

FUJITSU Storage

ETERNUS SF

**Express V16.0 / Storage Cruiser V16.0 /
AdvancedCopy Manager V16.0**

Installation and Setup Guide

Preface

Purpose

This manual provides information on installation and setup of the following FUJITSU Storage ETERNUS SF products:

- FUJITSU Storage ETERNUS SF Express (hereafter abbreviated as "Express")
- FUJITSU Storage ETERNUS SF Storage Cruiser (hereafter abbreviated as "Storage Cruiser")
- FUJITSU Storage ETERNUS SF AdvancedCopy Manager (hereafter abbreviated as "AdvancedCopy Manager")

Intended Readers

This manual is intended for users of the three ETERNUS SF series products stated above.

Before you read this manual, you should be sure to have a sufficient general knowledge and understanding of clustered systems and server virtualization.

Refer to the *ETERNUS SF Migration Guide* for information on upgrading from a previous version to this version.

Organization

This manual is composed as follows:

[Chapter 1 Product Structure and Programs](#)

This chapter explains how ETERNUS SF series products are organized and various types of installation.

[Chapter 2 Operating Environment](#)

This chapter explains operating systems, hardware devices etc. that are supported by the ETERNUS SF series.

[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 CCM.

[Chapter 8 Setup of AdvancedCopy Manager CCM](#)

This chapter explains how to set up the AdvancedCopy Manager CCM.

[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 CCM.

[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 Program components

This appendix explains the program components.

Appendix B License Management

This appendix explains license management function.

Appendix C Required Disk Space for Performance Management

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

Appendix D Install parameters

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

Appendix E Return Values for Silent Installation

This appendix describes return values for silent installation.

Appendix F Return Values for Silent Uninstallation

This appendix describes the return values for silent uninstallation.

Appendix G Upper Limit of Manageable Environment

This appendix describes the upper limit of manageable environment.

Notation

The names, abbreviations, and symbols shown below are used in this manual.

Operating Systems

Formal Name	Abbreviation	
Microsoft(R) Windows Server(R) 2003, Standard Edition Microsoft(R) Windows Server(R) 2003, Standard x64 Edition Microsoft(R) Windows Server(R) 2003, Enterprise Edition Microsoft(R) Windows Server(R) 2003, Enterprise x64 Edition Microsoft(R) Windows Server(R) 2003 R2, Standard Edition Microsoft(R) Windows Server(R) 2003 R2, Standard x64 Edition Microsoft(R) Windows Server(R) 2003 R2, Enterprise Edition Microsoft(R) Windows Server(R) 2003 R2, Enterprise x64 Edition	Windows Server 2003	Windows
Microsoft(R) Windows Server(R) 2008 Standard (32-bit)(64-bit) Microsoft(R) Windows Server(R) 2008 Standard without Hyper-V(TM) (32-bit) (64-bit) Microsoft(R) Windows Server(R) 2008 Enterprise (32-bit)(64-bit) Microsoft(R) Windows Server(R) 2008 Enterprise without Hyper-V(TM) (32-bit) (64-bit) Microsoft(R) Windows Server(R) 2008 Datacenter (32-bit)(64-bit) Microsoft(R) Windows Server(R) 2008 Datacenter without Hyper-V(TM) (32-bit) (64-bit)	Windows Server 2008	
Microsoft(R) Windows Server(R) 2008 R2 Foundation Microsoft(R) Windows Server(R) 2008 R2 Standard Microsoft(R) Windows Server(R) 2008 R2 Enterprise Microsoft(R) Windows Server(R) 2008 R2 Datacenter	Windows Server 2008 R2	
Microsoft(R) Windows Server(R) 2012 Standard Microsoft(R) Windows Server(R) 2012 Datacenter	Windows Server 2012	
Microsoft(R) Windows Server(R) 2012 R2 Standard Microsoft(R) Windows Server(R) 2012 R2 Datacenter	Windows Server 2012 R2	
Windows Vista(R) Home Basic Windows Vista(R) Home Premium Windows Vista(R) Business	Windows Vista	

Formal Name	Abbreviation	
Windows Vista(R) Enterprise Windows Vista(R) Ultimate		
Windows(R) 7 Home Basic Windows(R) 7 Home Premium Windows(R) 7 Professional Windows(R) 7 Enterprise Windows(R) 7 Ultimate	Windows 7	
Windows(R) 8 Windows(R) 8 Pro	Windows 8	
Windows(R) 8.1 Windows(R) 8.1 Pro	Windows 8.1	
Solaris(TM) 9 Operating System	Solaris 9	Solaris or Solaris OS
Oracle Solaris 10	Solaris 10	
Oracle Solaris 11	Solaris 11	
Red Hat(R) Enterprise Linux(R) AS (v.4 for x86) Red Hat(R) Enterprise Linux(R) AS (v.4 for EM64T)	RHEL-AS4	Linux
Red Hat(R) Enterprise Linux(R) ES (v.4 for x86) Red Hat(R) Enterprise Linux(R) ES (v.4 for EM64T)	RHEL-ES4	
Red Hat(R) Enterprise Linux(R) 5 (for x86) Red Hat(R) Enterprise Linux(R) 5 (for Intel64)	RHEL5	
Red Hat(R) Enterprise Linux(R) 6 (for x86) Red Hat(R) Enterprise Linux(R) 6 (for Intel64)	RHEL6	
SUSE(R) Linux Enterprise Server 11 for x86 SUSE(R) Linux Enterprise Server 11 for EM64T	SUSE Linux Enterprise Server 11	
HP-UX 11i HP-UX 11i v2 HP-UX 11i v3	HP-UX	
AIX(R) V6.1 AIX(R) V7.1	AIX	
VMware vSphere(R) 4 Essentials Kit VMware vSphere(R) 4 Essentials Plus Kit VMware vSphere(R) 4 Standard Edition(TM) VMware vSphere(R) 4 Standard Plus Data Recovery VMware vSphere(R) 4 Advanced Edition(TM) VMware vSphere(R) 4 Enterprise Edition(TM) VMware vSphere(R) 4 Enterprise Plus Edition(TM)	VMware vSphere 4	VMware
VMware vSphere(R) 5 Essentials Kit VMware vSphere(R) 5 Essentials Plus Kit VMware vSphere(R) 5 Standard Edition(TM) VMware vSphere(R) 5 Standard Plus Data Recovery VMware vSphere(R) 5 Enterprise Edition(TM) VMware vSphere(R) 5 Enterprise Plus Edition(TM)	VMware vSphere 5	

Oracle Solaris might be described as Solaris, Solaris Operating System, or Solaris OS.

FUJITSU Storage ETERNUS

Formal Name	Abbreviation	
FUJITSU Storage ETERNUS DX60/DX60 S2 FUJITSU Storage ETERNUS DX80/DX80 S2 FUJITSU Storage ETERNUS DX90/DX90 S2	-	
FUJITSU Storage ETERNUS DX100 S3 FUJITSU Storage ETERNUS DX200 S3		
FUJITSU Storage ETERNUS DX410 FUJITSU Storage ETERNUS DX440	ETERNUS DX400 series	ETERNUS DX400/ DX400 S2 series
FUJITSU Storage ETERNUS DX410 S2 FUJITSU Storage ETERNUS DX440 S2	ETERNUS DX400 S2 series	
FUJITSU Storage ETERNUS DX500 S3 FUJITSU Storage ETERNUS DX600 S3	-	
FUJITSU Storage ETERNUS DX8100 FUJITSU Storage ETERNUS DX8400 FUJITSU Storage ETERNUS DX8700	ETERNUS DX8000 series	ETERNUS DX8000/ DX8000 S2 series
FUJITSU Storage ETERNUS DX8100 S2 FUJITSU Storage ETERNUS DX8700 S2	ETERNUS DX8000 S2 series	
FUJITSU Storage ETERNUS DX200F	-	

Each individual device name in this document is listed with "FUJITSU Storage" omitted from it.

Software Products

Formal Name	Abbreviation
Microsoft(R) Internet Explorer(R)	Internet Explorer
Mozilla(R) Firefox(R)	Firefox
Microsoft(R) Cluster Service	MSCS
Microsoft(R) Windows Server(R) Failover Clustering	WSFC
Microsoft(R) Exchange Server	Exchange Server
Microsoft(R) SQL Server(R)	SQL Server
VMware(R) ESX(R)	VMware ESX
VMware(R) ESXi(TM)	VMware ESXi
VMware(R) vCenter(TM) Server	VMware vCenter Server or vCenter Server
FUJITSU Software PRIMECLUSTER Global Disk Services	GDS
FUJITSU Software PRIMECLUSTER Global File Services	GFS
FUJITSU Software Symfoware Server Enterprise Extended Edition FUJITSU Software Symfoware Server Enterprise Edition	Symfoware

Manuals

Formal Name	Abbreviation
FUJITSU Storage ETERNUS SF Express / ETERNUS SF Storage Cruiser / ETERNUS SF AdvancedCopy Manager Quick Reference	ETERNUS SF Quick Reference
FUJITSU Storage ETERNUS SF Express / ETERNUS SF Storage Cruiser / ETERNUS SF AdvancedCopy Manager Release Notes	ETERNUS SF Release Notes
FUJITSU Storage ETERNUS SF Express / ETERNUS SF Storage Cruiser / ETERNUS SF AdvancedCopy Manager Installation and Setup Guide	ETERNUS SF Installation and Setup Guide
FUJITSU Storage ETERNUS SF Express / ETERNUS SF Storage Cruiser / ETERNUS SF AdvancedCopy Manager Migration Guide	ETERNUS SF Migration Guide

Formal Name	Abbreviation
FUJITSU Storage ETERNUS SF Express / ETERNUS SF Storage Cruiser / ETERNUS SF AdvancedCopy Manager Web Console Guide	ETERNUS SF Web Console Guide
FUJITSU Storage ETERNUS SF Storage Cruiser / ETERNUS SF AdvancedCopy Manager Cluster Environment Setup Guide	ETERNUS SF Cluster Environment Setup Guide
FUJITSU Storage ETERNUS SF Express / ETERNUS SF Storage Cruiser / ETERNUS SF AdvancedCopy Manager Messages	ETERNUS SF Messages
FUJITSU Storage ETERNUS SF Express / ETERNUS SF Storage Cruiser Event Guide	ETERNUS SF Event Guide
FUJITSU Storage ETERNUS SF Express / ETERNUS SF Storage Cruiser / ETERNUS SF AdvancedCopy Manager Glossary	ETERNUS SF Glossary

Besides the above-mentioned, each individual manual name in this document is listed with "FUJITSU Storage" omitted from it.

Others

- In this document, "Fibre Channel switch" includes "Converged Switch".
- In this document, "ETERNUS CS800" includes ETERNUS CS800 S2/CS800 S3.
- In this document, the following products are collectively described as "Windows Server 2008 or later".
 - Windows Server 2008
 - Windows Server 2008 R2
 - Windows Server 2012
 - Windows Server 2012 R2
- In this document, the following products are collectively described as "Windows Server 2012 or later".
 - Windows Server 2012
 - Windows Server 2012 R2
- In this document, unless there is a special explanatory note, ETERNUS DX200 S3 indicates ETERNUS DX200 S3 and ETERNUS DX200F. In addition, ETERNUS Disk storage system includes ETERNUS DX200F All Flash Arrays. However, the following functions are not supported in ETERNUS DX200F:
 - Energy saving operation for storage device
 - NAS operation for storage device
 - Automated Storage Tiering operation at multiple tiers (two or more)

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Notes

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Update History

Content of Update	Updated Section	Revision
The information related to ETERNUS DX200F was described.	"Others" in Preface	1.1

Manual Organization and Reading Suggestions

Manual Organization

The following table describes the Manual organization of Express, Storage Cruiser and AdvancedCopy Manager.

When to Read	Related Manuals (Abbreviated)	Related Products (*1)			Explanation
		EXP	SC	ACM	
Before installation	Quick Reference	Yes	Yes	Yes	This manual is common for all products.
	Release Notes	Yes	Yes	Yes	This manual is common for all products.
	Overview	-	-	Yes	This manual is unique for the product.

When to Read	Related Manuals (Abbreviated)	Related Products (*1)			Explanation
		EXP	SC	ACM	
During installation	Installation and Setup Guide	Yes	Yes	Yes	This manual is common for all products.
	Cluster Environment Setup Guide	-	Yes	Yes	This manual is common for Storage Cruiser and AdvancedCopy Manager.
	Migration Guide	Yes	Yes	Yes	This manual is common for all products.
During operation	Operation Guide	Yes	Yes	Yes	This manual is unique for each product. The following manuals are available: <ul style="list-style-type: none"> - Express Operation Guide - Storage Cruiser Operation Guide - Storage Cruiser Operation Guide for Optimization Function - AdvancedCopy Manager Operation Guide (for Windows) - AdvancedCopy Manager Operation Guide (for Solaris) - AdvancedCopy Manager Operation Guide (for Linux) - AdvancedCopy Manager Operation Guide (for HP-UX) - AdvancedCopy Manager Operation Guide (for AIX) - AdvancedCopy Manager Operation Guide for Copy Control Module
	Web Console Guide	Yes	Yes	Yes	This manual is common for all products.
Anytime	Event Guide	Yes	Yes	-	This manual is common for Express and Storage Cruiser.
	Messages	Yes	Yes	Yes	This manual is common for all products.
	Glossary	Yes	Yes	Yes	This manual is common for all products.

*1: "EXP" indicates Express, "SC" indicates Storage Cruiser and "ACM" indicates AdvancedCopy Manager.

How to Read Manuals

Please use the following table to find the most useful information in the Express, Storage Cruiser and AdvancedCopy Manager manuals to answer your inquiry.

Purpose	Manual	Main Contents	How to Read
Acquiring a product overview and basic operation knowledge	Quick Reference	<ul style="list-style-type: none"> - Product overview - Installation decision - Overview of the necessary tasks from installation to first use 	Please read if you want to acquire a fundamental knowledge of the product and its operation in order to decide to install it or not.
	AdvancedCopy Manager Overview	<ul style="list-style-type: none"> - Main functions - Linkable applications 	

Purpose	Manual	Main Contents	How to Read
		<ul style="list-style-type: none"> - Procedure overview for Advanced Copy of ETERNUS Disk storage system 	
Confirming the updated contents	Release Notes	<ul style="list-style-type: none"> - New function overview - Incompatibilities with previous version - Fixed bugs 	Please read if you want to know the updated contents from a previous version and if you perform the upgrade.
Deciding if a version upgrade is required	Migration Guide	<ul style="list-style-type: none"> - Notes and cautions about version upgrade - Version upgrade procedure 	Please read if you want to upgrade from a previous version.
Installing and correctly operating the product Setting up operating environment depending on purpose	Installation and Setup Guide	<ul style="list-style-type: none"> - Operating environment - Installation procedure - Setup procedure - Uninstallation procedure 	Please read if you want to install and setup the product.
	Cluster Environment Setup Guide	<ul style="list-style-type: none"> - Supported cluster software - Installation procedure for a clustered system - Setup procedure for a clustered system - Uninstallation procedure for a clustered system 	Please read if you want to install and setup the product on a clustered system.
Administration and operation of the installed system	Express Operation Guide	<ul style="list-style-type: none"> - Starting and stopping the software - Device monitoring - Data copy inside the storage system - Necessary tasks after an architectural modification of the system as well as product maintenance 	Please read if you want to start or shutdown the system, monitor the operation status, do backup/restore operations, etc.
	Storage Cruiser Operation Guide	<ul style="list-style-type: none"> - Starting and stopping the software - Device monitoring - Necessary tasks after an architectural modification of the system as well as product maintenance - Command reference 	
	Storage Cruiser Operation Guide for Optimization Function	<ul style="list-style-type: none"> - Operating environment construction - Operating status monitoring - Necessary tasks after an architectural modification of 	

Purpose	Manual	Main Contents	How to Read
		<ul style="list-style-type: none"> the system as well as product maintenance - Command reference 	
	AdvancedCopy Manager Operation Guide (for Windows) AdvancedCopy Manager Operation Guide (for Solaris) AdvancedCopy Manager Operation Guide (for Linux) AdvancedCopy Manager Operation Guide (for HP-UX) AdvancedCopy Manager Operation Guide (for AIX) AdvancedCopy Manager Operation Guide for Copy Control Module	<ul style="list-style-type: none"> - Starting and stopping the software - Data backup/restore inside the storage system - Necessary tasks after an architectural modification of the system as well as product maintenance - Command reference 	
	Web Console Guide	<ul style="list-style-type: none"> - Operating environment - Screen layout description 	Please read if you want to understand the ETERNUS SF Web Console.
Dealing with messages issued by the software	Messages	<ul style="list-style-type: none"> - Messages and their explanations - Parameter (variable information) description - System action - Countermeasures 	Please read if you want a practical way of investigating and dealing with messages issued by the software.
Dealing with events issued by the software	Event Guide	<ul style="list-style-type: none"> - Phenomenon of event - Countermeasures 	Please read if you need to find a practical way of investigating and dealing with events.
Researching the meaning of specific terms related to the products and other important terms	Glossary	<ul style="list-style-type: none"> - Product specific terminology explanation - Explanation of important terminology appearing in the manual - Synonyms and related terms - Proper form of abbreviated terms 	Please read if you want to learn the meaning of important terms, product specific terms or abbreviations used in the manuals.

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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

This section explains the product structure.

1.1.1 Software structure

The product includes the following programs and manuals:

- ETERNUS SF Express
- ETERNUS SF Storage Cruiser
- ETERNUS SF AdvancedCopy Manager

1.1.2 DVD-ROM contents

The product consists of three DVD-ROM disks.

For Windows

No.	DVD-ROM name	Contained contents
1	ETERNUS SF SC/ACM/Express Mediapack for Windows Manager Program (1/2)	<ul style="list-style-type: none">- ETERNUS SF Manager program for Windows- Software Release Guide
2	ETERNUS SF SC/ACM/Express Mediapack for Windows Manager Program (2/2)	<ul style="list-style-type: none">- ETERNUS SF Manager program for Linux, Solaris- Software Release Guide
3	ETERNUS SF SC/ACM/Express Mediapack for Windows Agent Program & Manual	<ul style="list-style-type: none">- ETERNUS SF Agent program- Software Release Guide- Online Manuals

For Linux 64-bit

No.	DVD-ROM name	Contained contents
1	ETERNUS SF SC/ACM/Express Mediapack for Linux 64bit Manager Program (1/2)	<ul style="list-style-type: none">- ETERNUS SF Manager program for Windows- Software Release Guide
2	ETERNUS SF SC/ACM/Express Mediapack for Linux 64bit Manager Program (2/2)	<ul style="list-style-type: none">- ETERNUS SF Manager program for Linux, Solaris- Software Release Guide
3	ETERNUS SF SC/ACM/Express Mediapack for Linux 64bit Agent Program & Manual	<ul style="list-style-type: none">- ETERNUS SF Agent program- Software Release Guide- Online Manuals

For Solaris

No.	DVD-ROM name	Contained contents
1	ETERNUS SF SC/ACM Mediapack for Solaris Manager Program (1/2)	<ul style="list-style-type: none">- ETERNUS SF Manager program for Windows- Software Release Guide

No.	DVD-ROM name	Contained contents
2	ETERNUS SF SC/ACM Mediapack for Solaris Manager Program (2/2)	<ul style="list-style-type: none"> - ETERNUS SF Manager program for Linux, Solaris - Software Release Guide
3	ETERNUS SF SC/ACM Mediapack for Solaris Agent Program & Manual	<ul style="list-style-type: none"> - ETERNUS SF Agent program - Software Release Guide - Online Manuals

1.2 Determining the installation programs

The table below shows the relationships between products to be used and programs to be installed. Please 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 the following operations are used. <ul style="list-style-type: none"> - 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. - Using the Restore Wizard for Exchange Server.
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 functions provided by this product, install the AdvancedCopy Manager Copy Control Module. 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 environment. Install it in Windows or Linux environment.

*2: The AdvancedCopy Manager Copy Control Module is included in the ETERNUS SF Manager, but can also be installed as a standalone program.



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 the 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 is restricted by license management.

Therefore, in order to use a product, besides installing the related programs, it is necessary to register the license for that product.

There are two methods to register licenses, i.e. the Web Console and command.

The license keys to register are different for each ETERNUS Disk storage system.



See

Refer to "[Appendix B License Management](#)" for information on the types, functional ranges, and how to register using command of licenses. Refer to "Register License" in the *ETERNUS SF Web Console Guide* for information on how to register licenses using the Web Console.



Note

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

Chapter 2 Operating Environment

This chapter explains the 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/DX60 S2
- ETERNUS DX80/DX80 S2
- ETERNUS DX90/DX90 S2
- ETERNUS DX100 S3/DX200 S3



- The firmware versions of storage devices must be as shown in the table below:

Table 2.1 Storage devices and compatible firmware version numbers

Storage device name	Compatible firmware version number
ETERNUS DX60/DX80/DX90	V10L31 or later
ETERNUS DX60 S2	V20L10 or later
ETERNUS DX80 S2/DX90 S2	V10L16 or later
ETERNUS DX100 S3/DX200 S3	V10L10 or later

- For using Remote Advanced Copy between ETERNUS DX90 and ETERNUS DX90 S2, the firmware version of ETERNUS DX90 must be updated to V10L61 or later.
- Enable the following settings for the interface to storage device ETERNUS:

Table 2.2 Storage devices and interface settings

Storage device name	Interface settings
ETERNUS DX60/DX60 S2/DX80/DX90	Telnet connection
ETERNUS DX80 S2/DX90 S2 ETERNUS DX100 S3/DX200 S3	SSH connection or telnet connection

Devices supported by Storage Cruiser

Storage Cruiser supports the following devices:

Device type	Device name
Storage device	ETERNUS DX series ETERNUS CS800, ETERNUS CS2000 ETERNUS VS850 NetApp FAS Series NetApp V-Series
Tape library	ETERNUS LT series

Device type	Device name
Fibre Channel switch	ETERNUS SN200 PRIMERGY BX600 Fibre Channel Switch Blade Brocade series
Converged Switch	Brocade VDX series PRIMERGY BX Ethernet Fabric Switch
Others	Solaris, Windows, Linux, HP-UX, and AIX server nodes with Storage Cruiser's agent installed VMware vSphere 4 or later

Note

- The firmware versions of ETERNUS DX80 S2/DX90 S2, DX100 S3/DX200 S3, DX400 S2 series, DX500 S3/DX600 S3 must be as shown in the table below.

Table 2.3 ETERNUS Disk storage systems and compatible firmware version numbers

Model name	Compatible firmware version number
ETERNUS DX80 S2/DX90 S2	V10L16 or later
ETERNUS DX100 S3/DX200 S3	V10L10 or later
ETERNUS DX400 S2 series	V10L16 or later
ETERNUS DX500 S3/DX600 S3	V10L10 or later

- Enable the following settings for the interface to ETERNUS Disk storage systems:

Table 2.4 ETERNUS Disk storage systems and interface settings

Model name	Interface settings
ETERNUS DX60/DX60 S2/DX80/DX90	Telnet connection
ETERNUS DX80 S2/DX90 S2 ETERNUS DX100 S3/DX200 S3 ETERNUS DX400 S2 series ETERNUS DX500 S3/DX600 S3 ETERNUS DX8000 S2 series	SSH connection or telnet connection

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

Table 2.5 ETERNUS Disk storage systems and compatible firmware version numbers

Model name	Compatible firmware version number
ETERNUS DX80 S2/DX90 S2 ETERNUS DX400 S2 series ETERNUS DX8000 S2 series	V10L40 or later
ETERNUS DX100 S3/DX200 S3 ETERNUS DX500 S3/DX600 S3	V10L10 or later

Devices supported by AdvancedCopy Manager

AdvancedCopy Manager supports the following ETERNUS Disk storage systems.

- ETERNUS DX series

Note

- The firmware versions of ETERNUS DX60/DX60 S2/DX80/DX80 S2/DX90/DX90 S2 must be as shown in the table below.

Table 2.6 ETERNUS Disk storage system and compatible firmware version numbers

Model name	Compatible firmware version number
ETERNUS DX60/DX80/DX90	V10L31 or later
ETERNUS DX60 S2	V20L10 or later
ETERNUS DX80 S2/DX90 S2	V10L16 or later

- For using Remote Advanced Copy between DX90 and DX90 S2, the firmware version of DX90 must be updated to V10L61 or later.
- Enable the following settings for the interface to ETERNUS Disk storage systems:

Table 2.7 ETERNUS Disk storage systems and interface settings

Model name	Interface settings
ETERNUS DX60/DX60 S2/DX80/DX90	Telnet connection
ETERNUS DX80 S2/DX90 S2 ETERNUS DX100 S3/DX200 S3 ETERNUS DX400 S2 series ETERNUS DX500 S3/DX600 S3 ETERNUS DX8000 S2 series	SSH connection or telnet connection

Information

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

Table 2.8 ETERNUS Disk storage system supporting Copy command via SAN and via LAN

Device name	Copy command via SAN		Copy command via LAN	
	Operation	Firmware version	Operation	Firmware version
ETERNUS DX60/DX60 S2/DX80	A	All versions	N/A	-
ETERNUS DX90	A	All versions	A (*1)	V10L61 or later
ETERNUS DX80 S2/DX90 S2	A	All versions	A	All versions
ETERNUS DX100 S3/DX200 S3	A	All versions	A	All versions
ETERNUS DX400 series	A	All versions	A (*1)	V20L71 or later
ETERNUS DX400 S2 series	A	All versions	A	All versions
ETERNUS DX500 S3/DX600 S3	A	All versions	A	All versions
ETERNUS DX8000 series	A	All versions	A (*1)	V20L71 or later
ETERNUS DX8000 S2 series	A	All versions	A	All versions

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

*1: acarray add (ETERNUS Disk storage system registration command) cannot be executed with the -lan option.

Refer to "System Configuration" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* 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:

2GHz * 2 cores or more

- Other than those above:

2GHz * 4 cores or more



- 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.

For Windows environment

No.	Operating system name	Required Hotfix	Remarks
1	Windows Server 2012 R2 Standard	-	*1, *2, *3
2	Windows Server 2012 R2 Datacenter	-	*1, *2, *3
3	Windows Server 2012 Standard	-	*1, *2, *3
4	Windows Server 2012 Datacenter	-	*1, *2, *3
5	Windows Server 2008 R2 Standard SP1	-	*1, *2, *3
6	Windows Server 2008 R2 Enterprise SP1	-	*1, *2, *3
7	Windows Server 2008 R2 Datacenter SP1	-	*1, *2, *3
8	Windows Server 2008 R2 Standard	-	*1, *2, *3
9	Windows Server 2008 R2 Enterprise	-	*1, *2, *3
10	Windows Server 2008 R2 Datacenter	-	*1, *2, *3
11	Windows Server 2008 Standard SP2 (64-bit)	-	*2, *3
12	Windows Server 2008 Enterprise SP2 (64-bit)	-	*2, *3
13	Windows Server 2008 Datacenter SP2 (64-bit)	-	*2, *3

No.	Operating system name	Required Hotfix	Remarks
14	Windows Server 2008 Standard (64-bit)	KB952790	*2, *3
15	Windows Server 2008 Enterprise (64-bit)	KB952790	*2, *3
16	Windows Server 2008 Datacenter (64-bit)	KB952790	*2, *3
17	Windows Server 2008 Standard SP2 without Hyper-V (64-bit)	-	*2, *3
18	Windows Server 2008 Enterprise SP2 without Hyper-V (64-bit)	-	*2, *3
19	Windows Server 2008 Datacenter SP2 without Hyper-V (64-bit)	-	*2, *3
20	Windows Server 2008 Standard without Hyper-V (64-bit)	KB952790	*2, *3
21	Windows Server 2008 Enterprise without Hyper-V (64-bit)	KB952790	*2, *3
22	Windows Server 2008 Datacenter without Hyper-V (64-bit)	KB952790	*2, *3

*1: Cluster Shared Volumes (CSV) are not supported.

*2: On 64-bit operating system, this product runs as a 32-bit application on the WOW64 (Windows 32-bit On Windows 64-bit) subsystem.

*3: The Server Core installation option is not supported.

For Solaris environment

No.	Operating system name	Remarks
1	Solaris 10	*1
2	Solaris 11 (11/11 or later)	*2, *3

*1: Apply patch 141596-06.

*2: Add and install the next package. text/gnu-grep package

*3: Change the environment/TZ property of the svc:/system/environment:init SMF service instance of the operating system to the appropriate timezone name and refresh the service. After that, reboot the operating system.

Specify the appropriate timezone name to *timeZoneName*.

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

For Linux environment

No.	Operating system name	Remarks
1	Red Hat Enterprise Linux 5 (for Intel64)	*1, *2, *6
2	Red Hat Enterprise Linux 6 (for Intel64)	*3, *4, *5, *7

*1: The operation in the environment that "Enable" the Security-Enhanced Linux (SELinux) is not supported. In this case, set the SELinux to disable.

*2: Operates in 32 bit and 64bit platforms.

*3: Running as a 32-bit application.

*4: When installing, select "Compatibility Arch Support" and install the package of 32 bit library.

*5: Requires the tcsh (tcsh-6.17-8.el6.x86_64.rpm or later) packages.

*6: Requires the sqlite (sqlite-3.3.6-2.x86_64.rpm or later), libtermcap (libtermcap-2.0.8-46.1.x86_64.rpm or later) and e2fsprogs-libs (e2fsprogs-libs-1.39-8.el5.x86_64.rpm) packages. If Symfoware Server x86 has been installed, sqlite package (sqlite-3.3.6-2.i386.rpm or later), libtermcap package (libtermcap-2.0.8-46.1.i386.rpm or later), and e2fsprogslibs package (e2fsprogs-libs-1.39-8.el5.i386.rpm or later) are also required.

*7: Supported in environments where SELinux (Security-Enhanced Linux) is enabled with the following and later updates. The supported mode is "enforcing". Red Hat Enterprise Linux 6.2 (for Intel64) or later. Any earlier update version numbers are currently not supported. In this case, set SELinux to "disable" for operation.

2.2.2.2 Essential software

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

For Windows environment

No.	Essential software name	Remarks
1	SNMP Trap	This is Windows standard SNMP Trap monitor service. It is included in the OS installation media.

For Linux environment

No.	Essential software name	Remarks
1	net-snmp	This is Linux standard SNMP package. It is included in the OS installation media. When installing net-snmp, lm-sensors package may be required. This package is also included in the OS installation media.
2	openssl	This is the package which supports secure communication between machines. It is included in the OS installation media. When installing openssl, another package may be required. This package is also included in the OS installation media. Install the following package version or later depending on operating system of the server. - For Red Hat Enterprise Linux 5 (for Intel64) (*1) openssl-0.9.8b-8.3.el5.x86_64.rpm - For Red Hat Enterprise Linux 6 (*2) openssl-1.0.0-4.el6.i686.rpm
3	alsa-lib	This is the package which supports an audio and a MIDI function. It is included in the OS installation media. When installing alsa-lib, another package may be required. This package is also included in the OS installation media. Install the following package version or later depending on operating system of the server. - For Red Hat Enterprise Linux 5 (for Intel64) (*1) alsa-lib-1.0.12-3.el5.x86_64.rpm - For Red Hat Enterprise Linux 6 (*2) alsa-lib-1.0.21-3.el6.i686.rpm
4	libX11	This is the package of X.Org X11 libX11 Runtime Library. It is included in the OS installation media. When installing libX11, another package may be required. This package is also included in the OS installation media. Install the following package version or later depending on operating system of the server. - For Red Hat Enterprise Linux 5 (for Intel64) (*1) libX11-1.0.3-8.el5.x86_64.rpm - For Red Hat Enterprise Linux 6 (*2) libX11-1.3-2.el6.i686.rpm
5	libXext	This is the package of X.Org X11 libXext Runtime Library. It is included in the OS installation media. When installing libXext, another package may be required. This package is also included in the OS installation media. Install the following package version or later depending on operating system of the server. - For Red Hat Enterprise Linux 5 (for Intel64) (*1) libXext-1.0.1-2.1.x86_64.rpm

No.	Essential software name	Remarks
		<ul style="list-style-type: none"> - For Red Hat Enterprise Linux 6 (*2) libXext-1.1-3.el6.i686.rpm
6	libXi	<p>This is the package of X.Org X11 libXi Runtime Library. It is included in the OS installation media.</p> <p>When installing libXi, another package may be required. This package is also included in the OS installation media.</p> <p>Install the following package version or later depending on operating system of the server.</p> <ul style="list-style-type: none"> - For Red Hat Enterprise Linux 5 (for Intel64) (*1) libXi-1.0.1-3.1.x86_64.rpm - For Red Hat Enterprise Linux 6 (*2) libXi-1.3-3.el6.i686.rpm
7	libXt	<p>This is the package of X.Org X11 libXt Runtime Library. It is included in the OS installation media.</p> <p>When installing libXt, another package may be required. This package is also included in the OS installation media.</p> <p>Install the following package version or later depending on operating system of the server.</p> <ul style="list-style-type: none"> - For Red Hat Enterprise Linux 5 (for Intel64) (*1) libXt-1.0.2-3.1.fc6.x86_64.rpm - For Red Hat Enterprise Linux 6 (*2) libXt-1.0.7-1.el6.i686.rpm
8	libXtst	<p>This is the package of X.Org X11 libXtst Runtime Library. It is included in the OS installation media.</p> <p>When installing libXtst, another package may be required. This package is also included in the OS installation media.</p> <p>Install the following package version or later depending on operating system of the server.</p> <ul style="list-style-type: none"> - For Red Hat Enterprise Linux 5 (for Intel64) (*1) libXtst-1.0.1-3.1.x86_64.rpm - For Red Hat Enterprise Linux 6 (*2) libXtst-1.0.99.2-3.el6.i686.rpm
9	libXrender	<p>This is the package of X.Org X11 libXrender Runtime Library. It is included in the OS installation media.</p> <p>When installing libXrender, another package may be required. This package is also included in the OS installation media.</p> <p>Install the following package version or later depending on operating system of the server.</p> <ul style="list-style-type: none"> - For Red Hat Enterprise Linux 5 (for Intel64) (*1) libXrender-0.9.1-3.1.x86_64.rpm - For Red Hat Enterprise Linux 6 (*2) libXrender-0.9.5-1.el6.i686.rpm
10	apr	<p>This is the package of Apache Portable Runtime Library. It is included in the OS installation media.</p> <p>When installing apr, another package may be required. This package is also included in the OS installation media.</p> <p>Install the following package version or later depending on operating system of the server.</p> <ul style="list-style-type: none"> - For Red Hat Enterprise Linux 5 (for Intel64) (*1) apr-1.2.7-11.x86_64.rpm

No.	Essential software name	Remarks
		<ul style="list-style-type: none"> - For Red Hat Enterprise Linux 6 (*2) apr-1.3.9-3.el6.i686.rpm
11	apr-util	<p>This is the package of Apache Portable Runtime Utility library. It is included in the OS installation media.</p> <p>When installing apr-util, another package may be required. This package is also included in the OS installation media.</p> <p>Install the following package version or later depending on operating system of the server.</p> <ul style="list-style-type: none"> - For Red Hat Enterprise Linux 5 (for Intel64) (*1) apr-util-1.2.7-6.x86_64.rpm - For Red Hat Enterprise Linux 6 (*2) apr-util-1.3.9-3.el6.i686.rpm
12	libgcc	<p>This is the package of GCC shared support library. It is included in the OS installation media.</p> <p>When installing libgcc, another package may be required. This package is also included in the OS installation media.</p> <p>Install the following package version or later depending on operating system of the server.</p> <ul style="list-style-type: none"> - For Red Hat Enterprise Linux 5 (for Intel64) (*1) libgcc-4.1.1-52.el5.x86_64.rpm - For Red Hat Enterprise Linux 6 (*2) libgcc-4.4.4-13.el6.i686.rpm
13	glibc	<p>This is the package of GNU libc library. It is included in the OS installation media.</p> <p>When installing glibc, another package may be required. This package is also included in the OS installation media.</p> <p>Install the following package version or later depending on operating system of the server.</p> <ul style="list-style-type: none"> - For Red Hat Enterprise Linux 5 (for Intel64) (*1) glibc-2.5-12.x86_64.rpm - For Red Hat Enterprise Linux 6 (*2) glibc-2.12-1.7.el6.i686.rpm
14	libstdc++	<p>This is the package of GNU Standard C++ Library. It is included in the OS installation media.</p> <p>When installing libstdc++, another package may be required. This package is also included in the OS installation media.</p> <p>Install the following package version or later depending on operating system of the server.</p> <ul style="list-style-type: none"> - For Red Hat Enterprise Linux 5 (for Intel64) (*1) libstdc++-4.1.1-52.el5.x86_64.rpm - For Red Hat Enterprise Linux 6 (*2) libstdc++-4.4.4-13.el6.i686.rpm
15	expat	<p>This is the library package to analyze XML. It is included in the OS installation media.</p> <p>When installing expat, another package may be required. This package is also included in the OS installation media.</p> <p>Install the following package version or later depending on operating system of the server.</p> <ul style="list-style-type: none"> - For Red Hat Enterprise Linux 5 (for Intel64) (*1) expat-1.95.8-8.2.1.x86_64.rpm - For Red Hat Enterprise Linux 6 (*2) expat-2.0.1-9.1.el6.i686.rpm

No.	Essential software name	Remarks
16	readline	<p>This is the package to edit text in a command line. It is included in the OS installation media.</p> <p>When installing readline, another package may be required. This package is also included in the OS installation media.</p> <p>Install the following package version or later depending on operating system of the server.</p> <ul style="list-style-type: none"> - For Red Hat Enterprise Linux 5 (for Intel64) (*1) readline-5.1-1.1.x86_64.rpm - For Red Hat Enterprise Linux 6 (*2) readline-6.0-3.el6.i686.rpm
17	zlib	<p>This is the library package to compress and uncompress zlib. It is included in the OS installation media.</p> <p>When installing zlib, another package may be required. This package is also included in the OS installation media.</p> <p>Install the following package version or later depending on operating system of the server.</p> <ul style="list-style-type: none"> - For Red Hat Enterprise Linux 5 (for Intel64) (*1) zlib-1.2.3-3.x86_64.rpm - For Red Hat Enterprise Linux 6 (*2) zlib-1.2.3-25.el6.i686.rpm
18	zip	<p>This is the library package to compress zip. It is included in the OS installation media.</p> <p>When installing zip, another package may be required. This package is also included in the OS installation media.</p>
19	unzip	<p>This is the utility package for unzipping zip files. It is included in the OS installation media.</p> <p>When installing unzip, another package may be required. This package is also included in the OS installation media.</p>
20	perl	<p>This is the package for Perl Program Language. It is included in the OS installation media.</p> <p>When installing perl, another package may be required. This package is also included in the OS installation media.</p>
21	gawk	<p>This is the package for Perl Program Language (GNU) of awk text manipulation utility. It is included in the OS installation media.</p> <p>When installing gawk, another package may be required. This package is also included in the OS installation media.</p>
22	openldap	<p>This is the package for header of Fnlb and static library. It is included in the OS installation media.</p> <p>When installing openldap, another package may be required. This package is also included in the OS installation media.</p>
23	chkconfig	<p>This is the package for system tools which control /etc/rc*.d hierarchy. It is included in the OS installation media.</p> <p>When installing chkconfig, another package may be required. This package is also included in the OS installation media.</p>
24	shadow-utils	<p>This is the package for utilities which control shadow password files and user/group accounts. It is included in the OS installation media.</p> <p>When installing shadow-utils, another package may be required. This package is also included in the OS installation media.</p>
25	coreutils	<p>This is the package for GNU Core Utilities. It is included in the OS installation media.</p> <p>When installing coreutils, another package may be required. This package is also included in the OS installation media.</p>

- *1: When Symfoware Server x86 has been installed, also install the package of Red Hat Enterprise Linux 5 (for x86).
 *2: When Red Hat Enterprise Linux 6 (for Intel64) has been installed, install the 32-bit package.

2.2.2.3 Incompatible software

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

No.	Incompatible software name	Remarks
1	Systemwalker Resource Coordinator	Excluding Systemwalker Resource Coordinator Virtual server Edition
2	SystemWalker/StorageMGR-M	-
3	SystemWalker/StorageMGR-A	-
4	Softek AdvancedCopy Manager-M	-
5	Softek AdvancedCopy Manager-A	-
6	Softek SANView	-
7	Softek Storage Cruiser	-
8	Product bundles consisting only of Symfoware Client	-
9	Symfoware Client	-
10	ETERNUS SF AdvancedCopy Manager's agent	-
11	Systemwalker Centric Manager V13.5.1 or earlier	For using Solaris only
12	ETERNUS VASA Provider V1.1 or earlier	For using Windows only
13	ETERNUS Information Provider V1.1 or earlier	For using Windows only



Note

The IPv6 address device cannot be monitored if Systemwalker Centric Manager V13.5.0 or earlier has been installed in Linux environment.

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 environment

Directory name	Required disk space (Unit: MB)	Explanation
Program Directory	2850	"Program Directory" as specified during installation
Environment Directory	110	"Environment Directory" as specified during installation
Work Directory	40	"Work Directory" as specified during installation

For Solaris environment

Directory name	Required disk space (Unit: MB)	Explanation
/opt	3000	The directory to which the package will be installed.
/etc/opt	5	The directory to which the files for the environment settings will be installed.

Directory name	Required disk space (Unit: MB)	Explanation
/var/opt	1250	The directory to which the variable files (log files, temporary files, etc.) will be installed.

For Linux environment

Directory name	Required disk space (Unit: MB)	Explanation
/opt	3000	The directory to which the package will be installed.
/etc/opt	5	The directory to which the files for the environment settings will be installed.
/var/opt	1250	The directory to which the variable files (log files, temporary files, etc.) will be installed.

2.2.4 Required resources for operation (for Windows)

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 operation as Express's manager

Directory name	Required disk space (Unit: MB)	Explanation
Environment Directory	a + b	a: Database capacity of the repository for Manager. Refer to "3.1.4 Estimation of database size" for details. b: Repository size for common control. Refer to "Estimation formula for the 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

Disk space required for performance management

For performance management, add disk space as described below, depending on the number of Logical Units (LUs) on the storage device to be managed, the number of Disk Enclosures (DEs) and the number of days for which performance data are to be stored.

Storage Device	Required disk space (Unit: MB)
ETERNUS DX60/DX60 S2 ETERNUS DX80/DX80 S2 ETERNUS DX90/DX90 S2	$8 * (240 + (1.2 + 0.3 * DEs + 0.3 * (securedLUs + securedRAIDgroups[*1])) * 1440 + (95 * DEs) + (50 * (securedLUs + securedRAIDgroups[*1]))) / 1024 + 2.61$ *1: RAIDgroups is the number of RAID groups created from LU.
ETERNUS DX100 S3 ETERNUS DX200 S3	$8 * (475 + (1.2 + 0.7 * DEs + 0.4 * (securedLUs + securedRAIDgroups[*1])) * 1440 + (290 * DEs) + (76 * (securedLUs + securedRAIDgroups[*1]))) / 1024 + 2.25$ *1: RAIDgroups is the number of RAID groups created from LU.

Estimation formula for the repository size for common control

$$\text{Required size (MB)} = 300 + (\text{servers} + \text{switches} + \text{devicesToBeManaged} + \text{disks} + \text{RAIDGroups} + \text{volumes}) / 100 + (\text{servers} + \text{switches} + \text{devicesToBeManaged}) * \text{users} / 500$$

- servers: Number of Managed Servers

- *switches* : Number of managed switches
- *devicesToBeManaged* : Number of managed ETERNUS Disk storage systems
- *disks* : Total number of disks in each managed ETERNUS Disk storage system
- *RAIDGroups* : Number of managed RAID groups
- *volumes* : Number of managed volumes
- *users* : Number of users using Web Console (Number of user accounts)

For operation as Storage Cruiser's manager

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 the 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	$55(*4) + 20(*5) + a + b$	a: Repository size for common control. Refer to " Estimation formula for the repository size for common control " for details. b: Repository for Storage Cruiser *4: Log *5: Disk space required for the license management function

Repository for Storage Cruiser

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

- For ETERNUS DX80 S2/DX90 S2 (The firmware version is V10L40 or later), DX100 S3/DX200 S3: Required size (MB) = $devicesToBeManaged * 4$
- For ETERNUS DX400 S2 series (The firmware version is V10L40 or later), DX500 S3/DX600 S3: Required size (MB) = $devicesToBeManaged * 6$
- For ETERNUS DX8000 S2 series (The firmware version is V10L40 or later): Required size (MB) = $devicesToBeManaged * 23$
- For other than the above: Required size (MB) = 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 C Required Disk Space for Performance Management](#)" for details.

Estimation formula for the repository size for common control

Required size (MB) = $300 + (servers + switches + devicesToBeManaged + disks + RAIDGroups + volumes) / 100 + (servers + switches + devicesToBeManaged) * users / 500$

- *servers* : Number of Managed Servers
- *switches* : Number of managed switches
- *devicesToBeManaged* : Number of managed ETERNUS Disk storage systems

- *disks* : Total number of disks in each managed ETERNUS Disk storage system
- *RAIDGroups* : Number of managed RAID groups
- *volumes* : Number of managed volumes
- *users* : Number of users using Web Console (Number of user accounts)

Resource information when using the 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	1862	Fixed
Thin Provisioning information	32	Number of Thin Provisioning Pools
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

Estimate 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:
 $(1862 + (32 * 0) + (80 * 0) + (115 * 0) + (100 * 1) + (306 * 2)) * 100$
 - b. 100 TPV volumes in 1 Thin Provisioning Pool comprised of 2 RAID groups each with 4 disks:
 $(1862 + (32 * 1) + (80 * 0) + (115 * 0) + (100 * 2) + (306 * 4)) * 100$
 - c. 10 standard volumes in 1 RAID group which has 1 disk:
 $(1862 + (32 * 0) + (80 * 0) + (115 * 0) + (100 * 1) + (306 * 1)) * 10$
- a + b + c = 257400 bytes + 331800 bytes + 22680 bytes = 611880 bytes = about 598KB

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	10499	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
	Volume type information	234 (Standard/SDV/WSV) 356 (TPV) 487 (one layer Tier pool) 915 (2 layers Tier pool) 1343 (3 layers Tier pool)	Number of RAID groups/Thin Provisioning Pools/Tier pools
	Volume information	895	Number of volumes connected to server

Estimate 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 = 10499 + (630 * 1) + (646 * 1) = 11775
 Volume configuration information1 = (383 * 2 + 234 + 895) * 4 = 7580
 Volume configuration information2 = (383 * 4 + 356 + 895) * 10 = 27830
 Report file size = 11775 + 7580 + 27830 = 47185bytes = about 46.1KB

For operation as AdvancedCopy Manager's manager

Directory Name	Required Disk Space (Unit: MB)	Explanation
Environment Directory	For performing the backup operation: - If not backing up the Symfoware: $(a + 35 * b) / 1024 + e$ - If backing up the Symfoware: $((a + 35 * b) + (b + 0.5 * c)) / 1024 + e$	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 the repository size for common control " for details.
	For performing the replication operation: $(1.1 * d) / 1024 + e$	
Work Directory	$1107 + f + 20(*1)$	f: Capacity of saved file that is output according to "Volume lock error investigation function" in the <i>ETERNUS SF AdvancedCopy Manager Operation Guide (for Windows)</i> . 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. *1: Disk space required for the license management function
Database Creation Directory	g	g: Database capacity of the repository. Refer to " 3.1.4 Estimation of database size " for details. Database Creation Directory is "Database creation folder" specified in " 3.2 Installation procedure of ETERNUS SF Manager (for Windows) ".

Assuming a size of 2 MB per saved volume file, for n times an "in-use lock error" occurs, capacity f is determined by the following formula:

$$f = (a + b + 2 * c) * 2(\text{MB}) * n(\text{times})$$

Estimation formula for the repository size for common control

$$\text{Required size (MB)} = 300 + (\text{servers} + \text{swi tches} + \text{devi cesToBeManaged} + \text{di sks} + \text{RAI DGroups} + \text{vol umes}) / 100 + (\text{servers} + \text{swi tches} + \text{devi cesToBeManaged}) * \text{users} / 500$$

- *servers*: Number of Managed Servers
- *switches*: Number of managed switches
- *devicesToBeManaged*: Number of managed ETERNUS Disk storage systems

- *disks* : Total number of disks in each managed ETERNUS Disk storage system
- *RAIDGroups* : Number of managed RAID groups
- *volumes* : Number of managed volumes
- *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 using neither Automated Storage Tiering nor Automated QoS function:
2.7GB
- Other than those above:
3.7GB

For the manageable environment by ETERNUS SF Manager, refer to "[Appendix G Upper Limit of Manageable Environment](#)".



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 recommended by the operating system.

2.2.5 Required resources for operation (for Solaris)

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 operation as Storage Cruiser's manager

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 the repository size for common control " for details.
/var/opt/FJSVesflm	20	Disk space required for the license management function

Repository for Storage Cruiser

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

- For ETERNUS DX80 S2/DX90 S2 (The firmware version is V10L40 or later), DX100 S3/DX200 S3:
Required size (MB) = *devicesToBeManaged* * 4
- For ETERNUS DX400 S2 series (The firmware version is V10L40 or later), DX500 S3/DX600 S3:
Required size (MB) = *devicesToBeManaged* * 6

- For ETERNUS DX8000 S2 series (The firmware version is V10L40 or later):

$$\text{Required size (MB)} = \text{devicesToBeManaged} * 23$$

- For other than the above:

$$\text{Required size (MB)} = 0$$

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 C Required Disk Space for Performance Management](#)" for details.

Estimation formula for the repository size for common control

$$\text{Required size (MB)} = 300 + (\text{servers} + \text{switches} + \text{devicesToBeManaged} + \text{disks} + \text{RAIDGroups} + \text{volumes}) / 100 + (\text{servers} + \text{switches} + \text{devicesToBeManaged}) * \text{users} / 500$$

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

Resource information when using the 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

$$\text{Information stack file capacity} = (\text{data amount per month}) * \text{retention period [month]}$$

(unit: byte)

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

*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	1862	Fixed
Thin Provisioning information	32	Number of Thin Provisioning Pools
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

Estimate 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:
 $(1862 + (32 * 0) + (80 * 0) + (115 * 0) + (100 * 1) + (306 * 2)) * 100$
 - b. 100 TPV volumes in 1 Thin Provisioning Pool comprised of 2 RAID groups each with 4 disks:
 $(1862 + (32 * 1) + (80 * 0) + (115 * 0) + (100 * 2) + (306 * 4)) * 100$
 - c. 10 standard volumes in 1 RAID group which has 1 disk:
 $(1862 + (32 * 0) + (80 * 0) + (115 * 0) + (100 * 1) + (306 * 1)) * 10$
- $a + b + c = 257400 \text{ bytes} + 331800 \text{ bytes} + 22680 \text{ bytes} = 611880 \text{ bytes} = \text{about } 598\text{KB}$

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	10499	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
	Volume type information	234 (Standard/SDV/WSV) 356 (TPV) 487 (one layer Tier pool) 915 (2 layers Tier pool) 1343 (3 layers Tier pool)	Number of RAID groups/Thin Provisioning Pools/Tier pools
	Volume information	895	Number of volumes connected to server

Estimate 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 = $10499 + (630 * 1) + (646 * 1) = 11775$

Volume configuration information1 = $(383 * 2 + 234 + 895) * 4 = 7580$

Volume configuration information2 = $(383 * 4 + 356 + 895) * 10 = 27830$

Report file size = $11775 + 7580 + 27830 = 47185\text{bytes} = \text{about } 46.1\text{KB}$

For operation as AdvancedCopy Manager's manager

Directory name	Required disk space (Unit: MB)	Explanation
/etc/opt	For performing the backup operation: $(a + 35 * b) / 1024 + 0.4$	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: $(1.1 * c) / 1024 + 0.4$	
/var	1106	-
/var/opt	- For non-clustered systems: $13 + e + f + 20(*1)$ - For clustered systems: $26 + 4 * d + e + f + 20(*1)$	d: Number of transactions (including local transactions) e: Database capacity of the repository. Refer to " 3.1.4 Estimation of database size " for details. f: Repository size for common control. Refer to " Estimation formula for the repository size for common control " for details. *1: Disk space required for the license management function

Estimation formula for the repository size for common control

$$\text{Required size (MB)} = 300 + (\text{servers} + \text{switches} + \text{devicesToBeManaged} + \text{disks} + \text{RAIDGroups} + \text{volumes}) / 100 + (\text{servers} + \text{switches} + \text{devicesToBeManaged}) * \text{users} / 500$$

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

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 using neither Automated Storage Tiering nor Automated QoS function:
2.7GB
- Other than those above:
3.7GB

For the manageable environment by ETERNUS SF Manager, refer to "[Appendix G Upper Limit of Manageable Environment](#)".



- 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 recommended by the operating system.

2.2.6 Required resources for operation (for Linux)

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 operation as Express's manager

Directory name	Required disk space (Unit: MB)	Explanation
/etc/opt/FJSVswstf	a	a: Database capacity of the repository. Refer to " 3.1.4 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 the 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

For performance management, add disk space as described below, depending on the number of Logical Units (LUs) on the storage device to be managed, the number of Disk Enclosures (DEs) and the number of days for which performance data are to be stored.

Storage Device	Required disk space (Unit: MB)
ETERNUS DX60/DX60 S2 ETERNUS DX80/DX80 S2 ETERNUS DX90/DX90 S2	$8 * (240 + (1.2 + 0.3 * DEs + 0.3 * (securedLUs + securedRAIDgroups [*1]))) * 1440 + (95 * DEs) + (50 * (securedLUs + securedRAIDgroups [*1])) / 1024 + 2.61$ *1: RAIDgroups is the number of RAID groups created from LU.
ETERNUS DX100 S3 ETERNUS DX200 S3	$8 * (475 + (1.2 + 0.7 * DEs + 0.4 * (securedLUs + securedRAIDgroups [*1]))) * 1440 + (290 * DEs) + (76 * (securedLUs + securedRAIDgroups [*1])) / 1024 + 2.25$ *1: RAIDgroups is the number of RAID groups created from LU.

Estimation formula for the repository size for common control

$$\text{Required size (MB)} = 300 + (servers + switches + devicesToBeManaged + disks + RAIDGroups + volumes) / 100 + (servers + switches + devicesToBeManaged) * users / 500$$

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

For operation as Storage Cruiser's manager

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 the repository size for common control " for details.
/var/opt/FJSVesflm	20	Disk space required for the license management function

Repository for Storage Cruiser

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

- For ETERNUS DX80 S2/DX90 S2 (The firmware version is V10L40 or later), DX100 S3/DX200 S3:
 $\text{Required size (MB)} = devicesToBeManaged * 4$
- For ETERNUS DX400 S2 series (The firmware version is V10L40 or later), DX500 S3/DX600 S3:

Required size (MB) = *devicesToBeManaged* * 6

- For ETERNUS DX8000 S2 series (The firmware version is V10L40 or later):

Required size (MB) = *devicesToBeManaged* * 23

- For other than the above:

Required size (MB) = 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 C Required Disk Space for Performance Management](#)" for details.

Estimation formula for the repository size for common control

Required size (MB) = 300 + (*servers* + *switches* + *devicesToBeManaged* + *disks* + *RAIDGroups* + *volumes*) / 100 + (*servers* + *switches* + *devicesToBeManaged*) * *users* / 500

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

Resource information when using the 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	1862	Fixed
Thin Provisioning information	32	Number of Thin Provisioning Pools
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

Estimate 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:

- 100 standard volumes in 1 RAID group which has 2 disks:
 $(1862 + (32 * 0) + (80 * 0) + (115 * 0) + (100 * 1) + (306 * 2)) * 100$
 - 100 TPV volumes in 1 Thin Provisioning Pool comprised of 2 RAID groups each with 4 disks:
 $(1862 + (32 * 1) + (80 * 0) + (115 * 0) + (100 * 2) + (306 * 4)) * 100$
 - 10 standard volumes in 1 RAID group which has 1 disk:
 $(1862 + (32 * 0) + (80 * 0) + (115 * 0) + (100 * 1) + (306 * 1)) * 10$
- a + b + c = 257400 bytes + 331800 bytes + 22680 bytes = 611880 bytes = about 598KB

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	10499	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
	Volume type information	234 (Standard/SDV/WSV) 356 (TPV) 487 (one layer Tier pool) 915 (2 layers Tier pool) 1343 (3 layers Tier pool)	Number of RAID groups/Thin Provisioning Pools/Tier pools
	Volume information	895	Number of volumes connected to server

Estimate 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 = 10499 + (630 * 1) + (646 * 1) = 11775
Volume configuration information1 = (383 * 2 + 234 + 895) * 4 = 7580
Volume configuration information2 = (383 * 4 + 356 + 895) * 10 = 27830
Report file size = 11775 + 7580 + 27830 = 47185bytes = about 46.1KB
```

For operation as AdvancedCopy Manager's manager

Directory name	Required disk space (Unit: MB)	Explanation
/etc/opt	For performing the backup operation: - If not backing up the Symfoware: $(a + 35 * b) / 1024 + 0.4$ - If backing up the Symfoware: $((a + 35 * b) + (b + 0.5 * c)) / 1024 + 0.4$	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: $(1.1 * d) / 1024 + 0.4$	
/var	1106	-
/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 "3.1.4 Estimation of database size" for details. g: Repository size for common control. Refer to "Estimation formula for the repository size for common

Directory name	Required disk space (Unit: MB)	Explanation
		control " for details. *1: Disk space required for the license management function

Estimation formula for the repository size for common control

$$\text{Required size (MB)} = 300 + (\text{servers} + \text{switches} + \text{devicesToBeManaged} + \text{disks} + \text{RAIDGroups} + \text{volumes}) / 100 + (\text{servers} + \text{switches} + \text{devicesToBeManaged}) * \text{users} / 500$$

- *servers* : Number of Managed Servers
- *switches* : Number of managed switches
- *devicesToBeManaged* : Number of managed ETERNUS Disk storage systems
- *disks* : Total number of disks in each managed ETERNUS Disk storage system
- *RAIDGroups* : Number of managed RAID groups
- *volumes* : Number of managed volumes
- *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 using neither Automated Storage Tiering nor Automated QoS function:
2.7GB
- Other than those above:
3.7GB

For the manageable environment by ETERNUS SF Manager, refer to "[Appendix G Upper Limit of Manageable Environment](#)".



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 recommended by the operating system.

2.3 Operating environment of Storage Cruiser's agent

2.3.1 Hardware requirements

Servers on which to install Storage Cruiser's agent must be servers on which the "[2.3.2.1 Supported operating systems](#)" can be installed.

For Windows environment

The server must fulfill one of the following conditions:

- The server is PRIMEQUEST model.
- The server specifications fulfill requirements below.

Required CPU spec.
Intel(R) Pentium(R) III processor, 1GHz and over

For Solaris environment

The server must be as follows:

- Any one of sparc/SUN servers

For Linux environment

The server must fulfill one of the following conditions:

- The server is PRIMEQUEST model.
- The server specifications fulfill requirements below.

Required CPU spec.
Intel(R) Pentium(R) III processor, 1GHz and over

For HP-UX environment

The server must be as follows:

- Any one of HP-UX servers

For AIX environment

The server must be as follows:

- Any one of IBM Power Systems

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 Storage Cruiser's agent must be one of the following.

For Windows environment

No.	Operating system name	Required Hotfix	Remarks
1	Windows Server 2012 R2 Standard	-	*1, *2, *3
2	Windows Server 2012 R2 Datacenter	-	*1, *2, *3
3	Windows Server 2012 Standard	-	*1, *2, *3
4	Windows Server 2012 Datacenter	-	*1, *2, *3
5	Windows Server 2008 R2 Foundation SP1		*1, *3
6	Windows Server 2008 R2 Standard SP1	-	*1, *2, *3
7	Windows Server 2008 R2 Enterprise SP1	-	*1, *2, *3
8	Windows Server 2008 R2 Datacenter SP1	-	*1, *2, *3
9	Windows Server 2008 R2 Foundation		*1, *3
10	Windows Server 2008 R2 Standard	-	*1, *2, *3
11	Windows Server 2008 R2 Enterprise	-	*1, *2, *3
12	Windows Server 2008 R2 Datacenter	-	*1, *2, *3
13	Windows Server 2008 Standard SP2 (32-bit)(64-bit)	-	*1, *2, *3

No.	Operating system name	Required Hotfix	Remarks
14	Windows Server 2008 Enterprise SP2 (32-bit)(64-bit)	-	*1, *2, *3
15	Windows Server 2008 Datacenter SP2 (32-bit)(64-bit)	-	*1, *2, *3
16	Windows Server 2008 Standard (32-bit)(64-bit)	-	*1, *2, *3
17	Windows Server 2008 Enterprise (32-bit)(64-bit)	-	*1, *2, *3
18	Windows Server 2008 Datacenter (32-bit)(64-bit)	-	*1, *2, *3
19	Windows Server 2008 Standard SP2 without Hyper-V (32-bit)(64-bit)	-	*1, *2
20	Windows Server 2008 Enterprise SP2 without Hyper-V (32-bit)(64-bit)	-	*1, *2
21	Windows Server 2008 Datacenter SP2 without Hyper-V (32-bit)(64-bit)	-	*1, *2
22	Windows Server 2008 Standard without Hyper-V (32-bit)(64-bit)	-	*1, *2
23	Windows Server 2008 Enterprise without Hyper-V (32-bit)(64-bit)	-	*1, *2
24	Windows Server 2008 Datacenter without Hyper-V (32-bit)(64-bit)	-	*1, *2
25	Windows Server 2003 R2, Standard Edition SP2	-	-
26	Windows Server 2003 R2, Standard x64 Edition SP2	-	*1
27	Windows Server 2003 R2, Enterprise Edition SP2	-	-
28	Windows Server 2003 R2, Enterprise x64 Edition SP2	-	*1
20	Windows Server 2003, Standard Edition SP2	-	-
30	Windows Server 2003, Standard x64 Edition SP2	-	*1
31	Windows Server 2003, Enterprise Edition SP2	-	-
32	Windows Server 2003, Enterprise x64 Edition SP2	-	*1

*1: On 64-bit operating system, this product runs as a 32-bit application on the WOW64 (Windows 32-bit On Windows 64-bit) subsystem.

*2: The Server Core installation option is not supported.

*3: Guest OS is not supported in a Hyper-V environment.

For Solaris environment

No.	Operating system name	Required patch	Remarks
1	Solaris 9	Latest patch	-
2	Solaris 10	Latest patch	*1
3	Solaris 11 (11/11 or later)	-	*2

*1: Supported only within the global zone.

*2: Change the environment/TZ property of the svc:/system/environment:init SMF service instance of the operating system to the appropriate timezone name and refresh the service. After that, reboot the operating system.

Specify the appropriate timezone name to *timeZoneName*.

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

For Linux environment

No.	Operating system name	Required patch	Remarks
1	Red Hat Enterprise Linux AS (v.4 for x86)	Bundle correction U05111 or later	-

No.	Operating system name	Required patch	Remarks
2	Red Hat Enterprise Linux AS (v.4 for EM64T)	Bundle correction U05121 or later	*1
3	Red Hat Enterprise Linux ES (v.4 for x86)	Bundle correction U05111 or later	-
4	Red Hat Enterprise Linux ES (v.4 for EM64T)	Bundle correction U05121 or later	*1
5	Red Hat Enterprise Linux 5 (for x86)	-	-
6	Red Hat Enterprise Linux 5 (for Intel64)	-	*2
7	Red Hat Enterprise Linux 6 (for x86)	-	-
8	Red Hat Enterprise Linux 6 (for Intel64)	-	*2
9	SUSE Linux Enterprise Server 11 Service Pack 1 for x86	-	-
10	SUSE Linux Enterprise Server 11 Service Pack 1 for EM64T	-	*2
11	SUSE Linux Enterprise Server 11 Service Pack 2 for x86	-	-
12	SUSE Linux Enterprise Server 11 Service Pack 2 for EM64T	-	*2

*1: Running as a 32-bit application

*2: Running as a 64-bit native application

For HP-UX environment

No.	Operating system name	Required patch	Remarks
1	HP-UX 11i v1	Latest patch	*1
2	HP-UX 11i v2(PA-RISC)	Latest patch	*1
3	HP-UX 11i v2(Itanium)	Latest patch	*2
4	HP-UX 11i v3(PA-RISC)	Latest patch	*1
5	HP-UX 11i v3(Itanium)	Latest patch	*2

*1: Only HP 9000 servers

*2: Only HP Integrity servers

For AIX environment

No.	Operating system name	Required patch	Remarks
1	AIX V6.1	-	-
2	AIX V7.1	-	-

2.3.2.2 Essential software

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

For Windows, Solaris, Linux, or AIX environment

No.	Essential software name	Remarks
1	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 (HP-UX environment excluded) " for details.

For HP-UX environment

There is no essential software.

2.3.2.3 Incompatible software

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

For Windows environment

No.	Incompatible software name	Version / level	Remarks
1	Systemwalker Resource Coordinator	All	Excluding Systemwalker Resource Coordinator Virtual server Edition
2	Softek Storage Cruiser	All	-

For Solaris environment

No.	Incompatible software name	Version / level	Remarks
1	Systemwalker Resource Coordinator	All	-
2	Softek Storage Cruiser	All	-

For Linux environment

No.	Incompatible software name	Version / level	Remarks
1	Systemwalker Resource Coordinator	All	Excluding Systemwalker Resource Coordinator Virtual server Edition
2	Softek Storage Cruiser	All	-

For HP-UX environment

No.	Incompatible software name	Version / level	Remarks
1	Softek Storage Cruiser	All	-

For AIX environment

There is no incompatible software.

2.3.3 Required resources for installation

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

2.3.3.1 Required disk space for installation

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

For Windows environment

Directory name	Required disk space (Unit: MB)	Explanation
Program Directory	100	"Program Directory" as specified during installation. Default is "C:\ETERNUS_SF".
Environment Directory	1	"Environment Directory" as specified during installation. Default is "C:\ETERNUS_SF".
Work Directory	1	"Work Directory" as specified during installation. Default is "C:\ETERNUS_SF".

For Solaris environment

Directory name	Required disk space (Unit: MB)	Explanation
program install directory	100	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 environment

Directory name	Required disk space (Unit: MB)	Explanation
/opt	101	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 environment

- For HP-UX 11i v1

Directory name	Required disk space (Unit: MB)	Explanation
/opt	130	Directory into which to install the package
/etc/opt	0.2	Directory into which to install the files for the environment settings
/var/opt	0.2	Directory into which to install variable files (log files, temporary files, etc.)

- For HP-UX 11i v2 or HP-UX 11i v3

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.)

For AIX environment

Directory name	Required disk space (Unit: MB)	Explanation
/opt	101	Directory into which to install the package
/etc/opt	1	Directory into which to install the files for the environment settings

Directory name	Required disk space (Unit: MB)	Explanation
/var/opt	205	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 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 environment

Directory name	Required disk space (Unit: MB)	Explanation
Environment Directory	0.1	"Environment Directory" as specified during installation
Work Directory	20	"Work Directory" as specified during installation

For Solaris environment

Directory name	Required disk space (Unit: MB)	Explanation
fixed configuration directory	1	Directory into which to install the files for the environment settings
variable configuration directory	62	Directory into which to install variable files (log files, temporary files, etc.)

For Linux environment

Directory name	Required disk space (Unit: MB)	Explanation
fixed configuration directory	0.3	Directory into which to install the files for the environment settings
variable configuration directory	48	Directory into which to install variable files (log files, temporary files, etc.)

For HP-UX environment

Directory name	Required disk space (Unit: MB)	Explanation
fixed configuration directory	0.1	Directory into which to install the files for the environment settings
variable configuration directory	20	Directory into which to install variable files (log files, temporary files, etc.)

For AIX environment

Directory name	Required disk space (Unit: MB)	Explanation
fixed configuration directory	0.3	Directory into which to install the files for the environment settings

Directory name	Required disk space (Unit: MB)	Explanation
variable configuration directory	48	Directory into which to install variable files (log files, temporary files, etc.)

2.3.4.2 Required memory for operation

For operating 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
Solaris	300
Linux	256
HP-UX	32
AIX	256

2.3.4.3 Required swap size for operation

For operating 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
AIX	-

2.4 Operating environment of AdvancedCopy Manager's agent

2.4.1 Hardware requirements

Servers on which to install 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 environment, 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 AdvancedCopy Manager's agent must be one of the following.

For Windows environment

No.	Operating system name	Required Hotfix	Remarks
1	Windows Server 2012 R2 Standard	-	*2
2	Windows Server 2012 R2 Datacenter	-	*2
3	Windows Server 2012 Standard	-	*2
4	Windows Server 2012 Datacenter	-	*2
5	Windows Server 2008 R2 Standard SP1		*2
6	Windows Server 2008 R2 Enterprise SP1	-	*2
7	Windows Server 2008 R2 Datacenter SP1	-	*2
8	Windows Server 2008 R2 Standard	-	*2
9	Windows Server 2008 R2 Enterprise		*2
10	Windows Server 2008 R2 Datacenter	-	*2
11	Windows Server 2008 Standard SP2 (32-bit)(64-bit)	-	*2, *3
12	Windows Server 2008 Enterprise SP2 (32-bit)(64-bit)	-	*2, *3
13	Windows Server 2008 Datacenter SP2 (32-bit)(64-bit)	-	*2, *3
14	Windows Server 2008 Standard (32-bit)(64-bit)	-	*2, *3
15	Windows Server 2008 Enterprise (32-bit)(64-bit)	-	*2, *3
16	Windows Server 2008 Datacenter (32-bit)(64-bit)	-	*2, *3
17	Windows Server 2008 Standard SP2 without Hyper-V (32-bit)(64-bit)	-	*2
18	Windows Server 2008 Enterprise SP2 without Hyper-V (32-bit)(64-bit)	-	*2
19	Windows Server 2008 Datacenter SP2 without Hyper-V (32-bit)(64-bit)	-	*2
20	Windows Server 2008 Standard without Hyper-V (32-bit)(64-bit)	-	*2
21	Windows Server 2008 Enterprise without Hyper-V (32-bit)(64-bit)	-	*2
22	Windows Server 2008 Datacenter without Hyper-V (32-bit)(64-bit)	-	*2
23	Windows Server 2003 R2, Standard Edition SP2	-	-
24	Windows Server 2003 R2, Standard x64 Edition SP2	-	*1
25	Windows Server 2003 R2, Enterprise Edition SP2	-	-
26	Windows Server 2003 R2, Enterprise x64 Edition SP2	-	*1
27	Windows Server 2003, Standard Edition SP2	-	-
28	Windows Server 2003, Standard x64 Edition SP2	-	*1
29	Windows Server 2003, Enterprise Edition SP2	-	-
30	Windows Server 2003, Enterprise x64 Edition SP2	-	*1

*1: On 64-bit operating system, this product runs as a 32-bit application on the WOW64 (Windows 32-bit On Windows 64-bit) subsystem.

*2: The Server Core installation option is not supported.

*3: Guest OS is not supported in a Hyper-V environment.

Note

- For Windows Server 2003, security risks originating in the OS may occur. Refer to the following link for details:

<http://msdn.microsoft.com/en-us/library/windows/hardware/gg463353.aspx>

- Installation in Windows is not possible if it has the role of Active Directory domain services.

For Solaris environment

No.	Operating system name	Remarks
1	Solaris 9	*2, *3
2	Solaris 10	*1, *3
3	Solaris 11 (11/11 or later)	*4

*1: Apply patch 141596-06.

*2: Apply patch 111711-12, 111712-12.

*3: Add and install the next package. SUNWxcu4 package

*4: Add and install the next package. system/xopen/xcu4 package

For Linux environment

No.	Operating system name	Remarks
1	Red Hat Enterprise Linux AS (v.4 for x86)	*1, *6
2	Red Hat Enterprise Linux AS (v.4 for EM64T)	*1, *2, *6
3	Red Hat Enterprise Linux ES (v.4 for x86)	*1, *6
4	Red Hat Enterprise Linux ES (v.4 for EM64T)	*1, *2, *6
5	Red Hat Enterprise Linux 5 (for x86)	*6
6	Red Hat Enterprise Linux 5 (for Intel64)	*6, *8
7	Red Hat Enterprise Linux 6 (for x86)	*3, *7
8	Red Hat Enterprise Linux 6 (for Intel64)	*2, *4, *5, *7
9	SUSE Linux Enterprise Server 11 Service Pack 1 for x86	-
10	SUSE Linux Enterprise Server 11 Service Pack 1 for EM64T	*2
11	SUSE Linux Enterprise Server 11 Service Pack 2 for x86	-
12	SUSE Linux Enterprise Server 11 Service Pack 2 for EM64T	*2

*1: The volumes that size is larger than 2TB are not supported.

*2: Running as a 32-bit application.

*3: Requires the tcsh (tcsh-6.17-8.el6.i686.rpm or later) package.

*4: Requires the tcsh (tcsh-6.17-8.el6.x86_64.rpm or later) package.

*5: Requires the glibc (glibc-2.12-1.7.el6.i686.rpm or later), libstdc++ (libstdc++-4.4.4-13.el6.i686.rpm or later) and libgcc (libgcc-4.4.4-13.el6.i686.rpm) packages.

*6: The operation in the environment that "Enable" the Security-Enhanced Linux (SELinux) is not supported. In this case, set the SELinux to disable.

*7: Supported in environments where SELinux (Security-Enhanced Linux) is enabled with the following and later updates. The supported mode is "enforcing". Red Hat Enterprise Linux 6.2 (for x86) or later / Red Hat Enterprise Linux 6.2 (for Intel64) or later. Any earlier update version numbers are currently not supported. In this case, set SELinux to "disable" for operation.

*8: Running as a 32-bit application or a 64-bit application.

For HP-UX environment

No.	Operating system name	Remarks
1	HP-UX 11i v1	*1

No.	Operating system name	Remarks
2	HP-UX 11i v2(PA-RISC)	*1
3	HP-UX 11i v2(Itanium)	*1
4	HP-UX 11i v3(PA-RISC)	*1, *2
5	HP-UX 11i v3(Itanium)	*1

*1: The volume of 2TB and over is not supported.

*2: Only HP 9000 servers

For AIX environment

No.	Operating system name	Remarks
1	AIX V6.1	*1
2	AIX V7.1	*1

*1: The volume of 2TB and over is not supported.

2.4.2.2 Essential software

There is no essential software.

2.4.2.3 Incompatible software

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

For Windows environment

No.	Incompatible software name	Version / level	Remarks
1	SystemWalker/StorageMGR-M	All	-
2	SystemWalker/StorageMGR-A	All	-
3	Softek AdvancedCopy Manager-M	All	-
4	Softek AdvancedCopy Manager-A	All	-
5	ETERNUS SF AdvancedCopy Manager's manager	All	-
6	ETERNUS SF Manager	All	-

For Solaris environment

No.	Incompatible software name	Version / level	Remarks
1	SystemWalker/StorageMGR-M	All	-
2	SystemWalker/StorageMGR-A	All	-
3	Softek AdvancedCopy Manager-M	All	-
4	Softek AdvancedCopy Manager-A	All	-
5	ETERNUS SF AdvancedCopy Manager's manager	All	-
6	ETERNUS SF Manager	All	-

For Linux environment

No.	Incompatible software name	Version / level	Remarks
1	Softek AdvancedCopy Manager-M	All	-
2	Softek AdvancedCopy Manager-A	All	-
3	ETERNUS SF AdvancedCopy Manager's manager	All	-

No.	Incompatible software name	Version / level	Remarks
4	ETERNUS SF Manager	All	-

For HP-UX environment

No.	Incompatible software name	Version / level	Remarks
1	SystemWalker/StorageMGR-A	All	-
2	Softek AdvancedCopy Manager-A	All	-

For AIX environment

No.	Incompatible software name	Version / level	Remarks
1	Softek AdvancedCopy Manager-A	All	-

2.4.3 Required resources for installation

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

2.4.3.1 Required disk space for installation

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

For Windows environment

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 environment

Directory name	Required disk space (Unit: MB)	Explanation
Program install directory	130	Directory into which to install the package
Fixed configuration directory	0.2	Directory into which to install the files for the environment settings
Modifying configuration directory	2.2	Directory into which to install variable files (log files, temporary files, etc.)
/opt	0.2	Directory of operating system

For Linux environment

Directory name	Required disk space (Unit: MB)	Explanation
Program install directory	120	Directory into which to install the package
Fixed configuration directory	0.2	Directory into which to install the files for the environment settings
Modifying configuration directory	2.2	Directory into which to install variable files (log files, temporary files, etc.)
/opt	0.2	Directory of operating system

For HP-UX environment

Directory name	Required disk space (Unit: MB)	Explanation
Program install directory	140	Directory into which to install the package
Fixed configuration directory	0.2	Directory into which to install the files for the environment settings
Modifying configuration directory	2.2	Directory into which to install variable files (log files, temporary files, etc.)
/opt	0.2	Directory of operating system

For AIX environment

Directory name	Required disk space (Unit: MB)	Explanation
Program install directory	220	Directory into which to install the package
Fixed configuration directory	0.2	Directory into which to install the files for the environment settings
Modifying configuration directory	2.2	Directory into which to install variable files (log files, temporary files, etc.)
/opt	0.2	Directory of operating system

2.4.4 Required resources for operation

2.4.4.1 Required disk space for operation

For operating 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 environment

Directory name	Required disk space (Unit: MB)	Explanation
Environment Directory	<p>For performing the backup operation on the Managed Server:</p> <ul style="list-style-type: none"> - If not backing up the Symfoware: $(a + 35 * b) / 1024$ - If backing up the Symfoware: $((a + 35 * b) + (b + 0.5 * d)) / 1024$ <p>For performing the replication operation on the Managed Server: $(1.1 * c) / 1024$</p>	<p>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</p>
Work Directory	$1107 + e$	<p>e: Capacity of saved file that is output according to "Volume lock error investigation function" in the <i>ETERNUS SF AdvancedCopy Manager Operation Guide (for Windows)</i>.</p> <p>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.</p> <p>- 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:</p>

Directory name	Required disk space (Unit: MB)	Explanation
		$e = (a + b + 2 * c) * 2(\text{MB}) * n(\text{times})$

For Solaris, Linux, HP-UX or AIX environment

Directory name	Required disk space (Unit: MB)				Explanation
	Solaris	Linux	HP-UX	AIX	
Fixed configuration directory	$(a + 35 * b) / 1024$				a: Number of backup volumes b: Number of transaction volumes It is required for performing the backup operation on the Managed Server, not backing up the Symfoware.
	$((a + 35 * b) + (b + 0.5 * c)) / 1024$		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.
	$(1.1 * d) / 1024$				d: Number of volume pairs for replication management
	0.1				-
Modifying configuration directory	7		5		-
/var	1049		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 AdvancedCopy Manager's agent, the server on which it is installed must have the following amount of memory.

Operating system	Required disk space (Unit: MB)
Windows	64
Solaris	64
Linux	64
HP-UX	64
AIX	64

2.4.4.3 Required swap size for operation

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

Operating system	Required disk space (Unit: MB)
Windows	-

Operating system	Required disk space (Unit: MB)
Solaris	15
Linux	15
HP-UX	15
AIX	15

2.5 Operating environment of AdvancedCopy Manager CCM

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

2.5.1 Hardware requirements

Servers on which to install 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 environment, 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 AdvancedCopy Manager CCM must be one of the following.

For Windows environment

No.	Operating system name	Required Hotfix	Remarks
1	Windows Server 2012 R2 Standard	-	*1, *2, *3
2	Windows Server 2012 R2 Datacenter	-	*1, *2, *3
3	Windows Server 2012 Standard	-	*1, *2, *3
4	Windows Server 2012 Datacenter	-	*1, *2, *3
5	Windows Server 2008 R2 Standard SP1	-	*1, *2, *3
6	Windows Server 2008 R2 Enterprise SP1	-	*1, *2, *3
7	Windows Server 2008 R2 Datacenter SP1	-	*1, *2, *3
8	Windows Server 2008 R2 Standard	-	*1, *2, *3
9	Windows Server 2008 R2 Enterprise	-	*1, *2, *3
10	Windows Server 2008 R2 Datacenter	-	*1, *2, *3
11	Windows Server 2008 Standard SP2 (64-bit)	-	*2, *3

No.	Operating system name	Required Hotfix	Remarks
12	Windows Server 2008 Enterprise SP2 (64-bit)	-	*2, *3
13	Windows Server 2008 Datacenter SP2 (64-bit)	-	*2, *3
14	Windows Server 2008 Standard (64-bit)	-	*2, *3
15	Windows Server 2008 Enterprise (64-bit)	-	*2, *3
16	Windows Server 2008 Datacenter (64-bit)	-	*2, *3
17	Windows Server 2008 Standard SP2 without Hyper-V (64-bit)	-	*2, *3, *4
18	Windows Server 2008 Enterprise SP2 without Hyper-V (64-bit)	-	*2, *3, *4
19	Windows Server 2008 Datacenter SP2 without Hyper-V (64-bit)	-	*2, *3, *4
20	Windows Server 2008 Standard without Hyper-V (64-bit)	-	*2, *3, *4
21	Windows Server 2008 Enterprise without Hyper-V (64-bit)	-	*2, *3, *4
22	Windows Server 2008 Datacenter without Hyper-V (64-bit)	-	*2, *3, *4

*1: The Cluster Shared Volume is not supported.

*2: On 64-bit operating system, this product runs as a 32-bit application on the WOW64 (Windows 32-bit On Windows 64-bit) subsystem.

*3: The Server Core installation option is not supported.

*4: Guest OS is not supported in a Hyper-V environment.

For Solaris environment

No.	Operating system name	Remarks
1	Solaris 10	*1
2	Solaris 11 (11/11 or later)	*2

*1: Supported only within the global zone.

*2: Change the environment/TZ property of the svc:/system/environment:init SMF service instance of the operating system to the appropriate timezone name and refresh the service. After that, reboot the operating system.

Specify the appropriate timezone name to *timeZoneName*.

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

For Linux environment

No.	Operating system name	Remarks
1	Red Hat Enterprise Linux 5 (for Intel64)	*3, *5
2	Red Hat Enterprise Linux 6 (for Intel64)	*1, *2, *4
3	SUSE Linux Enterprise Server 11 Service Pack 1 for x86	-
4	SUSE Linux Enterprise Server 11 Service Pack 1 for EM64T	*1
5	SUSE Linux Enterprise Server 11 Service Pack 2 for x86	-
6	SUSE Linux Enterprise Server 11 Service Pack 2 for EM64T	*1

*1: Running as a 32-bit application

*2: Requires the glibc (glibc-2.12-1.7.el6.i686.rpm or later), libstdc++ (libstdc++-4.4.4-13.el6.i686.rpm or later) and libgcc (libgcc-4.4.4-13.el6.i686.rpm or later) packages.

*3: The operation in the environment that "Enable" the Security-Enhanced Linux (SELinux) is not supported. In this case, set the SELinux to disable.

*4: Supported in environments where SELinux (Security-Enhanced Linux) is enabled with the following and later updates. The supported mode is "enforcing". Red Hat Enterprise Linux 6.2 (for Intel64) or later. Any earlier update version numbers are currently

not supported. In this case, set SELinux to "disable" for operation.

*5: Running as a 64-bit native application

2.5.2.2 Essential software

There is no essential software.

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 AdvancedCopy Manager CCM.

2.5.3.1 Required disk space for installation

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

For Windows environment

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 environment

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 environment

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

2.5.4 Required resources for operation

2.5.4.1 Required disk space for operation

For operating 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 environment

Directory name	Required disk space (Unit: MB)	Explanation
Environment Directory	100	"Environment Directory" as specified during installation
Work Directory	100	"Work Directory" as specified during installation

For Solaris environment

Directory name	Required disk space (Unit: MB)	Explanation
/etc/opt	100	"Environment Directory" as specified during installation
/var/opt	100	"Work Directory" as specified during installation

For Linux environment

Directory name	Required disk space (Unit: MB)	Explanation
/etc/opt	100	"Environment Directory" as specified during installation
/var/opt	100	"Work Directory" as specified during installation

2.5.4.2 Required memory for operation

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

For Windows environment

- 512MB

For Solaris environment

- 512MB

For Linux environment

- 512MB

2.6 Combining the ETERNUS SF Agent and ETERNUS SF Manager

The following product level combinations are possible when using different levels of ETERNUS SF Agent and ETERNUS SF Manager.

Table 2.9 Combinations the ETERNUS SF Agent and ETERNUS SF Manager

Version level of ETERNUS SF Manager (Management Server)	Version level of ETERNUS SF Agent (Managed Server)			
	13.x	14.x	15.x	16.x
13.x	A	C	C	C
14.x	B	A	C	C
15.x	B	B	A	C
16.x	C	B	B	A

A: Connection possible

B: Connection possible (however, functions supported by the Managed Server version or later cannot be used)

C: Connection not possible

 Note

- There is a difference in functionality between some product version levels. Installation of the ETERNUS SF Manager and ETERNUS SF Agent of the same version level is recommended.
- The following restrictions apply to combinations of ETERNUS SF Manager and ETERNUS SF Agent products at different version levels:
 - If the ETERNUS SF Manager is a newer level than the ETERNUS SF Agent
Connection possible (but functions supported by levels later than that of the Managed Server cannot be used)
 - If the ETERNUS SF Agent is a newer level than the ETERNUS SF Manager
Connection not possible

Chapter 3 Installation of ETERNUS SF Manager

This chapter explains methods for installation of ETERNUS SF Manager.

When installing, there are the installation by inputting the necessary information in the interactive mode and the installation by inputting the information into an installation parameter file in advance (silent installation).

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 will be 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 will be performed.

If the incompatible software is found, refer to that software manual and uninstall it before starting the installation.

3.1.3 Symfoware confirmation

Symfoware components are bundled with ETERNUS SF Manager.

This section explains items to be checked when installing ETERNUS SF Manager on a server that already has Symfoware installed. If Symfoware is not yet installed, this task is not necessary.

For Windows environment

Check that the installed Symfoware Server is the following version.

For Windows Server 2008 or Windows Server 2008 R2

Symfoware Server Enterprise Edition V9.1.1 - V11.x

For Windows Server 2012 or later

Symfoware Server Enterprise Edition V10.1 - V11.x

Symfoware Server and Symfoware Server Client are used with ETERNUS SF Manager. Confirm the configuration of the installed Symfoware even if you use any of Symfoware Servers described above.

- When both Symfoware Server and Symfoware Server Client are installed:

There is no problem. They can be used simultaneously.

- When only Symfoware Server is installed:

Check if the installed Symfoware Server is "Symfoware Server Enterprise Edition V10.1".

When ETERNUS SF Manager is installed, Symfoware Server Client will also be installed.

For any version except "Symfoware Server Enterprise Edition V10.1", perform either of the following tasks.

- For using the installed Symfoware Server continuously:

Install the same version of Symfoware Server Client as the installed Symfoware Server.

When the version of Symfoware Server is Symfoware Server Enterprise Edition V9.1.1, you can install Symfoware Server Client using the following procedure:

1. Insert the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack for Windows (Manager Program) (1/2)" for this version into the DVD-ROM drive.
 2. Execute `dvdromDrive:\Manager_windows\ACM\symfo\cl0911\setup.exe` to start the installer.
- For using the Symfoware Server bundled with ETERNUS SF Manager:
Save any necessary data, and remove the installed Symfoware Server. After installing ETERNUS SF Manager, restore the saved data.
 - When only Symfoware Server Client is installed:
Uninstall the installed Symfoware Server Client.

For Solaris environment

Check that the installed Symfoware Server is the following version.

For any version other than listed below, uninstall that Symfoware Server and install one that is listed.

System environment	Version of Symfoware Server
Solaris 10	Either one of the following versions: - Symfoware Server Enterprise Edition 6.0 - 11.x - Symfoware Server Enterprise Extended Edition 6.0 - 11.x
Solaris 11	Either one of the following versions: - Symfoware Server Enterprise Edition 10.1 - 11.x - Symfoware Server Enterprise Extended Edition 10.1 - 11.x



Note

It cannot be operated in the environment where Symfoware Server is introduced with standard security operations selected.

For Linux environment

Check that the installed Symfoware Server is the following version.

For any version other than listed below, uninstall that Symfoware Server and install one that is listed.

Operating environment	Version of Symfoware Server
Red Hat Enterprise Linux 5 (for Intel64)	Either one of the following versions: - Symfoware Server Enterprise Edition V9.x - V11.x - Symfoware Server Enterprise Extended Edition V9.x - V11.x
Red Hat Enterprise Linux 6 (for Intel64)	Either one of the following versions: - Symfoware Server Enterprise Edition V10.x-V11.x - Symfoware Server Enterprise Extended Edition V10.x-V11.x

3.1.4 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 environment

The following database areas are required. The following databases must reside on a drive with NTFS format.

Type	Required size
RDB log file	100MB
RDB dictionary	55MB
Repository database	Calculated value by " Formula for calculating repository database "

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

Formula for calculating repository database

$$\text{Required size (MB)} = \{[(\text{servers} * 6 + \text{devices} * 11) / 40] * 17 + 512\} / 1024$$

- *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	Partition
Solaris	Slice
Linux	Partition
HP-UX	LUN
AIX	LUN

- 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 SynfinityDISK or PRIMECLUSTER Global Disk Services, 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.



Point

Cautions for calculating the disk space for the repository database:

- Round up to the integer, any fractions in the calculation results for the terms in the square brackets.
- When the calculated value is less than 65MB, use 65MB as the required size.
- If there is any possibility that the number of servers and/or devices will increase in the future, specify a larger disk space than calculated.

For Solaris or Linux environment

The following database areas are required.

Type	Required size
DB file directory	200MB
RDB log file directory	50MB
RDB dictionary directory	50MB
The directory containing the repository data storage DB	Disk space that calculated in " Formula for calculating repository database "

Note

- The following when you store the above mentioned database in the new device.
A management block is required for operation with the file system when the file system is created. The size of the file system must be less than the size of the defined device.
The capacity of the management block is specified using the relevant option to when the file system it is created.
- Confirm that free space listed above table is secured executing the df command to check the capacity of the file system after creating the file system.

Formula for calculating repository database

$$\text{Required size (MB)} = \{[(\text{servers} * 6 + \text{devices} * 11) / 40] * 17 + 512\} / 1024$$

- *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	Partition
Solaris	Slice
Linux	Partition
HP-UX	LUN
AIX	LUN

When the Managed Server to be managed is using mirroring with the SynfinityDISK or PRIMECLUSTER Global Disk Services, 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.

- 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.

Note

- Although the four directories can be created on the same device, for reliability and performance considerations, we recommend preparing these directories on another partition.
- When there are two or more Management Servers, define the number to be estimated as the total number on all Management Servers.

- Round up to the integer, any fractions in the calculation results for the terms in the square brackets.
- When the calculated capacity is less than 65 MB, use 65 MB as the minimum required size.
- When the calculated capacity and the free space in the prepared partition are the same size, the directory usage rate (capacity), displayed by the df command or similar, may be 100%, but this is not a problem.

 **Point**

If there is a possibility that the number of servers or number of partitions will be 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 will be increased in future and SynfinityDISK or PRIMECLUSTER Global Disk Services are used, also specify a size that is greater than the estimated size.

3.1.5 Registering the repository access user (for Solaris and Linux)

Register the user who performs the database access for repository to the operation system.

Refer to "The username and password for DB Setup" under the chapter "Installation procedure" in the *Software Release Guide* for the username and password of the database access user.

3.1.6 Kernel parameter tuning (for Solaris and Linux)

Tune the kernel parameters, which are required for operation.

3.1.6.1 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 /etc/system files and writing to /etc/project files. 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	315	Addition
	semsys:seminfo_semmsl	35	Maximum value
Message	msgsys:msginfo_msgmnb	4096	Maximum value
	msgsys:msginfo_msgmni	3	Addition
	msgsys:msginfo_msgtql	100	Maximum value

Edit the kernel parameters using the following methods.

- Add the tuning record to /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 shmsys:shminfo_shmseg = 60
set semsys:seminfo_semni = 320
set semsys:seminfo_semmsl = 35
set msgsys:msginfo_msgmnb = 4096
set msgsys:msginfo_msgmni = 53
set msgsys:msginfo_msgtql = 140
```

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



- 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	315	Addition	privileged
	process.max-sem-nsems	35	Maximum value	privileged
Message	process.max-msg-qbytes	4096	Maximum value	privileged
	project.max-msg-ids	3	Addition	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-msg-ids=(privileged,131,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 'project.max-shm-memory=(privileged,270585456,deny)' system
# projmod -s -K 'project.max-msg-ids=(privileged,131,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 'project.max-shm-memory=(privileged,270585456,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: project.max-msg-ids=(privileged,131,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: project.max-msg-ids=(privileged,131,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
```

3.1.6.2 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	<code>kernel.shmmax</code>	40000000	Maximum value
	<code>kernel.shmmni</code>	50	Addition
Semaphore	The first value of <code>kernel.sem (*1)</code>	30	Maximum value
	The second value of <code>kernel.sem (*1)</code>	640	Addition
	The fourth value of <code>kernel.sem (*1)</code>	305	Addition
Message	<code>kernel.msgmax</code>	512	Maximum value
	<code>kernel.msgmnb</code>	4096	Maximum value
	<code>kernel.msgmni</code>	3	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 = 250 32600 32 428
kernel.msgmax = 8192
kernel.msgmnb = 16384
kernel.msgmni = 18
```

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
```

3.1.7 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 install 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 "[D.9 Solaris/Linux Install parameter file \(for ETERNUS SF Manager\)](#)" for information on the install parameter file.

Table 3.4 Communication port numbers for ETERNUS SF Manager (for Solaris or Linux)

Service	Service name	Port number	Install 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
Repository service 1	rdaswstf	32004/tcp	Repository_service_1
Repository service 2	esfpostgres	15432/tcp	Repository_service_2
Remote access service	rmiswstf	9851/tcp	Remote_access_service
Exclusive control service	semswstf	9852/tcp	Exclusive_control_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

3.1.8 Confirmation of OS default locale (for Solaris and Linux)

ETERNUS SF Manager supports only "C" as the operating system default locale.

If the operating system default locale of your system is other than "C", change the value to "C" before installing ETERNUS SF Manager.

3.1.9 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 the IPv4 address](#)
- [If all Managed Servers use only the IPv6 address](#)
- [If Managed Servers using IPv4 and Managed Servers using IPv6 are combined](#)

If all Managed Servers use only the 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 will be installed.

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

For Solaris or Linux environment:

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

If all Managed Servers use only the 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 will be 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 environment:

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 will be 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 environment:

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



See

Refer to "[D.9 Solaris/Linux Install parameter file \(for ETERNUS SF Manager\)](#)" 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 will not be available.

3.2 Installation procedure of ETERNUS SF Manager (for Windows)

There are two methods of performing the 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

12 port numbers are used, as follows:

Table 3.5 Services and port numbers of ETERNUS SF Manager for Windows (default)

Service	Display name on the [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

Service	Display name on the [Port Registration] screen	Used port number
Repository service 1	Repository service 1	2004
Repository service 2	Repository service 2	15432
Remote access service	Remote access service	9851
Exclusive control service	Exclusive control service	9852
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

- When the user who belongs to Administrators of the domain installs the ETERNUS SF Manager, the Windows "Computer Browser service" must be started.
- Use DVD-ROM to install ETERNUS SF Manager.
Do not copy DVD-ROM contents to a local directory for installing ETERNUS SF Manager.
- 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 and delete this account because it is necessary to operate the ETERNUS SF system.
- When reinstall on Windows Server 2012 or later, 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
 - rmiswstf
 - semswstf
 - rdaswstf

The installation is performed as follows:

1. Log on to the server using Administrator privileges.

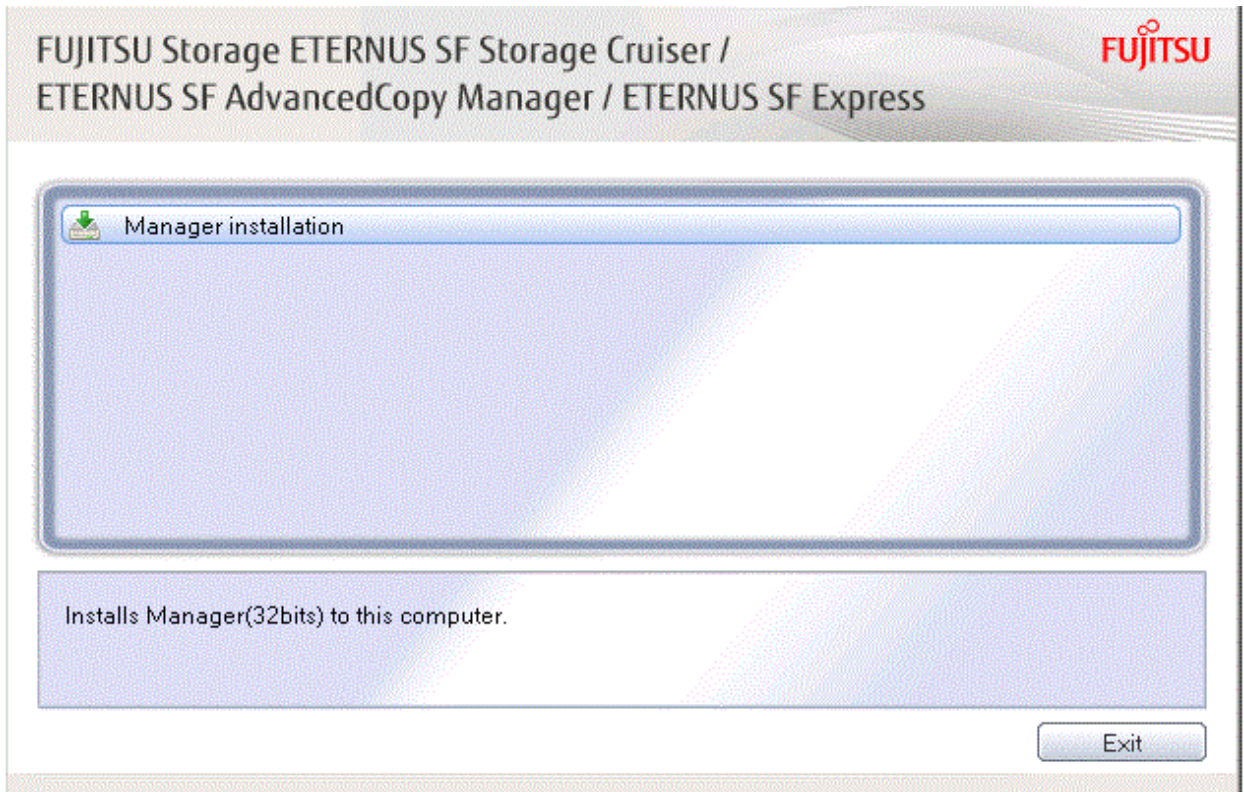
 Information

Specify a user that corresponds to the using server type.

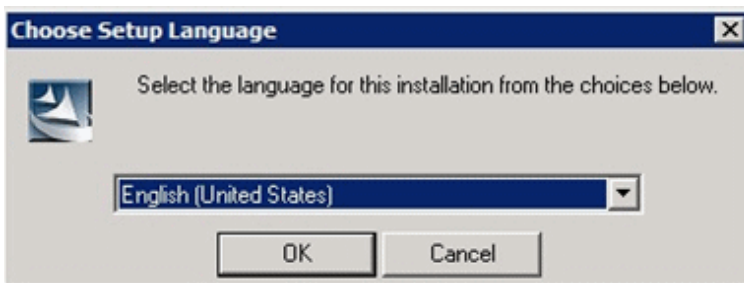
Server type	User to be specified
Domain Controller	Domain user
Machine that belongs to the domain	Local user
WORKGROUP (does not belong to the domain)	

2. Insert the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack for Windows (Manager Program) (1/2)" for this version into the DVD-ROM drive.

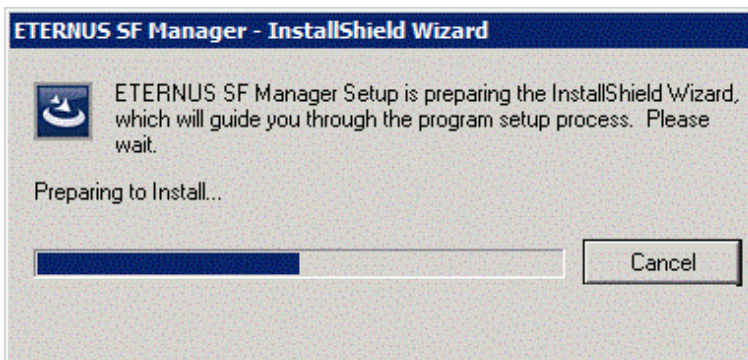
3. The following window will be displayed. Click **Manager installation**.
To cancel the installation at this point, click **Exit**.



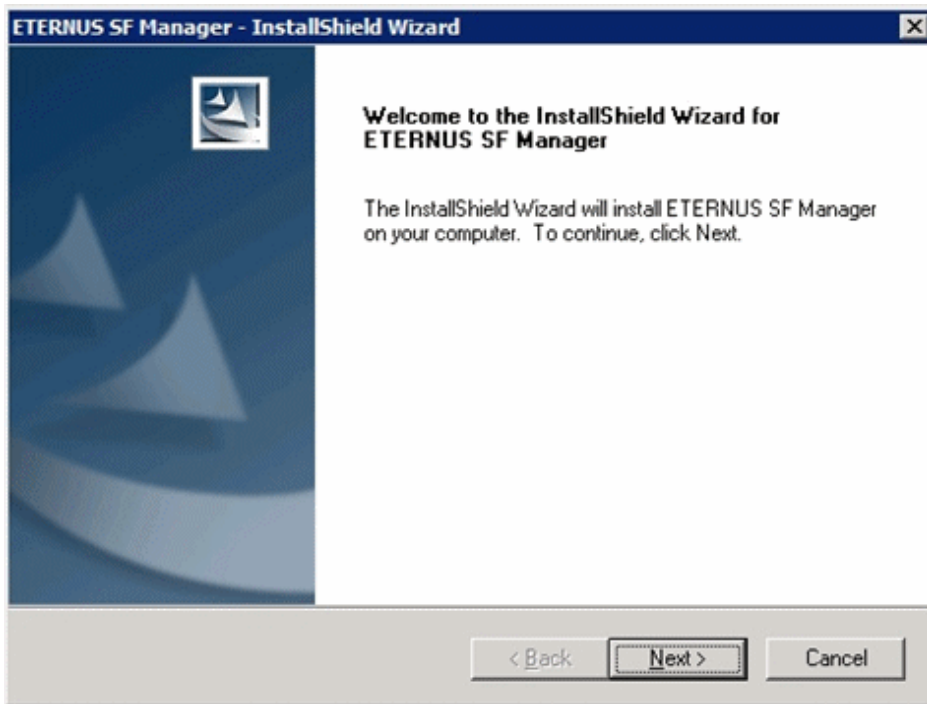
4. The **Choose Setup Language** dialog box will be displayed. Select the appropriate language and click **OK**.
The language selected in this dialog box will be used during the installation and uninstallation.



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

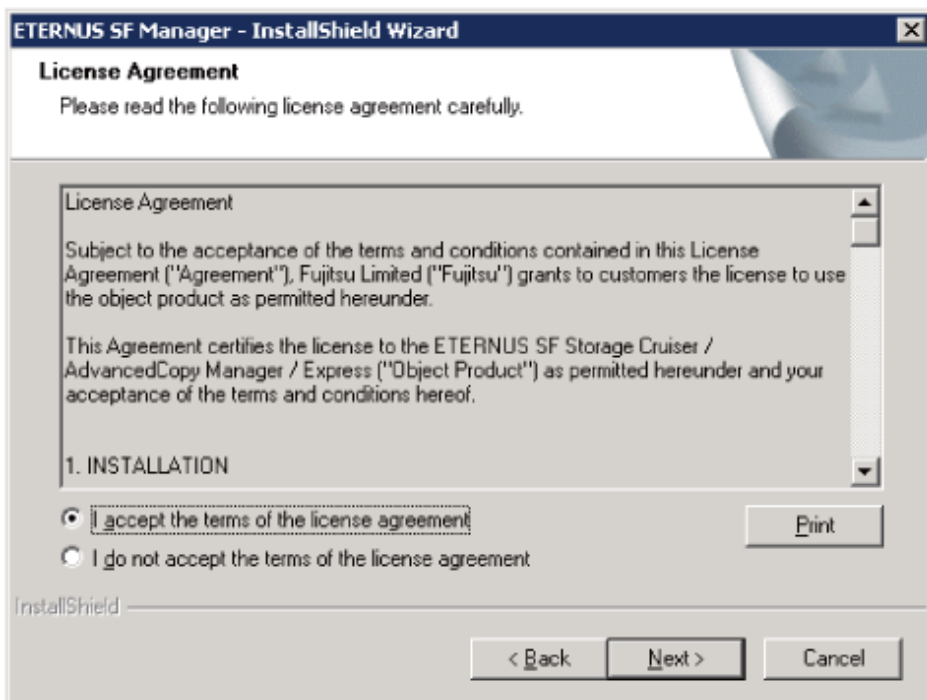


6. The installation wizard page will be displayed. Click **Next**.



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.].

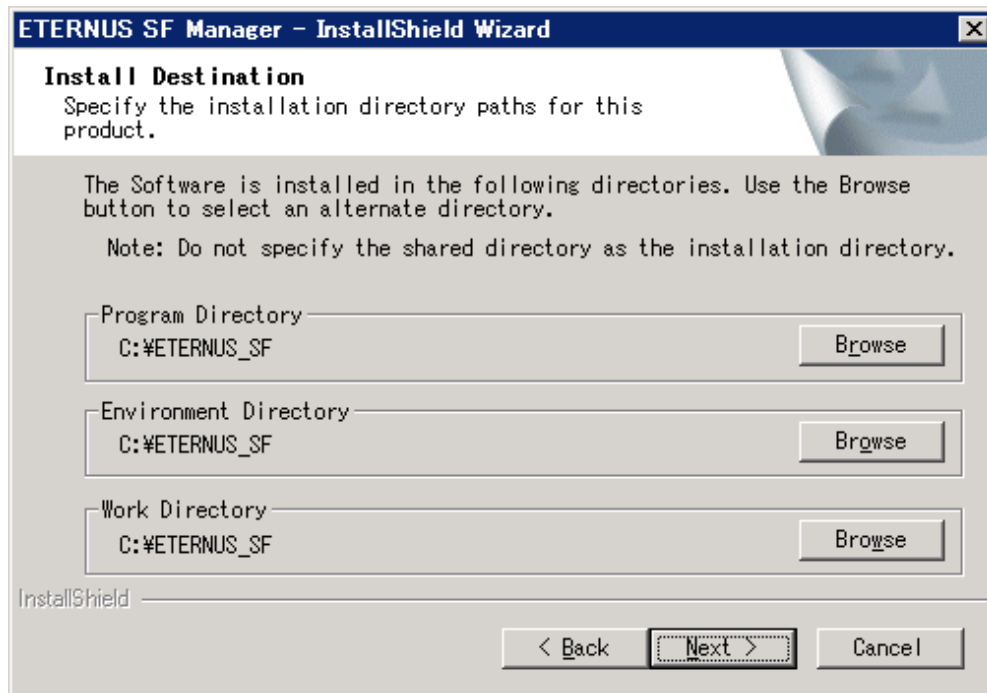
Option selection

Select the desired options according to the following information.

Install option	Explanation
Default	<p>Changing values in the Installation Destination page and Port Registration page is optional. In this case, steps 9 and 10 can be skipped.</p> <p>For this installation method, the following checks are automatically performed relating to the information provided by default:</p> <ul style="list-style-type: none"> - Is there enough disk space for the installation in the default directory? - Are the default port numbers available? <p>If an error is detected at this stage, a warning dialog box will be displayed. If no error is detected, the Start Copying Files page will be displayed.</p>
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

- 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.

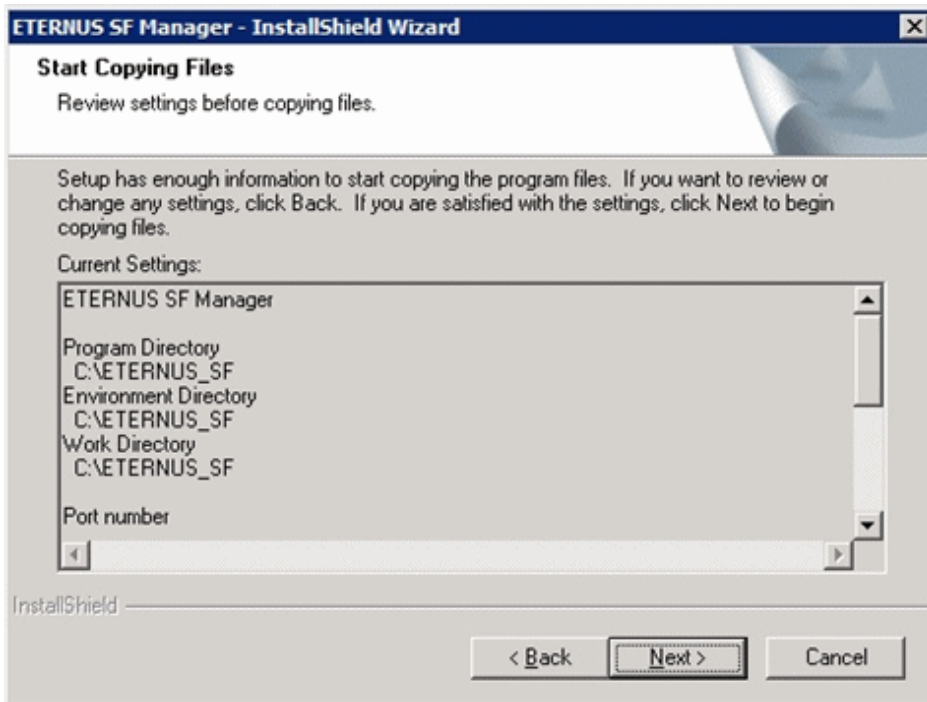
Service name	Port number / protocol (default)	Used purpose
astm	24917/tcp	This is used for the following purpose. - Internal communications for Automated Storage Tiering

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

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

If the settings are correct, click **Next**.

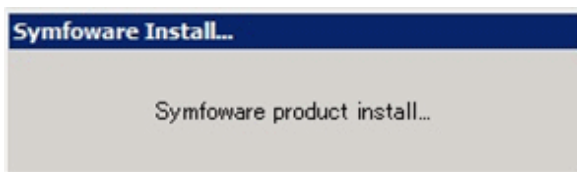
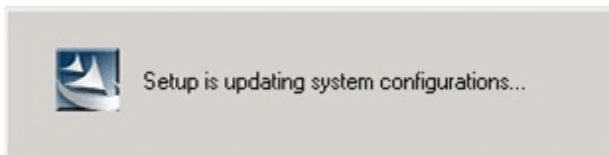
To change a setting, click **Back**.



12. Copying the program will be started.

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

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



14. Enter the requested information for the repository database creation in the following page.
Then, click **Continue**.

Database creation folder

This is the folder where the database will be created.

Enter the full path for each of the database directories shown below. The specified folders must be new NTFS folders. Only specify NTFS folders using unique folder names.

The default repository database will be displayed in each field. Change as necessary.

- DB log file storage location
Specify the folder for storing the RDB log file.
- DB dictionary file storage location
Specify the folder for storing the RDB dictionary file.
- Repository database space storage location
Specify the folder for storing the repository database space.

Note

- Do not specify a shared folder in which to create the database.
- The number of characters in a folder name must be between 4 and 80. Spaces and the characters " | : * ? / . < > , % & ^ = ! ; # ' @ () + are not supported for file names.
- Do not select the option [Compress drive to save disk space] in the **General** tab for any of these drives.
If the drive is compressed, there is more overhead than normal I/O operations. Depending on I/O, an access error may occur because of insufficient operating system resources.
- Do not check the [Compress or Encrypt Attributes] in the **Advanced Attributes** section of the **Properties** or **Advanced** part of the **General** tab.
Load is increased for a compressed and/or encrypted drive. Access errors may occur in an OS with insufficient resources.
If the encryption property is selected, access errors may occur when decryption cannot be performed.

Database size

The database size is entered in megabyte units.

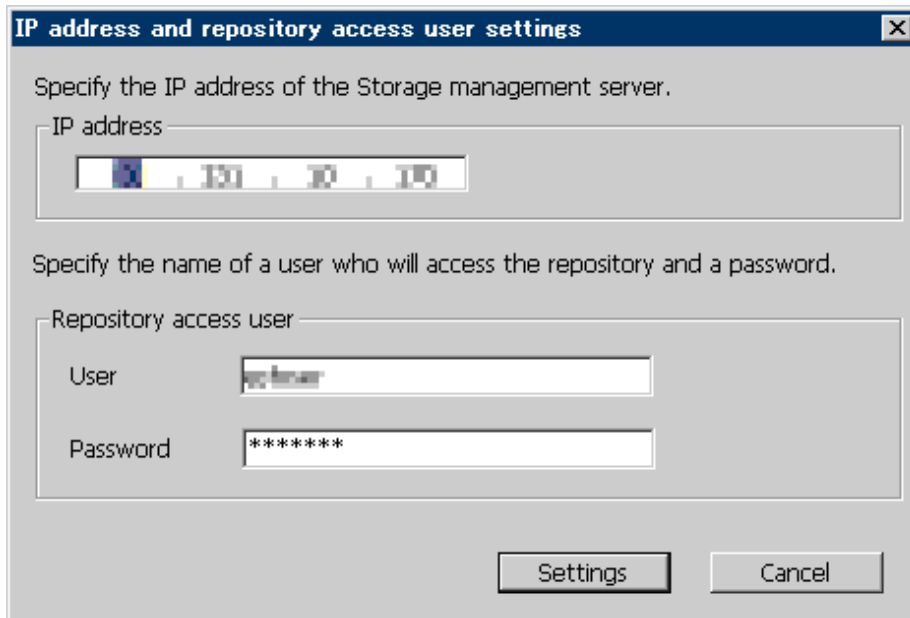
When using Express's manager or AdvancedCopy Manager's manager:

The size to enter is the result of the calculation performed before installation as described in "[3.1.4 Estimation of database size](#)". To use the default value, select the **Default size (65 MB)** checkbox.

When using only Storage Cruiser's manager:

Select the **Default size (65 MB)** checkbox.

15. The following page will be displayed. The default values will be displayed in the page. Change as necessary. Enter the IP address and the database user settings. Then, click **Settings**.



IP address

Enter the IP address of the Management Server (local system).

Specify the IPv4 address confirmed with "[3.1.9 IP address confirmation](#)".

Repository access user

Enter user name and password for the repository access user.

The user name entered here must have local logon or domain logon permissions at the OS level.

The following conditions apply for the user names and passwords:

- The user name and password must be compatible with the base operating system.
- The user name and password can be up to 18 characters (bytes).

Refer to "Installation procedure" in the *Software Release Guide* for the default user name and password. However, use other than default value because of security reasons.

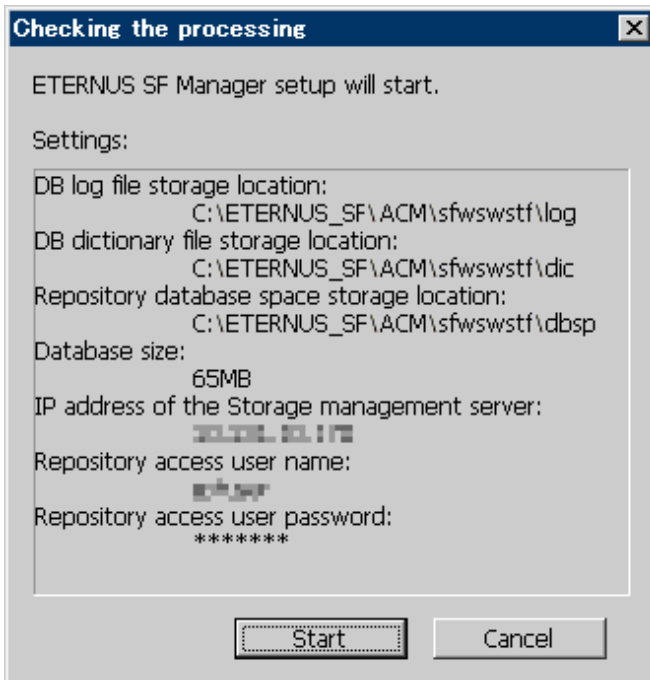
Point

- When Management Server has two or more IP addresses, specify IP address that can communicate to Management Server from all AdvancedCopy Manager's agents.
- Specify IPv4 for the IP address if both IPv4 and IPv6 are used for Management Server operation or when only IPv6 is used for Management Server operation. Add and make changes to the IPv6 address once installation is complete, referring to "[4.4.5 Updating Management Server IP address information](#)".

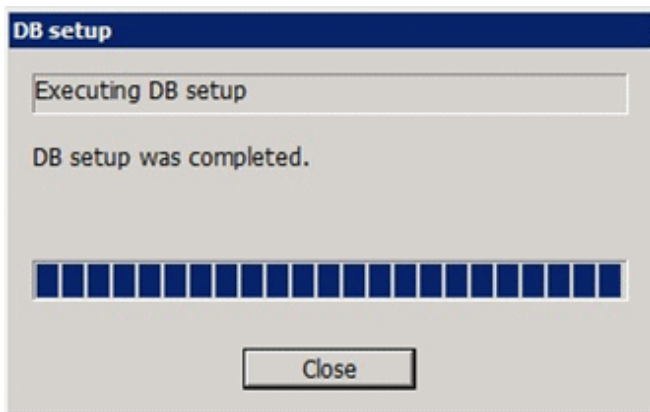
 **Note**

- When the user who belongs to Administrators of the domain installs the ETERNUS SF Manager, the Windows "Computer Browser service" must be started. If the installation is performed when the Computer Browser service is not started, the database setup processing might fail and the "Machine information cannot be obtained" message will be displayed.

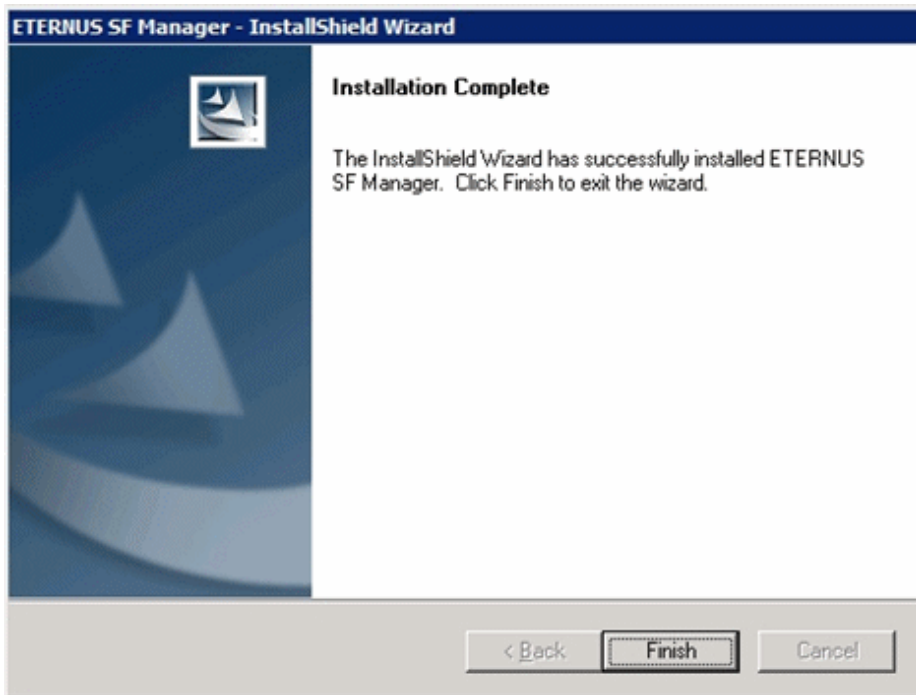
16. The following page will be displayed. Check the contents and click **Start**.



17. The database setup process starts. The following progress bar will be displayed, when the process is completed, click **Close**.



18. The following installation wizard page will be displayed. The installation process is completed. Click **Finish**.



19. Eject the DVD-ROM.

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

3.3 Silent installation procedure of ETERNUS SF Manager (for Windows)

A silent installation is a method of loading the required information for installation from a pre-created install parameter file to install software automatically without requiring user interaction at the time of installation.

Take the following steps for silent installation:

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

Note

- Silent installation does not support the version upgrade installation function.
For version upgrade installation, refer to the *ETERNUS SF Migration Guide* of this version.
- When installing by the user belonging to domain administrator, the Windows "Computer Browser service" must be started.
- Use the DVD-ROM for installation.
Copy the content of the DVD-ROM to a local directory but do not install it.
- After installation, do not rename, move or delete the installation destination directory.
- During installation, the operating system user account (esfpostgres) is added.
Do not change or delete this account. It is required for ETERNUS SF operation.
- When reinstalling ETERNUS SF Manager on Windows Server 2012 or later, 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

- rmiswstf
- semswstf
- rdaswstf

3.3.1 Editing install parameter file

An install parameter file is a file in which to specify install parameters such as installation destination directory and port number. This file is stored on DVD-ROM and default values are set for respective install parameters. For details on the install parameter file, refer to "[D.1 Windows Install parameter file \(for ETERNUS SF Manager\)](#)".

The install parameter file is stored on the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack for Windows (Manager Program) (1/2)" of this version.

- Storage location

```
dvdromDrive:\Manager_windows\install_parameter.ini
```

When installing using the default install parameter values, no editing is required.

When changing install parameters, copy the install parameter file on the DVD-ROM to an optional location and edit the copied file. For description of each install parameter, refer to "[D.2 Windows Install parameters \(for ETERNUS SF Manager\)](#)".

In this manual, installing using the default install parameter values is referred to as "Default install" and installing with edited install parameters is referred to as "Custom install".

3.3.2 Running silent installation

The procedure to silently install 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-ROM "ETERNUS SF SC/ACM/Express Mediapack for Windows (Manager Program) (1/2)" of this version into the DVD-ROM 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*.

```
dvdromDrive:\Manager_windows\esfsilentinstall.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*.

```
dvdromDrive:\Manager_windows\esfsilentinstall.bat -eula agreed -s installParameterFile [-1  
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 install 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 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 multiplexly the command for silent installation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an install log file is not created.

5. On completion of installation, a command prompt is displayed.
Remove the DVD-ROM 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 "[E.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.

3.4 Installation procedure of ETERNUS SF Manager (for Solaris)

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

- Default install

Install ETERNUS SF Manager by using the default values described in "[D.10 Solaris/Linux Install parameters \(for ETERNUS SF Manager\)](#)".

- Custom install

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

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

Refer to "[D.9 Solaris/Linux Install parameter file \(for ETERNUS SF Manager\)](#)" for information on the install parameter file.

Refer to "[D.10 Solaris/Linux Install parameters \(for ETERNUS SF Manager\)](#)" for information on the install parameter.

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

Point

When Symfoware has already been installed, perform the following procedure:

1. Stop the process of Symfoware/RDB, WebDBtools, and RDA-SV temporarily.
2. Install ETERNUS SF Manager (for Solaris).
3. Restart the process of Symfoware/RDB, WebDBtools, and RDA-SV.

Note

- Perform the following operation before installing ETERNUS SF Manager.
 - Check and make sure that the system is set to use a shadow password.
 - Register the user who performs the database access for repository to the operation system. Refer to "[3.1.5 Registering the repository access user \(for Solaris and Linux\)](#)" for details.
 - If the value of the environment variable PATH exceeds 800 characters, change it to 800 or less characters.
 - Add "/opt/FSUNrdb2b/lib" to the value of the environment variable LD_LIBRARY_PATH_64.
- 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 and delete this account because it is necessary to operate the ETERNUS SF system.

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:

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

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

```
# mount -F hfs -o ro /dev/dsk/c0t4d0s0 dvdromMountPoint
```

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

```
# cd dvdromMountPoint/Manager_unix
```

6. Execute the install shell.

- For default install:

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

- For custom install:

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

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


7. The license agreement information will be displayed. Display example is mentioned below.
If the conditions are agreeable, enter "y".

```
+-----+
|                                     |
|           ETERNUS SF V16.0         |
|                                     |
| All Rights Reserved, Copyright (C) FUJITSU LIMITED 2013 |
|                                     |
+-----+
```

License Agreement

Subject to the acceptance of the terms and conditions contained in this License Agreement ("Agreement"), Fujitsu Limited ("Fujitsu") grants to customers the license to use the object product as permitted hereunder.

This Agreement certifies the license to the ETERNUS SF Storage Cruiser / AdvancedCopy Manager / Express ("Object Product") as permitted hereunder and your acceptance of the terms and conditions hereof.

1. INSTALLATION

You are allowed to install and use manager module and agent module of the Object Product on any computer connected to the Storage Device directly or through network and you are also allowed to install and use client module of the Object Product on any computer.

2. ARCHIVAL COPY

You may make one (1) archival copy of the Object Product.

3. EMBEDDING

If the Object Product is expected to be used as embedded in another program, you may embed the Object Product, in whole or in part, in such other program, in accordance with the procedure described in the applicable documentation.

4. NO ASSIGNMENT

You may not rent, lease, sublicense, assign, transfer or create lien against the Object Product.

5. MODIFICATION

You may not modify or, except to the extent expressly permitted by applicable law, reverse engineer (including, without limitation, decompile and disassemble) the Object Product, and you may not permit others to do so.

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7. MISCELLANEOUS

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

8. The installation information will be displayed. Display example is mentioned below.
To continue installation, enter "y". To stop the installation, enter "q".

Setting of installation parameter file.

```
Installation_function:      ETERNUS SF Manager

Character_code:            EUC

Port number
  ETERNUS_SF_Manager_apache_service: 9855
  Communications_service_1:         1226
  Communications_service_2:         4917
  Repository_service_1:             32004
  Repository_service_2:             15432
  Remote_access_service:           9851
  Exclusive_control_service:       9852
  Internal_port_1:                 28005
  Internal_port_2:                 28009
  Internal_port_3:                 28443
  Internal_port_4:                 24916
  Internal_port_5:                 24917

Repository database setup
  DB_file_directory:              /var/opt/FJSVswstf/sfswstf/db
```

```

RDB_dictionary_directory:      /var/opt/FJSVswstf/sfswstf/dic
RDB_log_file_directory:       /var/opt/FJSVswstf/sfswstf/log
Repository_DB_space_directory: /var/opt/FJSVswstf/sfswstf/dbsp
Repository_data_size:         65
Management_server_IP_address:
AdvancedCopy_Manager_ARCH:    32bit
esfpostgres_UID:
Do you want to continue the installation? [y,q]:

```

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

```

INFO: ETERNUS SF was installed successfully.

```

If an error occurs during installation, the following message will be 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 install parameter file not to overlap the port number and perform the custom install (Refer to step 7).

- 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-ROM. The example is shown below.

```

# cd

```

11. Unmount the DVD-ROM.

```

# umount dvdromMountPoint

```

12. Eject the DVD-ROM.

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



- Even after the database is created, keep using a shadow password and continue the operation.
- If an IP address for Management Server is not specified in the install 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 the IP address of Management Server" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Solaris)*.
- The user information registered in "3.1.5 Registering the repository access user (for Solaris and Linux)" is set automatically as the user who performs the database access for repository. After the installation is completed, change the user information if required. Refer to "Change of password or deletion of the user who was specified as the repository access user" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Solaris)* for information on how to change the user information.

3.5 Silent installation procedure of ETERNUS SF Manager (for Solaris)

A silent installation is a method of loading the required information for installation from a pre-created install parameter file to install software automatically without requiring user interaction at the time of installation.

Take the following steps for silent installation:

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

Point

If Symfoware is installed, take the following procedure:

1. Stop the processes of Symfoware/RDB, WebDBtools and RDA-SV.
 2. Install ETERNUS SF Manager (for Solaris).
 3. Start the processes of Symfoware/RDB, WebDBtools and RDA-SV.
-

Note

- Silent installation does not support the version upgrade installation function.
For version upgrade installation, refer to the ETERNUS SF Migration Guide of this version.
 - Perform the following procedure before installing:
 - Check whether the system is set to use shadow passwords. If not set to use shadow passwords, set it to use shadow passwords.
 - Register access users to repository databases to the operating system beforehand. For details, refer to "[3.1.5 Registering the repository access user \(for Solaris and Linux\)](#)".
 - If the value of the environment variable PATH exceeds 800 characters, change the value to 800 or less characters.
 - Add "/opt/FSUNrdb2b/lib" to the value of the environment variable LD_LIBRARY_PATH_64.
 - 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 or delete this account. It is required for ETERNUS SF operation.
-

3.5.1 Editing install parameter file

An install parameter file is a file in which to specify install parameters such as installation destination directory and port number. This file is stored on DVD-ROM and default values are set for respective install parameters. For details on the install parameter file, refer to "[D.9 Solaris/Linux Install parameter file \(for ETERNUS SF Manager\)](#)".

The install parameter file is stored on the DVD-ROM "ETERNUS SF SC/ACM Mediapack for Solaris (Manager Program) (2/2)" of this version.

- Storage location

```
dvdromMountDir/Manager_unix/install_parameter.txt
```

When installing using the default install parameter values, no editing is required.

When changing install parameters, copy the install parameter file on the DVD-ROM to an optional location and edit the copied file. For description of each install parameter, refer to "[D.10 Solaris/Linux Install parameters \(for ETERNUS SF Manager\)](#)".

In this manual, installing using the default install parameter values is referred to as "Default install" and installing with edited install parameters is referred to as "Custom install".

3.5.2 Running silent installation

The procedure to silently install ETERNUS SF Manager (for Solaris) is as follows:

1. Log in to the target server as root (superuser).
2. Make sure that a local file system is mounted.
If not, run the following command to mount a local system:

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

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

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

5. 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*.

```
# dvdromMountPoint/Manager_unix/esfsilentinstall.sh -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*.

```
# dvdromMountPoint/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 install 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 multiplexly the command for silent installation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an install log file is not created.

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

```
# umount dvdromMountPoint
```

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

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

Point

- After creating databases, keep the settings that use shadow passwords.
- If the IP address of the Management Server is not specified for the install 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 "Change IP address of Management server" in the *ETERNUS SF AdvancedCopy Manager Operation Guide((for Solaris)*.
- As access users to repository databases, the user information registered in the "[3.1.5 Registering the repository access user \(for Solaris and Linux\)](#)" is auto-configured. On completion of installation, change the user information as required. For the change method, refer to "Deleting a repository accessible user or changing a repository accessible user's password" in the *ETERNUS SF 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 "[E.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 Installation procedure of ETERNUS SF Manager (for Linux)

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

- Default install

Install ETERNUS SF Manager by using the default values described in "[D.10 Solaris/Linux Install parameters \(for ETERNUS SF Manager\)](#)".

- Custom install

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

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

Refer to "[D.9 Solaris/Linux Install parameter file \(for ETERNUS SF Manager\)](#)" for information on the install parameter file.

Refer to "[D.10 Solaris/Linux Install parameters \(for ETERNUS SF Manager\)](#)" for information on the install parameter.

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

Point

When Symfoware has already been installed, perform the following procedure:

1. Stop the process of Symfoware/RDB, WebDBtools, and RDA-SV temporarily.
2. Install ETERNUS SF Manager (for Linux).
3. Restart the process of Symfoware/RDB, WebDBtools, and RDA-SV.

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 and delete this account because it is necessary to operate the ETERNUS SF system.

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:

```
# mount -a
```

3. Insert the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack for Linux 64bit (Manager Program) (2/2)" for this version into the DVD-ROM drive.
4. Mount the DVD-ROM.

```
# mount /dev/cdrom dvdromMountPoint
```

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

```
# cd dvdromMountPoint/Manager_unix
```

6. Execute the install shell.

- For default install:

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

- For custom install:

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

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

7. The license agreement information will be displayed. Display example is mentioned below.
If the conditions are agreeable, enter "y".

```
+-----+
|                ETERNUS SF V16.0                |
|                                                  |
| All Rights Reserved, Copyright (C) FUJITSU LIMITED 2013 |
+-----+
```

+-----+
License Agreement

Subject to the acceptance of the terms and conditions contained in this License Agreement ("Agreement"), Fujitsu Limited ("Fujitsu") grants to customers the license to use the object product as permitted hereunder.

This Agreement certifies the license to the ETERNUS SF Storage Cruiser / AdvancedCopy Manager / Express ("Object Product") as permitted hereunder and your acceptance of the terms and conditions hereof.

1. INSTALLATION

You are allowed to install and use manager module and agent module of the Object Product on any computer connected to the Storage Device directly or through network and you are also allowed to install and use client module of the Object Product on any computer.

2. ARCHIVAL COPY

You may make one (1) archival copy of the Object Product.

3. EMBEDDING

If the Object Product is expected to be used as embedded in another program, you may embed the Object Product, in whole or in part, in such other program, in accordance with the procedure described in the applicable documentation.

4. NO ASSIGNMENT

You may not rent, lease, sublicense, assign, transfer or create lien against the Object Product.

5. MODIFICATION

You may not modify or, except to the extent expressly permitted by applicable law, reverse engineer (including, without limitation, decompile and disassemble) the Object Product, and you may not permit others to do so.

6. LIMITED WARRANTY

(a) You acknowledge that Fujitsu cannot guarantee that your use of the Object Product will be uninterrupted, that the Object Product will be error free or that all Product errors will be corrected. However, if within ninety (90) days following your acquisition of the Object Product you notify the reseller from which you have acquired the Object Product of physical defects of the media containing the Object Product, Fujitsu will, at its sole discretion, correct the non-conformance or provide you with information necessary to correct the non-conformance, or replace the defective media with a new media. Only if you inform such reseller of your problem with the Object Product during the above mentioned warranty period and provide satisfactory evidence of the date you acquired the Object Product will Fujitsu be obligated to honor this warranty.

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

8. The installation information will be displayed.
To continue installation, enter "y". To stop the installation, enter "q".

Setting of installation parameter file.

Installation_function: ETERNUS SF Manager

Character_code: UTF8

Port number

ETERNUS_SF_Manager_apache_service: 9855

Communications_service_1: 1226

Communications_service_2: 4917

Repository_service_1: 32004

Repository_service_2: 15432

Remote_access_service: 9851

Exclusive_control_service: 9852

Internal_port_1: 28005

Internal_port_2: 28009

Internal_port_3: 28443

Internal_port_4: 24916

Internal_port_5: 24917

Repository database setup

DB_file_directory: /var/opt/FJSVswstf/sfswstf/db

RDB_dictionary_directory: /var/opt/FJSVswstf/sfswstf/dic

RDB_log_file_directory: /var/opt/FJSVswstf/sfswstf/log

Repository_DB_space_directory: /var/opt/FJSVswstf/sfswstf/dbsp

Repository_data_size: 65

Management_server_IP_address:

AdvancedCopy_Manager_ARCH: 32bit

esfpostgres_UID:

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

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

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

If an error occurs during installation, the following message will be 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 install parameter file not to overlap the port number and perform the custom install (Refer to step 7).

- 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-ROM. The example is shown below.

```
# cd
```

11. Unmount the DVD-ROM.

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

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

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



Point

- Even after the database is created, keep using a shadow password and continue the operation.
- If an IP address for Management Server is not specified in the install 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 the IP address of Management Server" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Linux)*.
- The user information registered in "[3.1.5 Registering the repository access user \(for Solaris and Linux\)](#)" is set automatically as the user who performs the database access for repository. After the installation is completed, change the user information if required. Refer to "Change of password or deletion of the user who was specified as the repository access user" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Linux)* for information on how to change the user information.

3.7 Silent installation procedure of ETERNUS SF Manager (for Linux)

A silent installation is a method of loading the required information for installation from a pre-created install parameter file to install software automatically without requiring user interaction at the time of installation.

Take the following steps for silent installation:

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

Point

If Symfoware is installed, take the following procedure:

1. Stop the processes of Symfoware/RDB, WebDBtools and RDA-SV.
 2. Install ETERNUS SF Manager (for Linux).
 3. Start the processes of Symfoware/RDB, WebDBtools and RDA-SV.
-

Note

- Silent installation does not support the version upgrade installation function.
For version upgrade installation, refer to the *ETERNUS SF Migration Guide* of this version.
 - 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 or delete this account. It is required for ETERNUS SF operation.
-

3.7.1 Editing install parameter file

An install parameter file is a file in which install 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 install parameters. For details on the install parameter file, refer to "[D.9 Solaris/Linux Install parameter file \(for ETERNUS SF Manager\)](#)".

The install parameter file is stored on the DVD-ROM "ETERNUS SF SC/ACM/Express MediaPack for Linux 64bit (Manager Program) (2/2)" of this version".

- Storage location

```
dvdromMountDir/Manager_unix/install_parameter.txt
```

When installing with default install parameter values, no editing is required.

When changing install parameters, copy the install parameter file on the DVD-ROM to an optional location and edit the copied file. For descriptions of respective install parameters, refer to "[D.10 Solaris/Linux Install parameters \(for ETERNUS SF Manager\)](#)".

In this manual, installing using the default install parameter values is referred to as "Default install" and installing with edited install parameters is referred to as "Custom install".

3.7.2 Running silent installation

The procedure to silently install ETERNUS SF Manager (for Linux) is as follows:

1. Log in to the target server as 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-ROM "ETERNUS SF SC/ACM/Express Mediapack for Linux 64bit (Manager Program) (2/2)" of this version into the DVD-ROM drive.
4. Mount the DVD-ROM.

```
# mount /dev/cdrom dvdromMountPoint
```

5. 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*.

```
# dvdromMountPoint/Manager_unix/esfsilentinstall.sh -eula agreed [-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*.

```
# dvdromMountPoint/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 install 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 multiplexly the command for silent installation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an install log file is not created.

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

```
# umount dvdromMountPoint
```

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

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

Point

- Even after creating databases, keep the settings to use shadow passwords.
 - If the IP address of the Management Server is not specified for the install 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 the IP address of Management server" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Linux)*.
 - As access users to repository databases, the user information registered in the "[3.1.5 Registering the repository access user \(for Solaris and Linux\)](#)" is auto-configured. On completion of installation, change the user information as required. For the change method, refer to "Deleting a repository accessible user or changing a repository accessible user's password" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Solaris)*.
-

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 "[E.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 user accounts and the corresponding ranges of control are shown in the table below.

ETERNUS SF role	Administrator privilege of the operating system	
	Yes	No
Yes	Operations are possible from the Web Console and the command line.	Operations are possible only from the Web Console.
No	Operations are possible only from the command line.	Operations are neither possible from the Web Console nor from the command line.

The following section explains how to create and make settings for user accounts controlling the Web Console and for users executing commands via command input.

4.1.1.1 Creating user accounts for operating from the Web Console

For user authentication when logging in on the 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 need to 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 environment

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 environment

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 environment

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 need to be specified. Make sure to specify the following values:

Group scope: Domain local

Group type: Security

For Solaris environment or Linux environment

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

- esfadmin
- esfmon

2. Create user accounts for operating from the Web Console.

For Windows environment

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 environment

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

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

For Windows environment

Use [Computer Management] and so on.

For Solaris environment

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 environment

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 Creating user accounts for executing command

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 the Web Console and execute commands.

For Windows

In Windows Server 2008 or later, a User Account Control function (hereafter called "UAC") has been added to enhance security. The cases where UAC is enabled and disabled are explained below.

- When UAC is enabled

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

- When UAC is disabled

Processes or programs that require administrator permissions must be executed by either the built-in 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
Built-in Administrator account	A	A
User account in the Administrators group	B	A
Standard user account	B	C

A: Runs without displaying the permissions granted dialog box.

B: Displays the permissions granted dialog box, and runs if permissions are approved.

C: Does not run, because Administrator permissions cannot be obtained.

If you do not wish to perform the dialog process using the administrator permissions dialog box, and the conditions marked as "B" in the table above apply (for example, in batch processing), the program must be executed using administrator permissions with one of the following methods:

- In the Command Prompt, use "runas" command to execute the program as a user with administrator permissions. A password must be entered after this.

[Batch file (test.bat) execution example]


```
runas /noprofile /user:mymachine\acmuser "cmd.exe /k test.bat"
```

- In the Task Scheduler, specify "Execute with top level privileges" to operate the program.
- Execute the program with the Command Prompt.
 - For Windows Server 2008 or Windows Server 2008 R2
From the **Start** menu, select **All Programs > Accessories** and right-click on **Command Prompt**. Specify "Run as Administrator" to run the Command Prompt. Execute the program from the Command Prompt.
 - For Windows Server 2012 or later
Specify "Command Prompt (Admin)" to run the Command Prompt. Execute the program from the Command Prompt.

4.1.1.3 User account of Linux/Solaris

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

4.1.2 Setting up for using Web Console

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

Port number/Protocol	Communication start direction	Function
9855/tcp	From Web Console to Management Server	Screen display and operate from the Web Console

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



See

.....
Refer to "Operating Environment and Environment Settings" in the *ETERNUS SF 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 the Web Console. Therefore, launch the Web Console and check that the initial screen is displayed.



See

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

4.1.4 Changing the information on the repository access user

If you use the information on the repository access user (user name or password) by default, a problem may occur for security reasons. Therefore, change the information on the repository access user used during installation.

To change the information on the repository access user, change the user information on the operating system, and then reconfigure the information on "repository access user" by using the `stguserset` command.



Refer to "Change of password or deletion of the user who was specified as the repository access user" in "Changing the Operating Environment" in the *ETERNUS SF Advanced Copy Manager Operation Guide* relevant to the OS of the Management Server for information about the procedure.

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.

With reference to the table below, create user accounts of system administrator and business administrator.

Table 4.4 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 the Web Console" for information on the ETERNUS SF roles.



Any user with privileges described in "Table 4.4 Privileges given to administrator user account" can use Express. Create user accounts used only for Express to prevent unexpected users from using it.



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

4.2.2 Configuring the 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, and 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 (For ETERNUS DX80 S2/DX90 S2/DX100 S3/DX200 S3)

Port number/Protocol	Communication start direction	Function
		Performance management (For ETERNUS DX80 S2/DX90 S2/DX100 S3/DX200 S3) Advanced Copy (For ETERNUS DX80 S2/DX90 S2/DX100 S3/DX200 S3)
32002/tcp	From Management Server to ETERNUS Disk storage system	Advanced Copy (For ETERNUS DX80 S2/DX90 S2/DX100 S3/DX200 S3)
1999/tcp (*2)	From Management Server to ETERNUS Disk storage system	Configuration management Advanced Copy (For ETERNUS DX60/DX60 S2/DX80/DX90)
22/tcp	From Management Server to ETERNUS Disk storage system	Configuration management (For ETERNUS DX80 S2/DX90 S2/DX100 S3/DX200 S3) Performance management (For ETERNUS DX80 S2/DX90 S2/DX100 S3/DX200 S3)
23/tcp	From Management Server to ETERNUS Disk storage system	Configuration management (For ETERNUS DX60/DX60 S2/DX80/DX80 S2/DX90/DX90 S2/DX100 S3/DX200 S3)

*1: For Maintenance-Secure connection

*2: For Maintenance connection

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.

.....

Note

.....

There are notes in combination with products using the SNMP Trap reception function.

- For Windows environment

As with ServerView AlarmService, Express use OS standard SNMP Trap reception service for fault management with SNMP Trap reception. Therefore, if any of the following products are mixed, take the same setting procedure as ServerView AlarmService is mixed.

- Systemwalker Centric Manager

Refer to each product's manual for specific setting method.

- For Linux environment
 - As with ServerView AlarmService, Express use OS standard snmptrapd of net-snmp package for fault management with SNMP Trap reception.
 - Therefore, if any of the following products are mixed, take the same setting procedure as ServerView AlarmService is mixed.
 - Systemwalker Centric Manager All versions
 - ServerView Resource Coordinator VE V2.1.1 - V2.1.3
- Refer to each product's manual for specific setting method.
- When uninstalling the following product in an environment mixed with it, FJSVswstt package remains.
 - ServerView Resource Coordinator VE V2.1.1 - V2.1.3

Execute the following command to delete FJSVswstt package:

```
# rpm -e FJSVswstt
```

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)

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

4.2.3.2 SNMP Trap setting (for Linux)

In SNMP Trap settings of the Management Server, set up according to the operating environment.

If the device is monitored

Install OS standard net-snmp package.

When installing net-snmp package, lm-sensors package may be required. These packages provide in OS installation media.
Edit the setup file for snmptrapd after ETERNUS SF Manager installation.



Note

- Create text file (snmptrapd.conf) in /etc/snmp directory when /etc/snmp/snmptrapd.conf does not exist.
- For Express, be sure to set /etc/snmp/snmptrapd.conf as follows:

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

- Normally, the snmptrapd configuration file indicates /etc/snmp/snmptrapd.conf. However other products may use /usr/share/snmp/snmptrapd.conf. Therefore, in this procedure, check both /etc/snmp/snmptrapd.conf and /usr/share/snmp/snmptrapd.conf. for coexisting with other products.
- If /usr/share/snmp/snmptrapd.conf is not used on other products, then disable access control by adding "disableAuthorization yes" to "/etc/snmp/snmptrapd.conf".

Edit the snmptrapd configuration file, according to the following procedure.

1. Confirm that snmptrapd is enabled by executing the following command:

```
# chkconfig --list snmptrapd
snmptrapd 0:off 1:off 2:on 3:on 4:on 5:on 6:off
```

If snmptrapd is disabled, execute the following command to enable snmptrapd:

```
# chkconfig --add snmptrapd
# chkconfig snmptrapd on
```

2. Confirm snmptrapd access control.

The setup varies depending on the access control setup status.

Check the content of the snmptrapd.conf and if the following is set, access control is disabled.

```
disableAuthorization yes
```

- When access control is disabled.

Add the following content to /etc/snmp/snmptrapd.conf. SNMP Trap reception is set.

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

- When access control is enabled.

Add the following lines in snmptrapd.conf.

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

Check both /etc/snmp/snmptrapd.conf and /usr/share/snmp/snmptrapd.conf, and edit snmptrapd.conf in which authCommunity has been set by other products.

If authCommunity is not set in either file, edit /etc/snmp/snmptrapd.conf.



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
```

3. Reflect the configuration file.

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

```
# /etc/init.d/snmptrapd stop
# /etc/init.d/snmptrapd start
```

 Note

After having edited snmptrapd.conf, if you have installed or uninstalled applications using snmptrapd (ServerView AlarmService, etc.) or have changed the configuration, make sure whether the content edited in the snmptrapd.conf is not changed.

 Point

In an environment using ServerView trap transfer program, execute the following commands to restart:

```
# /etc/init.d/snmptrapd stop
# /etc/init.d/trpsrvd stop
# /etc/init.d/snmptrapd start
# /etc/init.d/trpsrvd start
```

Installation of SELinux policy module for snmptrapd

For environments in which SELinux is set to "enforcing", apply the policy module, according to the following procedure. Implementing this procedure enables event reception by SNMP Trap.

1. Run the following command in order to change the setting to "SELinux=Permissive":

```
# setenforce 0
```

2. Move the directory and apply the policy module.

```
# cd /opt/FJSVssmgr/etc/selinux/
# /usr/sbin/semodule -i snmptrapd.pp
```

3. Run the following command to check that snmptrapd.pp is displayed:

```
# ls /etc/selinux/targeted/modules/active/modules/ | grep snmptrapd.pp
snmptrapd.pp
```

4. Run the following command in order to revert the setting to "SELinux=Enforcing":

```
# setenforce 1
```

Note

Check that other products have changed the policy setting for snmptrapd before applying the policy of this product to snmptrapd. Customize the policy setting if necessary.

If the policy is not set correctly, snmptrapd may not work.

Point

Implementing this procedure changes the SELinux policy for snmptrapd.

The policies that are set by applying /opt/FJSVssmgr/etc/selinux/snmptrapd.pp are defined in /opt/FJSVssmgr/etc/selinux/snmptrapd.te.

The contents of /opt/FJSVssmgr/etc/selinux/snmptrapd.te are shown below:

```
module snmptrapd 1.0;

require {
type unconfined_java_t;
type snmpd_t;
type var_t;
class sock_file write;
class unix_stream_socket connectto;
}

#===== snmpd_t =====
allow snmpd_t unconfined_java_t:unix_stream_socket connectto;
allow snmpd_t var_t:sock_file write;
```

In the following cases, apply the policy and create /opt/FJSVssmgr/etc/selinux/snmptrapd.pp again.

- If you have already changed an SELinux policy for snmptrapd
- If you are going to change a policy setting for snmptrapd

Implement the following procedure to create snmptrapd.pp:

1. Modify /opt/FJSVssmgr/etc/selinux/snmptrapd.te.
2. For changing the definition of the file context, create the snmptrapd.fc file defined the file context.
Store the created snmptrapd.fc file into the directory that contains the snmptrapd.te file.
3. Change the directory that contains the modified snmptrapd.te file.
4. Execute the following command to create snmptrapd.pp in the current directory.

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

Installation of SELinux policy module for nwsnmp-trapd

For environments in which SELinux is set to "enforcing" and if the IPv6 address device is monitored, apply the policy module, according to the following procedure. Implementing this procedure enables event reception by SNMP Trap.

1. Run the following command in order to change the setting to "SELinux=Permissive":

```
# setenforce 0
```

2. Move the directory and apply the policy module.

```
# cd /opt/FJSVssmgr/etc/selinux/
# /usr/sbin/semodule -i nwsnmp-trapd.pp
```

3. Run the following command to check that nwsnmp-trapd.pp is displayed:

```
# ls /etc/selinux/targeted/modules/active/modules/ | grep nwsnmp-trapd.pp
nwsnmp-trapd.pp
```

4. Run the following command in order to revert the setting to "SELinux=Enforcing":

```
# setenforce 1
```

Note

Check that other products have changed the policy setting for nwsnmp-trapd before applying the policy of this product to nwsnmp-trapd. Customize the policy setting if necessary. Customize the policy setting if necessary.

If the policy is not set correctly, nwsnmp-trapd may not work.

Point

Implementing this procedure changes the SELinux policy for nwsnmp-trapd.

The policies that are set by applying /opt/FJSVssmgr/etc/selinux/nwsnmp-trapd.pp are defined in /opt/FJSVssmgr/etc/selinux/nwsnmp-trapd.te.

The contents of /opt/FJSVssmgr/etc/selinux/nwsnmp-trapd.te are shown below:

```
module nwsnmp-trapd 1.0;
require {
type unconfined_java_t;
type snmpd_t;
type var_t;
class sock_file write;
class unix_stream_socket connectto;
}

#===== snmpd_t =====
allow snmpd_t unconfined_java_t:unix_stream_socket connectto;
allow snmpd_t var_t:sock_file write;
```

In the following cases, apply the policy and create /opt/FJSVssmgr/etc/selinux/nwsnmp-trapd.pp again.

- If you have already changed an SELinux policy for nwsnmp-trapd
- If you are going to change a policy setting for nwsnmp-trapd

Implement the following procedure to create nwsnmp-trapd.pp.

1. Modify /opt/FJSVssmgr/etc/selinux/nwsnmp-trapd.te.
2. For changing the definition of the file context, create the nwsnmp-trapd.fc file defined the file context. Store the created nwsnmp-trapd.fc file into the directory that contains the nwsnmp-trapd.te file.
3. Change the directory that contains the modified nwsnmp-trapd.te file.
4. Execute the following command to create nwsnmp-trapd.pp in the current directory.

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

4.2.4 Registering disk storage system

Using the 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 the 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 the 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 [Setup SNMP Agent (Basic Interface)] screen.
- 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.

For ETERNUS DX80 S2/DX90 S2, DX100 S3/DX200 S3, additionally perform the following settings:

- On the [Create SSH Server Key] screen of the ETERNUS Web GUI, create a new SSH server key. The number of bits for the key is at your discretion.
- On the [Setup User Account] screen of the ETERNUS Web GUI, create a Software Role Account. In later procedures, specify the account information you created here.
- If an SNMP community name is not already set in the ETERNUS Disk storage system, set an SNMP community name on the [Setup SNMP Community] screen of the ETERNUS Web GUI.

2. Launch the Web Console, and then register the target ETERNUS Disk storage system.



.....
Refer to "Register ETERNUS Disk Storage System" in the *ETERNUS SF 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 "[B.2 Functions provided by licenses](#)".

For the license registration method, refer to "[B.3.1 Registration of license](#)".

4.2.6 Setting the environment variable PATH

For using Advanced Copy functions, add the "bin" directory of AdvancedCopy Manager CCM to the environment variable PATH.

For Windows environment

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
```



.....
When listing multiple directories, separate them with semicolons (;).
.....

For Linux environment

When using Bourne shell, add a value to the environment variable PATH as below.

```
# PATH=$PATH:/opt/FJSVccm/bin
# export PATH
```



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 the 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, and 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 (For ETERNUS DX80 S2/DX90 S2, DX100 S3/DX200 S3, DX400 S2 series, DX500 S3/DX600 S3, DX8000 S2 series) Performance management (For ETERNUS DX80 S2/DX90 S2, DX100 S3/DX200 S3, DX400 S2 series, DX500 S3/DX600 S3, DX8000 S2 series)
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 (For ETERNUS DX80 S2/DX90 S2, DX100 S3/DX200 S3, DX400 S2 series, DX500 S3/DX600 S3, DX8000 S2 series) Performance management (For ETERNUS DX80 S2/DX90 S2, DX100 S3/DX200 S3, DX400 S2 series, DX500 S3/DX600 S3, DX8000 S2 series)
23/tcp	From Management Server to ETERNUS Disk storage system	Configuration management (For ETERNUS DX60/DX60 S2/DX80/DX80 S2/DX90/DX90 S2, DX100 S3/DX200 S3, DX400 S2 series, DX500 S3/DX600 S3, DX8000 S2 series)

*1: For Maintenance-Secure connection

*2: For Maintenance connection

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 "[B.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 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 *ETERNUS SF 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 "[B.1 Types of license](#)" for information on licenses and their respectively available functions.

Refer to "[B.3.1 Registration of license](#)" for information on how to register licenses.

Point

There are two methods to register licenses, i.e. the Web Console and command.

To be able to use the 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)

Install a Windows standard SNMP Trap receiver service (SNMP Trap).

This service is included in the install media of OS.

Note

Notes in combination with products using the SNMP Trap reception function

As with ServerView AlarmService, Express use OS standard SNMP Trap reception service for fault management with SNMP Trap reception. Therefore, if any of the following products is mixed, take the same setting procedure as ServerView AlarmService is mixed.

- Systemwalker Centric Manager

Refer to each product's manual for specific setting method.

4.3.3.2 SNMP Trap setting (for Linux)

SNMP Trap settings of the Management Server differ depending on whether only the IPv4 address device is monitored or whether the IPv4 address and IPv6 address devices are monitored. Set up according to the operating environment.

If only the IPv4 address device is monitored

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

Check snmptrapd status

Check if snmptrapd is activated with the following command:

```
# chkconfig --list snmptrapd
snmptrapd 0:off 1:off 2:on 3:on 4:on 5:on 6:off
```

If snmptrapd is not activated, execute the following command to activate it:

```
# chkconfig --add snmptrapd
# chkconfig snmptrapd on
```



Point

The snmptrapd file is located at /etc/snmp/snmptrapd.conf, but the file /usr/share/snmp/snmptrapd.conf 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 snmptrapd.conf, access control is enabled:

```
disableAuthorization yes
```



Note

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

SNMP Trap reception settings (if access control is disabled)

Add the following setting to /etc/snmp/snmptrapd.conf:

```
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 `/etc/snmp/snmptrapd.conf` and `/usr/share/snmp/snmptrapd.conf`, and edit the `snmptrapd.conf` in which `authCommunity` has been set by other products. If it is not set in either file, edit `/etc/snmp/snmptrapd.conf`.
- 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 the configuration file

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

```
# /etc/init.d/snmptrapd stop
# /etc/init.d/snmptrapd start
```

Note

After having edited `snmptrapd.conf`, if you have installed or uninstalled applications using `snmptrapd` (ServerView AlarmService, etc.) or have changed the configuration, make sure whether the content edited in the `snmptrapd.conf` is not changed.

Point

In an environment using ServerView trap transfer program, execute the following commands to restart:

```
# /etc/init.d/snmptrapd stop
# /etc/init.d/trpsrvd stop
# /etc/init.d/snmptrapd start
# /etc/init.d/trpsrvd start
```

Note

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



See

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

If the IPv6 address device is monitored

Only the IPv4 address device is monitored immediately after ETERNUS SF Manager installation.

As such, change from snmptrapd included in the OS standard net-snmp package by following the procedure below.

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.

```
# /etc/init.d/snmptrapd stop
```

3. Make the settings of the OS standard SNMP Trap daemon.

Make the following settings depending on the version of the installed ETERNUS SF Manager program.

- For Red Hat Enterprise Linux 6:

If the OS standard SNMP Trap daemon has automatically started when the system started, execute the following command to stop automatic start.

```
# chkconfig snmptrapd off
# chkconfig --list snmptrapd
```

- For Red Hat Enterprise Linux 5:

The settings are performed automatically when installing the package. No special setting is necessary.

4. Install the SNMP Trap daemon package.

Install the FJSVswstt-XXXX.rpm package in /opt/FJSVssmgr/etc/pkg.

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

XXXX part of the package file is depending on the platform of the system.

Red Hat Enterprise Linux 6 is as shown below:

```
# rpm -i /opt/FJSVssmgr/etc/pkg/FJSVswstt-13.6.0-1.i386.rpm
```

For Red Hat Enterprise Linux 5, execute the following command to restart the OS standard SNMP Trap daemon after install the package.

```
# /etc/init.d/snmptrapd restart
```

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.

```
# ps -ef | grep nwsnmp-trapd
```

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

```
# /opt/FJSVswstt/bin/mpnm-trapd stop  
# /opt/FJSVswstt/bin/mpnm-trapd start
```

Installation of SELinux policy module for snmptrapd

For environments in which SELinux is set to "enforcing", apply the policy module, according to the following procedure. Implementing this procedure enables event reception by SNMP Trap.

1. Run the following command in order to change the setting to "SELinux=Permissive":

```
# setenforce 0
```

2. Move the directory and apply the policy module.

```
# cd /opt/FJSVssmgr/etc/selinux/  
# /usr/sbin/semodule -i snmptrapd.pp
```

3. Run the following command to check that snmptrapd.pp is displayed:

```
# ls /etc/selinux/targeted/modules/active/modules/ | grep snmptrapd.pp  
snmptrapd.pp
```

4. Run the following command in order to revert the setting to "SELinux=Enforcing":

```
# setenforce 1
```

Note

Check that other products have changed the policy setting for snmptrapd before applying the policy of this product to snmptrapd. Customize the policy setting if necessary.

If the policy is not set correctly, snmptrapd may not work.

Point

Implementing this procedure changes the SELinux policy for snmptrapd.

The policies that are set by applying /opt/FJSVssmgr/etc/selinux/snmptrapd.pp are defined in /opt/FJSVssmgr/etc/selinux/snmptrapd.te.

The contents of /opt/FJSVssmgr/etc/selinux/snmptrapd.te are shown below:

```
module snmptrapd 1.0;  
  
require {  
type unconfined_java_t;  
type snmpd_t;  
type var_t;  
class sock_file write;  
class unix_stream_socket connectto;
```

```
}  
#===== snmpd_t =====  
allow snmpd_t unconfined_java_t:unix_stream_socket connectto;  
allow snmpd_t var_t:sock_file write;
```

In the following cases, apply the policy and create /opt/FJSVssmgr/etc/selinux/snmptrapd.pp again.

- If you have already changed an SELinux policy for snmptrapd
- If you are going to change a policy setting for snmptrapd

Implement the following procedure to create snmptrapd.pp:

1. Modify /opt/FJSVssmgr/etc/selinux/snmptrapd.te.
2. For changing the definition of the file context, create the snmptrapd.fc file defined the file context.
Store the created snmptrapd.fc file into the directory that contains the snmptrapd.te file.
3. Change the directory that contains the modified snmptrapd.te file.
4. Execute the following command to create snmptrapd.pp in the current directory.

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

.....

Installation of SELinux policy module for nwsnmp-trapd

For environments in which SELinux is set to "enforcing" and if the IPv6 address device is monitored, apply the policy module, according to the following procedure. Implementing this procedure enables event reception by SNMP Trap.

1. Run the following command in order to change the setting to "SELinux=Permissive":

```
# setenforce 0
```

2. Move the directory and apply the policy module.

```
# cd /opt/FJSVssmgr/etc/selinux/  
# /usr/sbin/semodule -i nwsnmp-trapd.pp
```

3. Run the following command to check that nwsnmp-trapd.pp is displayed:

```
# ls /etc/selinux/targeted/modules/active/modules/ | grep nwsnmp-trapd.pp  
nwsnmp-trapd.pp
```

4. Run the following command in order to revert the setting to "SELinux=Enforcing":

```
# setenforce 1
```



Check that other products have changed the policy setting for nwsnmp-trapd before applying the policy of this product to nwsnmp-trapd. Customize the policy setting if necessary. Customize the policy setting if necessary.

If the policy is not set correctly, nwsnmp-trapd may not work.

.....



Implementing this procedure changes the SELinux policy for nwsnmp-trapd.

The policies that are set by applying `/opt/FJSVssmgr/etc/selinux/nwsnmp-trapd.pp` are defined in `/opt/FJSVssmgr/etc/selinux/nwsnmp-trapd.te`.

The contents of `/opt/FJSVssmgr/etc/selinux/nwsnmp-trapd.te` are shown below:

```
module nwsnmp-trapd 1.0;
require {
type unconfined_java_t;
type snmpd_t;
type var_t;
class sock_file write;
class unix_stream_socket connectto;
}

#===== snmpd_t =====
allow snmpd_t unconfined_java_t:unix_stream_socket connectto;
allow snmpd_t var_t:sock_file write;
```

In the following cases, apply the policy and create `/opt/FJSVssmgr/etc/selinux/nwsnmp-trapd.pp` again.

- If you have already changed an SELinux policy for nwsnmp-trapd
- If you are going to change a policy setting for nwsnmp-trapd

Implement the following procedure to create `nwsnmp-trapd.pp`.

1. Modify `/opt/FJSVssmgr/etc/selinux/nwsnmp-trapd.te`.
2. For changing the definition of the file context, create the `nwsnmp-trapd.fc` file defined the file context. Store the created `nwsnmp-trapd.fc` file into the directory that contains the `nwsnmp-trapd.te` file.
3. Change the directory that contains the modified `nwsnmp-trapd.te` file.
4. Execute the following command to create `nwsnmp-trapd.pp` in the current directory.

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

4.3.3.3 SNMP Trap setting (for Solaris)

There are no specific settings for receiving the SNMP Trap in Management Server.



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 if `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 (Windows environment only)

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 *ETERNUS SF 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 the 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
1226/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 (For ETERNUS DX80 S2/DX90 S2/DX100 S3/DX200 S3, ETERNUS DX400 S2 series, ETERNUS DX500 S3/DX600 S3 , ETERNUS DX8000 S2 series)
23/tcp	From Management Server to ETERNUS Disk storage system	Configuration management (For ETERNUS DX60/DX60 S2/DX80/DX80 S2/DX90/DX90 S2/DX100 S3/DX200 S3, ETERNUS DX400 S2 series, ETERNUS DX500 S3/DX600 S3 , ETERNUS DX8000 S2 series)

X: Any number can be specified.



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 "[B.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 "[B.1 Types of license](#)" for information on licenses and their respectively available functions.

Refer to "[B.3.1 Registration of license](#)" for information on how to register licenses.

Point

There are two methods to register licenses, i.e. the Web Console and command. To be able to use the 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 *ETERNUS SF 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 *ETERNUS SF 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 the IPv4 address is used

No work is necessary.

If only the 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 the IPv4 and the 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 the IP address of Management Server" in the *ETERNUS SF AdvancedCopy Manager Operation Guide* for the OS 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 the 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 *ETERNUS SF Web Console Guide* for the method of settings.



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 *ETERNUS SF 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 *ETERNUS SF 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 the Web Console.

Refer to "Display/Change Contact Information" in the *ETERNUS SF Web Console Guide* for the method of settings.

After setting the contact e-mail address, use the 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 *ETERNUS SF 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.

When installing, there are the installation by inputting the necessary information in the interactive mode and the installation by inputting the information into an installation parameter file in advance (silent installation). The following are the operating environments in which the silent installation feature can be used:

Windows Server 2008 or later, Solaris, Red Hat Enterprise Linux 5, Red Hat Enterprise Linux 6, and SUSE Linux Enterprise Server 11

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 will be 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 will be 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 environment

From the Control Panel, open the following screen to check whether components of an older version of Storage Cruiser are displayed. If any component of Storage Cruiser is displayed, confirm the version.

OS type	Name of screen to be opened
Windows Server 2003	Add or Remove Programs
Windows Server 2008 or later	Programs and Features

For Solaris environment

Perform the following procedure.

1. Log in to the server on which to install Storage Cruiser's agent. Perform the operation with "root (super user)" after login.
2. Insert the DVD-ROM "ETERNUS SF SC/ACM Mediapack (Agent Program and Manual)" for this version into the DVD-ROM drive and mount the DVD-ROM.

In below example of command execution, the device name of the DVD-ROM drive is mounted as /dev/dsk/c0t4d0s0. The device name for the DVD-ROM drive, however, may be different for your particular device.

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

3. Execute the following command:

```
# cd dvdromMountPoint/Agent_unix/Storage_Cruiser/Solaris
# ./scagtinstall.sh -check
```

If there is any incompatible software installed, you will be notified by a corresponding message.
If this output states a Storage Cruiser's agent package, check the version.

For Linux environment

Perform the following procedure.

1. Log in to the server as a superuser.
2. Insert the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" for this version into the DVD-ROM drive and mount the DVD-ROM.

In below example of command execution, the device name of the DVD-ROM drive is mounted as /dev/cdrom. The device name for the DVD-ROM drive, however, may be different for your particular device.

```
# mount /dev/cdrom dvdromMountPoint
```

3. Execute the following command:

```
# cd dvdromMountPoint/Agent_unix/Storage_Cruiser/Linux
# /bin/sh ./scagtinstall.sh -check
```

If there is any incompatible software installed, you will be notified by a corresponding message.
If this output states a Storage Cruiser's agent package, check the version.

For HP-UX environment

Perform the following procedure.

1. Log in to the server as a 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-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" for this version into the DVD-ROM drive and mount the DVD-ROM.

In below example of command execution, the device name of the DVD-ROM drive is mounted as /dev/dsk/c1t2d0. The device name for the DVD-ROM 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 dvdromMountPoint
```

- For v11.23 or later:

```
# mount -F cdfs /dev/dsk/c1t2d0 dvdromMountPoint
```

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.

For AIX environment

Perform the following procedure.

1. Log in to the server as a superuser.
2. Insert the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" for this version into the DVD-ROM drive and mount the DVD-ROM.

In below example of command execution, the device name of the DVD-ROM drive is mounted as /dev/cd0. The device name for the DVD-ROM drive, however, may be different for your particular device.

```
# /usr/sbin/mount -o ro -v cdrfs /dev/cd0 dvdromMountPoint
```

3. Execute the following command:

```
# cd dvdromMountPoint/Agent_unix/Storage_Cruiser/AIX  
# /bin/sh ./scagtinstall.sh -check
```

If there is any incompatible software installed, you will be notified by a corresponding message.

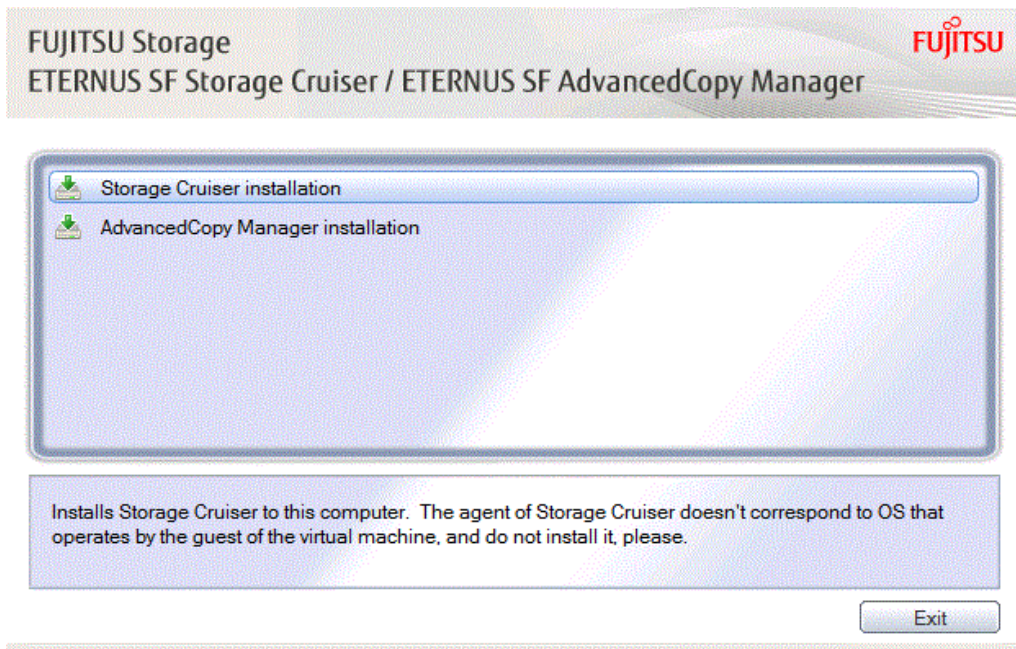
If this output states a Storage Cruiser's agent package, check the version.

5.1.2 Installation procedure of Storage Cruiser's agent (for Windows)

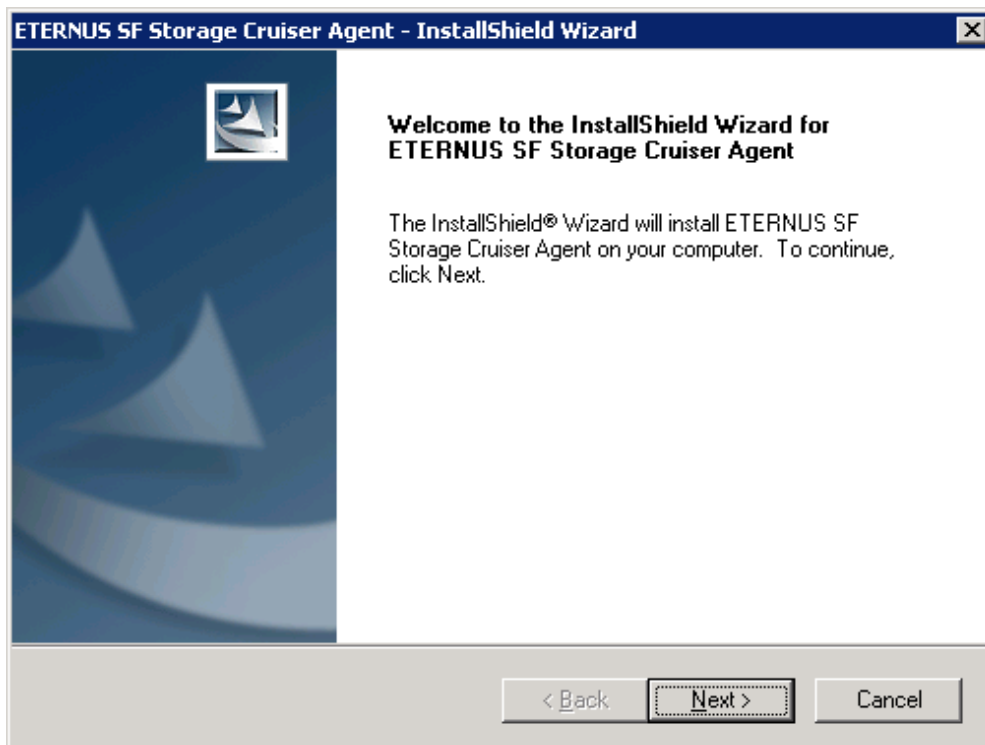
The installation procedure of Storage Cruiser's agent (for Windows) is performed as follows:

1. Log on to the server using Administrator privileges.
2. Insert the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" for this version into the DVD-ROM drive.

3. The following window will be displayed. Click **Storage Cruiser installation**.



4. The installation wizard page will be displayed. Click **Next**.



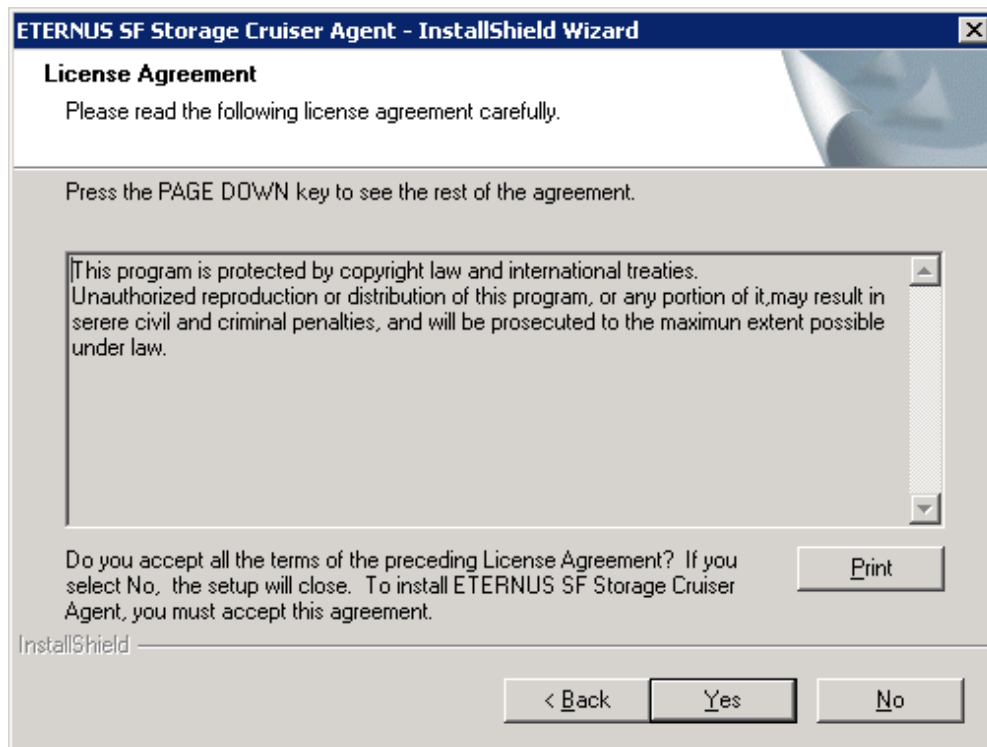
Information

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**.

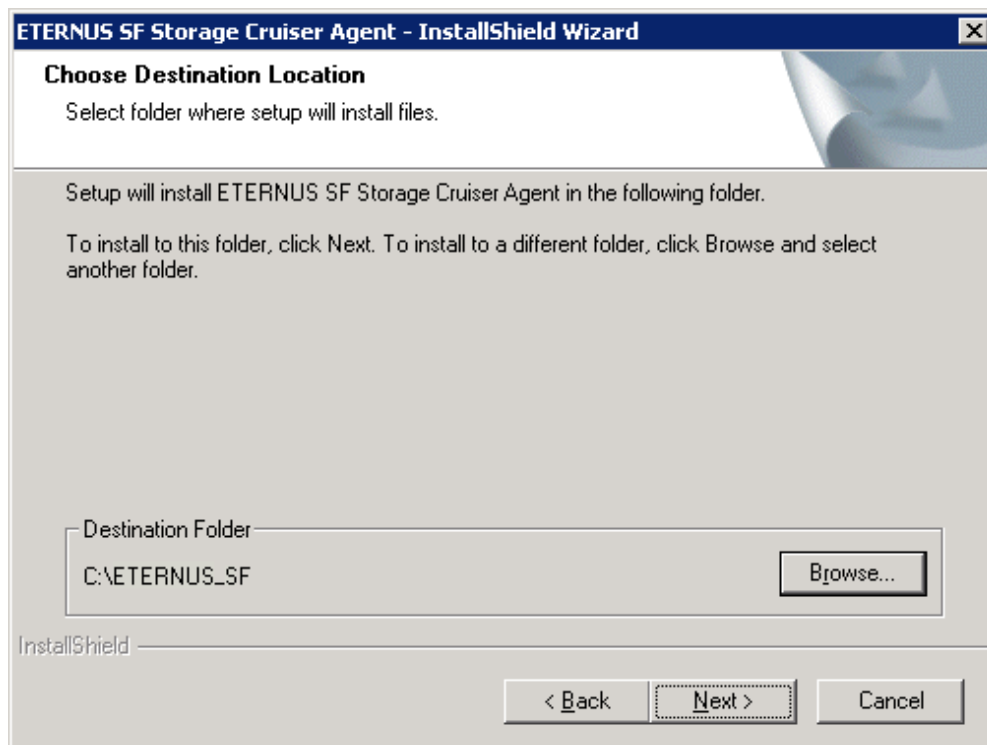
5. Read the terms and conditions of the **License Agreement** page.

If the conditions are agreeable, click **Yes**.



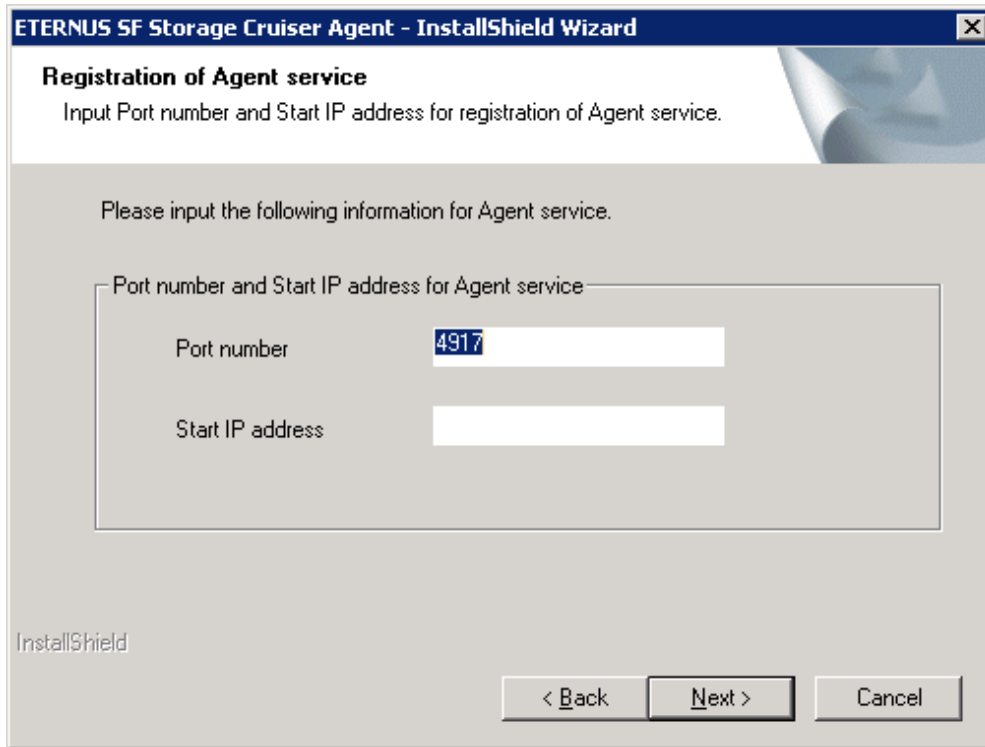
6. Specify the installation directory in the **Choose Destination Location** page.

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**.



The characters " | : * ? / . < > , % & ^ = ! ; are not supported for file name.

- 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	<p>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.</p> <p>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.</p> <p>The used port number can be checked with %SystemRoot%\system32\drivers\etc\services file.</p>
Start IP address	<p>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).</p> <p>Depending on the IP addresses that are set on the Managed Server, make this setting as follows:</p> <ul style="list-style-type: none"> - 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

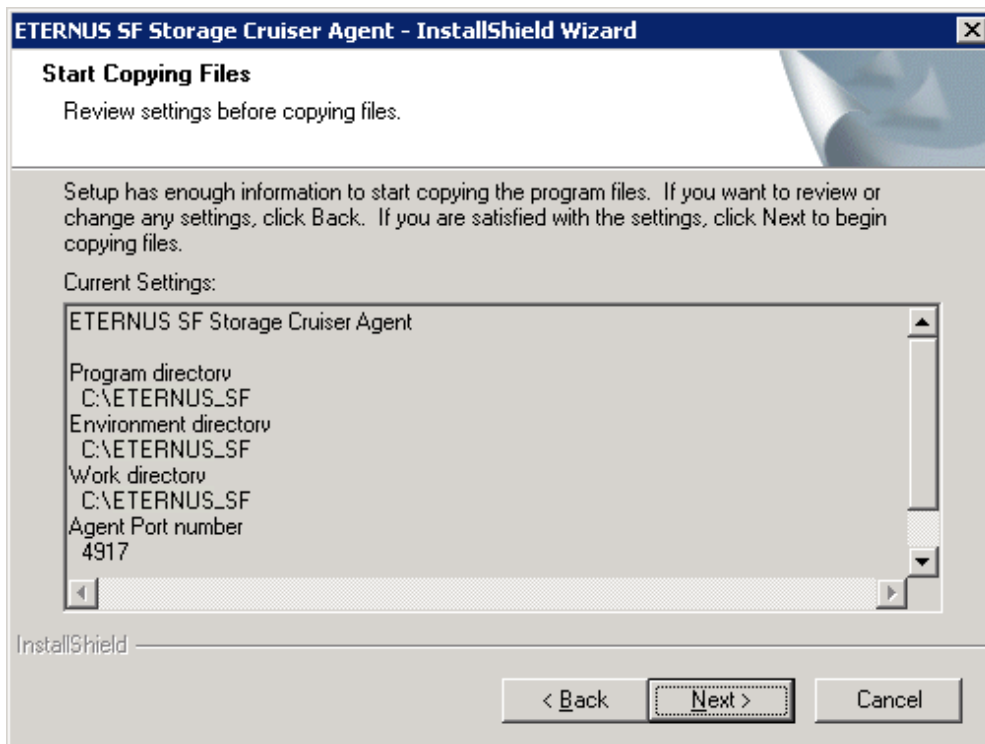
The following notes apply when using the IPv6 address.

- Only the global address is supported.
- The Web Console displays the IP address in accordance with RFC5952. As such, the format displayed by the Web Console may differ from the format entered using this procedure. Refer to "Note for IPv6" in the *ETERNUS SF Web Console Guide* for Web Console IPv6 address display rules.

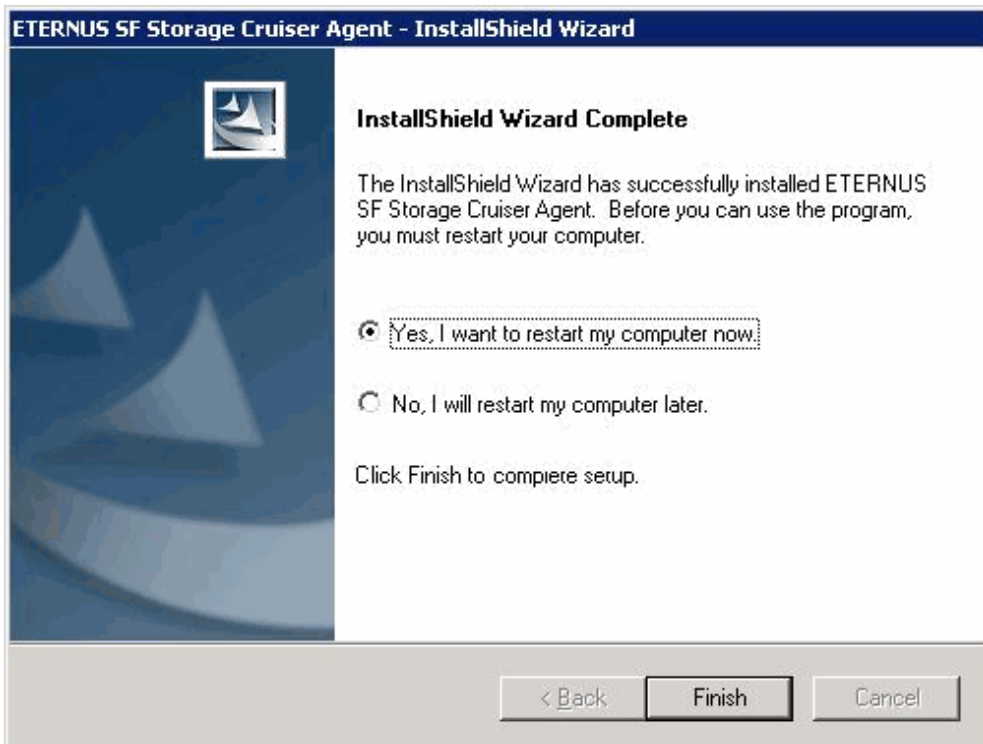
8. Check the settings information in the **Start Copying Files** page.

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 will be displayed. Click **Finish**, and then eject the DVD-ROM.



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 Server 2008 or later)

A silent installation is a method of loading the required information for installation from a pre-created install parameter file to install software automatically without requiring user interaction at the time of installation.

Take the following steps to run a silent installation:

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



Note

Silent installation does not support the version upgrade installation function.

For version upgrade installation, refer to the *ETERNUS SF Migration Guide* of this version.

5.1.3.1 Editing install parameter file

An install parameter file is a file in which to specify install parameters such as installation destination directory and port number. This file is stored on DVD-ROM and default values are set to respective install parameters. For details on the install parameter file, refer to "[D.3 Windows Install parameter file \(for Storage Cruiser's agent\)](#)".

The install parameter file is stored on the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" of this version.

- Storage location

```
dvdromDrive:\Agent_windows\Storage_Cruiser\windows_x86\scagt_parameter.ini
```

When running an installation with default install parameter values, no editing is required.

When changing install parameters, copy the install parameter file on the DVD-ROM to an optional location and edit the copied file. For description of each install parameter, refer to "D.4 Windows Install parameters (for Storage Cruiser's agent)".

In this manual, installing using the default install parameters is referred to as "Default install" and installing with edited install parameters is referred to as "Custom install".

5.1.3.2 Running silent installation

The following is the procedure to silently install Storage Cruiser's agent (Windows):

1. Log on to the target server as a user with administrator privileges.
2. Install the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" of this version into the DVD-ROM 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*.

```
dvdromDrive:\Agent_windows\Storage_Cruiser\windows_x86\scagtsilentinstall.bat [-1  
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*.

```
dvdromDrive:\Agent_windows\Storage_Cruiser\windows_x86\scagtsilentinstall.bat -s  
installParameterFile [-1 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 install 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 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 multiplexly the command for silent installation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an install log file is not created.

- In the case of default install or in the case the IP address is not specified for "Agent_server_IP_address" of the install 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-ROM 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 "E.2 Return values for silent installation (Storage Cruiser's agent for Windows)".

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.

5.1.4 Installation procedure of Storage Cruiser's agent (for Solaris)

The 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-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" for this version into the DVD-ROM drive and mount the DVD-ROM.

In below example of command execution, the device name of the DVD-ROM drive is mounted as /dev/dsk/c0t4d0s0. The device name for the DVD-ROM drive, however, may be different for your particular device.

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

3. Execute the following command:

```
# cd dvdromMountPoint/Agent_unix/Storage_Cruiser/Solaris
# ./scagtinstall.sh
```

4. The following message will be output. To execute the installation, enter 'y'. To discontinue the installation, enter any key except 'y'.

```
ETERNUS SF Storage Cruiser 16.0
Copyright FUJITSU LIMITED 2013
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 will be installed. The default is /opt.
variable configuration directory	This is the directory to which the variable files (log files, temporary files, etc.) will be installed. The default is /var/opt.

Directory name	Meaning
fixed configuration directory	This is the directory to which the files for the environment settings will be 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 will be 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 will continue.

When installation is completed normally, the following message will be displayed.

```
Installing Storage System Agent for ETERNUS SF 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 will be displayed.

```
ERROR : not privileged
or
ERROR : "ETERNUS SF Storage Cruiser" Agent cannot be installed in non-global zone.
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)

A silent installation is a method of loading the required information for installation from a pre-created install parameter file to install software automatically without requiring user interaction at the time of installation.

Take the following steps for silent installation:

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

Note

Silent installation does not support the version upgrade installation function.

For version upgrade installation, refer to the *ETERNUS SF Migration Guide* of this version.

5.1.5.1 Editing install parameter file

An install parameter file is a file in which to specify an installation destination directory. This file is stored on DVD-ROM and default values are set to respective install parameters. For details on the install parameter file, refer to "[D.11 Solaris Install parameter file \(for Storage Cruiser's agent\)](#)".

The install parameter file is stored on the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" of this version.

- Storage location

```
dvdromMountDir/Agent_unix/Storage_Cruiser/Solaris/scagt_parameter.txt
```

When installing with default install parameter values, no editing is required.

When changing install parameters, copy the install parameter file on the DVD-ROM to an optional location and edit the copied file. For description of each install parameter, refer to "[D.12 Solaris Install parameters \(for Storage Cruiser's agent\)](#)".

In this manual, installing using the default install parameter values is referred to as "Default install" and installing with edited install parameters is referred to as "Custom install".

5.1.5.2 Running silent installation

The procedure to silently install 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-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" of this version into the DVD-ROM drive to mount the DVD-ROM media.

In the following example of command execution, the device name of the DVD-ROM drive is mounted as /dev/dsk/c0t4d0s0. The device name of a DVD-ROM drive varies with the device:

```
# mount -F hfsfs -o ro /dev/dsk/c0t4d0s0 dvdromMountPoint
```

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*.

```
# dvdromMountPoint/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*.

```
# dvdromMountPoint/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 /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 multiplexly the command for silent installation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an install log file is not created.

4. On completion of installation, a command prompt is displayed.

Move to any directory other than the directory on the DVD-ROM. The example of move is as follows:

```
# cd /
```

5. Unmount the DVD-ROM.

```
# umount dvdromMountPoint
```

6. Remove the DVD-ROM media out of the DVD-ROM 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 "[E.3 Return values for silent installation \(Storage Cruiser's agent for Solaris/Linux\)](#)".

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.

5.1.6 Installation procedure of Storage Cruiser's agent (for Linux)

The installation procedure of Storage Cruiser's agent (for Linux) is performed as follows:

1. Log in to the server as a superuser.
2. Insert the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" for this version into the DVD-ROM drive and mount the DVD-ROM.

In below example of command execution, the device name of the DVD-ROM drive is mounted as /dev/cdrom. The device name for the DVD-ROM drive, however, may be different for your particular device.

```
# mount /dev/cdrom dvdromMountPoint
```

3. Execute the following command:

```
# cd dvdromMountPoint/Agent_unix/Storage_Cruiser/Linux  
# /bin/sh ./scaginstall.sh
```

4. The following message will be output. To execute the installation, enter 'y'. To discontinue the installation, enter any key except 'y'.

```
ETERNUS SF Storage Cruiser 16.0  
Copyright FUJITSU LIMITED 2013  
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 will continue.

When installation is completed normally, the following message will be 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 will be 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 RHEL5, RHEL6, SUSE Linux Enterprise Server 11)

A silent installation is installing software automatically without requiring user interaction at the time of installation.

5.1.7.1 Running silent installation

The following is the procedure to silently install Storage Cruiser's agent (for RHEL5, RHEL6, SUSE Linux Enterprise Server 11):

1. Log in to the target server as root user (superuser).
2. Install the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" of this version into the DVD-ROM drive to mount the DVD-ROM media.

In the following example of command execution, the device name of the DVD-ROM drive is mounted as `/dev/cdrom`. The device name of a DVD-ROM drive varies with the device:

```
# mount /dev/cdrom dvdromMountPoint
```

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*.

```
# dvdromMountPoint/Agent_unix/Storage_Cruiser/Linux/scagtsilentinstall.sh [-l installLogFile]
```

Point

- If nothing is specified for *installLogFile*, created is a log file named "scagtsilentinstall.log" in `/var/tmp/`.
- 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 multiplexly the command for silent installation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an install log file is not created.

4. On completion of installation, a command prompt is displayed. Move to any directory other than the directory on the DVD-ROM. The following is an example of move:

```
# cd
```

5. Unmount the DVD-ROM.

```
# umount dvdromMountPoint
```

6. Remove the DVD-ROM media out of the DVD-ROM drive.

This is the end of the silent installation of ETERNUS Storage Cruiser's agent (for RHEL5, RHEL6, SUSE Linux Enterprise Server 11).

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 "[E.3 Return values for silent installation \(Storage Cruiser's agent for Solaris/Linux\)](#)".

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.

5.1.8 Installation procedure of Storage Cruiser's agent (for HP-UX)

The installation procedure of Storage Cruiser's agent (for HP-UX) is performed as follows:

1. Log in to the server as a 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-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" for this version into the DVD-ROM drive and mount the DVD-ROM.

In below example of command execution, the device name of the DVD-ROM drive is mounted as /dev/dsk/c1t2d0. The device name for the DVD-ROM 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 dvdromMountPoint
```

- For v11.23 or later:

```
# mount -F cdfs /dev/dsk/c1t2d0 dvdromMountPoint
```

Note

There are the following cautions about mounting the DVD-ROM:

- If the user (usually "root") who executes the pfs_mount command belongs to 9 or more groups, the following error message will be output:

```
pfs_mount /dev/dsk/devi ceName 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 /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-ROM to the *workDir* directory, and uncompress it. Execute the swinstall command. Examples for executing the command are as follows:

- For HP-UX 11i v1:

```
# cp dvdromMountPoint/Agent_unix/Storage_Cruiser/HP-UX/pkg/FJSVssage-13.0.0.depot.Z
workDir
# uncompress workDir/FJSVssage-13.0.0.depot.Z
# swinstall -s workDir/FJSVssage-13.0.0.depot
```

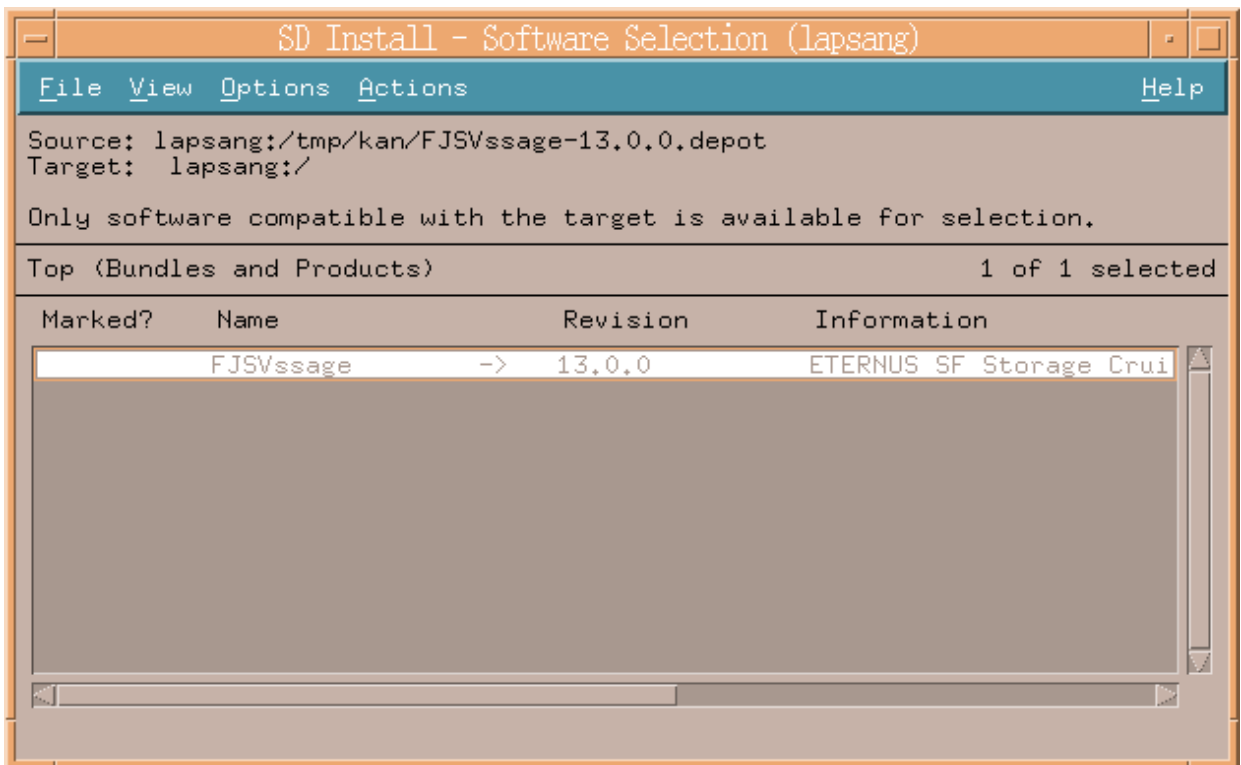
- For HP-UX 11i v2(Itanium) or HP-UX 11i v3(Itanium):

```
# cp dvdromMountPoint/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
```

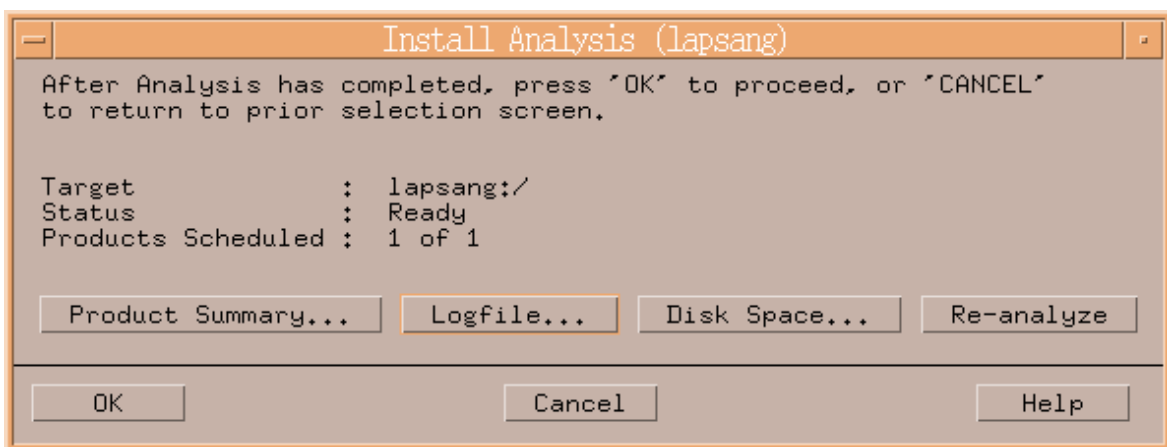
- For HP-UX 11i v2(PA-RISC) or HP-UX 11i v3(PA-RISC):

```
# cp dvdromMountPoint/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 following screen will be displayed. Select "FJSVssage" from the list, and click **Actions > install**.

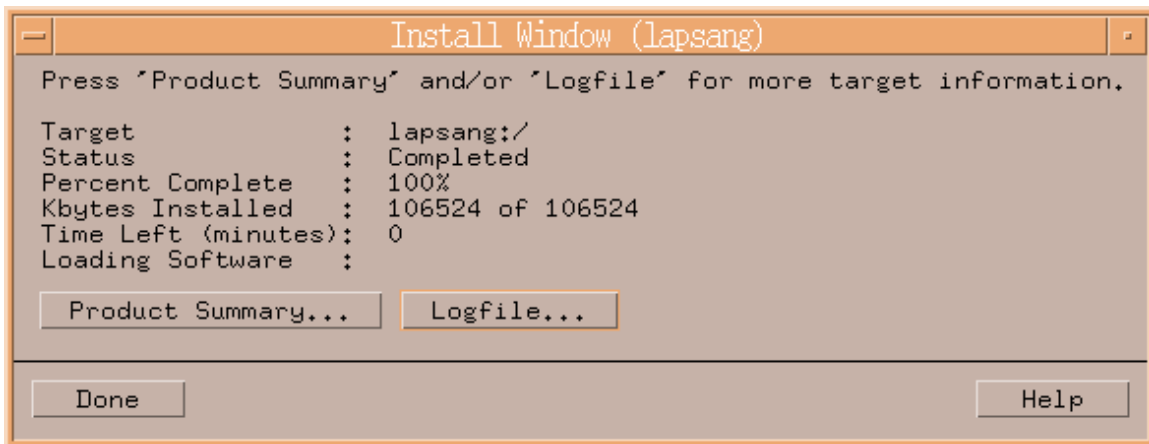


6. The **Install Analysis** screen will be displayed, and package will be checked. After checking package, click **OK**.



7. The **Install Window** screen will be displayed.

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 5, 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.

5.1.9 Installation procedure of Storage Cruiser's agent (for AIX)

The installation procedure of Storage Cruiser's agent (for AIX) is performed as follows:

1. Log in to the server as a superuser.
2. If /etc/opt directory does not exist, create it.
Configure the mode, owner, and group of /etc/opt directory in accordance with operations.

- Example of command execution

```
# /usr/bin/mkdir /etc/opt
# /usr/bin/chmod 755 /etc/opt
# /usr/bin/chown root:system /etc/opt
```

3. Insert the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" for this version into the DVD-ROM drive and mount the DVD-ROM.

In below example of command execution, the device name of the DVD-ROM drive is mounted as /dev/cd0. The device name for the DVD-ROM drive, however, may be different for your particular device.

```
# /usr/sbin/mount -o ro -v cdrfs /dev/cd0 dvdromMountPoint
```

4. Execute the following command to install Storage Cruiser's agent.

```
# cd dvdromMountPoint/Agent_unix/Storage_Cruiser/AIX
# /bin/sh ./scagtinstall.sh
```

5. The following message will be output. To execute the installation, enter 'y'.
To discontinue the installation, enter any key except 'y'.

```
ETERNUS SF Storage Cruiser 16.0
Copyright FUJITSU LIMITED 2013
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]
```

6. If 'y' was entered in step 4, the installation will continue.

When installation is completed normally, the following message will be 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 will be displayed.

```
ERROR : not privileged  
or  
INFO : Installation is terminated.  
or  
ERROR : Installing FJSVssage was failed.
```

7. Check that the installation is successfully completed.

1. Execute the following command:

```
# /usr/sbin/lsttab FJSVssage
```

If the installation is successfully completed, the following message is displayed.

```
FJSVssage:2:once:/opt/FJSVssage/bin/sstorageagt >/dev/null 2>&1
```

If the message is not displayed, the installation is failed. Confirm "[Chapter 2 Operating Environment](#)" and install again.

2. Confirm that all of the following directories exist.

If any of the following directories do not exist, the installation failed. Delete the package according to "[10.1.9 Uninstallation procedure of Storage Cruiser's agent \(for AIX\)](#)" and install again.

- /opt/FJSVssage
- /etc/opt/FJSVssage
- /var/opt/FJSVssage

The Storage Cruiser's agent (for AIX) 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 will be 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 will be 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 environment

From the Control Panel, open the following screen to check whether components of SystemWalker/StorageMGR or older version AdvancedCopy Manager are displayed.

OS type	Name of screen to be opened
Windows Server 2003	Add or Remove Programs
Windows Server 2008 or later	Programs and Features

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 environment

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
```

If the package information is output, the component of AdvancedCopy Manager's manager is installed. If no information is output, the component of AdvancedCopy Manager's agent is installed

For Linux environment

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
```

If the package information is output, the component of AdvancedCopy Manager's manager is installed. If no information is output, the component of AdvancedCopy Manager's agent is installed

For HP-UX environment

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 /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 /opt/swstorage/setup/stg/swsetup.ini file, an older version of AdvancedCopy Manager is installed. Confirm the version.

For AIX environment

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, an older version of AdvancedCopy Manager is installed.

If "AdvancedCopy Manager" is described in /opt/swstorage/setup/stg/swsetup.ini file, an older version of AdvancedCopy Manager is installed. Confirm the version.

5.2.2 Installation procedure of AdvancedCopy Manager's agent (for Windows)

There are two methods of performing the 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

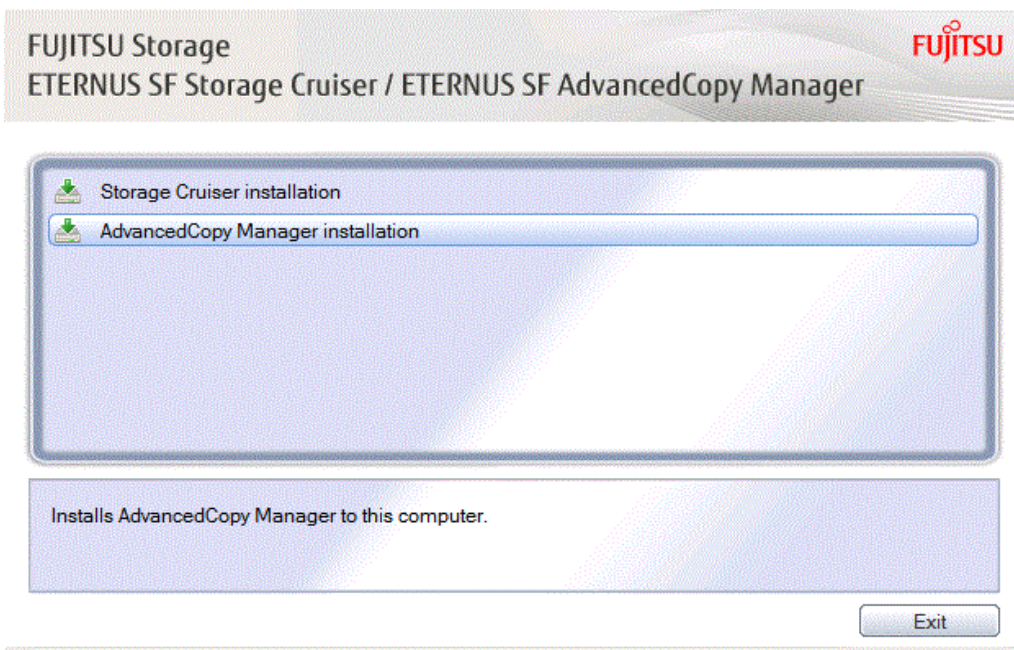
You need to enter the configuration information for installation on the screen (installation destination, communication service port number).

Note

- Use DVD-ROM to install ETERNUS SF Manager.
Do not copy DVD-ROM contents to a local directory for installing ETERNUS SF Manager.
- Refer to "Installation of ETERNUS SF Agent" in the *ETERNUS SF Cluster Environment Setup Guide* to install AdvancedCopy Manager's agent on a clustered system.
- When reinstall on Windows Server 2012 or later, 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 installation procedure of AdvancedCopy Manager's agent (for Windows) is performed as follows:

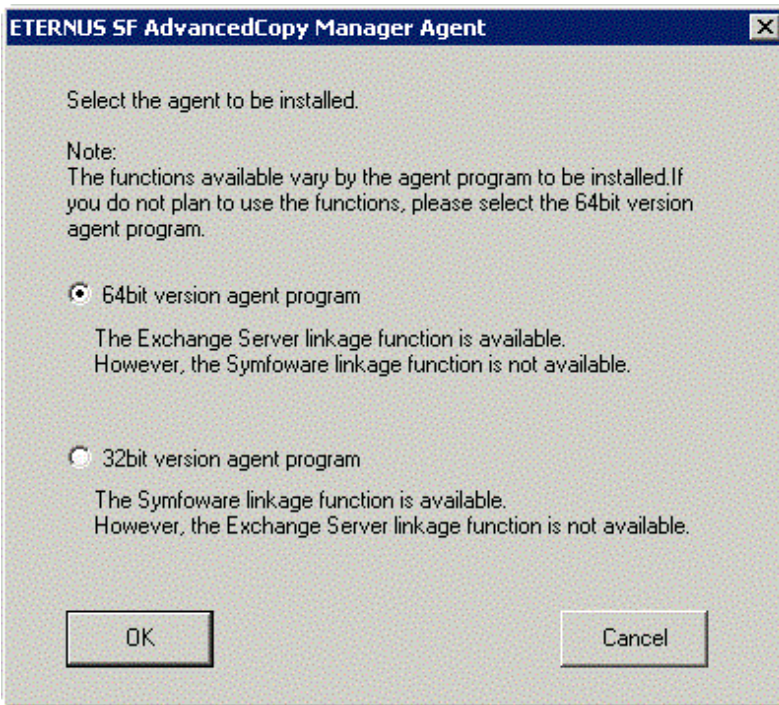
1. Log on to the server using Administrator privileges.
2. Insert the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" for this version into the DVD-ROM drive.
3. The following window will be displayed. Click **AdvancedCopy Manager installation**.



4. The following page will be displayed. Click **Installation of the Agent**.



5. The following page will be displayed if the server OS is Windows Server 2008 x64, Windows Server 2008 R2, or Windows Server 2012 or later. Select the agent to be installed.

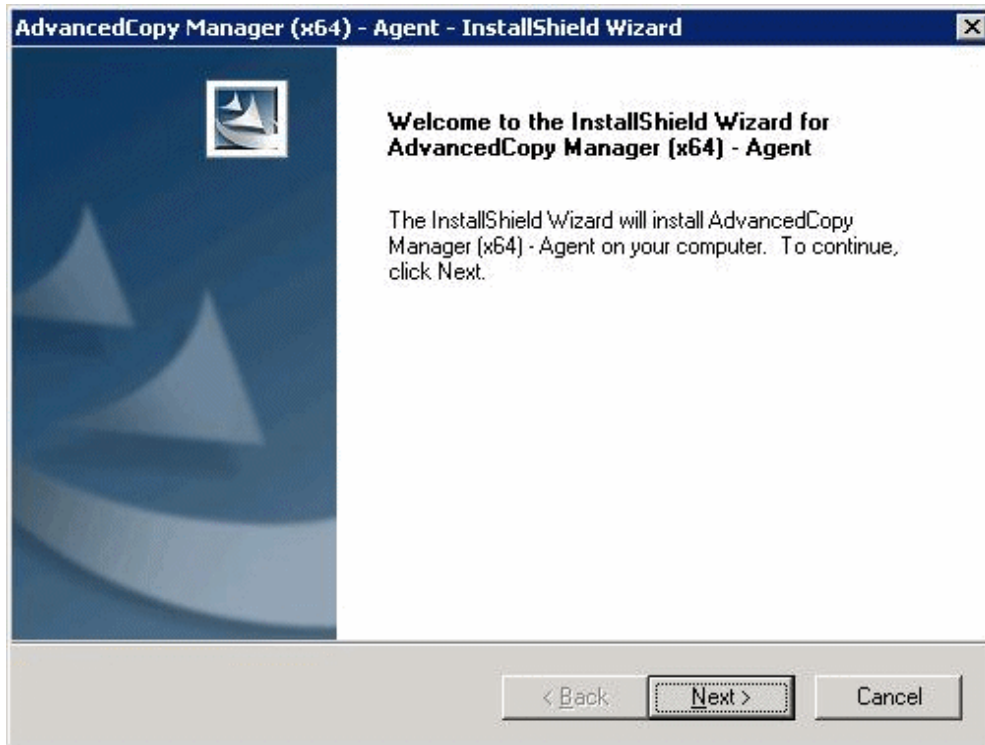


Make your selection according to the following reference criteria:

Function intended to be used	Explanation
Exchange Server linkage online backup function	Select the "64bit version agent program". AdvancedCopy Manager (64bit) for Windows Server 2008 / 2012 (x64) will be installed. The Symfoware linkage function will not be available.

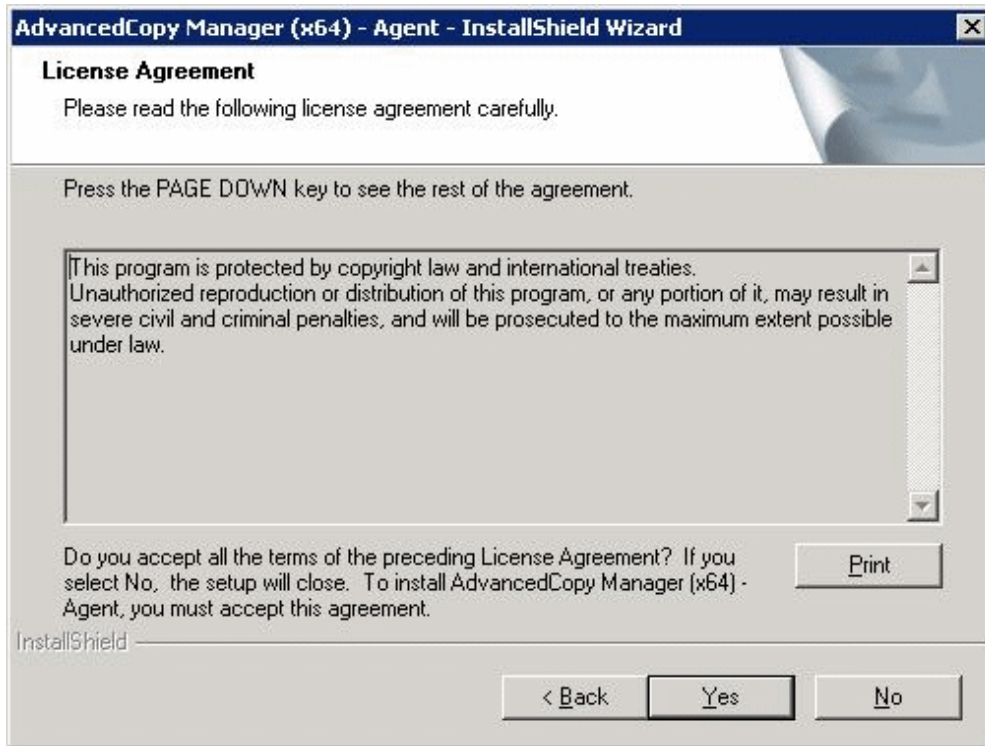
Function intended to be used	Explanation
Symfoware linkage function	Select the "32bit version agent program". AdvancedCopy Manager (32bit) for Windows Server 2008 / 2012 (x86,x64) will be installed. The Exchange Server linkage online backup function will not be available.
Not intending to use any of the above	Select the "64bit version agent program". AdvancedCopy Manager (64bit) for Windows Server 2008 / 2012 (x64) will be installed.

6. The installation wizard page will be displayed. Click **Next**.



7. Read the terms and conditions of the **License Agreement** page.

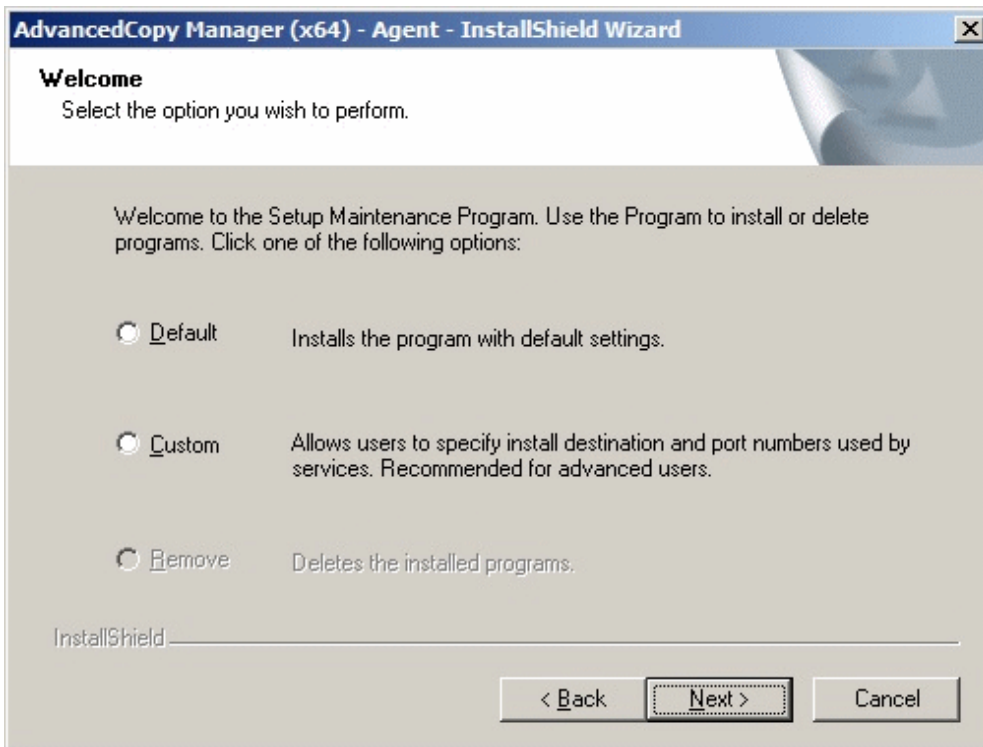
If the conditions are agreeable, click **Yes**.



8. The following page will be displayed.

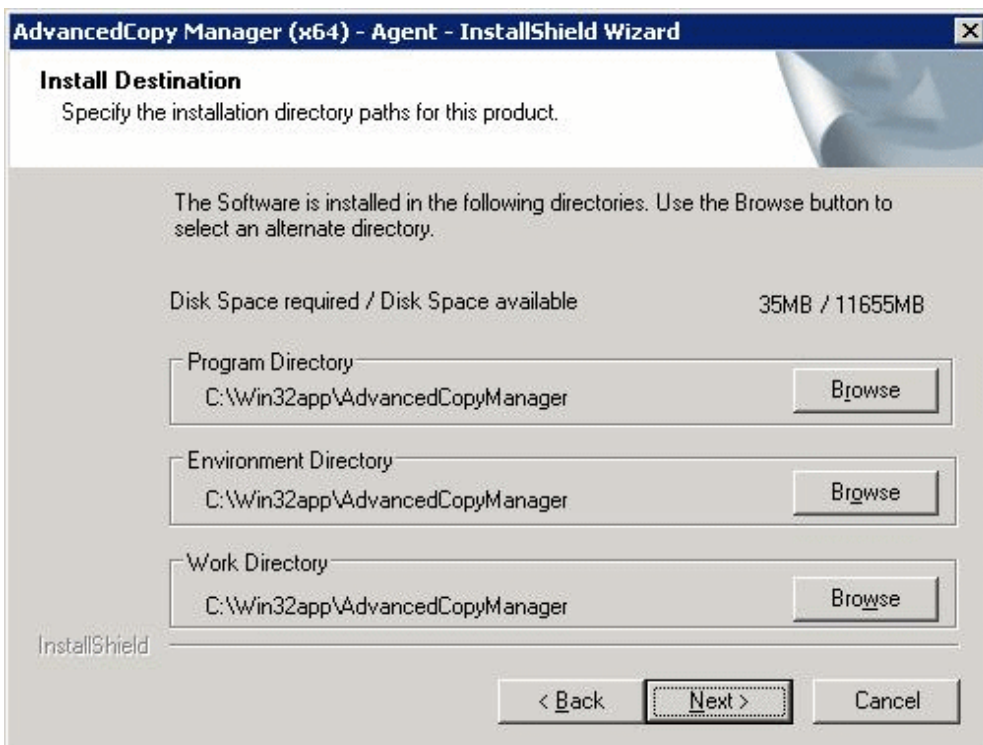
Select the desired options according to the following information.

Install option	Explanation
Default	<p>For this installation method, the following checks are automatically performed relating to the information provided by default:</p> <ul style="list-style-type: none"> - Is there enough disk space for the installation in the default directory? - Is the default port number (1226) available? <p>Consequently, steps 8 and 9 are skipped.</p> <p>If an error is detected at this stage, a warning dialog box will be displayed. If no error is detected, the Start Copying Files page will be displayed.</p>
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.

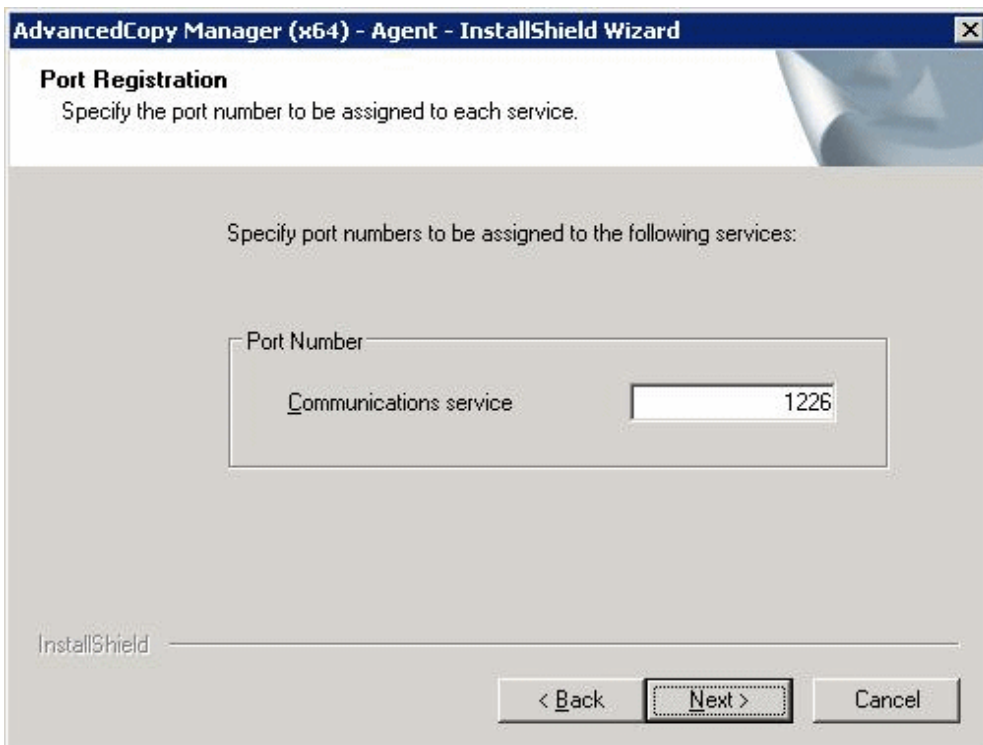
If installing to a directory other than the default directory, click **Browse** and change the install location. After designating all of the directories, click **Next**.



P Point

.....
 - Spaces and the characters " | : * ? / . < > ; & () + , = ^ are not supported for directory names.

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



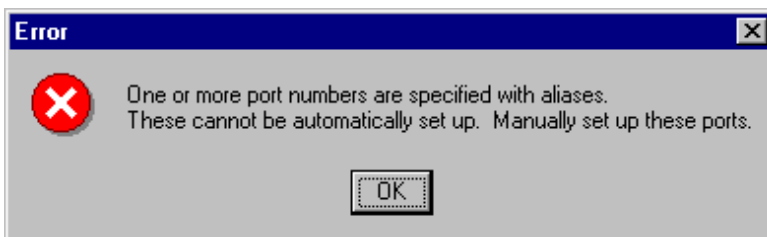
The recommended value for non-clustered systems is displayed.

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 will be displayed again.

If the AdvancedCopy Manager service name is defined with alias name, the following dialog box will be displayed and the port number specified on the previous page is ignored. However, processing for installation will continue.

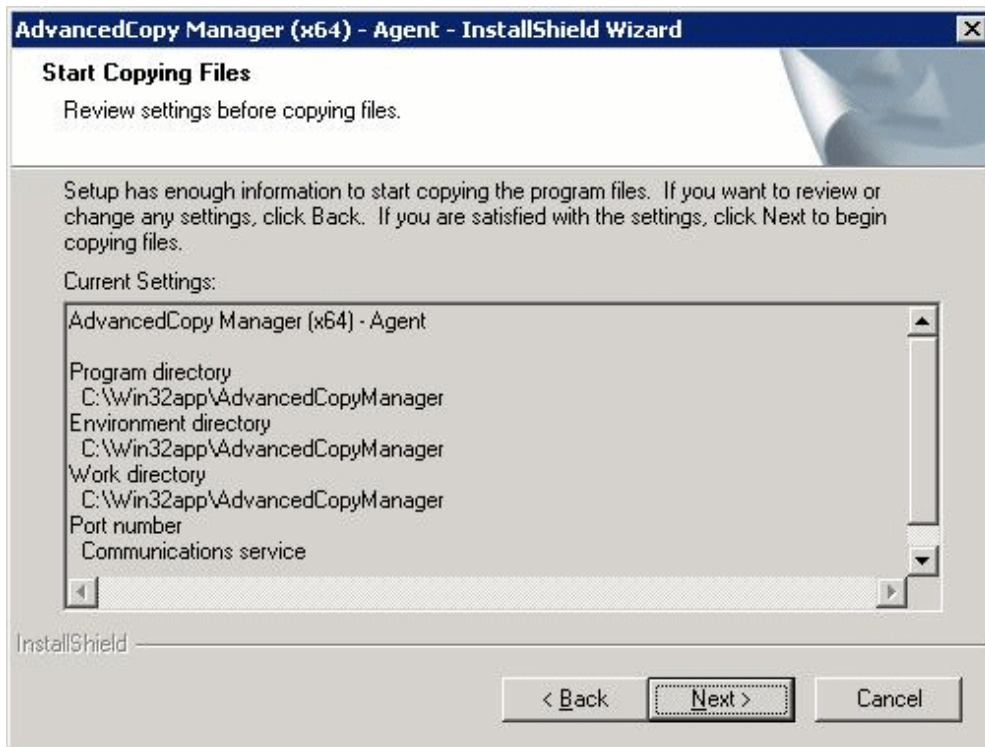


Point

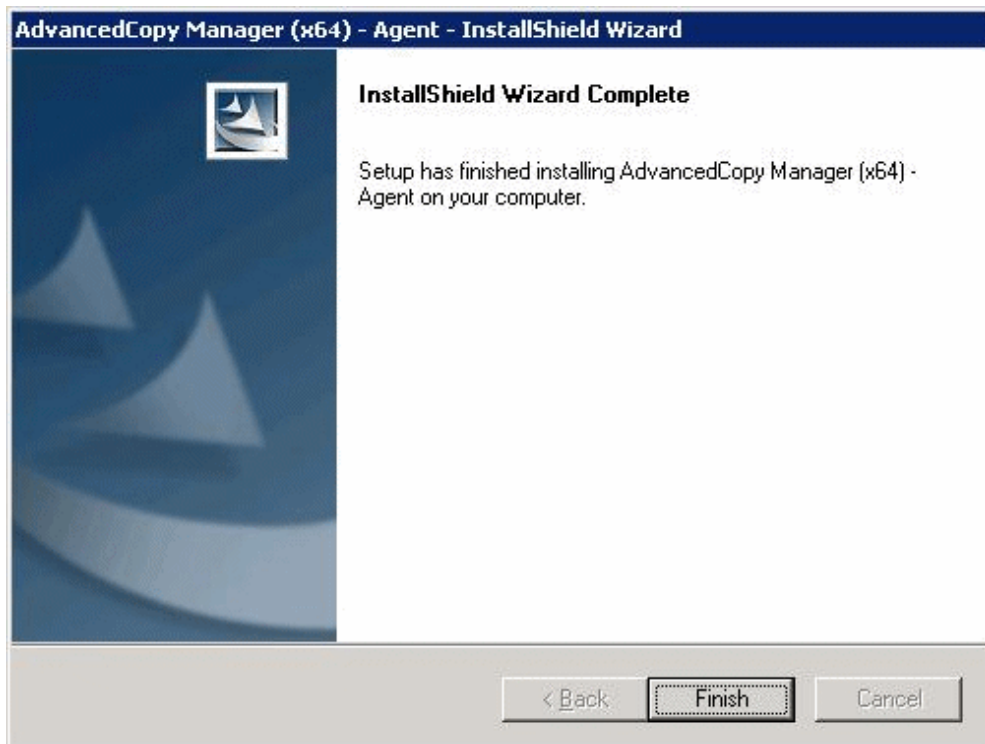
.....
For setting the port number manually, edit the %SystemRoot%\system32\drivers\etc\services file.
.....

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 will be displayed. Click **Finish** on the window and page which displayed in steps 3 and 4.



13. Eject the DVD-ROM.

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 Server 2008 or later)

A silent installation is a method of loading the required information for installation from a pre-created install parameter file to install software automatically without requiring user interaction at the time of installation.

Take the following steps for silent installation:

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



Note

Silent installation does not support the version upgrade installation function.
For version upgrade installation, refer to the *ETERNUS SF Migration Guide*.

5.2.3.1 Editing install parameter file

An install parameter file is a file in which to specify install parameters such as installation destination directory and port number. This file is stored on DVD-ROM and default values are set for respective install parameters. For details on the install parameter file, refer to "D.5 Windows Install parameter file (for AdvancedCopy Manager's agent)".

The install parameter file is stored on the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack (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 64-bit agent. AdvancedCopy Manager (64bit) for Windows Server 2008 / 2012 (x64) is installed. The Symfoware linkage function is not available (copy and replication functions).
When using Symfoware linkage function:	Select 32-bit agent. AdvancedCopy Manager (32bit) for Windows Server 2008 / 2012 (x86,x64) is installed. The function working with Exchange Server is not available.
When using neither of those above:	Select 64-bit agent. AdvancedCopy Manager (64bit) for Windows Server 2008 / 2012 (x64) is installed.

- Storage location

- For 32-bit agent:

```
dvdromDrive:\Agent_windows\AdvancedCopy_Manager\agent\windows_x86\install_parameter.ini
```

- For 64-bit agent:

```
dvdromDrive:\Agent_windows\AdvancedCopy_Manager\agent\windows_x64\install_parameter.ini
```

When installing with default install parameter values, no editing is required.

When changing install parameters, copy the install parameter file on DVD-ROM to an optional location and edit the copied file. For description of each install parameter, refer to "D.6 Windows Install parameters (for AdvancedCopy Manager's agent)".

In this manual, installing using the default install parameter values is referred to as "Default install" and installing with edited install parameters is referred to as "Custom install".

5.2.3.2 Running silent installation

The procedure to silently install 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-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" of this version into the DVD-ROM 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 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:]

```
dvdromDrive:\Agent_windows\AdvancedCopy_Manager\agent\windows_x86\acmagtsilentinstall.bat [-
l installLogFile]
```

[For 64-bit agent:]

```
dvdromDrive:\Agent_windows\AdvancedCopy_Manager\agent\windows_x64\acmagtsilentinstall.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*.

[For 32-bit agent:]

```
dvdromDrive:\Agent_windows\AdvancedCopy_Manager\agent\windows_x86\acmagtsilentinstall.bat -s
installParameterFile [-l installLogFile]
```

[For 64-bit agent:]

```
dvdromDrive:\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 install 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 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.
- Install using DVD-ROM.
Copy the content of the DVD-ROM to a local directory but do not install it

- When reinstalling AdvancedCopy Manager's agent on Windows Server 2012 or later, 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 multiplexly the command for silent installation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an install log file is not created.

-
5. On completion of installation, a command prompt is displayed.
Remove the DVD-ROM 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 "[E.4 Return values for silent installation \(AdvancedCopy Manager's agent for Windows\)](#)".

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 Installation procedure of AdvancedCopy Manager's agent (for Solaris)

The installation procedure of AdvancedCopy Manager's agent (for Solaris) is performed as follows:

1. Log in to the server as a superuser.
2. Insert the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" for this version into the DVD-ROM drive and mount the DVD-ROM.

In below example of command execution, the device name of the DVD-ROM drive is mounted as /dev/dsk/c0t4d0s0. The device name for the DVD-ROM drive, however, may be different for your particular device.

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

3. Install AdvancedCopy Manager's agent.

By executing the following command, multiple packages are installed at one time.

```
# cd dvdromMountPoint/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 will not be necessary.

- Example of executing the command:

```
# cd dvdromMountPoint/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 will be 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 will be 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 will be used for installation, so the port number will not be 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 will be displayed and installation processing is aborted.

```
# 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           |
|                               16.0                   |
|           Copyright FUJITSU LIMITED 2013           |
+-----+

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 will be installed. The default directory is /opt.
Fixed configuration directory	This is the directory to which the files for the environment settings will be installed. The default directory is /etc/opt.

Directory name	Meaning
Modifying configuration directory	This is the directory to which the modified files (log files, temporary files, etc.) will be 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
```

When input is complete, a confirmation message like the one below will be 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]
```

 **Point**

.....
Spaces and the characters " ' * = are not supported for directory names.
.....

7. On entering the installation destination directory, a message like the one below will be 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 10, the installation will continue.
When the installation completes successfully, the following message will be displayed.

```
swsetup: AdvancedCopy Manager was installed successfully.
```

9. Execute the following commands, and then eject the DVD-ROM:

```
# cd /
# umount dvdromMountPoint
```

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)

A silent installation is a method of loading the required information for installation from a pre-created install parameter file to install software automatically without requiring user interaction at the time of installation.

Take the following steps for silent installation:

1. Edit an install parameter file.

2. Run a silent installation.

Note

Silent installation does not support the version upgrade installation function.
For version upgrade installation, refer to the ETERNUS SF Migration Guide of this version.

5.2.5.1 Editing install parameter file

An install parameter file is a file in which to specify install parameters such as installation destination directory or port number. This file is stored on DVD-ROM and default values are set for respective install parameters. For details on the install parameter file, refer to "[D.13 Solaris/Linux Install parameter file \(for AdvancedCopy Manager' agent\)](#)".

The install parameter file is stored on the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" of this version.

- Storage location

```
dvdromMountDir/Agent_unix/AdvancedCopy_Manager/Solaris/install_parameter.txt
```

When installing with default install parameter values, no editing is required.

When changing install parameters, copy the install parameter file on the DVD-ROM to an optional location and edit the copied file. For description of each install parameter, refer to "[D.14 Solaris/Linux Install parameters \(for AdvancedCopy Manager's agent\)](#)".

In this manual, installing using the default install parameter values is referred to as "Default install" and installing with edited install parameters is referred to as "Custom install".

5.2.5.2 Running silent installation

The procedure to silently install AdvancedCopy Manager's agent is as follows:

1. Log in to the target server as root (superuser).
2. Install the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" of this version in the DVD-ROM drive to mount the DVD-ROM media.

In the following example of command execution, the device name of the DVD-ROM drive is mounted as `/dev/dsk/c0t4d0s0`. The device name of a DVD-RO drive varies with the device:

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

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*.

```
# dvdromMountPoint/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*.

```
# dvdromMountPoint/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 `/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 multiplexly the command for silent installation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an install log file is not created.

4. On completion of installation, a command prompt is displayed.
After running the following command, remove the DVD-ROM media used for installation, out of the device.

```
# umount dvdromMountPoint
```

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 "E.5 Return values for silent installation (AdvancedCopy Manager's agent for Solaris/Linux)".

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 Installation procedure of AdvancedCopy Manager's agent (for Linux)

The installation procedure of AdvancedCopy Manager's agent (for Linux) is performed as follows:

1. Log in to the server as a superuser.
2. Insert the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" for this version into the DVD-ROM drive and mount the DVD-ROM.

In below example of command execution, the device name of the DVD-ROM drive is mounted as /dev/cdrom. The device name for the DVD-ROM drive, however, may be different for your particular device.

```
# mount /dev/cdrom dvdromMountPoint
```

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 AS (v.4 for x86)	<i>dvdromMountPoint/Agent_unix/AdvancedCopy_Manager/rhel4_x86</i>
Red Hat Enterprise Linux AS (v.4 for EM64T)	
Red Hat Enterprise Linux ES (v.4 for x86)	
Red Hat Enterprise Linux ES (v.4 for EM64T)	

OS type	Directory
Red Hat Enterprise Linux 5 (for x86)	<i>dvdromMountPoint/Agent_unix/AdvancedCopy_Manager/rhel5_x86</i>
Red Hat Enterprise Linux 5 (for Intel64), using the Symfoware linkage function	
Red Hat Enterprise Linux 5 (for Intel64), not using the Symfoware linkage function	<i>dvdromMountPoint/Agent_unix/AdvancedCopy_Manager/rhel5_x64</i>
Red Hat Enterprise Linux 6 (for x86) Red Hat Enterprise Linux 6 (for Intel64)	<i>dvdromMountPoint/Agent_unix/AdvancedCopy_Manager/rhel6_x86</i>
SUSE Linux Enterprise Server 11 for x86 SUSE Linux Enterprise Server 11 for EM64T	<i>dvdromMountPoint/Agent_unix/AdvancedCopy_Manager/sles11_x86</i>

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 will not be 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 <code>stgxfws</code> service is already registered in the <code>/etc/services</code> file, the registered port number will be 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 <code>stgxfws</code> service is already registered in the <code>/etc/services</code> file, the registered port number will be 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 <code>stgxfws</code> service is already registered in the <code>/etc/services</code> file, or if this option is specified at the same time as the <code>-p</code> option, the registered port number will be used for installation, so the port number will not be 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           |
|                               16.0                   |
|           Copyright FUJITSU LIMITED 2013            |
+-----+

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 will be installed. The default is /opt.
Fixed configuration directory	This is the directory to which the files for the environment settings will be installed. The default is /etc/opt.
Modifying configuration directory	This is the directory to which the modified files (log files, temporary files, etc.) will be 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
```

When input is complete, a confirmation message like the one below will be 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]
```



Spaces and the characters " ' * = are not supported for directory names.

- On entering the installation destination directory, a message like the one below will be displayed. Enter 'y' to continue, or 'n' to cancel the installation.

```
Do you want to continue with the installation of this package? [y,n,?]
```

- If 'y' is entered in step 6, the installation will continue. When the installation completes successfully, the following message will be displayed.

```
swsetup: AdvancedCopy Manager was installed successfully.
```

- Execute the following commands, and then eject the DVD-ROM:

```
# cd /
# umount dvdromMountPoint
```

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 Installation procedure of AdvancedCopy Manager's agent (for RHEL5, RHEL6, SUSE Linux Enterprise Server 11)

A silent installation is a method of loading the required information for installation from a pre-created install parameter file to install software automatically without requiring user interaction at the time of installation.

Take the following steps for silent installation:

- Edit an install parameter file.
- Run a silent installation.



Silent installation does not support the version upgrade installation function. For version upgrade installation, refer to the ETERNUS SF Migration Guide of this version.

5.2.7.1 Editing install parameter file

An install parameter file is a file in which to specify install parameters such as installation destination directory or port number. This file is stored on DVD-ROM and default values are set for respective install parameters. For details on the install parameter file, refer to "[D.13 Solaris/Linux Install parameter file \(for AdvancedCopy Manager' agent\)](#)".

The install parameter file is stored on the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" of this version.

- Storage location

Environment	Storage location
Red Hat Enterprise Linux 5 (for x86)	<i>dvdromMountDir</i> /Agent_unix/AdvancedCopy_Manager/rhel5_x86/ install_parameter.txt
Red Hat Enterprise Linux 5 (for Intel64) , using the Symfoware linkage function	
Red Hat Enterprise Linux 5 (for Intel64) , not using the Symfoware linkage function	<i>dvdromMountDir</i> /Agent_unix/AdvancedCopy_Manager/rhel5_x64/ install_parameter.txt
Red Hat Enterprise Linux 6 (for x86) Red Hat Enterprise Linux 6 (for Intel64)	<i>dvdromMountDir</i> /Agent_unix/AdvancedCopy_Manager/rhel6_x86/ install_parameter.txt
SUSE Linux Enterprise Server 11 for x86 SUSE Linux Enterprise Server 11 for EM64T	<i>dvdromMountDir</i> /Agent_unix/AdvancedCopy_Manager/sles11_x86/ install_parameter.txt

When installing with default install parameter values, no editing is required.

When changing install parameters, copy the install parameter file on the DVD-ROM to an optional location and edit the copied file. For description of each install parameter, refer to "D.14 Solaris/Linux Install parameters (for AdvancedCopy Manager's agent)".

In this manual, installing using the default install parameter values is referred to as "Default install" and installing with edited install parameters is referred to as "Custom install".

5.2.7.2 Running silent installation

The procedure to silently install AdvancedCopy Manager's agent is as follows:

1. Log in to the target server as root (superuser).
2. Install the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" of this version in the DVD-ROM drive to mount the DVD-ROM media.

In the following example of command execution, the device name of the DVD-ROM drive is mounted as /dev/dsk/c0t4d0s0. The device name of a DVD-RO drive varies with the device:

```
# mount /dev/cdrom dvdromMountPoint
```

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 5 (for x86)	<i>dvdromMountPoint</i> /Agent_unix/AdvancedCopy_Manager/rhel5_x86
Red Hat Enterprise Linux 5 (for Intel64), using the Symfoware linkage function	
Red Hat Enterprise Linux 5 (for Intel64), not using the Symfoware linkage function	<i>dvdromMountPoint</i> /Agent_unix/AdvancedCopy_Manager/rhel5_x64
Red Hat Enterprise Linux 6 (for x86) Red Hat Enterprise Linux 6 (for Intel64)	<i>dvdromMountPoint</i> /Agent_unix/AdvancedCopy_Manager/rhel6_x86
SUSE Linux Enterprise Server 11 for x86 SUSE Linux Enterprise Server 11 for EM64T	<i>dvdromMountPoint</i> /Agent_unix/AdvancedCopy_Manager/sles11_x86



- If nothing is specified for *installLogFile*, an install log file named "acmagtsilentinstall.log" is created in /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 multiplexly the command for silent installation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an install log file is not created.

4. On completion of installation, a command prompt is displayed.
After running the following command, remove the DVD-ROM media used for installation, out of the device.

```
# umount dvdromMountPoint
```

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 ["E.5 Return values for silent installation \(AdvancedCopy Manager's agent for Solaris/Linux\)"](#).

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 Installation procedure of AdvancedCopy Manager's agent (for HP-UX)

The installation procedure of AdvancedCopy Manager's agent (for HP-UX) is performed as follows:

1. Log in to the server as a 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-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" for this version into the DVD-ROM drive and mount the DVD-ROM.

In below example of command execution, the device name of the DVD-ROM drive is mounted as /dev/dsk/c1t2d0. The device name for the DVD-ROM 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 dvdromMountPoint
```

- For v11.23 or later:

```
# mount -F cdfs /dev/dsk/c1t2d0 dvdromMountPoint
```

Note

Cautions about mounting the DVD-ROM:

- If the user (usually "root") who executes the pfs_mount command belongs to 9 or more groups, the following error message will be 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 /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 dvdromMountPoint/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 will not be necessary.

- Example of executing the command:

```
# cd dvdromMountPoint/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 will be used for installation, so that registration of the port number can be omitted.

Specified option	Overview of operation
-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 will be 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 will be used for installation, so the port number will not be 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 will be displayed and installation processing is aborted.

```
# 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           |
|                   16.0                               |
|           Copyright FUJITSU LIMITED 2013             |
+-----+

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 will be installed. The default is /opt.
Fixed configuration directory	This is the directory to which the files for the environment settings will be installed. The default is /etc/opt.
Modifying configuration directory	This is the directory to which the modified files (log files, temporary files, etc.) will be 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
```

When input is complete, a confirmation message like the one below will be 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]
```

 **Point**

.....
Spaces and the characters " ' * = are not supported for directory names.
.....

8. On entering the installation destination directory, a message like the one below will be 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 will continue.
When the installation completes successfully, the following message will be displayed.

```
swsetup: AdvancedCopy Manager was installed successfully.
```

10. Execute the following commands, and then eject the DVD-ROM:

```
# cd /
# umount dvdromMountPoint
```

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.

5.2.9 Installation procedure of AdvancedCopy Manager's agent (for AIX)

The installation procedure of AdvancedCopy Manager's agent (for AIX) is performed as follows:

1. Log in to the server as a superuser.
2. Insert the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" for this version into the DVD-ROM drive and mount the DVD-ROM.

In below example of command execution, the device name of the DVD-ROM drive is mounted as /dev/cd0. The device name for the DVD-ROM drive, however, may be different for your particular device.

```
# /usr/sbin/mount -o ro -v cdrfs /dev/cd0 dvdromMountPoint
```


3. Install AdvancedCopy Manager's agent.

By executing the following command, multiple packages are installed at one time.

```
# cd dvdromMountPoint/Agent_unix/AdvancedCopy_Manager/AIX
# ./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 will not be necessary.

- Example of executing the command:

```
# cd dvdromMountPoint/Agent_unix/AdvancedCopy_Manager/AIX
# ./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 will be 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 will be 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 will be used for installation, so the port number will not be requested.

- Cautions for executing the easysetup command:

- A default value is used for the destination directory of installation. Refer to step 4 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           |
|                   16.0                               |
|           Copyright FUJITSU LIMITED 2013             |
+-----+
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 will be installed. The default is /opt.
Fixed configuration directory	This is the directory to which the files for the environment settings will be installed. The default is /etc/opt.
Modifying configuration directory	This is the directory to which the modified files (log files, temporary files, etc.) will be 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 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

```

When input is complete, a confirmation message like the one below will be 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]

```



Spaces and the characters " ' * = are not supported for directory names.

6. On entering the installation destination directory, a message like the one below will be 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 will continue.

When the installation completes successfully, the following message will be displayed.

```

swsetup: AdvancedCopy Manager was installed successfully.

```

Point

If the `easyssetup` command has not been executed in step 3, enter the following line in the `/etc/rc.shutdown` file.

```
/opt/FJSVswstf/daemon/stop_smgr0
```

If the above line is not in the `/etc/rc.shutdown` file, AdvancedCopy Manager may not stop correctly. Also, AdvancedCopy Manager may not start normally when the OS is restarted, and this would have an adverse effect on operation. Do not use the `reboot` command to restart the OS, use the `shutdown` command.

8. Execute the following commands, and then eject the DVD-ROM:

```
# cd /  
# /usr/sbin/umount dvdromMountPoint
```

The AdvancedCopy Manager's agent (for AIX) installation is completed.

Refer to "[6.2 Setup of AdvancedCopy Manager's agent](#)" to set up 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 name	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 will be applied when launching Storage Cruiser's agent.

For Windows environment

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.
- On Windows Server 2008 or later, 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 environment

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.

For AIX environment

Run the following command in order to set the service name, the protocol name, and the port number to be used in the `/etc/services` file. The example below shows how to set "4917" for the port number to be used.

```
# /usr/sbin/chservices -a -v sscruisera -p tcp -n 4917
```

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 (Windows environment excluded)

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, HP-UX, or AIX environment, set the Start IP address as described in procedure below.

For Windows environment, the Start IP address is already configured in the installation of Storage Cruiser's agent, making this procedure unnecessary.

1. If Storage Cruiser's agent is currently running, execute the following command to stop it:

```
# /opt/FJSSVssage/bin/pstorageagt
```

2. Configure the Start IP address in the Storage Cruiser's agent.

```
# /opt/FJSSVssage/bin/setagtip -i ipAddress
```

Point

About setting values for the 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.

- The 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 (HP-UX environment excluded)

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 *ETERNUS SF Storage Cruiser SNIA HBA API Library Installation Guide* at the following URL for information on how to install the HBA API library:

<http://www.fujitsu.com/global/services/computing/storage/eternus/documentation/>

This website offers various technical documentation and catalogs for Storage Cruiser.

6.1.4 Correlation.ini file modification (Solaris environment only)

When an OS standard HBA driver is in use, it is necessary to modify the correlation.ini file that sets the details of 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



When "Correlation.ini" is changed, information on the following server node middleware is displayed:

- Multipath driver (MPxIO only)
- File system

6.1.5 Auto stop setting (AIX environment only)

In order to let the agents stop automatically when the system is stopped, modify the /etc/rc.shutdown file.

Add the contents that are shown in below example of file modification.

If there is no /etc/rc.shutdown file, create it as a new file and add the contents from the example of file modification.

Refer to your AIX documentation for information on the /etc/rc.shutdown file.

Example of file modification

```
if [ -x /opt/FJSVssage/bin/pstorageagt ]
then
    /bin/sh -c "/opt/FJSVssage/bin/pstorageagt;exit 0"
fi
```

6.1.6 System rebooting (Windows environment excluded)

After completing the settings, reboot the system. Storage Cruiser's agent will start automatically.

The following are command examples for rebooting the system.

For Solaris environment

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

For Linux environment

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

For HP-UX environment

```
# /sbin/shutdown -r -y 0
```

For AIX environment

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

6.1.7 Setting up End to End list display for Hyper-V (Windows environment only)

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 *ETERNUS SF 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 Creating user accounts for executing command

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.



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

For Windows Server 2003

For using AdvancedCopy Manager commands, operate as a user with Administrator permissions or a user in the Administrators group.

For Windows Server 2008 or later

In Windows Server 2008 or later, a User Account Control function (hereafter called "UAC") has been added to enhance security. The cases where UAC is enabled and disabled are explained below.

- When UAC is enabled

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

- When UAC is disabled

Processes or programs that require administrator permissions must be executed by either the built-in 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
Built-in Administrator account	A	A
User account in the Administrators group	B	A
Standard user account	B	C

- A: Runs without displaying the permissions granted dialog box.
- B: Displays the permissions granted dialog box, and runs if permissions are approved.
- C: Does not run, because Administrator permissions cannot be obtained.

If you do not wish to perform the dialog process using the administrator permissions dialog box, and the conditions marked as "B" in the table above apply (for example, in batch processing), the program must be executed using administrator permissions with one of the following methods:

- In the Command Prompt, use "runas" command to execute the program as a user with administrator permissions. A password must be entered after this.

[Batch file (test.bat) execution example]

```
runas /noprofile /user:mymachine\acmuser "cmd.exe /k test.bat"
```

- In the Task Scheduler, specify "Execute with top level privileges" to operate the program.
- Execute the program with the Command Prompt.
 - For Windows Server 2008 or Windows Server 2008 R2

From the **Start** menu, select **All Programs > Accessories** and right-click on **Command Prompt**. Specify "Run as Administrator" to run the Command Prompt. Execute the program from the Command Prompt.
 - For Windows Server 2012 or later

Specify "Command Prompt (Admin)" to run the Command Prompt. Execute the program from the Command Prompt.

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 environment

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
```



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)	<i>anyNumber/tcp</i>	

*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, HP-UX or AIX environment

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_ <i>logicalNodeName</i> (*1)	<i>anyNumber/tcp</i>	

*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 *ETERNUS SF Web Console Guide*.

6.2.4 Firewall setting (Windows environment only)

Follow the steps in the procedure below to modify the firewall settings. Alternatively, disable the firewall.

For Windows Server 2008 R2, or Windows Server 2012 or later

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.

For operating systems other than the above

1. From the **Control Panel**, open the **Windows Firewall** screen.
2. Click **Add Port** on the **Exceptions** tab to open the **Add Port** screen.
3. Make the following settings for the communication service:
 - **name**: Specify any name
 - **Port number**: Specify the port number assigned to the communication service at the time of installation, and select "TCP" for the protocol.
4. 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.
5. Click **OK** in the **Add Port** screen.
6. Click **OK** in the **Windows Firewall** screen.

6.2.5 System log setting (AIX environment only)

If the operating system is AIX, there is no output of the system log by the default settings of the operating system.

If you want to use the system log to check starting and stopping of the communication daemons, you have to enable output of the system log in the settings.

Refer to the operating system manuals for information on setting methods.

6.2.6 Start daemon (Windows environment excluded)

After completing the settings, start the daemon.

Refer to "Starting Daemons" in the *ETERNUS SF 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.

When installing, there are the installation by inputting the necessary information in the interactive mode and the installation by inputting the information into an installation parameter file in advance (silent installation).

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 will be 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 will be performed.

If the incompatible software is found, refer to that software manual and uninstall it before starting the installation.

7.2 Installation procedure of AdvancedCopy Manager CCM (for Windows)

There are two methods of performing the 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).

Note

Use DVD-ROM to install AdvancedCopy Manager CCM.

Do not copy DVD-ROM contents to a local directory for installing.

The installation procedure of AdvancedCopy Manager CCM is performed as follows:

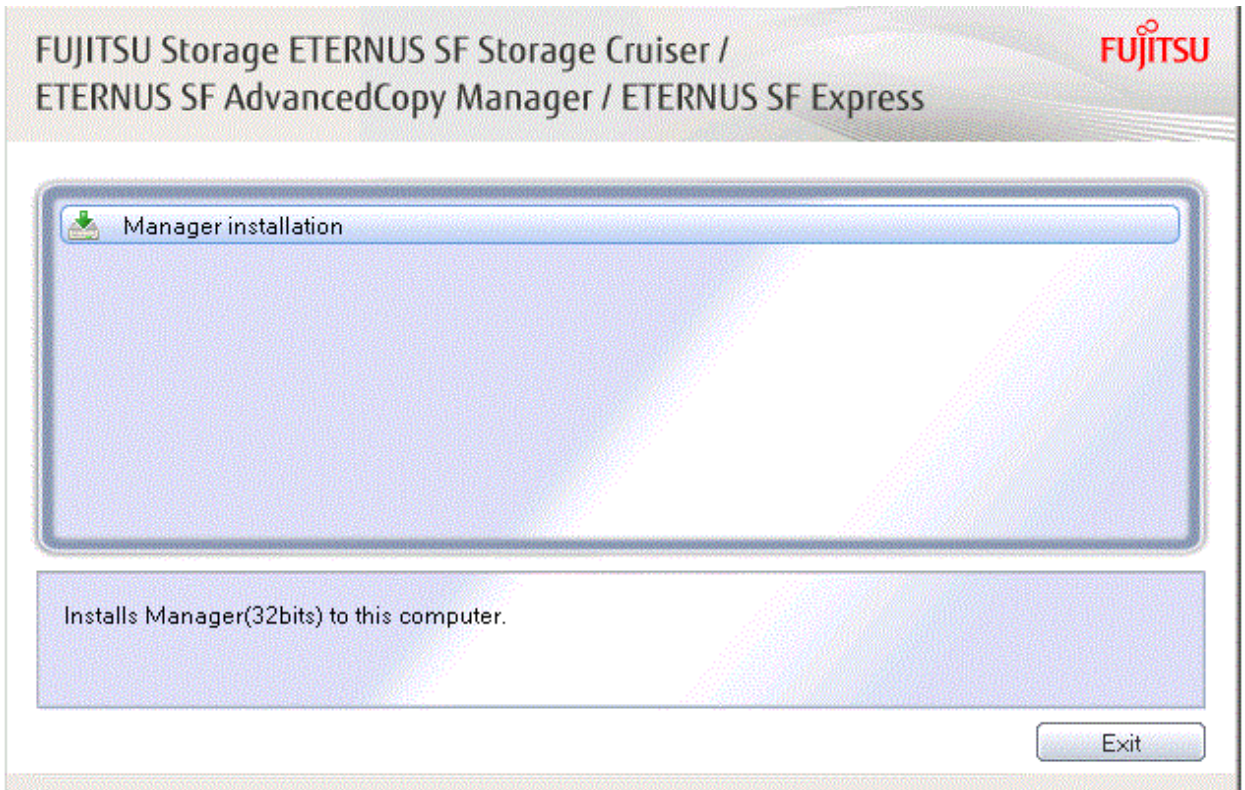
1. Log on to the server using Administrator privileges.

 **Information**

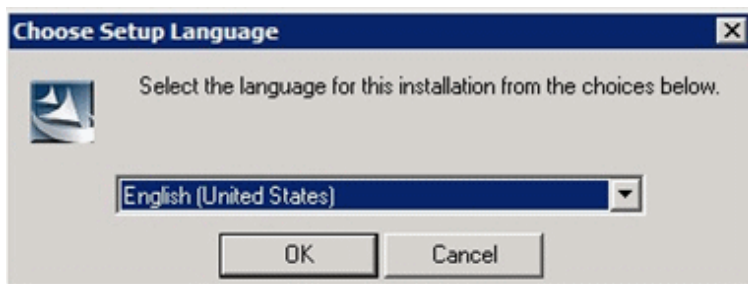
Specify a user that corresponds to the using server type.

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)	

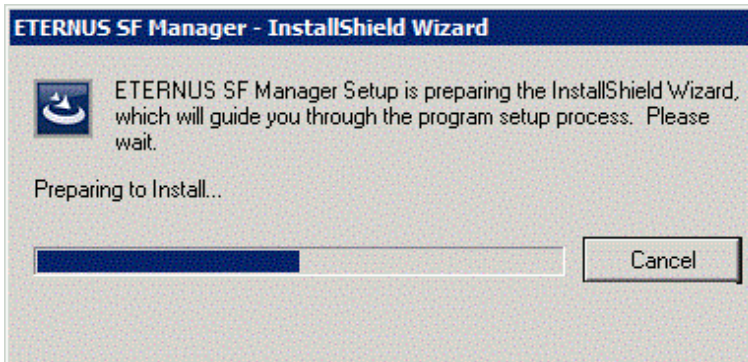
2. Insert the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack for Windows (Manager Program) (1/2)" for this version into the DVD-ROM drive.
3. The following window will be displayed. Click **Manager installation**.
To cancel the installation at this point, click **Exit**.



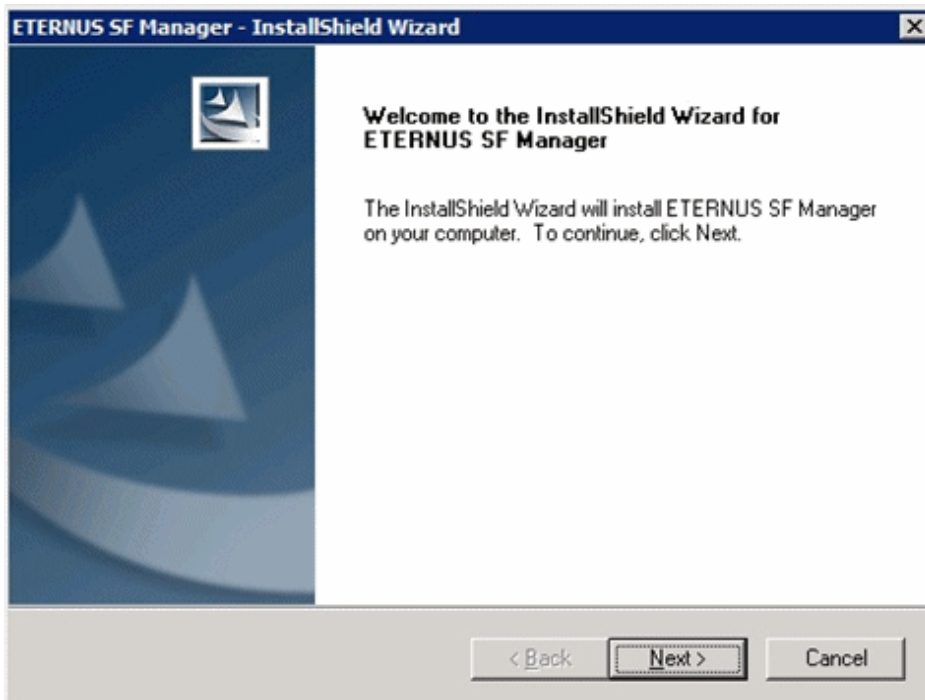
4. The **Choose Setup Language** dialog box will be displayed. Select the appropriate language and click **OK**.
The language selected in this dialog box will be used during the installation and uninstallation.



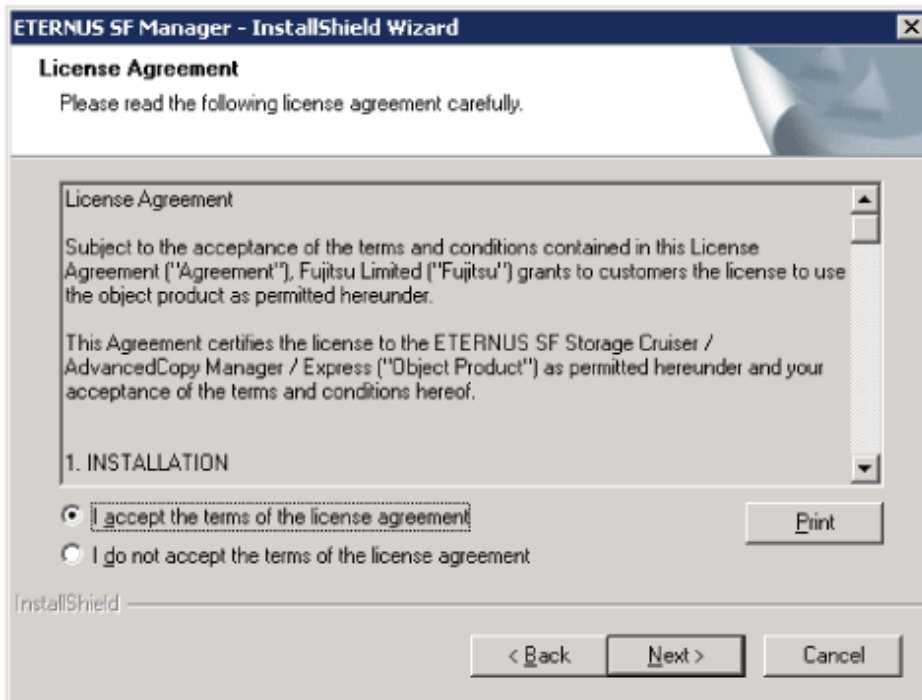
5. The following progress bar will be displayed. To cancel the installation, click **Cancel**.



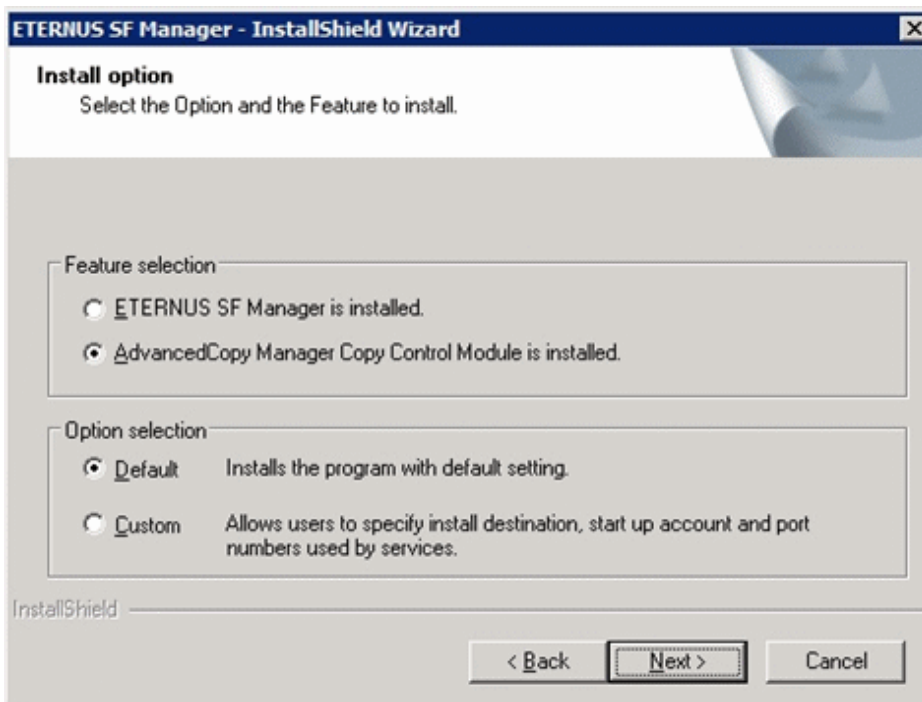
6. The installation wizard page will be displayed. Click **Next**.



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.

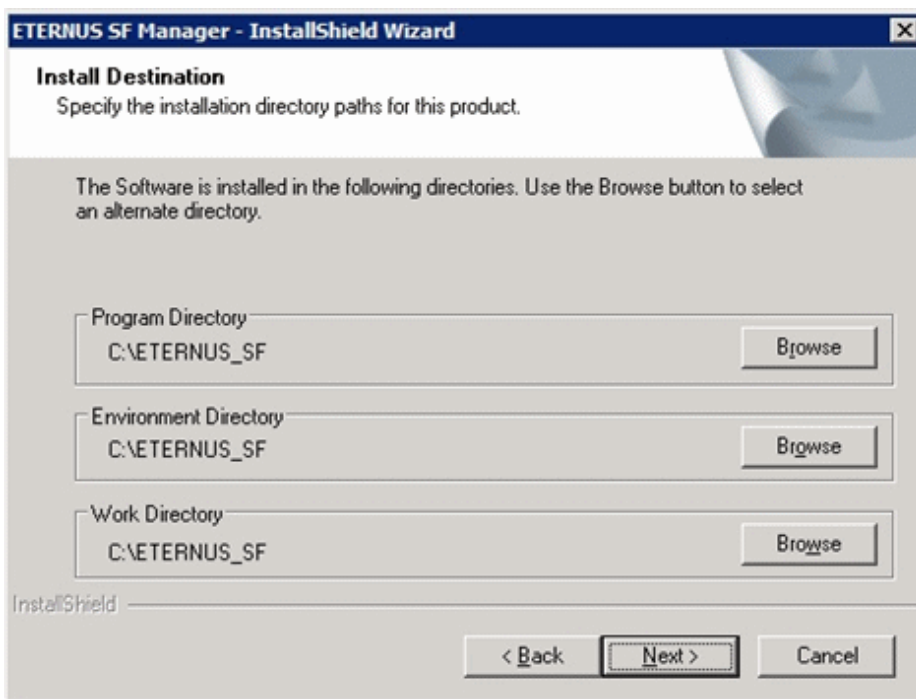
Option selection

Select the desired options according to the following information.

Install option	Explanation
Default	<p>Changing values in the Installation Destination page is optional. In this case, step 9 can be skipped.</p> <p>For this installation method, the following checks are automatically performed relating to the information provided by default:</p> <ul style="list-style-type: none"> - Is there enough disk space for the installation in the default directory? <p>If an error is detected at this stage, a warning dialog box will be displayed. If no error is detected, the Start Copying Files page will be displayed.</p>
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**.



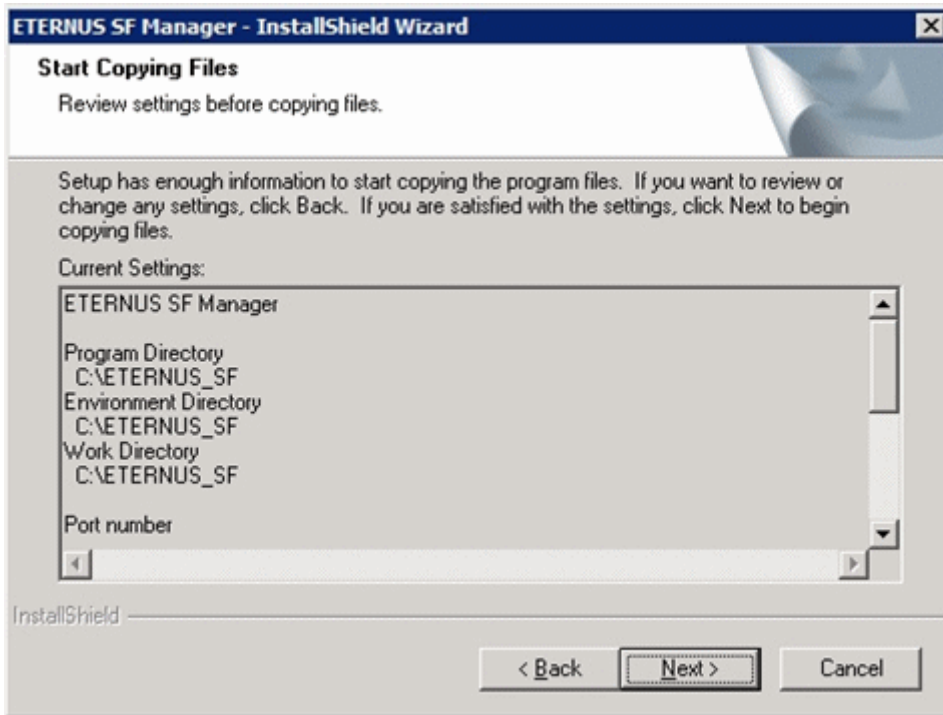
 **Point**

- 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.

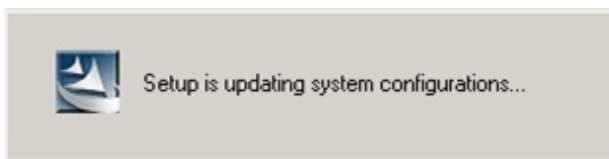
10. Check the settings information in the **Start Copying Files** page.

If the settings are correct, click **Next**.

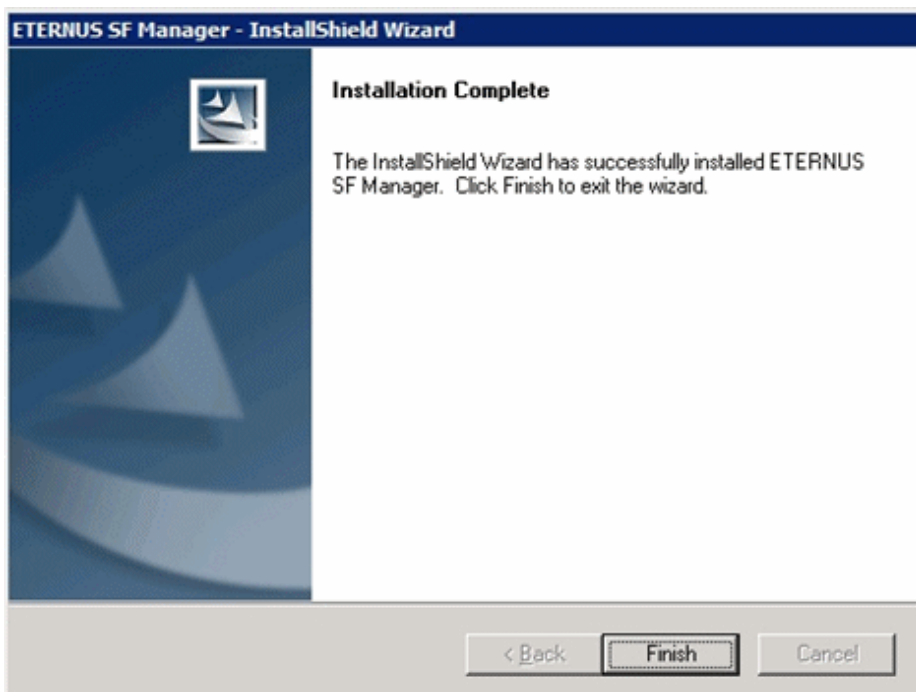
To change a setting, click **Back**.



11. Copying of the program will be started.
During this process, the file copy completion status will be displayed in the **Setup Status** page.
12. When the copying process is completed, the system configuration will be updated. Wait for the configuration update process to complete.



13. The following installation wizard page will be displayed. The installation process is completed. Click **Finish**.



14. Eject the DVD-ROM.

The AdvancedCopy Manager CCM (for Windows) installation is completed.

7.3 Silent installation procedure of AdvancedCopy Manager CCM (for Windows)

A silent installation is a method of loading the required information for installation from a pre-created install parameter file to install software automatically without requiring user interaction at the time of installation.

Take the following steps for silent installation:

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



- Silent installation does not support the version upgrade installation function.
For version upgrade installation, refer to the *ETERNUS SF Migration Guide* of this version.
 - Use the DVD-ROM for installation.
Copy the content of the DVD-ROM onto a local directory, but do not install it.
-

7.3.1 Editing install parameter file

An install parameter file is a file in which to specify install parameters such as installation destination directory and port number. This file is stored on DVD-ROM and default values are set for respective install parameters. For details on the install parameter file, refer to "[D.7 Windows Install parameter file \(for AdvancedCopy Manager Copy Control Module\)](#)".

The install parameter file is stored on the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack for Windows (Manager Program) (1/2)" of this version.

- Storage location

```
dvdromDrive:\Manager_windows\install_parameter_ccm.ini
```

When installing with default install parameter values, no editing is required.

When changing install parameters, copy the install parameter file on the DVD-ROM to an optional location and edit the copied file. For description of each install parameter, refer to "[D.8 Windows Install parameters \(for AdvancedCopy Manager Copy Control Module\)](#)".

In this manual, installing using the default install parameter values is referred to as "Default install" and installing with edited install parameters is referred to as "Custom install".

7.3.2 Running silent installation

The procedure to silently install AdvancedCopy Manager CCM (Windows) is as follows:

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



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

Server type	User to be specified
WORKGROUP (does not belong to the domain)	

2. Install the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack for Windows (Manager Program) (1/2)" of this version into the DVD-ROM 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*.

```
dvdromDrive: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*.

```
dvdromDrive:\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 install 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 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 multiplexly the command for silent installation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an install log file is not created.

5. On completion of installation, a command prompt is displayed.
Remove the DVD-ROM 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 ["E.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 Installation procedure of AdvancedCopy Manager CCM (for Solaris)

The installation procedure of AdvancedCopy Manager CCM for Solaris is performed as follows:

Point

No needs to modify the install parameter file for AdvancedCopy Manager Copy Control Module.

Refer to "[D.15 Solaris/Linux Install parameter file \(for AdvancedCopy Manager Copy Control Module\)](#)" for information on the install 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:

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

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

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

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

```
# cd dvdromMountPoint/Manager_unix
```

6. Specify the install parameter file, and execute the command for installation.
The install parameter file is stored in the same directory in which the install shell is stored. However, specify the install parameter file by using absolute path.

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

The absolute path name for install parameter file is as follows:

```
dvdromMountPoint/Manager_unix/install_parameter_ccm.txt
```

7. The license agreement information will be displayed. Display example is mentioned below.
If the conditions are agreeable, enter "y".

```
+-----+
|                                     |
|               ETERNUS SF V16.0      |
|                                     |
|   All Rights Reserved, Copyright (C) FUJITSU LIMITED 2013   |
|                                     |
+-----+

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```

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

8. The installation information will be displayed.

To continue installation, enter "y". To stop 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 will be displayed.

INFO: ETERNUS SF was installed successfully.

If an error occurs during installing, the following message will 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-ROM. The example is shown below.

```
# cd
```

11. Unmount the DVD-ROM.

```
# umount dvdromMountPoint
```

12. Eject the DVD-ROM.

The AdvancedCopy Manager CCM (for Solaris) installation is completed.

7.5 Silent installation procedure of AdvancedCopy Manager CCM (for Solaris)

A silent installation is an installing software automatically without requiring user interaction at the time of installation.



- Silent installation does not support the version upgrade installation function.
 - It is not necessary to edit the install parameter file for AdvancedCopy Manager Copy Control Module.
-

7.5.1 Running silent installation

The procedure to silently install AdvancedCopy Manager CCM (for Solaris) is as follows:

1. Log in to the target server as root (superuser).
2. Make sure that a local file system is mounted.
If not, run the following command to mount a local file system:

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

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

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

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*.

```
# dvdromMountPoint/Manager_unix/esfsilentinstall_ccm.sh -eula agreed [-l  
installLogFile]
```



- 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 multiplexly the command for silent installation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an install log file is not created.

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

```
# umount dvdromMountPoint
```

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

This is the end of the silent 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 "[E.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 Installation procedure of AdvancedCopy Manager CCM (for Linux)

The installation procedure of AdvancedCopy Manager CCM for Linux is performed as follows:

Point

No needs to modify the install parameter file for AdvancedCopy Manager Copy Control Module.

Refer to "[D.15 Solaris/Linux Install parameter file \(for AdvancedCopy Manager Copy Control Module\)](#)" for information on the install 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:

```
# mount -a
```

3. Insert the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack for Linux 64bit (Manager Program) (2/2)" for this version into the DVD-ROM drive.
4. Mount the DVD-ROM.

```
# mount /dev/cdrom dvdromMountPoint
```

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

```
# cd dvdromMountPoint/Manager_unix
```

6. Specify the install parameter file, and execute the command for installation.

The install parameter file is stored in the same directory in which the install shell is stored. However, specify the install parameter file by using absolute path.

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

The absolute path name for install parameter file is as follows:

```
dvdromMountPoint/Manager_unix/install_parameter_ccm.txt
```

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If the conditions are agreeable, enter "y".

```
+-----+
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```

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

8. The installation information will be displayed.

To continue installation, enter "y". To stop 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 will be displayed.

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

If an error occurs during installing, the following message will 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-ROM. An example is shown below.

```
# cd
```

11. Unmount the DVD-ROM.

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

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

The AdvancedCopy Manager CCM (for Linux) installation is completed.

7.7 Silent installation procedure of AdvancedCopy Manager CCM (for Linux)

A silent installation is an installing software automatically without requiring user interaction at the time of installation.



- Silent installation does not support the version upgrade installation function.
For version upgrade installation, refer to the *ETERNUS SF Migration Guide* of this version.
- It is not necessary to edit the install parameter file for AdvancedCopy Manager Copy Control Module.

7.7.1 Running silent installation

The procedure to silently install AdvancedCopy Manager CCM (for Linux) is as follows:

1. Log in to the target server as 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-ROM "ETERNUS SF SC/ACM/Express Mediapack for Linux 64bit (Manager Program) (2/2)" of this version into the DVD-ROM drive.
4. Mount the DVD-ROM.

```
# mount /dev/cdrom dvdromMountPoint
```

- 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*.

```
# dvdromMountPoint/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 multiplexly the command for silent installation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an install log file is not created.

- On completion of installation, a command prompt is displayed.
- Unmount the DVD-ROM.

```
# umount dvdromMountPoint
```

- Remove the DVD-ROM media out of the DVD-ROM drive.

This is the end of the silent 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 "[E.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 the 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 the CCM Server to ETERNUS Disk storage system	Configuration management (For ETERNUS DX80 S2/DX90 S2, DX100 S3/DX200 S3, DX400 S2 series, DX500 S3/DX600 S3, DX8000 S2 series)
1999/tcp	From the CCM Server to ETERNUS Disk storage system	Configuration management
32002/tcp	From the CCM Server to ETERNUS Disk storage system	Advanced Copy (For ETERNUS DX80 S2/DX90 S2, DX100 S3/DX200 S3, DX400 S2 series, DX500 S3/DX600 S3, DX8000 S2 series)
22/tcp	From the CCM Server to ETERNUS Disk storage system	Configuration management (For ETERNUS DX80 S2/DX90 S2, DX100 S3/DX200 S3, DX400 S2 series, DX500 S3/DX600 S3, DX8000 S2 series)
23/tcp	From the CCM Server to ETERNUS Disk storage system	Configuration management (For ETERNUS DX60/DX60 S2/DX80/DX80 S2/DX90/DX90 S2, DX100 S3/DX200 S3, DX400 S2 series, DX500 S3/DX600 S3, DX8000 S2 series)

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.

8.2.1 For Windows Server 2008 or later

In Windows Server 2008 or later, a User Account Control function (hereafter called "UAC") has been added to enhance security.

Cases where UAC is enabled and disabled are explained below.

- When UAC is enabled

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

- When UAC is disabled

Processes or programs that require administrator permissions must be executed by either the built-in 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
Built-in Administrator account	A	A
User account in the Administrators group	B	A
Standard user account	B	C

- A: Runs without displaying the permissions granted dialog box.
- B: Displays the permissions granted dialog box, and runs if permissions are approved.
- C: Does not run, because Administrator permissions cannot be obtained.

If you do not wish to perform the dialog process using the administrator permissions dialog box, and the conditions marked as "B" in the table above apply (for example, in batch processing), the program must be executed using administrator permissions with one of the following methods:

- In the Command Prompt, use the runas command to execute the program as a user with administrator permissions or the permissions required to operate AdvancedCopy Manager CCM. A password must be entered.

[Batch file (test.bat) execution example]

```
runas /noprofile /user:mymachine\acmuser "cmd.exe /k test.bat"
```

- In the Task Scheduler, specify "Execute with top level privileges" to operate the program.
- Execute the program with the Command Prompt.
 - For Windows Server 2008 or Windows Server 2008 R2
 - From the **Start** menu, select **All Programs > Accessories** and right-click on **Command Prompt**. Specify "Run as Administrator" to run the Command Prompt. Execute the program from the Command Prompt.
 - For Windows Server 2012 or later
 - Specify "Command Prompt (Admin)" to run the Command Prompt. Execute the program from the Command Prompt.

8.2.2 For Solaris or Linux

When using AdvancedCopy Manager CCM in Solaris or Linux environment, operate as a "root (super user)".

8.3 Setting the 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 environment

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
```



When listing multiple directories, separate them with semicolons (;).

For Solaris or Linux environment

When using Bourne shell, add a value to the environment variable PATH as below.

```
# PATH=$PATH:/opt/FJSVccm/bin  
# export PATH
```



.....
When listing multiple directories, separate them with semicolons (;).
.....

Chapter 9 Uninstallation of ETERNUS SF Manager

This chapter explains methods for uninstallation of ETERNUS SF Manager.

When uninstalling, there are the uninstallation using the interactive mode and the uninstallation without using the interactive mode (silent uninstallation).

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 will stop 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 will be 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 *ETERNUS SF Express Operation Guide*
- For Storage Cruiser:
"Backup of Manager" in the *ETERNUS SF Storage Cruiser Operation Guide*
- For AdvancedCopy Manager:
"Operation Maintenance" in the *ETERNUS SF 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 will also be deleted.

Under any of the following circumstances, you should back up the backup management list before starting the of 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 will be used again

For backing up the backup management list, execute the `swstresback` command.

Refer to "swstresback (Resource backup command)" in the *ETERNUS SF 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 the Web Console
- Executing the `stgxfwcmdelsrv` command on the Management Server

Refer to "stgxfwcmdelsrv (Server information deletion command)" in the *ETERNUS SF 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 will also be 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 will be used again

9.1.5 Unsetup of database (for Windows)

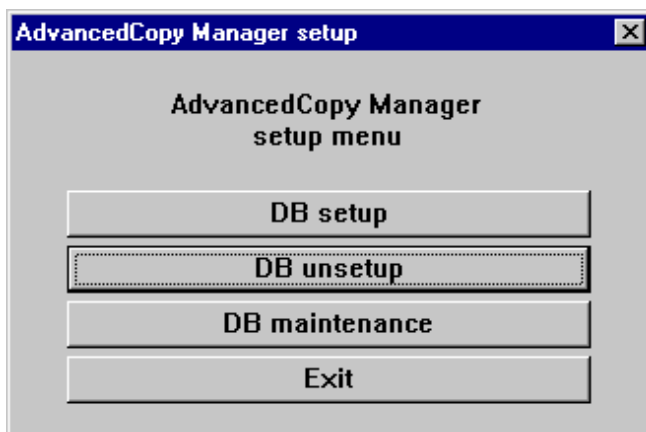
In order to delete the database, database environment and the repository settings, perform the database unsetup.

Note

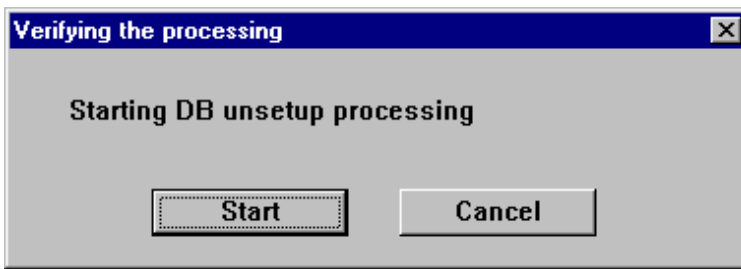
- For performing the database unsetup, you must be logged on as the user who has installed the ETERNUS SF Manager. If the database unsetup is performed by a different user, it may be failed.
- For systems that were in cluster operation, this task is unnecessary because the settings have been cleared during the deletion of the Management Server transaction.
You should, however, clear the settings according to the instructions in "Deletion of Cluster Environment for Management Server Transactions" or "Deletion of Cluster Environment for Managed Server Transactions" in the *ETERNUS SF Cluster Environment Setup Guide*. If you uninstall without clearing the settings, uninstallation processing will terminate prematurely with an error.
- Do not use the telnet server service for performing the database unsetup, as it will not work properly.
- The database unsetup uses Symfoware functions. If other software is used to perform Symfoware monitoring, database unsetup may fail. Therefore, stop Symfoware monitoring before performing executing the database unsetup.

The procedure is as follows:

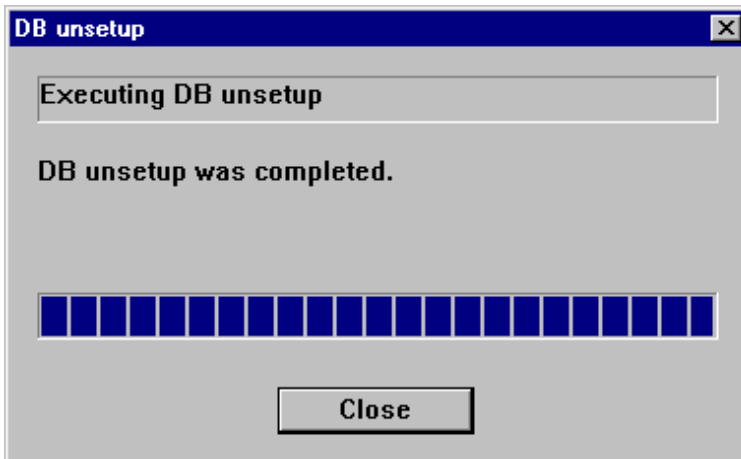
1. Click **Start > Programs > ETERNUS SF Manager > DB setup tool**.
2. The following page will be displayed. Click **DB unsetup**.



3. The following page will be displayed. Click **Start**.



4. The following progress bar will be displayed. When the database unsetup is completed, click **Close**.



5. Click **Exit** on the page displayed in step 2.

The procedure is completed.

9.1.6 Cancel of repository settings (for Solaris, Linux)

Start uninstall of the database integration.

Delete the database and its environment.

Cancel the repository configurations.



- When the Server is being operated on the clustered system, the repository configurations are cancelled when Management Server transaction are deactivated and removed. Therefore, it is not necessary to carry out this operation.
- Perform this operation under the locale specified when you installed ETERNUS SF Manager. However, when Symfoware is installed in advance, perform this operation under the locale specified at the time of installing Symfoware.
- DB unsetup uses Symfoware functions. If other software is used to perform Symfoware monitoring, DB unsetup may fail. Therefore, stop Symfoware monitoring before executing DB unsetup.
- Before performing database integration unsetup, add "/opt/FSUNrdb2b/lib" to the value of the environment variable LD_LIBRARY_PATH_64.

The procedure is shown below.

1. Log in to the server as a superuser.
2. Enter the following command to start uninstall of the database integration:

```
# /opt/swstorage/bin/stgdbunset
```

3. The following screen will be displayed. To continue processing, enter "y." To stop processing, enter "n."

```
////////////////////////////////////  
AdvancedCopy Manager Storage management server ( kiku )  
Database unsetup  
////////////////////////////////////  
  
+-----+  
| All of database environments of AdvancedCopy Manager |  
| will be deleted. |  
| [Notes] |  
| Once processing has started, all stored data is discarded. |  
| Make sure that the environment allows execution |  
| before proceeding. |  
+-----+  
  
Do you want to continue with processing? [y/n] ==>
```

4. The deletion of Management Server database is executed, the actions will be displayed on the screen.

 Point

.....
If an RDA-SV definition file overwrite confirmation message is displayed on the screen during processing, enter "y".
.....

```
///// AdvancedCopy Manager database unsetup /////  
  
Activation of RDB is complete.  
=====  
The replication management will be deleted.  
=====  
  
=====  
Clearing of database will start. (replication management)  
=====  
.  
Tables have been deleted. (replication management)  
=====  
Clearing of database is complete. (replication management)  
=====  
  
=====  
The replication management has been deleted.  
=====  
  
:  
  
=====  
Clearing of database environment is complete.  
=====  
  
=====  
The basic section has been deleted.  
=====
```

```
Database unsetup ended normally.
```

Cancel of repository settings is completed.

9.1.7 Eject the media

Make sure that the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack" is not in a DVD-ROM drive.

When the media is in the DVD-ROM drive, eject it.



An unexpected error may occur, when the media is left in the DVD-ROM drive.

9.1.8 Uninstallation of SELinux policy (for Linux)

If you applied the SELinux policy for snmptrapd during installation, revert to the status before applying the policy, according to the following procedure.

1. Run the following command in order to change the setting to "SELinux=Permissive":

```
# setenforce 0
```

2. Move the directory and uninstall the policy module.

```
# cd /opt/FJSVssmgr/etc/selinux/  
# /usr/sbin/semodule -r snmptrapd.pp
```

3. Run the following command to check that snmptrapd.pp is no longer displayed:

```
# ls /etc/selinux/targeted/modules/active/modules/ | grep snmptrapd.pp  
#
```

4. Run the following command in order to revert the setting to "SELinux=Enforcing":

```
# setenforce 1
```

Furthermore, if the IPv6 address device was monitored (if you applied the SELinux policy for Systemwalker Centric Manager SNMP Trap daemon), revert to the status before applying the policy according to the following procedure.

1. Run the following command in order to change the setting to "SELinux=Permissive":

```
# setenforce 0
```

2. Move the directory and uninstall the policy module.

```
# cd /opt/FJSVssmgr/etc/selinux/  
# /usr/sbin/semodule -r nwsnmp-trapd.pp
```

3. Run the following command to check that nwsnmp-trapd.pp is no longer displayed:

```
# ls /etc/selinux/targeted/modules/active/modules/ | grep nwsnmp-trapd.pp  
#
```

4. Run the following command in order to revert the setting to "SELinux=Enforcing"

```
# setenforce 1
```

9.2 Uninstallation procedure of ETERNUS SF Manager (for Windows)

The uninstallation procedure of ETERNUS SF Manager for Windows is performed as follows:

1. Log on to the server using Administrator privileges.
2. Start the uninstaller.

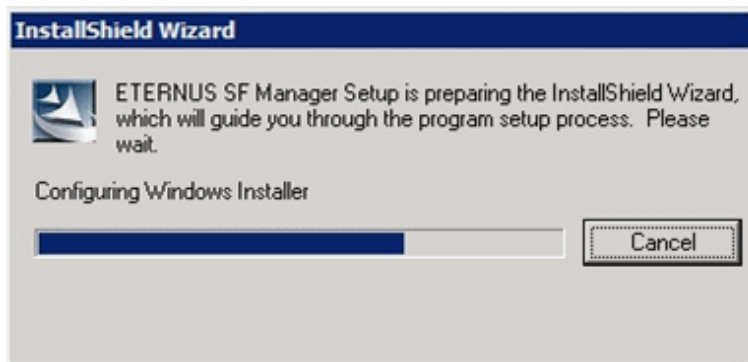
This can be done by either of the following methods:

- 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.

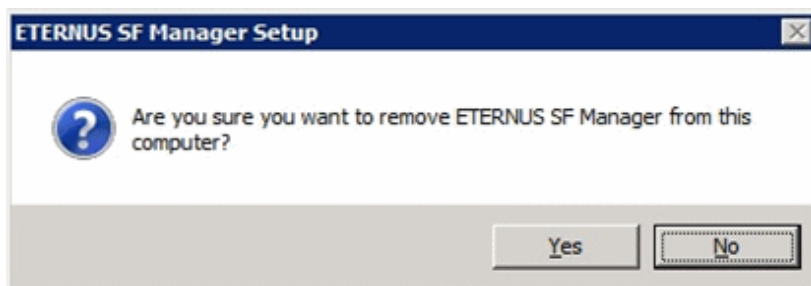
From the **Control Panel**, open the **Programs and Features** page.

From the list of displayed programs, select "ETERNUS SF Manager" and then click **Uninstall**.

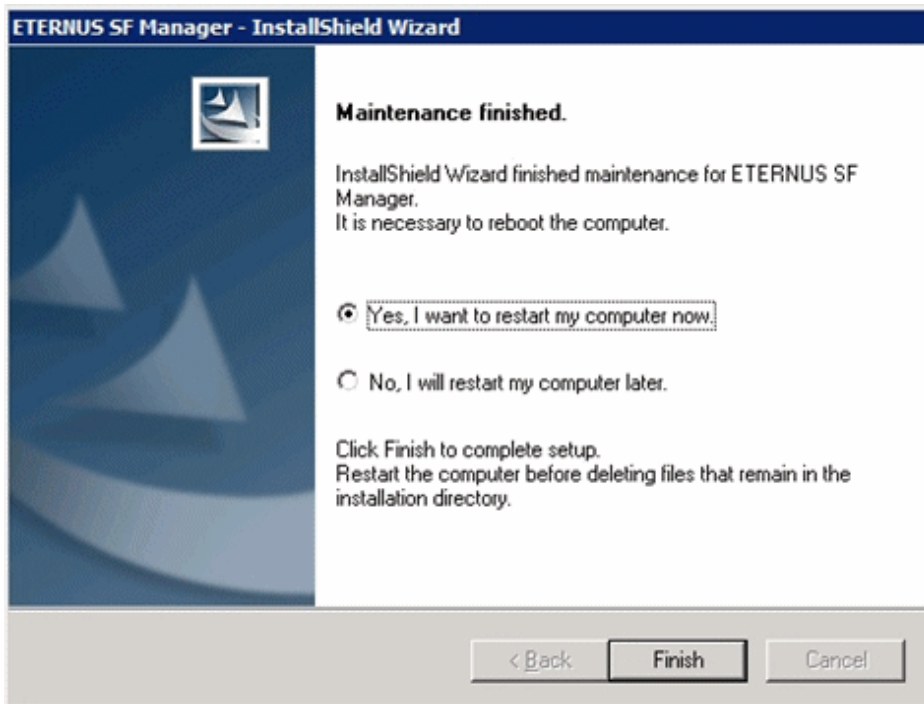
3. The following progress bar will be displayed. To cancel the uninstallation, click **Cancel**.



4. The following page will be displayed. Click **Yes**.



5. The following installation wizard page will be 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.

Information

The install destination directory is not deleted after ETERNUS SF Manager because of remaining Symfoware resources. Delete the install destination directory according to the following procedure.

1. Be sure that no other products (such as Systemwalker Centric Manager, or similar) are using Symfoware.
2. Uninstall Symfoware from the **Add or Remove Programs** or **Programs and Features** page.
If both Symfoware Server and Symfoware Client are installed, uninstall Symfoware Client first.
3. Delete the install destination directory.
Use Explorer or another application to delete the directory manually.
The default installation directory is "C:\ETERNUS_SF".

9.3 Silent uninstallation procedure of ETERNUS SF Manager (for Windows)

A silent uninstallation uninstalls software automatically without requiring user interaction at the time of uninstallation.

9.3.1 Running silent uninstallation

The procedure to silently uninstall 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*.

```
copyDestinati onDir\esfsilentuninstall.bat [-l uninstal lLogFile]
```

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 multiplexly the command for silent uninstallation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an uninstall log file is not created.

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 "[F.1 Return values for silent uninstallation \(ETERNUS SF Manager, AdvancedCopy Manager CCM for Windows\)](#)".

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).

Information

Even if ETERNUS SF Manager is uninstalled, an installation destination directory is not deleted. This is because the Symfoware resources are left in the installation destination directory.

When deleting the installation destination directory, take the following steps:

1. Make sure that no other product (Systemwalker Centric Manager and the like) is using Symfoware.
2. Uninstall Symfoware on the [Add and Delete Program] screen or [Program and Function] screen.
If both Symfoware Server and Symfoware Client are installed, first uninstall Symfoware Client.
3. Delete the installation destination directory.
Use Explorer to delete the install directory.
Default installation destination directory is [C:\ETERNUS_SF].

9.4 Uninstallation procedure of ETERNUS SF Manager (for Solaris)

The uninstallation procedure of ETERNUS SF Manager for Solaris is performed as follows:

Note

Before uninstalling, add "/opt/FSUNrdb2b/lib" to the value of the environment variable LD_LIBRARY_PATH_64.

1. Log in to the server as a superuser.
2. Uninstall ETERNUS SF Manager executing the following command:

```
# /opt/FJSVesfcm/esinstaller/esfuninstall.sh
```

3. The following screen will be displayed. To continue the uninstallation, enter "y". To stop the uninstallation, enter "q".

```
+-----+
|               ETERNUS SF V16.0               |
|                                               |
| All Rights Reserved, Copyright (C) FUJITSU LIMITED 2013 |
+-----+

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 will be displayed.
The following message will be displayed after the ETERNUS SF Manager uninstallation is completed normally.

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

5. Start the uninstaller of Symfoware to delete the Symfoware package.
Before deleting the package, confirm that none of the package functions used by any system other than ETERNUS SF Manager.

```
# /opt/symfoware/setup/symfo_remove
```

- Confirmation message to uninstall Symfoware will be displayed.
To perform the uninstallation, enter "all" or "y". To cancel the process, enter "n".
Enter "y" in response to the second confirmation message.

```

Start checking the installation environment.
Check of installation environment is ended.

WARNING: There is a possibility that another product uses "Symfoware Server Enterprise
Edition".

Continue the uninstallation?
y: Continue the uninstallation
q: End directly without uninstallation
[y,q]: y

Uninstallation of "Symfoware Server Enterprise Edition" begins.

Please select the functions to be uninstalled.
1: Base function (Server function, Client function)
Separate multiple selections with ",". (Example: 1, 2)
[all:All functions,1,q]: all

Selected functions
- Base function (Server function, Client function)

Start the uninstallation of the above functions?
y: Uninstallation begins
n: Select the functions again
q: End directly without uninstallation
[y,n,q]: y

Uninstallation begins.

```

- The following message will be displayed after the Symfoware uninstallation is completed normally.

```

Uninstallation of "Symfoware Server Enterprise Edition" is ended normally.

```

- 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

```

- Reboot the system.

```

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

```

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

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)

A silent uninstallation uninstalls software automatically without requiring user interaction at the time of uninstallation.



Note

Before uninstalling, add "/opt/FSUNrdb2b/lib" to the value of the environment variable LD_LIBRARY_PATH_64.

9.5.1 Running silent uninstallation

The procedure to silently uninstall 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/esinstaller/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 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 process exits. No error message is output on the screen.
- Do not execute multiplexly the command for silent uninstallation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an uninstall log file is not created.

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 "[F.2 Return values for silent uninstallation \(ETERNUS SF Manager, AdvancedCopy Manager CCM for Solaris/Linux\)](#)".

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. Start the uninstaller for Symfoware to delete the package.
Before deleting, make sure that this package function is not used by any other product.

```
# /opt/symfoware/setup/symfo_remove
```

- The confirmation message whether to uninstall Symfoware is displayed.
If you uninstall it, enter "all" or "y". If not, enter "n".
The confirmation message whether to uninstall Symfoware is displayed again, and enter "y".

```

Check of installation environment starts.
Check of installation environment finished

Warning: Other product may possibly be using "Symfoware Server Enterprise Edition"

Do you want to continue with uninstallation?
y: Continue with uninstallation
q: Not continue but quit uninstallation
[y,q]: y

Uninstall "Symfoware Server Enterprise Edition"

Select functions to uninstall
1: Basic function (server function, client function)
When selecting multiple functions, separate them with comma ",". (e.g.: 1, 2)
[all: all functions,1,q]: all

Selected function
- Basic function (server function, client function)

Do you want to start uninstalling the above function?
y: Start uninstalling
n: Reselect function
q: Not uninstall but quit uninstallation
[y,n,q]: y

Uninstallation starts

```

- When uninstallation of Symfoware terminated normally, the following message is displayed:

```

Uninstallation of "Symfoware Server Enterprise Edition" terminated normally

```

- 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

```

- Restart the system.

```

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

```

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

Information

Even if ETERNUS SF Manager is uninstalled, the /var/opt/FJSVesflm directory may be left.
In that case, delete the /var/opt/FJSVesflm directory.

9.6 Uninstallation procedure of ETERNUS SF Manager (for Linux)

The uninstallation procedure of ETERNUS SF Manager for Linux is performed as follows:

- Log in to the server as a superuser.
- Uninstall ETERNUS SF Manager executing the following command:

```
# /opt/FJSVesfcm/esinstaller/esfuninstall.sh
```

3. The following screen will be displayed. To continue the uninstallation, enter "y". To stop the uninstallation, enter "q".

```
+-----+
|                ETERNUS SF V16.0                |
|                |                                |
| All Rights Reserved, Copyright (C) FUJITSU LIMITED 2013 |
|                |                                |
+-----+

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 will be displayed.
The following message will be displayed after the ETERNUS SF Manager uninstallation is completed normally.

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

5. Start the uninstaller of Symfoware to delete the Symfoware package.
Before deleting the package, confirm that none of the package functions used by any system other than ETERNUS SF Manager.

```
# /opt/symfoware/setup/symfo_remove
```

6. Confirmation message to uninstall Symfoware will be displayed.
To perform the uninstallation, enter "all" or the "number of the function".
Enter "y" in response to the second confirmation message. To continue the uninstallation, enter "y". To stop the uninstallation, enter "q".

An example of uninstallation with the specification "all":

```
Start checking the installation environment.
Check of installation environment is ended.

WARNING: There is a possibility that another product uses "Symfoware Server
Enterprise Edition".

Continue the uninstallation?
y: Continue the uninstallation
q: End directly without uninstallation
[y,q]: y

Uninstallation of "Symfoware Server Enterprise Edition" begins.

Please select the functions to be uninstalled.
1: Base function (Server function, Client function)
Separate multiple selections with ",". (Example: 1, 2)
[all:All functions,1,q]: all

Selected functions
- Base function (Server function, Client function)

Start the uninstallation of the above functions?
y: Uninstallation begins
n: Select the functions again
q: End directly without uninstallation
[y,n,q]: y

Uninstallation begins.
```

7. The following message will be displayed after the Symfoware uninstallation is completed normally.

```
Uninstallation of "Symfoware Server Enterprise Edition" is ended normally.
```

8. Reboot the system

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

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

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)

A silent uninstallation uninstalls software automatically without requiring user interaction at the time of uninstallation.

9.7.1 Running silent uninstallation

The procedure to silently uninstall 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/esinstaller/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 multiplexly the command for silent uninstallation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an uninstall log file is not created.

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 "F.2 Return values for silent uninstallation (ETERNUS SF Manager, AdvancedCopy Manager CCM for Solaris/Linux)".

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. Start the uninstaller for Symfoware to delete the package.
Before deleting, make sure that this package function is not used by any other product.

```
# /opt/symfoware/setup/symfo_remove
```

2. The confirmation message whether to uninstall Symfoware is displayed.
If you uninstall it, enter "all" or "number to be deleted".
The confirmation message whether to uninstall it is displayed again. If you want to uninstall it, enter "y" and if not, enter "q".

Example of the case of specifying all to run uninstallation

```
Check of installation environment starts
Check of installation environment finished

Warning: Other product may possibly be using "Symfoware Server Enterprise Edition"

Do you want to continue with uninstallation?
y: Continue with uninstallation
q: Not continue but quit uninstallation
[y,q]: y

Uninstall "Symfoware Server Enterprise Edition"

Select functions to be uninstalled
1: Basic functions (server function, client function)
If you select multiple functions, separate them with comma ",". (e.g.: 1,2)
[all: all functions,1,q]: all

Selected function
- Basic functions (server function, client function)

Do you want to start uninstalling the above function?
y: Start uninstalling
n: Select function again
q: Not uninstall but quit uninstallation
[y,n,q]: y

Uninstallation starts
```

3. When uninstalling Symfoware terminates normally, the following message is displayed:

```
Uninstalling "Symfoware Server Enterprise Edition" terminated normally
```

4. Restart the system.

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

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

Information

Even if 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 the 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

For the port numbers to be deleted, refer to the following sections:

- 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 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.

When uninstalling, there are the uninstallation using the interactive mode and the uninstallation without using the interactive mode (silent uninstallation). The following are the operating environments in which the silent uninstallation feature can be used:

Windows Server 2008 or later, Solaris, Red Hat Enterprise Linux 5, Red Hat Enterprise Linux 6, and SUSE Linux Enterprise Server 11

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 environment

1. Open the **Services** screen.
 - For Windows Server 2012
Click **Control Panel > System and Security > Administrative Tools > Services**.
 - For Windows environment other than above
Click **Control Panel > Administrative Tools > Services**.
2. Select "ETERNUS SF Storage Cruiser Agent" and then click **Stop**.

For Solaris, Linux, HP-UX, or AIX environment

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, HP-UX, or AIX environment:

```
# /usr/bin/ps -ef | grep FJSVssage
```

- For Linux environment:

```
# /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 Uninstallation procedure of Storage Cruiser's agent (for Windows)

The uninstallation procedure of Storage Cruiser's agent (for Windows) is performed as follows:

1. Log on to the server using Administrator privileges.

2. Perform the following tasks.

- For Windows Server 2003

From the **Control Panel**, open the **Add or Remove Programs** page.

From the list of displayed programs, select "ETERNUS SF Storage Cruiser Agent" and then click **Change/Remove**.

- For Windows Server 2008 or later

From the **Control Panel**, open the **Programs and Features** page.

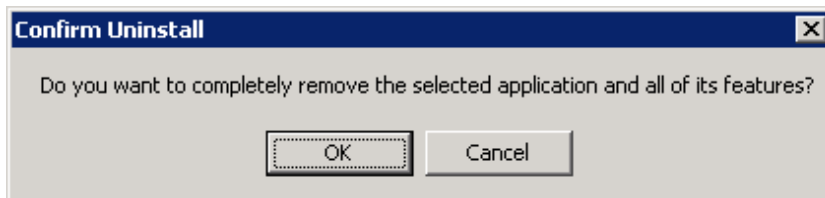
From the list of displayed programs, select "ETERNUS SF Storage Cruiser Agent" and then click **Uninstall**.

Information

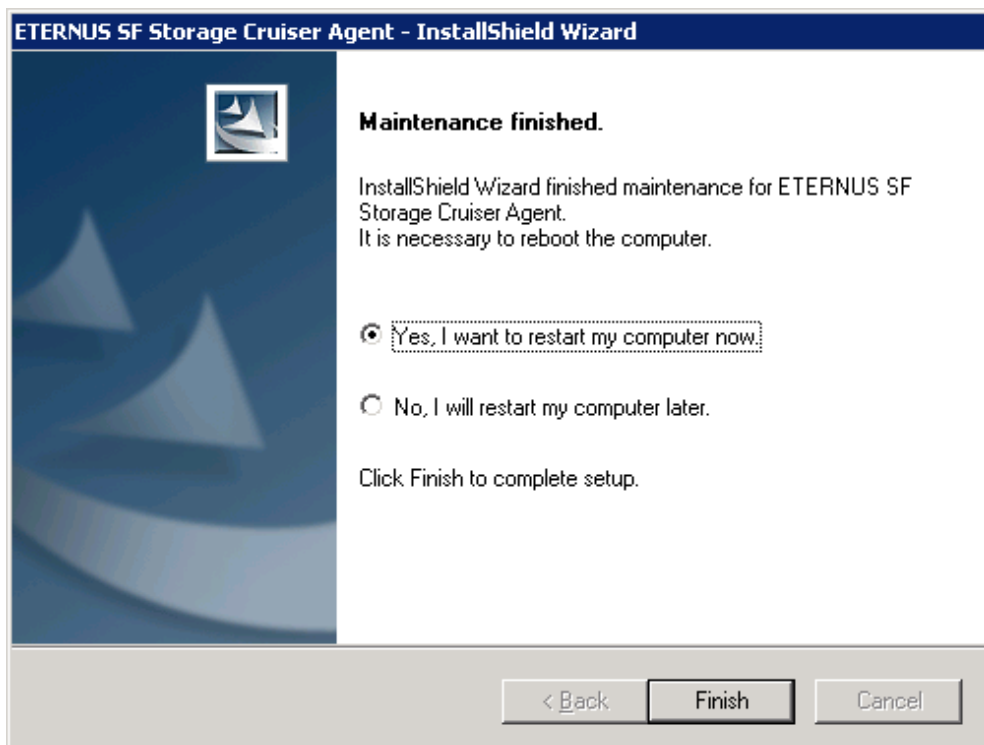
Sometimes, an error dialog may be displaying "Error reading setup initialization file", indicating that uninstallation cannot be performed. In such a case, insert the DVD-ROM that you used for installation into the DVD-ROM drive, open the directory stated below with Explorer or another application, and execute setup.exe.

- *dvdromDrive:\Agent_windows\Storage_Cruiser\windows_x86*

3. The following page is displayed. Click **OK**.



4. The following installation wizard page will be 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 Server 2008 or later)

A silent uninstallation uninstalls software automatically without requiring user interaction at the time of uninstallation.

10.1.3.1 Running silent uninstallation

The procedure to silently uninstall 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 multiplexly the command for silent uninstallation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an uninstall log file is not created.
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 "[F.3 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 Uninstallation procedure of Storage Cruiser's agent (for Solaris)

The uninstallation procedure of Storage Cruiser's agent (for Solaris) is performed 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 will 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)

A silent uninstallation uninstalls software automatically without requiring user interaction at the time of uninstallation.

10.1.5.1 Running silent uninstallation

The procedure to silently uninstall 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 /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 multiplexly the command for silent uninstallation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an uninstall log file is not created.
- 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 "[F.3 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 Uninstallation procedure of Storage Cruiser's agent (for Linux)

The uninstallation procedure of Storage Cruiser's agent (for Linux) is performed as follows:

1. Log in to the server as a superuser.
2. Execute the following command:

```
# rpm -e FJSVssage
```

Note

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 will 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 RHEL5, RHEL6, SUSE Linux Enterprise Server 11)

A silent uninstallation uninstalls software automatically without requiring user interaction at the time of uninstallation.

10.1.7.1 Running silent uninstallation

The procedure to silently uninstall Storage Cruiser's agent is as follows:

1. Log in to the target server as a user with root privileges.
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 /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 multiplexly the command for silent uninstallation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an uninstall log file is not created.
 - 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 "[F.3 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 Uninstallation procedure of Storage Cruiser's agent (for HP-UX)

The uninstallation procedure of Storage Cruiser's agent (for HP-UX) is performed as follows:

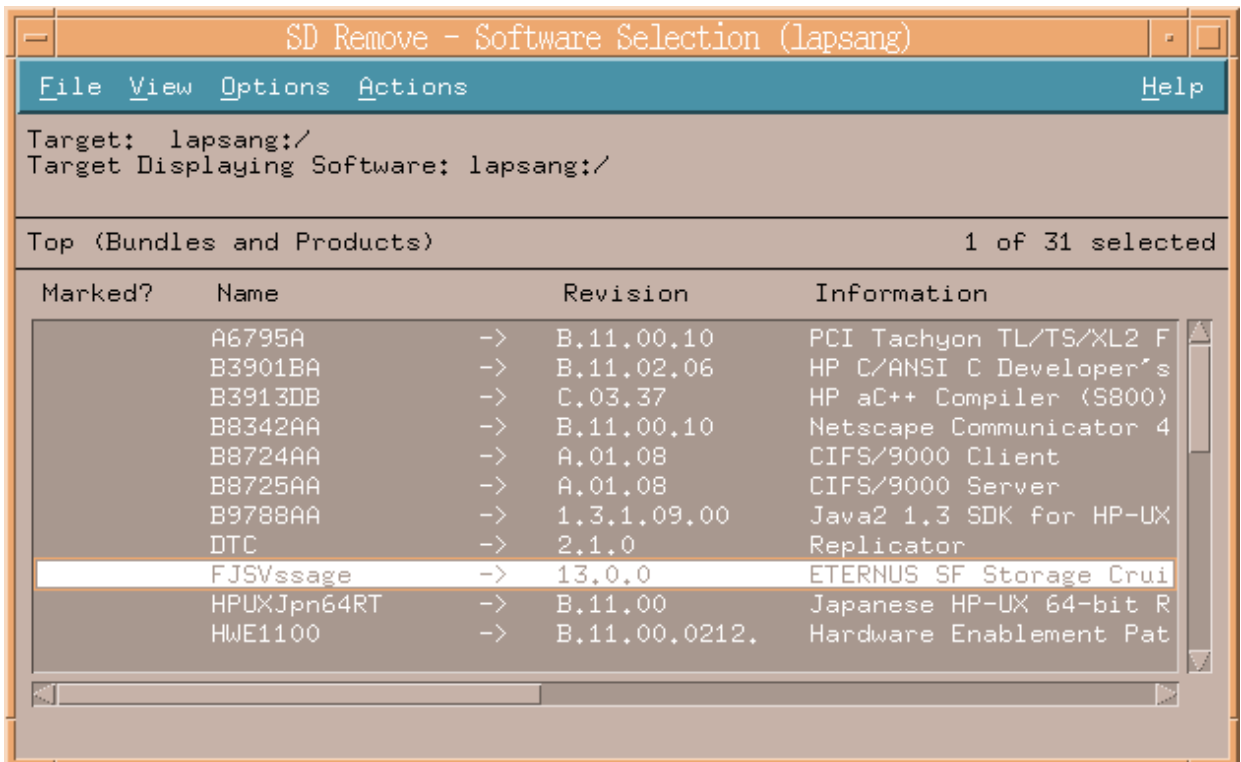
1. Log in to the server as a superuser.
2. Move to the root directory (/).

```
# cd /
```

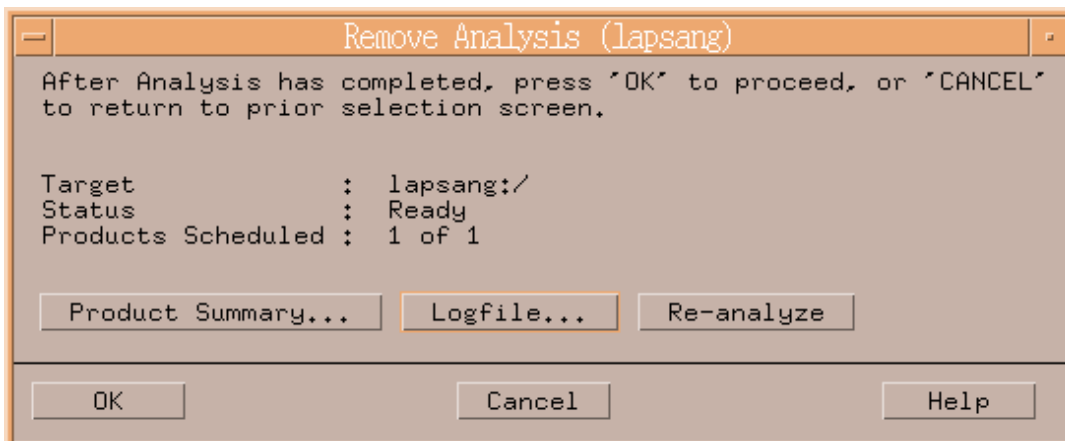
3. Execute the following command:

```
# swremove
```

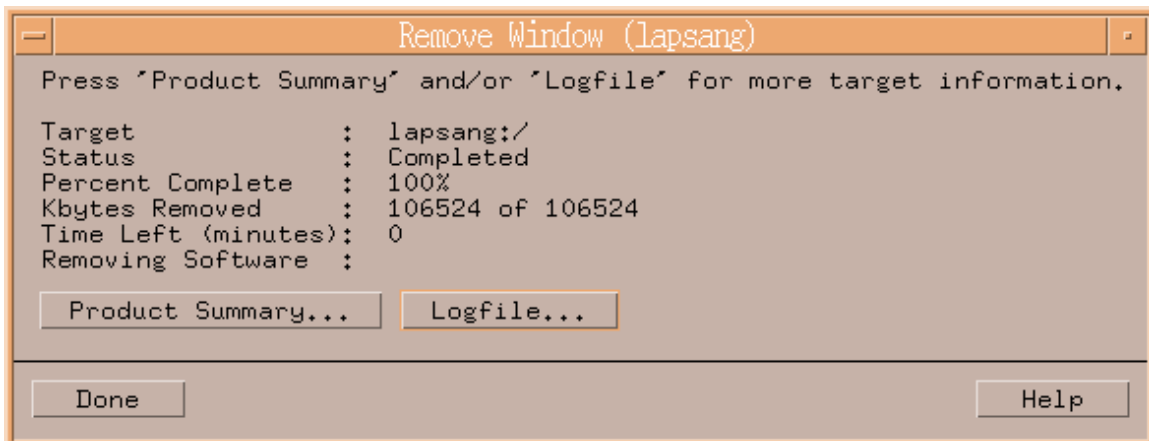
4. The following screen will be displayed. Select "FJSVssage" from the list, and then click **Actions > Remove**.



5. The **Remove Analysis** page will be displayed, and package will be checked. After checking package is completed, click **OK**.



- The **Remove Window** page will be displayed.
When "Completed" is displayed in **Status** field, the uninstallation is completed. Click **Done** to go back to the initial page.



- Delete the sscruisera line from the /etc/services file.

The Storage Cruiser's agent (for HP-UX) uninstallation is completed.

10.1.9 Uninstallation procedure of Storage Cruiser's agent (for AIX)

The uninstallation procedure of Storage Cruiser's agent (for AIX) is performed as follows:

- Log in to the server as a superuser.
- Run the following command to delete the "FJSVssage" record from the /etc/inittab file:

```
# /usr/sbin/rmitab FJSVssage
```

- Delete the contents you added to /etc/rc.shutdown file as specified in "Auto stop setting (AIX environment only)".
- Delete all of the following directories if they exist:
 - /opt/FJSVssage
 - /etc/opt/FJSVssage
 - /var/opt/FJSVssage

Example of deletion

```
# /usr/bin/rm -rf /opt/FJSVssage /etc/opt/FJSVssage /var/opt/FJSVssage
```

- Run the following command in order to delete the line "sscruisera" from the /etc/services file.
In the following example, the port number to be used is set to "4917". If you specified a different port number during installation, specify the same port number here.

```
# /usr/sbin/chservices -d -v sscruisera -p tcp -n 4917
```



Point

You can execute the following command to check the specified port number:

```
# /usr/bin/grep -e "^sscruisera" /etc/services
```

The currently set value will be displayed. In this example, the setting is "4917".

```
sscruisera          4917/tcp
```

6. Reboot the system.

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

The Storage Cruiser's agent (for AIX) 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 `swstresback` command before starting the uninstallation of AdvancedCopy Manager's agent.

Refer to "swstresback (Resource backup command)" in the *ETERNUS SF 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 *ETERNUS SF Cluster Environment Setup Guide* for information on the instructions.

10.2.1.3 Deletion of backup operation settings for Exchange Server (Windows environment only)

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 *ETERNUS SF 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 the Web Console
- Executing the `stgxfwcmdelsrv` command on the Management Server

Refer to "stgxfwcmdelsrv (Server information deletion command)" in the *ETERNUS SF 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 will also be 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 environment

1. Open the **Services** screen.
 - For Windows Server 2012 or later
Click **Control Panel > System and Security > Administrative Tools > Services**.
 - For Windows environment other than above
Click **Control Panel > Administrative Tools > Services**.
2. Select "AdvancedCopy Manager COM Service" and then click **Stop**.

For Solaris, Linux, HP-UX or AIX environment

Execute the following command to stop AdvancedCopy Manager daemon.

```
# /opt/swstorage/bin/stopacm
```

10.2.1.7 Deletion of the 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 AIX	/etc/services

10.2.2 Uninstallation procedure of AdvancedCopy Manager's agent (for Windows)



Note

The uninstallation procedure in the environment that Storage Cruiser's agent is installed in 64 bit operating system of Windows Server 2008 or later 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 uninstallation procedure of AdvancedCopy Manager's agent (for Windows) is performed as follows:

1. Log on to the server using Administrator privileges.

2. Perform the following tasks.

- For Windows Server 2003

From the **Control Panel**, open the **Add or Remove Programs** page.

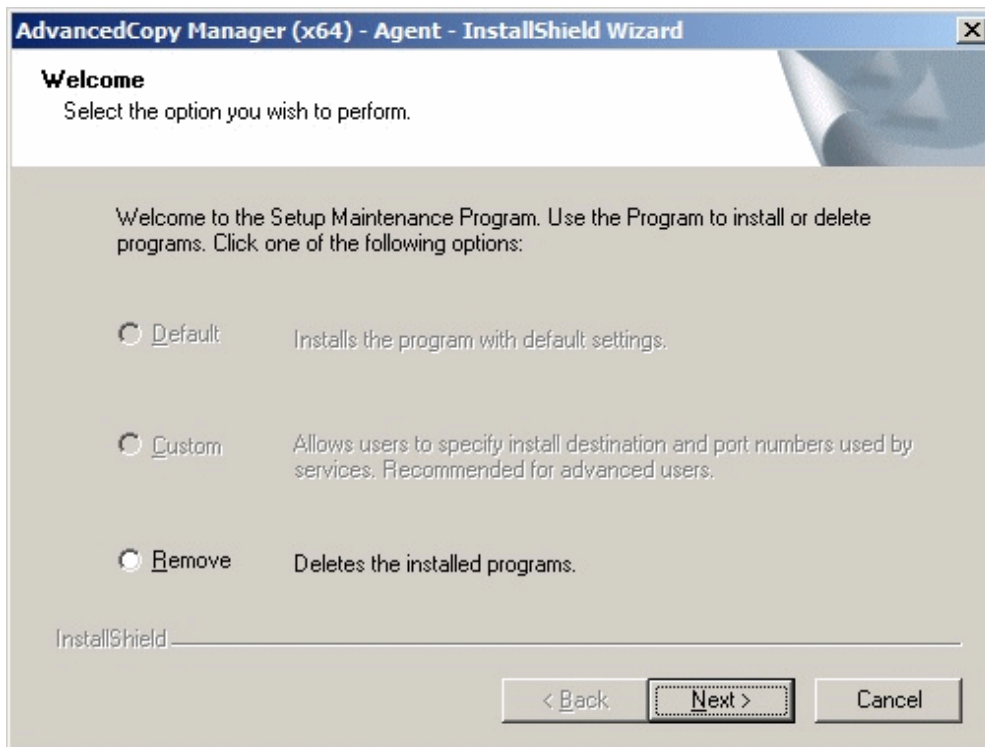
From the list of displayed programs, select "AdvancedCopy Manager - Agent" and then click **Change/Remove**.

- For Windows Server 2008 or later

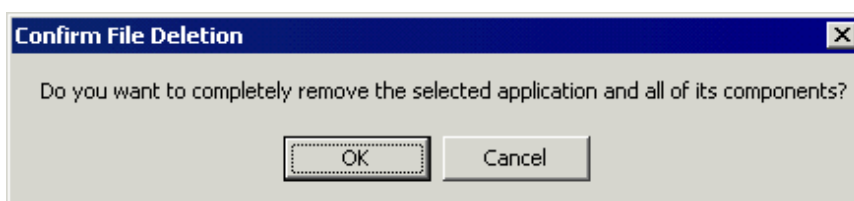
From the **Control Panel**, open the **Programs and Features** page.

From the list of displayed programs, select "AdvancedCopy Manager - Agent" and then click **Uninstall**.

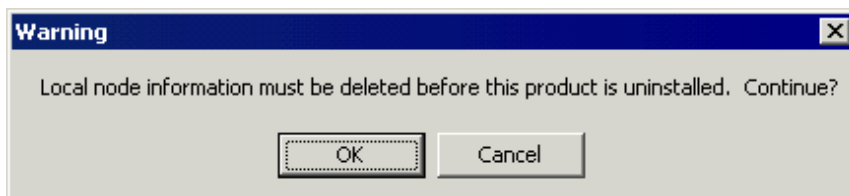
3. The following page will be displayed. Select **Remove** and then click **Next**.



4. The following page will be displayed. Click **OK**.

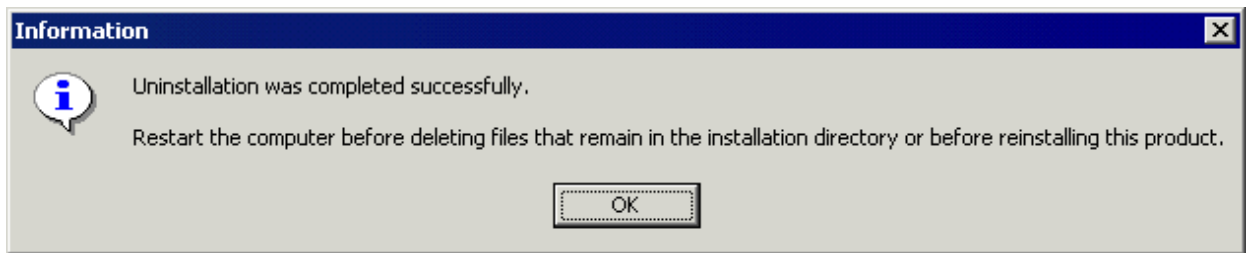


5. The page will be displayed to confirm whether you have completed the tasks described under "[10.2.1.4 Deletion of Managed Server](#)". If you have completed them, click **OK**.



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 will be 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 Server 2008 or later)

A silent uninstallation uninstalls software without requiring user interaction at the time of uninstallation.



Note

The following is the uninstallation procedure in the environment where Storage Cruiser's agent is installed on the 64-bit Windows Server 2008 or later operating system:

- 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 procedure to silently uninstall 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:

```
programDir\Installation\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 multiplexly the command for silent uninstallation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an uninstall log file is not created.

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 "[F.4 Return values for silent uninstallation \(AdvancedCopy Manager's agent for Windows\)](#)".

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.

10.2.4 Uninstallation procedure of AdvancedCopy Manager's agent (for Solaris)

The uninstallation procedure of AdvancedCopy Manager's agent (for Solaris) is performed as follows:

1. Log in to the server as a superuser.
2. Execute the following command:

By executing below command, most of the packages described in "[A.2.2 Program components of AdvancedCopy Manager's agent](#)" will be deleted.

```
# /opt/swstorage/setup/stg/swunsetup
```

3. Reboot the system.

The AdvancedCopy Manager's agent (for Solaris) uninstallation is completed.

Information

- If you are planning to install AdvancedCopy Manager's agent again in a different directory after executing the `swunsetup` command, make sure that no package directories described in "[A.2.2 Program components of AdvancedCopy Manager's agent](#)" remain.
- In some cases, executing the `swunsetup` command will not delete the package directories described in "[A.2.2 Program components of AdvancedCopy Manager's agent](#)". If these are unnecessary, delete them manually.

10.2.5 Silent uninstallation procedure of AdvancedCopy Manager's agent (for Solaris)

A silent uninstallation uninstalls software automatically without requiring user interaction at the time of uninstallation.

10.2.5.1 Running silent uninstallation

The procedure to silently uninstall AdvancedCopy Manager's agent (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/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 multiplexly the command for silent uninstallation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an uninstall log file is not created.
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 "[F.5 Return values for silent uninstallation \(AdvancedCopy Manager's agent for Solaris/Linux\)](#)".

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 the directory for the package listed in the "[A.2.2 Program components of AdvancedCopy Manager's agent](#)" is not left.
 - Even running the uninstallation process may not delete the directory for the package listed in the "[A.2.2 Program components of AdvancedCopy Manager's agent](#)". If not needed, delete the left directory.
-

10.2.6 Uninstallation procedure of AdvancedCopy Manager's agent (for Linux)

The uninstallation procedure of AdvancedCopy Manager's agent (for Linux) is performed as follows:

1. Log in to the server as a superuser.
2. Execute the following command:

By executing below command, most of the packages described in "[A.2.2 Program components of AdvancedCopy Manager's agent](#)" will be deleted.

```
# /opt/swstorage/setup/stg/swunsetup
```

3. Reboot the system.

The AdvancedCopy Manager's agent (for Linux) uninstallation is completed.

Information

- If you are planning to install AdvancedCopy Manager's agent again in a different directory after executing the swunsetup command, make sure that no package directories described in "[A.2.2 Program components of AdvancedCopy Manager's agent](#)" remain.
 - In some cases, executing the swunsetup command will not delete the package directories described in "[A.2.2 Program components of AdvancedCopy Manager's agent](#)". If these are unnecessary, delete them manually.
-

10.2.7 Silent uninstallation procedure of AdvancedCopy Manager's agent (for RHEL5, RHEL6, SUSE Linux Enterprise Server 11)

Refer to "[10.2.5 Silent uninstallation procedure of AdvancedCopy Manager's agent \(for Solaris\)](#)".

10.2.8 Uninstallation procedure of AdvancedCopy Manager's agent (for HP-UX)

The uninstallation procedure of AdvancedCopy Manager's agent (for HP-UX) is performed as follows:

1. Log in to the server as a superuser.
2. Execute the following command:

By executing below command, most of the packages described in "[A.2.2 Program components of AdvancedCopy Manager's agent](#)" will be deleted.

```
# /opt/swstorage/setup/stg/swunsetup
```

3. Reboot the system.

The AdvancedCopy Manager's agent (for HP-UX) uninstallation is completed.

Information

- If you are planning to install AdvancedCopy Manager's agent again in a different directory after executing the swunsetup command, make sure that no package directories described in "[A.2.2 Program components of AdvancedCopy Manager's agent](#)" remain.
- In some cases, executing the swunsetup command will not delete the package directories described in "[A.2.2 Program components of AdvancedCopy Manager's agent](#)". If these are unnecessary, delete them manually.

10.2.9 Uninstallation procedure of AdvancedCopy Manager's agent (for AIX)

The uninstallation procedure of AdvancedCopy Manager's agent (for AIX) is performed as follows:

1. Log in to the server as a superuser.
2. Execute the following command:

By executing below command, most of the packages described in "[A.2.2 Program components of AdvancedCopy Manager's agent](#)" will be deleted.

```
# /opt/swstorage/setup/stg/swunsetup
```

3. If the following line is defined in the /etc/rc.shutdown file, delete this line.

```
/opt/FJSVswstf/daemon/stop_smgr0
```

4. Reboot the system.

The AdvancedCopy Manager's agent (for AIX) uninstallation is completed.

Information

- If you are planning to install AdvancedCopy Manager's agent again in a different directory after executing the swunsetup command, make sure that no package directories described in "[A.2.2 Program components of AdvancedCopy Manager's agent](#)" remain.
- In some cases, executing the swunsetup command will not delete the package directories described in "[A.2.2 Program components of AdvancedCopy Manager's agent](#)". If these are unnecessary, delete them manually.

Chapter 11 Uninstallation of AdvancedCopy Manager CCM

This chapter explains how to uninstall AdvancedCopy Manager CCM.

When uninstalling, there are the uninstallation using the interactive mode and the uninstallation without using the interactive mode (silent uninstallation).

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 the environment setting files

If there is a possibility that the current environment will be 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 *ETERNUS SF 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 *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for the methods for checking and stopping active sessions of Advanced Copy.

11.1.3 Eject the media

Make sure that the DVD-ROM "ETERNUS SF SC/ACM/Express Mediapack" is not in a DVD-ROM drive.

When the media is in the DVD-ROM drive, eject it.

Note

An unexpected error may occur, when the media is left in the DVD-ROM drive.

11.2 Uninstallation procedure of AdvancedCopy Manager CCM (for Windows)

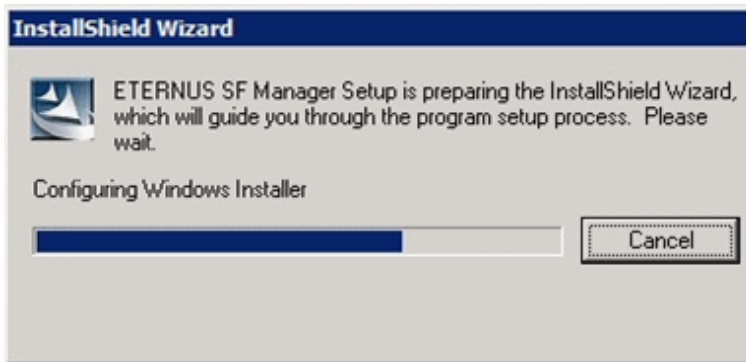
The uninstallation procedure of AdvancedCopy Manager CCM is performed as follows:

1. Log on to the server using Administrator privileges.
2. Perform the following tasks:

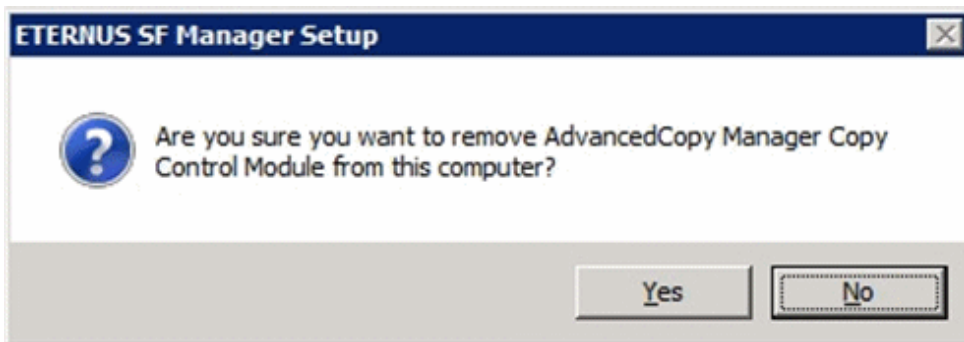
From the **Control Panel**, open the **Programs and Features** page.

From the list of displayed programs, select "ETERNUS SF AdvancedCopy Manager Copy Control Module" and then click **Uninstall**.

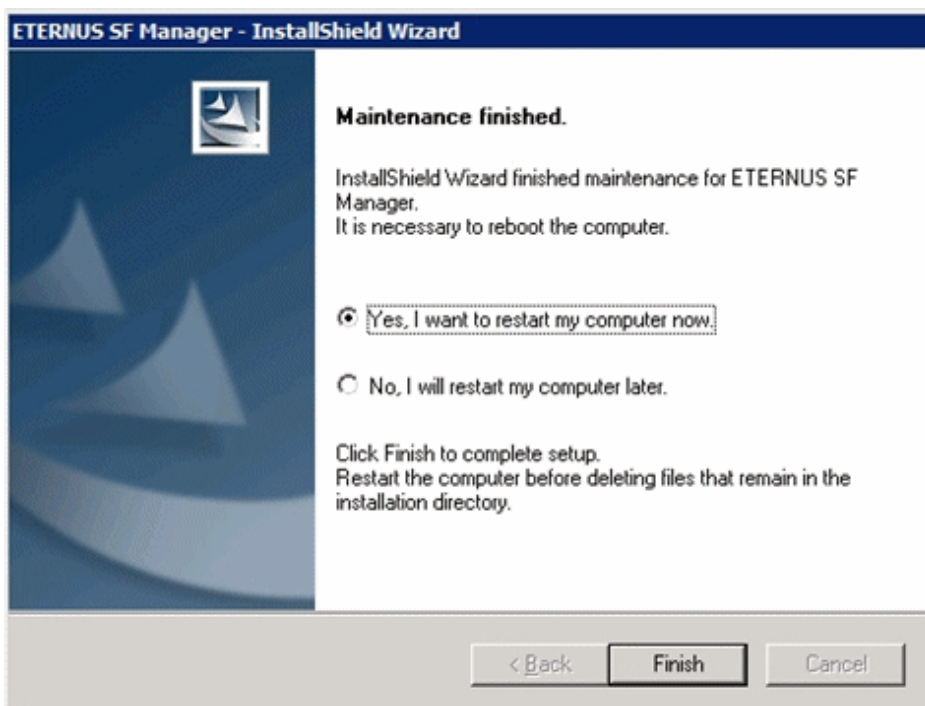
3. The following progress bar will be displayed. To cancel the uninstallation, click **Cancel**.



4. The following page will be displayed. Click **Yes**.



5. The following installation wizard page will be 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)

A silent uninstallation uninstalls software automatically without requiring user interaction at the time of uninstallation.

11.3.1 Running silent uninstallation

The procedure to silently uninstall 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:

```
programDir\Installation\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 multiplexly the command for silent uninstallation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an uninstall log file is not created.
-

5. On completion of uninstallation, a command prompt is displayed.
6. Delete the command run at step 4.

- Restart the system.



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 ["F.1 Return values for silent uninstallation \(ETERNUS SF Manager, AdvancedCopy Manager CCM for Windows\)"](#).

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 Uninstallation procedure of AdvancedCopy Manager CCM (for Solaris)

Use the following procedure to uninstall AdvancedCopy Manager CCM for Solaris.

- 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
```

- Uninstall ETERNUS SF AdvancedCopy Manager CCM executing the following command:

```
# /opt/FJVSvesfcm/esinstaller/esfuninstall.sh
```

- The following screen will be displayed. To continue uninstallation, enter "y". To stop the uninstallation, enter "q".

```
+-----+
|                ETERNUS SF V16.0                |
|                                                  |
| All Rights Reserved, Copyright (C) FUJITSU LIMITED 2013 |
+-----+
The following product has been installed on this system:
      ETERNUS SF AdvancedCopy Manager CCM

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

- The relevant packages are deleted, and execution result will be displayed.

The following message will be displayed at the complete.

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

- 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)

A silent uninstallation uninstalls software automatically without requiring user interaction at the time of uninstallation.

11.5.1 Running silent uninstallation

The procedure to silently uninstall 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/FJSSVesfcm/esinstaller/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 multiplexly the command for silent uninstallation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an uninstall log file is not created.

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 "[F.2 Return values for silent uninstallation \(ETERNUS SF Manager, AdvancedCopy Manager CCM for Solaris/Linux\)](#)".

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 Uninstallation procedure of AdvancedCopy Manager CCM (for Linux)

Use the following procedure to uninstall AdvancedCopy Manager CCM for Linux.

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/esinstaller/esfuninstall.sh
```

3. The following screen will be displayed. To continue uninstallation, enter "y". To stop the uninstallation, enter "q".

```
+-----+
|                                     |
|               ETERNUS SF V16.0     |
|                                     |
| All Rights Reserved, Copyright (C) FUJITSU LIMITED 2013 |
|                                     |
+-----+
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 will be displayed.

The following message will be 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)

A silent uninstallation uninstalls software automatically without requiring user interaction at the time of uninstallation.

11.7.1 Running silent uninstallation

The procedure to silently uninstall 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/esinstaller/esfsilentuninstall_ccm.sh [-l uninstallLogFile]
```



- 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 multiplexly the command for silent uninstallation. If it is multiplexly executed, the command executed after that will terminate abnormally. At this time, an uninstall log file is not created.
-
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 "[F.2 Return values for silent uninstallation \(ETERNUS SF Manager, AdvancedCopy Manager CCM for Solaris/Linux\)](#)".

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 *ETERNUS SF 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

Products in use	Products after addition and change					
	Express	Storage Cruiser	AdvancedCopy Manager	AdvancedCopy Manager CCM	Storage Cruiser and AdvancedCopy Manager	Storage Cruiser and AdvancedCopy Manager CCM
Express	-	- Register the Storage Cruiser license	- Register the AdvancedCopy Manager license		- Register the Storage Cruiser and AdvancedCopy Manager licenses	
Storage Cruiser	-	-	1. Delete the Storage Cruiser license 2. Register the AdvancedCopy Manager license		- Register the AdvancedCopy Manager license	
AdvancedCopy Manager	-	1. Delete the AdvancedCopy Manager license 2. Register the Storage Cruiser license	-	Can be used without any modifications	- Register the Storage Cruiser license	
AdvancedCopy Manager CCM			Can be used without any modifications	-		
Storage Cruiser and AdvancedCopy Manager	-	-	-	-	-	Can be used without any modifications
Storage Cruiser and AdvancedCopy Manager CCM	-	-	-	-	Can be used without any modifications	-

- : The products in use cannot be added and changed.

Addition and change of products when ETERNUS SF Manager CCM is installed as a 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 place
Registration of license	B.3.1 Registration of license
Removal of license	B.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 Program components

This appendix explains the program components with Express, Storage Cruiser, and AdvancedCopy Manager.

A.1 Program components of ETERNUS SF Manager

This section explains the program components of ETERNUS SF Manager.

Program components of ETERNUS SF Manager for Windows

ETERNUS SF Manager for Windows is composed of the following package.

Table A.1 Program components of ETERNUS SF Manager for Windows

No.	Program name	Version	Function
1	ETERNUS SF Manager	16.0	Management of storage systems

Program components of ETERNUS SF Manager for Solaris

ETERNUS SF Manager for Solaris is composed of the following package.

Table A.2 Program components of ETERNUS SF Manager for Solaris

No.	Program name	Version	Function
1	FJSVesfcm	16.0	ETERNUS SF Manager Common Control
2	FJSVssmgr	16.0.0	ETERNUS SF Manager Virtual storage management
3	FJSVswstt	13.6	SNMP Trap daemon
4	FJSVssmge	16.0.0	ETERNUS SF Manager (maintenance)
5	FJSVssetl	2.6.0	ETERNUS management library
6	FJSVgrapi	2.23	ETERNUS Disk storage systems Access API
7	FJSVswsrp	16.0	Replication Management
8	FJSVswssc	15.0	Security Framework
9	FJSVswstc	15.1	AdvancedCopy Manager API Library
10	FJSVswstf	16.0	AdvancedCopy Manager Basic
11	FJSVswsts	16.0	Backup Management
12	FJSVswtrc	15.2	Common Trace
13	FJSVesfes	16.0	Application Linkage
14	FJSVssast	16.0.0	Optimization Option
15	FJSVesflm	16.0	License management
16	FJSVrdbap	VA100-3	Symfoware/RDB Client Package
17	FJSVrdbdb	VA100-3	Symfoware/RDB Server Package
18	FJSVsymee	VA100-1	SymfoWARE Server Enterprise Edition Common Package
19	FJSVsymjd	VA100-3	Symfoware JDBC Driver package
20	FSUNrdb2b	VA100-3	Symfoware/RDB Common Package
21	FSUNrdbps	VA100-1	Symfoware/RDB Parallel Query Option
22	FJSVsymwa	VA010-2	Symfoware WebAdmin

No.	Program name	Version	Function
23	FJSVsymme	VA100-3	Symfoware Server Enterprise Edition Manual Package
24	FJSVsymwd	VA000-2	Symfoware WebDBtools
25	FJSVapccm	VA100-3	Symfoware/RDB Connection Manager Common Package
26	FJSVapcdb	VA100-3	Symfoware/RDB Connection Manager Server Package
27	FSUNrdasv	V20L21	SymfoWARE RDA-SV

Program components of ETERNUS SF Manager for Linux

ETERNUS SF Manager for Linux is composed of the following package.

Table A.3 Program components of ETERNUS SF Manager for Linux 32bit (*1) (For Red Hat Enterprise Linux 5 (for Intel64))

No.	Program name	Version	Function
1	FJSVesfcm	16.0-01	ETERNUS SF Manager Common Control
2	FJSVssmgr	16.0.0	ETERNUS SF Manager Virtual storage management
3	FJSVswstt	13.6.0	SNMP Trap daemon
4	FJSVssmge	16.0.0	ETERNUS SF Manager (maintenance)
5	FJSVssetl	2.6.0	ETERNUS management library
6	FJSVgrapi	1.20-1	ETERNUS Disk storage systems Access API
7	FJSVswsrp	16.0-01	Replication Management
8	FJSVswssc	15.0-01	Security Framework
9	FJSVswstc	15.1-01	AdvancedCopy Manager API Library
10	FJSVswstf	16.0-01	AdvancedCopy Manager Basic
11	FJSVswsts	16.0-01	Backup Management
12	FJSVswtrc	15.2-01	Common Trace
13	FJSVesfes	16.0-01	Application Linkage
14	FJSVssast	16.0.0	Optimization Option
15	FJSVesflm	16.0-01	License management
16	FJSVrdb2b	VA100.5-3	Symfoware/RDB Common Package
17	FJSVrdbap	VA100.5-3	Symfoware/RDB Client Package
18	FJSVrdbdb	VA100.5-1	Symfoware/RDB Server Package
19	FJSVsymee	VA100.5-1	Symfoware Server Enterprise Edition Common Package
20	FJSVsymjd	VA100.5-3	Symfoware JDBC Driver Package
21	FJSVrdbps	VA100.5-1	Symfoware/RDB Parallel Query Package
22	FJSVsymwd	VA000.5-2	Symfoware WebDBtools
23	FJSVsymwa	VA010.5-2	Symfoware WebAdmin
24	FJSVsymme	VA103.5-1	Symfoware Server Enterprise Edition Manual Package
25	FJSVapccm	VA100.5-3	Symfoware Server Connection Manager Common Package

No.	Program name	Version	Function
26	FJSVapcdb	VA100.5-1	Symfoware Server Connection Manager Database Package

*1: This is when 32-bit architecture AdvancedCopy Manager is installed based on the settings of install parameters.

Table A.4 Program components of ETERNUS SF Manager for Linux (For Red Hat Enterprise Linux 5 (for Intel64))

No.	Program name	Version	Function
1	FJSVesfcm	16.0-01	ETERNUS SF Manager Common Control
2	FJSVssmgr	16.0.0	ETERNUS SF Manager Virtual storage management
3	FJSVswstt	13.6.0	SNMP Trap daemon
4	FJSVssmge	16.0.0	ETERNUS SF Manager (maintenance)
5	FJSVssetl	2.6.0	ETERNUS management library
6	FJSVgrapi	1.20-1	ETERNUS Disk storage systems Access API
7	FJSVswsrp	15.3-01	Replication Management
8	FJSVswssc	15.0-01	Security Framework
9	FJSVswstc	15.1-01	AdvancedCopy Manager API Library
10	FJSVswstf	16.0-01	AdvancedCopy Manager Basic
11	FJSVswsts	15.3-01	Backup Management
12	FJSVswtrc	15.2-01	Common Trace
13	FJSVesfes	16.0-01	Application Linkage
14	FJSVssast	16.0.0	Optimization Option
15	FJSVesflm	16.0-01	License management
16	FJSVrdb2b	VA100.5-3	Symfoware/RDB Common Package
17	FJSVrdbap	VA100.5-3	Symfoware/RDB Client Package
18	FJSVrdbdb	VA106.5-1	Symfoware/RDB Server Package
19	FJSVsymee	VA100.5-1	Symfoware Server Enterprise Edition Common Package
20	FJSVsymjd	VA100.5-3	Symfoware JDBC Driver Package
21	FJSVrdbps	VA100.5-1	Symfoware/RDB Parallel Query Package
22	FJSVsymwd	VA000.5-2	Symfoware WebDBtools
23	FJSVsymwa	VA010.5-2	Symfoware WebAdmin
24	FJSVsymme	VA106.5-1	Symfoware Server Enterprise Edition Manual Package
25	FJSVapccm	VA106.5-3	Symfoware Server Connection Manager Common Package
26	FJSVapcdb	VA106.5-1	Symfoware Server Connection Manager Database Package

Table A.5 Program components of ETERNUS SF Manager for Linux (For RHEL6)

No.	Program name	Version	Function
1	FJSVesfcm	16.0-01	ETERNUS SF Manager Common Control

No.	Program name	Version	Function
2	FJSVssmgr	16.0.0	ETERNUS SF Manager Virtual storage management
3	FJSVswstt	13.6.0	SNMP Trap daemon
4	FJSVssmge	16.0.0	ETERNUS SF Manager (maintenance)
5	FJSVssetl	2.6.0	ETERNUS management library
6	FJSVgrapi	1.20-1	ETERNUS Disk storage systems Access API
7	FJSVswsrp	16.0-01	Replication Management
8	FJSVswssc	15.0-01	Security Framework
9	FJSVswstc	15.1-01	AdvancedCopy Manager API Library
10	FJSVswstf	16.0-01	AdvancedCopy Manager Basic
11	FJSVswsts	16.0-01	Backup Management
12	FJSVswtrc	15.2-01	Common Trace
13	FJSVesfes	16.0-01	Application Linkage
14	FJSVssast	16.0.0	Optimization Option
15	FJSVesflm	16.0-01	License management
16	FJSVrdb2b	VA100.6-3	Symfoware/RDB Common Package
17	FJSVrdbap	VA100.6-3	Symfoware/RDB Client Package
18	FJSVrdbdb	VA100.6-1	Symfoware/RDB Server Package
19	FJSVsymee	VA100.6-1	Symfoware Server Enterprise Edition Common Package
20	FJSVsymjd	VA100.6-3	Symfoware JDBC Driver Package
21	FJSVrdbps	VA100.6-1	Symfoware/RDB Parallel Query Package
22	FJSVsymwd	VA000.6-2	Symfoware WebDBtools
23	FJSVsymwa	VA010.6-2	Symfoware WebAdmin
24	FJSVsymme	VA103.6-1	Symfoware Server Enterprise Edition Manual Package
25	FJSVapccm	VA100.6-3	Symfoware Server Connection Manager Common Package
26	FJSVapcdb	VA100.6-1	Symfoware Server Connection Manager Database Package

A.2 Program components of ETERNUS SF Agent

This section explains the program components of ETERNUS SF Agent.

A.2.1 Program components of Storage Cruiser's agent

Storage Cruiser's agent is composed of the following packages:

Program components of Storage Cruiser's agent for Windows

Storage Cruiser's agent for Windows is composed of the following package:

Table A.6 Program components of Storage Cruiser's agent for Windows

No.	Program name	Version	Function
1	ETERNUS SF Storage Cruiser Agent	16.0	Storage Cruiser's agent

Program components of Storage Cruiser's agent for Solaris

Storage Cruiser's agent for Solaris is composed of the following package:

Table A.7 Program components of Storage Cruiser's agent for Solaris

No.	Package name	Version	Function
1	FJSVssage	16.0.0	Storage Cruiser's agent

Program components of Storage Cruiser's agent for Linux

Storage Cruiser's agent for Linux is composed of the following package:

Table A.8 Program components of Storage Cruiser's agent for Linux

No.	Package name	Version	Function
1	FJSVssage	16.0.0	Storage Cruiser's agent

Program components of Storage Cruiser's agent for HP-UX

Storage Cruiser's agent for HP-UX is composed of the following packages:

Table A.9 Program components of Storage Cruiser's agent for HP-UX

No.	Package name	Version	Function
1	FJSVssage	13.0.0	Storage Cruiser's agent (for HP-UX 11i v1)
2	FJSVssage	15.1.0	Storage Cruiser's agent (for HP-UX 11i v2 and 11i v3)

Program components of Storage Cruiser's agent for AIX

Storage Cruiser's agent for AIX is composed of the following package:

Table A.10 Program components of Storage Cruiser's agent for AIX

No.	Package name	Version	Function
1	FJSVssage	15.1.0	Storage Cruiser's agent

A.2.2 Program components of AdvancedCopy Manager's agent

AdvancedCopy Manager's agent is composed of the following packages:

Program components of AdvancedCopy Manager's agent for Windows

AdvancedCopy Manager's agent for Windows is composed of the following package:

Table A.11 Program components of AdvancedCopy Manager's agent for Windows

No.	Program name	Version	Function
1	ETERNUS SF AdvancedCopy Manager Agent	16.0	AdvancedCopy Manager's agent

Program components of AdvancedCopy Manager's agent for Solaris

AdvancedCopy Manager's agent for Solaris is composed of the following packages:

Table A.12 Program components of AdvancedCopy Manager's agent for Solaris

No.	Package name	Version	Function
1	FJSVgrapi	2.23	ETERNUS Disk storage systems Access API
2	FJSVswsrp	16.0	Replication Management
3	FJSVswstc	15.1	AdvancedCopy Manager API Library
4	FJSVswstf	16.0	AdvancedCopy Manager Basic
5	FJSVswsts	16.0	Backup Management
6	FJSVswtrc	15.2	Common Trace

Program components of AdvancedCopy Manager's agent for Linux

AdvancedCopy Manager's agent for Solaris is composed of the following packages:

The necessary package varies depending on the version of the system environment where the AdvancedCopy Manager's agent for Linux is installed.

For RHEL-AS4, RHEL-ES4, and RHEL5

The package configuration is represented as follows based on the system environment where the agent is installed:

- Red Hat Enterprise Linux AS (v.4 for x86)
- Red Hat Enterprise Linux ES (v.4 for x86)
- Red Hat Enterprise Linux AS (v.4 for EM64T)
- Red Hat Enterprise Linux ES (v.4 for EM64T)
- Red Hat Enterprise Linux 5 (for x86)
- Red Hat Enterprise Linux 5 (for Intel64)

Table A.13 Program components of AdvancedCopy Manager's agent for Linux (For RHEL-AS4, RHEL-ES4, and RHEL5)

No.	Package name	Version	Function
1	FJSVgrapi	1.20-1	ETERNUS Disk storage systems Access API
2	FJSVswsrp	16.0-01	Replication Management
		15.3-01	Replication Management (RHEL5 for Intel64)
3	FJSVswstc	15.1-01	AdvancedCopy Manager API Library
4	FJSVswstf	16.0-01	AdvancedCopy Manager Basic
5	FJSVswsts	16.0-01	Backup Management
		15.3-01	Backup Management (RHEL5 for Intel64)
6	FJSVswtrc	15.2-01	Common Trace

For RHEL6

The package configuration is represented as follows based on the system environment where the agent is installed:

- Red Hat Enterprise Linux 6 (for x86)
- Red Hat Enterprise Linux 6 (for Intel64)

Table A.14 Program components of AdvancedCopy Manager's agent for Linux (For RHEL6)

No.	Package name	Version	Function
1	FJSVgrapi	1.20-1	ETERNUS Disk storage systems Access API
2	FJSVswsrp	16.0-01	Replication Management

No.	Package name	Version	Function
3	FJSVswstc	15.1-01	AdvancedCopy Manager API Library
4	FJSVswstf	16.0-01	AdvancedCopy Manager Basic
5	FJSVswsts	16.0-01	Backup Management
6	FJSVswtrc	15.2-01	Common Trace

For SUSE Linux Enterprise Server 11

The package configuration is represented as follows based on the system environment where the agent is installed:

- SUSE Linux Enterprise Server 11 for x86
- SUSE Linux Enterprise Server 11 for EM64T

Table A.15 Program components of AdvancedCopy Manager's agent for Linux (For SUSE Linux Enterprise Server)

No.	Package name	Version	Function
1	FJSVgrapi	1.20-1	ETERNUS Disk storage systems Access API
2	FJSVswsrp	15.3-01	Replication Management
3	FJSVswstc	15.0-01	AdvancedCopy Manager API Library
4	FJSVswstf	16.0-01	AdvancedCopy Manager Basic
5	FJSVswsts	15.3-01	Backup Management
6	FJSVswtrc	15.0-01	Common Trace

Program components of AdvancedCopy Manager's agent for HP-UX

AdvancedCopy Manager's agent for HP-UX is composed of the following packages:

Table A.16 Program components of AdvancedCopy Manager's agent for HP-UX

No.	Package name	Version	Function
1	FJSVgrapi	2.21	ETERNUS Disk storage systems Access API
2	FJSVswsrp	16.0	Replication Management
3	FJSVswstc	15.1	AdvancedCopy Manager API Library
4	FJSVswstf	16.0	AdvancedCopy Manager Basic
5	FJSVswsts	16.0	Backup Management
6	FJSVswtrc	13.1	Common Trace

Program components of AdvancedCopy Manager's agent for AIX

AdvancedCopy Manager's agent for AIX is composed of the following packages:

Table A.17 Program components of AdvancedCopy Manager's agent for AIX

No.	Package name	Version	Function
1	FJSVgrapi	2.21	ETERNUS Disk storage systems Access API
2	FJSVswsrp	16.0	Replication Management
3	FJSVswstc	15.1	AdvancedCopy Manager API Library
4	FJSVswstf	16.0	AdvancedCopy Manager Basic
5	FJSVswsts	16.0	Backup Management
6	FJSVswtrc	13.1	Common Trace

A.3 Program components of AdvancedCopy Manager CCM

AdvancedCopy Manager CCM is composed of the following packages:

Program components of AdvancedCopy Manager CCM for Solaris

AdvancedCopy Manager CCM for Solaris is composed of the following package:

Table A.18 Program components of AdvancedCopy Manager CCM for Solaris

No.	Package name	Version	Function
1	FJSVccm	16.0	ETERNUS SF AdvancedCopy Manager Copy Control Module
2	FJSVesfcm	16.0	ETERNUS SF Manager shared control (Collecting the troubleshooting information)
3	FJSVesflm	16.0	License management

Program components of AdvancedCopy Manager CCM for Linux

AdvancedCopy Manager CCM for Linux is composed of the following package:

Table A.19 Program components of AdvancedCopy Manager CCM for Linux

No.	Package name	Version	Function
1	FJSVccm	16.0-1	ETERNUS SF AdvancedCopy Manager Copy Control Module
2	FJSVesfcm	16.0-01	ETERNUS SF Manager shared control (Collecting the troubleshooting information)
3	FJSVesflm	16.0-01	License management

Appendix B 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.

This appendix explains the license management function.

B.1 Types of license

On the current version of the product, the following types of license that can be managed by the license management function:

Table B.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 DX60/DX60 S2/DX80/DX80 S2/DX90/DX90 S2/DX100 S3/DX200 S3.
L2	ETERNUS SF Storage Cruiser Basic License	License for managing 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. This license is also necessary for managing NetApp FAS Series and V-Series.
L4	ETERNUS SF Storage Cruiser Standard CM Expansion (2->4CM)	License for managing ETERNUS 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 ETERNUS 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 ETERNUS DX8000 S2 series. This license is required for a disk storage system which has more than 6 CMs.
L7	ETERNUS SF Storage Cruiser Optimization Option	License for managing Automated Storage Tiering feature for ETERNUS DX80 S2/DX90 S2, DX100 S3/DX200 S3, DX400 S2 series, DX500 S3/DX600 S3, DX8000 S2 series.
L8	ETERNUS SF Storage Cruiser Quality of Service Management Option	License for managing Automated Quality of Service feature for ETERNUS DX100 S3/DX200 S3, DX500 S3/DX600 S3.
L9	ETERNUS SF AdvancedCopy Manager Local Copy License	License for using Advanced Copy functions of ETERNUS Disk storage system in the following ways: Advanced Copy can be done inside the storage system only. <ul style="list-style-type: none"> - 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 Copy Control Module, without installing an agent on the Managed Server. This license applies to ETERNUS DX60/DX60 S2/DX80/DX80 S2/DX90/DX90 S2/DX100 S3/DX200 S3, DX400 S2 series, DX500 S3/DX600 S3, DX8000 S2 series.

No. (*1)	License name	Explanation
		Advanced Copy Feature license for the ETERNUS Disk storage system is not required.
L10	ETERNUS SF AdvancedCopy Manager Local Copy License (w/o HW license)	<p>License for using Advanced Copy functions of ETERNUS Disk storage system in the following ways: Advanced Copy can be done inside the storage system only.</p> <ul style="list-style-type: none"> - 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 Copy Control Module, without installing an agent on the Managed Server. <p>This license applies to ETERNUS Disk storage system except ETERNUS DX60/DX60 S2/DX80/DX80 S2/DX90/DX90 S2, DX100 S3/DX200 S3, DX400 S2 series, DX500 S3/DX600 S3, DX8000 S2 series.</p> <p>The prior registration of the Advanced Copy Feature license for the ETERNUS Disk storage system is required.</p>
L11	ETERNUS SF AdvancedCopy Manager Local Copy CM Expansion (2->4CM)	<p>License for using Advanced Copy functions of ETERNUS DX8000 S2 series.</p> <p>This license is required for a disk storage system which has more than 2 CMs.</p>
L12	ETERNUS SF AdvancedCopy Manager Local Copy CM Expansion (4->6CM)	<p>License for using Advanced Copy functions of ETERNUS DX8000 S2 series.</p> <p>This license is required for a disk storage system which has more than 4 CMs.</p>
L13	ETERNUS SF AdvancedCopy Manager Local Copy CM Expansion (6->8CM)	<p>License for using Advanced Copy functions of ETERNUS DX8000 S2 series.</p> <p>This license is required for a disk storage system which has more than 6 CMs.</p>
L14	ETERNUS SF AdvancedCopy Manager Remote Copy License	<p>License for using Remote Advanced Copy functions of ETERNUS Disk storage system in the following ways: Advanced Copy can be done between ETERNUS Disk storage systems.</p> <ul style="list-style-type: none"> - 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 Copy Control Module, without installing an agent on the Managed Server. <p>This license applies to ETERNUS DX90/DX90 S2/DX200 S3, DX400 S2 series, DX500 S3/DX600 S3, DX8000 S2 series.</p> <p>Advanced Copy Feature license for the ETERNUS Disk storage system is not required.</p>
L15	ETERNUS SF AdvancedCopy Manager Remote Copy License (w/o HW license)	<p>License for using Remote Advanced Copy functions of ETERNUS Disk storage system in the following ways: Advanced Copy can be done between ETERNUS Disk storage systems.</p>

No. (*1)	License name	Explanation
		<p>- 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.</p> <p>- Agent-less operation model: Advanced Copy is done by using AdvancedCopy Manager Copy Control Module, without installing an agent on the Managed Server.</p> <p>The license applies to ETERNUS Disk storage system except ETERNUS DX90/DX90 S2/DX200 S3, DX400 S2 series, DX500 S3/DX600 S3, DX8000 S2 series.</p> <p>The prior registration of the Advanced Copy Feature license for the ETERNUS Disk storage system is required.</p>
L16	ETERNUS SF AdvancedCopy Manager Remote Copy CM Expansion (2->4CM)	<p>License for using Remote Advanced Copy functions of ETERNUS DX8000 S2 series.</p> <p>This license is required for a disk storage system which has more than 2 CMs.</p>
L17	ETERNUS SF AdvancedCopy Manager Remote Copy CM Expansion (4->6CM)	<p>License for using Remote Advanced Copy functions of ETERNUS DX8000 S2 series.</p> <p>This license is required for a disk storage system which has more than 4 CMs.</p>
L18	ETERNUS SF AdvancedCopy Manager Remote Copy CM Expansion (6->8CM)	<p>License for using Remote Advanced Copy functions of ETERNUS DX8000 S2 series.</p> <p>This license is required for a disk storage system which has more than 6 CMs.</p>
L19	ETERNUS SF Storage Cruiser Standard License Software Upgrade	<p>License for totally managing the SAN environment including ETERNUS Disk storage systems, switches and servers.</p> <p>This license is an additional license on which L2 license is already registered.</p>
L20	ETERNUS SF AdvancedCopy Manager Local Copy License Software Upgrade	<p>License for using Advanced Copy functions of ETERNUS Disk storage system in the following ways: Advanced Copy can be done inside the storage system only.</p> <p>- 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.</p> <p>- Agent-less operation model: Advanced Copy is done by using AdvancedCopy Manager Copy Control Module, without installing an agent on the Managed Server.</p> <p>This license applies to ETERNUS DX400 S2 series, DX500 S3/DX600 S3, DX8000 S2 series, and is an additional license on which Advanced Copy Feature license is already registered.</p> <p>For ETERNUS DX400 S2 series, DX8000 S2 series, Advanced Copy Feature license must be registered prior to this license registration.</p>
L21	ETERNUS SF AdvancedCopy Manager for Exchange Server	<p>The Exchange Server mailbox database can be restored using the Restore Wizard.</p> <p>This license is a common license to L9 and L10.</p>

No. (*1)	License name	Explanation
		After L9 or L10 is registered, it is necessary to register this license.

*1: The text string for the item numbers (Lxx) solely serves for explanation purposes. This is not the actual license key or license number.

B.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 B.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 system configuration	A	A	A	-	-
	Eco-mode status	A	A	A	-	-
Other device status		-	-	Server and switch	-	-
Server, volumes connection management	ETERNUS Disk storage system, 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	-	-
	Switch	-	-	User defined interval	-	-
Performance monitoring	ETERNUS Disk storage system	-	A	A	-	-
Storage system temperature graph display	ETERNUS Disk storage system	24 hours Max	User defined interval	User defined interval	-	-
Advanced Copy	SnapOPC+	DX100 S3/ DX200 S3: to max	-	-	A	-

Function		License (A=Available)				
		Express	Storage Cruiser Basic	Storage Cruiser Standard	AdvancedCopy Manager Local Copy License	AdvancedCopy Manager Remote Copy License
		session count Other than those above: 8 sessions Max				
	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 2 HBAs can be set.	-	- Zoning setting - Entering affinity group name - Sharing affinity group - 3 or more HBAs can be set.	-	-
NAS file system management	Install NAS file system	A	A	A	-	-
	Display NAS file system configuration information	A	A	A	-	-
	Backup of NAS volume	-	-	-	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.

B.3 Operation of license management function

This section explains the various ways to operate the license management function.

The license management function can be operated using either the Web Console or the Command Line Interface (CLI). The table below shows the types and methods of operation for handling licenses.

Type of operation	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 Copy Control Module operates.

Refer to "[B.4 Command references](#)" for information on the commands.

Note

- License registration and removal from the 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 environment, the term referring to "User with administrative privileges" is root (Super user).
 - For Windows environment, the term referring to the user of belonging to Administrators group.
 - Before you register licenses from the 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 following ETERNUS Disk storage systems can specify the IP address on the command.
ETERNUS DX60/DX60 S2/DX80/DX80 S2/DX90/DX90 S2, DX100 S3/DX200 S3, DX400 S2 series, DX500 S3/DX600 S3, DX8000 S2 series
Enable the following connections in setting up interface on the ETERNUS Disk storage system.
 - For specifying the IP address of ETERNUS DX60/DX60 S2/DX80/DX90:
Enable the telnet connection.
 - For specifying the IP address of ETERNUS DX80 S2/DX90 S2, DX100 S3/DX200 S3, DX400 S2 series, DX500 S3/DX600 S3, DX8000 S2 series:
Enable the ssh connection or telnet connection.
-

B.3.1 Registration of license

This subsection explains how to register licenses in a disk storage system.

Using Web Console

Refer to "Register License" in the *ETERNUS SF 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
```

B.3.2 Displaying of the license

This subsection explains how to display the registered licenses.

Using Web Console

Refer to "Display License" in the *ETERNUS SF 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
```

B.3.3 Removal of license

This subsection explains how to remove registered licenses.

Using Web Console

Refer to "Delete License" in the *ETERNUS SF 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
```

B.3.4 Backup and restore the 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
```

B.4 Command references

This section describes the usage of the license management function command.

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	<i>installDir</i> \LM\bin
Solaris Linux	/opt/FJSVesflm/bin

installDir: The installation directory of ETERNUS SF Manager or AdvancedCopy Manager Copy Control Module



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 environment, the term referring to "User with administrative privileges" is root (Super user).
- For Windows environment, the term referring to the user of belonging to Administrators group.

B.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
```

B.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
```

B.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 | serial Number] [-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

Title	Description
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
```

B.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 i pAddress -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 will be displayed.

If no licenses are registered, all licenses that are available for registration will be 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 will be displayed.

If no licenses are registered, the hardware licenses that are set in the ETERNUS Disk storage system will be surveyed, and then the licenses that are set will be displayed.

If no hardware licenses are registered either, all licenses that are available for registration will be 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)
:
```

B.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
```

B.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
```

B.5 Maintenance of license management function

This section describes methods for changing the operating environment using the license management function and for troubleshooting.

B.5.1 Backup and restoration of license definition information

Refer to "[B.3.4 Backup and restore the 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.

B.5.2 Collecting the 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 <i>installDir</i> \LM\var directory
	Definition files	All files under the <i>installDir</i> \LM\etc directory
Solaris	Log files	All files under the /var/opt/FJSVesflm directory
Linux	Definition files	All files under the /etc/opt/FJSVesflm directory

installDir: The installation directory of ETERNUS SF Manager or AdvancedCopy Manager Copy Control Module

Appendix C Required Disk Space for Performance Management

This appendix explains the required disk space for the performance management with ETERNUS SF Manager.

When the performance management is being performed, based on the fibre channel switch used to collect the performance information, the type of ETERNUS Disk storage system, the number of logical units involved, the number of Disk Enclosures (DEs), and the number of days for which information is to be collected, the required capacity given below becomes necessary.

Information

The default number of days for collection is seven. The number of secured Logical Units (LUs) is the actual number of LUs the functions of which are secured in order to perform performance management for the ETERNUS Disk storage systems. Performance management is secured in units of 64 LUN for the ETERNUS Disk storage systems. Therefore, when instructed to secure from LUN 15 to 200, the information for the actual LUs 0 to 255 (256 in total) would be secured.

Target device	Required disk space (Unit : MB)
ETERNUS DX60/DX60 S2 ETERNUS DX80/DX80 S2 ETERNUS DX90/DX90 S2	$(keepingDays + 1) * (240 + (1.2 + 0.3 * DEs + 0.3 * (securedLUs + secured_RAIDGroups)) * (86400 / perfMonitorInterval) + 3 * (10.6 + 0.07 * (86400 / perfMonitorInterval) (95 * DEs) + (50 * (securedLUs + securedRAIDGroups))) / 1024$ <p>*1: The <i>securedRAIDGroups</i> is the number of RAIDGroups created from the secured LUs. *2: The performance monitoring interval sets 60 seconds if its interval is set to less than 60 seconds.</p>
ETERNUS DX100 S3 ETERNUS DX200 S3	$(KeepingDays + 1) * (475 + (1.2 + 0.7 * DEs + 0.4 * (securedLUs + secured_RAIDGroups [*1])) * (86400 / perfMonitorInterval (s)) + 0.2 * (86400 / perfMonitorInterval (s)[*2]) + (290 * DEs) + (76 * (securedLUs + securedRAIDgroups [*1]))) / 1024$ <p>*1: The <i>securedRAIDGroups</i> is the number of RAIDGroups created from the secured LUs. *2: The performance monitoring interval sets 60 seconds if its interval is set to less than 60 seconds.</p>
ETERNUS DX400 series	$(keepingDays + 1) * (6837 + (17 + 0.2 * DEs + 0.2 * securedLUs + 0.3 * securedRAIDGroups) * (86400 / perfMonitorInterval) + (10.6 + 0.07 * (86400 / perfMonitorInterval) + (79 * DEs) + (89 * securedLUs) + (103 * securedRAIDGroups)) / 1024$ <p>*1: The <i>securedRAIDGroups</i> is the number of RAIDGroups created from the secured LUs. *2: The performance monitoring interval sets 60 seconds if its interval is set to less than 60 seconds.</p>
ETERNUS DX400 S2 series ETERNUS DX8000 S2 series	$(keepingDays + 1) * (6837 + (17 + 0.2 * DEs + 0.2 * securedLUs + 0.3 * securedRAIDGroups) * (86400 / perfMonitorInterval) + 3 * (10.6 + 0.07 * (86400 / perfMonitorInterval) + (79 * DEs) + (89 * securedLUs) + (103 * securedRAIDGroups)) / 1024$ <p>*1: The <i>securedRAIDGroups</i> is the number of RAIDGroups created from the secured LUs. *2: The performance monitoring interval sets 60 seconds if its interval is set to less than 60 seconds.</p>

Target device	Required disk space (Unit : MB)
ETERNUS DX500 S3 ETERNUS DX600 S3	$(keepingDays + 1) * (1378 + (3.5 + 0.7 * DEs + 0.5 * (securedLUs + securedRAIDGroups [*1])) * (86400 / perfMonitorInterval (s)) + 0.2 * (86400 / perfMonitorInterval (s)[*2]) + (290 * DEs) + (85 * (securedLUs + securedRAIDGroups [*1]))) / 1024$ <p>*1: The <i>securedRAIDGroups</i> is the number of RAIDGroups created from secured LUs.</p> <p>*2: The performance monitoring interval sets 60 seconds if its interval is set to less than 60 seconds.</p>
ETERNUS DX8100	Refer to the formula of ETERNUS DX400 series.
ETERNUS DX8400 ETERNUS DX8700	$(keepingDays + 1) * (24090 + (60 + 0.2 * DEs + 0.2 * securedLUs + 0.3 * securedRAIDGroups) * (86400 / perfMonitorInterval) + (10.6 + 0.07 * (86400 / perfMonitorInterval)) + (79 * DEs) + (89 * securedLUs) + (103 * securedRAIDGroups)) / 1024$ <p>*1: The <i>securedRAIDGroups</i> is the number of RAIDGroups created from the secured LUs.</p> <p>*2: The performance monitoring interval sets 60 seconds if its interval is set to less than 60 seconds.</p>
ETERNUS SN200 series Fibre Channel switch (Maximum number of FC ports = 16 or less) PRIMERGY Fibre Channel Switch Blade PRIMERGY Fibre Channel Switch Blade(4Gbps) Brocade Fibre Channel Switch (Maximum number of FC ports = 16 or less)	$(keepingDays + 1) * (30 / perfMonitorInterval) * 1.6$
ETERNUS SN200 series Fibre Channel switch (Maximum number of FC ports = 32 or less) Brocade Fibre Channel Switch (Maximum number of FC ports = 32 or less)	$(keepingDays + 1) * (30 / perfMonitorInterval) * 3.2$
ETERNUS SN200 series Fibre Channel switch (Maximum number of FC ports = 128 or less) Brocade Fibre Channel Switch (Maximum number of FC ports = 128 or less)	$(keepingDays + 1) * (30 / perfMonitorInterval) * 13$
ETERNUS SN200 series Fibre Channel switch (Maximum number of FC ports = 256 or less) Brocade Fibre Channel Switch (Maximum number of FC ports = 256 or less)	$(keepingDays + 1) * (30 / perfMonitorInterval) * 26$
ETERNUS SN200 series Fibre Channel switch (Maximum number of FC ports = 384 or less) Brocade Fibre Channel Switch (Maximum number of FC ports = 384 or less)	$(keepingDays + 1) * (30 / perfMonitorInterval) * 39$
ETERNUS SN200 MDS series Fibre Channel switch	$(keepingDays + 1) * 0.1 * maxNumberOfSlotsSupportedByDevice * 128 * (30 / perfMonitorInterval)$ <p>*1: Use 1 as the maximum number of slots for MDS9120</p>

Additionally, when performance information is output using the performance information operation command, the following disk space is required, depending on the number of LUs of ETERNUS Disk storage system and Fibre Channel switches, number of DEs, number of ports that is used to collect performance information, and number of days of performance information output.

Each element (number of installed CM CPUs, number of installed DEs, installed CA Ports, installed CM Ports, LUs, RAIDGroups, and installed FC Ports) is the number mounted in the device when the command is executed.

Target device	Required disk space (Unit : MB)
ETERNUS DX60/DX60 S2 ETERNUS DX80/DX80 S2 ETERNUS DX90/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/DX400 S2 series ETERNUS DX8000/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 DX100 S3 ETERNUS DX200 S3 ETERNUS DX500 S3 ETERNUS DX600 S3	$outputDays * (0.2 + (0.1 + 0.9 * DEs + 0.1 * CAPorts + 0.2 * (LUs + RAIDGroups)) * (86400 / perfMonitorInterval [s]) + 0.2 * (86400 / perfMonitorInterval [s]) + (1.8 * DEs) + (0.2 * CAPorts) + (0.6 * (LUs + RAIDGroups))) / 1024$
Fibre Channel switches	$outputDays * (0.1 + FCPorts + (0.1 * FCPorts)) + (0.1 + ports + (0.1 * FCPorts) * (86400 / perfMonitorInterval)) / 1024$



See

.....
Refer to "Performance information operation command (storageadm perfdata)" in the *ETERNUS SF Storage Cruiser Operation Guide* for information on the command.
.....

Appendix D Install parameters

This appendix explains the install parameter file and the details of each install parameter.

D.1 Windows Install parameter file (for ETERNUS SF Manager)

The sample of an install parameter file is stored on the DVD-ROM of "ETERNUS SF SC/ACM/Express Mediapack for Windows (Manager Program) (1/2)" of this version.

- Storage location

```
dvdromDrive:\Manager_windows\install_parameter.ini
```

When changing install parameters, copy the sample install parameter file to an optional location to edit the copied file.

The sample of the install parameter file is shown below.

For description of each parameter, refer to "[D.2 Windows Install parameters \(for ETERNUS SF Manager\)](#)".

```
[Install_Directory]
Program_directory=C:\ETERNUS_SF
Environment_directory=C:\ETERNUS_SF
Work_directory=C:\ETERNUS_SF

[Repository_Directory]
;Repository database setup
; Repository_data_size: Min. 65
; Management_server_IP_address:
; IPv4 format xxx.xxx.xxx.xxx
RDB_dictionary_directory=C:\ETERNUS_SF\ACM\sfwswstf\dic
RDB_log_file_directory=C:\ETERNUS_SF\ACM\sfwswstf\log
Repository_DB_space_directory=C:\ETERNUS_SF\ACM\sfwswstf\dbsp
Repository_data_size=65
Management_server_IP_address=

[Port_Number]
Web_service=9855
Communications_service_1=1226
Communications_service_2=4917
Repository_service_1=2004
Repository_service_2=15432
Remote_access_service=9851
Exclusive_control_service=9852
Internal_port_1=28005
Internal_port_2=28009
Internal_port_3=28443
Internal_port_4=24916
```

D.2 Windows Install parameters (for ETERNUS SF Manager)

The following is a description of install 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
RDB_dictionary_directory	Directory for RDB dictionary (*5)	C:\ETERNUS_SF\ACM\sfwswstf\dic
RDB_log_file_directory	RDB log file directory (*5)	C:\ETERNUS_SF\ACM\sfwswstf\log

Parameter name	Description	Default value
Repository_DB_space_directory	Directory for repository DB space (*5)	C:\ETERNUS_SF\ACM\sffswstf\dbsp
Repository_data_size	Repository DB size (MB)	65
Management_server_IP_address	IP address of Management Server (*1, *2)	None
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_1	Port number for repository service1 (*3)	2004
Repository_service_2	Port number for repository service2 (*3)	15432
Remote_access_service	Port number for remote access service (*3)	9851
Exclusive_control_service	Port number for exclusive control service (*3)	9852
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 "3.1.9 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.

*5: Do not specify the following for directory:

- Shared directory
- Do not select the option [Compress drive to save disk space] in the **General** tab for any of these drives.
If the drive is compressed, there is more overhead than normal I/O operations. Depending on I/O, an access error may occur because of insufficient operating system resources.
- Do not check the [Compress or Encrypt Attributes] in the **Advanced Attributes** section of the **Properties** or **Advanced** part of the **General** tab.
Load is increased for a compressed and/or encrypted drive. Access errors may occur in an OS with insufficient resources.
If the encryption property is selected, access errors may occur when decryption cannot be performed.
- Characters " | : * ? / . < > , % & ^ = ! ; # ' @ () + are not supported for directory name.
- The number of characters specifiable for directory name is 4 to 80.
- Do not specify directories using relative paths. Specify directories using absolute paths.



- 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 the Windows environment, it is not possible to specify Internal Port 5 in the install 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

D.3 Windows Install parameter file (for Storage Cruiser's agent)

The sample of an install parameter file is stored on the DVD-ROM of "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" of the version.

- Storage location

```
dvdromDrive:\Agent_windows\Storage_Cruiser\windows_x86\scagt_parameter.ini
```

When changing install parameters, copy the sample install parameter file to an optional location and edit the copied file.
The sample of the install parameter file is shown below.

For description of each parameter, refer to "D.4 Windows Install parameters (for Storage Cruiser's agent)".

```

;-----;
; 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=

```

D.4 Windows Install parameters (for Storage Cruiser's agent)

The following is a description of install parameters:

Parameter name	Description	Default value
Program_directory	Program directory	C:\ETERNUS_SF
Environment_directory	Configuration directory	C:\ETERNUS_SF

Parameter name	Description	Default value
Work_directory	<i>Working directory</i>	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.

D.5 Windows Install parameter file (for AdvancedCopy Manager's agent)

The sample of an install parameter file is stored on the DVD-ROM of "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" of this version.

- Storage location
 - For 32-bit agent:

```
dvdromDrive:\Agent_windows\AdvancedCopy_Manager\agent\windows_x86\install_parameter.ini
```

- For 64-bit agent:

```
dvdromDrive:\Agent_windows\AdvancedCopy_Manager\agent\windows_x64\install_parameter.ini
```

When changing install parameters, copy the sample install parameter file to an optional location and edit the copied file.

The sample of the install parameter file is shown below.

For description of each parameter, refer to "D.6 Windows Install parameters (for AdvancedCopy Manager's agent)".

```
[InstallParameter]
Program_Directory=C:\Win32app\AdvancedCopyManager
Environment_Directory=C:\Win32app\AdvancedCopyManager
Work_Directory=C:\Win32app\AdvancedCopyManager
Communications_service=1226
```

D.6 Windows Install parameters (for AdvancedCopy Manager's agent)

The following is a description of install parameters:

Parameter name	Description	Default value
Program_directory	Program directory	C:\Win32app\AdvancedCopyManager
Environment_directory	Configuration directory	C:\Win32app\AdvancedCopyManager

Parameter name	Description	Default value
Work_directory	Working directory	C:\Win32app\AdvancedCopyManager
Communications_service	Port number for communication service (*1)	1226

*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.

D.7 Windows Install parameter file (for AdvancedCopy Manager Copy Control Module)

The sample of an install parameter file is stored on the DVD-ROM of "ETERNUS SF SC/ACM/Express Mediapack for Windows (Manager Program) (1/2)" of this version.

- Storage location

```
dvdromDrive:\Manager_windows\install_parameter_CCM.ini
```

When changing install parameters, copy the sample install parameter file to an optional location and edit the copied file. The sample of the install parameter file is shown below.

For description of each parameter, refer to "D.8 Windows Install parameters (for AdvancedCopy Manager Copy Control Module)".

```
[Install_Directory]
Program_directory= C:\ETERNUS_SF
Environment_directory= C:\ETERNUS_SF
Work_directory= C:\ETERNUS_SF
```

D.8 Windows Install parameters (for AdvancedCopy Manager Copy Control Module)

The following is a description of install 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.
- Characters "| : * ? / . < > , % & ^ = ! ; # ' @" are not supported for directory name.
- The number of characters specifiable for directory name is 4 to 70.

D.9 Solaris/Linux Install parameter file (for ETERNUS SF Manager)

The sample of the install parameter file is provided on the DVD-ROM "ETERNUS SF SC/ACM Mediapack for Solaris (Manager Program) (2/2)" or "ETERNUS SF SC/ACM/Express Mediapack for Linux 64bit (Manager Program) (2/2)" for this version.

- Stored location

```
dvdromMountPoint/Manager_unix/install_parameter.txt
```

For changing install parameters, copy the form of the install parameter file in a convenient location and modify the installation information.

The following is the form of the install parameter file.

Refer to "[D.10 Solaris/Linux Install parameters \(for ETERNUS SF Manager\)](#)" for the description for the each parameter.

```
#-----#
# Installation function
#   1: ETERNUS SF Manager
#   2: ETERNUS SF AdvancedCopy Manager CCM
#-----#
Installation_function: 1

#-----#
# Character code
#   Solaris:
#     1: EUC
#     2: SJIS
#     3: UTF8
#     NULL: System default
#         (Solaris 10 --> EUC
#          Solaris 11 --> UTF8)
#
#   Linux:
#     1: UTF8
#     2: EUC
#     NULL: System default (UTF8)
#-----#
Character_code:

#-----#
# Port number
#   range: 1024 - 65535
#-----#
ETERNUS_SF_Manager_apache_service: 9855
Communications_service_1: 1226
Communications_service_2: 4917
Repository_service_1: 32004
Repository_service_2: 15432
Remote_access_service: 9851
Exclusive_control_service: 9852
Internal_port_1: 28005
Internal_port_2: 28009
Internal_port_3: 28443
Internal_port_4: 24916
Internal_port_5: 24917

#-----#
# Repository database setup
#   Repository_data_size: Min. 65
#   Management_server_IP_address: format xxx.xxx.xxx.xxx
#-----#
DB_file_directory: /var/opt/FJSVswstf/sfswstf/db
RDB_dictionary_directory: /var/opt/FJSVswstf/sfswstf/dic
```

```

RDB_log_file_directory: /var/opt/FJSVswstf/sfswstf/log
Repository_DB_space_directory: /var/opt/FJSVswstf/sfswstf/dbsp
Repository_data_size: 65
Management_server_IP_address:

#-----#
# AdvancedCopy Manager ARCH
#   Linux(RHEL5):
#     NULL: System dependence
#     1: 32bit
#     2: 64bit
#-----#
AdvancedCopy_Manager_ARCH:

#-----#
# esfpostgres UID
#   For primecluster system:
#     NULL: System allocate
#     integer : range 100-59999
#-----#
esfpostgres_UID:

```

D.10 Solaris/Linux Install parameters (for ETERNUS SF Manager)

The explanation of the install parameters described below:

Parameter name	Description	Default value
Installation_function	When installing ETERNUS SF Manager, set to [1].	1
Character_code	Specify the character encoding used in AdvancedCopy Manager. For Solaris, specify the following numbers corresponding to the character codes. - For EUC: [1] - For SJIS: [2] - For UTF8: [3] For Linux, specify the following numbers corresponding to the character codes. - For UTF8: [1] - For EUC: [2]	None (*4)
ETERNUS_SF_Manager_apache_service	Web Console service port number (*6)	9855
Communications_service_1	Communications service 1 port number (*6)	1226
Communications_service_2	Communications service 2 port number (*6)	4917
Repository_service_1	Repository service 1 port number (*6)	32004
Repository_service_2	Repository service 2 port number (*6)	15432
Remote_access_service	Remote access service port number (*6)	9851
Exclusive_control_service	Exclusive control service port number (*6)	9852
Internal_port_1	Port numbers for various internal services (*6)	28005

Parameter name	Description	Default value
Internal_port_2		28009
Internal_port_3		28443
Internal_port_4		24916
Internal_port_5		24917
DB_file_directory	DB file directory	/var/opt/FJVSswstf/sfswstf/db
RDB_dictionary_directory	RDB dictionary directory	/var/opt/FJVSswstf/sfswstf/dic
RDB_log_file_directory	RDB log file directory	/var/opt/FJVSswstf/sfswstf/log
Repository_DB_space_directory	Repository DB space directory	/var/opt/FJVSswstf/sfswstf/dbsp
Repository_data_size	Repository DB size (MB)	65
Management_server_IP_address	Management Server IP address (*1) (*5)	None
AdvancedCopy_Manager_ARCH	Architecture of AdvancedCopy Manager to be installed (*2)	None
esfpostgres_UID	User ID which ETERNUS SF Manager internally uses on installation of PRIMECLUSTER (*3)	None

*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: If 32-bit architecture Symfoware is installed on Red Hat Enterprise Linux 5 (for Intel64), specify "1" to install 32-bit architecture AdvancedCopy Manager. Specify a blank in other cases.

*3: 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.

*4: If no number is specified for Character_code (default value), the character code will be as follows:

- For Solaris 10: "EUC"
- For Solaris 11: "UTF8"
- For Linux: "UTF8"

*5: Specify the IPv4 address confirmed with "[3.1.9 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](#)".

*6: 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.

D.11 Solaris Install parameter file (for Storage Cruiser's agent)

The sample of an install parameter file is stored on the DVD-ROM of "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" of this version.

- Storage location

```
dvdromMountPoint/Agent_unix/Storage_Cruiser/Solaris/scagt_parameter.txt
```


When changing install parameters, copy the sample install parameter file to an optional location and edit the copied file. The sample of the install parameter file is shown below. For description of each parameter, refer to "D.12 Solaris Install parameters (for Storage Cruiser's agent)".

```
#-----#
# Installation directory
#-----#
Program_Directory: /opt
Environment_Directory: /etc/opt
Work_Directory: /var/opt
```

D.12 Solaris Install parameters (for Storage Cruiser's agent)

The following is a description of install parameters:

Parameter name	Description	Default value
Program_Directory	Program directory	/opt
Environment_Directory	Configuration directory	/etc/opt
Work_Directory	Working directory	/var/opt



- 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.

D.13 Solaris/Linux Install parameter file (for AdvancedCopy Manager' agent)

The sample of an install parameter file is stored on the DVD-ROM of "ETERNUS SF SC/ACM/Express Mediapack (Agent Program and Manual)" of this version.

- Storage location

Environment	Location
Solaris	<i>dvdromMountPoint</i> /Agent_unix/AdvancedCopy_Manager/Solaris/ install_parameter.txt
Red Hat Enterprise Linux 5 (for x86)	<i>dvdromMountPoint</i> /Agent_unix/AdvancedCopy_Manager/rhel5_x86/ install_parameter.txt
Red Hat Enterprise Linux 5 (for Intel64) (When using the Symfoware linkage function)	
Red Hat Enterprise Linux 5 (for Intel64) (When not using the Symfoware linkage function)	<i>dvdromMountPoint</i> /Agent_unix/AdvancedCopy_Manager/rhel5_x64/ install_parameter.txt
Red Hat Enterprise Linux 6 (for x86) Red Hat Enterprise Linux 6 (for Intel64)	<i>dvdromMountPoint</i> /Agent_unix/AdvancedCopy_Manager/rhel6_x86/ install_parameter.txt
SUSE Linux Enterprise Server 11 for x86 SUSE Linux Enterprise Server 11 for EM64T	<i>dvdromMountPoint</i> /Agent_unix/AdvancedCopy_Manager/sles11_x86/ install_parameter.txt

When changing install parameters, copy the sample install parameter file to an optional location and edit the copied file. The sample of the install parameter file is shown below. For description of each parameter, refer to "D.14 Solaris/Linux Install parameters (for AdvancedCopy Manager's agent)".

```
#-----#
# Install Directory
#-----#
Program_Directory: /opt
Environment_Directory: /etc/opt
Work_Directory: /var/opt

#-----#
# Port number
#   range: 1024 - 65535
#-----#
Communications_service: 1226
```

D.14 Solaris/Linux Install parameters (for AdvancedCopy Manager's agent)

The following is a description of install 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.

D.15 Solaris/Linux Install parameter file (for AdvancedCopy Manager Copy Control Module)

The sample of the install parameter file is provided on the DVD-ROM "ETERNUS SF SC/ACM Mediapack for Solaris (Manager Program) (2/2)" or "ETERNUS SF SC/ACM/Express Mediapack for Linux 64bit (Manager Program) (2/2)" for this version.

- Stored location

```
dvdromMountPoint/Manager_unix/install_parameter_ccm.txt
```

The following is the form of the install parameter file.

```
#-----#
# Installation function
#   1: ETERNUS SF Manager
#   2: ETERNUS SF AdvancedCopy Manager CCM
```

```
#-----#  
Installation_function: 2
```

Appendix E Return Values for Silent Installation

This appendix describes return values for silent installation.

E.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 E.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 install parameter file does not exist. (This return value is not set for AdvancedCopy Manager CCM in Solaris/Linux environment.)	Make sure that the specified install 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 Solaris/Linux environment.)	Refer to " Appendix D Install parameters " to make sure that the content of the install 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.	Silent installation does not support version upgrade installation. For version upgrade installation, refer to the <i>ETERNUS SF Migration Guide</i> 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.

E.2 Return values for silent installation (Storage Cruiser's agent for Windows)

The following is a description of the meanings of command return values and actions responding to them for silent installation (Storage Cruiser's agent for Windows):

Table E.2 Return values for silent installation (Storage Cruiser's agent for Windows)

Return Value	Meaning	Action
0	Installation succeeded.	No action is required.

Return Value	Meaning	Action
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 install parameter file does not exist.	Make sure that the specified install parameter file exists.
6	Specified install parameter file is incorrect.	Refer to " Appendix D Install parameters " to make sure the content of the install parameter file is correct.
7	A Storage Cruiser's agent is already installed.	<ul style="list-style-type: none"> - If earlier version is installed: Silent installation does not support version upgrade installation. For version upgrade installation, refer to the <i>ETERNUS SF Migration Guide</i> of this version. - If this version is 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.	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.

E.3 Return values for silent installation (Storage Cruiser's agent for Solaris/Linux)

The following is a description of the meanings of command return values and actions responding to them for silent installation (Storage Cruiser's agent for Solaris/Linux):

Table E.3 Return values for silent installation (Storage Cruiser's agent for Solaris/Linux)

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 install parameter file does not exist.	Make sure that the specified install parameter file exists.
6	Specified install parameter file is incorrect.	Refer to " Appendix D Install parameters " to make sure that the content of the install parameter file is correct.
7	A Storage Cruiser's agent is already installed.	<ul style="list-style-type: none"> - If earlier version is installed: Silent installation does not support version upgrade installation. For version upgrade installation, refer to the <i>ETERNUS SF Migration Guide</i> of this version. - If this version is installed: No action is required.

Return Value	Meaning	Action
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.	Take either of the following actions: <ul style="list-style-type: none"> - Check the content of the install log file to take required action. Then perform the following operations: <ol style="list-style-type: none"> 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.

E.4 Return values for silent installation (AdvancedCopy Manager's agent for Windows)

The following is a description of the meanings of command return values and actions responding to them for silent installation (AdvancedCopy Manager's agent for Windows):

Table E.4 Return values for silent installation (AdvancedCopy Manager's agent for Windows)

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 install parameter file does not exist.	Make sure that the specified install parameter file exists.
6	Specified install parameter is incorrect.	Refer to " Appendix D Install parameters " to make sure that the content of the install parameter file is correct.
7	An AdvancedCopy Manager's agent or AdvancedCopy Manager's manager is already installed.	<ul style="list-style-type: none"> - If earlier version of the AdvancedCopy Manager's agent is installed: Silent installation does not support the upgrade installation. For upgrade installation, refer to the <i>ETERNUS SF Migration Guide</i> 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.	Check the content of the install log file to take required action.

Return Value	Meaning	Action
		If you do not know how to respond to the error, contact Fujitsu Technical Support.

E.5 Return values for silent installation (AdvancedCopy Manager's agent for Solaris/Linux)

The following is a description of the meanings of command return values and actions responding to them for silent installation (AdvancedCopy Manager's agent for Solaris/Linux):

Table E.5 Return values for silent installation (AdvancedCopy Manager's agent for Solaris/Linux)

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 install parameter file does not exist.	Make sure the specified install parameter file exists.
6	Specified install parameter file is incorrect.	Refer to " Appendix D Install parameters " to make sure that the content of the install parameter file is correct.
7	An AdvancedCopy Manager's agent or AdvancedCopy Manager's manager is already installed.	<ul style="list-style-type: none"> - If earlier version of the AdvancedCopy Manager's agent is installed: Silent installation does not support the upgrade installation. For upgrade installation, refer to the <i>ETERNUS SF Migration Guide</i> 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.	<p>Take either of the following actions:</p> <ul style="list-style-type: none"> - Check the content of the install log file to take required action. Then perform the following operations: <ol style="list-style-type: none"> 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.

Appendix F Return Values for Silent Uninstallation

This appendix describes the return values for silent uninstallation.

F.1 Return values for silent uninstallation (ETERNUS SF Manager, AdvancedCopy Manager CCM for Windows)

The following is a description of the meanings of command return values and actions responding to them for silent uninstallation (ETERNUS SF Manager, AdvancedCopy Manager CCM for Windows):

Table F.1 Return values for silent uninstallation (ETERNUS SF Manager, AdvancedCopy Manager CCM for Windows)

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 not set for AdvancedCopy Manager CCM)	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.

F.2 Return values for silent uninstallation (ETERNUS SF Manager, AdvancedCopy Manager CCM for Solaris/Linux)

The following is a description of the meanings of command return values and actions responding to them for silent uninstallation (ETERNUS SF Manager, AdvancedCopy Manager CCM for Solaris/Linux):

Table F.2 Return values for silent uninstallation (ETERNUS SF Manager, AdvancedCopy Manager CCM for Solaris/Linux)

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.

Return Value	Meaning	Action
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.

F.3 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 F.3 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.

F.4 Return values for silent uninstallation (AdvancedCopy Manager's agent for Windows)

The following is a description of the meanings of command return values and actions responding to them for silent uninstallation (AdvancedCopy Manager's agent for Windows):

Table F.4 Return values for silent uninstallation (AdvancedCopy Manager's agent for Windows)

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.

Return Value	Meaning	Action
		If you do not know how to respond to the error, contact Fujitsu Technical Support.

F.5 Return values for silent uninstallation (AdvancedCopy Manager's agent for Solaris/Linux)

The following is a description of the meanings of command return values and actions responding to them for silent uninstallation (AdvancedCopy Manager's agent for Solaris/Linux):

Table F.5 Return values for silent uninstallation (AdvancedCopy Manager's agent for Solaris/Linux)

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 G Upper Limit of Manageable Environment

The following is a description of the upper limit of manageable resources by one ETERNUS SF Manager:

G.1 Determining the 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 1024, 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
    
```

Basal value

This is a value required for behaviors of ETERNUS SF Manager (including the Automated Storage Tiering). Specify the following value:

Basal value = 304

Evaluated value of registered device

For evaluated value of registered device, specify the value calculated by the following formula:

```

Evaluated value of registered device = 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 N/A(*1)	NAS function A(*1)
Storage device	ETERNUS DX80 S2/DX90 S2	23	-
	ETERNUS DX100 S3/DX200 S3	23	33
	ETERNUS DX410 S2/DX440 S2	25	-
	ETERNUS DX500 S3/DX600 S3	25	35
	ETERNUS DX8100 S2	25	-
	ETERNUS DX8700 S2	40	-
	ETERNUS DX series other than those above	30	-

Device type	Registered device	Evaluated value	
		NAS function N/A(*1)	NAS function A(*1)
	Manually embedded storage device other than ETERNUS DX series	5	-
Server	VMware vSphere4 or later (*2)	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 device	ETERNUS SN200, PRIMERGY BX600 Fibre Channel switch blade, Brocade series, Brocade VDX series, PRIMERGY BX Ethernet Fabric Switch	20	-
Tape library	ETERNUS LT250/LT270	20	-
	ETERNUS LT series other than ETERNUS LT250/LT270	5	-
Others	Devices other than those above	5	-

*1: N/A: not available, A: available

*2: 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
--

Number of performance-managed devices

Number of performance-managed storage devices and switch devices.

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 the 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 in storage devices targeted for Automated QoS

Total number of FTVs in storage devices targeted for Automated QoS

Total number of FTVs in all the storage devices for which the Automated QoS function is enabled.

Evaluated value of the Reporting function

When using the Reporting function, specify the value calculated by the following formula:

Evaluated value of the Reporting function = $0.3 * \text{total number of volumes in storage devices targeted for reporting}$

Total number of volumes in storage devices targeted for reporting

Total number of volumes in all the storage devices for which the Reporting function is enabled.

The following are the configuration examples evaluated by the above formula:

 **Example**

Only fault monitoring and performance management are performed

Target environment

Managed device

ETERNUS DX200 S3: 30 pcs

ETERNUS SN200: 6 pcs

Storage Cruiser's agent and AdvancedCopy Manager's agent installed server node: 70 pcs

ETERNUS LT250: 2 pcs

Performance-managed device

ETERNUS DX200 S3: 30 pcs

ETERNUS SN200: 6 pcs

Use of backup management function and replication management function of AdvancedCopy Manager

The following functions are not used:

- Automated QoS function
- Reporting function
- NAS Management

Comprehensive evaluation value

```

304
+ (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)                    # Evaluated value of performance management
+ 20                                  # Evaluated value of AdvancedCopy Manager
+ 0                                    # Evaluated value of Automated QoS function
+ 0                                    # Evaluated value of Reporting function
= 1022.4
    
```

 **Example**

Use the Automated QoS function and the Reporting function to perform backup operation

Target environment

Managed device

ETERNUS DX600 S3: 6 pcs (NAS operation on one of these 6)

ETERNUS SN200: 2 pcs

VMware vSphere4 server: 18 pcs

Performance-managed device

ETERNUS DX600 S3: 6 pcs

ETERNUS SN200: 2 pcs

Use of backup management function and replication management function of AdvancedCopy Manager
Automated QoS function

Total number of FTVs in all storage devices targeted for Automated QoS: 500

Reporting function

Total number of volumes in all storage devices targeted for Reporting: 800

Comprehensive evaluation value

304	
+ (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)	# 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
= 999.8	

G.2 Upper Limit of the Automated Storage Tiering

The upper limit of Tier pools managed by the Automated Storage Tiering is as follows:

- Total capacity and maximum number of Tier pools creatable per device
The upper limit is displayed in "[Table G.1 Upper limit of Tier pools per storage device](#)".

Table G.1 Upper limit of Tier pools per storage device

Storage device	Total capacity of Tier pools per storage device (*1)	Max. number of creatable Tier pools per storage device
ETERNUS DX80 S2/DX90 S2	128TB	30
ETERNUS DX410 S2	384TB	60
ETERNUS DX440 S2	768TB	64
ETERNUS DX8000 S2 series	1024TB	64
ETERNUS DX100 S3/DX200 S3	128TB	30
ETERNUS DX500 S3	384TB	60
ETERNUS DX600 S3	768TB	64

*1: Value including the capacity of Thin Provisioning Pool

- Total capacity of Tier pools manageable by ETERNUS SF Manager
It is 1024TB regardless of the number of managed storage devices.
- Total capacity of Tier pools that can be simultaneously evaluated by ETERNUS SF Manager
The total capacity of Tier pools whose access status data can be evaluated in the same period of time is displayed in "[Table G.2 Total capacity of simultaneously evaluable Tier pools](#)".
For example, if a 512TB Tier pool of ETERNUS DX600 S3 and a 384TB Tier pool of ETERNUS DX500 S3 coexist, it is necessary to set so that the evaluation time of each Tier pool may not be overlapped. However, access status data can be simultaneously collected.

Table G.2 Total capacity of simultaneously evaluable Tier pools

Configuration of evaluated Tier pools	Total capacity of simultaneously evaluable Tier pools
ETERNUS DX100 S3/DX200 S3/DX500 S3/DX600 S3 Tier pools exist	768TB

Configuration of evaluated Tier pools	Total capacity of simultaneously evaluable Tier pools
Other than those above	1024TB

G.3 Upper Limit of the 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.	600 volumes

G.4 Upper Limit of the 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.	1200 volumes