent installation command.

7.4 Interactive Installation Procedure of AdvancedCopy Manager CCM (for Solaris)

The interactive installation procedure of AdvancedCopy Manager CCM (for Solaris) is as follows:

Point

No needs to modify the installation parameter file for AdvancedCopy Manager CCM.

Refer to "C.15 Installation Parameter File (for AdvancedCopy Manager CCM for Solaris/Linux)" for information on the installation parameter file.

1. Log in to the server as a superuser.
2. Make sure that the local file system is mounted.
   If the local file system is not mounted, execute the following command to mount the local file system:
   - For Solaris 11

     ```
     # /usr/sbin/zfs mount -a
     ```

   - For Solaris 10

     ```
     # /usr/sbin/mountall -l
     ```

3. Insert the DVD "ETERNUS SF SC/ACM Mediapack for Solaris (V16.9 or higher) Manager Program (2/2)" of this version into the DVD drive.
4. Mount the DVD media.
   In below example of command execution, the device name of the DVD drive is mounted as /dev/dsk/c0t4d0s0. The device name for the DVD drive, however, may be different for your particular device.

   ```
   # mount -F hsfs -o ro /dev/dsk/c0t4d0s0 dvdMountPoint
   ```

5. Change directory in which the install shell is stored.

   ```
   # cd dvdMountPoint/Manager_unix
   ```

6. Specify the installation parameter file, and execute the command for installation.
   The installation parameter file is stored in the same directory in which the install shell is stored. However, specify the installation parameter file by using absolute path.

   ```
   # ./esfinstall.sh -s installParamFile
   ```

   The absolute path name for installation parameter file is as follows:

   dvdMountPoint/Manager_unix/install_parameter_ccm.txt

7. The license agreement information is displayed.
   If the conditions are agreeable, enter "y".

   ```
   Do you accept the terms of the above License Agreement? (default: n) [y,n]:
   ```

8. The installation information is displayed.
   To continue installation, enter "y". To cancel the installation, enter "q".

   ```
   Setting of installation parameter file.

       Installation_function:      ETERNUS SF AdvancedCopy Manager CCM


   Do you want to continue the installation? [y,q]:
   ```

9. After installation is completed successfully, the following message is displayed.

   ```
   INFO: ETERNUS SF was installed successfully.
   ```

   If an error occurs during installing, the following message is displayed and no AdvancedCopy Manager CCM files are installed.

   - When FJSVccm, for example, is already installed.

     ```
     ERROR: The following product has been already installed on this system.:
             ETERNUS SF AdvancedCopy Manager Copy Control Module

     ERROR: Installation has failed.
     ```

     Way of handling: Uninstall the installed software (In this case, FJSVccm).

10. Change directory into other than DVD media. The example is shown below.

    ```
    # cd
    ```

11. Unmount the DVD media.

    ```
    # umount dvdMountPoint
    ```

12. Eject the DVD media.

The AdvancedCopy Manager CCM (for Solaris) installation is completed.

7.5 Silent Installation Procedure of AdvancedCopy Manager CCM (for Solaris)

Point

It is not necessary to edit the installation parameter file for AdvancedCopy Manager CCM.

7.5.1 Running Silent Installation

The silent installation procedure of AdvancedCopy Manager CCM (for Solaris) is as follows:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Make sure that a local file system is mounted.
   If not, run the following command to mount a local file system.
   - For Solaris 11

     ```
     # /usr/sbin/zfs mount -a
     ```

   - For Solaris 10

     ```
     # /usr/sbin/mountall -l
     ```

3. Install the DVD "ETERNUS SF SC/ACM Mediapack for Solaris (V16.9 or higher) Manager Program (2/2)" of this version into the DVD drive.
4. Mount the DVD media.
   In the following example of command execution, the device name of the DVD drive is mounted as /dev/dsk/c0t4d0s0. The device name of a DVD drive varies with the device.

   ```
   # mount -F hsfs -o ro /dev/dsk/c0t4d0s0 dvdMountPoint
   ```

5. Execute the following silent installation command.
   For *installLogFile*, specify the file in which to output installation log with an absolute path. It is optional to specify for *installLogFile*.

   ```
   # dvdMountPoint/Manager_unix/esfsilentinstall_ccm.sh -eula agreed [-l installLogFile]
   ```

   Point

   - The -eula option is specified to agree to licensing. Only when "agreed" is specified for optional parameter is installation enabled. The -eula option must be specified before other options.
   - If nothing is specified for *installLogFile*, an install log file named "esfsilentinstall.log" is created in the "/var/tmp" directory.
   - If any file of the same name as the specified install log file exists, it is overwritten.
   - It is required to specify an existing directory with write permission for the directory in which to store the install log file. If it has no write permission, no error message is output in the command prompt or screen and the process terminates with error.
   - If the path to the install log file contains any spaces, it should be surrounded by double quote characters.
   - The characters " ! $ are not supported for path name for install log file.

   Note

   - If an invalid option is specified, its corresponding error message is output in the install log file and the process exits. No error message is output in the command prompt or screen.
   - Do not execute multiple silent install commands at the same time. If a silent install starts while a silent install is executing, the silent install terminates abnormally without creating an install log file.

6. On completion of installation, a command prompt is displayed.

7. Unmount the DVD media.

```
# umount dvdMountPoint
```

8. Remove the DVD media out of the DVD drive.

This is the end of the installation of AdvancedCopy Manager CCM (for Solaris).

7.5.2 Checking Silent Installation Result

Check the return value from the silent installation command. If necessary, check the install log file. However, if the return value from the silent installation command is 3 or 9, no install log file is created. For details, refer to "D.1 Return Values for Silent Installation (for ETERNUS SF Manager, AdvancedCopy Manager CCM)".

The installation result can be viewed in the install log file, too.
Open the install log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent installation command.

7.6 Interactive Installation Procedure of AdvancedCopy Manager CCM (for Linux)

The interactive installation procedure of AdvancedCopy Manager CCM (for Linux) is as follows:

Point

No needs to modify the installation parameter file for AdvancedCopy Manager CCM.

Refer to "C.15 Installation Parameter File (for AdvancedCopy Manager CCM for Solaris/Linux)" for information on the installation parameter file.

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Make sure that the local file system is mounted.
   If the local file system is not mounted, execute the following command to mount the local file system.

```
# mount -a
```

3. Insert the DVD "ETERNUS SF SC/ACM/Express Mediapack for Linux 64bit (V16.9 or higher) Manager Program (2/2)" of this version into the DVD drive.
4. Mount the DVD media.

```
# mount -t iso9660 -r /dev/cdrom dvdMountPoint
```

5. Change directory in which the command for installation is stored.

```
# cd dvdMountPoint/Manager_unix
```

6. Specify the installation parameter file, and execute the command for installation.
   The installation parameter file is stored in the same directory in which the install shell is stored. However, specify the installation parameter file by using absolute path.

```
# ./esfinstall.sh -s installParamFile
```

   The absolute path name for installation parameter file is as follows:

   dvdMountPoint/Manager_unix/install_parameter_ccm.txt

7. The license agreement information is displayed.
   If the conditions are agreeable, enter "y".

```
Do you accept the terms of the above License Agreement? (default: n) [y,n]:
```

8. The installation information is displayed.
   To continue installation, enter "y". To cancel the installation, enter "q".

```
Setting of installation parameter file.

    Installation_function:      ETERNUS SF AdvancedCopy Manager CCM


Do you want to continue the installation? [y,q]:
```

9. After installation is completed successfully, the following message is displayed.

```
INFO: ETERNUS SF was installed successfully.
```

   If an error occurs during installing, the following message be displayed and no AdvancedCopy Manager CCM files are installed.

   - When FJSVccm, for example, is already installed.

```
ERROR: The following product has been already installed on this system.:
        ETERNUS SF AdvancedCopy Manager Copy Control Module

ERROR: Installation has failed.
```

     Way of handling: Uninstall the installed software (In this case, FJSVccm).

10. Change directory into other than DVD media. An example is shown below.

```
# cd
```

11. Unmount the DVD media.

```
# umount /dev/cdrom
```

12. Remove the DVD media out of the DVD drive.

The AdvancedCopy Manager CCM (for Linux) installation is completed.

7.7 Silent Installation Procedure of AdvancedCopy Manager CCM (for Linux)

Point

It is not necessary to edit the installation parameter file for AdvancedCopy Manager CCM.

7.7.1 Running Silent Installation

The silent installation procedure of AdvancedCopy Manager CCM (for Linux) is as follows:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Make sure that a local file system is mounted.
   If not, run the following command to mount a local file system.

```
# mount -a
```

3. Install the DVD "ETERNUS SF SC/ACM/Express Mediapack for Linux 64bit (V16.9 or higher) Manager Program (2/2)" of this version into the DVD drive.
4. Mount the DVD media.

```
# mount -t iso9660 -r /dev/cdrom dvdMountPoint
```

5. Execute the following silent installation command.
   For *installLogFile*, specify the file in which to output installation log with an absolute path. It is optional to specify for *installLogFile*.

```
# dvdMountPoint/Manager_unix/esfsilentinstall_ccm.sh -eula agreed [-l installLogFile]
```

Point

- The -eula option is specified to agree to licensing. Only when "agreed" is specified for optional parameter is installation enabled. The -eula option must be specified before other options.
- If nothing is specified for *installLogFile*, an install log file named "esfsilentinstall.log" is created in the "/var/tmp" directory.
- If any file of the same name as the specified install log file exists, it is overwritten.
- It is required to specify an existing directory with write permission for the directory in which to store the install log file. If it has no write permission, no error message is output in the command prompt or screen, and the process terminates with error.
- If the path to the install log file contains any spaces, it should be surrounded by double quote characters.
- The characters " ! $ are not supported for path name for install log file.

Note

- If an invalid option is specified, its corresponding error message is output in the install log file and the process exits. No error message is output in the command prompt or screen.
- Do not execute multiple silent install commands at the same time. If a silent install starts while a silent install is executing, the silent install terminates abnormally without creating an install log file.

6. On completion of installation, a command prompt is displayed.
7. Unmount the DVD media.

```
# umount dvdMountPoint
```

8. Remove the DVD media out of the DVD drive.

This is the end of the installation of AdvancedCopy Manager CCM (for Linux).

7.7.2 Checking Silent Installation Result

Check the return value from the silent installation command. If necessary, check the install log file. However, if the return value from the silent installation command is 3 or 9, no install log file is created. For details, refer to "D.1 Return Values for Silent Installation (for ETERNUS SF Manager, AdvancedCopy Manager CCM)".

The installation result can be viewed in the install log file, too.
Open the install log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent installation command.

Chapter 8 Setup of AdvancedCopy Manager CCM

This chapter explains how to set up AdvancedCopy Manager CCM.

8.1 Configuring Network Environment

In order to enable the server on which the AdvancedCopy Manager CCM is installed (hereafter referred to as "CCM Server") to communicate with the ETERNUS Disk storage systems to be managed, configure the network environment. Refer to the ETERNUS Web GUI manual for information on how to configure the network environment.

When Setting Up Firewall Between CCM Server and ETERNUS Disk Storage System

If you set up a firewall between the CCM Server and ETERNUS Disk storage system, specify below port numbers so as to enable transmissions to pass the firewall.

The port numbers depend on the model of ETERNUS Disk storage system.

Port Number/Protocol	Communication Start Direction	Function
1372/tcp	From CCM Server to ETERNUS Disk storage system	Configuration management (*1)
1999/tcp	From CCM Server to ETERNUS Disk storage system	Configuration management
22/tcp	From CCM Server to ETERNUS Disk storage system	Configuration management (*1)
23/tcp	From CCM Server to ETERNUS Disk storage system	Configuration management (*2)

*1: For the ETERNUS DX series (excluding the ETERNUS DX60 S2) and the ETERNUS AF All-Flash Arrays
*2: For the ETERNUS DX60 S2

8.2 Creating User Account for Using AdvancedCopy Manager CCM

This section explains how to create user accounts with the privileges that are required for using the AdvancedCopy Manager CCM.

For Windows environments

The cases where User Account Control (hereafter referred to as "UAC") of Windows operating system is enabled and disabled are explained below.

- When UAC is enabled

  When any user other than the Administrator account (including accounts in the Administrators group) executes a process or program that requires administrator privileges, the "Permissions granted/authorized dialog" is displayed. Permissions granted or authorized must be confirmed.

- When UAC is disabled

  A process or program that requires administrator privileges must be executed by either an Administrator account or a user account in the Administrators group.

The operating conditions are shown below.

Table 8.1 Relationship Between Account and UAC

Account Type	UAC: Enabled	UAC: Disabled
Administrator account	Y	Y
User account in the Administrators group	N (*1)	Y
Standard user account	N (*1)	N

Y: A process or program runs without displaying the permissions granted/authorized dialog.
N: A process or program does not run because the user does not have administrator privileges.
*1: The permissions granted/authorized dialog is displayed and the process or program runs if the user is authorized. However, the message output by the process or program is not displayed.

When UAC is enabled and a process or program is executed by any user other than the Administrator account, use one of the methods below to execute that process or program with administrator privileges:

Table 8.2 How to Disable Interactive Processes in the Permissions Granted/Authorized Dialog

Disabling Interactive Processes	User Account in the Administrators Group	Standard User Account
Specify "Command Prompt (Admin)" to run the Command Prompt. Execute the program from the Command Prompt.	Can Disable	Can Disable
In the task scheduler, start the process with "Execute with maximum permissions" specified.	Can Disable	Cannot Disable

For Solaris or Linux environments

When using AdvancedCopy Manager CCM in a Solaris or Linux environment, operate as a "root (super user)".

8.3 Setting Environment Variable PATH

To execute AdvancedCopy Manager CCM commands, it is necessary to add the "bin" directory of the AdvancedCopy Manager CCM to the environment variable PATH.

For Windows environments

1. Right-click on **Computer** on the **Start** menu, and select the **Properties** from the pop-up menu.
2. Click **Advanced system settings** on the left side of **System** dialog box.
3. Click **Advanced** tab in the **System Properties** dialog box, and then click **Environment Variables**.
4. Add the following value to the environment variable PATH.

```
installDir\CCM\bin
```

Point

When listing multiple directories, separate them with semicolons (;).

For Solaris or Linux environments

When using Bourne shell, add a value to the environment variable PATH as below.

```
# PATH=$PATH:/opt/FJSVccm/bin
# export PATH
```

Point

When listing multiple directories, separate them with semicolons (;).

8.4 Settings Required to Register Storage Devices (When Using the ETERNUS DX S2 series Only)

The required settings procedure for device registration of the ETERNUS DX S2 series is as follows.

Point

To delete the registration of the ETERNUS DX S2 series from the product after the settings in this section are performed and operations are started, the settings content must be restored. For the procedure to restore the settings content, refer to "Appendix N Work Required After Device Deletion of the ETERNUS DX S2 series".

For Windows environments

1. Log on to the CCM Server using Administrator privileges.
2. Back up the settings file. Copy the following file to the backup destination directory.
   To use the CCM Server in a clustered system, perform this step on both the primary node and secondary node.

File to be Backed up	Backup Destination Directory
$INS_DIR\CCM\jre\conf\security\java.security	$INS_DIR\CCM\tools

   $INS_DIR is "Program Directory" specified at the AdvancedCopy Manager CCM installation.

3. Copy the following file over the copy destination file.
   To use the CCM Server in a clustered system, perform this step on both the primary node and secondary node.

Copy Source File	Copy Destination File
$INS_DIR\CCM\tools\java.security.forS2.windows	$INS_DIR\CCM\jre\conf\security\java.security

   $INS_DIR is "Program Directory" specified at the AdvancedCopy Manager CCM installation.

For Solaris or Linux environments

1. Log in to the CCM Server as a superuser.
2. Back up the settings file. Copy the following file to the backup destination directory.
   To use the CCM Server in a clustered system, perform this step on both the primary node and secondary node.
   - For Solaris environments

File to be Backed up	Backup Destination Directory
/opt/FJSVccm/jre/lib/security/java.security	/opt/FJSVccm/tools

     The command execution example is as follows.

```
# cp -p /opt/FJSVccm/jre/lib/security/java.security /opt/FJSVccm/tools/
```

   - For Linux environments

File to be Backed up	Backup Destination Directory
/opt/FJSVccm/jre/conf/security/java.security	/opt/FJSVccm/tools

     The command execution example is as follows.

```
# cp -p /opt/FJSVccm/jre/conf/security/java.security /opt/FJSVccm/tools/
```

3. Copy the following file over the copy destination file.
   To use the CCM Server in a clustered system, perform this step on both the primary node and secondary node.

   - For Solaris environments

Copy Source File	Copy Destination File
/opt/FJSVccm/tools/java.security.forS2.solaris	/opt/FJSVccm/jre/lib/security/java.security

   The command execution example is as follows.

```
# cp -p /opt/FJSVccm/tools/java.security.forS2.solaris /opt/FJSVccm/jre/lib/security/
java.security
```

   - For Linux environments

Copy Source File	Copy Destination File
/opt/FJSVccm/tools/java.security.forS2.linux	/opt/FJSVccm/jre/conf/security/java.security

   The command execution example is as follows.

```
# cp -p /opt/FJSVccm/tools/java.security.forS2.linux /opt/FJSVccm/jre/conf/security/
java.security
```

Chapter 9 Uninstallation of ETERNUS SF Manager

This chapter explains methods for uninstallation of ETERNUS SF Manager.

9.1 Before Uninstallation

The following preparation is necessary before starting the ETERNUS SF Manager uninstallation.

Information

It is not necessary to stop the ETERNUS SF Manager services before starting the ETERNUS SF Manager uninstallation.
The ETERNUS SF Manager uninstaller stops the ETERNUS SF Manager services before it removes the programs.

9.1.1 Backup of ETERNUS SF Manager Environment

If there is a possibility that the current environment is used again, e.g. after migration, back up (save) the ETERNUS SF Manager environment as needed.
Use the following manuals as reference for saving the ETERNUS SF Manager environment.

- For Express
  "Backing Up Express's Manager Environment" in the *Express Operation Guide*
- For Storage Cruiser
  "Backup of Manager" in the *Storage Cruiser Operation Guide*
- For AdvancedCopy Manager
  "Operation Maintenance" in the *AdvancedCopy Manager Operation Guide*

9.1.2 Backup of Backup Management List

If ETERNUS SF Manager is uninstalled, the backup management list of AdvancedCopy Manager is also deleted.

Under any of the following circumstances, you should back up the backup management list before starting the ETERNUS SF Manager uninstallation.

- If you performed the backup operation of AdvancedCopy Manager on a Management Server
- If there is a possibility that the backup management list is used again

For backing up the backup management list, execute the "swstresback" command.
Refer to "Command References" in the *AdvancedCopy Manager Operation Guide* for the operating system of the Management Server for information on the command.

9.1.3 Deletion of Managed Servers

If AdvancedCopy Manager was used, all Managed Servers under the Management Server from which ETERNUS SF Manager is uninstalled must be removed from the control of AdvancedCopy Manager.

There are two methods for this task:

- Using Web Console
- Executing the "stgxfwcmdelsrv" command on the Management Server

  Refer to "Command References" in the *AdvancedCopy Manager Operation Guide* for the operating system of the Management Server for information on the command.

Point

If AdvancedCopy Manager was not used, this task is not necessary.

9.1.4 Backup of Pre-processing and Post-processing Scripts

If ETERNUS SF Manager is uninstalled, AdvancedCopy Manager's pre-processing and post-processing scripts (shell scripts) used in backup/restore and replication are also deleted.

Under any of the following circumstances, you should back up the scripts before starting the ETERNUS SF Manager uninstallation.

- If you performed the backup/replication operation of AdvancedCopy Manager on a Management Server
- If there is a possibility that the customized scripts are used again

9.1.5 Eject Media

Make sure that the DVD media of this product is not in a DVD drive.
When the DVD media is in the DVD drive, eject it.

Note

An unexpected error may occur, when the DVD media is left in the DVD drive.

9.1.6 Uninstallation of SELinux Policy (for Linux)

When an SELinux policy module is installed using Express's manager or Storage Cruiser's manager, perform the following procedure and uninstall the SELinux policy:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. If SELinux = Enforcing, execute the following command to return the state back to before the policy was applied.
   If SELinux = Disabled, this step is not needed.
   If OS is Red Hat Enterprise Linux 7 or later, default is SELinux = Enforcing.

```
# /opt/FJSVssmgr/etc/selinux/esfsepolicy_unsetup.sh
```

9.1.7 Uninstallation of SNMP Trap Daemon Package (for Linux)

When using Express's manager or Storage Cruiser's manager, and when using the ETERNUS SF SNMP Trap monitoring daemon (for monitoring devices using an IPv6 address, the SNMPv2c protocol, or the SNMPv3 protocol), perform the following procedure and uninstall the SNMP Trap daemon package:

1. By executing the following commands, automatic startup of the SNMP Trap daemon is prevented when the system is started.

```
# systemctl stop startsc-snmptrapd.service
# systemctl disable startsc-snmptrapd.service
# rm /usr/lib/systemd/system/startsc-snmptrapd.service
```

2. Execute the following command to uninstall the SNMP Trap daemon package.

```
# rpm -e FJSVswstt
```

9.1.8 Uninstallation of ETERNUS VMware Support Package

If the ETERNUS VMware Support Package has been installed, refer to the *ETERNUS VASA Provider User's Guide* that was downloaded in "3.1.8 Download of ETERNUS VMware Support Package" and uninstall the ETERNUS VMware Support Package.

9.1.9 Uninstallation of ETERNUS SF SNMP Trap Service (for Windows)

When using Express's manager or Storage Cruiser's manager, and when monitoring devices using the SNMPv3 protocol, perform the following procedure and uninstall the SNMP Trap Service.

Note

In an environment where other software using SNMP Traps such as Systemwalker Centric Manager and ServerView Resource Orchestrator coexists on a target server, if you stop the ETERNUS SF SNMP Trap Service, other software using SNMP Traps cannot perform the fault monitoring. Make sure that even if the fault monitoring cannot be performed, no problem is caused, and perform the following procedure.
For other software to be able to perform the fault monitoring, after uninstalling the ETERNUS SF SNMP Trap Service, set up an operation environment of other software so that the SNMP Trap service for the software is available.

1. Click **Control Panel** > **System and Security** > **Administrative tools** > **Services** to open the service screen.
2. If the ETERNUS SF SNMP Trap Service status is "Started", select the SNMP Trap monitoring service and click **Stop**.
3. Select the ETERNUS SF Manager Tomcat Service and click **Stop**.
4. Execute the following command from the command prompt to uninstall the ETERNUS SF SNMP Trap Service.

```
> powershell -ExecutionPolicy Unrestricted $INS_DIR\ESC\Manager\opt\FJSVssmgr\sbin\swsttctr.ps1
-uninstall
```

   $INS_DIR is "Program Directory" specified at the ETERNUS SF Manager installation.

9.2 Interactive Uninstallation Procedure of ETERNUS SF Manager (for Windows)

The interactive uninstallation procedure of ETERNUS SF Manager (for Windows) is as follows:

1. Log on to the server using Administrator privileges.
2. Start the uninstaller.

   This can be done by either of the following methods:

   - Click **Start** > **All Programs** > **ETERNUS SF Manager** to open the menu and then click **Uninstall**.
   - From the **Control Panel**, open the page to remove programs and give the instruction to remove ETERNUS SF Manager.

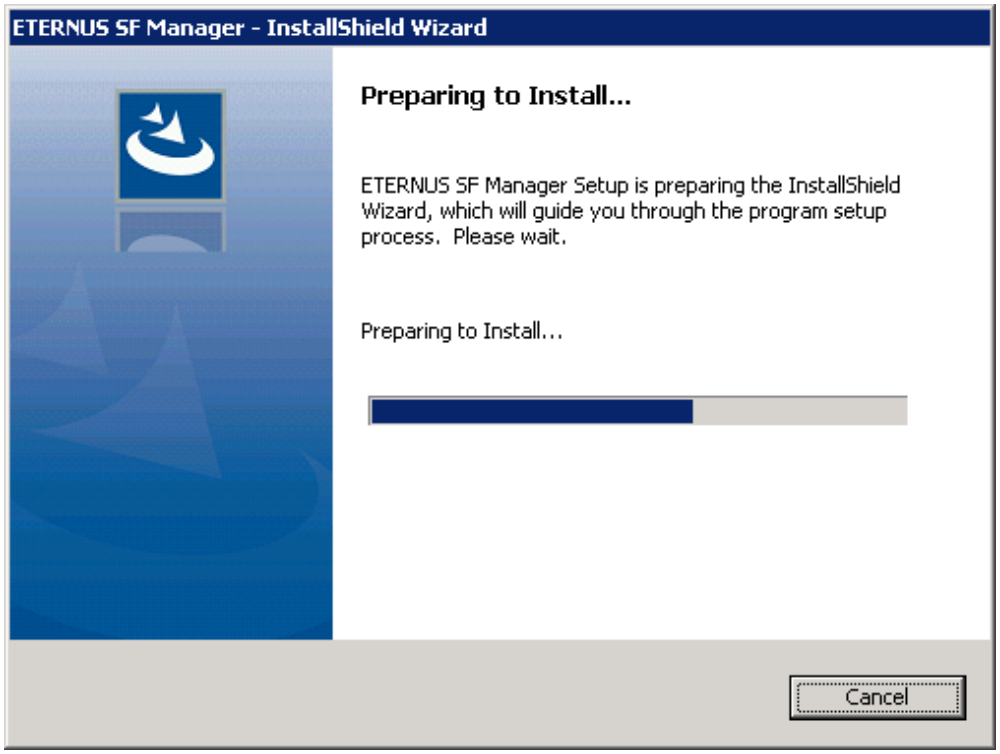
     From the **Control Panel**, open the **Programs and Features** page.
     From the list of displayed programs, select "ETERNUS SF Manager" and then click **Uninstall**.

   Note

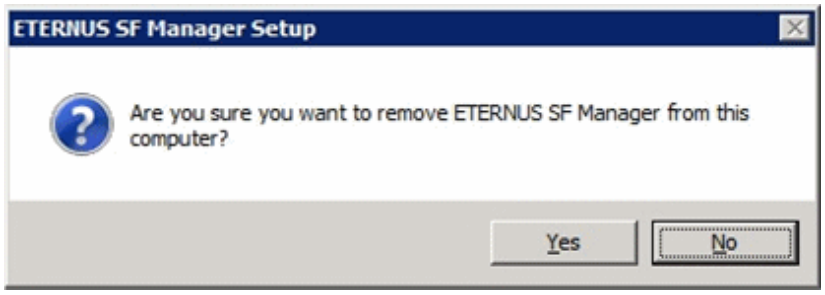
   Notes when Storage Cruiser's agent is installed in a target server

   Uninstaller suspends Storage Cruiser's agent of a target server so that no error may occur in uninstalling ETERNUS SF Manager.
   For this reason, do not perform any operations associated with the target server before uninstallation is completed.
   When the target server is also operated as the Storage Cluster Controller, ETERNUS Disk storage systems are not monitored by the Storage Cluster Controller, so that Automatic Failover of ETERNUS Disk storage systems is disabled.

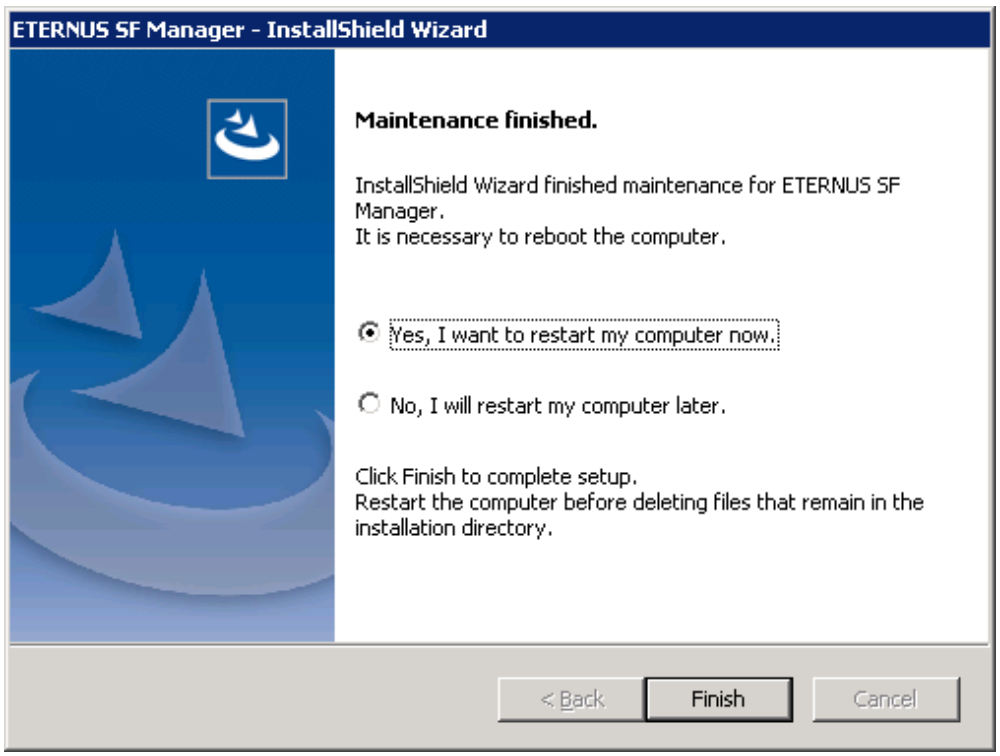
3. The following progress bar is displayed. To cancel the uninstallation, click **Cancel**.



4. The following page is displayed. Click **Yes**.



5. The following installation wizard page is displayed. The uninstallation process is completed. Click **Finish**.



6. Restart the system.
7. Delete the agent management information.

   Use Explorer or another application to delete all files under *environmentDir*\etc after backing up (saving) any files as necessary.

The ETERNUS SF Manager (for Windows) uninstallation is completed.
Following that, perform the procedure in "9.8 Deletion of Port Number".

Information

When ETERNUS SF Manager is uninstalled, UpdateAdvisor for Middleware is not uninstalled.
If you do not use UpdateAdvisor for Middleware, uninstall it manually.

Refer to the UpdateAdvisor for Middleware manual for how to uninstall UpdateAdvisor for Middleware.

9.3 Silent Uninstallation Procedure of ETERNUS SF Manager (for Windows)

9.3.1 Running Silent Uninstallation

The silent uninstallation procedure of ETERNUS SF Manager (for Windows) is as follows:

1. Log on to the target server as a user with administrator privileges.
2. Start a command prompt. Start a new command prompt different from the silent installation execution, and run a silent uninstallation.
3. Copy the following silent uninstallation file to any directory other than the ETERNUS SF Manager installed directory.

```
programDirAtInstallation\ISSetup\esfsilentuninstall.bat
```

Information

Running an uninstallation from the program directory specified at installation tries to delete the "esfsilentuninstall_ccm.bat" file itself and fails uninstallation. For this reason, copy the file to other than the program directory specified at installation, and then run the copied file.

4. Execute the command copied at step 3 to uninstall.

   For *uninstallLogFile*, specify the file in which to output uninstallation log with an absolute path. It is optional to specify for *uninstallLogFile*.

```
copyDestinationDir\esfsilentuninstall.bat [-l uninstallLogFile]
```

Point

- If nothing is specified for *uninstallLogFile*, an uninstall log file named "esfsilentuninstall.log" is created in the working directory specified for the environment variable TEMP.
- If any file of the same name as the specified uninstall log file exists, it is overwritten.
- It is required to specify an existing directory with write permission for the directory in which to store the uninstall log file. If it has no write permission, no error message is output on the screen and the process terminates with error.
- If the path to the uninstall log file contains any spaces, it should be surrounded by double quote characters.
- The characters " | : * ? / . < > % & ^ ; ! are not supported for path name for uninstall log file.

Note

- If an invalid option is specified, its corresponding error message is output in the uninstall log file and the process exits. No error message is output on the screen.
- Do not execute multiple silent uninstall commands at the same time. If a silent uninstall starts while a silent uninstall is executing, the silent uninstall terminates abnormally without creating an uninstall log file.
- Notes when Storage Cruiser's agent is installed in a target server

  Uninstaller suspends Storage Cruiser's agent of a target server so that no error may occur in uninstalling ETERNUS SF Manager.
  For this reason, do not perform any operations associated with the target server before uninstallation is completed.
  When the target server is also operated as the Storage Cluster Controller, ETERNUS Disk storage systems are not monitored by the Storage Cluster Controller, so that Automatic Failover of ETERNUS Disk storage systems is disabled.

5. On completion of uninstallation, a command prompt is displayed.
6. Delete the command run at step 4.

9.3.2 Checking Uninstallation Result

Check the return value from the silent uninstallation command. If necessary, check the uninstall log file. However, if the return value from the silent uninstallation command is 3 or 9, no uninstall log file is created. For details, refer to "D.4 Return Values for Silent Uninstallation (for ETERNUS SF Manager, AdvancedCopy Manager CCM)".

The uninstallation result can be viewed in the uninstall log file, too.
Open the uninstall log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent uninstallation command.

9.3.3 Post-silent Uninstallation Work

1. Restart the system.
2. Delete the AdvancedCopy Manager's agent management information.
   Back up all the files under <Configuration directory>\etc and as required, delete them by Explorer after backup.

This is the end of the uninstallation of ETERNUS SF Manager (for Windows).
Following that, perform the procedure in "9.8 Deletion of Port Number".

Information

When ETERNUS SF Manager is uninstalled, UpdateAdvisor for Middleware is not uninstalled.
If you do not use UpdateAdvisor for Middleware, uninstall it manually.

Refer to the UpdateAdvisor for Middleware manual for how to uninstall UpdateAdvisor for Middleware.

9.4 Interactive Uninstallation Procedure of ETERNUS SF Manager (for Solaris)

The interactive uninstallation procedure of ETERNUS SF Manager for Solaris is as follows:

1. Log in to the server as a superuser.
2. Uninstall ETERNUS SF Manager executing the following command.

```
# /opt/FJSVesfcm/esfinstaller/esfuninstall.sh
```

3. The following screen is displayed. To continue the uninstallation, enter "y". To stop the uninstallation, enter "q".

```
+-------------------------------------------------------------+
|                   ETERNUS SF V16.9.1                        |
|                                                             |
| All Rights Reserved, Copyright (C) Fujitsu Limited 2013-2024 |
+-------------------------------------------------------------+

The following product has been installed on this system:
    ETERNUS SF Manager

Do you want to continue the uninstallation? [y,q]:
```

4. The relevant packages are deleted, and execution result is displayed.
   The following message is displayed after the ETERNUS SF Manager uninstallation is completed normally.

```
INFO: ETERNUS SF was uninstalled successfully.
```

5. If the FSUNiconv package has been installed, delete this package.
   Before deleting the package, confirm that none of the package functions used by any system other than ETERNUS SF Manager.

```
# pkgrm FSUNiconv
```

6. Reboot the system.

```
# /usr/sbin/shutdown -y -g0 -i6
```

The ETERNUS SF Manager (for Solaris) uninstallation is completed.
Following that, perform the procedure in "9.8 Deletion of Port Number".

Information

Delete the "/var/opt/FJSVesflm" directory manually, if the directory still exists after ETERNUS SF Manager is uninstalled.

9.5 Silent Uninstallation Procedure of ETERNUS SF Manager (for Solaris)

9.5.1 Running Silent Uninstallation

The silent uninstallation procedure of ETERNUS SF Manager (for Solaris) is as follows:

1. Log in to the target server. Perform the post-login operation as root (superuser).
2. Execute the following silent uninstallation command.

   For *uninstallLogFile*, specify the file in which to output uninstallation log with an absolute path. It is optional to specify for *uninstallLogFile*.

   ```
   # /opt/FJSVesfcm/esfinstaller/esfsilentuninstall.sh [-l uninstallLogFile]
   ```

   Point

   - If nothing is specified for *uninstallLogFile*, created is a log file named "esfsilentuninstall.log" in the "/var/tmp" directory.
   - If any file of the same name as the specified uninstall log file exits, it is overwritten. On completion of uninstallation, a command prompt is displayed.
   - It is required to specify an existing directory with write permission for the directory in which to store the uninstall log file. If it has no write permission, no error message is output on the screen and the process terminates with error.
   - If the path to the uninstall log file contains any spaces, it should be surrounded by double quote characters.
   - The characters " ! $ are not supported for path name for uninstall log file.

   Note

   - If an invalid option is specified, its corresponding error message is output in the log file and the process exits. No error message is output on the screen.
   - Do not execute multiple silent uninstall commands at the same time. If a silent uninstall starts while a silent uninstall is executing, the silent uninstall terminates abnormally without creating an uninstall log file.

3. On completion of uninstallation, a command prompt is displayed.

9.5.2 Checking Uninstallation Result

Check the return value from the silent uninstallation command. If necessary, check the uninstall log file. However, if the return value from the silent uninstallation command is 3 or 9, no uninstall log file is created. For details, refer to "D.4 Return Values for Silent Uninstallation (for ETERNUS SF Manager, AdvancedCopy Manager CCM)".

The uninstallation result can be viewed in the uninstall log file, too.
Open the uninstall log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent uninstallation command.

9.5.3 Post-silent Uninstallation Work

1. If FSUNiconv package is installed, delete the package.
   Before deleting, make sure that this package function is not used for other than ETERNUS SF Manager.

```
# pkgrm FSUNiconv
```

2. Restart the system.

```
# /usr/sbin/shutdown -y -g0 -i6
```

This is the end of the uninstallation of ETERNUS SF Manager (for Solaris).
Following that, perform the procedure in "9.8 Deletion of Port Number".

Information

When ETERNUS SF Manager is uninstalled, the "/var/opt/FJSVesflm" directory may be left.
In that case, delete the "/var/opt/FJSVesflm" directory.

9.6 Interactive Uninstallation Procedure of ETERNUS SF Manager (for Linux)

The interactive uninstallation procedure of ETERNUS SF Manager (for Linux) is as follows:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Uninstall ETERNUS SF Manager executing the following command.

```
# /opt/FJSVesfcm/esfinstaller/esfuninstall.sh
```

3. The following screen is displayed. To continue the uninstallation, enter "y". To stop the uninstallation, enter "q".

```
+-------------------------------------------------------------+
|                   ETERNUS SF V16.9.1                        |
|                                                             |
| All Rights Reserved, Copyright (C) Fujitsu Limited 2013-2024 |
+-------------------------------------------------------------+

The following product has been installed on this system:
    ETERNUS SF Manager

Do you want to continue the uninstallation? [y,q]:
```

4. The relevant packages are deleted, and execution result is displayed.
   The following message is displayed after the ETERNUS SF Manager uninstallation is completed normally.

```
INFO: ETERNUS SF was uninstalled successfully.
```

5. Reboot the system

```
# /sbin/shutdown -r now
```

The ETERNUS SF Manager (for Linux) uninstallation is completed.
Following that, perform the procedure in "9.8 Deletion of Port Number".

Information

Delete the "/var/opt/FJSVesflm" directory manually, if the directory still exists after ETERNUS SF Manager is uninstalled.

9.7 Silent Uninstallation Procedure of ETERNUS SF Manager (for Linux)

9.7.1 Running Silent Uninstallation

The silent uninstallation procedure of ETERNUS SF Manager (for Linux) is as follows:

1. Log in to the target server. Perform the post-login operation as root (superuser).
2. Execute the following silent uninstallation command.

   For *uninstallLogFile*, specify the file in which to output uninstallation log with an absolute path. It is optional to specify for *uninstallLogFile*.

   ```
   # /opt/FJSVesfcm/esfinstaller/esfsilentuninstall.sh [-l uninstallLogFile]
   ```

   Point

   - If nothing is specified for *uninstallLogFile*, a log file named "esfsilentuninstall.log" is created in the "/var/tmp" directory.
   - If any file of the same name as the specified uninstall log file exists, it is overwritten.
   - It is required to specify an existing directory with write permission for the directory in which to store the uninstall log file. If it has no write permission, no error message is output on the screen and the process terminates with error.
   - If the path to the uninstall log file contains any spaces, it should be surrounded by double quote characters.
   - The characters " ! $ are not supported for path name for uninstall log file.

   Note

   - If an invalid option is specified, its corresponding error message is output in the uninstall log file and the process exits. No error message is output on the screen.
   - Do not execute multiple silent uninstall commands at the same time. If a silent uninstall starts while a silent uninstall is executing, the silent uninstall terminates abnormally without creating an uninstall log file.

3. On completion of uninstallation, a command prompt is displayed.

9.7.2 Checking Uninstallation Result

Check the return value from the silent uninstallation command. If necessary, check the uninstall log file. However, if the return value from the silent uninstallation command is 3 or 9, no uninstall log file is created. For details, refer to "D.4 Return Values for Silent Uninstallation (for ETERNUS SF Manager, AdvancedCopy Manager CCM)".

The uninstallation result can be viewed in the uninstall log file, too.
Open the uninstall log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent uninstallation command.

9.7.3 Post-silent Uninstallation Work

1. Restart the system.

   ```
   # /sbin/shutdown -r now
   ```

This is the end of the uninstallation of ETERNUS SF Manager (for Linux).
Following that, perform the procedure in "9.8 Deletion of Port Number".

Information

When ETERNUS SF Manager is uninstalled, the "/var/opt/FJSVesflm" directory may be left.
In that case, delete the "/var/opt/FJSVesflm" directory.

9.8 Deletion of Port Number

From the "services" file, delete the port numbers that were used by services/daemon of ETERNUS SF Manager.
Usually, the "services" file is on the following path.

OS Type	Path Name
Windows	%SystemRoot%\system32\drivers\etc\services
Solaris Linux	/etc/services

Refer to the following sections for the port numbers to be deleted:

- If the installation method was default installation

  Port numbers listed in "Table 3.5 Services and Port Numbers of ETERNUS SF Manager for Windows (Default)"

- If the installation method was custom installation

  Port numbers entered in step 10 of the "3.2 Interactive Installation Procedure of ETERNUS SF Manager (for Windows)"

Chapter 10 Uninstallation of ETERNUS SF Agent

This chapter explains how to uninstall Storage Cruiser's agent and AdvancedCopy Manager's agent.

10.1 Uninstallation of Storage Cruiser's Agent

This section explains how to uninstall Storage Cruiser's agent.

10.1.1 Before Uninstallation

The following preparation is necessary before starting the Storage Cruiser's agent uninstallation.

10.1.1.1 Stopping Services/Daemons

Perform the tasks described below to stop the service/daemon of the Storage Cruiser's agent to be uninstalled.

- For Windows environments

  1. Click **Control Panel** > **System and Security** > **Administrative Tools** > **Services** to open the **Services** screen.
  2. Select "ETERNUS SF Storage Cruiser Agent" and then click **Stop**.

- For Solaris, Linux, or HP-UX environments

  1. Execute the following command to stop the daemon.

     ```
     # /opt/FJSVssage/bin/pstorageagt
     ```

  2. Execute the following command to confirm that the daemon has stopped.

     - For Solaris or HP-UX environments

       ```
       # /usr/bin/ps -ef | grep FJSVssage
       ```

     - For Linux environments

       ```
       # /bin/ps -ef | grep FJSVssage
       ```

  3. If the daemon has not stopped, execute the following command to stop the daemon forcibly.

     ```
     # /usr/bin/kill -9 <Process ID of daemon>
     ```

10.1.2 Interactive Uninstallation Procedure of Storage Cruiser's Agent (for Windows)

The interactive uninstallation procedure of Storage Cruiser's agent (for Windows) is as follows:

1. Log on to the server using Administrator privileges.
2. Perform the following tasks.

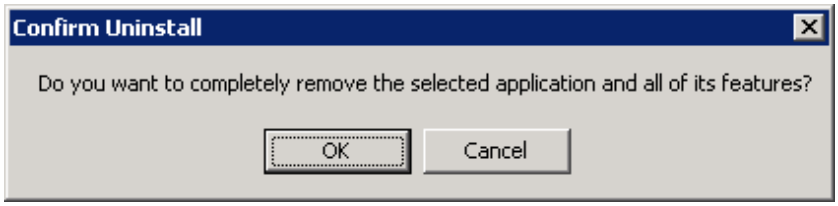
   From the **Control Panel**, open the **Programs and Features** page.
   From the list of displayed programs, select "ETERNUS SF Storage Cruiser Agent" and then click **Uninstall**.

   Information

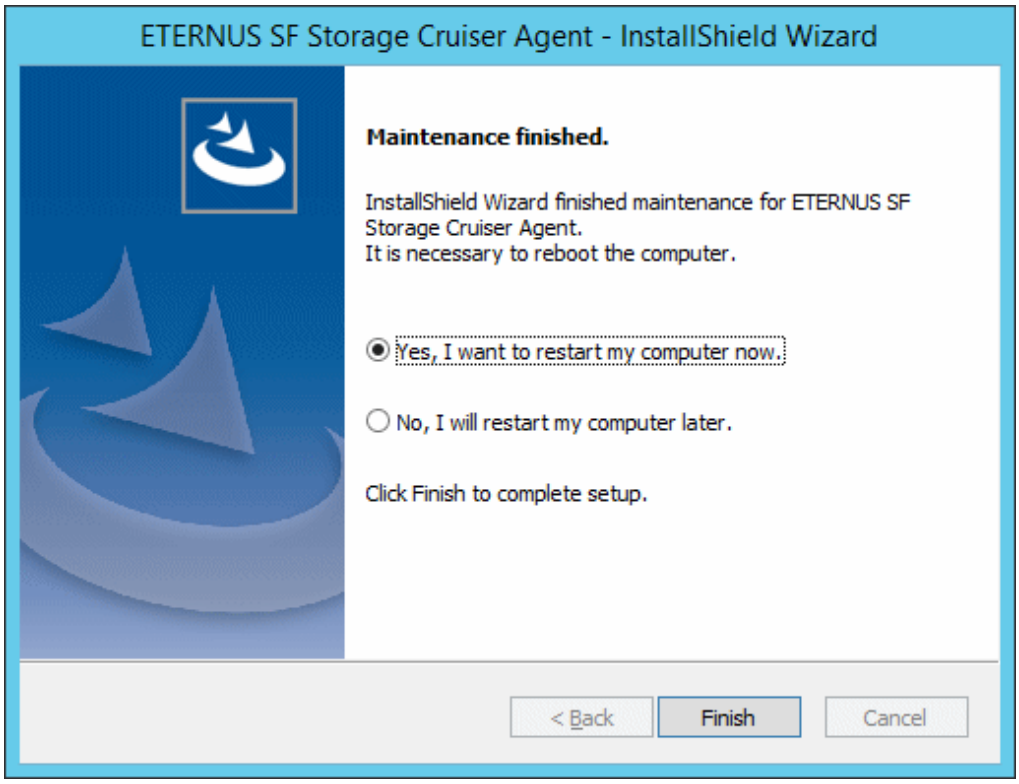
   Sometimes, an error dialog may be displaying "Error reading setup initialization file", indicating that uninstallation cannot be performed. In such a case, insert the DVD media that you used for installation into the DVD drive, open the directory stated below with Explorer or another application, and execute setup.exe.

   - *dvdDrive*:\Agent_windows\Storage_Cruiser\windows_x86

3. The following page is displayed. Click **OK**.



4. The following installation wizard page is displayed. The uninstallation process is completed. Click **Finish**.



5. Restart the system.

The Storage Cruiser's agent (for Windows) uninstallation is completed.

Information

Sometimes, uninstallation does not delete the directory into which the software was installed.

[For example]

```
C:\ETERNUS_SF\ESC\Agent
```

In such a case, use Explorer or another application to delete the directory manually.

10.1.3 Silent Uninstallation Procedure of Storage Cruiser's Agent (for Windows)

10.1.3.1 Running Silent Uninstallation

The silent uninstallation procedure of Storage Cruiser's agent (for Windows) is as follows:

1. Log on to the target server as a user with administrator privileges.

2. Start the command prompt with the "Run as administrator" box.
3. Copy the following uninstall information directory to any directory other than the directory in which Storage Cruiser was installed.

```
programDirAtInstallation\ESC\AgentUninst
```

4. Execute the command copied at step 3 to uninstall.

   For *uninstallLogFile*, specify the file in which to output uninstallation log with an absolute path. It is optional to specify *uninstallLogFile*.

```
copyDestinationDir\scagtsilentuninstall.bat [-l uninstallLogFile]
```

Point

- If nothing is specified for *uninstallLogFile*, an uninstall log file named "scagtsilentuninstall.log" is created in the working directory specified for the environment variable TEMP.
- If there is any file of the same name as the specified uninstall log file exists, it is overwritten.
- It is required to specify an existing directory with write permission for the directory in which to store the uninstall log file. If it has no write permission, no error message is output in the command prompt or screen, and the process terminates with error.
- If the path to the uninstall log file contains any spaces, it should be surrounded by double quote characters.
- The characters " | : * ? / . < > % & ^ ; ! are not supported for path name for uninstall log file.

Note

- If an invalid option is specified, its corresponding error message is output in the uninstall log file and the process exits. No error message is output in the command prompt or screen.
- Do not execute multiple silent uninstall commands at the same time. If a silent uninstall starts while a silent uninstall is executing, the silent uninstall terminates abnormally without creating an uninstall log file.

5. On completion of uninstallation, a command prompt is displayed.
   Delete the directory copied at step 3.

10.1.3.2 Checking Uninstallation Result

Check the return value from the silent uninstallation command. If necessary, check the uninstall log file. However, if the return value from the silent uninstallation command is 3 or 9, no uninstall log file is created. For details, refer to "D.5 Return Values for Silent Uninstallation (for Storage Cruiser's Agent)".

The uninstallation result can be viewed in the uninstall log file, too.
Open the uninstall log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent uninstallation command.

10.1.4 Interactive Uninstallation Procedure of Storage Cruiser's Agent (for Solaris)

The interactive uninstallation procedure of Storage Cruiser's agent (for Solaris) is as follows:

1. Log in to the server as a superuser.
2. Execute the following command.

```
# pkgrm FJSVssage
```

Note

If you are planning to install Storage Cruiser's agent again in a different directory after executing the "pkgrm" command, make sure that no FJSVssage package directories remain. Refer to "2.3.3.1 Required Disk Space for Installation" for information on the FJSVssage package directory.

If the FJSVssage package directory contains any user-specific files, the uninstallation process cannot delete these files; due to this, executing the "pkgrm" command does also not delete the FJSVssage package directory. In such a case, delete the directory manually.

3. Delete the "sscruisera" line from the "/etc/services" file.
4. Reboot the system.

```
# /usr/sbin/shutdown -y -g0 -i6
```

The Storage Cruiser's agent (for Solaris) uninstallation is completed.

10.1.5 Silent Uninstallation Procedure of Storage Cruiser's Agent (for Solaris)

10.1.5.1 Running Silent Uninstallation

The silent uninstallation procedure of Storage Cruiser's agent is as follows:

1. Log in to the target server. Perform the post-login operation as root (superuser).
2. Execute the following silent uninstallation command.
   For *uninstallLogFile*, specify the file in which to output uninstallation log with an absolute path. It is optional to specify for *uninstallLogFile*.

```
# /opt/FJSVssage/bin/scagtsilentuninstall.sh [-l uninstallLogFile]
```

Point

- If nothing is specified for *uninstallLogFile*, an uninstall log file named "scagtsilentuninstall.log" is created in the "/var/tmp" directory.
- If there is any file of the same name as the specified uninstall log existing, it is overwritten.
- It is required to specify an existing directory with write permission for the directory in which to store the uninstall log file. If it has no write permission, no error message is output in the command prompt or screen, and the process terminates with error.

Note

- If an invalid option is specified, its corresponding error message is output in the uninstall log file and the operation exits. No error message is output in the command prompt or screen.
- Do not execute multiple silent uninstall commands at the same time. If a silent uninstall starts while a silent uninstall is executing, the silent uninstall terminates abnormally without creating an uninstall log file.
- After running this command, if you reinstall Storage Cruiser's agent in another directory, make sure that the directory for the FJSVssage package is not left. For the size of the FJSVssage package, refer to "2.3.3.1 Required Disk Space for Installation".
- If there is any file unique to the user existing in the directory for the FJSVssage package, the file cannot be deleted by the uninstallation process. Therefore, even running uninstallation does not delete the directory of the FJSVssage package. In this case, delete the directory.

3. On completion of uninstallation, a command prompt is displayed.
4. Delete the line of "sscruisera" from the "/etc/services" file.
5. Restart the system.

```
# /usr/sbin/shutdown -y -g0 -i6
```

10.1.5.2 Check Uninstallation Result

Check the return value from the silent uninstallation command. If necessary, check the uninstall log file. However, if the return value from the silent uninstallation command is 3 or 9, no uninstall log file is created. For details, refer to "D.5 Return Values for Silent Uninstallation (for Storage Cruiser's Agent)".

The uninstallation result can be viewed in the uninstall log file, too.
Open the uninstall log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent uninstallation command.

10.1.6 Interactive Uninstallation Procedure of Storage Cruiser's Agent (for Linux)

The interactive uninstallation procedure of Storage Cruiser's agent (for Linux) is as follows:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Execute the following command.

```
# rpm -e FJSVssage
```

If you are planning to install Storage Cruiser's agent again in a different directory after executing the "rpm" command, make sure that no FJSVssage package directories remain. Refer to "2.3.3.1 Required Disk Space for Installation" for information on the FJSVssage package directory.

If the FJSVssage package directory contains any user-specific files, the uninstallation process cannot delete these files; due to this, executing the "rpm" command does also not delete the FJSVssage package directory. In such a case, delete the directory manually.

3. Delete the "sscruisera" line from the "/etc/services" file.
4. Reboot the system.

```
# /sbin/shutdown -r now
```

The Storage Cruiser's agent (for Linux) uninstallation is completed.

10.1.7 Silent Uninstallation Procedure of Storage Cruiser's Agent (for Linux)

10.1.7.1 Running Silent Uninstallation

The silent uninstallation procedure of Storage Cruiser's agent (for Linux) is as follows:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Execute the following silent uninstallation command.
   For *uninstallLogFile*, specify the file in which to output uninstallation log with an absolute path. It is optional to specify for *uninstallLogFile*.

```
# /opt/FJSVssage/bin/scagtsilentuninstall.sh [-l uninstallLogFile]
```

Point

- If nothing is specified for *uninstallLogFile*, an uninstall log file named "scagtsilentuninstall.log" is created in the "/var/tmp" directory.
- If there is any file of the same name as the specified uninstall log file exists, it is overwritten.
- It is required to specify an existing directory with write permission for the directory in which to store the uninstall log file. If it has no write permission, no error message is output in the command prompt or screen, and the process terminates with error.

Note

- If an invalid option is specified, its corresponding error message is output in the log file and the process exits. No error message is output in the command prompt or screen.
- Do not execute multiple silent uninstall commands at the same time. If a silent uninstall starts while a silent uninstall is executing, the silent uninstall terminates abnormally without creating an uninstall log file.
- If there is any file unique to the user in the directory for the FJSVssage package, uninstallation process cannot delete the file. Therefore, even running uninstallation does not delete the directory for the FJSVssage. In this case, delete the directory.

3. On completion of uninstallation, a command prompt is displayed.
4. Delete the line of "sscruisera" from the "/etc/services" file.
5. Restart the system.

```
# /sbin/shutdown -r now
```

10.1.7.2 Check Uninstallation Result

Check the return value from the silent uninstallation command. If necessary, check the uninstall log file. However, if the return value from the silent uninstallation command is 3 or 9, no uninstall log file is created. For details, refer to "D.5 Return Values for Silent Uninstallation (for Storage Cruiser's Agent)".

The uninstallation result can be viewed in the uninstall log file, too.
Open the uninstall log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent uninstallation command.

10.1.8 Interactive Uninstallation Procedure of Storage Cruiser's Agent (for HP-UX)

The interactive uninstallation procedure of Storage Cruiser's agent (for HP-UX) is as follows:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Move to the root directory (/).

```
# cd /
```

3. Execute the following command.

```
# swremove
```

4. The screen is displayed. Select "FJSVssage" from the list, and then click **Actions** > **Remove**.
5. The **Remove Analysis** screen is displayed, and package is checked.
   After checking package is completed, click **OK**.

6. The **Remove Window** screen is displayed.
   When "Completed" is displayed in **Status** field, the uninstallation is completed. Click **Done** to go back to the initial page.
7. Delete the "sscruisera" line from the "/etc/services" file.

The Storage Cruiser's agent (for HP-UX) uninstallation is completed.

10.2 Uninstallation of AdvancedCopy Manager's Agent

This section explains how to uninstall AdvancedCopy Manager's agent.

10.2.1 Before Uninstallation

The following preparation is necessary before starting the AdvancedCopy Manager's agent uninstallation.

10.2.1.1 Backup of Backup Management List

If you are planning to use the backup management list afterwards, back up the backup management list using the "swstresback" command before starting the uninstallation of AdvancedCopy Manager's agent.

Refer to "Command References" in the *AdvancedCopy Manager Operation Guide* for the operating system of the Managed Server for information on the command.

10.2.1.2 Deletion of Clustered Operating Environment

Before starting the uninstallation of AdvancedCopy Manager's agent from server nodes on which a cluster environment is built, delete the environment of all Managed Server transactions created on these server nodes.

Refer to "Deletion of Cluster Environment for Managed Server Transactions" in the *Cluster Environment Setup Guide* for information on the instructions.

10.2.1.3 Deletion of Backup Operation Settings for Exchange Server (for Windows)

Before starting the uninstallation of AdvancedCopy Manager's agent from environments in which backup operation was implemented for Exchange Server databases, perform the tasks described under "Uninstallation" in "Backup and Restore of Exchange Server Databases" in the *AdvancedCopy Manager Operation Guide*.

10.2.1.4 Deletion of Managed Server

The server from which the AdvancedCopy Manager's agent is uninstalled must be removed from the control of Management Server.

There are two methods for this task:

- Using Web Console
- Executing the "stgxfwcmdelsrv" command on the Management Server

  Refer to "Command References" in the *AdvancedCopy Manager Operation Guide* for the operating system of the Management Server for information on the command.

10.2.1.5 Backup of Pre-processing and Post-processing Scripts

If AdvancedCopy Manager's agent is uninstalled, AdvancedCopy Manager's pre-processing and post-processing scripts (shell scripts) used in backup/restore and replication are also deleted.

If there is a possibility that any customized scripts are used again, back up these scripts.

10.2.1.6 Stopping Services/Daemons

Perform the tasks described below to stop the services/daemons of the AdvancedCopy Manager's agent to be uninstalled.

- For Windows environments

  1. Click **Control Panel** > **System and Security** > **Administrative Tools** > **Services** to open the **Services** screen.
  2. Select "AdvancedCopy Manager COM Service" and then click **Stop**.

- For Solaris, Linux, or HP-UX environments

  Execute the following command to stop the AdvancedCopy Manager daemon.

```
# /opt/swstorage/bin/stopacm
```

10.2.1.7 Deletion of Port Number

From the "services" file, delete the port numbers that were used by services/daemons of AdvancedCopy Manager's agent.
Usually, the "services" file is on the following path.

OS Type	Path Name
Windows	%SystemRoot%\system32\drivers\etc\services
Solaris Linux HP-UX	/etc/services

10.2.2 Interactive Uninstallation Procedure of AdvancedCopy Manager's Agent (for Windows)

Point

The uninstallation procedure of AdvancedCopy Manager's agent in the environment that AdvancedCopy Manager's agent and Storage Cruiser's agent are installed is as follows:

- For uninstalling AdvancedCopy Manager's agent only

  1. Stop Storage Cruiser's agent.
  2. Uninstall AdvancedCopy Manager's agent.

- For uninstalling both Storage Cruiser's agent and AdvancedCopy Manager's agent

  1. Uninstall Storage Cruiser's agent.
  2. Uninstall AdvancedCopy Manager's agent.

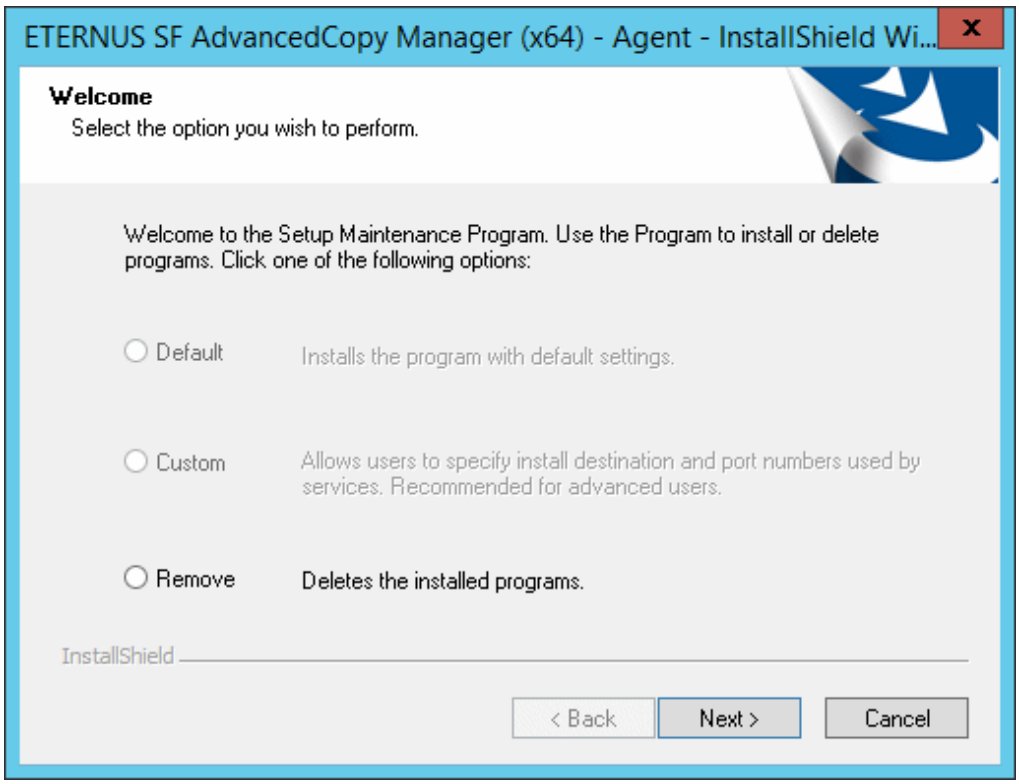
The interactive uninstallation procedure of AdvancedCopy Manager's agent (for Windows) is as follows:

1. Log on to the server using Administrator privileges.
2. Perform the following tasks.

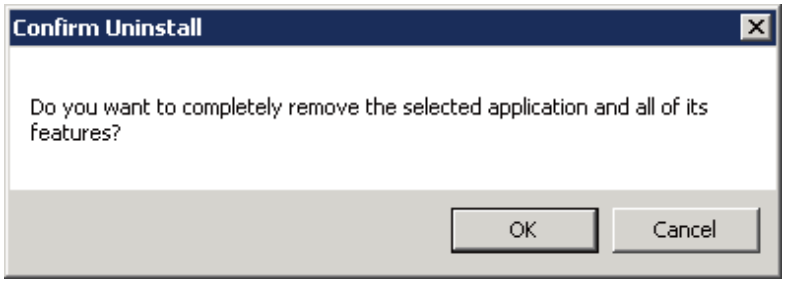
   From the **Control Panel**, open the **Programs and Features** page.
   From the list of displayed programs, select "AdvancedCopy Manager - Agent" and then click **Uninstall**.

   The following steps are explained using screen examples when the "64bit version agent program" is installed.

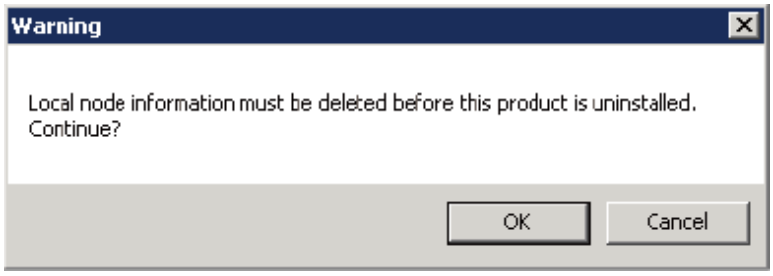
3. The following page is displayed. Select **Remove** and then click **Next**.



4. The following page is displayed. Click **OK**.

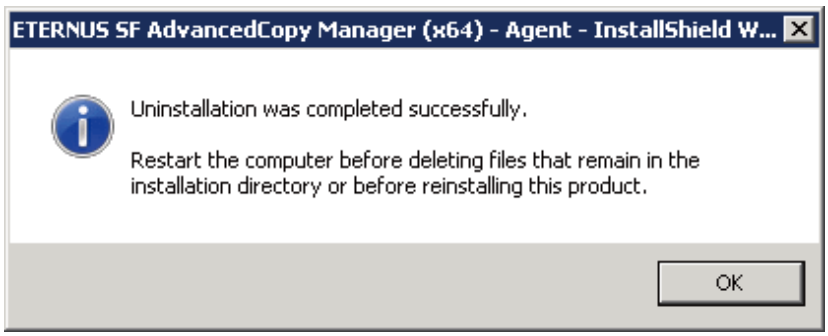


5. The page is displayed to confirm whether you have completed the tasks described under "10.2.1.4 Deletion of Managed Server". If you have completed them, click **OK**.



If you have not completed them, click **Cancel** to terminate the uninstallation processing, and then perform the "10.2.1.4 Deletion of Managed Server". After that, restart this procedure from step 1.

6. The page is displayed when the uninstallation processing is completed. Click **OK**.



7. Restart the system.
8. Delete the agent management information.

   Use Explorer or another application to delete all files under *environmentDir*\etc after backing up any files as necessary.

The AdvancedCopy Manager's agent (for Windows) uninstallation is completed.

10.2.3 Silent Uninstallation Procedure of AdvancedCopy Manager's Agent (for Windows)

Note

The following is the uninstallation procedure in the environment where Storage Cruiser's agent is installed:

- When not uninstalling Storage Cruiser's agent
  1. Stop Storage Cruiser's agent.
  2. Uninstall AdvancedCopy Manager's agent.
- When uninstalling Storage Cruiser's agent, too
  1. Uninstall Storage Cruiser's agent.
  2. Uninstall AdvancedCopy Manager's agent.

10.2.3.1 Running Silent Uninstallation

The silent uninstallation procedure of AdvancedCopy Manager's agent (for Windows) is as follows:

1. Log on to the target server as a user with administrator privileges.
2. Start the command prompt with "Run as administrator".
3. Copy the following uninstall information directory to any directory other than the directory in which AdvancedCopy Manager's agent is installed.

```
programDirAtInstallation\ISSetup
```

Information

Running uninstallation from the program directory specified at installation tries to delete the acmagtsilentuninstall.bat file itself and fails in uninstallation. For this reason, copy the file to any directory other than the program directory specified at installation and then run the copied file.

4. Move to the copied "ISSetup" directory.

   The following is an example where the copy destination directory at step 3 is C:\temp.

   ```
   cd C:\temp\ISSetup
   ```

5. Execute the command copied at step 3 to uninstall.

   For *uninstallLogFile*, specify the file in which to output uninstallation log with an absolute path. It is optional to specify for *uninstallLogFile*.

   ```
   acmagtsilentuninstall.bat [-l uninstallLogFile]
   ```

   Point

   - If nothing is specified for *uninstallLogFile*, an uninstall log file named "acmagtsilentuninstall.log" is created in the working directory specified for the environment variable TEMP.
   - If there is any file of the same name as the specified uninstall log file, it is overwritten.
   - It is required to specify an existing directory with write permission for the directory in which to store the uninstall log file. If it has no write permission, no error message is output in the command prompt or screen, and the process terminates with error.
   - If the path to the uninstall log file contains any spaces, it should be surrounded by double quote characters.
   - The characters " | : * ? / . < > % & ^ ; ! are not supported for path name for uninstall log file.

   Note

   - If an invalid option is specified, its corresponding error message is output in the uninstall log file and the process exits. No error message is output in the command prompt or screen.
   - Do not execute multiple silent uninstall commands at the same time. If a silent uninstall starts while a silent uninstall is executing, the silent uninstall terminates abnormally without creating an uninstall log file.

6. On completion of uninstallation, a command prompt is displayed.
   Delete the directory copied at step 3.

10.2.3.2 Checking Uninstallation Result

Check the return value from the silent uninstallation command. If necessary, check the uninstall log file. However, if the return value from the silent uninstallation command is 3 or 9, no uninstall log file is created. For details, refer to "D.6 Return Values for Silent Uninstallation (for AdvancedCopy Manager's Agent)".

The uninstallation result can be viewed in the uninstall log file, too.
Open the uninstall log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent uninstallation command.

10.2.3.3 Post-silent Uninstallation Work

1. Restart the system.
2. Delete the agent management information.
   Use Explorer or another application to delete all files under *environmentDir*\etc after backing up any files as necessary.

The AdvancedCopy Manager's agent (for Windows) uninstallation is completed.

10.2.4 Interactive Uninstallation Procedure of AdvancedCopy Manager's Agent (for Solaris)

The interactive uninstallation procedure of AdvancedCopy Manager's agent (for Solaris) is as follows:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Uninstall AdvancedCopy Manager's agent executing the following command.

```
# /opt/swstorage/setup/stg/swunsetup
```

3. The following screen is displayed. To continue the uninstallation, enter "y". To stop the uninstallation, enter "n" or "q".

```
+-------------------------------------------------------------+
|              ETERNUS SF AdvancedCopy Manager                |
|                          16.9.1                             |
|                  Copyright Fujitsu Limited 2013-2024        |
+-------------------------------------------------------------+


Welcome to Setup
This program will uninstall "AdvancedCopy Manager" on your system.

Do you want to remove all packages included in AdvancedCopy Manager? [y,n,?,q]
```

4. The relevant packages are deleted, and execution result is displayed.
   The following message is displayed after the AdvancedCopy Manager's agent uninstallation is completed normally.

```
AdvancedCopy Manager was uninstalled successfully.
```

5. Reboot the system.

```
# /usr/sbin/shutdown -y -g0 -i6
```

The AdvancedCopy Manager's agent (for Solaris) uninstallation is completed.

Information

- After executing the "swunsetup" command, if you reinstall AdvancedCopy Manager's agent to another directory, make sure that no package directories listed in "Program Components of AdvancedCopy Manager's Agent" in the *Software Release Guide* remain.
- Even executing the "swunsetup" command may not delete the package directories listed in "Program Components of AdvancedCopy Manager's Agent" in the *Software Release Guide*. If these are unnecessary, delete them manually.

10.2.5 Silent Uninstallation Procedure of AdvancedCopy Manager's Agent (for Solaris)

10.2.5.1 Running Silent Uninstallation

The silent uninstallation procedure of AdvancedCopy Manager's agent (for Solaris) is as follows:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Execute the following silent uninstallation command.

   For *uninstallLogFile*, specify the file in which to output uninstallation log with an absolute path. It is optional to specify for *uninstallLogFile*.

```
# /opt/swstorage/setup/stg/acmagtsilentuninstall.sh [-l uninstallLogFile]
```

Point

- If nothing is specified for *uninstallLogFile*, an uninstall log file named "acmagtsilentuninstall.log" is created in the "/var/tmp" directory.
- If there is any file of the same name as the specified uninstall log file, it is overwritten.
- It is required to specify an existing directory with write permission for the directory in which to store the uninstall log file. If it has no write permission, no error message is output in the command prompt or screen, and the process terminates with error.

Note

- If an invalid option is specified, its corresponding error message is output in the uninstall log file and the process exits. No error message is output in the command prompt or screen.
- Do not execute multiple silent uninstall commands at the same time. If a silent uninstall starts while a silent uninstall is executing, the silent uninstall terminates abnormally without creating an uninstall log file.

3. On completion of uninstallation, a command prompt is displayed.

10.2.5.2 Checking Uninstallation Result

Check the return value from the silent uninstallation command. If necessary, check the uninstall log file. However, if the return value from the silent uninstallation command is 3 or 9, no uninstall log file is created. For details, refer to "D.6 Return Values for Silent Uninstallation (for AdvancedCopy Manager's Agent)".

The uninstallation result can be viewed in the uninstall log file, too.
Open the uninstall log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent uninstallation command.

Information

- After running uninstallation, if you reinstall AdvancedCopy Manager's agent to another directory, make sure that no package directories listed in "Program Components of AdvancedCopy Manager's Agent" in the *Software Release Guide* remain.
- Even running the uninstallation process may not delete the package directories listed in "Program Components of AdvancedCopy Manager's Agent" in the *Software Release Guide*. If these are unnecessary, delete them manually.

10.2.5.3 Post-silent Uninstallation Work

1. Reboot the system.

```
# /usr/sbin/shutdown -y -g0 -i6
```

The AdvancedCopy Manager's agent (for Solaris) uninstallation is completed.

10.2.6 Interactive Uninstallation Procedure of AdvancedCopy Manager's Agent (for Linux)

The interactive uninstallation procedure of AdvancedCopy Manager's agent (for Linux) is as follows:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).

2. Uninstall AdvancedCopy Manager's agent executing the following command.

```
# /opt/swstorage/setup/stg/swunsetup
```

3. The following screen is displayed. To continue the uninstallation, enter "y". To stop the uninstallation, enter "n" or "q".

```
+-------------------------------------------------------+
|              ETERNUS SF AdvancedCopy Manager           |
|                         16.9.1                        |
|                  Copyright Fujitsu Limited 2013-2024  |
+-------------------------------------------------------+


Welcome to Setup.
This program will uninstall "AdvancedCopy Manager" on your system.

Do you want to remove all packages included in AdvancedCopy Manager? [y,n,?,q]
```

4. The relevant packages are deleted, and execution result is displayed.
   The following message is displayed after the AdvancedCopy Manager's agent uninstallation is completed normally.

```
AdvancedCopy Manager was uninstalled successfully.
```

5. Reboot the system.

```
# /sbin/shutdown -r now
```

The AdvancedCopy Manager's agent (for Linux) uninstallation is completed.

Information

- After executing the "swunsetup" command, if you reinstall AdvancedCopy Manager's agent to another directory, make sure that no package directories listed in "Program Components of AdvancedCopy Manager's Agent" in the *Software Release Guide* remain.
- Even executing the "swunsetup" command may not delete the package directories listed in "Program Components of AdvancedCopy Manager's Agent" in the *Software Release Guide*. If these are unnecessary, delete them manually.

10.2.7 Silent Uninstallation Procedure of AdvancedCopy Manager's Agent (for Linux)

10.2.7.1 Running Silent Uninstallation

The silent uninstallation procedure of AdvancedCopy Manager's agent (for Linux) is as follows:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Execute the following silent uninstallation command.
   For *uninstallLogFile*, specify the file in which to output uninstallation log with an absolute path. It is optional to specify for *uninstallLogFile*.

```
# /opt/swstorage/setup/stg/acmagtsilentuninstall.sh [-l uninstallLogFile]
```

Point

- If nothing is specified for *uninstallLogFile*, an uninstall log file named "acmagtsilentuninstall.log" is created in the "/var/tmp" directory.

- If there is any file of the same name as the specified uninstall log file, it is overwritten.
- It is required to specify an existing directory with write permission for the directory in which to store the uninstall log file. If it has no write permission, no error message is output in the command prompt or screen, and the process terminates with error.

Note

- If an invalid option is specified, its corresponding error message is output in the uninstall log file and the process exits. No error message is output in the command prompt or screen.
- Do not execute multiple silent uninstall commands at the same time. If a silent uninstall starts while a silent uninstall is executing, the silent uninstall terminates abnormally without creating an uninstall log file.

3. On completion of uninstallation, a command prompt is displayed.

10.2.7.2 Checking Uninstallation Result

Check the return value from the silent uninstallation command. If necessary, check the uninstall log file. However, if the return value from the silent uninstallation command is 3 or 9, no uninstall log file is created. For details, refer to "D.6 Return Values for Silent Uninstallation (for AdvancedCopy Manager's Agent)".

The uninstallation result can be viewed in the uninstall log file, too.

Open the uninstall log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent uninstallation command.

Information

- After running uninstallation, if you reinstall AdvancedCopy Manager's agent to another directory, make sure that no package directories listed in "Program Components of AdvancedCopy Manager's Agent" in the *Software Release Guide* remain.
- Even running the uninstallation process may not delete the package directories listed in "Program Components of AdvancedCopy Manager's Agent" in the *Software Release Guide*. If these are unnecessary, delete them manually.

10.2.7.3 Post-silent Uninstallation Work

1. Reboot the system.

```
# /sbin/shutdown -r now
```

The AdvancedCopy Manager's agent (for Linux) uninstallation is completed.

10.2.8 Interactive Uninstallation Procedure of AdvancedCopy Manager's Agent (for HP-UX)

The interactive uninstallation procedure of AdvancedCopy Manager's agent (for HP-UX) is as follows:

1. Login to the server on which to perform the tasks. Perform operations after logging in with root (superuser).
2. Uninstall AdvancedCopy Manager's agent executing the following command.

```
# /opt/swstorage/setup/stg/swunsetup
```

3. The following screen is displayed. To continue the uninstallation, enter "y". To stop the uninstallation, enter "n" or "q".

```
+-------------------------------------------------------+
|             ETERNUS SF AdvancedCopy Manager           |
```

```
|                          16.9.1                          |
|                 Copyright Fujitsu Limited 2013-2024      |
+---------------------------------------------------------+


Welcome to Setup.
This program will uninstall "AdvancedCopy Manager" on your system.

Do you want to remove all packages included in AdvancedCopy Manager? [y,n,?,q]
```

4. The relevant packages are deleted, and execution result is displayed.
   The following message is displayed after the AdvancedCopy Manager's agent uninstallation is completed normally.

```
AdvancedCopy Manager was uninstalled successfully.
```

5. Reboot the system.

```
# /usr/sbin/shutdown -r now
```

The AdvancedCopy Manager's agent (for HP-UX) uninstallation is completed.

Information

- After executing the "swunsetup" command, if you reinstall AdvancedCopy Manager's agent to another directory, make sure that no package directories listed in "Program Components of AdvancedCopy Manager's Agent" in the *Software Release Guide* remain.
- Even executing the "swunsetup" command may not delete the package directories listed in "Program Components of AdvancedCopy Manager's Agent" in the *Software Release Guide*. If these are unnecessary, delete them manually.

Chapter 11 Uninstallation of AdvancedCopy Manager CCM

This chapter explains how to uninstall AdvancedCopy Manager CCM.

Point

This chapter describes the tasks that are necessary only if you have installed the AdvancedCopy Manager CCM as a standalone product.
If you were using the AdvancedCopy Manager CCM that is included in ETERNUS SF Manager, do not perform the tasks described in this chapter.

11.1 Before Uninstallation

The following preparation is necessary before starting the AdvancedCopy Manager CCM uninstallation.

11.1.1 Backup of Environment Setting Files

If there is a possibility that the current environment is used again, e.g. after migration, back up (save) the AdvancedCopy Manager CCM environment as needed.

Refer to "Backing Up Environment Settings Files" in the *AdvancedCopy Manager Operation Guide for Copy Control Module* for information on how to backup.

11.1.2 Stopping of Copy Sessions

Stop all Advanced Copy sessions that are currently in progress in ETERNUS Disk storage system under the control of AdvancedCopy Manager CCM.

Refer to "Managing Copy Sessions" in the *AdvancedCopy Manager Operation Guide for Copy Control Module* for the methods for checking and stopping active sessions of Advanced Copy.

11.1.3 Eject Media

Make sure that the DVD media of this product is not in a DVD drive.
When the DVD media is in the DVD drive, eject it.

Note

An unexpected error may occur, when the DVD media is left in the DVD drive.

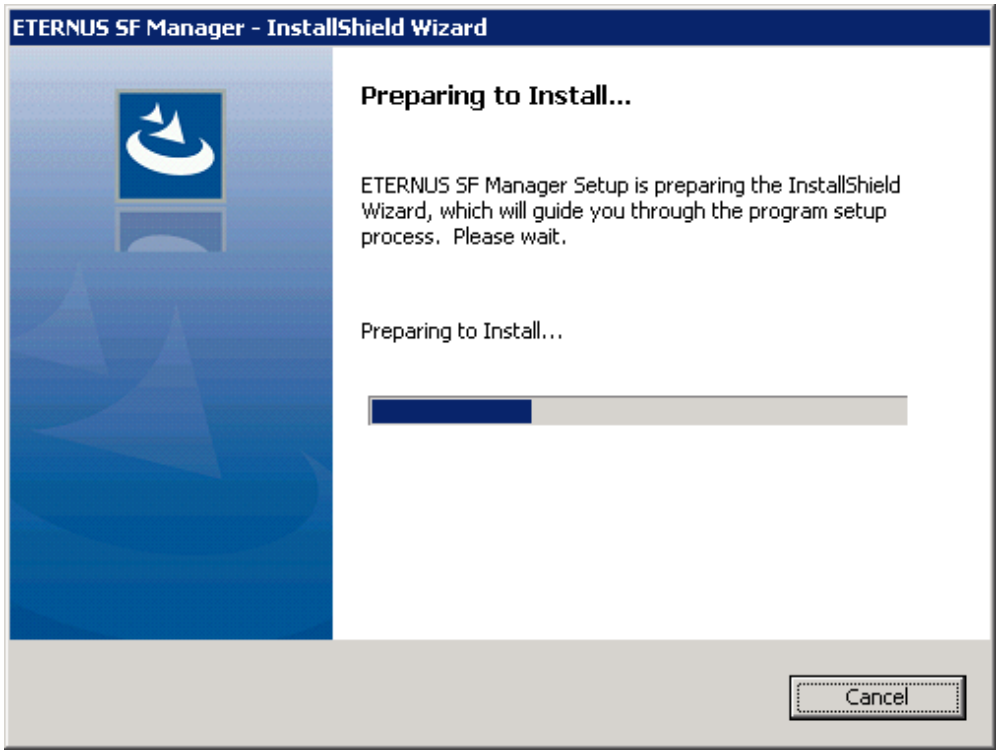
11.2 Interactive Uninstallation Procedure of AdvancedCopy Manager CCM (for Windows)

The interactive uninstallation procedure of AdvancedCopy Manager CCM (for Windows) is as follows:

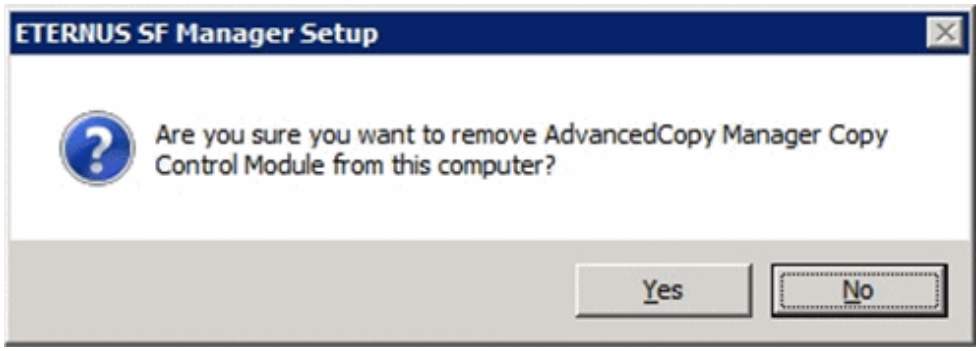
1. Log on to the server using Administrator privileges.
2. Perform the following tasks.

   From the **Control Panel**, open the **Programs and Features** page.
   From the list of displayed programs, select "ETERNUS SF AdvancedCopy Manager Copy Control Module" and then click **Uninstall**.

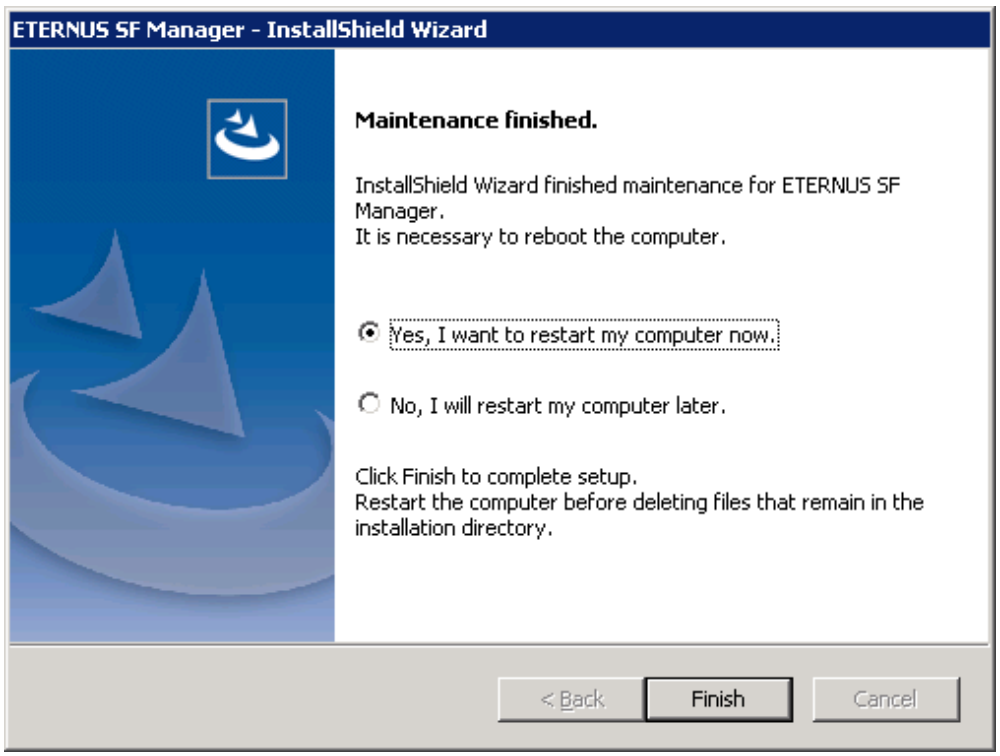
3. The following progress bar is displayed. To cancel the uninstallation, click **Cancel**.



4. The following page is displayed. Click **Yes**.



5. The following installation wizard page is displayed. The uninstallation process is completed. Click **Finish**.



   Sometimes, uninstallation does not delete the directory into which the software was installed.
   In such a case, use Explorer or another application to delete the directory manually.
   The default installation directory is "C:\ETERNUS_SF".

6. Restart the system.

The AdvancedCopy Manager CCM (for Windows) uninstallation is completed.

11.3 Silent Uninstallation Procedure of AdvancedCopy Manager CCM (for Windows)

11.3.1 Running Silent Uninstallation

The silent uninstallation procedure of AdvancedCopy Manager CCM (Windows) is as follows:

1. Log on to the target server as a user with administrator privileges.
2. Start a command prompt. Start a new command prompt different from the one used to run installation.
3. Copy the following silent uninstallation batch file to any directory other than the directory in which AdvancedCopy Manager CCM is installed.

```
programDirAtInstallation\ISSetup\esfsilentuninstall_ccm.bat
```

Information

Running uninstallation from the program directory specified at the time of installation tries to delete the "esfsilentuninstall.bat" file itself and fails in uninstallation. For this reason, copy the file to any directory other than the program directory specified at installation and then run the copied file.

4. Execute the command copied at step 3 to uninstall.

   For *uninstallLogFile*, specify the file in which to output uninstallation log with an absolute path. It is optional to specify for *uninstallLogFile*.

   ```
   copyDestinationDir\esfsilentuninstall_ccm.bat [-l uninstallLogFile]
   ```

   Point

   - If nothing is specified for *uninstallLogFile*, an uninstall log file named "esfsilentuninstall.log" is created in the working directory specified by the environment variable TEMP.
   - If there is any file of the same name as the specified uninstall log file, it is overwritten.
   - It is required to specify an existing directory with write permission for the directory in which to store the uninstall log file. If it has no write permission, no error message is output on the screen, and the process terminates with error.
   - If the path to the uninstall log file contains any spaces, it should be surrounded by double quote characters.
   - The characters " | : * ? / . < > % & ^ ; ! are not supported for path name for uninstall log file.

   Note

   - If an invalid option is specified, its corresponding error message is output in the uninstall log file and the process exits. No error message is output on the screen.
   - Do not execute multiple silent uninstall commands at the same time. If a silent uninstall starts while a silent uninstall is executing, the silent uninstall terminates abnormally without creating an uninstall log file.

5. On completion of uninstallation, a command prompt is displayed.
6. Delete the command run at step 4.
7. Restart the system.

   Information

   Despite performing uninstallation process, the installation destination directory may not be deleted.

   In that case, delete the directory using Explorer and the like. Default installation destination directory is [C:\ETERNUS_SF].

11.3.2 Checking Uninstallation Result

Check the return value from the silent uninstallation command. If necessary, check the uninstall log file. However, if the return value from the silent uninstallation command is 3 or 9, no uninstall log file is created. For details, refer to "D.4 Return Values for Silent Uninstallation (for ETERNUS SF Manager, AdvancedCopy Manager CCM)".

The uninstallation result can be viewed in the uninstall log file, too.
Open the uninstall log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent uninstallation command.

11.4 Interactive Uninstallation Procedure of AdvancedCopy Manager CCM (for Solaris)

The interactive uninstallation procedure of AdvancedCopy Manager CCM (for Solaris) is as follows:

1. The AdvancedCopy Manager CCM uninstallation must be performed by a superuser. If a general user, execute the "su" command to switch to a superuser.

```
$ su
```

2. Uninstall ETERNUS SF AdvancedCopy Manager CCM executing the following command.

```
# /opt/FJSVesfcm/esfinstaller/esfuninstall.sh
```

3. The following screen is displayed. To continue uninstallation, enter "y". To stop the uninstallation, enter "q".

```
+-------------------------------------------------------------+
|                         ETERNUS SF V16.9.1                  |
|                                                             |
| All Rights Reserved, Copyright (C) Fujitsu Limited 2013-2024 |
+-------------------------------------------------------------+
The following product has been installed on this system:
      ETERNUS SF AdvancedCopy Manager CCM

Do you want to continue the uninstallation? [y,q]:
```

4. The relevant packages are deleted, and execution result is displayed.

   The following message is displayed at the complete.

```
INFO: ETERNUS SF was uninstalled successfully.
```

5. Reboot the system.

```
# /usr/sbin/shutdown -y -g0 -i6
```

The AdvancedCopy Manager CCM (for Solaris) uninstallation is completed.

11.5 Silent Uninstallation Procedure of AdvancedCopy Manager CCM (for Solaris)

11.5.1 Running Silent Uninstallation

The silent uninstallation procedure of AdvancedCopy Manager CCM (for Solaris) is as follows:

1. Log in to the target server. Perform the post-login operation as root (superuser).
2. Execute the following silent uninstallation command.

   For *uninstallLogFile*, specify the file in which to output uninstallation log with an absolute path. It is optional to specify for *uninstallLogFile*.

```
# /opt/FJSVesfcm/esfinstaller/esfsilentuninstall_ccm.sh [-l uninstallLogFile]
```

Point

- If nothing is specified for *uninstallLogFile*, an uninstall log file named "esfsilentuninstall.log" is created in the "/var/tmp" directory.
- If there is any file of the same name as the specified uninstall log file exists, it is overwritten. On completion of uninstallation, a command prompt is displayed.
- It is required to specify an existing directory with write permission for the directory in which to store the uninstall log file. If it has no write permission, no error message is output on the screen and the process terminates with error.
- If the path to the uninstall log file contains any spaces, it should be surrounded by double quote characters.

- The characters " ! $ are not supported for path name for uninstall log file.

Note

- If an invalid option is specified, its corresponding error message is output in the log file and the operation exits. No error message is output on the screen.
- Do not execute multiple silent uninstall commands at the same time. If a silent uninstall starts while a silent uninstall is executing, the silent uninstall terminates abnormally without creating an uninstall log file.

3. On completion of uninstallation, a command prompt is displayed.
4. Restart the system.

11.5.2 Checking Uninstallation Result

Check the return value from the silent uninstallation command. If necessary, check the uninstall log file. However, if the return value from the silent uninstallation command is 3 or 9, no uninstall log file is created. For details, refer to "D.4 Return Values for Silent Uninstallation (for ETERNUS SF Manager, AdvancedCopy Manager CCM)".

The uninstallation result can be viewed in the uninstall log file, too.
Open the uninstall log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent uninstallation command.

11.6 Interactive Uninstallation Procedure of AdvancedCopy Manager CCM (for Linux)

The interactive uninstallation procedure of AdvancedCopy Manager CCM (for Linux) is as follows:

1. The AdvancedCopy Manager CCM uninstallation must be performed by a superuser. If a general user, execute the "su" command to switch to a superuser.

```
$ su
```

2. Uninstall ETERNUS SF AdvancedCopy Manager CCM executing the following command.

```
# /opt/FJSVesfcm/esfinstaller/esfuninstall.sh
```

3. The following screen is displayed. To continue uninstallation, enter "y". To stop the uninstallation, enter "q".

```
+-------------------------------------------------------------+
|                          ETERNUS SF V16.9.1                 |
|                                                             |
| All Rights Reserved, Copyright (C) Fujitsu Limited 2013-2024 |
+-------------------------------------------------------------+
The following product has been installed on this system:
      ETERNUS SF AdvancedCopy Manager CCM

Do you want to continue the uninstallation? [y,q]:
```

4. The relevant packages are deleted, and execution result is displayed.

   The following message is displayed at the complete.

```
INFO: ETERNUS SF was uninstalled successfully.
```

5. Reboot the system.

```
# /sbin/shutdown -r now
```

The AdvancedCopy Manager CCM (for Linux) uninstallation is completed.

11.7 Silent Uninstallation Procedure of AdvancedCopy Manager CCM (for Linux)

11.7.1 Running Silent Uninstallation

The silent uninstallation procedure of AdvancedCopy Manager CCM (for Linux) is as follows:

1. Log in to the target server. Perform the post-login operation as root (superuser).
2. Execute the following silent uninstallation command.

   For *uninstallLogFile*, specify the file in which to output uninstallation log with an absolute path. It is optional to specify for *uninstallLogFile*.

   ```
   # /opt/FJSVesfcm/esfinstaller/esfsilentuninstall_ccm.sh [-l uninstallLogFile]
   ```

   Point

   - If nothing is specified for *uninstallLogFile*, an uninstall log file named "esfsilentuninstall.log" is created in the "/var/tmp" directory.
   - If there is any file of the same name as the specified uninstall log file exists, it is overwritten. On completion of uninstallation, a command prompt is displayed.
   - It is required to specify an existing directory with write permission for the directory in which to store the uninstall log file. If it has no write permission, no error message is output on the screen, but the process terminates with error.
   - If the path to the uninstall log file contains any spaces, it should be surrounded by double quote characters.
   - The characters " ! $ are not supported for path name for uninstall log file.

   Note

   - If an invalid option is specified, its corresponding error message is output in the log file and the process exits. No error message is output on the screen.
   - Do not execute multiple silent uninstall commands at the same time. If a silent uninstall starts while a silent uninstall is executing, the silent uninstall terminates abnormally without creating an uninstall log file.
3. On completion of uninstallation, a command prompt is displayed.
4. Restart the system.

11.7.2 Checking Uninstallation Result

Check the return value from the silent uninstallation command. If necessary, check the uninstall log file. However, if the return value from the silent uninstallation command is 3 or 9, no uninstall log file is created. For details, refer to "D.4 Return Values for Silent Uninstallation (for ETERNUS SF Manager, AdvancedCopy Manager CCM)".

The uninstallation result can be viewed in the uninstall log file, too.
Open the uninstall log file to see "ResultCode" in the **ResponseResult** section. In "ResultCode" is written the return value from the silent uninstallation command.

Chapter 12 Adding and Changing Products in Use

This chapter explains how to add and change products in use.
Refer to the *Migration Guide* for information on upgrading from a previous product version.

The required procedures for the addition and change of products in use are as follows:

Addition and Change of Using Products When ETERNUS SF Manager Is Installed

When ETERNUS SF Manager is installed, you can add and change the using products without uninstalling ETERNUS SF Manager.

The procedure for addition and change of products in use is as below.

Table 12.1 For Adding and Changing Products in Use When ETERNUS SF Manager Is Installed

<table>
<tr><th rowspan="2">Products in Use</th><th colspan="6">Products after Addition and Change</th></tr>
<tr><th>Express</th><th>Storage Cruiser</th><th>AdvancedCopy Manager</th><th>AdvancedCopy Manager CCM</th><th>Storage Cruiser and AdvancedCopy Manager</th><th>Storage Cruiser and AdvancedCopy Manager CCM</th></tr>
<tr><td>Express</td><td>-</td><td>- Register the Storage Cruiser license</td><td colspan="2">- Register the AdvancedCopy Manager license</td><td colspan="2">- Register the Storage Cruiser and AdvancedCopy Manager licenses</td></tr>
<tr><td>Storage Cruiser</td><td>-</td><td>-</td><td colspan="2">1. Delete the Storage Cruiser license
2. Register the AdvancedCopy Manager license</td><td colspan="2">- Register the AdvancedCopy Manager license</td></tr>
<tr><td>AdvancedCopy Manager</td><td>-</td><td rowspan="2">1. Delete the AdvancedCopy Manager license
2. Register the Storage Cruiser license</td><td>-</td><td>Can be used without any modifications</td><td colspan="2" rowspan="2">- Register the Storage Cruiser license</td></tr>
<tr><td>AdvancedCopy Manager CCM</td><td>-</td><td>Can be used without any modifications</td><td>-</td></tr>
<tr><td>Storage Cruiser and AdvancedCopy Manager</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>Can be used without any modifications</td></tr>
<tr><td>Storage Cruiser and AdvancedCopy Manager CCM</td><td>-</td><td>-</td><td>-</td><td>-</td><td>Can be used without any modifications</td><td>-</td></tr>
</table>

- : The products in use cannot be added and changed.

Addition and Change of Products When ETERNUS SF Manager CCM Is Installed as Standalone Program

When AdvancedCopy Manager CCM is installed as a standalone program, AdvancedCopy Manager CCM uninstallation and ETERNUS SF Manager installation are required for the addition and change of products in use.

The required procedures for the addition and change of products in use are as follows.

1. Delete the AdvancedCopy Manager license.
2. Uninstall AdvancedCopy Manager CCM.
3. Install ETERNUS SF Manager.
4. Set up ETERNUS SF Manager as a manager for the product in use.

   Point

   - When two products are used in one Management Server, ETERNUS SF Manager must be set up as a manager for each product.
   - Register the license during setting up.

5. When a product in use is Storage Cruiser or AdvancedCopy Manager, install and set up the agent for each product if needed.

See

Refer to the following table for each procedure.

Procedure	Reference
Registration of license	A.3.1 Registration of License
Removal of license	A.3.3 Removal of License
Installation of ETERNUS SF Manager	Chapter 3 Installation of ETERNUS SF Manager
Setup of ETERNUS SF Manager	Chapter 4 Setup of ETERNUS SF Manager
Installation of Storage Cruiser's agent	5.1 Installation of Storage Cruiser's Agent
Setup of Storage Cruiser's agent	6.1 Setup of Storage Cruiser's Agent
Installation of AdvancedCopy Manager's agent	5.2 Installation of AdvancedCopy Manager's Agent
Setup of AdvancedCopy Manager's agent	6.2 Setup of AdvancedCopy Manager's Agent
Uninstallation of AdvancedCopy Manager CCM	Chapter 11 Uninstallation of AdvancedCopy Manager CCM

Appendix A License Management

In order to enable the functions of Express, Storage Cruiser, and AdvancedCopy Manager, it is required to register the corresponding license keys in ETERNUS SF Manager.

A.1 Types of License

On the current version, the following types of license that can be managed by the license management function.

Table A.1 Types of License

No. (*1)	License Name	Explanation
L1	ETERNUS SF Express License	License for basic device management of ETERNUS Disk storage systems. This license applies to the ETERNUS DX60 S5/DX100 S5/DX200 S5, DX60 S4/DX100 S4/DX200 S4, DX60 S3/DX100 S3/DX200 S3, DX60 S2/DX80 S2/DX90 S2, and the ETERNUS AF150 S3, AF250 S3/AF250 S2/AF250.
L2	ETERNUS SF Storage Cruiser Basic License	License for managing the ETERNUS Disk storage systems.
L3	ETERNUS SF Storage Cruiser Standard License	License for totally managing the SAN environment including ETERNUS Disk storage systems, switches and servers. In addition, this license can manage ETERNUS AX/HX series, ETERNUS AB/HB series, NetApp FAS Series, NetApp FAS Series (with clustered Data ONTAP), and NetApp AFF series.
L4	ETERNUS SF Storage Cruiser Standard CM Expansion (2->4CM)	License for managing the ETERNUS DX8000 S3 series, DX8000 S2 series. This license is required for a disk storage system which has more than 2 CMs.
L5	ETERNUS SF Storage Cruiser Standard CM Expansion (4->6CM)	License for managing the ETERNUS DX8000 S3 series, DX8000 S2 series. This license is required for a disk storage system which has more than 4 CMs.
L6	ETERNUS SF Storage Cruiser Standard CM Expansion (6->8CM)	License for managing the ETERNUS DX8000 S3 series, DX8000 S2 series. This license is required for a disk storage system which has more than 6 CMs.
L7	ETERNUS SF Storage Cruiser Standard CM Expansion (*X*->*Y*CM)	License for managing the ETERNUS DX8900 S3. This license is required for a disk storage system which has a maximum of 24 CMs. The value of *X* is found by adding 2 CMs to the previous value. The minimum value of *X* is 8 and the maximum value is 22. The value of *Y* is found by adding 2 CMs to the corresponding value of *X*. The minimum value of *Y* is 10 and the maximum value is 24.
L8	ETERNUS SF Storage Cruiser Optimization Option	License for managing Automated Storage Tiering feature for the ETERNUS DX series (excluding the ETERNUS DX60 S5/S4/S3/S2) and ETERNUS AF All-Flash Arrays.
L9	ETERNUS SF Storage Cruiser Quality of Service Management Option	License for managing Automated Quality of Service feature for the ETERNUS DX S6/S5/S4/S3 series (excluding the ETERNUS DX60 S5/S4/S3) and the ETERNUS AF All-Flash Arrays.

No. (*1)	License Name	Explanation
L10	ETERNUS SF Storage Cruiser Storage Cluster Option	License for using Storage Cluster functions. After L3 and L16 licenses or L16 and L22 licenses are registered, it is necessary to register this license.
L11	ETERNUS SF AdvancedCopy Manager Local Copy License	License for using Advanced Copy functions of the ETERNUS Disk storage system in the following ways: Advanced Copy can be done inside the storage system only. - Agent-based operation model An agent is installed on a Managed Server and the operation is done in cooperation with the Managed Server's OS or DBMS. - Agent-less operation model Advanced Copy is done by using AdvancedCopy Manager CCM, without installing an agent on the Managed Server. This license applies to the ETERNUS DX series (excluding the ETERNUS DX60 S2) and the ETERNUS AF All-Flash Arrays. Advanced Copy Feature license for the ETERNUS Disk storage system is not required.
L12	ETERNUS SF AdvancedCopy Manager Local Copy CM Expansion (2->4CM)	License for using Advanced Copy functions of the ETERNUS DX8000 S3 series, DX8000 S2 series. This license is required for a disk storage system which has more than 2 CMs.
L13	ETERNUS SF AdvancedCopy Manager Local Copy CM Expansion (4->6CM)	License for using Advanced Copy functions of the ETERNUS DX8000 S3 series, DX8000 S2 series. This license is required for a disk storage system which has more than 4 CMs.
L14	ETERNUS SF AdvancedCopy Manager Local Copy CM Expansion (6->8CM)	License for using Advanced Copy functions of the ETERNUS DX8000 S3 series, DX8000 S2 series. This license is required for a disk storage system which has more than 6 CMs.
L15	ETERNUS SF AdvancedCopy Manager Local Copy CM Expansion (*X*->*Y*CM)	License for using Advanced Copy functions of the ETERNUS DX8900 S3. This license is required for a disk storage system which has a maximum of 24 CMs. The value of *X* is found by adding 2 CMs to the previous value. The minimum value of *X* is 8 and the maximum value is 22. The value of *Y* is found by adding 2 CMs to the corresponding value of *X*. The minimum value of *Y* is 10 and the maximum value is 24.
L16	ETERNUS SF AdvancedCopy Manager Remote Copy License	License for using Remote Advanced Copy functions of the ETERNUS Disk storage system in the following ways: Advanced Copy can be done between the ETERNUS Disk storage systems. - Agent-based operation model An agent is installed on a Managed Server and the operation is done in cooperation with the Managed Server's OS or DBMS.

No. (*1)	License Name	Explanation
		- Agent-less operation model Advanced Copy is done by using AdvancedCopy Manager CCM, without installing an agent on the Managed Server. This license applies to the ETERNUS DX series (excluding the ETERNUS DX60 S5/S4/S3/S2, DX80 S2) and the ETERNUS AF All-Flash Arrays. Advanced Copy Feature license for the ETERNUS Disk storage system is not required.
L17	ETERNUS SF AdvancedCopy Manager Remote Copy License (w/o HW license)	License for using Remote Advanced Copy functions of the ETERNUS Disk storage system in the following ways: Advanced Copy can be done between the ETERNUS Disk storage systems. - Agent-based operation model An agent is installed on a Managed Server and the operation is done in cooperation with the Managed Server's OS or DBMS. - Agent-less operation model Advanced Copy is done by using AdvancedCopy Manager CCM, without installing an agent on the Managed Server. The license applies to the ETERNUS DX80 S2. The prior registration of the Advanced Copy Feature license for the ETERNUS Disk storage system is required.
L18	ETERNUS SF AdvancedCopy Manager Remote Copy CM Expansion (2->4CM)	License for using Remote Advanced Copy functions of the DX8000 S3 series, ETERNUS DX8000 S2 series. This license is required for a disk storage system which has more than 2 CMs.
L19	ETERNUS SF AdvancedCopy Manager Remote Copy CM Expansion (4->6CM)	License for using Remote Advanced Copy functions of the ETERNUS DX8000 S3 series, DX8000 S2 series. This license is required for a disk storage system which has more than 4 CMs.
L20	ETERNUS SF AdvancedCopy Manager Remote Copy CM Expansion (6->8CM)	License for using Remote Advanced Copy functions of the ETERNUS DX8000 S3 series, DX8000 S2 series. This license is required for a disk storage system which has more than 6 CMs.
L21	ETERNUS SF AdvancedCopy Manager Remote Copy CM Expansion (*X*->*Y*CM)	License for using Remote Advanced Copy functions of the ETERNUS DX8900 S3 series. This license is required for a disk storage system which has a maximum of 24 CMs. The value of *X* is found by adding 2 CMs to the previous value. The minimum value of *X* is 8 and the maximum value is 22. The value of *Y* is found by adding 2 CMs to the corresponding value of *X*. The minimum value of *Y* is 10 and the maximum value is 24.
L22	ETERNUS SF Storage Cruiser Standard License Software Upgrade	License for totally managing the SAN environment including the ETERNUS Disk storage systems, switches and servers.

No. (*1)	License Name	Explanation
		This license is an additional license on which L2 license is already registered.
L23	ETERNUS SF AdvancedCopy Manager Local Copy License Software Upgrade	License for using Advanced Copy functions of the ETERNUS Disk storage system in the following ways: Advanced Copy can be done inside the storage system only. - Agent-based operation model An agent is installed on a Managed Server and the operation is done in cooperation with the Managed Server's OS or DBMS. - Agent-less operation model Advanced Copy is done by using AdvancedCopy Manager CCM, without installing an agent on the Managed Server. This license applies to the ETERNUS DX500 S4/DX600 S4, DX500 S3/DX600 S3, DX8000 S3 series, DX400 S2 series, DX8000 S2 series, and is an additional license on which Advanced Copy Feature license is already registered. For the ETERNUS DX400 S2 series, DX8000 S2 series, Advanced Copy Feature license must be registered prior to this license registration.
L24	ETERNUS SF AdvancedCopy Manager for Exchange Server	The Exchange Server mailbox database can be restored using the Restore Wizard. This license is a license to L11. After L11 is registered, it is necessary to register this license.
L25	ETERNUS SF AdvancedCopy Manager for Microsoft SQL Server	The SQL Server database can be restored using the Restore Wizard. This license is a license to L11. After L11 is registered, it is necessary to register this license.

*1: The text string for the item numbers (L*xx*) solely serves for explanation purposes. This is not the actual license key or license number.

A.2 Functions Provided by Licenses

On the current version of the product, the range of functions that become available varies with each license.
The functions provided by each license are shown in the following table.

Table A.2 Available Major Functions per License

Function		License (A=Available)				
		Express	Storage Cruiser Basic	Storage Cruiser Standard	AdvancedCopy Manager Local Copy License	AdvancedCopy Manager Remote Copy License
Display of ETERNUS Disk storage system status	Normal/ abnormal status	A	A	A	A	A
	Detailed status of disk storage	A	A	A	-	-

Function		License (A=Available)				
		Express	Storage Cruiser Basic	Storage Cruiser Standard	AdvancedCopy Manager Local Copy License	AdvancedCopy Manager Remote Copy License
	system configuration					
	Eco-mode status	A	A	A	-	-
Other device status		-	-	Server, switch, ETERNUS AX/HX series, ETERNUS AB/HB series, NetApp FAS Series, NetApp FAS Series (with clustered Data ONTAP), NetApp V-Series, NetApp AFF series	-	-
Server, volumes connection management	ETERNUS Disk storage system, Fibre Channel switch and server	-	-	A	-	-
Volume creation and allocation	ETERNUS Disk storage system	A	A	A	-	-
I/O path configuration	ETERNUS Disk storage system and switch	-	-	A	-	-
Eco Mode setting	ETERNUS Disk storage system	A	A	A	-	-
Performance data collection	ETERNUS Disk storage system	24 hours Max	User defined interval	User defined interval	-	-
	Fibre Channel switch	-	-	User defined interval	-	-
Performance monitoring	ETERNUS Disk storage system and Fibre Channel switch	-	A	A	-	-
Storage system temperature graph display	ETERNUS Disk storage system	24 hours Max	User defined interval	User defined interval	-	-

Function		License (A=Available)				
		Express	Storage Cruiser Basic	Storage Cruiser Standard	AdvancedCopy Manager Local Copy License	AdvancedCopy Manager Remote Copy License
Advanced Copy	SnapOPC+	ETERNUS DX60 S2/ DX80 S2/ DX90 S2: Eight sessions Max Other than those above: to max session count	-	-	A	-
	OPC/ QuickOPC	-	-	-	A	-
	EC	-	-	-	A	-
	REC	-	-	-	-	A
	Advanced Copy settings	A	A	A	A	A
	Remote copy path settings	-	-	-	-	A
	Backup management	-	-	-	A	-
	DBMS/OS support (*1)	-	-	-	A	A
Thin Provisioning Pool capacity graph display	ETERNUS Disk storage system	31 days Max (*2)	User defined interval (*3)	User defined interval (*3)	-	-
Volume allocation wizard	ETERNUS Disk storage system, Switch, Server	Up to two HBAs can be set.	-	- Zoning setting - Entering affinity group name - Sharing affinity group - Three or more HBAs can be set.	-	-
NAS file system management (*4)	Install NAS file system	A	A	A	-	-
	Display NAS file system configuration information	A	A	A	-	-

Function		License (A=Available)				
		Express	Storage Cruiser Basic	Storage Cruiser Standard	AdvancedCopy Manager Local Copy License	AdvancedCopy Manager Remote Copy License
	Backup of NAS volume	-	-	-	A	-
	Automatically collect NAS volume snapshots	A	A	A	-	-
	Limit NAS volume capacity (Quota management)	A	A	A	-	-
	Inter-box backup/restore of NAS volumes	-	-	-	-	A

*1: Interoperability with external applications such as Exchange Server and SQL Server, including file systems and pre/post processing scripts.

*2: The line graph displays data for the past 31 days from the present day.

*3: The line graph displays data for the past 31 days, a year, or a decade from the present day.

*4: This function cannot be used for the ETERNUS All-Flash Arrays.

A.3 Operation of License Management Function

The license management function can be operated using either Web Console or the Command Line Interface (CLI). The table below shows the types and methods of operation for handling licenses.

Operation Type	Method (A=Available, N/A=Not Available)	
	CLI	Web Console
License registration	A	A
Display of license information	A	A
License removal	A	A
Backup and restore of database for license management	A	N/A

Point

The command is available in all the operating system environments in which ETERNUS SF Manager or AdvancedCopy Manager CCM operates.
Refer to "A.4 Command References" for information on the commands.

Note

- License registration and removal with Web Console can be operated only by users who belong to the ESFAdmin role group.

- The license registration command can be executed only by users with administrator privileges.
  The meaning of "User with administrative privileges" varies according to the OS as indicated below.
  - For Linux or Solaris environments, the term referring to "User with administrative privileges" is root (Super user).
  - For Windows environments, the term referring to the user of belonging to Administrators group.
- Before you register licenses with Web Console, carry out device registration for the ETERNUS Disk storage system.
  Refer to "4.2.4 Registering Disk Storage System" for the procedure for registering devices of the disk storage system.
  If you want to register licenses in a disk storage system for which device registration has not been performed, use the CLI.
- The ETERNUS DX series and the ETERNUS AF All-Flash Arrays can specify the IP address on the command.
  Enable the following connections in setting up interface on the storage device.
  - For specifying the IP address of the ETERNUS DX series (excluding the ETERNUS DX60 S2) and the ETERNUS AF All-Flash Arrays
    Enable the ssh connection.
  - For specifying the IP address of the ETERNUS DX60 S2
    Enable the telnet connection.

A.3.1 Registration of License

Using Web Console

Refer to "Register License" in the *Web Console Guide* for information on the procedure.

Using Command Line Interface

The following procedure is required to register a license:

1. Confirm the license ID of the license to register with the "esflm listid" command.

```
> esflm listid
```

2. Execute the following command.
   - If the server on which the command is executed can access the target ETERNUS Disk storage system

```
> esflm add licenseID licenseKey -i ipAddress -u userName -p password
```

   - If the server on which the command is executed cannot access the target ETERNUS Disk storage system

```
> esflm add licenseID licenseKey -s serialNumber
```

Note

When executing the "esflm add" command with the -s option, licenses are registered on the ETERNUS SF system only. They are not registered on the ETERNUS Disk storage system.
When registering the following licenses, set the target ETERNUS Disk storage system so that it can be accessed and then execute the "esflm add" command with the -i option:

- ETERNUS SF AdvancedCopy Manager Local Copy License
- ETERNUS SF AdvancedCopy Manager Remote Copy License
- ETERNUS SF Storage Cruiser Storage Cluster Option

A.3.2 Displaying of License

Using Web Console

Refer to "Display License" in the *Web Console Guide* for information on the procedure.

Using Command Line Interface

For displaying the information of registered licenses, execute the "esflm list" command.

- For displaying the information of all registered licenses

  Execute the "esflm list" command without any operands.

```
> esflm list
```

- For displaying the information for each product

  Execute the "esflm list" command by specifying the product name.

```
> esflm list productName
```

- For displaying the information for each ETERNUS Disk storage system

  Execute the "esflm list" command by specifying the serial number of the target ETERNUS Disk storage system.

```
> esflm list serialNumber
```

A.3.3 Removal of License

Using Web Console

Refer to "Delete License" in the *Web Console Guide* for information on the procedure.

Using Command Line Interface

For removing the registered licenses, execute the "esflm remove" command.

- For removing a particular license

  Execute the "esflm remove" command by specifying the serial number of the target ETERNUS Disk storage system and the ID of the license to be removed.

```
> esflm remove serialNumber licenseID
```

- For removing all licenses from a particular ETERNUS Disk storage system

  Execute the "esflm remove" command by specifying the serial number of the target ETERNUS Disk storage system and the -all option.

```
> esflm remove serialNumber -all
```

A.3.4 Backup and Restore License Management Database

The license information that is registered in the license management function is stored in a database called "license management database".
The following procedure is required to back up and restore the license management database.

- For backup

  Execute the "esflm backup" command by specifying the name of the file in which to back up the license management database.

```
> esflm backup backupFileName
```

- For restoration

  Execute the "esflm restore" command by specifying the name of the file in which the license management database is backed up.

```
> esflm restore backupFileName
```

A.4 Command References

The commands of license management function are as follows.

Command Name	Description
esflm	Performs various functions for license management.

The commands of license management function are stored in the following directory.

OS Type	Location
Windows	*installDir*\LM\bin
Solaris Linux	/opt/FJSVesflm/bin

installDir : The installation directory of ETERNUS SF Manager or AdvancedCopy Manager CCM

Note

The command can be executed only by users with administrator privileges.

The meaning of "User with administrative privileges" varies according to the OS as indicated below.

- For Linux or Solaris environments, the term referring to "User with administrative privileges" is root (Super user).
- For Windows environments, the term referring to the user of belonging to Administrators group.

A.4.1 esflm add (License Registration Command)

NAME

esflm add - Registers a license information to the license management function

SYNOPSIS

```
esflm add licenseID [licenseKey {-s serialNumber | -i ipAddress -u userName [-p password] }] | -i
ipAddress -u userName [-p password]
```

DESCRIPTION

This command registers the license information to the license management function.

OPTIONS

-s *serialNumber*

This option is used to specify the serial number of the target ETERNUS Disk storage system, if a license for remote copy is registered and the server on which the command is executed cannot access the target ETERNUS Disk storage system.

-i *ipAddress*

This option is used to specify an IP address of the target ETERNUS Disk storage system.

-u *userName*

This option is used to specify a user name to access the target ETERNUS Disk storage system.

-p *password*

This option is used to specify the password of the user specified by the -u option.
When this option is omitted, it is necessary to enter the password from the console.

OPERANDS

licenseID

This operand is used to specify a license ID.

licenseKey

This operand is used to specify a license key.
If the license is already set in the ETERNUS Disk storage system, it is possible to specify the -i option instead of this operand.

EXIT STATUS

=0: Completed successfully
>0: Terminated abnormally

EXAMPLES

```
> esflm add 01000002 A3CD487CB52F7C03 -i 192.168.10.11 -u user1 -p psw99999
A license was registered successfully
```

A.4.2 esflm backup (License Management Database Backup Command)

NAME

esflm backup - Performs a backup of the license management database

SYNOPSIS

```
esflm backup backupFileName
```

DESCRIPTION

This command performs a backup of the license management database.

OPERANDS

backupFileName

This operand is used to specify the name of the file in which to back up the data.

EXIT STATUS

=0: Completed successfully
>0: Terminated abnormally

EXAMPLES

```
> esflm backup Backup.dat
Backup of license database was performed successfully
```

A.4.3 esflm list (License List Command)

NAME

esflm list - Displays the list of license information registered into the license management function

SYNOPSIS

```
esflm list [productName | serialNumber] [-remaindays days]
```

DESCRIPTION

This command displays the list of license information registered to license management function. The contents to be displayed are as follows.

Title	Description
Product	Product name Express : ETERNUS SF Express ACM : ETERNUS SF AdvancedCopy Manager SC: ETERNUS SF Storage Cruiser
License ID	License ID
License	License name
Serial Number	Serial number of ETERNUS Disk storage system
Registration Date	Date of license registration
Expire Date	Expired date for trial license (for the license which is not trial license, the blank is displayed in this field)

OPTIONS

-remaindays *days*

This option is used to specify the number of remaining days for trial licenses.
For example, for displaying a list of information on trial licenses whose validity expires on the today and tomorrow, specify this option argument to "1".

OPERANDS

productName

This operand is used to specify a product name if you would like to display the license information associated with a particular ETERNUS SF product. The strings that can be specified are as follows.

Strings That Can Be Specified	Product Name
Express	ETERNUS SF Express
ACM	ETERNUS SF AdvancedCopy Manager
SC	ETERNUS SF Storage Cruiser

serialNumber

This operand is used to specify a serial number of the target ETERNUS Disk storage system if you would like to display the license information associated with a particular ETERNUS Disk storage system.

EXIT STATUS

=0: Completed successfully
>0: Terminated abnormally

EXAMPLES

```
> esflm list Express
Product License ID License                      Serial Number Registration Date Expire Date
Express 020006000  ETERNUS SF Express V16 TierS ABCDEFGHIJKL  2013/12/16        2014/1/15
```

A.4.4 esflm listid (License ID List Command)

NAME

esflm listid - Displays the list of license IDs that can be registered to license management function

SYNOPSIS

```
esflm listid [-s serialNumber | -i ipAddress -u userName [-p password]]
```

DESCRIPTION

This command displays the list of license IDs that can be registered to license management function. The contents to be displayed are as follows.

Title	Description
Product	Product name Express : ETERNUS SF Express ACM : ETERNUS SF AdvancedCopy Manager SC: ETERNUS SF Storage Cruiser
License ID	License ID
License Name	License name

OPTIONS

-s *serialNumber*

This option is used to specify the serial number of the ETERNUS Disk storage system.

If licenses are already registered under the specified serial number, license information available for registration on the same model name is displayed.
If no licenses are registered, all licenses that are available for registration are displayed.

-i *ipAddress*

This option is used to specify the IP address of the ETERNUS Disk storage system.

If licenses are already registered under the serial number of the ETERNUS Disk storage system specified by the IP address, license information available for registration on the same model name is displayed.
If no licenses are registered, the hardware licenses that are set in the ETERNUS Disk storage system are surveyed, and then the licenses that are set are displayed.
If no hardware licenses are registered either, all licenses that are available for registration are displayed.

-u *userName*

This option is used to specify the user name for access to the ETERNUS Disk storage system.

-p *password*

This option is used to specify the password of the user who is specified by the -u option.
This option is omitted, it is necessary to enter the password from the console.

EXIT STATUS

=0: Completed successfully
>0: Terminated abnormally

EXAMPLES

Display all the license IDs that can be registered to the license management function.

```
> esflm listid
Product License ID      License Name
Express                 ETERNUS SF Express V16 for TierS
Express                 ETERNUS SF Express V16 for Tier1
   :
ACM     04000603L       ETERNUS SF AdvancedCopy Manager V16 Local Copy License for TierS (DX60S2)
ACM     04000606L       ETERNUS SF AdvancedCopy Manager V16 Local Copy License Software Upgrade for
TierS (DX60S2)
   :
SC      08020600B       ETERNUS SF Storage Cruiser V16 Basic License for TierS (DX60S2)
   :
```

A.4.5 esflm remove (License Remove Command)

NAME

esflm remove - Removes a registered license information from the license management function

SYNOPSIS

```
esflm remove serialNumber {licenseID | -all}
```

DESCRIPTION

This command removes the registered license information from the license management function.

OPTIONS

-all

This option is used to remove all the registered licenses of the target ETERNUS Disk storage system.

OPERANDS

serialNumber

This operand is used to specify a serial number of the target ETERNUS Disk storage system.

licenseID

This operand is used to specify a license ID if a particular license information is to be removed.

EXIT STATUS

=0: Completed successfully
>0: Terminated abnormally

EXAMPLES

```
> esflm remove ABCDEFGHIJKL -all
All licenses were removed successfully
```

A.4.6 esflm restore (License Management Database Restore Command)

NAME

esflm restore - Performs a restoration of the license management database

SYNOPSIS

```
esflm restore backupFileName
```

DESCRIPTION

This command performs a restoration of the license management database.

OPERANDS

backupFileName

This operand is used to specify a backed up file.

EXIT STATUS

=0: Completed successfully
>0: Terminated abnormally

EXAMPLES

```
> esflm restore Backup.dat
Restoration of license database was performed successfully
```

A.5 Maintenance of License Management Function

This section describes methods for changing the operating environment using the license management function and for troubleshooting.

A.5.1 Backup and Restoration of License Definition Information

Refer to "A.3.4 Backup and Restore License Management Database" for methods for backing up and restoring license definition information.
If a license key is not set, this operation is not required.

A.5.2 Collecting Troubleshooting Information for License Management Function

Log in to the server where the license management function is running and collect the information listed below: After that, send the collected data to your Fujitsu Technical Support.

OS Type	File Type	Collected Files
Windows	Log files	All files under the *installDir*\LM\var directory
	Definition files	All files under the *installDir*\LM\etc directory
Solaris Linux	Log files	All files under the /var/opt/FJSVesflm directory
	Definition files	All files under the /etc/opt/FJSVesflm directory

installDir : The installation directory of ETERNUS SF Manager or AdvancedCopy Manager CCM

Appendix B Required Disk Space for Performance Management

This appendix explains the required disk space for the performance management with Storage Cruiser.

When the performance management is being performed, add disk space as described in "Table B.1 Required Capacity for Performance Management".

Point

- "*keepingDays*" is number of days for collection. The default is seven.
- For "*securedLUs*", which is the actual number of LUs, performance management secures the performance information of the storage device.

  For example, if an instruction to secure the performance information of LU#15 to LU#200 is issued, the actual number of secured LUs is 256, which is LU#0 to LU#255. This is because the performance management secures the performance information of the storage device in units of 64 LUs.
- "*securedRAIDgroups*" is the sum total of the following RAID group numbers.
  - The number of RAID groups where the secured LUs exist
  - The number of RAID groups that configure the Thin Provisioning Pool where the secured LUs exist
  - The number of RAID groups that configure the Tier pool where the secured LUs exist
- Calculate the performance monitoring interval in seconds.

Table B.1 Required Capacity for Performance Management

Target Device	Required Disk Space (Unit : MB)
ETERNUS DX60 S5	If the number of days for collection is seven (default), the required disk space (MB) is as following: - When setting the performance monitoring interval to 30 seconds 11,000 - When setting the performance monitoring interval to 60 seconds 5,600 - When setting the performance monitoring interval to 300 seconds or more 1,700 If seven is not set as the number of days for collection, multiply the above required disk space by "Number of days for collection * 0.15".
ETERNUS DX100 S5	If the number of days for collection is seven (default), the required disk space (MB) is as following: - When setting the performance monitoring interval to 30 seconds 16,000 - When setting the performance monitoring interval to 60 seconds

Target Device	Required Disk Space (Unit : MB)
	18,000 - When setting the performance monitoring interval to 300 seconds or more 7,000 If seven is not set as the number of days for collection, multiply the above required disk space by "Number of days for collection * 0.15".
ETERNUS DX200 S5	If the number of days for collection is seven (default), the required disk space (MB) is as following: - When setting the performance monitoring interval to 30 seconds - When disabling the Deduplication/Compression: 16,000 - When enabling the Deduplication/Compression: 50,000 - When setting the performance monitoring interval to 60 seconds - When disabling the Deduplication/Compression: 18,000 - When enabling the Deduplication/Compression: 55,000 - When setting the performance monitoring interval to 300 seconds or more - When disabling the Deduplication/Compression: 13,000 - When enabling the Deduplication/Compression: 32,000 If seven is not set as the number of days for collection, multiply the above required disk space by "Number of days for collection * 0.15".
ETERNUS DX500 S5 ETERNUS DX600 S6/S5	If the number of days for collection is seven (default), the required disk space (MB) is as following: - When setting the performance monitoring interval to 30 seconds - When disabling the Deduplication/Compression: 22,000 - When enabling the Deduplication/Compression: 45,000 - When setting the performance monitoring interval to 60 seconds - When disabling the Deduplication/Compression: 22,000 - When enabling the Deduplication/Compression: 55,000 - When setting the performance monitoring interval to 300 seconds - When disabling the Deduplication/Compression: 22,000 - When enabling the Deduplication/Compression: 50,000 - When setting the performance monitoring interval to 600 seconds - When disabling the Deduplication/Compression: 22,000 - When enabling the Deduplication/Compression: 40,000

Target Device	Required Disk Space (Unit : MB)
	If seven is not set as the number of days for collection, multiply the above required disk space by "Number of days for collection * 0.15".

ETERNUS DX900 S6/S5	If the number of days for collection is seven (default), the required disk space (MB) is as following:
	- When setting the performance monitoring interval to 30 seconds
	  - When disabling the Compression: 40,000
	  - When enabling the Compression: 45,000
	- When setting the performance monitoring interval to 60 seconds
	  - When disabling the Compression: 90,000
	  - When enabling the Compression: 120,000
	- When setting the performance monitoring interval to 300 seconds or more
	  - When disabling the Compression: 121,000
	  - When enabling the Compression: 151,000
	If seven is not set as the number of days for collection, multiply the above required disk space by "Number of days for collection * 0.15".

ETERNUS DX60 S4/S3	- When setting the performance monitoring interval to less than 60 seconds (*keepingDays* + 1) * (475 + (1.2 + 0.7 * *DEs* + 0.4 * (*securedLUs* + *securedRAIDGroups*)) * (86400 / *perfMonitorInterval*) + 288 + (290 * *DEs*) + (76 * (*securedLUs* + *securedRAIDgroups*))) / 1024 - When setting the performance monitoring interval to 60 seconds or more (*keepingDays* + 1) * (475 + (1.2 + 0.7 * *DEs* + 0.4 * (*securedLUs* + *securedRAIDGroups*)) * (86400 / *perfMonitorInterval*) + 0.2 * (86400 / *perfMonitorInterval*) + (290 * *DEs*) + (76 * (*securedLUs* + *securedRAIDgroups*))) / 1024
ETERNUS DX100 S4/S3 ETERNUS DX200 S4/S3 (*1)	- When setting the performance monitoring interval to less than 60 seconds (*keepingDays* + 1) * (788 + (2.4 + 0.7 * *DEs* + 0.2 * *NASVolumes* + 0.4 * (*securedLUs* + *securedRAIDgroups*)) * (86400 / *perfMonitorInterval*) + 288 + (290 * *DEs*) + (38 * *NASVolumes*) + (76 * (*securedLUs* + *securedRAIDgroups*))) / 1024 - When setting the performance monitoring interval to 60 seconds or more (*keepingDays* + 1) * (788 + (2.4 + 0.7 * *DEs* + 0.2 * *NASVolumes* + 0.4 * (*securedLUs* + *securedRAIDgroups*)) * (86400 / *perfMonitorInterval*) + 0.2 * (86400 / *perfMonitorInterval*) + (290 * *DEs*) + (38 * *NASVolumes*) + (76 * (*securedLUs* + *securedRAIDgroups*))) / 1024

Target Device	Required Disk Space (Unit : MB)
	*1: When enabling Deduplication/Compression to operate the device, add the following capacity to the calculated capacity using the above formula: (*KeepingDays* + 1) * 21.25 MB
ETERNUS DX500 S4/S3 (*1) ETERNUS DX600 S4/S3 (*1)	- When setting the performance monitoring interval to less than 60 seconds (*keepingDays* + 1) * (2244 + (6.7 + 0.7 * *DEs* + 0.2 * *NASVolumes* + 0.5 * (*securedLUs* + *securedRAIDGroups*)) * (86400 / *perfMonitorInterval*) + 288 + (290 * *DEs*) + (38 * *NASVolumes*) + (85 * (*securedLUs* + *securedRAIDGroups*))) / 1024 - When setting the performance monitoring interval to 60 seconds or more (*keepingDays* + 1) * (2244 + (6.7 + 0.7 * *DEs* + 0.2 * *NASVolumes* + 0.5 * (*securedLUs* + *securedRAIDGroups*)) * (86400 / *perfMonitorInterval*) + 0.2 * (86400 / *perfMonitorInterval*) + (290 * *DEs*) + (38 * *NASVolumes*) + (85 * (*securedLUs* + *securedRAIDGroups*))) / 1024 *1: When enabling Deduplication/Compression to operate the device, add the following capacity to the calculated capacity using the above formula: (*KeepingDays* + 1) * 37.5 MB

ETERNUS DX8900 S6	If the number of days for collection is seven (default), the required disk space (MB) is as following:
	- When setting the performance monitoring interval to 30 seconds (four CEs or less)
	  - When disabling the Compression: 50,000
	  - When enabling the Compression: 60,000
	- When setting the performance monitoring interval to 30 seconds (six CEs or more)
	  - When disabling the Compression: 92,000
	  - When enabling the Compression: 100,000
	- When setting the performance monitoring interval to 60 seconds
	  - When disabling the Compression: 107,000
	  - When enabling the Compression: 135,000
	- When setting the performance monitoring interval to 300 seconds or more
	  - When disabling the Compression: 126,000
	  - When enabling the Compression: 156,000
	If seven is not set as the number of days for collection, multiply the above required disk space by "Number of days for collection * 0.15".

ETERNUS DX8900 S4	If the number of days for collection is seven (default), the required disk space (MB) is as following:

Target Device	Required Disk Space (Unit : MB)

	- When setting the performance monitoring interval to 30 seconds (four CEs or less)
	  - When disabling the Compression: 50,000
	  - When enabling the Compression: 60,000
	- When setting the performance monitoring interval to 30 seconds (six CEs or more)
	  - When disabling the Compression: 85,000
	  - When enabling the Compression: 105,000
	- When setting the performance monitoring interval to 60 seconds
	  - When disabling the Compression: 100,000
	  - When enabling the Compression: 135,000
	- When setting the performance monitoring interval to 300 seconds or more
	  - When disabling the Compression: 125,000
	  - When enabling the Compression: 175,000
	If seven is not set as the number of days for collection, multiply the above required disk space by "Number of days for collection * 0.15".

ETERNUS DX8700 S3 ETERNUS DX8900 S3	- When setting the performance monitoring interval to less than 60 seconds (*keepingDays* + 1) * (6913 + (17.8 + 0.7 * *DEs* + 0.5 * (*securedLUs* + *securedRAIDGroups*)) * (86400 / *perfMonitorInterval*) + 288 + (290 * *DEs*) + (85 * (*securedLUs* + *securedRAIDGroups*))) / 1024 - When setting the performance monitoring interval to 60 seconds or more (*keepingDays* + 1) * (6913 + (17.8 + 0.7 * *DEs* + 0.5 * (*securedLUs* + *securedRAIDGroups*)) * (86400 / *perfMonitorInterval*) + 0.2 * (86400 / *perfMonitorInterval*) + (290 * *DEs*) + (85 * (*securedLUs* + *securedRAIDGroups*))) / 1024
ETERNUS DX60 S2 ETERNUS DX80 S2 ETERNUS DX90 S2	- When setting the performance monitoring interval to less than 60 seconds (*keepingDays* + 1) * (240 + (1.2 + 0.3 * *DEs* + 0.3 * (*securedLUs* + *securedRAIDGroups*)) * (86400 / *perfMonitorInterval*) + 334.2 + (95 * *DEs*) + (50 * (*securedLUs* + *securedRAIDGroups*))) / 1024 - When setting the performance monitoring interval to 60 seconds or more (*keepingDays* + 1) * (240 + (1.2 + 0.3 * *DEs* + 0.3 * (*securedLUs* + *securedRAIDGroups*)) * (86400 / *perfMonitorInterval*) + 3 * (10.6 + 0.07 * (86400 / *perfMonitorInterval*)) + (95 * *DEs*) + (50 * (*securedLUs* + *securedRAIDGroups*))) / 1024
ETERNUS DX400 S2 series ETERNUS DX8000 S2 series	- When setting the performance monitoring interval to less than 60 seconds

Target Device	Required Disk Space (Unit : MB)
	(*keepingDays* + 1) * (6837 + (17 + 0.2 * *DEs* + 0.2 * *securedLUs* + 0.3 * *securedRAIDGroups*) * (86400 / *perfMonitorInterval*) + 334.2 + (79 * *DEs*) + (89 * *securedLUs*) + (103 * *securedRAIDGroups*)) / 1024 - When setting the performance monitoring interval to 60 seconds or more (*keepingDays* + 1) * (6837 + (17 + 0.2 * *DEs* + 0.2 * *securedLUs* + 0.3 * *securedRAIDGroups*) * (86400 / *perfMonitorInterval*) + 3 * (10.6 + 0.07 * (86400 / *perfMonitorInterval*)) + (79 * *DEs*) + (89 * *securedLUs*) + (103 * *securedRAIDGroups*)) / 1024
ETERNUS AF150 S3	If the number of days for collection is seven (default), the required disk space (MB) is as following: - When setting the performance monitoring interval to 30 seconds 16,000 - When setting the performance monitoring interval to 60 seconds 18,000 - When setting the performance monitoring interval to 300 seconds or more 7,000 If seven is not set as the number of days for collection, multiply the above required disk space by "Number of days for collection * 0.15".
ETERNUS AF250 S3	If the number of days for collection is seven (default), the required disk space (MB) is as following: - When setting the performance monitoring interval to 30 seconds - When disabling the Deduplication/Compression: 16,000 - When enabling the Deduplication/Compression: 50,000 - When setting the performance monitoring interval to 60 seconds - When disabling the Deduplication/Compression: 18,000 - When enabling the Deduplication/Compression: 55,000 - When setting the performance monitoring interval to 300 seconds or more - When disabling the Deduplication/Compression: 13,000 - When enabling the Deduplication/Compression: 32,000 If seven is not set as the number of days for collection, multiply the above required disk space by "Number of days for collection * 0.15".
ETERNUS AF650 S3	If the number of days for collection is seven (default), the required disk space (MB) is as following: - When setting the performance monitoring interval to 30 seconds

Target Device	Required Disk Space (Unit : MB)
	- When disabling the Deduplication/Compression: 22,000 - When enabling the Deduplication/Compression: 45,000 - When setting the performance monitoring interval to 60 seconds - When disabling the Deduplication/Compression: 22,000 - When enabling the Deduplication/Compression: 55,000 - When setting the performance monitoring interval to 300 seconds - When disabling the Deduplication/Compression: 22,000 - When enabling the Deduplication/Compression: 50,000 - When setting the performance monitoring interval to 600 seconds - When disabling the Deduplication/Compression: 22,000 - When enabling the Deduplication/Compression: 40,000 If seven is not set as the number of days for collection, multiply the above required disk space by "Number of days for collection * 0.15".
ETERNUS AF250 S2 (*1) ETERNUS AF250 (*1)	- When setting the performance monitoring interval to less than 60 seconds (*KeepingDays* + 1) * (475 + (1.2 + 0.7 * *DEs* + 0.4 * (*securedLUs* + *securedRAIDGroups*)) * (86400 / *perfMonitorInterval*) + 288 + (290 * *DEs*) + (76 * (*securedLUs* + *securedRAIDgroups*))) / 1024 - When setting the performance monitoring interval to 60 seconds or more (*KeepingDays* + 1) * (475 + (1.2 + 0.7 * *DEs* + 0.4 * (*securedLUs* + *securedRAIDGroups*)) * (86400 / *perfMonitorInterval*) + 0.2 * (86400 / *perfMonitorInterval*) + (290 * *DEs*) + (76 * (*securedLUs* + *securedRAIDgroups*))) / 1024 *1: When enabling Deduplication/Compression to operate the device, add the following capacity to the calculated capacity using the above formula: (*KeepingDays* + 1) * 21.25 MB
ETERNUS AF650 S2 (*1) ETERNUS AF650 (*1)	- When setting the performance monitoring interval to less than 60 seconds (*keepingDays* + 1) * (2244 + (6.7 + 0.7 * *DEs* + 0.5 * (*securedLUs* + *securedRAIDGroups*)) * (86400 / *perfMonitorInterval*) + 288 + (290 * *DEs*) + (85 * (*securedLUs* + *securedRAIDGroups*))) / 1024 - When setting the performance monitoring interval to 60 seconds or more (*keepingDays* + 1) * (2244 + (6.7 + 0.7 * *DEs* + 0.5 * (*securedLUs* + *securedRAIDGroups*)) * (86400 / *perfMonitorInterval*) + 0.2 * (86400 / *perfMonitorInterval*) + (290 * *DEs*) + (85 * (*securedLUs* + *securedRAIDGroups*))) / 1024

Target Device	Required Disk Space (Unit : MB)
	*1: When enabling Deduplication/Compression to operate the device, add the following capacity to the calculated capacity using the above formula: (*KeepingDays* + 1) * 37.5 MB
NetApp FAS Series	(*keepingDays* + 1) * (0.05 + 14.83 / *perfMonitorInterval*)
PRIMERGY Fibre Channel Switch Blade PRIMERGY Fibre Channel Switch Blade(4Gbps) Brocade Fibre Channel Switch (Maximum number of FC ports = 16 or less)	(*keepingDays* + 1) * (30 / *perfMonitorInterval*) * 1.6
Brocade Fibre Channel Switch (Maximum number of FC ports = 32 or less)	(*keepingDays* + 1) * (30 / *perfMonitorInterval*) * 3.2
Brocade Fibre Channel Switch (Maximum number of FC ports = 128 or less)	(*keepingDays* +1) * (30 / *perfMonitorInterval*) * 13
Brocade Fibre Channel Switch (Maximum number of FC ports = 256 or less)	(*keepingDays* + 1) * (30 / *perfMonitorInterval*) * 26
Brocade Fibre Channel Switch (Maximum number of FC ports = 384 or less)	(*keepingDays* + 1) * (30 / *perfMonitorInterval*) * 39
VDX series (Maximum transfer rate 10Gbps)	(*keepingDays* + 1) * (30 / *perfMonitorInterval*) * *ports* / 10 *1: The number of mounted ports is the total number of FC Ports and Ethernet Ports (excluding 1GbE RJ45) on the device.
VDX series (Maximum transfer rate 40Gbps)	(*keepingDays* + 1) * (30 / *perfMonitorInterval*) * *ports* / 9 *1: The number of mounted ports is the total number of FC Ports and Ethernet Ports (excluding 1GbE RJ45) on the device.

Additionally, when performance information is output using the "storageadm perfdata" command, the disk capacity described in "Table B.2 Required Capacity for Outputting Performance Information" is required.
Each element (number of installed CM CPUs, number of installed DEs, installed CA Ports, installed CM Ports, LUs, RAIDGroups, installed FC Ports, and installed Ethernet Ports) is the number mounted in the device when the "storageadm perfdata" command is executed.

Table B.2 Required Capacity for Outputting Performance Information

Target Device	Required Disk Space (Unit : MB)
ETERNUS DX60 S5 ETERNUS DX100 S5	7,200 MB is required when *outputDays* is 7. If *outputDays* is a number other than 7, multiply "*outputDays* * 0.15" by the required disk space obtained above.
ETERNUS DX200 S5 ETERNUS DX500 S5 ETERNUS DX600 S6/S5	10,000 MB is required when *outputDays* is 7. If *outputDays* is a number other than 7, multiply "*outputDays* * 0.15" by the required disk space obtained above.
ETERNUS DX900 S6	42,000 MB is required when *outputDays* is 7. If *outputDays* is a number other than 7, multiply "*outputDays* * 0.15" by the required disk space obtained above.
ETERNUS DX900 S5	30,000 MB is required when *outputDays* is 7. If *outputDays* is a number other than 7, multiply "*outputDays* * 0.15" by the required disk space obtained above.
ETERNUS DX60 S4/S3	- When setting the performance monitoring interval to less than 60 seconds

Target Device	Required Disk Space (Unit : MB)
	outputDays * (0.2 + (0.1 + 0.9 * *DEs* + 0.1 * *CAPorts* +0.2* (*LUs* + *RAIDGroups*)) * (86400 / *perfMonitorInterval*) + 288 + (1.8 * *DEs*) + (0.2 * *CAPorts*) + (0.6 * (*LUs*+*RAIDGroups*))) / 1024 - When setting the performance monitoring interval to 60 seconds or more *outputDays* * (0.2 + (0.1 + 0.9 * *DEs* + 0.1 * *CAPorts* +0.2* (*LUs* + *RAIDGroups*)) * (86400 / *perfMonitorInterval*) + 0.2 * (86400 / *perfMonitorInterval*) + (1.8 * *DEs*) + (0.2 * *CAPorts*) + (0.6 * (*LUs*+*RAIDGroups*))) / 1024
ETERNUS DX100 S4/S3 ETERNUS DX200 S4/S3 ETERNUS DX500 S4/S3 ETERNUS DX600 S4/S3	- When setting the performance monitoring interval to less than 60 seconds *outputDays* * (0.4 + (0.1 + 0.9 * *DEs* + 0.1 * *CAPorts* + 0.1 * *NASVolumes* + 0.2 * (*LUs* + *RAIDGroups*)) * (86400 / *perfMonitorInterval*) + 288 + (1.8 * *DEs*) + (0.2 * *CAPorts*) + (0.2 * *NASVolumes*) + (0.6 * (*LUs* + *RAIDGroups*))) / 1024 - When setting the performance monitoring interval to 60 seconds or more *outputDays* * (0.4 + (0.1 + 0.9 * *DEs* + 0.1 * *CAPorts* + 0.1 * *NASVolumes* + 0.2 * (*LUs* + *RAIDGroups*)) * (86400 / *perfMonitorInterval*) + 0.2 * (86400 / *perfMonitorInterval*) + (1.8 * *DEs*) + (0.2 * *CAPorts*) + (0.2 * *NASVolumes*) + (0.6 * (*LUs* + *RAIDGroups*))) / 1024
ETERNUS DX8900 S6	The following shows the required disk space when *outputDays* is 7. - 4CE or less: 43,000 MB - Other than above: 48,000 MB If *outputDays* is a number other than 7, multiply "*outputDays* * 0.15" by the required disk space obtained above.
ETERNUS DX8900 S4	The following shows the required disk space when *outputDays* is 7. - 4CE or less: 15,000 MB - Other than above: 32,000 MB If *outputDays* is a number other than 7, multiply "*outputDays* * 0.15" by the required disk space obtained above.
ETERNUS DX8700 S3 ETERNUS DX8900 S3	- When setting the performance monitoring interval to less than 60 seconds *outputDays* * (1.5 + (0.7 + 0.9 * *DEs* + 0.1 * *CAPorts* + 0.2 * (*LUs* + *RAIDGroups*)) * (86400 / *perfMonitorInterval*) + 288 + (1.8 * *DEs*) + (0.2 * *CAPorts*) + (0.6 * (*LUs* + *RAIDGroups*))) / 1024 - When setting the performance monitoring interval to 60 seconds or more *outputDays* * (1.5 + (0.7 + 0.9 * *DEs* + 0.1 * *CAPorts* + 0.2 * (*LUs* + *RAIDGroups*)) * (86400 / *perfMonitorInterval*) + 0.2 * (86400 / *perfMonitorInterval*) + (1.8 * *DEs*) + (0.2 * *CAPorts*) + (0.6 * (*LUs* + *RAIDGroups*))) / 1024

Target Device	Required Disk Space (Unit : MB)
ETERNUS DX60 S2 ETERNUS DX80 S2 ETERNUS DX90 S2	*outputDays* * (((0.1 + 0.4 * *DEs* + 0.1 * *CMPorts* + 0.2 * (*LUs* + *RAIDGroups*)) * (86400 / *perfMonitorInterval*)) + (0.2 + 0.6 * *DEs* + 0.2 * *CMPorts* + 0.4 * (*LUs* + *RAIDGroups*))) / 1024
ETERNUS DX400 S2 series ETERNUS DX8000 S2 series	*outputDays* * (((0.1 + 0.2 * *DEs* + 0.1 * *CAPorts* + 0.2 * (*LUs* + *RAIDGroups*) + 0.1 * *CMCPUs*) * (86400 / *perfMonitorInterval*)) + (0.9 + 0.8 * *DEs* + 0.2 * *CAPorts* + 0.4 * (*LUs* + *RAIDGroups*) + 0.1 * *CMCPUs*)) / 1024
ETERNUS AF150 S3	7,200 MB is required when *outputDays* is 7. If *outputDays* is a number other than 7, multiply "*outputDays* * 0.15" by the required disk space obtained above.
ETERNUS AF250 S3 ETERNUS AF650 S3	10,000 MB is required when *outputDays* is 7. If *outputDays* is a number other than 7, multiply "*outputDays* * 0.15" by the required disk space obtained above.
ETERNUS AF250 S2 ETERNUS AF250	- When setting the performance monitoring interval to less than 60 seconds *outputDays* * (0.2 + (0.1 + 0.9 * *DEs* + 0.1 * *CAPorts* +0.2* (*LUs* + *RAIDGroups*)) * (86400 / *perfMonitorInterval*) + 288 + (1.8 * *DEs*) + (0.2 * *CAPorts*) + (0.6 * (*LUs*+*RAIDGroups*))) / 1024 - When setting the performance monitoring interval to 60 seconds or more *outputDays* * (0.2 + (0.1 + 0.9 * *DEs* + 0.1 * *CAPorts* +0.2* (*LUs* + *RAIDGroups*)) * (86400 / *perfMonitorInterval*) + 0.2 * (86400 / *perfMonitorInterval*) + (1.8 * *DEs*) + (0.2 * *CAPorts*) + (0.6 * (*LUs*+*RAIDGroups*))) / 1024
ETERNUS AF650 S2 ETERNUS AF650	- When setting the performance monitoring interval to less than 60 seconds *outputDays* * (0.4 + (0.1 + 0.9 * *DEs* + 0.1 * *CAPorts* + 0.2 * (*LUs* + *RAIDGroups*)) * (86400 / *perfMonitorInterval* [s]) + 288 + (1.8 * *DEs*) + (0.2 * *CAPorts*) + (0.6 * (*LUs* + *RAIDGroups*))) / 1024 - When setting the performance monitoring interval to 60 seconds or more *outputDays* * (0.4 + (0.1 + 0.9 * *DEs* + 0.1 * *CAPorts* + 0.2 * (*LUs* + *RAIDGroups*)) * (86400 / *perfMonitorInterval* [s]) + 0.2 * (86400 / *perfMonitorInterval*) + (1.8 * *DEs*) + (0.2 * *CAPorts*) + (0.6 * (*LUs* + *RAIDGroups*))) / 1024
Fibre Channel switches	*outputDays* * (0.1 + *FCPorts* + (0.1 * *FCPorts*)) + (0.1 + *ports* + (0.1 * *FCPorts* * (86400 / *perfMonitorInterval*))) / 1024
VDX series	*outputDays* * (0.1 + *ports* + (0.1 * *ports*)) + (0.1 + *ports* + (0.1 * *ports* * (86400 / *perfMonitorInterval*))) / 1024 *1: The number of mounted ports is the total number of FC Ports and Ethernet Ports (excluding 1GbE RJ45) on the device.

See

Refer to "Command References" in the *Storage Cruiser Operation Guide* for information on the "storageadm perfdata" command.

Appendix C Installation Parameters

This appendix explains the installation parameter file and the details about each installation parameter.

C.1 Installation Parameter File (for ETERNUS SF Manager for Windows)

The sample of an installation parameter file is stored on the DVD "ETERNUS SF SC/ACM/Express Mediapack for Windows (V16.9 or higher) Manager Program (1/2)" of this version.

- Storage location
  - For automatic service activation

    dvdDrive:\Manager_windows\install_parameter.ini
  - For prevention of automatic service activation

    dvdDrive:\Manager_windows\install_parameter_not_start_service.ini

When changing installation parameters, copy the sample installation parameter file to an optional location to edit the copied file.
The sample of the installation parameter file is shown below.
For description of each parameter, refer to "C.2 Installation Parameters (for ETERNUS SF Manager for Windows)".

- For automatic service activation

```
[Install_Directory]
Program_directory=C:\ETERNUS_SF
Environment_directory=C:\ETERNUS_SF
Work_directory=C:\ETERNUS_SF

[Management_Server]
; Management_server_IP_address:
; IPv4 format xxx.xxx.xxx.xxx
Management_server_IP_address=
Start_Service=yes

[Port_Number]
Web_service=9855
Communications_service_1=1226
Communications_service_2=4917
Repository_service=15432
Internal_port_1=28005
Internal_port_2=28009
Internal_port_3=28443
Internal_port_4=24916
```

- For the prevention of automatic service activation

```
[Install_Directory]
Program_directory=C:\ETERNUS_SF
Environment_directory=C:\ETERNUS_SF
Work_directory=C:\ETERNUS_SF

[Management_Server]
; Management_server_IP_address:
; IPv4 format xxx.xxx.xxx.xxx
Management_server_IP_address=
Start_Service=no

[Port_Number]
```

```
Web_service=9855
Communications_service_1=1226
Communications_service_2=4917
Repository_service=15432
Internal_port_1=28005
Internal_port_2=28009
Internal_port_3=28443
Internal_port_4=24916
```

C.2 Installation Parameters (for ETERNUS SF Manager for Windows)

The following is a description of installation parameters.

Parameter Name	Description	Default Value
Program_directory	Program directory (*4)	C:\ETERNUS_SF
Environment_directory	Configuration directory (*4)	C:\ETERNUS_SF
Work_directory	Working directory (*4)	C:\ETERNUS_SF
Management_server_IP_address	IP address of Management Server (*1, *2)	None
Start_Service	Automatic service activation of ETERNUS SF Manager	- For automatic service activation: yes - For prevention of automatic service activation: no
Web_service	Port number for Web Console service (*3)	9855
Communications_service_1	Port number for communication service1 (*3)	1226
Communications_service_2	Port number for communication service2 (*3)	4917
Repository_service	Port number for repository service (*3)	15432
Internal_port_1	Communication port number for internal use (*3)	28005
Internal_port_2		28009
Internal_port_3		28443
Internal_port_4		24916

*1: If the Management Server has multiple IP addresses, specify IP addresses available for communication between the Management Server and all of the AdvancedCopy Manager's agents.

*2: Specify the IPv4 address confirmed in the "3.1.6 IP Address Confirmation" section to do pre-installation work. When using both IPv4 and IPv6 addresses for the Management Server or even when using only IPv6, specify IPv4 address. On completion of installation, refer to "4.4.5 Updating Management Server IP Address Information" to add or change IPv6 address.

*3: When changing a port number, specify an unused port number. Values between 1024 and 65535 are valid.

*4: Do not specify the following for directory:

- Shared directory
- Characters " | : * ? / . < > , % & ^ = ! ; # ' @ ( ) + are not supported for directory name.
- The number of characters specifiable for directory name is 4 to 70.
- Do not specify the directory with a relative path. Specify it with an absolute path.

Point

- Only CR+LF is available for linefeed code. Do not use CR or LF.
- Do not use 2-byte characters such as double-byte space.

Note

With ETERNUS SF Manager, Internal Port 5 is the communication port number used internally. In Windows environments, it is not possible to specify Internal Port 5 in the installation parameter file.
When changing the port number for Internal Port 5, in advance on the Servers for installation, edit the %SystemRoot%\system32\drivers\etc\services file manually, and define the following service name and unused port number in the range 1024-65535.

Service Name	Port Number / Protocol (Default)	Used Purpose
astm	24917/tcp	This is used for the following purpose. - Internal communications for Automated Storage Tiering

C.3 Installation Parameter File (for Storage Cruiser's Agent for Windows)

The sample of an installation parameter file is stored on the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of the version.

- Storage location

```
dvdDrive:\Agent_windows\Storage_Cruiser\windows_x86\scagt_parameter.ini
```

When changing installation parameters, copy the sample installation parameter file to an optional location and edit the copied file.
The sample of the installation parameter file is shown below.
For description of each parameter, refer to "C.4 Installation Parameters (for Storage Cruiser's Agent for Windows)".

```
;-----------------------------------------------;
; Install directory
;-----------------------------------------------;
[Install_directory]
Program_Directory=C:\ETERNUS_SF
Environment_Directory=C:\ETERNUS_SF
Work_Directory=C:\ETERNUS_SF

;-----------------------------------------------;
; Port number
; range: 1024 - 65535
;-----------------------------------------------;
[Port_number]
Communications_service=4917

;-----------------------------------------------;
; IP address
; Agent_server_IP_address:
;-----------------------------------------------;
[IP_address]
Agent_server_IP_address=
```

C.4 Installation Parameters (for Storage Cruiser's Agent for Windows)

The following is a description of installation parameters.

Parameter Name	Description	Default Value
Program_directory	Program directory	C:\ETERNUS_SF
Environment_directory	Configuration directory	C:\ETERNUS_SF
Work_directory	*Working directory*	C:\ETERNUS_SF
Communications_service	Port number for communication service (*1)	4917
Agent_server_IP_address	Agent IP address	None

*1: When changing a port number, specify an unused port number. Values between 1024 and 65535 are valid.

Point

- Only CR+LF is available for linefeed code. Do not use CR or LF.
- Do not use 2-byte characters such as double-byte space.
- Characters | : * ? / . < > , % & ^ = ! ; are not supported for directory name.
- The number of characters specifiable for directory name is 4 to 70.
- Specify directories using absolute paths.
- The space character cannot be used at the head or the end of directory name.

C.5 Installation Parameter File (for AdvancedCopy Manager's Agent for Windows)

The sample of an installation parameter file is stored on the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version.

- Storage location
  - For automatic service activation
    - For 32 bit agent:

```
dvdDrive:\Agent_windows\AdvancedCopy_Manager\agent\windows_x86\install_parameter.ini
```

    - For 64 bit agent:

```
dvdDrive:\Agent_windows\AdvancedCopy_Manager\agent\windows_x64\install_parameter.ini
```

  - For prevention of automatic service activation
    - For 32 bit agent:

```
dvdDrive:\Agent_windows\AdvancedCopy_Manager\agent
\windows_x86\install_parameter_not_start_service.ini
```

    - For 64 bit agent:

```
dvdDrive:\Agent_windows\AdvancedCopy_Manager\agent
\windows_x64\install_parameter_not_start_service.ini
```

When changing installation parameters, copy the sample installation parameter file to an optional location and edit the copied file.
The sample of the installation parameter file is shown below.
For description of each parameter, refer to "C.6 Installation Parameters (for AdvancedCopy Manager's agent for Windows)".

- For automatic service activation

```
[InstallParameter]
Program_Directory=C:\Win32app\AdvancedCopyManager
Environment_Directory=C:\Win32app\AdvancedCopyManager
Work_Directory=C:\Win32app\AdvancedCopyManager
Communications_service=1226
StartService=yes
```

- For prevention of automatic service activation

```
[InstallParameter]
Program_Directory=C:\Win32app\AdvancedCopyManager
Environment_Directory=C:\Win32app\AdvancedCopyManager
Work_Directory=C:\Win32app\AdvancedCopyManager
Communications_service=1226
StartService=no
```

C.6 Installation Parameters (for AdvancedCopy Manager's agent for Windows)

The following is a description of installation parameters.

Parameter Name	Description	Default Value
Program_directory	Program directory	C:\Win32app\AdvancedCopyManager
Environment_directory	Configuration directory	C:\Win32app\AdvancedCopyManager
Work_directory	Working directory	C:\Win32app\AdvancedCopyManager
Communications_service	Port number for communication service (*1)	1226
StartService	Automatic service activation of AdvancedCopy Manager's agent	- For automatic service activation: yes - For prevention of automatic service activation: no

*1: When changing a port number, specify an unused port number. Values between 1024 and 65535 are valid.

Point

- Specify directories using absolute paths.
- Spaces and the characters " | : * ? / . < > ; & ( ) + , = ^ are not supported for directory name.

C.7 Installation Parameter File (for AdvancedCopy Manager CCM for Windows)

The sample of an installation parameter file is stored on the DVD "ETERNUS SF SC/ACM/Express Mediapack for Windows (V16.9 or higher) Manager Program (1/2)" of this version.

- Storage location

```
dvdDrive:\Manager_windows\install_parameter_CCM.ini
```

When changing installation parameters, copy the sample installation parameter file to an optional location and edit the copied file.
The sample of the installation parameter file is shown below.
For description of each parameter, refer to "C.8 Installation Parameters (for AdvancedCopy Manager CCM for Windows)".

```
[Install_Directory]
Program_directory= C:\ETERNUS_SF
Environment_directory= C:\ETERNUS_SF
Work_directory= C:\ETERNUS_SF
```

C.8 Installation Parameters (for AdvancedCopy Manager CCM for Windows)

The following is a description of installation parameters.

Parameter Name	Description	Default Value
Program_directory	Program directory	C:\ETERNUS_SF
Environment_directory	Configuration directory	C:\ETERNUS_SF
Work_directory	Working directory	C:\ETERNUS_SF

Point

- Only CR+LF is available for linefeed code. Do not use CR or LF.
- Do not use 2-byte characters such as double-byte space.
- Do not specify the shared directory.
- Characters " | : * ? / . < > , % & ^ = ! ; # ' @ are not supported for directory name.
- The number of characters specifiable for directory name is 4 to 70.

C.9 Installation Parameter File (for ETERNUS SF Manager for Solaris/Linux)

The sample of the installation parameter file is provided on the DVD "ETERNUS SF SC/ACM Mediapack for Solaris (V16.9 or higher) Manager Program (2/2)" or "ETERNUS SF SC/ACM/Express Mediapack for Linux 64bit (V16.9 or higher) Manager Program (2/2)" of this version.

- Stored location
  - For automatic service activation

```
dvdMountPoint/Manager_unix/install_parameter.txt
```

  - For prevention of automatic service activation

```
dvdMountPoint/Manager_unix/install_parameter_not_start_service.txt
```

For changing installation parameters, copy the form of the installation parameter file in a convenient location and modify the installation information.

The following is the form of the installation parameter file.
For description of each parameter, refer to "C.10 Installation Parameters (for ETERNUS SF Manager for Solaris/Linux)".

- For automatic service activation

```
#------------------------------------------------#
# Installation function
#     1: ETERNUS SF Manager
#     2: ETERNUS SF AdvancedCopy Manager CCM
#------------------------------------------------#
Installation_function: 1

#------------------------------------------------#
# Port number
#     range: 1024 - 65535
#------------------------------------------------#
ETERNUS_SF_Manager_apache_service: 9855
Communications_service_1: 1226
Communications_service_2: 4917
Repository_service: 15432
Internal_port_1: 28005
Internal_port_2: 28009
Internal_port_3: 28443
Internal_port_4: 24916
Internal_port_5: 24917

#------------------------------------------------#
# Management_server_IP_address: format xxx.xxx.xxx.xxx
#------------------------------------------------#
Management_server_IP_address:

#------------------------------------------------#
# esfpostgres UID
#    For primecluster system:
#        NULL: System allocate
#        integer : range 100-59999
#------------------------------------------------#
esfpostgres_UID:

#------------------------------------------------#
# Start Service Control
#------------------------------------------------#
StartService: yes
```

- For prevention of automatic service activation

```
#------------------------------------------------#
# Installation function
#     1: ETERNUS SF Manager
#     2: ETERNUS SF AdvancedCopy Manager CCM
#------------------------------------------------#
Installation_function: 1

#------------------------------------------------#
# Port number
#     range: 1024 - 65535
#------------------------------------------------#
ETERNUS_SF_Manager_apache_service: 9855
Communications_service_1: 1226
Communications_service_2: 4917
Repository_service: 15432
Internal_port_1: 28005
Internal_port_2: 28009
Internal_port_3: 28443
```

```
Internal_port_4: 24916
Internal_port_5: 24917

#-----------------------------------------------#
# Management_server_IP_address: format xxx.xxx.xxx.xxx
#-----------------------------------------------#
Management_server_IP_address:

#-----------------------------------------------#
# esfpostgres UID
#    For primecluster system:
#        NULL: System allocate
#        integer : range 100-59999
#-----------------------------------------------#
esfpostgres_UID:

#-----------------------------------------------#
# Start Service Control
#-----------------------------------------------#
StartService: no
```

C.10 Installation Parameters (for ETERNUS SF Manager for Solaris/Linux)

The explanation of the installation parameters described below.

Parameter Name	Description	Default Value
Installation_function	When installing ETERNUS SF Manager, set to [1].	1
ETERNUS_SF_Manager_apache_service	Web Console service port number (*4)	9855
Communications_service_1	Communications service 1 port number (*4)	1226
Communications_service_2	Communications service 2 port number (*4)	4917
Repository_service	Repository service port number (*4)	15432
Internal_port_1	Port numbers for various internal services (*4)	28005
Internal_port_2		28009
Internal_port_3		28443
Internal_port_4		24916
Internal_port_5		24917
Management_server_IP_address	Management Server IP address (*1, *3)	None
esfpostgres_UID	User ID which ETERNUS SF Manager internally uses on installation of PRIMECLUSTER (*2)	None
StartService	Automatic service activation of ETERNUS SF Manager	- For automatic service activation: yes - For prevention of automatic service activation: no

*1: When the Management Server has two or more IP addresses, specify the IP address which is available for communicating with the Management Server from all of the AdvancedCopy Manager's agents.

*2: On installation in PRIMECLUSTER environments, specify an unregistered user ID for the system by using integer number from 100 to 59999. Specify a blank in other cases.

*3: Specify the IPv4 address confirmed with "3.1.6 IP Address Confirmation". Specify the IPv4 address when operating the Management Server with both IPv4 and IPv6 or when operating the Management Server with IPv6 only. Add and change the IPv6 address after installation is complete, referring to "4.4.5 Updating Management Server IP Address Information".

*4: When changing a port number, specify an unused port number. Values between 1024 and 65535 are valid.

Point

- Only LF is permitted for linefeed code. Do not use CR+LF or CR.
- Do not use double-byte character such as double-byte space.

C.11 Installation Parameter File (for Storage Cruiser's Agent for Solaris)

The sample of an installation parameter file is stored on the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version.

- Storage location

```
dvdMountPoint/Agent_unix/Storage_Cruiser/Solaris/scagt_parameter.txt
```

When changing installation parameters, copy the sample installation parameter file to an optional location and edit the copied file.
The sample of the installation parameter file is shown below.
For description of each parameter, refer to "C.12 Installation Parameters (for Storage Cruiser's Agent for Solaris)".

```
#-----------------------------------------------#
# Installation directory
#-----------------------------------------------#
Program_Directory: /opt
Environment_Directory: /etc/opt
Work_Directory: /var/opt
```

C.12 Installation Parameters (for Storage Cruiser's Agent for Solaris)

The following is a description of installation parameters.

Parameter Name	Description	Default Value
Program_Directory	Program directory	/opt
Environment_Directory	Configuration directory	/etc/opt
Work_Directory	Working directory	/var/opt

Point

- Only LF is available for linefeed code. Do not use CR+LF or CR.
- Specify directories using absolute paths.
- Spaces and the characters " ' * ; = \ are not supported for directory name.

C.13 Installation Parameter File (for AdvancedCopy Manager's Agent for Solaris/Linux)

The sample of an installation parameter file is stored on the DVD "ETERNUS SF SC/ACM/Express Mediapack (V16.9 or higher) Agent Program and Manual" of this version.

- Storage location

Environment	Location
Solaris	*dvdMountPoint*/Agent_unix/AdvancedCopy_Manager/Solaris/install_parameter.txt
Red Hat Enterprise Linux 9 (for Intel64)	*dvdMountPoint*/Agent_unix/AdvancedCopy_Manager/rhel9_x64/install_parameter.txt
Red Hat Enterprise Linux 8 (for Intel64)	*dvdMountPoint*/Agent_unix/AdvancedCopy_Manager/rhel8_x64/install_parameter.txt
Red Hat Enterprise Linux 7 (for Intel64)	*dvdMountPoint*/Agent_unix/AdvancedCopy_Manager/rhel7_x86/install_parameter.txt
SUSE Linux Enterprise Server 15 for AMD64 & Intel64	*dvdMountPoint*/Agent_unix/AdvancedCopy_Manager/sles15_x64/install_parameter.txt

When changing installation parameters, copy the sample installation parameter file to an optional location and edit the copied file.
The sample of the installation parameter file is shown below.
For description of each parameter, refer to "C.14 Installation Parameters (for AdvancedCopy Manager's Agent for Solaris/Linux)".

```
#------------------------------------------------------------#
# Install Directory
#------------------------------------------------------------#
Program_Directory: /opt
Environment_Directory: /etc/opt
Work_Directory: /var/opt

#------------------------------------------------------------#
# Port number
#      range: 1024 - 65535
#------------------------------------------------------------#
Communications_service: 1226
```

C.14 Installation Parameters (for AdvancedCopy Manager's Agent for Solaris/Linux)

The following is a description of installation parameters.

Parameter Name	Description	Default Value
Program_directory	Program directory	/opt
Environment_directory	Configuration directory	/etc/opt
Work_directory	Working directory	/var/opt
Communications_service	Port number for communication daemon (*1)	1226

*1: When changing a port number, specify an unused port number. Values between 1024 and 65535 are valid.

Point

- Only LF is available for linefeed code. Do not use CR+LF or CR.
- Specify directories using absolute paths.
- Spaces and the characters " ' * = are not supported for directory name.
- Specify different directories for "Program_directory", "Environment_directory", and "Work_directory".

C.15 Installation Parameter File (for AdvancedCopy Manager CCM for Solaris/Linux)

The sample of the installation parameter file is provided on the DVD "ETERNUS SF SC/ACM Mediapack for Solaris (V16.9 or higher) Manager Program (2/2)" or "ETERNUS SF SC/ACM/Express Mediapack for Linux 64bit (V16.9 or higher) Manager Program (2/2)" of this version.

- Stored location

```
dvdMountPoint/Manager_unix/install_parameter_ccm.txt
```

The following is the form of the installation parameter file.

```
#-----------------------------------------------#
# Installation function
#     1: ETERNUS SF Manager
#     2: ETERNUS SF AdvancedCopy Manager CCM
#-----------------------------------------------#
Installation_function: 2
```

Appendix D Return Values for Silent Installation and Silent Uninstallation

D.1 Return Values for Silent Installation (for ETERNUS SF Manager, AdvancedCopy Manager CCM)

The following is a description of the meanings of command return values and actions responding to them for silent installation (for ETERNUS SF Manager, AdvancedCopy Manager CCM).

Table D.1 Return Values for Silent Installation (for ETERNUS SF Manager, AdvancedCopy Manager CCM)

Return Value	Meaning	Action
0	Installation succeeded.	No action is required.
2	Silent installation command was run with invalid parameters.	Specify correct parameters for the silent installation command.
3	Creating an install log file failed.	Check whether the destination to which to store the install log file has write permission. In addition, check whether the file name is specified to the argument of -l option.
4	Specified installation parameter file does not exist. (This return value is not set for AdvancedCopy Manager CCM in a Solaris or Linux environment.)	Make sure that the specified installation parameter file exists.
5	Licensing is not agreed to.	Specify "-eula agreed" for parameter of the silent installation command.
6	Specified installation parameter file is incorrect. (This return value is not set for AdvancedCopy Manager CCM in a Solaris or Linux environment.)	Refer to "Appendix C Installation Parameters" to make sure that the content of the installation parameter file is correct.
7	This version of the ETERNUS SF product is already installed.	No action is required.
8	An earlier version of ETERNUS SF product is already installed.	The command for silent installation does not support upgrading from an installed version. For the upgrade installation, refer to the *Migration Guide* of this version.
9	Another installation or uninstallation is in progress.	On completion of the installation or uninstallation in progress, try again.
Other than those above	Error occurred during installation.	Check the content of the install log file to take required action. If you do not know how to respond to the error, contact Fujitsu Technical Support.

D.2 Return Values for Silent Installation (for Storage Cruiser's Agent)

The following is a description of the meanings of command return values and actions responding to them for silent installation (for Storage Cruiser's agent).

Table D.2 Return Values for Silent Installation (for Storage Cruiser's Agent)

Return Value	Meaning	Action
0	Installation succeeded.	No action is required.
2	Silent installation command was run with invalid parameters.	Specify correct parameters for the silent installation command.
3	Creating an install log file failed.	Check whether the destination to which to store the install log file has write permission. In addition, check whether the file name is specified to the argument of -l option.
4	Specified installation parameter file does not exist.	Make sure that the specified installation parameter file exists.
6	Specified installation parameter file is incorrect.	Refer to "Appendix C Installation Parameters" to make sure the content of the installation parameter file is correct.
7	A Storage Cruiser's agent is already installed.	- If earlier version is installed: The command for silent installation does not support upgrading from an installed version. For the upgrade installation, refer to the *Migration Guide* of this version. - If this version in installed: No action is required.
9	Another installation or uninstallation is in progress.	On completion of the installation or uninstallation in progress, try again.
Other than those above	Error occurred during installation.	- For Windows Check the content of the install log file to take required action. If you do not know how to respond to the error, contact Fujitsu Technical Support. - For Solaris/Linux Take either of the following actions: - Check the content of the install log file to take required action. Then perform the following operations: 1. Back up the log of silent installation. 2. Run uninstallation. 3. Rerun installation. - If you cannot respond to the content of the install log file, contact Fujitsu Technical Support.

D.3 Return Values for Silent Installation (for AdvancedCopy Manager's Agent)

The following is a description of the meanings of command return values and actions responding to them for silent installation (for AdvancedCopy Manager's agent).

Table D.3 Return Values for Silent Installation (for AdvancedCopy Manager's Agent)

Return Value	Meaning	Action
0	Installation succeeded.	No action is required.
2	Silent installation command was run with invalid parameters.	Specify correct parameters for the silent installation command.
3	Creating an install log file failed.	Check whether the destination to which to store the install log file has write permission. In addition, check whether the file name is specified to the argument of -l option.
4	Specified installation parameter file does not exist.	Make sure that the specified installation parameter file exists.
6	Specified installation parameter is incorrect.	Refer to "Appendix C Installation Parameters" to make sure that the content of the installation parameter file is correct.
7	An AdvancedCopy Manager's agent or AdvancedCopy Manager's manager is already installed.	- If earlier version of the AdvancedCopy Manager's agent is installed: The command for silent installation does not support upgrading from an installed version. For the upgrade installation, refer to the *Migration Guide* of this version. - If this version of the AdvancedCopy Manager's agent is installed: No action is required. - If the AdvancedCopy Manager's manager is installed: It is not able to perform the silent installation of the AdvancedCopy Manager's agent with a server that AdvancedCopy Manager's manager has been installed.
9	Another installation or uninstallation is in progress.	On completion of the installation or uninstallation in progress, try again.
Other than those above	Error occurred during installation.	- For Windows Check the content of the install log file to take required action. If you do not know how to respond to the error, contact Fujitsu Technical Support. - For Solaris/Linux Take either of the following actions: - Check the content of the install log file to take required action. Then perform the following operations: 1. Back up the log of silent installation. 2. Run uninstallation. 3. Rerun installation. - If you cannot respond to the content of the install log file, contact Fujitsu Technical Support.

D.4 Return Values for Silent Uninstallation (for ETERNUS SF Manager, AdvancedCopy Manager CCM)

The following is a description of the meanings of command return values and actions responding to them for silent uninstallation (for ETERNUS SF Manager, AdvancedCopy Manager CCM).

Table D.4 Return Values for Silent Uninstallation (for ETERNUS SF Manager, AdvancedCopy Manager CCM)

Return Value	Meaning	Action
0	Uninstallation succeeded.	No action is required.
2	Silent uninstallation command was run with invalid parameters.	Specify correct parameters for the silent uninstallation command.
3	Creating an uninstall log file failed.	Check whether the destination to which to store the uninstall log file has write permission. In addition, check whether the file name is specified to the argument of -l option.
4	A product to be uninstalled is not installed.	No action is required.
9	Another installation or uninstallation is in progress.	On completion of the installation or uninstallation in progress, try again.
10	It is not possible to run the uninstallation at the command prompt from which the silent installation was run. (This return value is set for ETERNUS SF Manager for Windows.)	Close the current command prompt and start a new command prompt to run a silent uninstallation.
Other than those above	Error occurred during uninstallation.	Check the content of the uninstall log file to take required action. If you do not know how to respond to the error, contact Fujitsu Technical Support.

D.5 Return Values for Silent Uninstallation (for Storage Cruiser's Agent)

The following is a description of the meanings of command return values and actions responding to them for silent uninstallation (for Storage Cruiser's agent).

Table D.5 Return Values for Silent Uninstallation (for Storage Cruiser's Agent)

Return Value	Meaning	Action
0	Uninstallation succeeded.	No action is required.
2	Silent uninstallation command was run with invalid parameters.	Specify correct parameters for the silent uninstallation command.
3	Creating an uninstall log file failed.	Check whether the destination to which to store the uninstall log file has write permission. In addition, check whether the file name is specified to the argument of -l option.
9	Another installation or uninstallation is in progress.	On completion of the installation or uninstallation in progress, try again.
Other than those above	Error occurred during uninstallation.	Check the content of the uninstall log file to take required action. If you do not know how to respond to the error, contact Fujitsu Technical Support.

D.6 Return Values for Silent Uninstallation (for AdvancedCopy Manager's Agent)

The following is a description of the meanings of command return values and actions responding to them for silent uninstallation (for AdvancedCopy Manager's agent).

Table D.6 Return Values for Silent Uninstallation (for AdvancedCopy Manager's Agent)

Return Value	Meaning	Action
0	Uninstallation succeeded.	No action is required.
2	Silent uninstallation command was run with invalid parameters.	Specify correct parameters for the silent uninstallation command.
3	Creating an uninstall log file failed.	Check whether the destination to which to store the uninstall log file has write permission. In addition, check whether the file name is specified to the argument of -l option.
9	Another installation or uninstallation is in progress.	On completion of the installation or uninstallation in progress, try again.
Other than those above	Error occurred during uninstallation.	Check the content of the uninstall log file to take required action. If you do not know how to respond to the error, contact Fujitsu Technical Support.

Appendix E Upper Limit of Manageable Environment

The following is a description of the upper limit of manageable resources by one ETERNUS SF Manager.

E.1 Determining Number of Manageable Devices

The number of manageable devices by one ETERNUS SF Manager is determined using the following evaluation formula. If the value calculated by the evaluation formula (comprehensive evaluation value) exceeds 2048, allocate the devices to multiple ETERNUS SF Managers to manage.

```
Comprehensive evaluation value = Basal value
                               + Evaluated value of registered device
                               + Evaluated value of fault monitoring
                               + Evaluated value of performance management
                               + Evaluated value of AdvancedCopy Manager
                               + Evaluated value of Automated QoS function
                               + Evaluated value of Reporting function
                               + Evaluated value of Storage Cluster function
                               + Evaluated value of VMware vSphere Virtual Volumes function
```

Basal Value

This is a value required for behaviors of ETERNUS SF Manager (including the Automated Storage Tiering). Specify the following value:

```
Basal value = 560
```

Evaluated Value of Registered Devices

For evaluated value of registered device, specify the value calculated by the following formula:

```
Evaluated value of registered devices = Evaluated value 1 per model
                                      + Evaluated value 2 per model
                                      + Evaluated value 3 per model
                                      + Evaluated value 4 per model
                                      + Evaluated value 5 per model
                                      + Evaluated value 6 per model
```

Evaluated Value 1 to 6 per Model

For evaluated value per device, select the appropriate value for a device to be registered from the table below. If the number of devices to be registered is 6 or less, specify the values only for the number of devices to be registered. If the number is 7 or more, specify the 6 largest evaluated values of the devices.

Device Type	Registered Device		Evaluated Value	
			NAS Function Not Available	NAS Function Available
Storage devices	ETERNUS DX series	ETERNUS DX100 S5/S4/S3 ETERNUS DX200 S5/S4/S3	23	33
		ETERNUS DX500 S5/S4/S3 ETERNUS DX600 S5/S4/S3	25	35
		ETERNUS DX600 S6	25	-
		ETERNUS DX900 S6/S5 ETERNUS DX8900 S6/S4/S3 ETERNUS DX8700 S3	90	-
		ETERNUS DX80 S2 ETERNUS DX90 S2	23	-

Device Type	Registered Device		Evaluated Value	
			NAS Function Not Available	NAS Function Available
		ETERNUS DX410 S2 ETERNUS DX440 S2	25	-
		ETERNUS DX8100 S2	25	-
		ETERNUS DX8700 S2	40	-
		Other than those above	30	-
	ETERNUS All-Flash Arrays	ETERNUS AF150 S3 ETERNUS AF250 S3/S2 ETERNUS AF250	23	-
		ETERNUS AF650 S3/S2 ETERNUS AF650	25	-
	Other than those above		5	-
Servers	VMware vSphere (*1)		35	-
	Storage Cruiser's agent installed server node (whether AdvancedCopy Manager's agent is installed or not)		30	-
	Only AdvancedCopy Manager's agent installed server node		10	-
	Agent not installed server node		5	-
Switch devices	Brocade series, VDX series, PRIMERGY BX Ethernet Fabric Switch		20	-
Tape libraries	ETERNUS LT series		5	-
Others	Devices other than those above		5	-

*1: For servers (VM guests) used as virtual machines by VMware vSphere, evaluated values are not needed to be specified.

Evaluated Value of Fault Monitoring

For evaluated value of fault monitoring, specify the value calculated by the following formula:

```
Evaluated value of fault monitoring = 0.3 * number of registered devices
```

Number of Registered Devices

Number of all the registered devices excluding VM guests

Evaluated Value of Performance Management

When using the performance management, specify the value calculated by the following formula:

```
Evaluated value of performance management = 13.5 * number of performance-managed devices
                + Evaluated value by method for specifying scope of monitoring volumes
                + Evaluated value of NAS management device
```

Number of Performance-managed Devices

Number of performance-managed storage devices and switch devices

Evaluated Value by Method for Specifying Scope of Monitoring Volumes

When the following devices are included in the devices where "All" is selected for the scope of monitoring volumes for performance management, specify the value calculated by the following formula:

- ETERNUS DX series (excluding the ETERNUS DX60 S2)
- ETERNUS AF All-Flash Arrays

```
Evaluated value by method for specifying scope of monitoring volumes = 100
```

Evaluated Value of NAS Management Device

If there is any device that uses NAS management for performance management targets, specify the value calculated by the following formula:

```
Evaluated value of NAS management device = 3.5 + 11 * Number of NAS volumes
```

Number of NAS Volumes

Total number of NAS volumes in all the storage devices targeted for performance management

Evaluated Value of AdvancedCopy Manager

When using the backup management function or replication management function of AdvancedCopy Manager, specify the value calculated by the following formula:

```
Evaluated value of AdvancedCopy Manager = 20
```

Evaluated Value of Automated QoS Function

When using the Automated QoS function, specify the value calculated by the following formula:

```
Evaluated value of the Automated QoS function = 10 + 0.2 * total number of FTVs targeted for
Automated QoS
```

Total Number of FTVs Targeted for Automated QoS

Total number of FTVs in all the registered devices, for which Automated QoS function is enabled

Evaluated Value of Reporting Function

When using the Reporting function, specify the value calculated by the following formula:

```
Evaluated value of the Reporting function = 0.3 * total number of volumes targeted for Reporting
function
```

Total Number of Volumes Targeted for Reporting Function

Total number of volumes in all the registered devices, for which the Reporting function is intended to collect information

Evaluated Value of Storage Cluster Function

When using the Storage Cluster function, specify the value calculated by the following formula:

```
Evaluated value of Storage Cluster function = 10 * Number of devices of Storage Cluster + 0.2 * TFOVs
```

Number of Devices of Storage Cluster

Number of storage devices composing Storage Cluster

TFOVs

Total number of TFOVs in all the storage devices

Evaluated Value of VMware vSphere Virtual Volumes Function

When using the VMware vSphere Virtual Volumes function, specify the value calculated by the following formula:

```
Evaluated value of VMware vSphere Virtual Volumes function = 255 + 45 * Number of virtual machines
```

Number of Virtual Machines

Number of virtual machines scheduled to execute backup concurrently. However, when the number exceeds 10, specify the number 10.

The following are the configuration examples evaluated by the above formula.

Example

When Only Fault Monitoring and Performance Management Are Performed

Target Environment

Managed Devices

ETERNUS DX200 S3: 30 pcs

Brocade Fibre Channel Switch: 6 pcs

Storage Cruiser's agent and AdvancedCopy Manager's agent installed server node: 70 pcs

ETERNUS LT140: 2 pcs

Performance-managed Devices

ETERNUS DX200 S3: 30 pcs

"Partial" is specified for the scope of monitoring volumes for performance management.

Brocade Fibre Channel Switch: 6 pcs

Use of Backup Management Function and Replication Management Function of AdvancedCopy Manager

Following Functions Are Not Used:

- Automated QoS function
- Reporting function
- NAS Management
- Storage Cluster function
- VMware vSphere Virtual Volumes function

Comprehensive Evaluation Value

```
560
+ (30 + 30 + 30 + 30 + 30 + 30)    # Evaluated value of registered device
+ 0.3 * (30 + 6 + 70 + 2)          # Evaluated value of fault monitoring
+ 13.5 * (30 + 6) + 0 + 0          # Evaluated value of performance management
+ 20                               # Evaluated value of AdvancedCopy Manager
+ 0                                # Evaluated value of Automated QoS function
+ 0                                # Evaluated value of Reporting function
+ 0                                # Evaluated value of Storage Cluster function
+ 0                                # Evaluated value of VMware vSphere Virtual Volumes function
= 1278.4
```

Example

Use Automated QoS Function and Reporting Function to Perform Backup Operation

Target Environment

Managed Devices

ETERNUS DX600 S3: 6 pcs (NAS operation on one of these 6)

Brocade Fibre Channel Switch: 2 pcs

VMware vSphere server: 18 pcs

Performance-managed Devices

ETERNUS DX600 S3: 6 pcs

"Partial" is specified for the scope of monitoring volumes for performance management.

Brocade Fibre Channel Switch: 2 pcs

Use of Backup Management Function and Replication Management Function of AdvancedCopy Manager

Automated QoS Function

Total number of FTVs targeted for Automated QoS: 500

Reporting Function

Total number of volumes targeted for Reporting function: 800

Following Functions Are Not Used:

- NAS Management
- Storage Cluster function
- VMware vSphere Virtual Volumes function

Comprehensive Evaluation Value

```
560
+ (35 + 35 + 35 + 35 + 35 + 35)  # Evaluated value of registered device
+ 0.3 * (6 + 2 + 18)             # Evaluated value of fault monitoring
+ 13.5 * (6 + 2) + 0 + 0         # Evaluated value of performance management
+ 20                             # Evaluated value of AdvancedCopy Manager
+ 10 + 0.2 * 500                 # Evaluated value of Automated QoS function
+ 0.3 * 800                      # Evaluated value of Reporting function
+ 0                              # Evaluated value of Storage Cluster function
+ 0                              # Evaluated value of VMware vSphere Virtual Volumes function
= 1255.8
```

Example

Use Storage Cluster Function

Target Environment

Managed Devices

ETERNUS DX200 S3: 14 pcs

Brocade Fibre Channel Switch: 4 pcs

Storage Cruiser's agent and AdvancedCopy Manager's agent installed server node: 20 pcs

Performance-managed Devices

ETERNUS DX200 S3: 14 pcs

"Partial" is specified for the scope of monitoring volumes for performance management.

Brocade Fibre Channel Switch: 4 pcs

Use of Backup Management Function and Replication Management Function of AdvancedCopy Manager

Storage Cluster Function

Configure two pieces of ETERNUS DX200 S3 as Storage Cluster.

Total number of TFOVs in all storage devices: 200

Following Functions Are Not Used:

- Automated QoS function
- Reporting function
- NAS Management

- VMware vSphere Virtual Volumes function

Comprehensive Evaluation Value

```
560
+ (30 + 30 + 30 + 30 + 30 + 30)  # Evaluated value of registered device
+ 0.3 * (14 + 4 + 20)            # Evaluated value of fault monitoring
+ 13.5 * (14 + 4) + 0 + 0        # Evaluated value of performance management
+ 20                             # Evaluated value of AdvancedCopy Manager
+ 0                              # Evaluated value of Automated QoS function
+ 0                              # Evaluated value of Reporting function
+ 10 * 2 + 0.2 * 200             # Evaluated value of Storage Cluster function
+ 0                              # Evaluated value of VMware vSphere Virtual Volumes function
= 1074.4
```

Example

Use VMware vSphere Virtual Volumes Function

Target Environment

Managed Devices

ETERNUS DX600 S3: 6 pcs

Brocade Fibre Channel Switch: 2 pcs

VMware vSphere server: 4 pcs

Performance-managed Devices

ETERNUS DX600 S3: 6 pcs

"All" is specified for the scope of monitoring volumes for performance management.

Brocade Fibre Channel Switch: 2 pcs

Use of Backup Management Function and Replication Management Function of AdvancedCopy Manager

Automated QoS Function

Total number of FTVs targeted for Automated QoS: 300

Reporting Function

Total number of volumes targeted for Reporting function: 500

Use of Virtual Machine Backup Function of VMware vSphere Virtual Volumes Function

Set a schedule so that the number of VM guests to be backed up concurrently is two pieces.

Following Functions Are Not Used:

- NAS Management
- Storage Cluster function

Comprehensive Evaluation Value

```
560
+ (35 + 35 + 35 + 35 + 25 + 25)  # Evaluated value of registered device
+ 0.3 * (6 + 2 + 4)              # Evaluated value of fault monitoring
+ 13.5 * (6 + 2) + 100 + 0       # Evaluated value of performance management
+ 20                             # Evaluated value of AdvancedCopy Manager
+ 10 + 0.2 * 300                 # Evaluated value of Automated QoS function
+ 0.3 * 500                      # Evaluated value of Reporting function
+ 0                              # Evaluated value of Storage Cluster function
+ 255 + 45 * 2                    # Evaluated value of VMware vSphere Virtual Volumes function
= 1546.6
```

E.2 Upper Limit of Automated Storage Tiering

The upper limit of Tier pools managed by the Automated Storage Tiering is as follows.
Also, "total capacity of Tier pools" represents logical capacity of Tier pools.

Total Value of Total Capacity and Maximum Number of Tier Pools Creatable per Device

The upper limit of total value of total capacity and maximum number of Tier pools creatable per device is equal to the maximum capacity and maximum number of Flexible Tier pools for the ETERNUS Disk storage system used. For details, refer to the manual for the ETERNUS Disk storage system used.

Total Value of Total Capacity of Tier Pools Manageable by ETERNUS SF Manager

The maximum is 128 PB regardless of the number of managed storage devices. However, if the managed storage device is configured with an ETERNUS DX900 S6 or an ETERNUS DX8900 S6 only, and the chunk size of the Tier pool is 1344 MB, the maximum is 512 PB.

Total Value of Used Capacity of Tier Pools That Can Be Simultaneously Evaluated by ETERNUS SF Manager

The value 2 PB is set by default, but it can be expanded up to 128 PB. However, if the managed storage device is configured with an ETERNUS DX900 S6 or an ETERNUS DX8900 S6 only, and the chunk size of the Tier pool is 1344 MB, the maximum available expansion is up to 512 PB.
If you expand the value, you must add the memory capacity to the install target server according to the evaluated value of the memory size that is used by Automated Storage Tiering.

Evaluated Value of Memory Size Used by Automated Storage Tiering

The evaluated value of the memory size that is used by Automated Storage Tiering can be calculated with the following formula according to the used capacity and the chunk size coefficient of each Tier pool that is managed by ETERNUS SF Manager.

```
Evaluated value = [Used capacity of Tier pool #1 (PB)] * [Chunk size coefficient of Tier pool #1]
                + [Used capacity of Tier pool #2 (PB)] * [Chunk size coefficient of Tier pool #2]
                                :
                + [Used capacity of Tier pool #n (PB)] * [Chunk size coefficient of Tier pool #n]
```

The chunk size coefficient of a Tier pool Tier is as follows.

Storage Device	Coefficient	Remarks
ETERNUS DX S6 series	8	On Web Console, "21MB" is displayed as the chunk size of a Tier pool.
	0.125	On Web Console, "1344MB" is displayed as the chunk size of a Tier pool.
ETERNUS DX S5 series (excluding the ETERNUS DX60 S5) ETERNUS DX8900 S4 ETERNUS AF S3 series	8	On Web Console, "21MB" is displayed as the chunk size of a Tier pool.
	0.5	On Web Console, "336MB" is displayed as the chunk size of a Tier pool.
ETERNUS DX S4 series (excluding the ETERNUS DX60 S4 and DX8900 S4) ETERNUS AF S2 series	8	On Web Console, "21MB" is displayed as the chunk size of a Tier pool.
	4	On Web Console, "42MB" is displayed as the chunk size of a Tier pool.
	2	On Web Console, "84MB" is displayed as the chunk size of a Tier pool.
	1	On Web Console, "168MB" is displayed as the chunk size of a Tier pool.
ETERNUS DX S3 series (excluding the ETERNUS DX60 S3) ETERNUS AF series	8	For storage devices whose firmware version is older than V10L70, the coefficient is fixed to 8. On Web Console, a hyphen (-) is displayed as the chunk size of a Tier pool.

Storage Device	Coefficient	Remarks
		For storage devices whose firmware version is V10L70 or later, "21MB" is displayed as the chunk size of a Tier pool on Web Console.
	4	On Web Console, "42MB" is displayed as the chunk size of a Tier pool.
	2	On Web Console, "84MB" is displayed as the chunk size of a Tier pool.
	1	On Web Console, "168MB" is displayed as the chunk size of a Tier pool.
ETERNUS DX S2 series (excluding the ETERNUS DX60 S2)	8	Fixed for all models. On Web Console, a hyphen (-) is displayed as the chunk size of a Tier pool.

Based on the calculated evaluated value, add the memory capacity shown in the following table to the memory capacity that is described in "2.2.5.2 Required Memory for Operation".

Calculated Evaluated Value	Memory Capacity That Must Be Added
Less than 16	0.5 GB
16 or more, but less than 24	1.1 GB
24 or more, but less than 32	1.7 GB
32 or more, but less than 40	2.3 GB
40 or more, but less than 48	2.9 GB
48 or more, but less than 56	3.5 GB
56 or more	4.1 GB

If the evaluated value of the memory size that is used by Automated Storage Tiering is larger than 16, you must modify the Automated Storage Tiering configuration file and expand the maximum memory capacity used for Automated Storage Tiering. Refer to "Appendix L Customizing Automated Storage Tiering Configuration File" for the procedure to customize the Automated Storage Tiering configuration file.

E.3 Upper Limit of Automated QoS Function

The following is the upper limit of the total number of FTVs in all the storage devices for which the Automated QoS function is enabled. The number of FTVs in the storage devices for which the Automated QoS function is not enabled is not included in the total sum.

Item	Upper Limit
Total number of FTVs in all the storage devices for which the Automated QoS function is enabled.	1,800 volumes

E.4 Upper Limit of Reporting Function

The following is the upper limit of the total number of volumes in all the storage devices for which the Reporting function is enabled. The number of volumes in the storage devices for which the Reporting function is not enabled is not included in the total sum.

Item	Upper Limit
Total number of volumes in all the storage devices for which the Reporting function is enabled	1,200 volumes

E.5 Upper Limit of Monitoring Function of Storage Cluster Controller

The upper limit of storage devices that one Storage Cluster Controller monitors is as follows.
If the upper limit of number of storage devices to be monitored is exceeded, allocate multiple Storage Cluster Controllers.

Item	Upper Limit
Number of storage devices to be monitored by one Storage Cluster Controller	2

Note

It is not possible to simultaneously monitor one storage device from multiple Storage Cluster Controllers.

Appendix F Consolidated Patch

The Consolidated Patch is a patch that combines all of the patches of ETERNUS SF Manager for a specific version (Version 16.1 or later is supported). This makes it possible to keep the ETERNUS SF Manager in the most recent state, simply by applying the most recent Consolidated Patch.

How to perform the following items are explained in this chapter:

- Applying the ETERNUS SF Manager Consolidate Patch to the Management Server
- Deleting all ETERNUS SF Manager patches that have been applied to the Management Server

To apply the Consolidated Patch, upload the file from Web Console.

Deletion of all patches is used when deleting all of the patches that have been applied to the ETERNUS SF Manager. After deleting all patches, the Consolidated Patch is applied.

Note

When applying the Consolidated Patch, the ETERNUS SF Manager service must be running. If the services is not running, execute the following batch to start the service.

```
$INS_DIR\Common\bin\Start_ESFservice.bat
```

$INS_DIR is "Program Directory" specified at the ETERNUS SF Manager installation.

F.1 Operating Environment

F.1.1 Supported Products

With this feature, it is possible to apply only the ETERNUS SF Manager Consolidate Patch.

This feature cannot be applied to the following programs:

- Storage Cruiser's agent
- AdvancedCopy Manager's agent
- AdvancedCopy Manager CCM (When ETERNUS SF Manager is not installed).

Information

AdvancedCopy Manager CCM patch can be applied when the ETERNUS SF Manager is installed on the same server.

F.1.2 Supported Operating Systems

This feature only supports Windows environments on which the ETERNUS SF Manager is capable of operating.
Refer to "For Windows Environment" of "2.2.2.1 Supported Operating Systems" for details on the Windows environments on which the ETERNUS SF Manager is capable of operating.

F.1.3 Notes

For Clustered environments

In cases when the Management Server is operated as a cluster, do not use this feature.
When a Consolidated Patch is applied or when all of the patches are deleted, the services automatically restart due to this feature. For this reason, there are cases when the node fails over / fails back, the patches may not properly apply.

For utilization of UpdateAdvisor for Middleware

When implementing other tasks that use UpdateAdvisor for Middleware on the Management Server, do not execute this feature at the same time. Tasks that utilize the UpdateAdvisor for Middleware include tasks that are subject to not only this product but other products as well.

F.2 How to Obtain Consolidated Patch

Contact your technical product support for ETERNUS SF products.

F.3 Tasks to Perform before Applying Consolidated Patch / Deleting All Patches

This section explains the tasks that are to be performed prior to implementing the application of the Consolidated Patch or the deleting all of the patches.

F.3.1 Login to Web Console

Login to Web Console with a user that has been granted the Administrator role from the ETERNUS SF roles.

See

Refer to the *Web Console Guide* for information on the Web browsers that can be used and their versions, how to start Web Console, and how to login to Web Console.
Refer to "4.1.1.1 Creating User Accounts for Operating from Web Console" for information on the range of the Web Console operations that are permitted for each ETERNUS SF role.

F.3.2 Confirm Login User

After the application of the Consolidated Patch, the ETERNUS SF Manager services are automatically restarted. Users that are currently logged in to Web Console are forced to disconnect.

Be sure to confirm that users other than the user applying the patch are not logged in to Web Console. If there are other users that are logged in, have them log out, or execute forcible log out as needed. Refer to "Forcible Logout" in the *Web Console Guide* for information on how to confirm the users that are logged in and how to execute forcible log out.

F.3.3 Confirm Processing Status

In relation to the Management Server on which the ETERNUS SF Manager is operating, when an action is executed with the screen of Web Console or a command is executed, the process is executed in the background. While these processes are being executed, it is not possible to apply the Consolidated Patch to the ETERNUS SF Manager. To confirm the processing status, use the Job Status pane of Web Console.
Refer to "Web Console Screen Layout" in the *Web Console Guide* for information on how to display the Job Status pane.

In cases when a process is being executed, the Status of the information displayed in the Job Status pane is displayed as "Waiting" or "Executing". Start the application of the Consolidated Patch after all of the processes are completed and confirming that the Status of all information is displayed as "Completed".

F.4 Applying Consolidated Patch

F.4.1 Prepare Consolidated Patch File

Save the Consolidated Patch obtained from the public site to the client that is accessing Web Console. When doing so, do not change the name of the file.

Note

Use the Consolidated patch file exactly how it was obtained from the public site. Do not use a patch that has been obtained elsewhere or has been re-compressed.
The update file of UpdateSite Fix Type cannot be used, either.

F.4.2 Applying Consolidated Patch

The Consolidated Patch can be applied from Web Console.
Refer to "Apply Consolidated Patch/Display Application Status/Delete All Patches" in the *Web Console Guide* for information on the procedures for application.

Point

After the operations have been completed, the user that had been logged in is automatically logged out. In addition, the services of the ETERNUS SF Manager are automatically stopped after 30 seconds.
Once the application of the patch has been completed, the services of the ETERNUS SF Manager are automatically started. Login after the ETERNUS SF Manager has started.

In cases when it is not necessary to apply the patch, such as when the Consolidated Patch that has been uploaded with the application of the Consolidated Patch has already been applied, the services of the ETERNUS SF Manager are not stopped. In this case, it is not necessary to login again.

Note

In cases when stop or restart of the services of the ETERNUS SF Manager have not been implemented automatically, it is possible that the application of the patch has failed. Confirm whether the ETERNUS SF Manager has output an error to the system log or the event log of the server.
In the case that an error has been output, refer to the article of the corresponding message number in the *Messages* for information about the issue and recovery actions. In the case that an error has not been output, after some time has passed, reconfirm whether it is possible to access Web Console.

F.4.3 Confirm Results of Application of Consolidated Patch

Login to Web Console after restart of the ETERNUS SF Manager services to confirm the results of the application and the application status of the Consolidated Patch.

The results of the application of the patch can be found in the operation history. Refer to "Display Operation History" in the *Web Console Guide* for information on procedures for displaying this information. If the **Action** column is "Apply Patch" and the **Result** column is "Success" in the operation history, the application of the patch has been properly completed.

The status of the application of the patch can be displayed using the **Patch Management** screen. Refer to "Apply Consolidated Patch/Display Application Status/Delete All Patches" in the *Web Console Guide* for information on the procedures to display this information.
An entry with the same name as the Consolidated Patch file name is displayed in the [Consolidated Patch Name] of the **Patch Management** screen.

In cases when the application of the patch has failed, a dialogue is displayed immediately after logging in. Similarly in this case, confirm the operation history and the status of the application of the Consolidated Patch.
For errors displayed in the operation history, refer to the article for the corresponding message number in the *Messages*.
If you have referred to the system log or the event log of the server and have dealt with the error of the ETERNUS SF Manager services, it is unnecessary to deal with this error message.

Point

If the details about the operation history have been confirmed, the dialogue that is displayed in cases when the application of the patch has failed is not displayed at the time of the next login.

F.5 Deleting All Patches

F.5.1 Deleting All Patches

The operation for deleting all of the patches can be performed from Web Console.
Refer to "Apply Consolidated Patch/Display Application Status/Delete All Patches" in the *Web Console Guide* for information about the procedures for deleting the patches.

Point

When the operation for deleting all of the patches is executed, all patches that had been applied to the ETERNUS SF Manager up to that point are deleted. However, patches applied to other products using the UpdateAdvisor for Middleware are not deleted.

After the operation has been completed, the user that had been logged in is automatically logged out. Once the deletion of the patches has been completed, the services of the ETERNUS SF Manager are automatically started. Login after ETERNUS SF Manager has started.

In cases where no patches have been applied to the ETERNUS SF Manager, the services of the ETERNUS SF Manager are not stopped. In this case, it is not necessary to login again.

Note

In cases when stop or restart of the services of the ETERNUS SF Manager have not been implemented automatically, it is possible that the deletion of the patch has failed. Confirm whether an error of the ETERNUS SF Manager has been output to the system log or the event log of the server.
In the case that an error has been output, refer to the article of the corresponding message number in the *Messages* to correspond to the issue. In the case that an error has not been output, after some time has passed, reconfirm whether it is possible to access Web Console.

F.5.2 Confirm Results of Deleting All Patches

The results of the deletion of all patches is found in the operation history. Refer to "Display Operation History" in the *Web Console Guide* for information on procedures for confirming this information. If the **Action** column is "Delete All Patches" and the **Result** column is "Success" in the operation history, the deletion of all patches has been properly completed.

The status of the application of the patch can be referred to from the **Patch Management** screen. Refer to "Apply Consolidated Patch/Display Application Status/Delete All Patches" in the *Web Console Guide* for information on the procedures for confirming this information.
A hyphen (-) is displayed in the [Consolidated Patch Name] of the **Patch Management** screen.

In cases when the deletion of the patch has failed, a dialogue is displayed immediately after logging in. Similarly in this case, confirm the operation history and the status of the application of the Consolidated Patch.
For errors displayed in the operation history, refer to the article for the corresponding message number in the *Messages*.
If you have referred to the system log or the event log of the server and have dealt with the error of the ETERNUS SF Manager services, it is unnecessary to deal with this error message.

Point

If the details about the operation history have been confirmed, the dialogue that is displayed in cases when the deletion of the patch has failed is not displayed at the time of the next login.

Appendix G Configuring Network Environment

When setting up a firewall in an environment using Express, Storage Cruiser, or AdvancedCopy Manager, set it up so that the ports used in each product can pass through the firewall. For the setup method, refer to the manuals listed in the table below.

Point

The port numbers that should pass through a firewall vary depending on the function used. Refer to sections listed in the Reference column of the table below for details.

Product Name	Object	Reference	Description
Express	Express's manager	- "4.1.2 Setting Up for Using Web Console" - "4.2.2 Configuring Network Environment"	-
Storage Cruiser	Storage Cruiser's manager Storage Cruiser's agent	- "4.1.2 Setting Up for Using Web Console" - "4.3.1 Configuring Network Environment" - "Network Requirements" in the *Storage Cruiser Operation Guide*	-
AdvancedCopy Manager	AdvancedCopy Manager's manager AdvancedCopy Manager's agent	- "4.1.2 Setting Up for Using Web Console" - "4.4.1 Configuring Network Environment"	-
		- "Installing and Registering VSSHP" in "Backup and Restore of Exchange Server Databases" in the *AdvancedCopy Manager Operation Guide (for Windows)* - "Prerequisites" in "Backup and Restore Using Wizard for Exchange Server" in the *AdvancedCopy Manager Operation Guide (for Windows)*	Only when using a target function
	AdvancedCopy Manager CCM	- "8.1 Configuring Network Environment"	-

Appendix H Installation and Configuration of SNMP Trap Transfer Program

In this product, when monitoring devices using SNMPv3 protocol and when other applications receiving traps coexist on Management Server, it is required to install the SNMP Trap transfer program.
Other applications include Systemwalker Centric Manager and applications that use Microsoft SNMP Trap Service such as ServerView Resource Orchestrator and others.

- When coexisting with Systemwalker Centric Manager

  When installing ETERNUS SF Manager into a Systemwalker Centric Manager installed server, use the SNMP Trap transfer program attached to Systemwalker Centric Manager. (Do not install the SNMP Trap transfer program included in the DVD media of this product.)
  When installing both Systemwalker Centric Manager and ETERNUS SF Manager, or when installing Systemwalker Centric Manager into an ETERNUS SF Manager installed server, install the SNMP Trap transfer program included in the DVD media of this product. (Do not install the SNMP Trap transfer program attached to Systemwalker Centric Manager.)

- When coexisting with applications other than listed above

  Install the SNMP Trap transfer program included in the DVD media of this product.

To install and set up the SNMP Trap transfer program included in the DVD media of this product, take the following procedure.

Point

The SNMP Trap transfer program is available for Windows and IPv4 environments only.

H.1 Installation and Configuration Procedure

1. Extract the following zip file of the Management Server to any folder (hereinafter called $TPF_DIR).

   ```
   $INS_DIR\ESC\Manager\opt\FJSVssmgr\etc\pkg\MpSttr_win_x64_v17.zip
   ```

   $INS_DIR is "Program Directory" specified at the ETERNUS SF Manager installation.

   Note

   - Extract to a directory whose path is 32 alphanumeric characters or less.
   - If the SNMP Trap transfer program is already configured in the environment, perform the procedure in "H.2 Cancellation Procedure of Configured Settings" to cancel the settings and then reconfigure the settings. If the settings are reconfigured without canceling the previous settings in advance, SNMP Traps may not be transferred to the correct port.

2. Stop all the applications (including ETERNUS SF Manager) receiving traps.

   a. Stop ETERNUS SF Manager.
   For information on how to stop it, refer to "Starting and Stopping Manager" in the *Storage Cruiser Operation Guide*. Also, stop the SNMP Trap monitoring service/daemon, too.

   b. If Systemwalker Centric Manager coexists, execute the "pcentricmgr" command to stop Systemwalker Centric Manager. Refer to the Systemwalker Centric Manager manuals for information on the command.

   c. If applications using the OS standard SNMP Trap service/daemon coexist, stop them. For information on how to stop them, refer to their respective application manuals.
   Also, stop the OS standard SNMP Trap service/daemon, too.

3. Edit the %SystemRoot%\system32\drivers\etc\services file to change the port numbers used for applications using SNMP Traps.

   a. Change the port number used for ETERNUS SF Manager.

      Edit the port number in the following line to your desired port number.
      If this line is not listed, add the whole line.

```
escwksttr-trap      28162/udp
```

4. Define the port number used by the SNMP Trap transfer program to transfer the SNMP Traps in the SNMP Trap transfer definition file. For information on how to define port numbers, refer to "H.3.1 SNMP Trap Transfer Definition File".

   - For ETERNUS SF Manager, specify "28162".
   - If Systemwalker Centric Manager coexists, specify "49162".
   - If applications using the OS standard SNMP Trap service/daemon coexist, specify "5972".

5. Execute the "MpSttrSet" command with system administration privileges to set the SNMP Trap transfer program.

```
> $TPF_DIR\MpSttr\bin\MpSttrSet.exe setup
```

6. Execute the "MpSttrCtrl" command with system administration privileges to start the SNMP Trap transfer program.

```
> $TPF_DIR\MpSttr\bin\MpSttrCtrl.exe start
```

Note

- After the SNMP Trap transfer program is configured, the program is started automatically when the OS is started.
- To change the SNMP Trap reception port of Systemwalker Centric Manager from "49162/udp", perform the following procedure.

  1. Open the %SystemRoot%\system32\drivers\etc\services file.
  2. Change the port number described in the following line to the desired port number. If the line does not exist, add the line.

```
mpwksttr-trap       xxxxxx/udp
```

- If the SNMP Trap transfer definition file is edited while the ETERNUS SF system is running, be sure to execute the "MpSttrCtrl" command with system administrator privileges and restart the program after the file has been edited.
- To add a local IP address after the SNMP Trap transfer program is started, define the local IP address to be added in the SNMP Trap transfer local IP address definition file. For information on how to define a local IP address, refer to "H.3.2 SNMP Trap Transfer Local IP Address Definition File".
  If the SNMP Trap transfer local IP address definition file is edited while the ETERNUS SF system is running, be sure to execute the "MpSttrCtrl" command with system administrator privileges and restart the program after the file has been edited.

7. Start all the applications (including ETERNUS SF Manager) receiving traps.

   a. Start ETERNUS SF Manager.
      For information on how to start it, refer to "Starting and Stopping Manager" in the *Storage Cruiser Operation Guide*. Also, start the SNMP Trap monitoring service/daemon, too.

   b. If Systemwalker Centric Manager coexists, execute the "scentricmgr" command to start Systemwalker Centric Manager. Refer to the Systemwalker Centric Manager manuals for information on the command.

c. If applications using the OS standard SNMP Trap service/daemon coexist, start them. For information on how to start them, refer to their respective application manuals.
Also, start the OS standard SNMP Trap service/daemon, too.

H.2 Cancellation Procedure of Configured Settings

1. Stop all the applications (including ETERNUS SF Manager) receiving traps.

   a. Stop ETERNUS SF Manager.
   For information on how to stop it, refer to "Starting and Stopping Manager" in the *Storage Cruiser Operation Guide*. Also, stop the SNMP Trap monitoring service/daemon, too.

   b. If Systemwalker Centric Manager coexists, execute the "pcentricmgr" command to stop Systemwalker Centric Manager. Refer to the Systemwalker Centric Manager manuals for information on the command.

   c. If applications using the OS standard SNMP Trap service/daemon coexist, stop them. For information on how to stop them, refer to their respective application manuals.
   Also, stop the OS standard SNMP Trap service/daemon, too.

2. Execute the "MpSttrCtrl" command with system administration privileges to stop the SNMP Trap transfer program.

```
> $TPF_DIR\MpSttr\bin\MpSttrCtrl.exe stop
```

3. Execute the "MpSttrSet" command with system administration privileges to cancel the settings for SNMP Trap transfer.

```
> $TPF_DIR\MpSttr\bin\MpSttrSet.exe unsetup
```

4. Revert the port number of the application that receives the SNMP Trap to the original setting.

   Delete the "escwksttr-trap" line in the %SystemRoot%\system32\drivers\etc\services file. If other applications receiving SNMP Traps coexist (excluding Systemwalker Centric Manager), revert the port numbers of the applications that receive SNMP Traps to the original settings.

   Information

   Because the port number for Systemwalker Centric Manager is automatically reverted to the original setting in step 3, step 4 is not required for Systemwalker Centric Manager.

5. Start the application.

   After canceling the coexistence of applications receiving traps other than ETERNUS SF Manager, start ETERNUS SF Manager. For information on how to start it, refer to "Starting and Stopping Manager" in the *Storage Cruiser Operation Guide*. Also, start the SNMP Trap monitoring service/daemon, too.

H.3 Definition File

H.3.1 SNMP Trap Transfer Definition File

FILE NAME

mpsttr.ini

PURPOSE

This file is used to transfer received SNMP Traps to other product.

LOCATION

```
<MpSttr.zip file or MpSttr_win_x64_v17.zip file extracted folder>\MpSttr\etc
```

DESCRIPTION EXAMPLE

```
// SNMP trap forwarding site port number
5972   // net-snmp(snmptrapd)
28162  // ETERNUS SF Manager
49162  // Systemwalker Centric Manager
```

DESCRIPTION RULES

- Describe one port number to transfer SNMP Traps to in one line. Specify a value between 0 and 65535 for port number.
- The number of port numbers describable to a file is up to five.
- What is described from "//" to line end is regarded as a comment.

NOTES

Do not use multibyte characters.

H.3.2 SNMP Trap Transfer Local IP Address Definition File

FILE NAME

mpsttrlocalip.ini

PURPOSE

This file is used to add a local IP address after the SNMP Trap transfer program is started. Here, "local IP address" refers to an IP address defined for internal communication within the SNMP Trap transfer program. For example, an internally defined logical IP address for a clustered server.

LOCATION

```
<MpSttr_win_x64_v17.zip file extracted folder>\MpSttr\etc
```

FILE DESCRIPTION FORMAT

```
Local_IP_Address
```

- Describe one local IP address per line in IPv4 format.
- The number of local IP addresses describable to a file is up to five.
- What is described from "//" to line end is regarded as a comment.

DESCRIPTION EXAMPLE

```
// SNMP trap forwarding site local ip address
192.0.2.10
192.0.2.20
```

NOTES

Do not use multibyte characters.

Appendix I Adding Memory to ETERNUS SF Manager When Using Large Numbers of Volumes

When managing the following storage devices in which the number of volumes exceeds 18,000 per device, it is required to add memory to the Management Server and set the memory to ETERNUS SF Manager.

- ETERNUS DX900 S6/S5
- ETERNUS DX8900 S6/S4
- ETERNUS DX8000 S3/S2 series

To estimate the memory required to add to the Management Server, refer to "I.1 Estimating Memory Size When Using Large Numbers of Volumes".
To set memory to ETERNUS SF Manager, refer to "I.2 Memory Settings to ETERNUS SF Manager When Using Large Numbers of Volumes".

I.1 Estimating Memory Size When Using Large Numbers of Volumes

Add the following memory size to the memory size listed in "Chapter 2 Operating Environment":

Table I.1 When Number of Storage Devices Whose Number of Volumes Exceeds 18,000 is One

Number of Volumes	Memory Size Required to Add
18,001 to less than 30,000	1 GB
30,000 or more	2 GB

Table I.2 When Number of Storage Devices Whose Number of Volumes Exceeds 18,000 is More Than One (N)

Number of Volumes Per Device	Memory Size Required to Add
18,001 to less than 30,000	3 GB * N - 2 GB
30,000 or more	4 GB * N - 2 GB

If a storage device whose number of volumes is 18,001 to less than 30,000 and a storage device whose number of volumes is 30,000 or more are mixed, use the estimation for a storage device that has more volumes (30,000 or more).

I.2 Memory Settings to ETERNUS SF Manager When Using Large Numbers of Volumes

When using large numbers of volumes, it is required to set a memory size that ETERNUS SF Manager Tomcat Daemon/Service uses. Take the following steps for settings:

For Windows environments

1. Stop ETERNUS SF Manager.
   - For non-cluster operation
     1. Click **Control Panel** > **System and Security** > **Administrative Tools** > **Services** to open the **Services** screen.
     2. Select "ETERNUS SF Manager Tomcat Service" to click **Stop**.
   - For cluster operation

     Use Failover Cluster Manager to stop ETERNUS SF Manager.

2. Execute the following command. In the case of cluster operation, execute the command on both primary and secondary nodes.

```
> $INS_DIR\Common\sys\tomcat\bin\esfservice.bat remove
```

   $INS_DIR is "Program Directory" specified at the ETERNUS SF Manager installation.

3. Edit the following file. In the case of cluster operation, edit the file on both primary and secondary nodes.

   `$INS_DIR\Common\sys\tomcat\conf\esfsetenv.conf`

   Add the following line to the above file. If there is already an entry in "-Xmx", edit *memorySize*.

```
-Xmx=memorySize
```

   memorySize : Specify a memory size to be used in terms of megabytes. Put "m" at the end of the memory size specified in figures.
   Specify the total of the following values as the memory size: the memory size described in "2.2.5.2 Required Memory for Operation" and the estimated memory size described in "I.1 Estimating Memory Size When Using Large Numbers of Volumes".

   EXAMPLE

   When setting a memory size to 8 GB

```
-Xmx=8192m
```

4. Execute the following command. In the case of cluster operation, execute the command on both primary and secondary nodes.

```
> $INS_DIR\Common\sys\tomcat\bin\esfservice.bat install
```

5. Start ETERNUS SF Manager.

   - For non-cluster operation

     1. Click **Control Panel** > **System and Security** > **Administrative Tools** > **Services** to open the **Services** screen.
     2. Change **Startup Type** of ETERNUS SF Manager Tomcat Service to **Auto**.
     3. Select "ETERNUS SF Manager Tomcat Service" to click **Start**.

   - For cluster operation

     Use Failover Cluster Manager to start ETERNUS SF Manager.

For Solaris or Linux environments

1. Stop ETERNUS SF Manager

   - For non-cluster operation

```
# /opt/FJSVesfcm/bin/stopesf.sh
```

   - For cluster operation

     Use the cluster software in use to stop ETERNUS SF Manager.

2. Edit the following file. In the case of cluster operation, edit the file on both primary and secondary nodes.

   `/opt/FJSVesfcm/tomcat/conf/esfsetenv.conf`

   Add the following line to the above file. If there is already an entry in "-Xmx", edit *memorySize*.

```
-Xmx=memorySize
```

   memorySize : Specify a memory size to be used in terms of megabytes. Put "m" at the end of the memory size specified in figures.

Specify the total of the following values as the memory size: the memory size described in "2.2.5.2 Required Memory for Operation" and the estimated memory size described in "I.1 Estimating Memory Size When Using Large Numbers of Volumes".

EXAMPLE

When setting a memory size to 8 GB

```
-Xmx=8192m
```

3. Start ETERNUS SF Manager.

   - For non-cluster operation

   ```
   # /opt/FJSVesfcm/bin/startesf.sh
   ```

   - For cluster operation

     Use Failover Cluster Manager to start ETERNUS SF Manager.

Appendix J Adding Memory When Using the Reporting Function

If a large number of access paths are allocated to the target volumes of the Reporting function or the target volumes are configured with a large number of disks (when the value obtained from the following formula exceeds 1 million: "Number of access paths" * "Number of volumes" * "Number of disks"), adding memory to the Management Server and setting the memory to ETERNUS SF Manager are required.

To estimate the memory required to add to the Management Server, refer to "Estimating the Memory Size to Add When Using a Large Number of Access Paths and Disks".
To set memory to ETERNUS SF Manager, refer to "Memory Settings When Using the Reporting Function".

Estimating the Memory Size to Add When Using a Large Number of Access Paths and Disks

Use the following formula to obtain the memory size to add in addition to the memory size described in "Chapter 2 Operating Environment".
If the obtained value is negative, use "0".

```
The memory size to add (GB) = 1.6 * number of access paths * number of volumes * number of disks /
1000000 - 1.6
```

If the conditions described in "Appendix I Adding Memory to ETERNUS SF Manager When Using Large Numbers of Volumes" are satisfied, add the value calculated in "I.1 Estimating Memory Size When Using Large Numbers of Volumes" to the obtained value.

Memory Settings When Using the Reporting Function

Set up the memory according to the procedure described in "I.2 Memory Settings to ETERNUS SF Manager When Using Large Numbers of Volumes".

Appendix K Customizing Role Group Configuration File

Customization of the role group configuration file is required for the following.

- Any name is specified to create an ETERNUS SF role group
- A group whose scope is specified with Universal is used as the ETERNUS SF role group

The procedure to customize the role group configuration file is as follows.

1. Stop ETERNUS SF Manager.
   - For non-cluster operation
     1. Click **Control Panel** > **System and Security** > **Administrative Tools** > **Services** to open the **Services** screen.
     2. Select "ETERNUS SF Manager Tomcat Service" to click **Stop**.
   - For cluster operation

     Use Failover Cluster Manager to stop ETERNUS SF Manager.
2. Edit the following file. In the case of cluster operation, edit the file on both primary and secondary nodes.

   ```
   > $ENV_DIR\Common\etc\authentication\role_groups.conf
   ```

   $ENV_DIR is "Environment Directory" specified at the ETERNUS SF Manager installation.
   - When any name is specified to create an ETERNUS SF role group

     For the "administrator_group" parameter, specify a group name (default is "ESFAdmin") that is granted with the Administrator role.
     For the "monitor_group" parameter, specify a group name (default is "ESFMon") that is granted with the Monitor role.

     ```
     administrator_group=Administrator_role_group_name
     monitor_group=Monitor_role_group_name
     ```
   - When a group whose scope is specified with Universal is used as the ETERNUS SF role group

     Specify "enable" for the "universal_scope" parameter.

     ```
     universal_scope=enable
     ```

     Information

     When the group whose scope is specified with Universal is not used, specify "disable" for the "universal_scope" parameter. In addition, the default value of the "universal_scope" parameter is "disable".
3. Start ETERNUS SF Manager.
   - For non-cluster operation
     1. Click **Control Panel** > **System and Security** > **Administrative Tools** > **Services** to open the **Services** screen.
     2. Change **Startup Type** of ETERNUS SF Manager Tomcat Service to **Auto**.
     3. Select "ETERNUS SF Manager Tomcat Service" to click **Start**.
   - For cluster operation

     Use Failover Cluster Manager to start ETERNUS SF Manager.

Appendix L Customizing Automated Storage Tiering Configuration File

The Automated Storage Tiering configuration file has the following parameter related to Automated Storage Tiering. By changing the value of the parameter, you can customize the behavior of Automated Storage Tiering.

Parameter Name	Explanation
MAXMEMORY	The maximum value of the memory capacity that is to be used by Automated Storage Tiering. To expand the total value of the Tier pool used capacity that can be evaluated in the same time period as the access status data, increase the value of this parameter.

File Name and Stored Location

The name of the Automated Storage Tiering configuration file is "ast.properties". This file is stored in the following directory.

OS Type of Management Server	Absolute Path Name
Windows	$INS_DIR\AST\Manager\etc\opt\FJSVssast\data\properties\ast.properties ($INS_DIR is "Program Directory" specified at the ETERNUS SF Manager installation.)
Solaris, Linux	/etc/opt/FJSVssast/data/properties/ast.properties

How to Define the Parameter

MAXMEMORY

As the default value, 2,560 is set. Specify the maximum memory capacity (in megabytes) that is used by Automated Storage Tiering with an integer value of 2,560 or larger as required.

The relationship between "Evaluated Value of Memory Size Used by Automated Storage Tiering" and "Maximum Memory Size Used by Automated Storage Tiering" is as follows.

Evaluated Value of Memory Size Used by Automated Storage Tiering	Maximum Memory Size Used by Automated Storage Tiering
16 or less	2,560 MB
More than 16 and 24 or less	3,180 MB
More than 24 and 32 or less	3,800 MB
More than 32 and 40 or less	4,420 MB
More than 40 and 48 or less	5,040 MB
More than 48 and 56 or less	5,660 MB
More than 56 and 64 or less	6,280 MB

If an invalid value is specified, it is regarded the same as if 2,560 is specified. As a result, the evaluated value of the memory size that is used by Automated Storage Tiering becomes 16.

Example

The following is a specification example where the "Maximum Memory Size Used by Automated Storage Tiering" is changed to 3,180 MB when the "Evaluated Value of Memory Size Used by Automated Storage Tiering" is 24.

```
MAXMEMORY=3180
```

How to Reflect the Configuration File

The procedure to reflect the contents of the Automated Storage Tiering configuration file to this product is as follows:

1. In Web Console, open Overview of Automated Storage Tiering that is related to the storage system where the Tier pool exists for performing Automated Storage Tiering and check that "Reallocating" and "Waiting" are not displayed in **Status** column.
2. Execute the following command to stop ETERNUS SF Manager.
   - For Windows environments

     ```
     > $INS_DIR\Common\bin\Stop_ESFservice.bat
     ```

     $INS_DIR is "Program Directory" specified at the ETERNUS SF Manager installation.
   - For Solaris or Linux environments

     ```
     # /opt/FJSVesfcm/bin/stopesf.sh
     ```
3. Edit the Automated Storage Tiering configuration file "ast.properties".
4. Execute the following command to restart ETERNUS SF Manager.
   - For Windows environments

     ```
     > $INS_DIR\Common\bin\Start_ESFservice.bat
     ```

     $INS_DIR is "Program Directory" specified at the ETERNUS SF Manager installation.
   - For Solaris or Linux environments

     ```
     # /opt/FJSVesfcm/bin/startesf.sh
     ```

Appendix M List of Directories Used By This Product

The list of directories used when installing and using this product is shown in the table below:

- Table M.1 List of Directories Used for the Management Server
- Table M.2 List of Directories Used for the Managed Server That Installed the Storage Cruiser's Agent
- Table M.3 List of Directories Used for the Managed Server That Installed the AdvancedCopy Manager's Agent
- Table M.4 List of Directories Used for the CCM Server

Information

The directories listed in the table are the default installation destination directories. If you installed the program in non-default directories, you must replace the default installation destination directories where the program is actually installed.

Table M.1 List of Directories Used for the Management Server

OS Type of Management Server	Used Directories	Remarks
Windows	C:\ETERNUS_SF\ACM C:\ETERNUS_SF\AST\Manager C:\ETERNUS_SF\CCM C:\ETERNUS_SF\Common C:\ETERNUS_SF\ESC\ISSetup C:\ETERNUS_SF\ESC\Manager C:\ETERNUS_SF\ISSetup C:\ETERNUS_SF\LM	"C:\ETERNUS_SF" is the default installation destination directory.
Solaris, Linux	/etc/opt/FJSVccm /etc/opt/FJSVesfcm /etc/opt/FJSVesfes /etc/opt/FJSVesflm /etc/opt/FJSVgrapi /etc/opt/FJSVssast /etc/opt/FJSVssetl /etc/opt/FJSVssmge /etc/opt/FJSVssmgr /etc/opt/FJSVswsrp /etc/opt/FJSVswstf /etc/opt/FJSVswsts /etc/opt/FJSVswstt /etc/opt/FJSVswtrc /opt/FJSVccm /opt/FJSVesfcm /opt/FJSVesfes /opt/FJSVesflm /opt/FJSVgrapi /opt/FJSVssast /opt/FJSVssetl /opt/FJSVssmge /opt/FJSVssmgr /opt/FJSVswsrp /opt/FJSVswstf /opt/FJSVswsts /opt/FJSVswstt /opt/FJSVswtrc	"/etc", "/opt", and "/var/opt" are the default installation destination directories.

OS Type of Management Server	Used Directories	Remarks
	/opt/FSUNNWsnmp /var/opt/FJSVccm /var/opt/FJSVesfcm /var/opt/FJSVesfes /var/opt/FJSVesflm /var/opt/FJSVgrapi /var/opt/FJSVssast /var/opt/FJSVssetl /var/opt/FJSVssmge /var/opt/FJSVssmgr /var/opt/FJSVswsrp /var/opt/FJSVswstf /var/opt/FJSVswsts /var/opt/FJSVswstt /var/opt/FJSVswtrc	
	/usr/lib/locale/ja_JP.eucJP/LC_MESSAGES /usr/lib/locale/ja_JP.PCK/LC_MESSAGES /usr/lib/locale/ja_JP.UTF-8/LC_MESSAGES	Solaris only.
	/usr/share/locale/ja/LC_MESSAGES /usr/share/locale/ja_JP.eucJP/LC_MESSAGES /usr/share/locale/ja_JP.UTF-8/LC_MESSAGES	Linux only.

Table M.2 List of Directories Used for the Managed Server That Installed the Storage Cruiser's Agent

OS Type of Managed Server	Used Directories	Remarks
Windows	C:\ETERNUS_SF\ESC\Agent C:\ETERNUS_SF\ESC\AgentUninst	"C:\ETERNUS_SF" is the default installation destination directory.
Solaris, Linux, HP-UX	/etc/opt/FJSVssage /opt/FJSVssage /var/opt/FJSVssage	"/etc", "/opt", and "/var/opt" are the default installation destination directories.

Table M.3 List of Directories Used for the Managed Server That Installed the AdvancedCopy Manager's Agent

OS Type of Managed Server	Used Directories	Remarks
Windows	C:\Win32app\AdvancedCopyManager	"C:\Win32app" is the default installation destination directory.
Solaris, Linux, HP-UX	/etc/opt/FJSVgrapi /etc/opt/FJSVswsrp /etc/opt/FJSVswstf /etc/opt/FJSVswsts /etc/opt/FJSVswtrc /etc/opt/swstorage /opt/FJSVgrapi /opt/FJSVswsrp /opt/FJSVswstf /opt/FJSVswsts /opt/FJSVswtrc /opt/swstorage /var/opt/FJSVgrapi /var/opt/FJSVswsrp /var/opt/FJSVswstf	"/etc", "/opt", and "/var/opt" are the default installation destination directories.

OS Type of Managed Server	Used Directories	Remarks
	/var/opt/FJSVswsts /var/opt/FJSVswtrc /var/opt/swstorage	
	/usr/lib/locale/ja_JP.eucJP/LC_MESSAGES /usr/lib/locale/ja_JP.PCK/LC_MESSAGES /usr/lib/locale/ja_JP.UTF-8/LC_MESSAGES	Solaris only.
	/usr/share/locale/ja/LC_MESSAGES /usr/share/locale/ja_JP.eucJP/LC_MESSAGES /usr/share/locale/ja_JP.UTF-8/LC_MESSAGES	Linux only.

Table M.4 List of Directories Used for the CCM Server

OS Type of CCM Server	Used Directories	Remarks
Windows	C:\ETERNUS_SF\CCM C:\ETERNUS_SF\Common C:\ETERNUS_SF\ISSetup C:\ETERNUS_SF\LM	"C:\ETERNUS_SF" is the default installation destination directory.
Solaris, Linux	/etc/opt/FJSVccm /etc/opt/FJSVesfcm /etc/opt/FJSVesflm /opt/FJSVccm /opt/FJSVesfcm /opt/FJSVesflm /var/opt/FJSVccm /var/opt/FJSVesfcm /var/opt/FJSVesflm	"/etc", "/opt", and "/var/opt" are the default installation destination directories.

Appendix N Work Required After Device Deletion of the ETERNUS DX S2 series

To delete the ETERNUS DX S2 series that is registered in the product and remove it as a management target, the work described in this chapter must be performed.

N.1 Work Required in the Management Server

If the ETERNUS DX S2 series that is registered in the Management Server is deleted and removed as a management target, the required work is as follows.

Point

Perform the work after confirming that the ETERNUS DX S2 series is not registered in the Management Server.

For Windows environments

1. Log on to the Management Server using Administrator privileges.
2. Stop the ETERNUS SF Manager service.
   - When the Management Server is in a non-clustered system

     Execute the following batch to stop the ETERNUS SF Manager service.

     ```
     > $INS_DIR\Common\bin\Stop_ESFservice.bat
     ```

     From this step onward, $INS_DIR is "Program Directory" specified at the ETERNUS SF Manager installation.
   - When the Management Server is in a clustered system

     Use the Failover Cluster Manager to stop the ETERNUS SF Manager service.
3. Copy the following file over the copy destination file.
   To use the Management Server in a clustered system, perform this step on both the primary node and secondary node.

Copy Source File	Copy Destination File
$INS_DIR\Common\sys\tomcat\webapps\esf\WEB-INF\config\java.security	$INS_DIR\Common\jre\conf\security\java.security
$INS_DIR\CCM\tools\java.security	$INS_DIR\CCM\jre\conf\security\java.security

4. Start the ETERNUS SF Manager service.
   - When the Management Server is in a non-clustered system

     Execute the following batch to start the ETERNUS SF Manager service.

     ```
     > $INS_DIR\Common\bin\Start_ESFservice.bat
     ```
   - When the Management Server is in a clustered system

     Use the Failover Cluster Manager to start the ETERNUS SF Manager service.

For Solaris or Linux environments

1. Log in to the Management Server as a superuser.

2. Stop the ETERNUS SF Manager daemon.

   - When the Management Server is in a non-clustered system

     Execute the following command to stop the ETERNUS SF Manager daemon.

     ```
     # /opt/FJSVesfcm/bin/stopesf.sh
     ```

   - When the Management Server is in a clustered system

     Use the cluster software in use to stop ETERNUS SF Manager daemon.

3. Copy the following file over the copy destination file.
   To use the Management Server in a clustered system, perform this step on both the primary node and secondary node.

   - For Solaris environments

Copy Source File	Copy Destination File
/opt/FJSVesfcm/tomcat/webapps/esf/WEB-INF/config/java.security	/opt/FJSVesfcm/JRE/lib/security/java.security
/opt/FJSVcccm/tools/java.security	/opt/FJSVccm/jre/lib/security/java.security

     The command execution example is as follows.

     ```
     # cp -p /opt/FJSVesfcm/tomcat/webapps/esf/WEB-INF/config/java.security /opt/
     FJSVesfcm/JRE/lib/security/java.security
     # cp -p /opt/FJSVccm/tools/java.security /opt/FJSVccm/jre/lib/security/java.security
     ```

   - For Linux environments

Copy Source File	Copy Destination File
/opt/FJSVesfcm/tomcat/webapps/esf/WEB-INF/config/java.security	/opt/FJSVesfcm/JRE/conf/security/java.security
/opt/FJSVccm/tools/java.security	/opt/FJSVccm/jre/conf/security/java.security

     The command execution example is as follows.

     ```
     # cp -p /opt/FJSVesfcm/tomcat/webapps/esf/WEB-INF/config/java.security /opt/FJSVesfcm/JRE/
     conf/security/java.security
     # cp -p /opt/FJSVccm/tools/java.security /opt/FJSVccm/jre/conf/security/java.security
     ```

4. Start the ETERNUS SF Manager daemon.

   - When the Management Server is in a non-clustered system

     Execute the following command to start the ETERNUS SF Manager daemon.

     ```
     # /opt/FJSVesfcm/bin/startesf.sh
     ```

   - When the Management Server is in a clustered system

     Use the cluster software in use to start ETERNUS SF Manager daemon.

N.2 Work Required in the CCM Server

If the ETERNUS DX S2 series that is registered in the CCM Server is deleted and removed as a management target, the required work is as follows.

Point

Perform the work after confirming that the ETERNUS DX S2 series is not registered in the CCM Server.

For Windows environments

1. Log on to the CCM Server using Administrator privileges.
2. Copy the following file over the copy destination file.
   To use the CCM Server in a clustered system, perform this step on both the primary node and secondary node.

Copy Source File	Copy Destination File
$INS_DIR\CCM\tools\java.security	$INS_DIR\CCM\jre\conf\security\java.security

   $INS_DIR is "Program Directory" specified at the AdvancedCopy Manager CCM installation.

For Solaris or Linux environments

1. Log in to the CCM Server as a superuser.
2. Copy the following file over the copy destination file.
   To use the CCM Server in a clustered system, perform this step on both the primary node and secondary node.

   - For Solaris environments

Copy Source File	Copy Destination File
/opt/FJSVccm/tools/java.security	/opt/FJSVccm/jre/lib/security/java.security

   The command execution example is as follows.

```
# cp -p /opt/FJSVccm/tools/java.security /opt/FJSVccm/jre/lib/security/java.security
```

   - For Linux environments

Copy Source File	Copy Destination File
/opt/FJSVccm/tools/java.security	/opt/FJSVccm/jre/conf/security/java.security

   The command execution example is as follows.

```
# cp -p /opt/FJSVccm/tools/java.security /opt/FJSVccm/jre/conf/security/java.security
```