FUJITSU

ETERNUS SF
AdvancedCopy Manager 14.2

Installation and Setup Guide

Preface

Purpose

This manual provides information on the installation and customization of ETERNUS SF AdvancedCopy Manager.

This manual is intended for the Windows, Solaris, Linux, HP-UX and AIX versions of this software.

Audience

This manual is intended for the system manager in charge of managing disk storage with ETERNUS SF AdvancedCopy Manager.

Organization

This manual consists of the following chapters 1 through 11 and appendixes A through E.

Related Manuals

This ETERNUS SF AdvancedCopy Manager manual is included in the following series of manuals:

- ETERNUS SF AdvancedCopy Manager Overview

  Provides an overview of ETERNUS SF AdvancedCopy Manager.

- ETERNUS SF AdvancedCopy Manager Installation and Setup Guide

  Describes the installation procedure for ETERNUS SF AdvancedCopy Manager. (This manual)

- ETERNUS SF AdvancedCopy Manager Operator's Guide

  Describes the operating procedures for ETERNUS SF AdvancedCopy Manager. A different operator's guide is provided for each supported operating system.

- ETERNUS SF AdvancedCopy Manager GUI User's Guide

  Describes the operating procedures for the GUI client of ETERNUS SF AdvancedCopy Manager.

- ETERNUS SF AdvancedCopy Manager Message Guide

  Explains the messages output by ETERNUS SF AdvancedCopy Manager and the associated troubleshooting.

- ETERNUS SF AdvancedCopy Manager Operator's Guide for Cluster Environment

  Describes the installation and customization procedures for ETERNUS SF AdvancedCopy Manager in a cluster environment.

- ETERNUS SF AdvancedCopy Manager Operator's Guide for Tape Server Option

  Describes the operating procedures for performing tape backup with ETERNUS SF AdvancedCopy Manager.

- ETERNUS SF AdvancedCopy Manager Operator's Guide for Copy Control Module

  Describes the operating procedures for the ETERNUS SF AdvancedCopy Manager Copy Control Module.

- ETERNUS SF AdvancedCopy Manager Glossary

  Describes the terminology used in the ETERNUS SF AdvancedCopy Manager manuals.

Users are recommended to read the "ETERNUS SF AdvancedCopy Manager Overview" first, in order to gain an understanding of the general concepts of this software before reading the other manuals as required.

Notes on abbreviations

- Microsoft(R) Windows Server(R) 2003, Standard Edition, Microsoft(R) Windows Server(R) 2003, Enterprise Edition, Microsoft(R) Windows Server(R) 2003, Enterprise Edition for Itanium-based Systems are abbreviated as "Windows Server 2003".

- Microsoft(R) Windows Server(R) 2008 Standard, Microsoft(R) Windows Server(R) 2008 Enterprise, Microsoft(R) Windows Server(R) 2008 Datacenter, and Microsoft(R) Windows Server(R) 2008 for Itanium-Based Systems are abbreviated as "Windows Server 2008".

- Microsoft(R) Windows Server(R) 2008 R2 Standard, Microsoft(R) Windows Server(R) 2008 R2 Enterprise, Microsoft(R) Windows Server(R) 2008 R2 Datacenter are abbreviated as "Windows Server 2008 R2".

- Microsoft(R) Windows(R) XP Home Edition operating system and the Microsoft(R) Windows(R) XP Professional operating system are abbreviated as "Windows XP".

- Windows Vista(R) Home Basic, Windows Vista(R) Home Premium, Windows Vista(R) Business, Windows Vista(R) Enterprise and Windows Vista(R) Ultimate are abbreviated as "Windows Vista".

- Windows(R) 7 Home Basic, Windows(R) 7 Home Premium, Windows(R) 7 Professional, Windows(R) 7 Enterprise and Windows(R) 7 Ultimate are abbreviated as "Windows 7".

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

- "ETERNUS SF AdvancedCopy Manager" is abbreviated to "AdvancedCopy Manager".

- ETERNUS SF AdvancedCopy Manager's Manager is abbreviated to "Manager of AdvancedCopy Manager".

- ETERNUS SF AdvancedCopy Manager's Agent is abbreviated to "Agent of AdvancedCopy Manager".

- ETERNUS DX60/DX80/DX80 S2/DX90/DX90 S2, ETERNUS DX400/DX400 S2 series, ETERNUS DX8000 series, ETERNUS2000, ETERNUS4000, ETERNUS8000, ETERNUS3000, ETERNUS6000, and ETERNUS GR series are referred to as "ETERNUS disk storage systems".

- The Web GUI of ETERNUS DX series, ETERNUSmgr, and GRmgr are referred to as "ETERNUS Web GUI".

- ETERNUS LT20, LT40, LT60, LT270, LT250, LT230, LT220, LT160, and LT130 are referred to as "ETERNUS tape library".

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Contents

Chapter 1 Overview of Installation Procedure

This chapter provides an overview of the installation of AdvancedCopy Manager.

1.1 Software configuration of AdvancedCopy Manager

AdvancedCopy Manager consists of the following software:

- Manager

  The Manager runs on the Storage Management Server and manages multiple Storage Servers. If there is only one Storage Server in the system, backup tasks and replication tasks can be performed by installing the Manager on the Storage Server because the agent functions are included with the Manager.

- Agent

  The Agent runs on a Storage Server that is connected to ETERNUS disk storage systems, and performs backup tasks and replication tasks. There are five platforms to choose from when using the Agent (Windows, Solaris, Linux, HP-UX, and AIX).

- GUI client

  This connects to the AdvancedCopy Manager Storage Management server, and monitors and administers the environment of AdvancedCopy Manager.

- Tape Manager

  The Tape Manager runs on a tape server that is connected to an ETERNUS tape library, and performs tape backup tasks.

- Tape Agent

  The Tape Agent runs on a Storage Server that is connected to ETERNUS disk storage systems, and issues instructions to the tape server to perform backups from disk to tape.

  The Tape Agent is included in the Agent software.

- Copy Control Module

  The Copy Control Module performs backup using the Advanced Copy function of the ETERNUS disk storage systems, without installing the Agent of AdvancedCopy Manager on the server that is the backup source.

  For Copy Control Module installation procedures, refer to the "ETERNUS SF AdvancedCopy Manager Operator's Guide for Copy Control Module".

1.2 Server type of AdvancedCopy Manager

AdvancedCopy Manager defines the server types shown below.

Table 1.1 AdvancedCopy Manager server types

Server type	Explanation
Storage Management Server	Server that manages the Storage Servers. Only one Storage Management server can be configured in a system environment using AdvancedCopy Manager.
Storage Server	Server that implements the AdvancedCopy Manager backup and replication tasks. Multiple Storage Servers can be configured in a system environment using AdvancedCopy Manager.
Tape server	Server that implements backup tasks to tape media in conjunction with Storage Server backup tasks. Can be constructed only if the "ETERNUS SF AdvancedCopy Manager Tape Server Option" is installed.
CCM Server	Server that performs backup without installing the Agent of AdvancedCopy Manager on the server that is the backup source.

The operating format determines which software needs to be installed on the servers described in "AdvancedCopy Manager server types".

The table below shows server type and software combinations.

Each server can be combined with other servers.

Table 1.2 AdvancedCopy Manager server type and software combinations

Server types	Software to be installed		
	Manager	Agent	Tape Manager
Storage Management Server	Yes	No	No
Storage Server	No	Yes	No
Storage Management Server that is also used as Storage Server	Yes	No	No
Tape server	No	Yes	Yes
Tape server that is also used as Storage Management Server	Yes	No	Yes
Tape server that is also used as Storage Server	No	Yes	Yes
Tape server that is also used as Storage Management Server and Storage Server	Yes	No	Yes

Yes: Installation required

No: Installation not required

1.3 System configuration example of AdvancedCopy Manager

A Storage Server can also be used as a Storage Management Server. This enables the construction of the various AdvancedCopy Manager configurations shown in the examples below.

When no tape server is installed

Figure 1.1 Storage Server also used as Storage Management Server
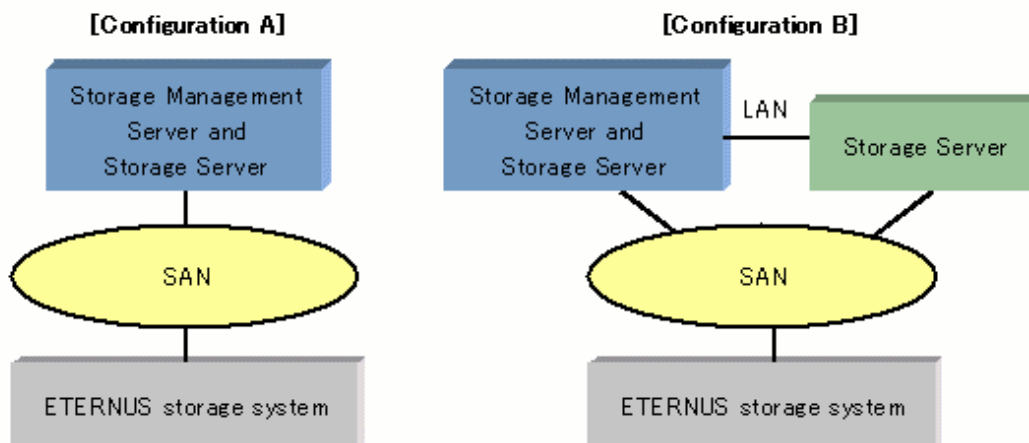
Figure 1.2 Storage Management Server configured on separate server
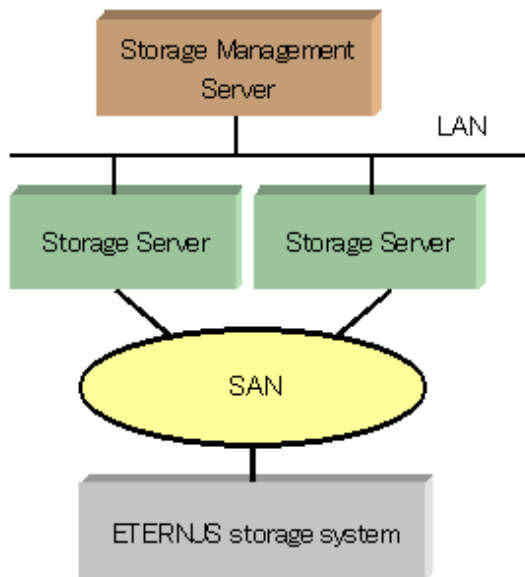
Installation procedure

For all the above configurations, use the following procedures to install AdvancedCopy Manager:

1. 1.3.1 Installation of Storage Management Server
2. 1.3.2 Installation of Storage Server
3. 1.3.2 Installation of Storage Server

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The Storage Management Server contains a repository that stores the operation management information of all Storage Servers. Therefore if there are numerous Storage Servers, repository access contention may arise.

In the Storage Server that is also used as the Storage Management Server, repository access contention has significant influence on transactions. Consider the use of one of the following configurations in order to minimize the effect on transactions:

- Configure a dedicated Storage Management Server.

- Use a configuration in which the Storage Server that has the least workload is the Storage Server that is also used as the Storage Management Server.

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When a Tape server is installed

Figure 1.3 Tape server configured on separate server
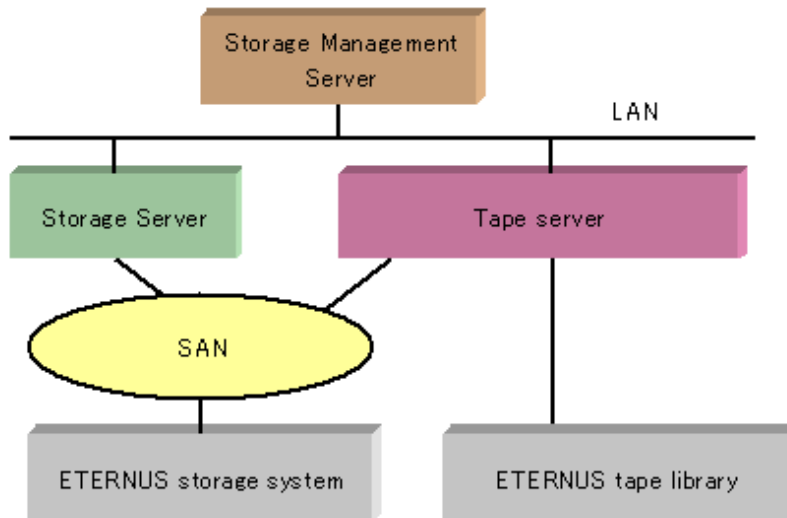
Figure 1.4 Tape server configured on Storage Management Server
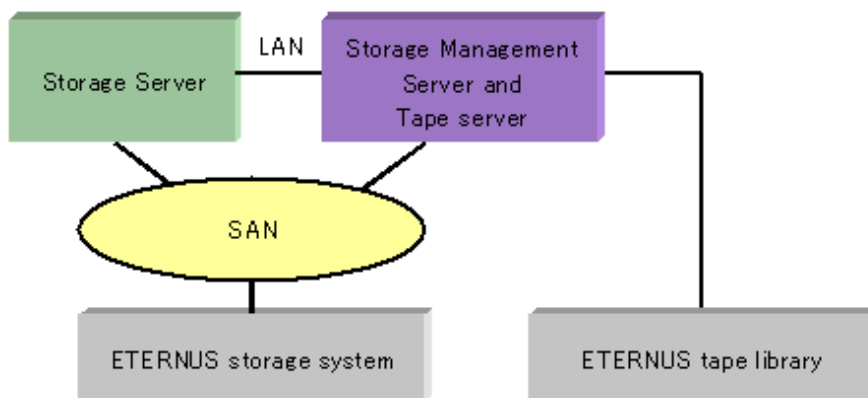
Figure 1.5 Tape server configured on Storage Server
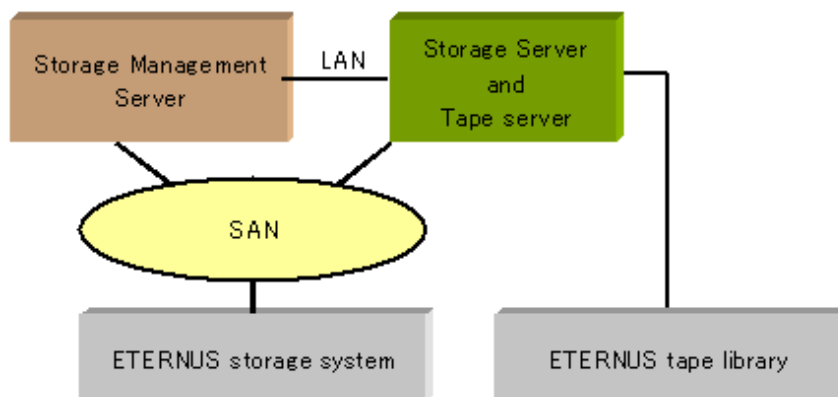
Installation procedure

Use the following procedures to install AdvancedCopy Manager:

1. 1.3.1 Installation of Storage Management Server

2. 1.3.2 Installation of Storage Server

Note

If the Storage Server is running on Solaris

To satisfy the following conditions, the Storage Server and the Tape Server must be configured separately.

- Synchronous replication operations target areas that include VTOC

- The above areas are tape backup targets

1.3.1 Installation of Storage Management Server

Use the following procedures to install the Storage Management server:

1. Install the Manager of AdvancedCopy Manager.

   Refer to "Chapter 2 Installation of the Manager" for the installation method.

2. Customize as the Storage Management Server

   Refer to "Chapter 3 Customization of Storage Management Server" for the customization method.

1.3.2 Installation of Storage Server

Use the following procedures to install the Storage Server on a server that is not also used as the Storage Management Server:

1. Install the AdvancedCopy Manager Agent.

   Refer to "Chapter 4 Installation of the Agent" for the installation method.

2. Customize as a Storage Server

   Refer to "Chapter 5 Customization of Storage Server" for the customization method.

Information

The Agent does need to be installed on a server that does not perform AdvancedCopy Manager backup or replication operations.

1.3.3 Installation of GUI client

The GUI client should be installed with the following procedure.

1. Installation of GUI client

   Refer to "Chapter 6 Installation of the GUI Client" for the installation method.

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It is necessary to operate the GUI client and the manager at the same version level in AdvancedCopy Manager.

Please use a GUI client with the same version level as the manager.

2. Using GUI client

   Refer to the "ETERNUS SF AdvancedCopy Manager GUI User's Guide" for details of how to use the GUI client.

1.3.4 Installation of Tape Server

Use the following procedures to install a Tape server:

1. Install the Tape Manager.

    Refer to "Chapter 7 Installation of Tape Manager" for the installation method.

2. Customize as a Tape server.

    Refer to "Chapter 8 Customization of Tape Server" for the customization method.

Chapter 2 Installation of the Manager

This chapter explains the installation of the Manager of AdvancedCopy Manager.

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It is necessary to install the ETERNUS SF License Manager. For the installation procedure of it, refer to "E.2 Installation of License Manager".
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2.1 Prerequisites for Windows Platform

This section describes how to install the Windows edition of the Manager.

2.1.1 Hardware requirements

Machine model

A machine that enables the Windows operating system to be loaded is required.

Note
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The PRIMERGY FT model is not supported.
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I/O device

The following I/O devices are required to run this software.

Note that an AdvancedCopy Manager license and appropriate cache table size settings are required.

The settings required for Advanced Copy functions will depend on the device type, so consult your Fujitsu systems engineer.

Table 2.1 Hardware requirements

Component name	Remarks
ETERNUS DX60/DX80/DX80 S2/DX90/DX90 S2 ETERNUS DX410/DX410 S2/DX440/DX440 S2 ETERNUS DX8100/DX8400/DX8700 ETERNUS2000 models 100 or higher ETERNUS4000 models 100 or higher ETERNUS8000 ETERNUS3000 models 100 or higher ETERNUS6000 ETERNUS GR720/GR730/GR740/GR820/GR840	Any one is required (also required if backup and replication operations are performed at the Storage Management Server). Advanced copy function is required.
LAN Card	

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When executing the Advanced Copy function of ETERNUS DX60/DX80/DX80 S2/DX90/DX90 S2, it is necessary to register the Advanced Copy license to the License Manager.
For the registration procedure of the Advanced Copy license, refer to "Appendix E About ETERNUS SF License Manager".
....

2.1.2 Software requirements

2.1.2.1 Basic software

Manager of AdvancedCopy Manager can only be installed under one of the following environments. Any other system environment is not supported.

- Microsoft(R) Windows Server(R) 2003, Standard Edition SP1,SP2

- Microsoft(R) Windows Server(R) 2003, Enterprise Edition SP1,SP2

- Microsoft(R) Windows Server(R) 2003 R2, Standard Edition

- Microsoft(R) Windows Server(R) 2003 R2, Standard Edition SP2

- Microsoft(R) Windows Server(R) 2003 R2, Enterprise Edition

- Microsoft(R) Windows Server(R) 2003 R2, Enterprise Edition SP2

- Microsoft(R) Windows Server(R) 2008 Standard (x86,x64) (Note)

- Microsoft(R) Windows Server(R) 2008 Standard SP2 (x86,x64) (Note)

- Microsoft(R) Windows Server(R) 2008 Enterprise (x86,x64) (Note)

- Microsoft(R) Windows Server(R) 2008 Enterprise SP2 (x86,x64) (Note)

- Microsoft(R) Windows Server(R) 2008 Datacenter (x86,x64) (Note)

- Microsoft(R) Windows Server(R) 2008 Datacenter SP2 (x86,x64) (Note)

- Microsoft(R) Windows Server(R) 2008 R2 Standard

- Microsoft(R) Windows Server(R) 2008 R2 Enterprise

- Microsoft(R) Windows Server(R) 2008 R2 Datacenter

Note

- The Hyper-V(TM) function of Windows Server 2008 is not supported.

- If the Storage Management Server is running on Windows Server 2003, it may cause a security risk come from OS vulnerability. Refer to the following link for detail of security risk.
  http://www.microsoft.com/whdc/system/vista/services.mspx

2.1.2.2 Exclusion Software

AdvancedCopy Manager cannot coexist with the following software.

- SystemWalker/StorageMGR-M

- SystemWalker/StorageMGR-A

- Softek AdvancedCopy Manager-M

- Softek AdvancedCopy Manager-A

- Interstage Business Application Server Standard Edition(*)

- Interstage CollaborationRing File Transfer Integrator(*)

- Interstage CollaborationRing EDI Server(*)

- Interstage CollaborationRing Process Manager(*)

- Interstage CollaborationRing Flow Controller(*)

- Interstage CollaborationRing Business Connector(*)

- Interstage List Manager Enterprise Edition/Standard Edition(*)

(*) If OS is Windows Server 2008

If any of the above-mentioned software is installed, it must be uninstalled first.

2.1.2.3 Symfoware confirmation

Symfoware components are internally bundled with the Manager of AdvancedCopy Manager.

No problems arise if Symfoware is not installed in the install destination system.

If Symfoware is installed, the Symfoware status must be confirmed after installation.

Windows Server 2003

Check that the installed Symfoware Server is the following level:

- Symfoware Server Enterprise Edition V6.0 - V9.x

If another level of Symfoware was installed, uninstall Symfoware Server, then install Symfoware Server Enterprise Edition V6.0 - V9.x.

Windows Server 2008 or Windows Server 2008 R2

Symfoware Server and Symfoware Client are used with the Manager of AdvancedCopy Manager. The configuration of the installation must be confirmed.

- Both Symfoware Server and Symfoware Client can be installed without a problem.

- If only Symfoware Server is installed, and the version is Symfoware Server Enterprise Edition 9.1.1, no action is required because the client will be installed when ACM Manager is installed.

- If only Symfoware Server is installed, and a version other than the above is installed, perform the following:

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

    - Save any required data, and remove the installed Symfoware Server. After installing the ACM Manager, restore the saved data.

- If only Symfoware Client is installed, remove it.

2.1.2.4 Estimation of Database area

To operate Manager of AdvancedCopy Manager, the following databases are required.

Repository

The following database areas are required for the repository.

The following databases must reside on a drive with NTFS format:

- RDB dictionary

- RDB log file

- Repository database

The Table 2.2 Required database spacebelow gives the minimum space required for each database. Check that the required capacity is securable. (Enter these specifications with reference to "3.1.2 Details of Non-cluster Storage Management Server Customization".)

Table 2.2 Required database space

Type	Size
RDB dictionary	55(MB)
RDB log file	100(MB)
Repository database	Refer to the following expression. (The minimum space required is 65MB.)

Calculating the repository capacity:

```
Capacity (MB) = {[(number of servers x 6 + total number of devices x 11) / 40] x 17 +
512} / 1024
```

- Number of servers: = The total of Storage management servers and Storage servers.

- Total of devices = The total of devices (*1) to be managed by the AdvancedCopy Manager. Note that this total is not the total of devices connected to all the Storage servers.

    *1 Depending on the Storage server to be managed, the "device" corresponds to the following:

Table 2.3 Storage Server OS type and meaning of "device"

Storage server type	Correspondence to the "device"
Windows	Partition
Solaris	Slice
HP-UX	LUN
Linux	Partition
AIX	LUN

When the Storage server to be managed is using mirroring with the SynfinityDISK or PRIMECLUSTER Global Disk Services, the number of devices is equivalent to the total number of mirror slices.
The total number of mirror slices is the number of devices multiplied by the number of disks comprising the mirror group.

Note

- When there are two or more Storage servers, define the number to be estimated as the total number on all Storage servers.

- When a cluster operation is running, consider not only logical servers but also physical 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.

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Specify in advance a size that is greater than the estimated size if there is a possibility that the number of servers or number of partitions will be increased in future.

If SafeDISK or PRIMECLUSTER Global Disk Services are used, specify in advance 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.

2.1.3 Startup account

During installation of AdvancedCopy Manager, the system will ask which user should be used as the "startup account". The user specified here is used as the account for activating each service of the AdvancedCopy Manager or as a manager of any "authentication function".

For more information of the "authentication function" see "Security provided by authentication function" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide (Windows)".

When an existing user is specified as the startup account, ensure that the user satisfies the following requirements:

- The user belongs to the Administrators group.

- The user's password does not expire.

If the startup account that has been specified at installation time of the AdvancedCopy Manager does not belong to the Administrators group, the system automatically makes the startup account belong to the Administrators group.

Since the startup account is used as the account for activating the services of the AdvancedCopy Manager, the following authority is added when installing the AdvancedCopy Manager:

- Log on as a service

- Act as part of the operating system

- Increase quotas

- Replace a process level token

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An account name and password must satisfy all of the validation requirements of the Windows OS naming convention.
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2.1.4 Essential Resources

This section describes the resources that are mandatory for this software.

2.1.4.1 Disk space required at installation

In order to install this software for the first time, the following disk space is required for each directory. If the existing file system size can't support these disk space requirements, the file system may need to be rebuilt with more allocated space.

Table 2.4 Disk space required at installation

Directory	Disk space requirement (Unit: megabytes)	Remarks
Program storing	700(MB):Windows Server 2003 800(MB):Windows Server 2008 or Windows Server 2008 R2	The program directory name specified when you install this software product.
Environmental setup	1(MB)	The environmental setting directory name specified when you install this software product.
Work	1(MB)	The directory name for work specified when you install this software product.

2.1.4.2 Disk space requirement during operation

When using this software in addition to disk space required for installation, the following disk capacity (reference) is required for each directory for the following operations:

Table 2.5 Disk space required during operation

Directory	Disk space requirement (Unit: megabytes)	Operation
Environmental setup	(a+35 x b)/1024	For backup operations in the server
Environmental setup	(1.1 x c)/1024	For replication operations in the server
Work	107+d	Mandatory

- a: Number of backup volumes

- b: Number of transaction volumes

- c: Number of volume pairs for replication management

- d: Capacity of saved file that is output according to "Volume lock error investigation function" in "ETERNUS SF AdvancedCopy Manager Operator's Guide (Windows)".

  The output for each number of backup and transaction volumes and for each volume pair for replication management is made in sizes between several hundred KB and 2 MB each time a "in-use lock error" occurs.

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

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

2.1.4.3 Memory Requirements during operation

A minimum of 96 MB or more of memory is required to run this software.

2.1.5 Installation

This section describes how to install the Manager of AdvancedCopy Manager. The following two methods of installation are available:

- Custom install

- Default install

Custom install and default install are described below.

Custom install

With the custom install method, the user enters the various types of install information (install destination, startup account name, port numbers used for each service, and so on) in the windows.

Default install

The default install method uses the default install information. The input tasks that use windows can be omitted.

Default install information

[Install destination]

- Program directory

```
<System drive>:\Win32app\AdvancedCopyManager\
```

- Environment setup directory

```
<System drive>:\Win32app\AdvancedCopyManager\
```

- Work directory

```
<System drive>:\Win32app\AdvancedCopyManager\
```

[Startup account name]

```
Account name: acmuser
Password: acmuser
```

Note: For Windows Server 2008 or Windows Server 2008 R2, use the following password: acm!123

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- If the above account name and password cannot be used due to an OS security policy, use custom install to install the Manager.

- For a user belonging to the domain Administrators group to perform the installation tasks under Windows Server 2008 or Windows Server 2008 R2, the Windows service "Computer Browser service" must be started.

- The following table shows the intended users for user creation, user authentication, and service execution for each server type being used.

Server type		
Domain controller	Machine belonging to a domain	WORKGROUP (not belonging to a domain)
Domain user	Local user	Local user

 Point

The following tables show the levels of operation support when the status of a Windows domain environment is either raised or lowered during AdvancedCopy Manager operations.

Table 2.6 Levels of support for raising status

		After implementation			
		DC (FSMO)	DC (non-FSMO)	Non-DC	Ordinary environment
Before implementation	**DC (FSMO)**	-	-	-	-
	DC (non-FSMO)	Y	-	-	-
	Non-DC	Y	N	-	-
	Ordinary environment	Y	N	Y	-

Y : Can be raised

N : Cannot be raised

- : Not raised

Table 2.7 Levels of support for lowering status

		After implementation			
		DC (FSMO)	DC (non-FSMO)	Non-DC	Ordinary environment
Before implementation	**DC (FSMO)**	-	N	N	N
	DC (non-FSMO)	-	-	N	N
	Non-DC	-	-	-	Y
	Ordinary environment	-	-	-	-

Y : Can be lowered

N : Cannot be lowered

- : Not lowered

[Port numbers used for each service]

Table 2.8 List of port numbers

Service name	Port number
Communication service	1226
Remote access service	9851
Exclusion control service	9852
CB service	4660
Repository service	2004

Error checks

The following error checks are automatically performed for the default install information.

If the error checks detect an error, a warning dialog is displayed and the display returns to the [Welcome] window (install options selection window).

- [Install destination]

    Checks that the free disk space required for installation is available.

- [Account name/Password]

    If the default account name already exists in the system, checks that the password matches the default password.

    Note: If the default account name does not exist in the system, a new user is created with the default account name and password.

- [Port numbers]

    Checks that the default port numbers are not being used for anything else.

    Note: If an alias has been used to define an AdvancedCopy Manager service name, a warning dialog is displayed and a port number is not registered. The install process can be continued by clicking the [OK] button.

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To operate a Storage Management Server in a cluster system:

Refer to "Installation of Manager function of AdvancedCopy Manager" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster environment".
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2.1.5.1 Flow of installation

A flowchart outlining the installation process for the Manager agent of AdvancedCopy Manager is shown below:

Figure 2.1 Figure: Flow of installation
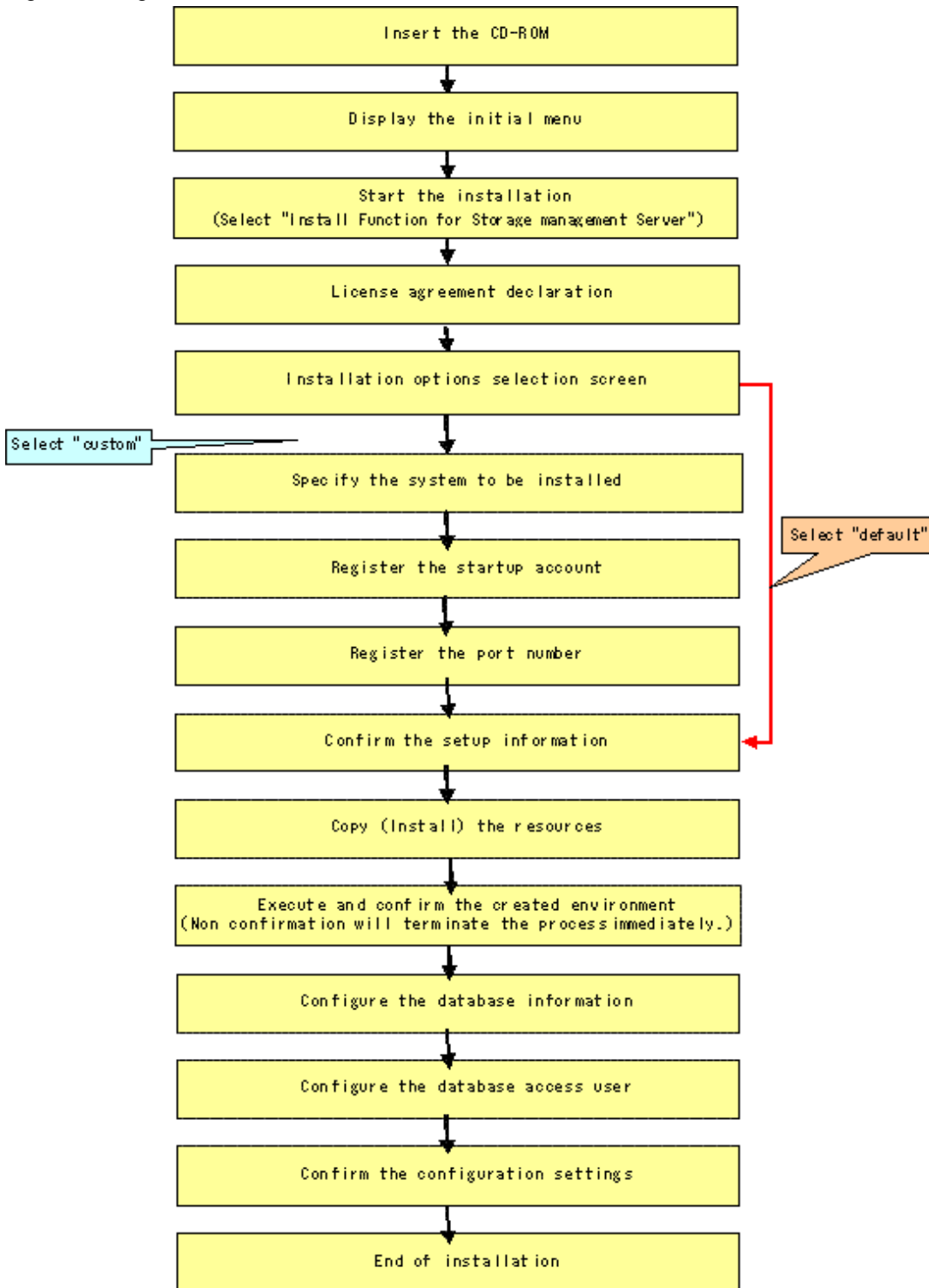
2.1.5.2 Installation procedure

![Note] **Note**

Executing this process with the service listed below must be paid attention.

- Terminal service (via a remote desktop connection)

  If the Storage Management Server is running on Windows Server 2003, the Terminal Service must be used by making a console session connection to it. Refer to the following link for information on how to make console session connections:

Do not use service listed below, as it will not work properly.

- Telnet server service

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Install AdvancedCopy Manager, using the following procedure:

1. Logon to the system.

   Logon as the user who has the Administrator's authority on the system where the AdvancedCopy Manager will be installed.

2. Insert the AdvancedCopy Manager CD-ROM (Manager Program) into the drive and an initial window will be displayed. Click [Install Function for Storage Management Server].

3. At the following (InstallShield) window, check the displayed contents, and then click the [Next] button.
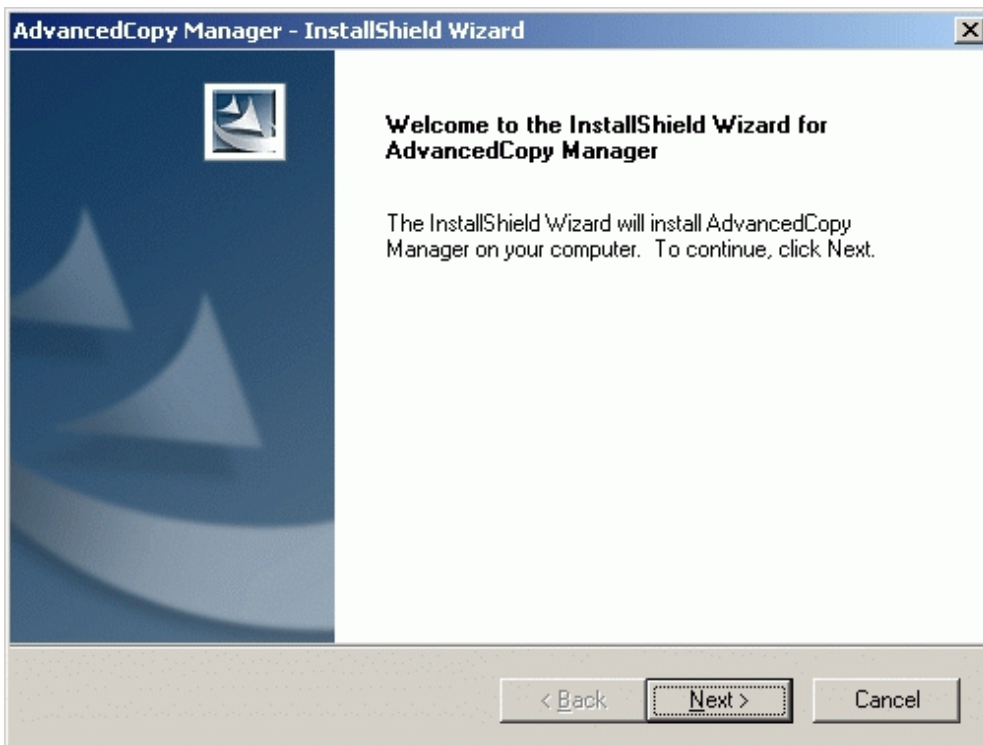
4. Accept the license usage terms and conditions displayed on the [License Agreement] window.

   Check the displayed contents, and then click the [Yes] button.
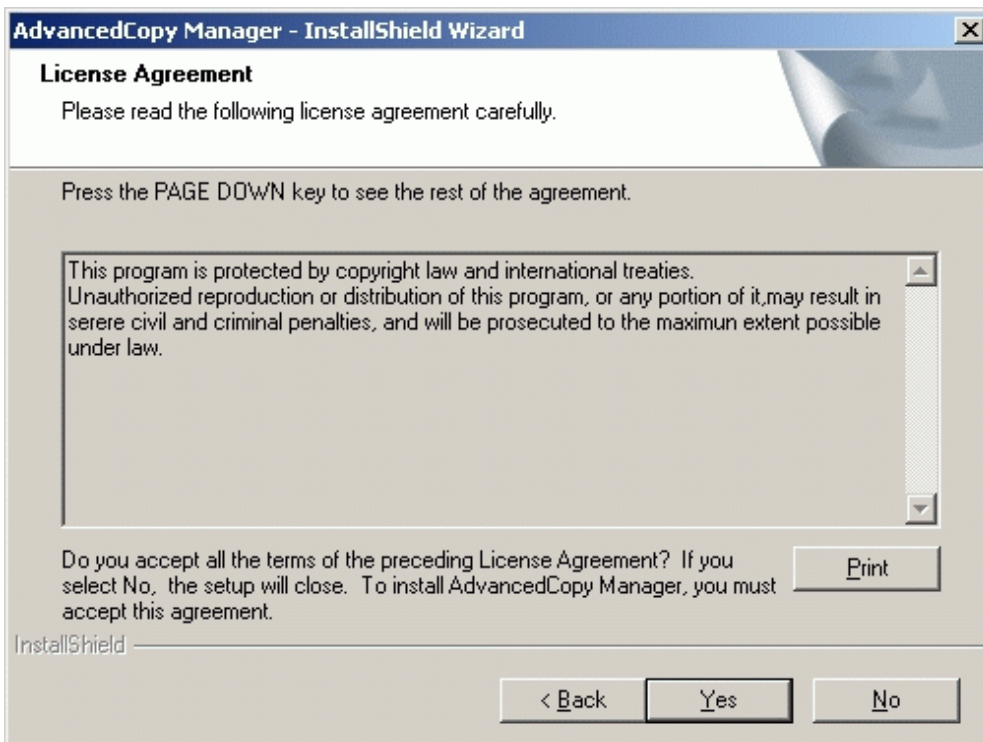
5. On the [Welcome] window, select the install option (default or custom).
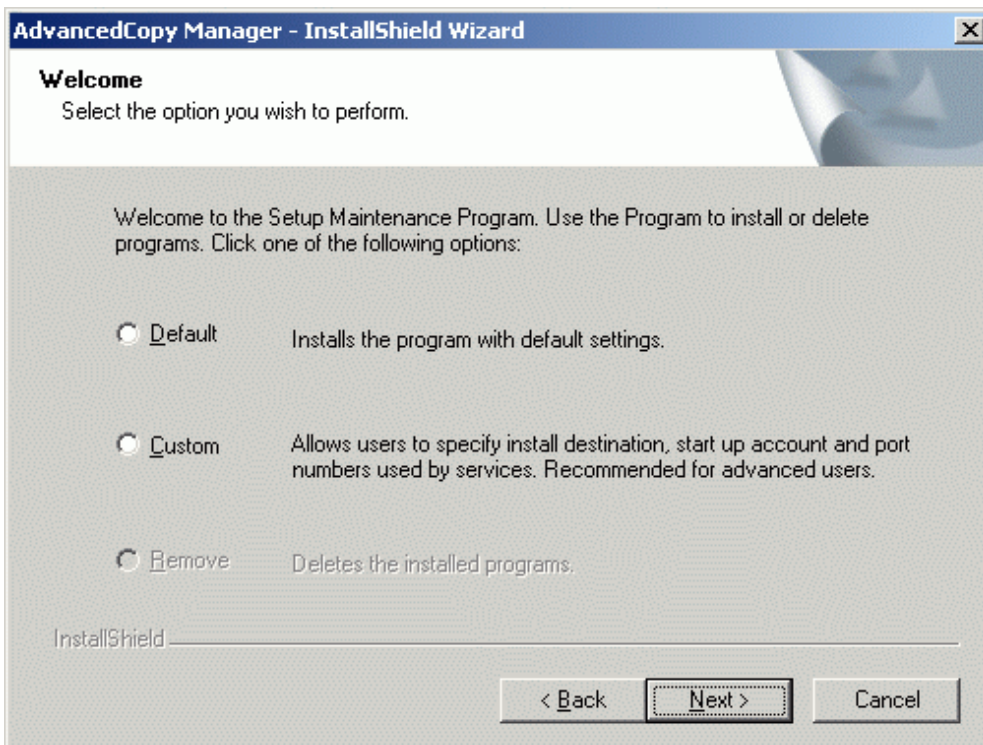
- If [Default] is selected

    The install information settings on the following windows can be omitted (the settings in steps 6 to 8 are not required):

    - [Specify installation directory] window

    - [Startup Account registration] window

    - [The registration of the port] window

    Error checks are performed automatically for the default install information of the omitted windows.

    - If an error is detected:

        A warning dialog is displayed and the display switches back to the main window.

    - If no errors are detected:

        The [Start Copying Files] window is displayed.

- If [Custom] is selected

    Install information settings must be entered in each of the install windows.

    Enter the required information as indicated for the display windows in step 6 and subsequent steps.

6. Specify the installation directory.

    If this product is to be installed in directories other than those displayed (default directories), click the [Browse] button to select the desired directories. After all the proper directories have been selected, click the [Next] button.

Note

Directories with spaces in their names (e.g., Program Files) cannot be specified.
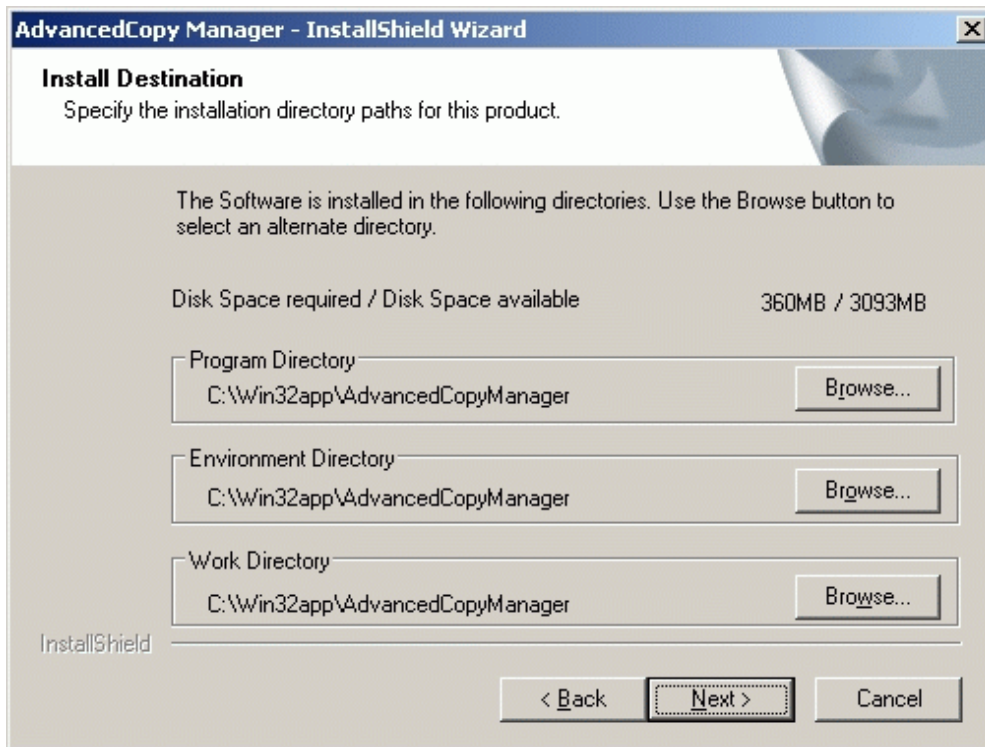
If the [Browse] button is clicked, the following screen is displayed.
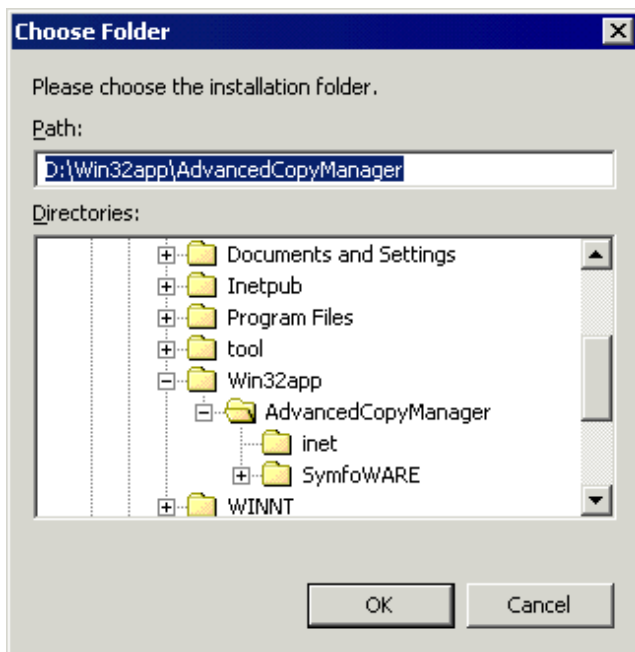
7. Specify the startup account on the [Startup/Authentication feature manager] window.

   Enter the account name belonging to the Administrator's group with a password, and click the [Next] button. The account name and password must satisfy all of the validation requirements of the Windows OS naming convention the following conditions.

··

In Windows Server 2008 or Windows Server 2008 R2

Environment dependent characters (Unicode) included in JIS X 0213:2004 (hereafter referred to as "JIS2004") cannot be used in the account name

··

For details of the startup account, see "2.1.3 Startup account".

If the account name is not registered, the system adds this account with Administrative rights with the password set not to expire. The system will also set the following user authority:

- Log on as a service

- Function as part of the operating system

- Adding a quota

- Replace the process level token

![AdvancedCopy Manager - InstallShield Wizard screenshot showing Startup/Authentication Account Registration dialog with Account field "acmuser", Password and Confirm Password fields, and Back, Next, Cancel buttons]

![See icon] **See**

··

For the password changing of the startup account, refer to "Changing the startup account" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide (Windows)".

··

8. Specify the port number to be allocated for the service in the [The registration of the port] window.

The first displayed numeric value is the recommended value for cluster operation, but it is not necessarily unique. Enter an appropriate port number that suits your operations.

If changing to a value other than the recommended value, enter a number in the following range:

- From 5001 to 32767

For cluster operations in Windows Server 2003, change all port numbers to numbers in the above range.

After port number specification is complete, click the [Next] button.

The [The registration of the port] window will be redisplayed if the specified port number is already assigned elsewhere.
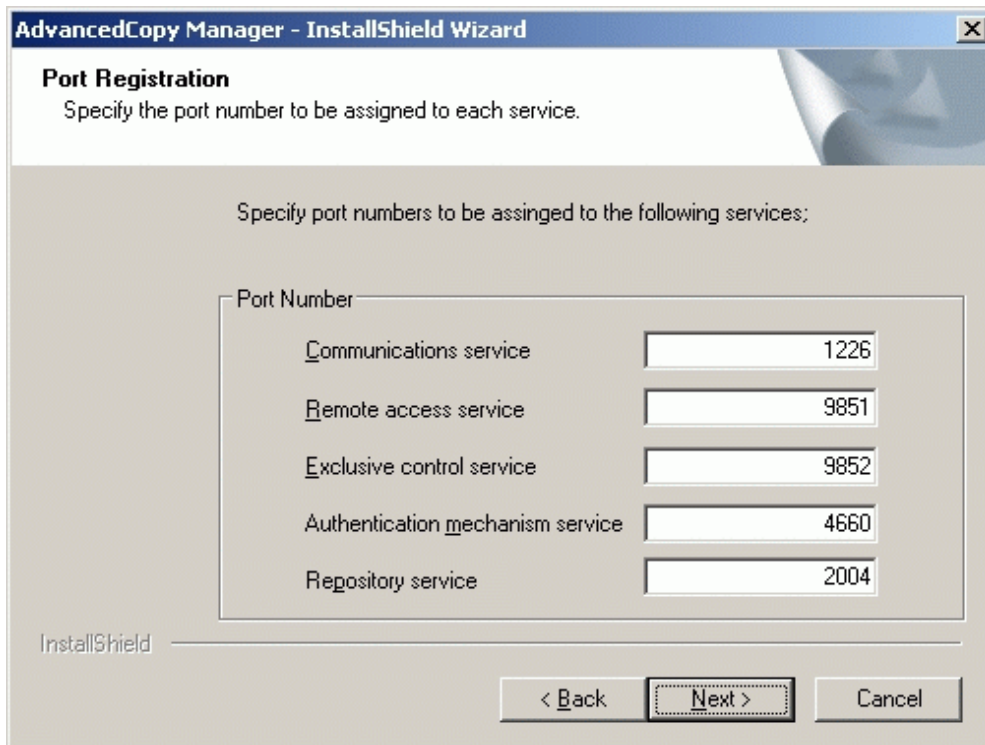
If the AdvancedCopy Manager service name is defined with an ALIAS, the following window will be displayed and the port number specified on the previous screen is ignored. The installation will proceed.
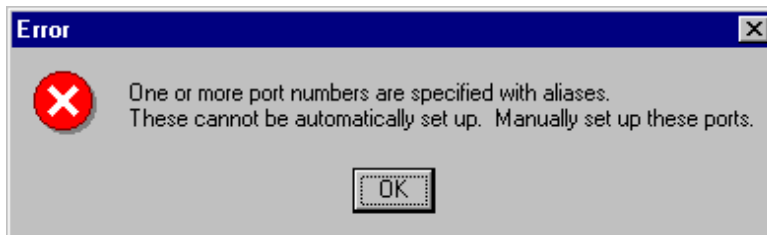
Edit the following file to set the port number manually:

```
C:\WINDOWS\system32\drivers\etc\Services
```

9. Confirm the settings on the [Start Copying Files] window.

   If the information specified is correct, click the [Next] button, or to correct or modify any settings click the [Back] button.
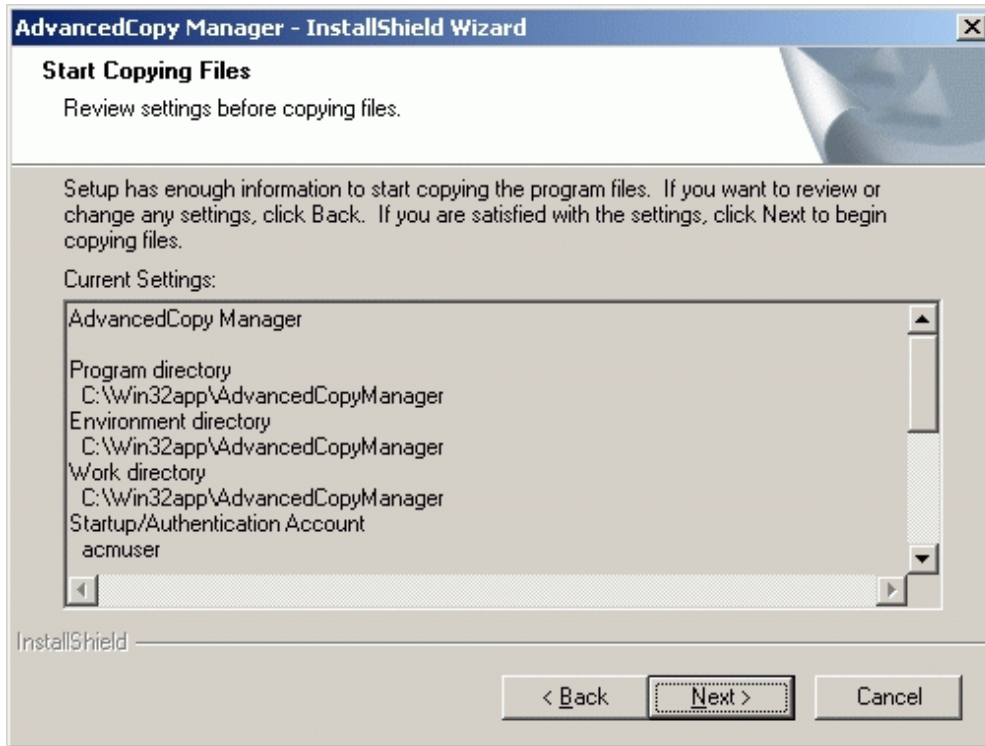
10. Start the copying.

    The file transfer in progress can be viewed on the [Setup Status] window.
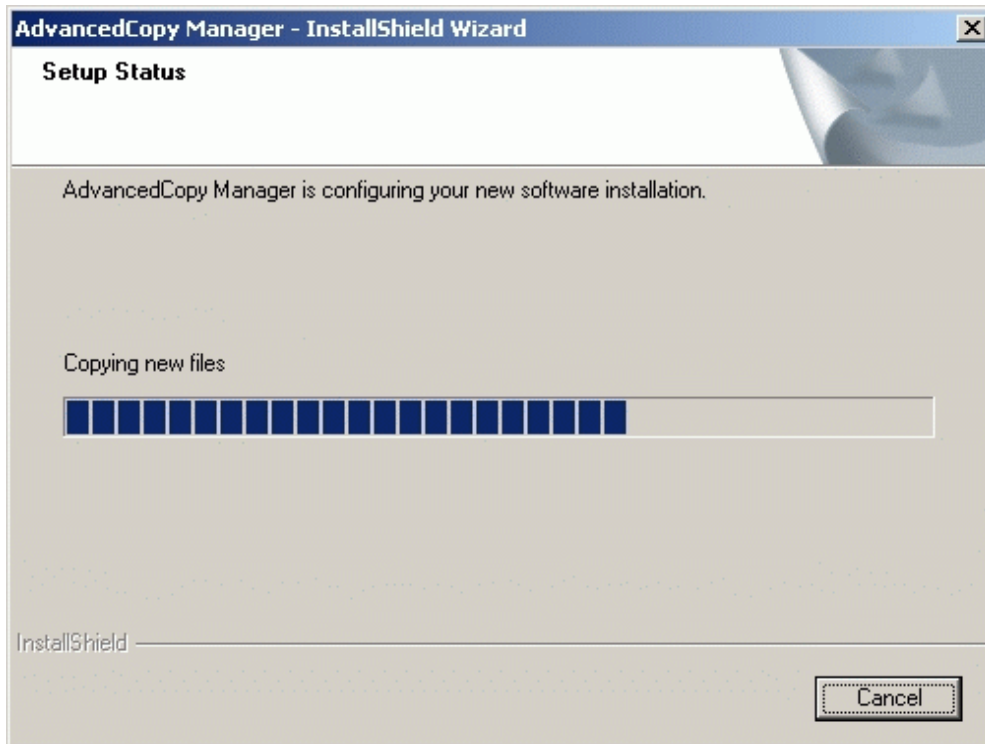
11. Confirm the environment settings.

    In the [Environment setup] dialog click the [Yes] button to set up the environment now or [No] to do the settings after rebooting the system. If you click [No], the installation-completed window is displayed.

Click the [End] button and the [Environment setup] window will be automatically displayed after restarting the system.

For cluster operation of the storage management server, click [No].
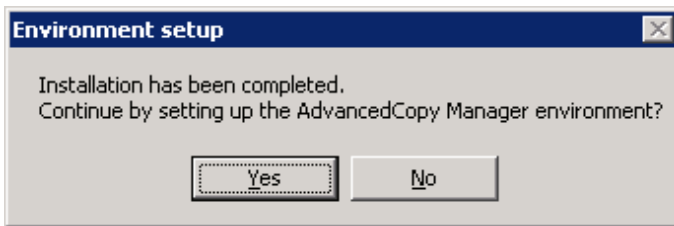
12. Finish the Installer.

Click the [Finish] button to end the install process.
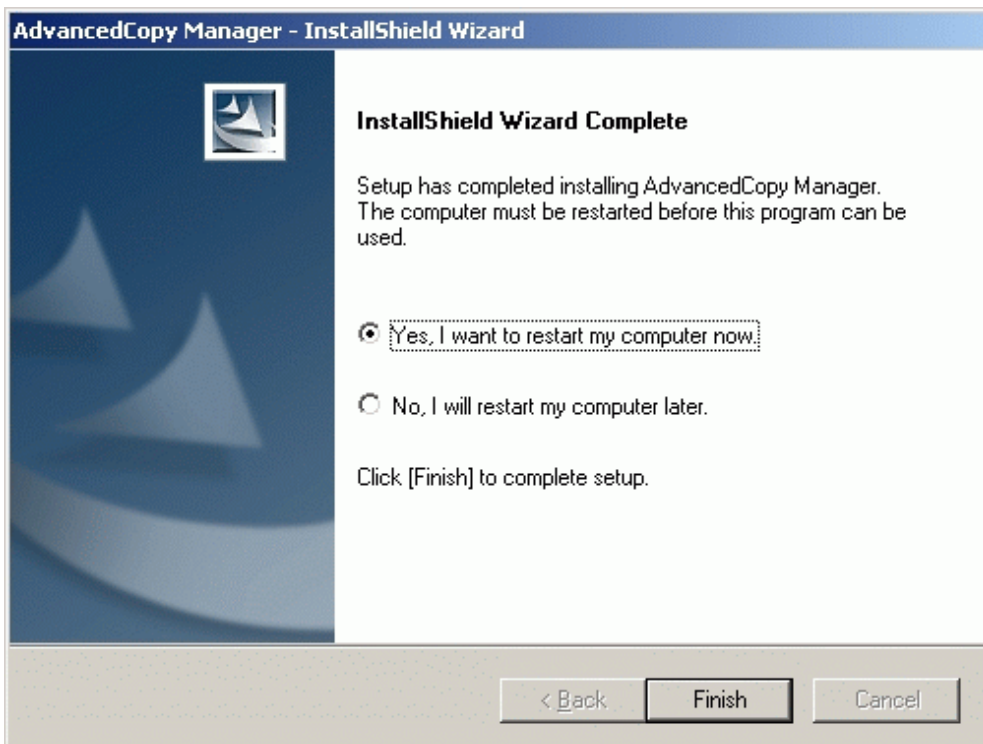
13. Confirm and Install the ETERNUS SF License Manager.

- For Windows Server 2003

Double-click on the [Add or Remove Programs] icon in the Control Panel. On the "Add or Remove Programs" window, check whether [ETERNUS SF License Manager] is displayed or not.

- For Windows Server 2008 or Windows Server 2008 R2

Double-click on the [Programs and Features] icon in the Control Panel. On the "Programs and Features" window, check whether [ETERNUS SF License Manager] is displayed or not.

If the [ETERNUS SF License Manager] is not displayed, install the ETERNUS SF License Manager by referring the "E.2.1 Installation on Windows environment".

2.2 Prerequisites for Solaris/Linux Platform

This section describes how to install a Solaris or Linux edition Manager.

2.2.1 Hardware requirements

The following I/O devices are required to run this software:

Note that an AdvancedCopy license and appropriate cache table size settings are required.

The settings required for AdvancedCopy functions will depend on the device type, so consult your Fujitsu systems engineer.

Table 2.9 Hardware requirements

Component name	Remarks
ETERNUS DX60/DX80/DX80 S2/DX90/DX90 S2 ETERNUS DX410/DX410 S2/DX440/DX440 S2 ETERNUS DX8100/DX8400/DX8700 ETERNUS2000 models 100 or higher ETERNUS4000 models 100 or higher ETERNUS8000 ETERNUS3000 models 100 or higher ETERNUS6000 ETERNUS GR720/GR730/GR740/GR820/GR840	Any one is required (also required if backup and replication operations are performed at the Storage Management Server). Advanced copy function is required.
LAN Card	

📶 Point

When executing the Advanced Copy function of ETERNUS DX60/DX80/DX80 S2/DX90/DX90 S2, it is necessary to register the Advanced Copy license to the License Manager.
For the registration procedure of the Advanced Copy license, refer to "Appendix E About ETERNUS SF License Manager".

2.2.2 Software requirements

2.2.2.1 Basic software

Manager of AdvancedCopy Manager can only be installed in one of the following environments. Any other version of Solaris is not supported.

Solaris

- Solaris 8 Operating System

- Solaris 9 Operating System

- Solaris 10 Operating System

📘 Note

If the operating system is Solaris 10

The following functions of Solaris 10 are not supported:

- Containers (Zones)

- ZFS

Linux

- 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) * Operates in 32-bit compatible mode

- Red Hat Enterprise Linux AS (v. 4 for Itanium)

- Red Hat Enterprise Linux 5 (for Intel Itanium)

- Red Hat Enterprise Linux 5 (for x86)

- Red Hat Enterprise Linux 5 (for Intel64) * Operates in 32-bit compatible mode or 64-bit mode

Note
. . . .

Manager of AdvancedCopy Manager is not supported in an environment where SELinux (Security-Enhanced Linux) is enabled.
Disable SELinux at servers that operate Manager of AdvancedCopy Manager.

. . . .

2.2.2.2 Exclusion Software

AdvancedCopy Manager cannot coexist with the following software.

Solaris

- SystemWalker/StorageMGR-M

- SystemWalker/StorageMGR-A

- Softek AdvancedCopy Manager-M

- Softek AdvancedCopy Manager-A

- Symfoware Server 2.x - 5.x

- Symfoware Server Standard Edition 6.x or later

- Symfoware Server Client Function 6.x/7.x/8.x/9.x

- Symfoware Server Connection Manager 6.x/7.x/8.x/9.x

If any of the above-mentioned software is installed, it must be uninstalled first.

Refer to "2.2.4.1 Items to check before Installation" for further detail.

Linux

It cannot coexist with the following software.

- System environment is v 4 for x86 or v.4 for EM64T

  - Softek AdvancedCopy Manager-M

  - Softek AdvancedCopy Manager-A

  - Symfoware Server Client V7.0 or later

  - Symfoware Server Standard Edition V7.0 or later

  - Symfoware Server Connection Manager V7.0 or later

- System environment is v 4 for Itanium

  - Softek AdvancedCopy Manager-M

  - Softek AdvancedCopy Manager-A

  - Symfoware Server Client V7.0 or later

  - Symfoware Server Connection Manager V7.0 or later

- System environment is Linux 5 (for x86 / for Intel64 / for Intel Itanium)

  - Symfoware Server Client Function V9.0 or later

  - Symfoware Server Connection Manager 9.0 or later

If any of the abovementioned software is installed, it must be uninstalled first.

2.2.2.3 Symfoware confirmation

Symfoware components are internally bundled with the Manager of AdvancedCopy Manager.

No problems arise if Symfoware is not installed in the install destination system.

If Symfoware is installed, the Symfoware status must be confirmed after installation. Check that the installed Symfoware server is the following level:

Solaris

- 32-bit version

  - Symfoware Server Enterprise Edition 6.0 - 9.x

- 64-bit version

  - Symfoware Server Enterprise Extended Edition 6.0 - 9.x

If it was installed previously at another level it needs to be uninstalled and the appropriate level installed.

Note that the software versions and levels differ in accordance with the system environment where Symfoware is installed. Refer to the related software manuals for details.

Note
. . . .

Symfoware cannot operate in an environment where standard security operations are selected during installation.

. . . .

Linux

- System environment of V4 for x86:

  - Symfoware Server Enterprise Edition V7.0 - V9.x

- System environment of v.4 for EM64T

  - Symfoware Server Enterprise Edition V8.0.1 - V9.x

- System environment of V4 for Itanium:

  - Symfoware Server Enterprise Extended Edition V7.0 - V9.x

- System environment of Linux 5 (for x86 / for Intel64 / for Intel Itanium)

  - Symfoware Server Enterprise Extended Edition V9.x

    or

  - Symfoware Server Enterprise Edition V9.x

If it was installed previously at another level it needs to be uninstalled and the appropriate level installed.

2.2.2.4 Estimation of Database area

The following database areas are required in order for the Manager of AdvancedCopy Manager to operate:

- Repository

  Repository for managing the information of devices managed by AdvancedCopy Manager

  This repository also contains management information such as history for backup restoration and replication.

Point
. . . .

When configuring a Tape Server on the Storage Management Server (Solaris version)

You must also estimate the dynamic resources used by the Tape Server. For details, see "7.3.2 Dynamic Disk Resources".

Repository

A database domain is needed in the directory of the following repositories.

- Directory for database file system

- Directory for RDB dictionary

- Directory for RDB log file

- Directory for repository data database space

The following Table 2.10 Capacity of required database areas provides information on the minimum space required for each database.

Table 2.10 Capacity of required database areas

Type	Necessary size on filesystem
Directory for Database file system	200 MB
Directory for RDB dictionary	50 MB
Directory for RDB log file	50 MB
Directory for repository data storage database space	See the estimation expression (minimum: 65 MB) given below.

Note

- Note the following when you store the above mentioned directory in the new device.

  A management block is required for operation with the filesystem when the filesystem is created. The size of the filesystem 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 filesystem it is created.

- Confirm the capacity of the filesystem by the df command etc., and confirm using the table above whether there is enough free space to support the requirements as listed.

The formula for estimating space requirements for repository data storage is set out below.

```
Capacity (MB) = {[(number of servers x 6 + total number of devices x 11) / 40] x 17+ 512}/
1024
```

- Number of servers = The total of Storage management servers and managing Storage servers.

- Total of devices = The total of devices (*1) to be managed by the AdvancedCopy Manager. Note that this total is not the total of devices connected to all the Storage servers.

  *1: Depending on the Storage server to be managed, the "device" corresponds to the following:

Table 2.11 Storage Server OS type and meaning of "device"

Storage server type	Correspondence to the "device"
Windows	Partition
Solaris	Slice
HP-UX	LUN
Linux	Partition
AIX	LUN

When the Storage 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.

 Note

- Although the four directories can be created on the same device, for reliability and performance considerations, Fujitsu recommends preparing these directories on another partition.

- When there are two or more Storage servers, define the number to be estimated as the total number on all Storage servers. When cluster operation is used, consider not only logical servers but also physical servers.

- Round up 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.If the calculated capacity and the prepared partition free space are the same, then after the database is created, the directory usage rate (capacity) may be 100%. This is not a problem.

- 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.

2.2.3 Essential Resources

This section describes the resources required by the software.

When Tape Manager is configured on this Server, estimate the dynamic resources used by Tape Manager. For details, see the "Chapter 7 Installation of Tape Manager"

2.2.3.1 Static Disk Resources

The following table lists the amount of disk space required for each directory when this software is newly installed. If necessary, expand the size of the file system.

Table 2.12 Disk space requirement at installation

No.	Directory	Disk space requirements (Unit: MB)		Remarks
		Solaris	Linux	
1	/$DIR1	580	580	-
2	/$DIR2	0.2	1	-
3	/$DIR3	0.2	1	-
4	/opt	150	120	When the program directory name specified at the time of installation is something other than /opt

- "$DIR1" is the program directory name to be specified when you install this software product.

- "$DIR2" is the environment setup directory name to be specified when you install this software product.

- "$DIR3" is the variable data storage directory name to be specified when you install this software product.

2.2.3.2 Dynamic Disk Resources

To use this software product, the disk space for each directory (reference) listed in the following table is required for installation, in addition to that described in "2.2.3.1 Static Disk Resources". If there is not enough space, expand the size of the file system.

[Estimated disk space requirements for the database area]

For details, see the "2.2.2.4 Estimation of Database area"

Table 2.13 Disk space requirement during operation

No.	Directory	Disk space requirement (Unit: MB)	Operation
1	/$DIR2	(a+35 x b)/1024	For Backup Management
2	/$DIR2	(1.1 x c)/1024	For Replication Management
3	/$DIR2	0.4	Mandatory
4	/$DIR3	13	Mandatory
5	/$DIR3	13+4xd	Cluster operation.
6	/var	106	Mandatory.

- "$DIR2" is the environment setup directory name to be specified when you install this software product.

- "$DIR3" is the program directory name to be specified when you install this software product.

- a: Number of backup disks

- b: Number of transaction disks

- c: Number of volume pairs for replication management

- d: Number of transactions (include local transaction)

2.2.3.3 Memory Requirements

To operate this software product, the amount of memory listed in the following table is required.

Table 2.14 Memory Requirements

No.	Memory requirement (Unit: MB)	Operation
1	150	Performs operation using 16 partitions of transaction volume and 60 partitions of backup volume for all 128 partitions.
2	10	Executing a 1-slice backup command in 16 slices of transaction volume and 60 slices of backup volume

2.2.3.4 Swap Space Requirements

To operate this software product, the swap space listed in the following table is required. If the requirements exceed the provided swap area, expand it.

Table 2.15 Swap Space Requirements

No.	Swap area (Unit: MB)	Operation
1	300	Performs operation using 16 slices of transaction volume and 60 slices of backup volume for all 128 slices.

2.2.4 Installation

This section describes how to install the Manager agent of AdvancedCopy Manager

2.2.4.1 Items to check before Installation

Confirm whether there is enough disk space to install this software. Please refer to "2.2.3.1 Static Disk Resources" for the size of the disk that this software uses. You will need to reconfigure the disk partition composition when there is not enough disk space.

Solaris

Check that SystemWalker/StorageMGR, Softek AdvancedCopy Manager and ETERNUS SF AdvancedCopy Manager are not installed using the following command at the command line.

```
# pkginfo -l FJSVswsts
```

If SystemWalker/StorageMGR is installed, uninstall it using the following methods.

- SystemWalker/StorageMGR is installed when displayed in the output result as SystemWalker/StorageMGR. Distinguish M/A and SE/EE from this output result, confirm the version. Uninstall it with reference to installation instructions for SystemWalker/StorageMGR.

- Softek AdvancedCopy Manager is installed when displayed in the output result as Softek AdvancedCopy Manager. Uninstall it with reference to installation instructions for Softek AdvancedCopy Manager.

- ETERNUS SF AdvancedCopy Manager is installed when displayed in the output result as ETERNUS SF AdvancedCopy Manager.

Use the following commands to confirm whether the installed ETERNUS SF AdvancedCopy Manager is a Manager or an Agent:

```
# pkginfo -l FJSVswssc
```

If this operation results in a package being displayed in the output result, the Manager is installed, uninstall the Manager, with reference to "Solaris/Linux Platform" under "Uninstall of Manager.

If a package is not displayed in the output result, the Agent is installed. Refer to "Solaris/Linux/HP-UX/AIX Platform" under "Uninstall of Agent" and uninstall the Agent.

Linux

Confirm Softek AdvancedCopy Manager or ETERNUS SF AdvancedCopy Manager is not installed.

```
# rpm -qi FJSVswsts
```

If it is installed, uninstall it using the following methods.

- Softek AdvancedCopy Manager is installed when displayed in the output result as Softek AdvancedCopy Manager. Uninstall it with reference to the appropriate Software Overview of Softek AdvancedCopy Manager.

- ETERNUS SF AdvancedCopy Manager is installed when displayed in the output result as ETERNUS SF AdvancedCopy Manager.

Use the following commands to confirm whether the installed ETERNUS SF AdvancedCopy Manager is a Manager or an Agent:

```
# rpm -qi FJSVswssc
```

If this operation results in a package being displayed in the output result, the Manager is installed. Uninstall the Manager, with reference to "Solaris/Linux Platform" under "Uninstall of Manager".

If a package is not displayed in the output, the Agent is installed. Refer to "Solaris/Linux/HP-UX/AIX Platform" under "Uninstall of Agent" and uninstall the Agent.

Saving the environment setup file (Solaris/Linux)

There are two or more environmental definition files in this software. Please save environmental setting file before deleting this software if needed, when using by re-installation etc.

```
# /opt/FJSVswsts/bin/swstresback Dir-Name
```

2.2.4.2 Software Installation

To install the software, refer to the separate procedures given below for the Solaris and the Linux.

Solaris

1. Log in to the system as a root (superuser).

```
# shutdown -y -g0 -i0
```

2. Activate the system in single user mode.

```
[ok prompt] boot -s (*1)
```

Information

....

Input the following command at the ok prompt.

```
Type Ctrl-d to proceed with normal startup.
(or give root password for system maintenance): superuser password
```

....

3. Mount the local file system

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

4. Mount the CD-ROM (Manager Program) for this software product.

```
# mount -F hsfs -o ro /dev/dsk/c0t4d0s0 <CD-ROM mount point>
```

Information

....

The device name of the CD-ROM device differs for different devices/systems.

....

5. When you execute swsetup (Installation command) for this software, multiple packages are installed at one time. The swsetup command calls the pkgadd command, and installs all the packages listed in "A.1 Solaris Platform" of "Program Components of AdvancedCopy Manager".

```
# cd <CD-ROM mount point>/mgr-sol
# ./swsetup
```

6. The install directory and the initial value of the character code are displayed.

To change the following information, input "y". To leave the information as is, input "n" or press the Return key, and then go to step 9.

  - Install directory for the packages (Program install directory)
    The initial value is /opt

  - Install directory for the environment setup file (Fixed configuration directory)
    The initial value is /etc/opt.

  - Install directory for the files to be modified, such as log file or temporary file (Modifying configuration directory)
    The initial value is /var/opt.

```
# ./swsetup
swsetup: Installer is preparing for installation...
```

```
+-----------------------------------------------------------+
|                ETERNUS SF AdvancedCopy Manager            |
|                           14.2                            |
|                Copyright FUJITSU LIMITED 2010             |
+-----------------------------------------------------------+


Welcome to Setup.
This program will install "AdvancedCopy Manager" on your system.


Manager 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]
```

7. When you specify "y" in step 6, specify the install directory.

```
Please specify install directory: (default: /opt) [?,q] /opt

Please specify fixed configuration directory: (default: /etc/opt) [?,q]  /etc/opt

Please specify variable configuration directory: (default: /var/opt) [?,q] /var/opt
```

8. To confirm the message, input "n," or press the Return key. To make any other changes, input "y."

```
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]
```

9. To confirm the final message and start the installation, input "y." To cancel the installation, input "n."

```
Do you want to continue with the installation of this package? [y,n,?]
```

10. Installation begins. An example of the display is shown below.

```
swsetup: Starting installation of AdvancedCopy Manager...
swsetup: Starting installation of Symfoware...
    ---
Installation of <FJSVswstf> was successful.
Installation of <FJSVswtrc> was successful.
Installation of <FJSVgrapi> was successful.
    ---
```

11. When the installation terminates normally, the system displays the following message.

```
swsetup: AdvancedCopy Manager was installed successfully.
```

12. Execute the following command, then press the eject button to eject the CD-ROM for this software.

```
# cd /
# umount <CD-ROM mount point>
```

13. Reboot the system.

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

14. Refer to "3.2 Solaris/Linux Platform" under "Customization of Storage Management Server" and set up the environment.

   If the Tape Manager is to be installed on this server, refer to "Chapter 7 Installation of Tape Manager" and "Chapter 8 Customization of Tape Server"to install the software and set up the environment.

15. Confirm and Install the ETERNUS SF License Manager.

   Check whether the ETERNUS SF License Manager is installed or not.

```
# pkginfo -l FJSVesflm
```

   If the package information of the ETERNUS SF License Manager is not displayed, install the ETERNUS SF License Manager by referring the "E.2.2 Installation on Solaris environment".

Linux

1. Log in to the system as a root (superuser), and then execute a shutdown of the system.

2. Mount the CD-ROM (Manager Program) for this software product.

   The following example is for mounting the disk at /dev/cdrom (set in /etc/fstab as the default mount for CD media).

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

3. When you execute swsetup (Installation command) for this software, multiple packages are installed at one time. It differs according to the version of the system environment.

   [System environment of v.4 for x86 or v.4 for EM64T]

```
# cd <CD-ROM mount point>/mgr-linux/linux4_x86
# ./swsetup
```

   [System environment of v.4 for Itanium]

```
# cd <CD-ROM mount point>/mgr-linux/linux4_ia64
# ./swsetup
```

   [System environment of 5 for x86]

```
# cd <CD-ROM mount point>/mgr-linux/linux5_x86
# ./swsetup
```

   [System environment of 5 for Intel64]

```
# cd <CD-ROM mount point>/mgr-linux/linux5_x64
# ./swsetup
```

   When the system environment applies to either of the following condition, you must adopt the case of [System environment of 5 for Intel64].

   - Copy Control Module function of the previous version is installed.

   - Copy Control Module function which upgraded from the previous version is installed.

   - Manager function of the previous version is installed.

   [System environment of 5 for Intel Itanium]

```
# cd <CD-ROM mount point>/mgr-linux/linux5_ia64
# ./swsetup
```

4. The install directory and the initial value of the character code are displayed. To change the following information, input "y." To leave the information as is, input "n" or press the Return key, and then go to step 7.

- Install directory for the packages (Program install directory)
  The initial value is /opt

- Install directory for the environment setup file (Fixed configuration directory)
  The initial value is /etc/opt.

- Install directory for the files to be modified, such as log file or temporary file (Modifying configuration directory)
  The initial value is /var/opt.

```
# ./swsetup
swsetup: Installer is preparing for installation...
+----------------------------------------------------------+
|                ETERNUS SF AdvancedCopy Manager           |
|                          14.2                            |
|                Copyright FUJITSU LIMITED 2010            |
+----------------------------------------------------------+


Welcome to Setup.
This program will install "AdvancedCopy Manager" on your system.



Manager 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]
```

5. When you specify "y" in step 4, also specify the install directory and the character code.

```
Please specify install directory: (default: /opt) [?,q] /opt

Please specify fixed configuration directory: (default: /etc/opt) [?,q]  /etc/opt

Please specify variable configuration directory: (default: /var/opt) [?,q] /var/opt
```

6. To confirm the message, input "n", or press the Return key. To make any other changes, input "y".

```
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]
```

7. To confirm the final message and start the installation, input "y". To cancel the installation, input "n".

```
Do you want to continue with the installation of this package? [y,n,?]
```

8. Installation begins. An example of the display is shown below.

```
swsetup: Starting installation of AdvancedCopy Manager...
SymfoWareDB is installing.....
```

```
SymfoWareDB is successfully installed.
swsetup: Starting installation of package. : FJSVswstf


./cmd/swpkgadd.sh FJSVswstf /opt/swstorage/etc/swinst.res



FJSVswstf RPM installing......
rpm -ivh --nodeps ./pkg/FJSVswstf-14.2-01.i386.rpm
Preparing...               ########################################### [100%]
   1:FJSVswstf             ########################################### [100%]
swsetup: Package is successfully installed. : FJSVswstf
            ...
```

9. When the installation terminates normally, the system outputs the following message.

```
swsetup: AdvancedCopy Manager was installed successfully.
```

10. Execute the following commands, and then remove the CD-ROM from the drive.

```
# cd /
# umount /dev/cdrom
# ejectcdrom
```

11. Reboot the system.

```
# shutdown -r now
```

12. Refer to "3.2 Solaris/Linux Platform" under "Customization of Storage Management Server" and set up the environment.

If the Tape Manager is to be installed on this server, refer to "Chapter 7 Installation of Tape Manager" and "Chapter 8 Customization of Tape Server" to install the software and set up the environment.

13. Confirm and Install the ETERNUS SF License Manager.

Check whether the ETERNUS SF License Manager is installed or not.

```
# rpm -qi FJSVesflm
```

If the package information of the ETERNUS SF License Manager is not displayed, install the ETERNUS SF License Manager by referring the "E.2.3 Installation on Linux environment".

Chapter 3 Customization of Storage Management Server

This chapter details how to customize the Storage Management Server.

3.1 Windows Platform

This section describes how to customize the Windows version of Storage Management server.

3.1.1 Flow chart of Customizing Storage Management Server

The flow of customizing the Storage Management Server is shown below. AdvancedCopy Manager automatically performs the steps shown in green in the flowchart.

Figure 3.1 Flow chart of customizing Storage Management Server
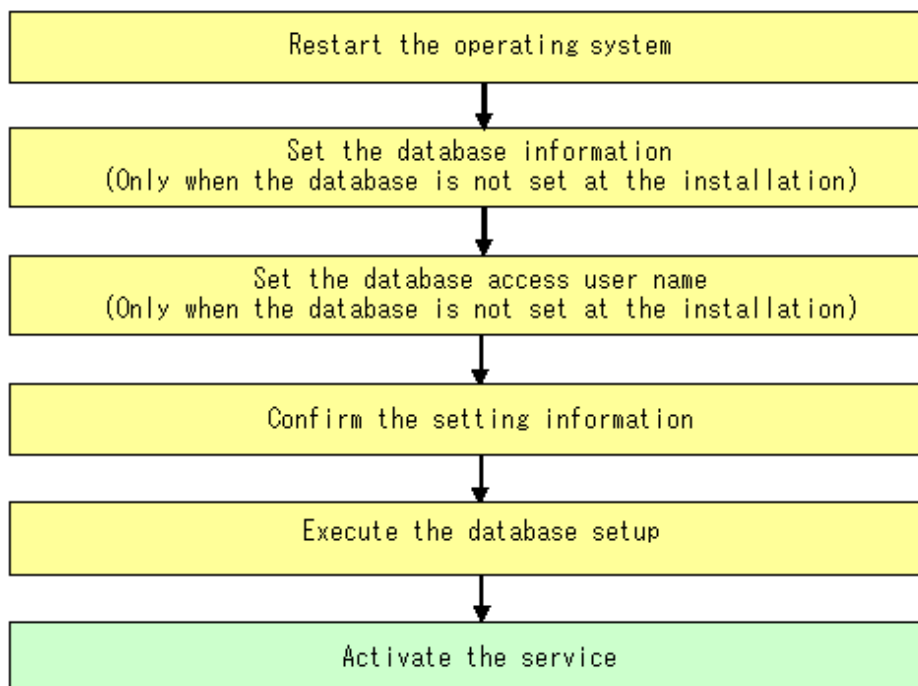
3.1.2 Details of Non-cluster Storage Management Server Customization

To set up a Storage Management Server, perform the following steps:

Note

If the Storage Management Server operates in a cluster, then the following procedure is unnecessary because the configuration is specified during cluster setup.

For details on how to configure the cluster server environment, refer to the "ETERNUS SF AdvancedCopy Manager Operator's Guide for Cluster Environment", chapter "Customization of Storage Management Server Transactions and Storage Server Transactions".

Perform the following steps:

1. Restart the system in order to make it the installed environment.

   If the system has already been rebooted while installing the manager of AdvancedCopy Manager, then go to step 2.

When logging on to the system, log on using an account that belongs to the Administrators group, such as the Administrator user, and that starts with an alphabetic character and is comprised of underscores and alphanumeric characters. If logon is performed using a different account, the operations in step 2 and subsequent steps may fail.

2. Set the database information.

Please record the logon user who set the database information.
This logon user is needed for the unsetup the database information.

The unsetup the database information may be failed, when the unsetup is executed by a user different from the user who executed the setup.

Executing this process with the service listed below must be paid attention.

- Terminal service (via a remote desktop connection)

  If the Storage Management Server is running on Windows Server 2003, the Terminal Service must be used by making a console session connection to it. If used by not making a console session connection, it may cause output of a message such as "The database name could not be defined" and not work properly. Refer to the following link for information on how to make console session connections:
  http://support.microsoft.com/kb/947723
  http://support.microsoft.com/kb/278845

Do not use service listed below, as it will not work properly.

- Telnet server service

If the [Environment Setting] operation was not performed during the installation of the AdvancedCopy Manager (ACM) Manager agent installation, the following window is displayed after restarting the system. Change the displayed information if necessary, and click the [Continue] button. Note: If the [Environment Settings] operation was performed during installation of the Manager Agent, the window below will not be displayed.

If this window appears during the install of the Storage Management Server for cluster operation, click the [Cancel] button.

- Database creation folder

    Enter the folder name where each database will be stored.

    Specify the absolute path name including the drive name. The folder name specified here must be a new NTFS folder. If the specified folder has been formatted by any other system or if it is an existing folder, change it to another folder name.

    Do not select [Compress drive to save disk space] in the [General] tab of the properties for the drive in which each respective database will be created. If drive compression is performed, then a performance overhead will occur (compared to a normal I/O process). As a result, an access error or OS resource error may be caused due to the high I/O usage.

    Do not compress or encrypt the folders where the database is created. To make sure these settings are not used, in Windows Explorer right-click the folder in question, and in the context menu select the [Properties] item. In the [General] tab, click [Advanced] - this will open the [Advanced Attributes] dialog box. In the [Compress or Encript Attributes] group box, make sure that none of the options is selected.

    - [Compress contents to save disk space] - Similar to drive compression, if this option is selected, then a performance overhead will occur (compared to a normal I/O). As a result, an access error or OS resource error may be caused due to the high I/O usage.

    - [Encrypt contents to secure data] - If this option is selected, then the database will not be able to decrypt the data, and an access error will occur.

    ![Note icon] Note
    ....
    When specifying the absolute path with drive name, use appropriate operating system syntax.
    ....

- Database size

    Specify the database size in MB. Use the value calculated by the "Calculating the repository capacity:." If specifying the default value, check the [Default size] button.

3. Set the IP address and database access user.

   Enter the IP address of the Storage Management Server (local system) that communicates with a Storage Server, and then the user name/password with which the database will be accessed. The specified user name needs to be the local logon authority or the domain logon authority.

   Click the [Settings] button. (This window will not display if the [Environment Settings] operation was performed during the installation)

The user name and password must satisfy the following conditions:

   - Specify a username and password that are valid in the operating system.

   - Specify a username and password that are 18 bytes or less.

P Point
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   - If it does not conflict with anything else, it is recommended that you use the startup account that was specified earlier in the installation of Manager of AdvancedCopy Manager when assigning a user.

   - If you select a new name here, such as repouser, register it in the system and add the local logon authority or the domain logon authority to it.
     Specify the appropiate user name from the following table for the server type being used.

Server type		
Domain controller	Machine belonging to a domain	WORKGROUP (not belonging to a domain)
Domain user	Local user	Local user

   - If you specify a username that is already registered in the system, use the same characters (uppercase, lowercase, etc.) as in the already-registered username.
. . . .

4. Verify the configuration information.

   Confirm the displayed database settings and click [Start]. This automatically performs database setup processing after restarting the system. If the [Environment Settings] operation was performed during installation of the AdvancedCopy Manager's Manager, this window would be initially displayed after restarting the system.
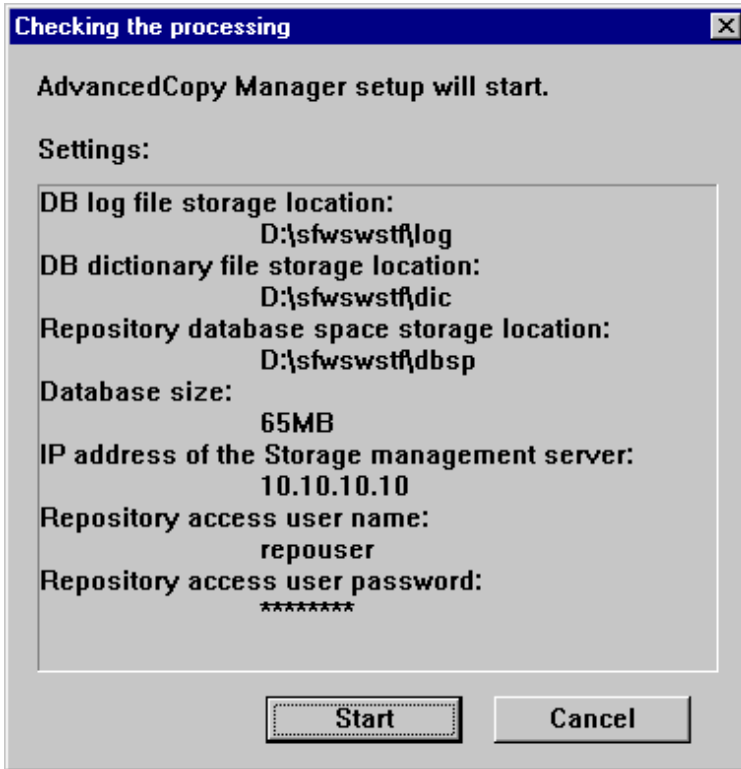
5. The DB Setup processing started.
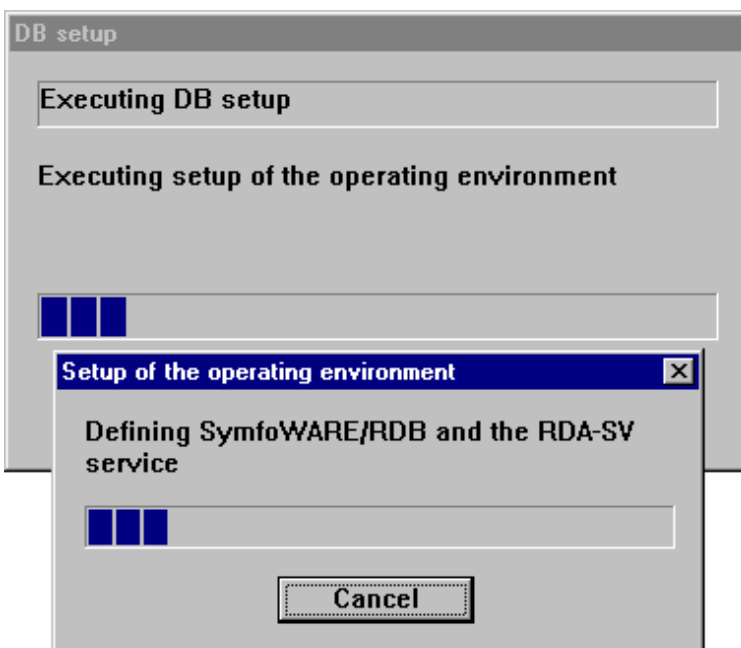
6. The DB Setup processing is completed.

   The DB Setup completion window is displayed; click the [Close] button.
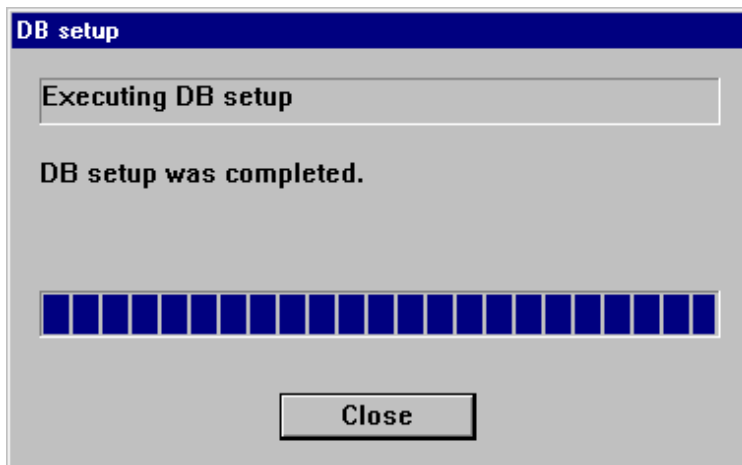
7. Activate each service.

   Check if the following services of the AdvancedCopy Manager have been activated. If not, activate these services.

   For more information on the services, see "Starting and stopping services" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide (Windows)."

   - AdvancedCopy Manager ACL Manager

   - AdvancedCopy Manager COM Service

   - AdvancedCopy Manager GUI Service

   - SymfoWARE RDA RDBSWSTF

   - SymfoWARE RDB RDBSWSTF

 Note
. . . .

If any of the following cases apply, refer to "If using an environment where Windows firewall is enabled", and set up the Windows firewall.

   - Windows Server 2003 Service Pack 1 is applied

   - Windows Server 2003 R2

   - Windows Server 2008

   - Windows Server 2008 R2
. . . .

8. Saving a database

   As a precaution against unexpected events, make a backup of the database whose environment has already been set up.

   Refer to "Saving a database", in the "ETERNUS SF AdvancedCopy Manager Operator's Guide (Windows)" for further information.

3.1.3 Port Filtering configuration

The Table below shows the number and purpose of each port used to operate the Storage Management Server. If port filtering settings need to be made, refer to the description in the "Purpose" column to determine the object to connect to the port.

Table 3.1 Port numbers and purposes

Service	Reception port	Purpose
Communication service	1226/tcp	This service is used for communications with managed Storage Servers.
Remote access service	9851/tcp	This service is used for communications with client machines that use the GUI client window.
Exclusive control service	9852/tcp	This service is used for communications with client machines that use the GUI client.
Authentication mechanism service	4660/tcp	This service is used only for communications within the local machine.
Repository service	2004/tcp	This service is used only for communications within the local machine.
Communication service for cluster systems (*1)	Any-number/tcp	For Storage Management Server jobs, this service is used for communications with managed Storage Servers. For Storage Server jobs, this service is used for communications with the Storage Management Server, and for communications with remote Storage Servers in inter-server replications

*1 In a cluster system, this service is required for each job that is created during the cluster setup. The reception port is any port number that was specified for that job.

🔷 Note

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If port numbers have been entered other than those that were initially displayed at installation, replace the port numbers listed in the Table above with the port numbers that have been entered.

. . . .

3.1.4 Registering Advanced Copy License

When executing the Advanced Copy function of ETERNUS DX60/DX80/DX80 S2/DX90/DX90 S2, it is necessary to register the Advanced Copy license to the License Manager.

Register the Advanced Copy license by referring to "Appendix E About ETERNUS SF License Manager".

3.2 Solaris/Linux Platform

This section describes how to customize the Solaris and Linux version Storage Management servers.

3.2.1 Flow of Customizing Storage Management Server

The flow of customizing the Storage Management Server is shown below. AdvancedCopy Manager automatically performs the steps shown in green in the flowchart.

Figure 3.2 Flow of customizing Storage Management Server
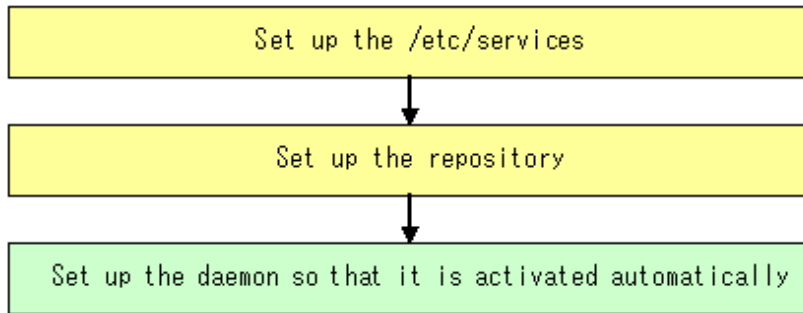
3.2.2 Configuring the port number (/etc/services file)

Operation of the Storage Management Server requires the following port numbers listed below.

Therefore, prepare the port numbers to be used in the Storage Management Server and save them to the/etc/services file.

The below shows the port numbers to be written to the /etc/services file.

The Table 3.2 Port numbers and purposes of port Numbers below lists each service, and shows the relevant port number and describes its intended purpose. If settings such as port filtering are required, refer to the description in the "Purpose" column to determine the object to connect to the port before entering these settings.

Contents of the /etc/services file

```
#service-name   port-number/protocol-name
stgxfws  1226/tcp
rdaswstf 2004/tcp
rmiswstf 9851/tcp
semswstf 9852/tcp
smaclmgr 4660/tcp
```

If the port numbers that set have already been used in the installed system, assign other numbers of available ports.

Note

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Solaris

The following messages are displayed when an error occurs during the configuration of a port number. Check the setup.

component start : sh /opt/FJSVswstf/bin/stgdbcom start

SymfoWARE/RDB for AdvancedCopy Manager has been successfully started!!

RDA-SV for AdvancedCopy Manager failed to start!!

. . . .

Table 3.2 Port numbers and purposes

Service name	Reception port	Purpose
stgxfws	1226/tcp	This service is used for communications with managed Storage Servers.
rdaswstf	2004/tcp	This service is used only for communications within the local machine.
rmiswstf	9851/tcp	This service is used for communications with client machines that use the GUI client.
semswstf	9852/tcp	This service is used for communications with client machines that use the GUI client.

Service name	Reception port	Purpose
smaclmgr	4660/tcp	This service is used only for communications within the local machine.
stgxfws_<logical_node_name> (*1)	Any-number/tcp	For Storage Management Server jobs, this service is used for communications with managed Storage Servers. For Storage Server jobs, this service is used for communications with the Storage Management Server, and for communications with remote Storage Servers in inter-server replications.

*1 In a cluster system, this service is required for each job that is created during the cluster setup. The logical node name is the name that was specified during the cluster setup, and the reception port is any port number that was specified for that job

Note
. . . .

If port numbers other than those listed in the Contents of the /etc/services file above have been specified in the /etc/services file, use the port numbers in the /etc/services file instead of the port numbers listed in the "Reception port" column of the Table 3.2 Port numbers and purposes: Port numbers and purposes above.
. . . .

3.2.3 Configuring up the Repository

This section explains how to set up the repository used to operate the Storage Management Server.

Use the following procedure to set up the repository:

1. 3.2.3.1 Estimation of database area

2. 3.2.3.2 Directory creation

3. 3.2.3.3 Kernel parameter tuning

4. 3.2.3.4 Database creation

3.2.3.1 Estimation of database area

See "Repository" and estimate the size of the database area.

3.2.3.2 Directory creation

In "Repository" it was explained that database areas are required in the following directories:

- The directory for database file

- The directory for RDB dictionary

- The directory for RDB log file

- The directory for repository data database space

In this Chapter, these directories are created on the device where the database area of a capacity indicated in "Repository" can be stored.

Note
. . . .

- Although the four directories can be created on the same partition, for reliability and update performance considerations, Fujitsu recommends preparing these directories on another partition.

- When the directories are used on a cluster system, create them on the shared disk.
. . . .

3.2.3.3 Kernel parameter tuning

The Storage Management Server requires tuning of the kernel parameters, which are necessary for operation.

3.2.3.3.1 Solaris Platform

Refer to the following tables corresponding to each Solaris release for information about which kernel parameters require tuning and their values. Refer to the Solaris manuals for more information about kernel parameters.

📝 Note

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

- A method for making entries in the /etc/project file under Solaris 10 has been added, in addition to the previous method for making entries in the /etc/system file.

Solaris 8 and 9 and Solaris 10 (tuning using /etc/system)

Tuning values for kernel parameters

Table 3.3 Tuning values for kernel parameters

Resource	Parameter	Required value	Standard configuration
Shared memory	shmsys:shminfo_shmmax	2150000	Maximum value
	shmsys:shminfo_shmmni	80	Addition
	shmsys:shminfo_shmseg (*1)	60	Maximum value
Semaphore	semsys:seminfo_semmni	310	Addition
	semsys:seminfo_semmns (*2)	610	Addition
	semsys:seminfo_semmnu (*2)	512	Addition
	semsys:seminfo_semmsl	35	Maximum value
Message	msgsys:msginfo_msgmax (*2)	512	Maximum value
	msgsys:msginfo_msgmnb	4096	Maximum value
	msgsys:msginfo_msgmni	3	Addition
	msgsys:msginfo_msgtql	100	Maximum value

*1 The parameters need not be set for Solaris 9 and later.

*2 This setting is not required under Solaris 10.

Tuning procedure

To edit the kernel parameters, either add tuning records to the /etc/system file or change the value of existing records.

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 the table "Table 3.3 Tuning values for kernel parameters" above, and compare 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. (This is only an example. Use suitable values for your environment.)

```
set shmsys:shminfo_shmmax = 20000000
set shmsys:shminfo_shmmni = 180
set shmsys:shminfo_shmseg = 60
set semsys:seminfo_semmni = 320
set semsys:seminfo_semmns = 670
set semsys:seminfo_semmnu = 542
set semsys:seminfo_semmsl = 35
set msgsys:msginfo_msgmax = 2048
set msgsys:msginfo_msgmnb = 4096
set msgsys:msginfo_msgmni = 53
set msgsys:msginfo_msgtql = 140
```

4. To register the new kernel parameter values in the system, reboot the system.

   Use the following command to reboot the system:

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

5. Restart the system, and then use the output of the following command to check that the new settings have been applied.

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

Solaris 10 (tuning using /etc/project)

📌 **Note**

....

- Care is required when setting values if other software that only supports tuning using the /etc/system file is used on a server where this product is used.

- If the /etc/system file and the /etc/project file are both used for tuning, refer to the operating system documentation to set the appropriate values.

- If the /etc/project file is used for tuning, ensure that you do not set values that are lower than the Solaris default values.

....

AdvancedCopy Manager runs under the following project:

- system project

  This is the project in which daemons such as those in the initialized operating system status run.

- user.root project

  Processes that run with root permissions in the initialized operating system status belong to this project.

Tuning values for resource control

Table 3.4 Tuning values for resource control

Resource	Parameter	Required value	Standard configuration	Privilege level
Shared memory	project.max-shm-memory	172,000,000	Addition	privileged
	project.max-shm-ids	80	Addition	privileged
Semaphore	project.max-sem-ids	310	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.

Tuning procedure

To edit parameters, edit the /etc/project file.

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

2. Refer to the "Tuning values for resource control" Table 3.4 Tuning values for resource control above, and compare 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.

   (Note that this is an example only.)

```
# 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 "projects -l" command.

   The following example shows how the confirmation command executes.

```
# 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 following is an example of executing the commands. Please refer to the manual etc. of Solaris for details of the command.

   - system projects

   ```
   # newtask -p system
   ```

   - user.root projects

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

6. Check the kernel parameter values after modification.

   The following is an example of executing the commands. Please refer to the manual etc. of Solaris for details of the command.

   - system projects

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

   - user.root projects

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

3.2.3.3.2 Linux Platform

The Table 3.5 Kernel parameter required values required for AdvancedCopy Manager operation below lists the kernel parameters to be tuned and their values.

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

Note

- If a value has not been set for a parameter in the /etc/sysctl.conf file, the operating system default value is used for the parameter. In such cases, make an addition or change based on the operating system default value. To display the values being used by the operating system, execute the sysctl command with the "-a" option. See the section about the man command of the operating system for details of the sysctl command.

- For a parameter described as "Maximum value" under "Parameters already set" in the Table 3.5 Kernel parameter required values required for AdvancedCopy Manager operation below, specify the larger of the tuning value and the specified or default value. For a parameter listed as "Addition", specify the value obtained by adding the tuning value to the specified or default value.

Table 3.5 Kernel parameter required values required for AdvancedCopy Manager operation

Resource	Parameter	Required value	If parameters have already been set
Shared memory	kernel.shmmax	2097152	Maximum value
	kernel.shmmni	50	Addition
Semaphore	The 1st value of kernel.sem (*1)	30	Maximum value
	The 2nd value of kernel.sem (*1)	600	Addition
	The 4th value of kernel.sem (*1)	300	Addition
Message	kernel.msgmax	512	Maximum value
	kernel.msgmnb	4096	Maximum value
	kernel.msgmni	3	Addition

*1 Because the kernel.sem parameter is specified in the following format, it indicates the order of the four set values.

For the third value, specify the specified or default value.

kernel.sem = para1 para2 para3 para4

The following is an example of an edited /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 reflect 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 reflect the tuning.

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

3.2.3.4 Database creation

Start Database Merge Setup to create a database environment and database.

The procedure is described below.

· ·

- If the Storage Management Server operates in a cluster, then the following procedure is unnecessary because the configuration is specified during cluster setup.

- For details on how to configure the cluster server environment, refer to "ETERNUS SF AdvancedCopy Manager Operator's Guide for Cluster Environment", chapter "Customization of Storage Management Server Transactions and Storage Server Transactions".

- In advance, refer to "3.2.3.1 Estimation of database area","3.2.3.2 Directory creation" and "3.2.3.3 Kernel parameter tuning" and verify the IP address of the Storage Management Server.

- To activate the database integration setup, log in as the root user.

- Although the four directories can be created on the same partition, for reliability and update performance considerations, Fujitsu recommends preparing these directories on another partition.

- Execute it at the locale specified at the time of installation on the Storage Management Server.

- Before activating the database integration setup, check and make sure the system is set to use a shadow password. The system should always be operated with the use shadow password setting turned on.

· ·

1. Activate the database integration setup.

   Enter the following command to activate the database integration setup.

   ```
   # /opt/swstorage/bin/stgdbset
   ```

📖 Note
· ·

When operating as a cluster system, database integration setup is activated from the cluster setup command, so this command need not be entered.

· ·

2. Confirm whether to continue processing.

   To continue processing, enter "y". To not continue processing, enter "n".

   In the following display example, the machine name is displayed in parentheses on the second line.

   ```
   ////////////////////////////////////////////////////////////////
        AdvancedCopy Manager Storage Management Server (kiku)
                    Common environment creation
   ////////////////////////////////////////////////////////////////


     +------------------------------------------------------------+
     |   A common environment for the AdvancedCopy Manager        |
     |   Storage Management Server will be created.               |
     |  [Notes]                                                   |
     |   Prepare the following directories before starting processing.|
     |  ========================================================= |
     |                                                            |
     |   1) Directory for the DB file                             |
     |   2) Directory for the RDB dictionary                      |
     |   3) Directory for the RDB log file                        |
     |   4) Directory for the DB space to store the repository data   |
     |                                                            |
     +------------------------------------------------------------+


            Do you want to continue with processing? [y/n] ==> y
   ```

3. Enter the directory name for database files.

   Use the absolute path to enter the directory that has been created as a directory for database files in 3.2.3.2 Directory creation.

```
///////////////////////////////////////////////////////////////////
      AdvancedCopy Manager Storage Management Server (kiku)
                  Common environment creation
 //////////////////////////////////////////////////////////////////


----------------------< DB device setting >----------------------
         Enter the directory name for the DB file.
          [Notes]
           Enter the absolute path name of the directory.
                   Enter ==> /aaa1
```

4. Enter the directory name for the RDB dictionary.

   Enter the directory name that has been created as a directory for the RDB dictionary in 3.2.3.2 Directory creation.

```
///////////////////////////////////////////////////////////////////
      AdvancedCopy Manager Storage Management Server (kiku)
                  Common environment creation
 //////////////////////////////////////////////////////////////////


----------------------< DB device setting >----------------------
         Enter the directory name for the RDB dictionary.
          [Notes]
           Enter the absolute path name of the directory.
                   Enter ==> /aaa2
```

5. Enter the directory name for RDB log files.

   Enter the directory name that has been created as a directory for RDB log files in 3.2.3.2 Directory creation.

```
///////////////////////////////////////////////////////////////////
      AdvancedCopy Manager Storage Management Server (kiku)
                  Common environment creation
 //////////////////////////////////////////////////////////////////


----------------------< DB device setting >----------------------
         Enter the directory name for the RDB log file.
            [Notes]
           Enter the absolute path name of the directory.
                   Enter ==> /aaa3
```

6. Enter the directory name for a repository data database space and the repository data size.

   Enter the directory name that has been created as a directory for a repository data database space in 3.2.3.2 Directory creation. Then, enter the repository data size that has been estimated in "3.2.3.1 Estimation of database area". You must use an integer value in megabytes for this value (65 megabytes or more).

```
///////////////////////////////////////////////////////////////////
      AdvancedCopy Manager Storage Management Server (kiku)
                  Common environment creation
///////////////////////////////////////////////////////////////////


----------------------< DB device setting >----------------------
         Enter the directory for the DB space used to
         save repository data.

         [Notes]
           Enter the absolute path name of the directory.

                   Enter ==> /aaa4

         Enter the repository data size. (minimum: 65MB)
```

```
           [Notes]
             Enter only the number of 65MB or more values in MB unit.

                  Enter ==> 65
```

7. Verify the entered contents.

   If the entry is correct, press "y". To reenter the contents, press "n".

   After "y" is pressed, the entry is checked. If an error is detected, an error message is displayed and control returns to step 2.

   If "n" is pressed, control returns to step 2.

```
//////////////////////////////////////////////////////////////////
      AdvancedCopy Manager Storage Management Server (kiku)
                  Common environment creation
//////////////////////////////////////////////////////////////////

Directory name for the DB file ............/aaa1
Directory name for the RDB dictionary ...../aaa2
Directory name for the RDB log file ......./aaa3
Directory name for the DB space
          used to save repository data ..../aaa4
Repository data Size ......................65MB

          Okay? [y/n] ==> y
```

8. Confirm whether to continue the creation of the common environment for the Storage Management Server.

   To continue creation of the environment for the Storage Management Server, enter "y". To stop the process, enter "n".

```
//////////////////////////////////////////////////////////////////
      AdvancedCopy Manager Storage Management Server (kiku)
                  Common environment creation
//////////////////////////////////////////////////////////////////

  +--------------------------------------------------------------+
  |    Creation of the AdvancedCopy Manager Storage management   |
  |    server environment will start.                           |
  |  ========================================================== |
  |                                                              |
  |    Once processing has started, system information is rewritten.|
  |    Make sure that the environment allows execution          |
  |    before proceeding.                                       |
  |                                                              |
  +--------------------------------------------------------------+

          Do you want to continue with processing? [y/n] ==> y
```

9. The common environment of the Storage Management Server is created.

   The common environment of the Storage Management Server is created and the results can be displayed as required. An example of the execution results is shown below.

Note

If the confirmation message for overwriting the RDA-SV definition file is displayed on the screen during the process, enter "y".

```
Creation of database disk environment will start.

Creation of database disk environment is complete.
```

```
Creation of database operating environment will start.

Copying of the DB definition and setting files are complete.

Creation of a log management file is complete.

Creation of a RDB temporary log file is complete.

Creation of a RDB archive log file is complete.

Creation of a RDB dictionary and RDB directory file is complete.

Activation of RDB is complete.

Creation of database operating environment is complete.

Creation of database will start (basic section).

Definition of database is complete.

Definition of database space is complete.

Table definition will start.
.................
Table definition is complete.

Creation of database is complete (basic section).
                     .
                     .
                     .
Setup for replication management is complete.
```

10. Enter the IP address of the Storage Management Server

    Enter the IP address of the Storage Management Server that communicates with a Storage Server.

    If the Storage Management Server uses a logical IP address, enter the logical IP address.

    If the contents have been entered correctly, the database integration setup ends.

```
//////////////////////////////////////////////////////////////////
      AdvancedCopy Manager Storage Management Server (kiku)
                    Database integrated setup
//////////////////////////////////////////////////////////////////


         Enter the IP address of the Storage Management Server.

       [Notes]
        For operating by a logical IP address,
        enter a logical IP address.

            ( format : ???.???.???.??? )

             Enter ==> 1.10.11.100


      Storage Management Server has been registered.
```

11. Enter the user name and password for repository access.

    Enter the user name and password for repository access.

    Enter the registered user name and password.

P Point

- It is recommended that a secure user other than root be used.

- Specify a username and password that is valid in the operating system.

- Specify a username and a password that are 18 bytes or less.

If the contents have been entered correctly, the database integration setup ends.

```
//////////////////////////////////////////////////////////////////
      AdvancedCopy Manager Storage Management Server (kiku)
                    Database integrated setup
//////////////////////////////////////////////////////////////////


        Enter the user name and password for accessing
        the repository of AdvancedCopy Manager.

         [Notes]
           We recommend you to input a general user other than root.
             Username           : user
             Password         :
             Password(Re-enter) :

Password for accessing the repository has been registered.

Database integrated setup ended normally.

#
```

See

For the password changing of the repository accessible user, refer to "Deleting a repository accessible user or changing a repository accessible user's password" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide".

12. A daemon is started.

    Use the following command to start a daemon.

    ```
    # /opt/swstorage/bin/startacm
    ```

13. Save the database.

    In case of a failure, save the database for which the environment has been set up.

    Refer to "Database save method" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide" for details on how to save the created database area.

3.2.4 Automatic Start of Daemons

Accessing data via the GUI client requires the daemons of the Storage Management Server to be running. The database setup and installation program configures the system so that these daemons are started automatically.

3.2.5 Registering Advanced Copy License

When executing the Advanced Copy function of ETERNUS DX60/DX80/DX80 S2/DX90/DX90 S2, it is necessary to register the Advanced Copy license to the License Manager.

Register the Advanced Copy license by referring to "Appendix E About ETERNUS SF License Manager".

Chapter 4 Installation of the Agent

This chapter explains the installation of the Agent of AdvancedCopy Manager.

4.1 Windows Platform

This section describes how to install the Windows edition of the Agent.

4.1.1 Hardware requirements

Machine model

A machine supports the Windows operating system to be loaded is required.

📌 **Note**

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The PRIMERGY FT model is not supported.

....

I/O devices

The following I/O devices are required to run this software.

Note that an AdvancedCopy license and appropriate cache table size settings are required. The settings required for the provided AdvancedCopy functions depend on the device type, so consult your Fujitsu systems engineer.

Table 4.1 Hardware requirements

Component name	Remarks
ETERNUS DX60/DX80/DX80 S2/DX90/DX90 S2 ETERNUS DX410/DX410 S2/DX440/DX440 S2 ETERNUS DX8100/DX8400/DX8700 ETERNUS2000 models 100 or higher ETERNUS4000 models 100 or higher ETERNUS8000 ETERNUS3000 models 100 or higher ETERNUS6000 ETERNUS GR720/GR730/GR740/GR820/GR840	Any one is required. Advanced copy function is required.
LAN Card	

4.1.2 Software requirements

4.1.2.1 Basic software

Confirm that the system environment corresponds to one of the following. This version of the Agent of AdvancedCopy Manager cannot be installed on any other system.

- Microsoft(R) Windows Server(R) 2003, Standard Edition SP1,SP2

- Microsoft(R) Windows Server(R) 2003, Enterprise Edition SP1,SP2

- Microsoft(R) Windows Server(R) 2003, Standard x64 Edition

- Microsoft(R) Windows Server(R) 2003, Standard x64 Edition SP2

- Microsoft(R) Windows Server(R) 2003, Enterprise x64 Edition

- Microsoft(R) Windows Server(R) 2003, Enterprise x64 Edition SP2

- Microsoft(R) Windows Server(R) 2003 R2, Standard Edition

- Microsoft(R) Windows Server(R) 2003 R2, Standard Edition SP2

- Microsoft(R) Windows Server(R) 2003 R2, Enterprise Edition

- Microsoft(R) Windows Server(R) 2003 R2, Enterprise Edition SP2

- Microsoft(R) Windows Server(R) 2003 R2, Standard x64 Edition

- Microsoft(R) Windows Server(R) 2003 R2, Standard x64 Edition SP2

- Microsoft(R) Windows Server(R) 2003 R2, Enterprise x64 Edition

- Microsoft(R) Windows Server(R) 2003 R2, Enterprise x64 Edition SP2

- Microsoft(R) Windows Server(R) 2003, Enterprise Edition for Itanium-based Systems

- Microsoft(R) Windows Server(R) 2003, Enterprise Edition for Itanium-based Systems SP2

- Microsoft(R) Windows Server(R) 2008 Standard (x86,x64) (Note)

- Microsoft(R) Windows Server(R) 2008 Standard SP2 (x86,x64) (Note)

- Microsoft(R) Windows Server(R) 2008 Enterprise (x86,x64) (Note)

- Microsoft(R) Windows Server(R) 2008 Enterprise SP2 (x86,x64) (Note)

- Microsoft(R) Windows Server(R) 2008 Datacenter (x86,x64) (Note)

- Microsoft(R) Windows Server(R) 2008 Datacenter SP2 (x86,x64) (Note)

- Microsoft(R) Windows Server(R) 2008 for Itanium-Based Systems

- Microsoft(R) Windows Server(R) 2008 for Itanium-Based Systems SP2

- Microsoft(R) Windows Server(R) 2008 R2 Standard

- Microsoft(R) Windows Server(R) 2008 R2 Enterprise

- Microsoft(R) Windows Server(R) 2008 R2 Datacenter

Note

- The Hyper-V(TM) function of Windows Server 2008 is not supported.

- If the Storage Management Server is running on Windows Server 2003, it may cause a security risk come from OS vulnerability. Refer to the following link for detail of security risk.
  http://www.microsoft.com/whdc/system/vista/services.mspx

- Windows with Active Directory domain services is not supported.

4.1.2.2 Exclusion software

AdvancedCopy Manager cannot to coexist with the following software.

- SystemWalker/StorageMGR-M

- SystemWalker/StorageMGR-A

- Softek AdvancedCopy Manager-M

- Softek AdvancedCopy Manager-A

When the above-mentioned software is installed, please uninstall it.

4.1.3 Essential Resources

This section describes the resources that are mandatory for this software.

4.1.3.1 Static Disk space requirement

In order to install this software newly, the following disk space is required for each directory. If required, extend the size of the corresponding file system or partition.

Table 4.2 Disk space requirement at installation

Directory	Disk space requirement (Unit: megabytes)	Remarks
Program storing	35 MB	The program directory name specified when you install this software product.
Environmental setup	1 MB	The environmental setting directory name specified when you install this software product.
Work	1 MB	The directory name for work specified when you install this software product.

4.1.3.2 Dynamic Disk space requirement

When using this software, in addition to disk space required for installation, the following minimum disk capacity (reference) is required for each directory.

Table 4.3 Disk space requirement during operation

Directory	Disk space requirement (Unit: megabytes)	Operation
Environmental setup	(a+35xb)/1024	For backup operations in the server
Environmental setup	(1.1xc)/1024	For replication operations in the server
Work	107+d	Mandatory

- a: Number of backup disks

- b: Number of transaction disks

- c: Number of volume pairs for replication management

- d: Capacity of saved file that is output according to "Volume lock error investigation function" in "ETERNUS SF AdvancedCopy Manager Operator's Guide (Windows)".

The output for each number of backup and transaction volumes and for each volume pair for replication management is made in sizes between several hundred KB and 2 MB each time a "in-use lock error" occurs.

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

- d = (a + b + 2 x c) x 2 MB x n times

4.1.3.3 Memory Requirements

A minimum of 64 Megabytes or more of memory is required to run this software.

4.1.4 Installation

This section explains the installation method of the Agent of AdvancedCopy Manager.

Kind of installation

The following two methods of installation are available:

- Custom install

- Default install

Custom install and default install are described below.

Custom install

With the custom install method, the user enters the various types of install information (install destination, startup account name, port numbers used for each service, and so on) in the windows.

Default install

The default install method uses the default install information. The input tasks that use windows can be omitted.

Default install information

[Install destination]

- Program directory

```
<System drive>:\Win32app\AdvancedCopyManager\
```

- Environment setup directory

```
< System drive>:\Win32app\AdvancedCopyManager\
```

- Work directory

```
< System drive>:\Win32app\AdvancedCopyManager\
```

[Startup account name]

```
Account name:    acmuser
Password:        acmuser
```

Note: In Windows Server 2008 or Windows Server 2008 R2, the password is 'acm!123'

[Port numbers used for each service]

```
Communication service:    1226
```

Error checks

The following error checks are automatically performed for the default install information.

If the error checks detect an error, a warning dialog is displayed and the display returns to the [Welcome] window (install options selection window).

- [Install destination]

  Checks that the free disk space required for installation is available

- [Account name/Password]

  If the default account name already exists in the system, checks that the password matches the default password

  Note: If the default account name does not exist in the system, a new user is created with the default account name and password.

- [Port numbers]

  Checks that the default port numbers are not being used for something else

  Note: If an alias has been used to define an AdvancedCopy Manager service name, a warning dialog is displayed and a port number is not registered. The install process can be continued by clicking the [OK] button.

Note

. . . .

To operate a storage server in a cluster system:

Refer to "Installation of The agent function of AdvancedCopy Manager" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster environment".

4.1.4.1 Confirmation

Combination of a database and the Agent of AdvancedCopy Manager

For Windows Server 2008 environment

The Agents of AdvancedCopy Manager that can be installed are as follows.

- AdvancedCopy Manager (32bit) for Windows Server 2008(x86,x64)

- AdvancedCopy Manager (64bit) for Windows Server 2008(x64)

- AdvancedCopy Manager (64bit) for Windows Server 2008 for Itanium-Based Systems

Depending on the database, there is a difference between which Agent of AdvancedCopy Manager should be installed, as shown below.

- The server backup or restore Exchange Server database

AdvancedCopy Manager (64bit) for Windows Server 2008(x64)

For Windows Server 2008 R2 environment

The Agents of AdvancedCopy Manager that can be installed are as follows.

- AdvancedCopy Manager (32bit) for Windows Server 2008 (x86,x64)

- AdvancedCopy Manager (64bit) for Windows Server 2008 (x64)

Depending on the database, there is a difference between which Agent of AdvancedCopy Manager should be installed.

- The server backup or restore Exchange Server database

AdvancedCopy Manager (64bit) for Windows Server 2008(x64)

Startup account

When installing the AdvancedCopy Manager for the first time, select "startup account" as the user type. This user type can activate each service of AdvancedCopy Manager. To specify the "startup account", the user must satisfy the following conditions:

- The user must belong to the Administrator's group of the local computer.

- A password with no expiry date has been set.

However, if the user of the specified "startup account" does not belong to the Administrator's group, the system will automatically perform this task.

Also, since the "startup account" is used as the account for activating the services of AdvancedCopy Manager, the following authority will be added during installation:

- Log on as a service

- Act as part of the operating system

- Increase quotas

- Replace a process level token

Note

The structure of the account name and password must satisfy all requirements of the file system naming convention supported by the Windows OS.

4.1.4.2 Flow of installation

The flow of installation is as illustrated below.
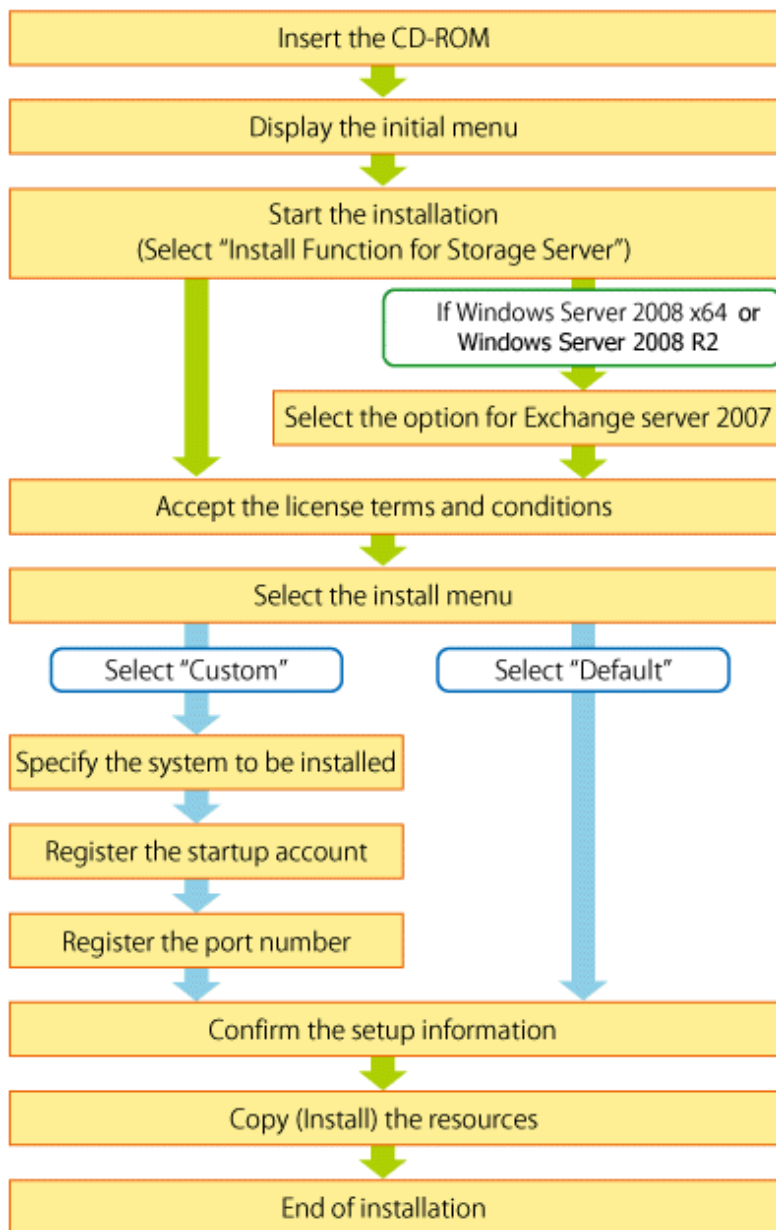
4.1.4.3 Installation procedure

Install the Agent of AdvancedCopy Manager, using the following procedure:

1. Logon as the user who has the Administrator's authority

2. Insert the AdvancedCopy Manager CD-ROM (Agent Program) into the CD drive and the initial window will be displayed.

Click [Install Function for Storage Server].
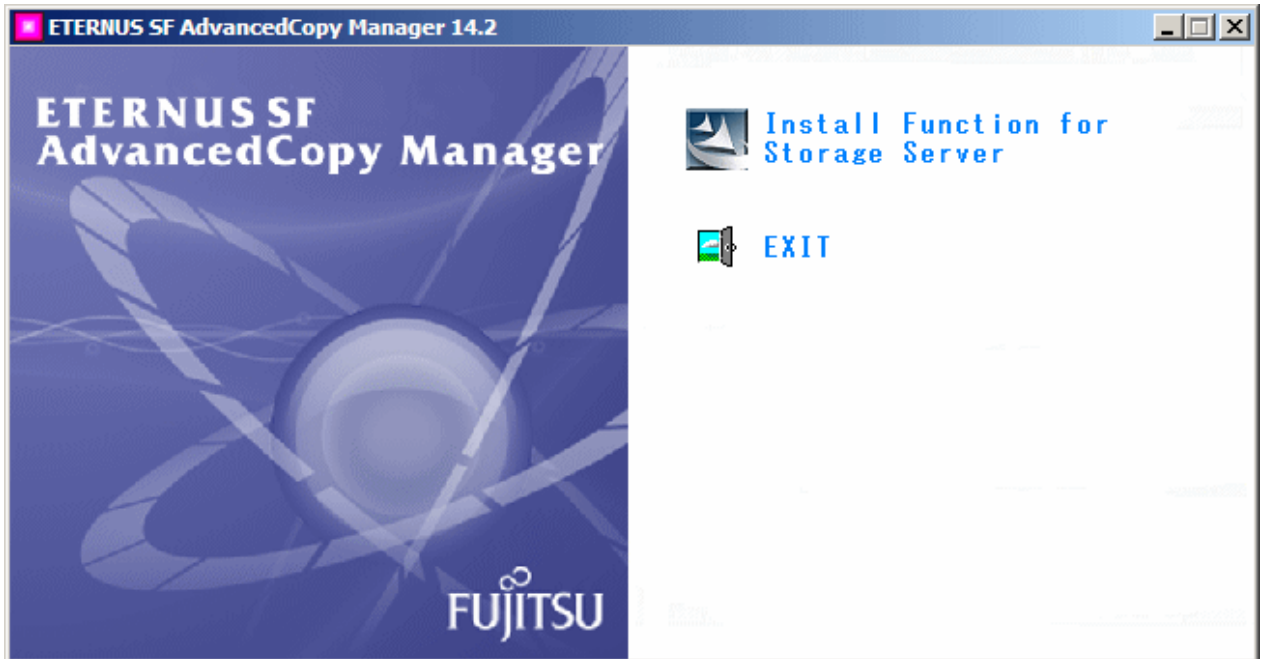
3. Choose whether to use the Exchange server online backup feature in the following window.
(This window is displayed in case of Windows Server 2008 x64 or Windows Server 2008 R2)
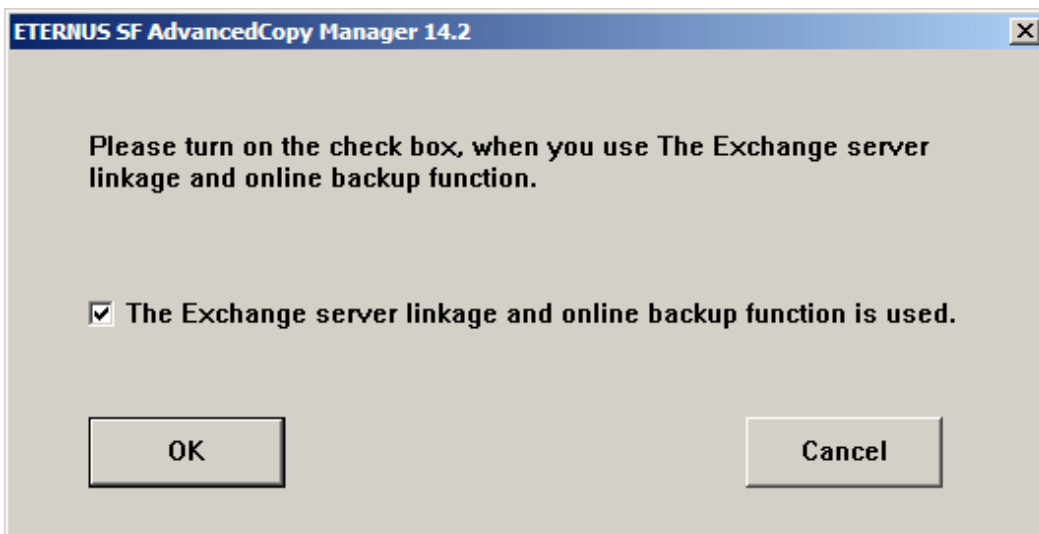
- If the check box is checked

AdvancedCopy Manager (64bit) for Windows Server 2008 (x64) is installed.

- If the check box is not checked

AdvancedCopy Manager (32bit) for Windows Server 2008 (x86,x64) is installed.

4. The next window is displayed. Check the displayed contents, then click the [Next] button.
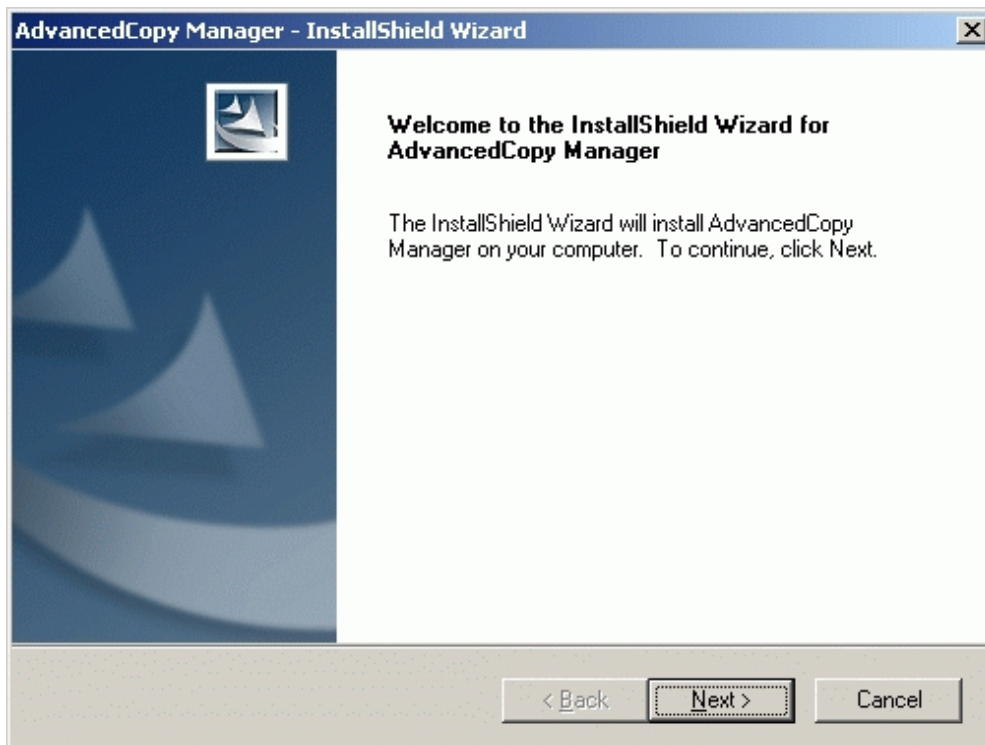
5. Accept the license terms and conditions displayed on the [License Agreement] window.

   Check the displayed contents, and then click the [Yes] button.
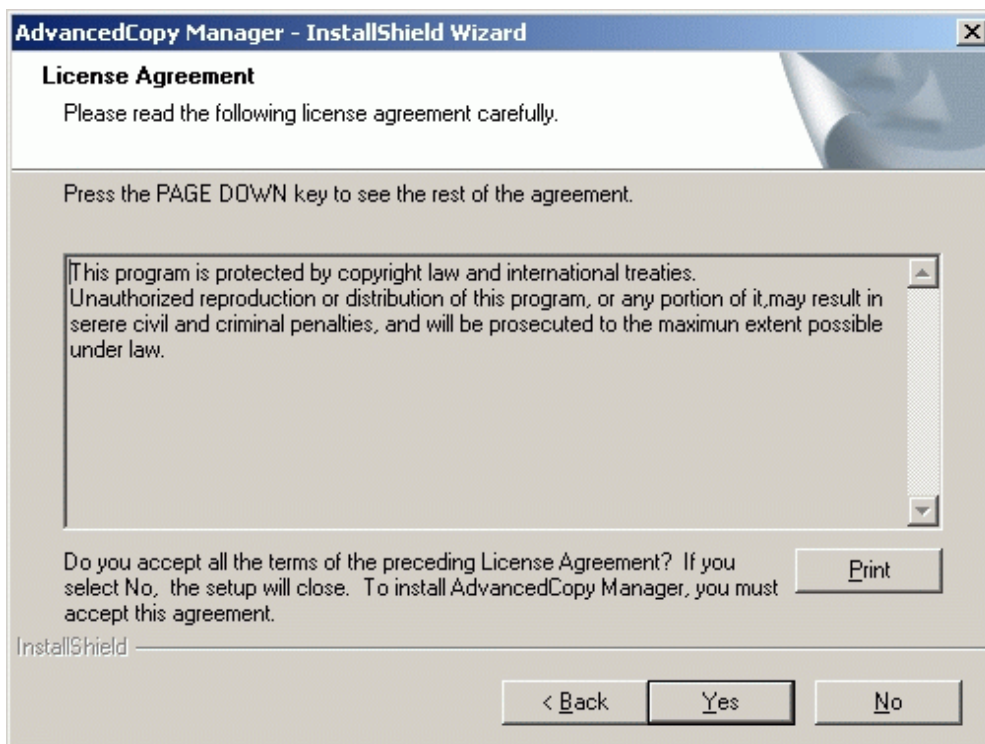
6. On the [Welcome] window, select the install option (default or custom).
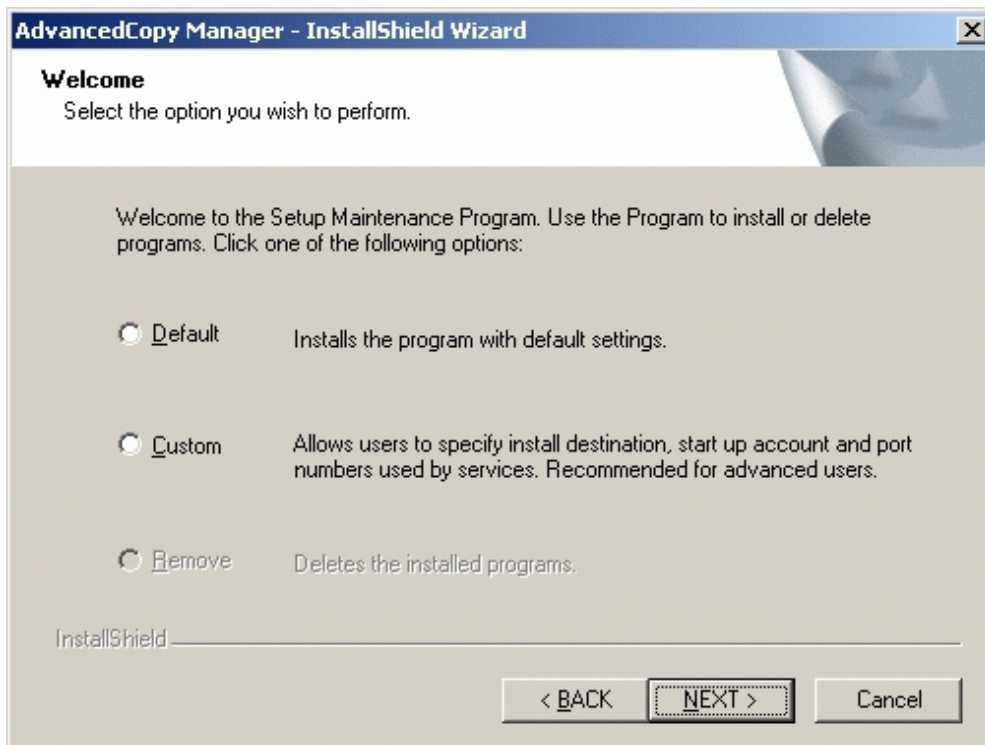
- If [Default] is selected

The install information settings on the following windows can be omitted (the settings in steps 6 to 8 are not required):

- [Specify installation directory] window

- [Register a Startup Account] window

- [The registration of the port] window

Error checks are performed automatically for the default install information of the omitted windows.

- If an error is detected:

A warning dialog is displayed and the display switches back to the main window.

- If no errors are detected:

The [Start Copying Files] window is displayed.

Refer to "Chapter 3 Customization of Storage Management Server" for the default install information and the error check contents.

- If [Custom] is selected

Install information settings must be entered in each of the install windows.

Enter the required information as indicated for the display windows in step 7 and subsequent steps.

7. Specify the installation directory.

If this product is to be installed in directories other than those displayed (default directories), click the [Browse] button to select the desired directories. After all the proper directories have been selected, click the [Next] button. Note: directories with spaces in their names (e.g., Program Files) must not be specified.

If the [Browse] button is clicked, the following screen is displayed.
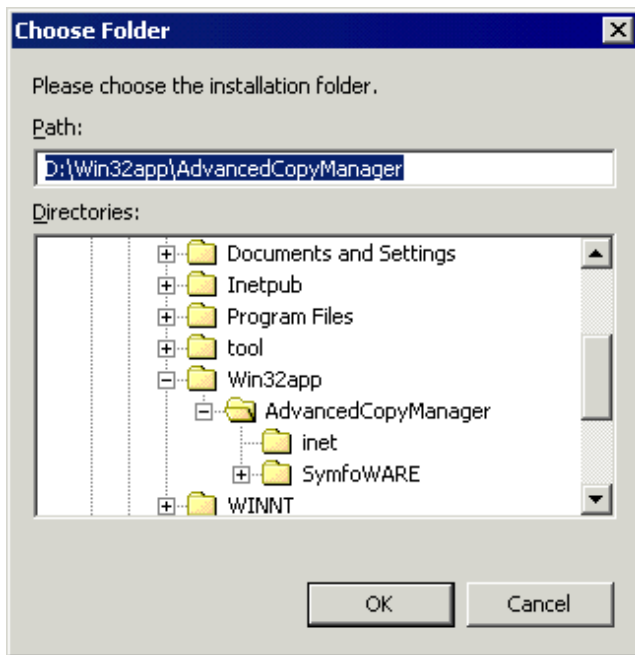
8. Specify the startup account in the [Register a Startup Account] window.

Input the account's name belonging to the Administrator's group with a password, and click the [Next] button. The account name and password must satisfy must satisfy all requirements of the file system naming convention supported by the Windows OS.

For details of the startup account, see "2.1.3 Startup account".

If a previously unregistered name is entered, it should be registered as a new account. At this time, the system automatically sets the password to unexpired and assigns it to the Administrator's group. In addition, the system automatically sets the following user's authority:

- Log on as a service

- Act as part of the operating system

- Increase quotas

- Replace a process level token

📖 See
. . . .
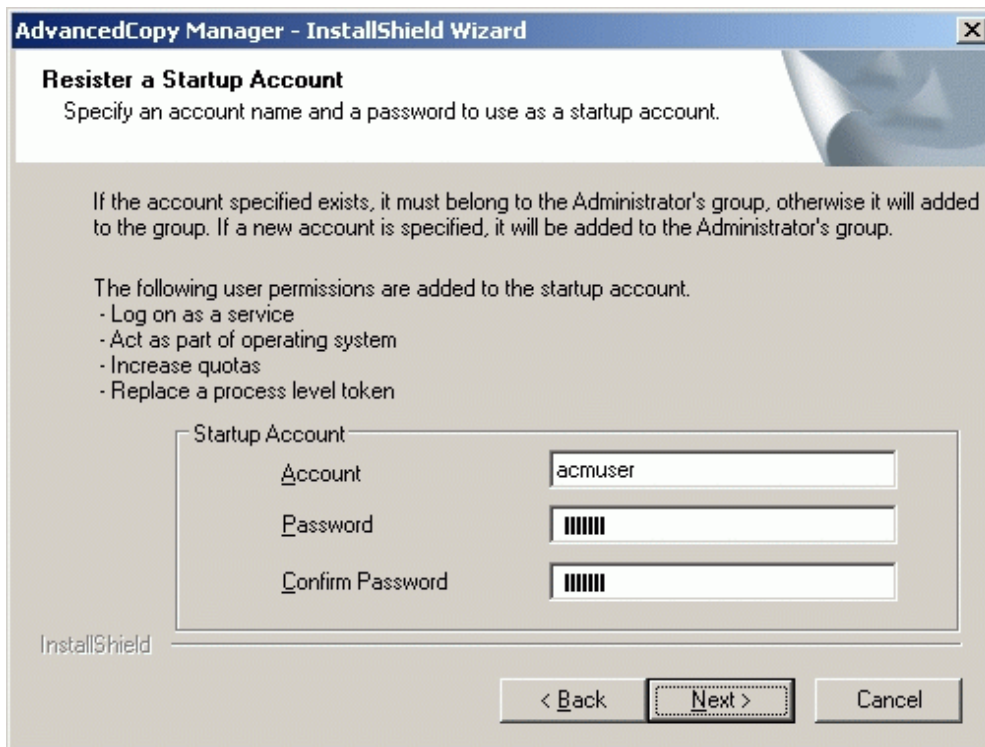
For the password changing of the startup account, refer to "Changing the startup account" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide (Windows)".

. . . .

9. Specify the port number to be allocated for the service in the [Port Registration] window.

   If changing the port number from the recommended value, enter a number in the following range:

   - 5001 to 32767

   The first displayed value is the recommended value for a non cluster environment, and does not necessarily need to be a unique number.For cluster operations in Windows Server 2003, change all port numbers to numbers in the above range.

After the port number entry is complete, click the [Next] button. If a specified port number is already assigned for something else, this window will be redisplayed.
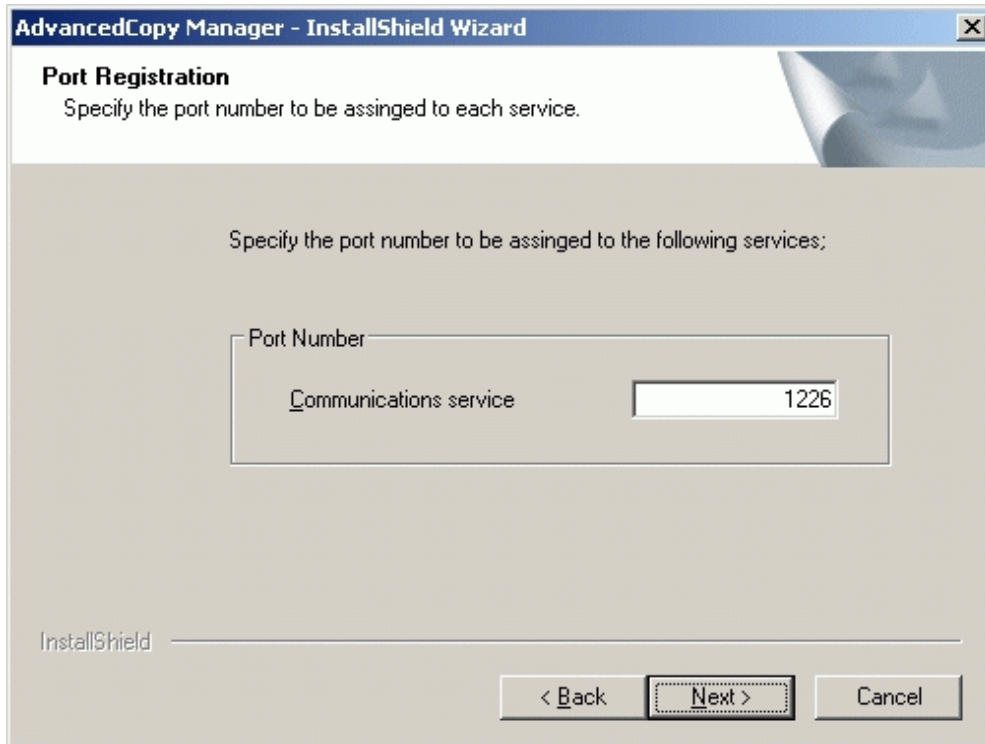
If the AdvancedCopy Manager service name is defined with an ALIAS, the following window will be displayed and the port number specified on the previous window is ignored.

The installation however will proceed.
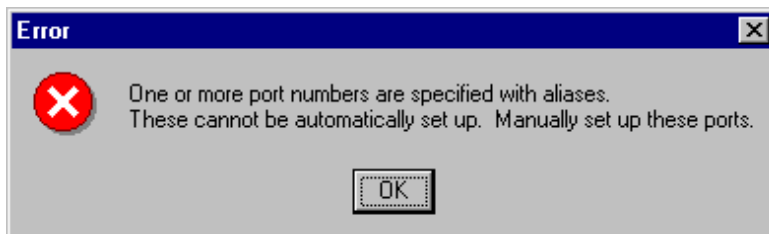
The file below should be edited if the port number is set manually.

```
C:\WINDOWS\system32\drivers\etc\Services
```

10. Confirm the settings on the [Start Copying Files] window. If the information entered is correct and no mistakes have been detected, click the [Next] button. To correct or modify any settings click the [Back] button.
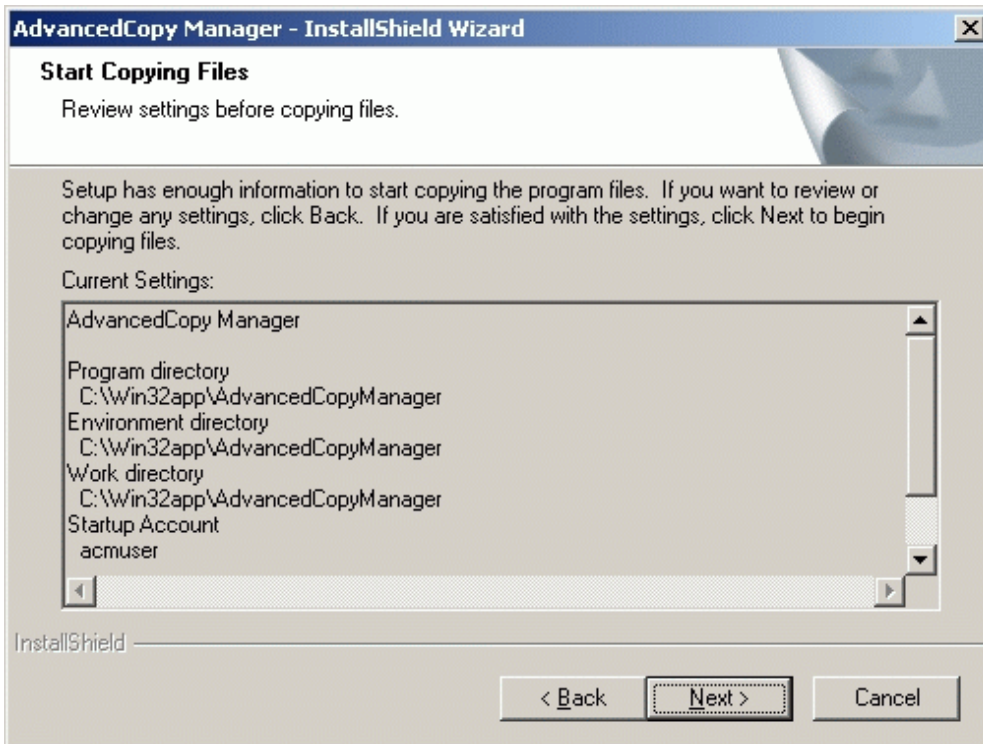
11. The copy process will begin, and its progress will be displayed on the [Setup Status] window.
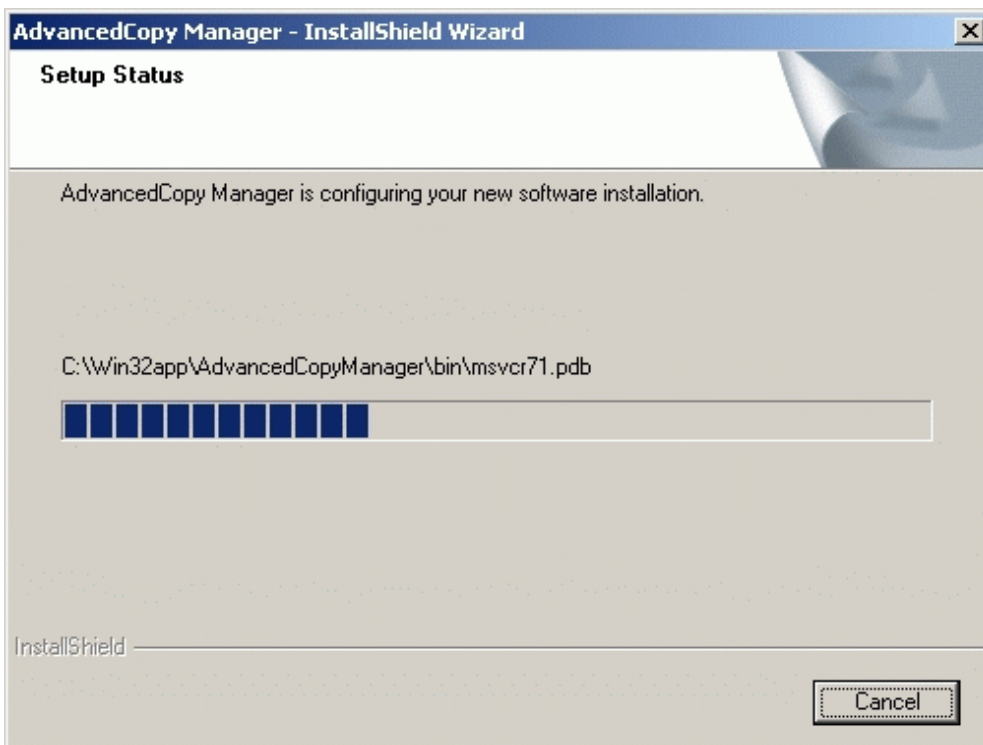
12. To complete the installation, click the [Finish] button.
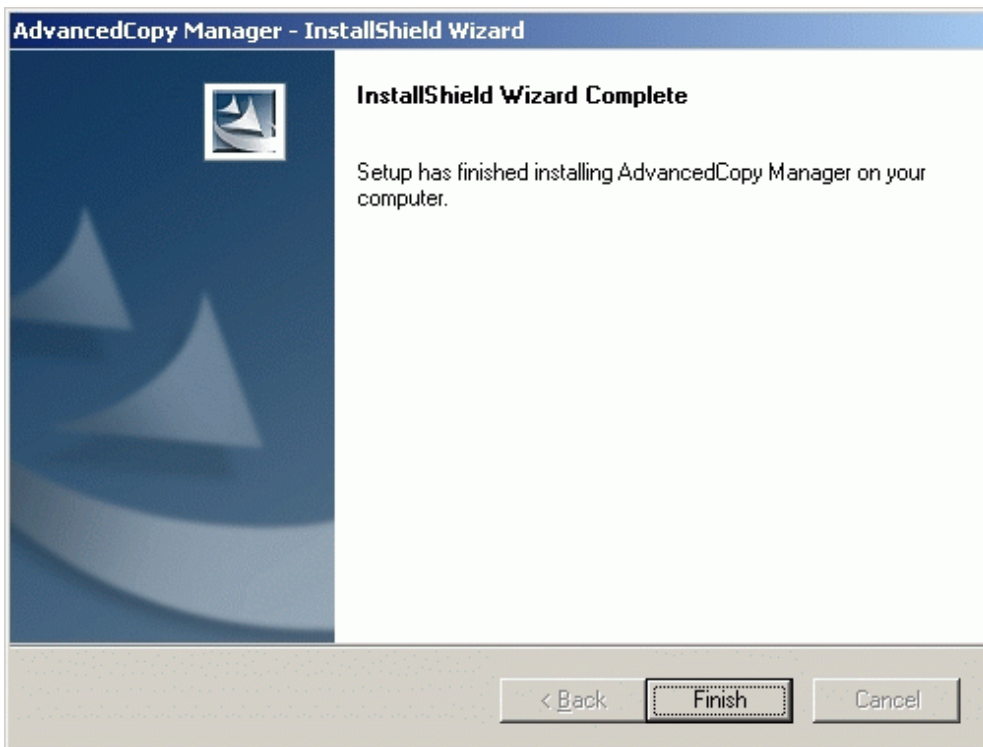
4.2 Solaris/Linux/HP-UX/AIX Platform

This section describes how to install the Agent component in Solaris, Linux, HP-UX, and AIX operating systems.

4.2.1 Hardware requirements

At least 64 megabytes of memory are required.

The following I/O devices are required to run this software.

Note that an AdvancedCopy Manager license and appropriate cache table size settings are required.

The settings required for the provided Advanced Copy functions depend on the device type, so consult your Fujitsu systems engineer.

Table 4.4 Hardware requirements

Component name	Remarks
ETERNUS DX60/DX80/DX80 S2/DX90/DX90 S2 ETERNUS DX410/DX410 S2/DX440/DX440 S2 ETERNUS DX8100/DX8400/DX8700 ETERNUS2000 models 100 or higher ETERNUS4000 models 100 or higher ETERNUS8000 ETERNUS3000 models 100 or higher ETERNUS6000 ETERNUS GR720/GR730/GR740/GR820/GR840	Any one is required. Advanced copy function is required.
LAN Card	

4.2.2 Software requirements

4.2.2.1 Basic software

The Agent of AdvancedCopy Manager can only be installed in one of the following) Operating environments as listed below. Any other operating system environment is not supported.

Solaris

- Solaris 8 Operating System

- Solaris 9 Operating System

- Solaris 10 Operating System

 Note
. . . .

If the operating system is Solaris 10

The following functions of Solaris 10 are not supported:

- Containers (Zones)

- ZFS
. . . .

Linux

- 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) *Operates in 32-bit compatible mode

- Red Hat Enterprise Linux ES (v.4 for EM64T) *Operates in 32-bit compatible mode

- Red Hat Enterprise Linux AS (v.4 for Itanium)

- Red Hat Enterprise Linux 5 (for x86)

- Red Hat Enterprise Linux 5 (for Intel64) *Operates in 32-bit compatible mode or 64-bit mode

- Red Hat Enterprise Linux 5 (for Intel Itanium)

-

 Note
. . . .

Agent of AdvancedCopy Manager is not supported in an environment where SELinux (Security-Enhanced Linux) is enabled.
Disable SELinux at servers that operate agent of AdvancedCopy Manager.
. . . .

-

HP-UX

- HP-UX 11.00, 11i, v2 (PA-RISC)

- HP-UX 11i V2.0 (Itanium)

- HP-UX 11i V3 (Itanium)

AIX

- AIX 5L V5.1, AIX 5L V5.2, AIX 5L V5.3

4.2.2.2 Exclusive software

AdvancedCopy Manager cannot to coexist with the following software.

Solaris

- SystemWalker/StorageMGR-M

- SystemWalker/StorageMGR-A

- Softek AdvancedCopy Manager-M

- Softek AdvancedCopy Manager-A

Refer to "Solaris" documentation, "Items to check before Installation", for instructions on checking if SystemWalker/StorageMGR is installed and on how to uninstall it, if required.

Linux

- Softek AdvancedCopy Manager-M

- Softek AdvancedCopy Manager-A

Refer to the Linux of "Items to check before installation", and check that Softek AdvancedCopy Manager is not installed. If it is installed, please uninstall it.

HP-UX

- SystemWalker/StorageMGR-A

- Softek AdvancedCopy Manager-A

Refer to "HP-UX" documentation, "Items to check before Installation", for instructions on checking if SystemWalker/StorageMGR is installed and on how to uninstall it, if required.

AIX

- Softek AdvancedCopy Manager-A

Refer to the AIX Linuxof "Items to check before installation", and check that Softek AdvancedCopy Manager is not installed. If it is installed, please uninstall it.

4.2.2.3 Locale

The locale of the internal code system (the code system that was specified when AdvancedCopy Manager was installed at the Storage Management server) used by AdvancedCopy Manager must be installed on all Storage servers.

Action is required if the language environments (LANG) at the Storage Management server and the Storage servers are different. Refer to "Appendix B Locale" for the actions required for different combinations.

4.2.3 Essential Resources

This section describes the resources that are mandatory for this software.

4.2.3.1 Static Disk Resources

The following table lists the amount of disk space required for each directory when this software is installed for the first time. The file system may require to be reconfigured if there is insufficient free space.

Table 4.5 Disk space requirement at installation

No.	Directory	Disk space requirements (Unit: megabytes)				Remarks
		Solaris	Linux	HP-UX	AIX	
1	/$DIR1	130	120	120	200	

No.	Directory	Disk space requirements (Unit: megabytes)				Remarks
		Solaris	Linux	HP-UX	AIX	
2	/$DIR2	0.2	0.2	0.2	0.2	
3	/$DIR3	2.2	2.2	2.2	2.2	
4	/opt	0.2	0.2	0.2	0.2	

- "$DIR1" is the program directory name to be specified when you install this software product.

- "$DIR2" is the environment setup directory name to be specified when you install this software product.

- "$DIR3" is the variable data storage directory name to be specified when you install this software product.

For Solaris, refer to theTable 4.9 Installation directory (Default value) of an install directory for specification of a directory name.

For Linux, refer to the Table 4.10 Installation directory (Default value) of an install directory for specification of a directory name.

For HP-UX, refer to the Table 4.11 Installation directory (Default value) of an install directory for specification of a directory name.

For AIX, refer to the Table 4.12 Installation directory (Default value) of an install directory for specification of a directory name.

4.2.3.2 Dynamic Disk Resources

The table below lists disk space requirements required for different uses of the product. These requirements are in addition to the disk space requirements described in "4.2.3.1 Static Disk Resources".

Table 4.6 Disk space requirement during operation
No.	Directory	Disk space requirement (Unit: megabytes)				Operation
		Solaris	Linux	HP-UX	AIX	
1	/$DIR2	(a+35 x b)/ 1024	(a+35 x b)/ 1024	(a+35 x b)/ 1024	(a+35 x b)/ 1024	For Backup Management
2	/$DIR2	(1.1 x c)/ 1024	(1.1 x c)/ 1024	(1.1 x c)/ 1024	(1.1 x c)/ 1024	For Replication Management
3	/$DIR2	0.1	0.1	0.1	0.1	Mandatory.
4	/$DIR3	7	7	5	5	Mandatory.
5	/var	13	13	13	13	Mandatory.

- "$DIR2" is the program directory name to be specified when you install this software product.

- "$DIR3" is the program directory name to be specified when you install this software product.

- a: Number of backup volumes

- b: Number of transaction volumes

- c: Number of volume pairs for replication management

Note

When Tape Server is configured on the Storage server, also estimate the dynamic resources used by Tape Server. For details, see "7.3.2 Dynamic Disk Resources".

4.2.3.3 Memory Requirements

To operate this software product, the amount of memory listed in the following table is required.

Table 4.7 Amount of memory required during operation

No.	Memory requirement (Unit: megabytes)				Operation
	Solaris	Linux	HP-UX	AIX	
1	29	29	13	13	Does not exist.
2	10	10	10	10	Executing a 1-slice backup command in 16 slices of transaction volume and 60 slices of backup volume

4.2.3.4 Swap Space Requirements

To operate this software product, the swap space listed in the following table is required. If the requirements exceed the provided swap area, expand it.

Table 4.8 Swap space requirement during operation

No.	Swap area (Unit: megabytes)				Operation
	Solaris	Linux	HP-UX	AIX	
1	11.2	11.2	3.2	3.2	Does not exist.
2	11	11	11	11	Executing a 1-slice backup command in 16 slices of transaction volume and 60 slices of backup volume

4.2.4 Installation

The following sub-sections explain how to install the Agent component of AdvancedCopy Manager.

4.2.4.1 Items to check before Installation

Check that there is ample free disk space for installation of this software. See "4.2.3.1 Static Disk Resources " for disk space sizing. If there is not enough free space more space will need to be allocated to the filesystem or partition.

Solaris

Confirm SystemWalker/StorageMGR, AdvancedCopy Manager or ETERNUS SF AdvancedCopy Manager is not installed.

```
# pkginfo -l FJSVswsts
```

Uninstall it if the package is shown to be installed by the output by this command:

a. If SystemWalker/StorageMGR, SystemWalker/StorageMGR is displayed in the output result, they are installed. Distinguish M/A and SE/EE from this output result, confirm the version, and uninstall it with reference to the uninstall instructions for the installed version of SystemWalker/StorageMGR.

b. If either Softek AdvancedCopy Manager or ETERNUS SF AdvancedCopy Manager is displayed in the output result, they are installed. Uninstall it with reference to "10.2.2 Solaris/Linux/HP-UX/AIX Platform" of "Uninstall".

Check whether Softek AdvancedCopy Manager or ETERNUS SF AdvancedCopy Manager has already been installed as a manager function or an agent function can be performed using the following commands.

```
# pkginfo -l FJSVswssc
```

If the output of this command shows the package to be installed it is a manager function and not an agent function.

Linux

Confirm Softek AdvancedCopy Manager or ETERNUS SF AdvancedCopy Manager is not installed.

```
# rpm -qi FJSVswsts
```

Uninstall it if the package is shown to be installed by the output of this command:

Softek AdvancedCopy Manager or ETERNUS SF AdvancedCopy Manager is installed if displayed in the output result as Softek AdvancedCopy Manager or ETERNUS SF AdvancedCopy Manager. Uninstall it referring to "10.2.2 Solaris/Linux/HP-UX/AIX Platform" of "Uninstallation".

Check whether Softek AdvancedCopy Manager or ETERNUS SF AdvancedCopy Manager has already been installed is a manager function or an agent function can be confirmed using the following commands.

Use the following commands to confirm whether the installed ETERNUS SF AdvancedCopy Manager is a Manager or an Agent:

```
# rpm -qi FJSVswssc
```

If the output of this command shows the package to be installed it is a manager function and not an agent function.

HP-UX

Confirm SystemWalker/StorageMGR, AdvancedCopy Manager or ETERNUS SF AdvancedCopy Manager is not installed.

Confirm neither of the following files exists.

```
/opt/swstorage/etc/swstg.ini
/etc/opt/swstorage/swstg.ini
```

Uninstall it if either of the above-mentioned file exists by the following methods.

a. If SystemWalker/StorageMGR is described in/opt/swstorage/setup/stg/swsetup.ini, then SystemWalker/StorageMGR is installed. Confirm the distinction of SE/EE and the version of this file, and uninstall it with reference to installation instructions for SystemWalker/StorageMGR.

b. If AdvancedCopy Manager is described in /opt/swstorage/setup/stg/swsetup.ini, AdvancedCopy Manager is installed. Uninstall with reference to "10.2.2 Solaris/Linux/HP-UX/AIX Platform" for "Uninstalling".

AIX

Confirm AdvancedCopy Manager is not installed.

Confirm neither of the following files exists.

```
/opt/swstorage/etc/swstg.ini
/etc/opt/swstorage/swstg.ini
```

Uninstall it if either of the above-mentioned files exist using the following methods.

If described AdvancedCopy Manager in /opt/swstorage/setup/stg/swsetup.ini, AdvancedCopy Manager is installed.
Uninstall with reference to "10.2.2 Solaris/Linux/HP-UX/AIX Platform" of "Uninstalling".

4.2.4.2 Installation procedures

This section describes the installation procedures for the Solaris, Linux, HP-UX, and AIX editions of Agent.

Solaris

1. Log in to the system as a root (superuser), and execute a shutdown of the system.

```
# shutdown -y -g0 -i0
```

2. Activate the system in single user mode.

```
[ok prompt] boot -s
```

Information

• •

Input the following command at the ok prompt.

```
Type Ctrl-d to proceed with normal startup.
(or give root password for system maintenance): superuser password
```

• •

3. Mount the local file system.

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

4. Mount the CD-ROM(Agent Program) for this software product.

```
# mount -F hsfs -o ro /dev/dsk/c0t4d0s0 <CD-ROM mount point>
```

Information

• •

The device name of the CD-ROM device differs for different devices.

• •

5. When you execute swsetup (Installation command) for this software, multiple packages are installed at one time. The swsetup command calls the pkgadd command, and installs all the packages (Agent functions) listed in "A.1 Solaris Platform" of "Program Components of AdvancedCopy Manager"

```
# cd <CD-ROM mount point>/agent/solaris
# ./swsetup
```

The following configuration is not necessary if the easysetup command is used.

- Settings for the installation destination directory

- Registering the port number in the /etc/services

```
# cd <CD-ROM mount point>/agent/solaris
# ./easysetup [-o]
or
# ./easysetup -p port-number [-o]
```

- If the option is not specified

Use the default value (1226) for the port number used in the Storage Server.

If the stgxfws service port number is already registered in the /etc/services, then the existing port number is used -this is why the registration of the port number is skipped.

- If the option is specified

Specify one of the options as required.

- -p option

Use this option to change the port number used for the Storage Server.

The range of the port number is from 1024 to 65535.

If the stgxfws service port number is already registered in the /etc/services, then the existing port number is used-this is why the registration of the port number is skipped.

- -o option

  Specify this option if the port number and installation destination directory are to be specified by the interactive setup.

  If the stgxfws service port number is already registered in the /etc/services or the -p option is specified with this option, the port number will not be asked during the interactive setup, as the existing port number will be used.

P Point

· ·

- The default value is used for the installation destination directory.

  Refer to the step 7 and after for the 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 "Port number setting (/etc/services)" to register the port number manually.

· ·

6. If SystemWalker/StorageMGR, AdvancedCopy Manager or ETERNUS SF AdvancedCopy Manager has been installed, either of the following messages is displayed, and processing is terminated.

```
# swsetup: ERROR: SystemWalker/StorageMGR is already installed.
```

```
# swsetup: ERROR: AdvancedCopy Manager is already installed.
```

7. The install directory category type and the initial value of the install directory name are displayed. To change the following information, input "y." To leave the information as is, input "n" or press the Return key, and then go to step 10.

Table 4.9 Installation directory (Default value)

```
# ./swsetup
swsetup: Installer is preparing for installation...
+-----------------------------------------------------------+
|                ETERNUS SF AdvancedCopy Manager            |
|                            14.2                           |
|                  Copyright FUJITSU LIMITED 2010           |
+-----------------------------------------------------------+


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]
```

- Install directory for the packages (Program install directory)

  The initial parent path value is /opt.

- Install directory for the environment setup file (Fixed configuration directory)

  The initial parent path value is /etc/opt.

- Install directory for the files to be modified, such as log file or temporary file (Modifying configuration directory)

  The initial parent path value is /var/opt.

8. When you specify "y" in step 7, also specify the install directory category type and the install directory name.

```
Please specify install directory: (default: /opt) [?,q] /opt
```

```
Please specify fixed configuration directory: (default: /etc/opt) [?,q]  /etc/opt

Please specify variable configuration directory: (default: /var/opt) [?,q] /var/opt
```

9. To confirm the message, input "n," or press the Return key. To make any other changes, input "y."

```
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]
```

10. To confirm the final message and start the installation, input "y." To cancel the installation, input "n."

```
Do you want to continue with the installation of this package? [y,n,?]
```

11. Installation begins. An example of the display is shown below.

```
swsetup: Starting installation of AdvancedCopy Manager...
. . .
```

12. When the installation completes successfully, the system displays the following message.

```
swsetup: AdvancedCopy Manager was installed successfully.
```

13. Execute the following commands, and then press the eject button to remove the CD-ROM of this software from the drive.

```
# cd / <RETURN>
# umount <CD-ROM mount point>
```

14. Reboot the system.

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

15. For details on how to set up the environment, see "5.2 Solaris/Linux/HP-UX/AIX Platform" of "Customization of Storage Server".

Linux

1. Log in to the system as a root (super user).

2. This software CD-ROM (agent program) is inserted.

   It is an example as follows for doing the mount to /dev/cdrom (It is set to /etc/fstab as a default mount of cd media).

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

3. When you execute swsetup (Installation command) for this software, multiple packages are installed at one time. The swsetup command calls the rmp command, and installs all the packages (Agent functions) listed in "A.2 Linux Platform" of "Program Components of AdvancedCopy Manager"

   [System environment of v. 4 for x86 and v. 4 for EM64T]

```
# cd <CD-ROM mount point>/agent/linux/linux4_x86
# ./swsetup
```

   [System environment of v. 4 for Itanium]

```
# cd <CD-ROM mount point>/agent/linux/linux4_ia64
# ./swsetup
```

[System environment of 5 for x86]

```
# cd <CD-ROM mount point>/agent/linux/linux5_x86
# ./swsetup
```

[System environment of 5 for Intel64]

```
# cd <CD-ROM mount point>/agent/linux/linux5_x64
# ./swsetup
```

[System environment of 5 for Intel Itanium]

```
# cd <CD-ROM mount point>/agent/linux/linux5_ia64
# ./swsetup
```

The following configuration is not necessary if the easysetup command is used.

- Settings for the installation destination directory

- Registering the port number in the /etc/services

```
# cd <CD-ROM mount point>/agent/linux/(each OS directory)
# ./easysetup [-o]
or
# ./easysetup -p port-number [-o]
```

- If the option is not specified

  Use the default value (1226) for the port number used in the Storage Server.

  If the stgxfws service port number is already registered in the /etc/services, then the existing port number is used-this is why the registration of the port number is skipped.

- If the option is specified

  Specify one of the options as required.

  - -p option

    Use this option to change the port number used for the Storage Server.

    The range of the port number is from 1024 to 65535.

    If the stgxfws service port number is already registered in the /etc/services, then the existing port number is used-this is why the registration of the port number is skipped.

  - -o option

    Specify this option if the port number and installation destination directory are to be specified by the interactive setup.

    If the stgxfws service port number is already registered in the /etc/services or the -p option is specified with this option, then the port number will not be asked during the interactive setup as the existing port number will be used.

P Point

- The default value is used for the installation destination directory.

  Refer to the step 7 and after for the 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 "Port number setting (/etc/services)" to register the port number manually.
••

4. The default value for the installation destination directory is displayed. To change the following information, input "y". To leave the information as is, input "n" or press the Return key, and then go to step 7.

Table 4.10 Installation directory (Default value)

```
# ./swsetup
swsetup: Installer is preparing for installation...
+-----------------------------------------------------------+
|               ETERNUS SF AdvancedCopy Manager             |
|                          14.2                             |
|                Copyright FUJITSU LIMITED 2010             |
+-----------------------------------------------------------+


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]
```

- Install directory for the packages (Program install directory)

The initial parent path value is /opt.

- Install directory for the environment setup file (Fixed configuration directory)

The initial parent path value is /etc/opt.

- Install directory for the files to be modified, such as log file or temporary file (Modifying configuration directory)

The initial parent path value is /var/opt.

5. When you specify "y" in step 4, also specify the install directory category type and the install directory name.

```
Please specify install directory: (default: /opt) [?,q] /opt

Please specify fixed configuration directory: (default: /etc/opt) [?,q]  /etc/opt

Please specify modifying configuration directory: (default: /var/opt) [?,q] /var/opt
```

6. To confirm the message, input "n" or press the Return key. To make any other changes, input "y".

```
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]
```

7. To confirm the final message and start the installation, input "y". To cancel the installation, input "n"

```
Do you want to continue with the installation of this package? [y,n,?]
```

8. Installation begins. An example of the display is shown below.

```
swsetup: Starting installation of AdvancedCopy Manager...
swsetup: Starting installation of package. : FJSVswstf


./cmd/swpkgadd.sh FJSVswstf /opt/swstorage/etc/swinst.res



FJSVswstf RPM installing......
rpm -ivh --nodeps ./pkg/FJSVswstf-14.2-01.i386.rpm
Preparing...                ########################################### [100%]
   1:FJSVswstf              ########################################### [100%]



swsetup: Package is successfully installed. : FJSVswstf

swsetup: Starting installation of package. : FJSVswtrc

./cmd/swpkgadd.sh FJSVswtrc /opt/swstorage/etc/swinst.res
```

9. When the installation completes successfully, the system displays the following message.

```
swsetup: AdvancedCopy Manager was installed successfully.
```

10. Execute the following commands, and then remove the CD-ROM from the drive.

```
# cd /
# umount /dev/cdrom
# eject
```

11. Reboot the system.

```
# shutdown -r now
```

12. For details on how to set up the environment, see "5.2 Solaris/Linux/HP-UX/AIX Platform" of "Customization of Storage Server".

HP-UX

1. Log in as root (super user) and execute the following commands.

```
# /usr/sbin/pfs_mountd &
# /usr/sbin/pfsd &
```

2. Create the CD-ROM mount destination /cdrom. If /cdrom already exists, this step is not required.

```
# mkdir -p /cdrom
```

3. Mount the CD-ROM(Agent Program). In the following example, the CD-ROM device file name is specified as /dev/dsk/c1t2d0, and the mount point name is specified as /cdrom.

```
# /usr/sbin/pfs_mount -t rrip -x unix /dev/dsk/c1t2d0 /cdrom
```

4. Execute the following command and start installing Agent of AdvancedCopy Manager.

```
# cd /cdrom/agent/hp-ux
# ./swsetup
```

If the easysetup command is executed, there is no need to register the /etc/services file port number.

```
# cd /cdrom/agent/hp-ux
# ./easysetup [-o]
or
# ./easysetup -p port-number [-o]
```

There is no need to specify the "-p" option when the port number used for the Storage Server is 1226 (the default value).
When the port number used for the Storage Server is not 1226, specify the "-p" option.

When the "-o" option is specified, specify the port number used for Storage Server communication and the installation destination directory during the interactive setup.

5. If SystemWalker/StorageMGR, Softek AdvancedCopy Manager or ETERNUS SF AdvancedCopy Manager has been installed, either of the following messages is displayed, and processing is terminated.

```
# swsetup: ERROR: SystemWalker/StorageMGR is already installed.
```

```
# swsetup: ERROR: AdvancedCopy Manager is already installed.
```

The SystemWalker/StorageMGR package will need to be uninstalled. See "HP-UX" of "Items to check before Installation" for additional information.

6. The install directory category type and the initial parent path value of the install directory name are displayed. To change the installation destination, enter y; otherwise, enter n, and then go to step 9.

Table 4.11 Installation directory (Default value)

```
# ./swsetup
#swsetup: Installer is preparing for installation...
+----------------------------------------------------------+
|                ETERNUS SF AdvancedCopy Manager           |
|                          14.2                            |
|                Copyright FUJITSU LIMITED 2010            |
+----------------------------------------------------------+


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]
```

- Program install directory

  Program installation directory. The initial parent path value is /opt.

- Fixed configuration directory

  Installation directory of the environment definition file. The initial parent path value is /etc/opt.

- Modifying configuration directory

  Installation directory of the file (log/temporary file) to be changed. The initial parent path value is /var/opt.

7. When you specify "y" in step 6, also specify the install directory category type and the install directory name.

```
Please specify install directory: (default: /opt) [?,q] /opt

Please specify fixed configuration directory: (default: /etc/opt) [?,q] /etc/opt
```

```
Please specify variable configuration directory: (default: /var/opt) [?,q] /var/opt
```

8. When the confirmation message of the entered directory name is displayed, check it and reply with "n". To change the contents again, reply with "y". If you replied with "y", step 7 is displayed again.

```
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] n
```

9. When the last confirmation message for starting the installation is displayed, verify that there are no problems, and enter "y".

```
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 this package[y,n,?] y
```

10. Installation starts.

```
swsetup: Starting installation of AdvancedCopy Manager...
swsetup: Starting installation of package. : FJSVswstf
./cmd/swpkgadd.sh FJSVswstf /opt/swstorage/etc/swinst.res
FJSVswstf

                  :
swsetup: Package is successfully installed. : FJSVswstf
swsetup: Starting installation of package. : FJSVswtrc

                  :
swsetup: Package is successfully installed. : FJSVswtrc
swsetup: Starting installation of package. : FJSVgrapi

                  :
swsetup: Package is successfully installed. : FJSVgrapi
swsetup: Starting installation of package. : FJSVswsts

                  :
swsetup: Package is successfully installed. : FJSVswsts
```

11. When the installation is completed, the following message is displayed.

```
swsetup: AdvancedCopy Manager was installed successfully.
```

12. Unmount the Agent of AdvancedCopy Manager CD-ROM by executing the following command.

```
# cd /
# /usr/sbin/pfs_umount /cdrom
```

13. Reboot the system.

```
# /usr/sbin/shutdown -y -r now
```

14. For details on how to set up the environment, see "5.2 Solaris/Linux/HP-UX/AIX Platform" of "Customization of Storage Server".

When mounting the CD-ROM, note the following points.

- If a user (usually, root) who executes the pfs_mount command belongs to nine or more groups, an error occurs, as shown below.

```
pfs_mount /dev/dsk/device-name not owner.
pfs_mount giving up on cdrom.
```

If the user who executes the pfs_mount command belongs to nine or more groups in the /etc/group file, change the /etc/group file so that the user belongs to 8 or less groups.

- When the pfs_mount command is executed, an error may be output, as shown below.

```
/usr/sbin/pfs_mount:/etc/pfs_fstab:No such file or directory
```

In this case, create a /etc/pfs_fstab file in /etc.

```
# touch /etc/pfs_fstab
# chown root:root /etc/pfs_fstab
# chmod 644 /etc/pfs_fstab
```

- When pfs_mount is performed, if the resolv.conf file exists under /etc, an error may occur. To prevent this error, temporarily save the resolv.conf file by following the method below and execute the pfs_mount command.

    1. After temporarily saving the file with the following command, execute the mount operation.

    ```
    # mv resolv.conf resolv.conf.org
    ```

    2. After installing Agent of AdvancedCopy Manager, restore the environment.

    ```
    # mv resolv.conf.org resolv.conf
    ```

AIX

1. Log in as root (super user) and create the CD-ROM mount destination /cdrom. If /cdrom already exists, this step is not required.

```
# mkdir -p /cdrom
```

2. Mount the CD-ROM (Agent Program). In the following example, the CD-ROM device file name is specified as /dev/cd0, and the mount point name is specified as /cdrom.

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

3. Execute the following command and start installing Agent of AdvancedCopy Manager.

```
# cd /cdrom/agent/aix
# ./swsetup
```

If the easysetup command is executed, there is no need to register the /etc/services file port number.

```
# cd /cdrom/agent/aix
# ./easysetup [-o]
or
# ./easysetup -p port-number [-o]
```

There is no need to specify the "-p" option when the port number used for the Storage Server is 1226 (the default value). When the port number used for the Storage Server is not 1226, specify the "-p" option.

When the "-o" option is specified, specify the port number used for Storage Server communication and the installation destination directory during the interactive setup.

4. If AdvancedCopy Manager has been installed, either of the following messages is displayed, and processing is terminated.

```
# swsetup: ERROR: AdvancedCopy Manager is already installed.
```

Uninstall it. See "AIX" of "Items to check before Installation" if the above-mentioned message is output.

5. The install directory category type and the initial value of the install directory name are displayed. To change the installation destination, enter "y"; otherwise, enter "n", and then go to step 8.

Table 4.12 Installation directory (Default value)

```
# ./swsetup
#swsetup: Installer is preparing for installation...
+------------------------------------------------------------+
|              ETERNUS SF AdvancedCopy Manager               |
|                          14.2                              |
|               Copyright FUJITSU LIMITED 2010               |
+------------------------------------------------------------+


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]
```

- Program install directory

  Program installation directory. The initial parent path value is /opt.

- Fixed configuration directory

  Installation directory of the environment definition file. The initial parent path value is /etc/opt.

- Modifying configuration directory

  Installation directory of the file (log/temporary file) to be changed. The initial parent path value is /var/opt.

6. When you specify "y" in step 5, also specify the install directory category type and the install directory name.

```
Please specify install directory: (default: /opt) [?,q] /opt

Please specify fixed configuration directory: (default: /etc/opt) [?,q] /etc/opt

Please specify variable configuration directory: (default: /var/opt) [?,q] /var/opt
```

7. When the confirmation message of the entered directory name is displayed, check it and reply with "n". To change the contents again, reply with "y". If you replied with "y", step 6 is displayed again.

```
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] n
```

8. When the last confirmation message for starting the installation is displayed, verify that there are no problems, and enter "y".

```
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 this package[y,n,?] y
```

9. Installation starts.

```
swsetup: Starting installation of AdvancedCopy Manager...
swsetup: Starting installation of package. : FJSVswstf
./cmd/swpkgadd.sh FJSVswstf /opt/swstorage/etc/swinst.res
FJSVswstf

                  :
swsetup: Package is successfully installed. : FJSVswstf
swsetup: Starting installation of package. : FJSVswtrc

                  :
swsetup: Package is successfully installed. : FJSVswtrc
swsetup: Starting installation of package. : FJSVgrapi

                  :
swsetup: Package is successfully installed. : FJSVgrapi
swsetup: Starting installation of package. : FJSVswsts

                  :
swsetup: Package is successfully installed. : FJSVswsts
```

10. When the installation is successfully completed, the following message is displayed.

```
swsetup: AdvancedCopy Manager was installed successfully.
```

If the easysetup command has not been executed in step 3, the following line must be in the /etc/rc.shutdown file.

```
/opt/FJSVswstf/daemon/stop_smgr0
```

📌 Note

Without the above configuration setting, AdvancedCopy Manager may not be stopped normally. 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 with the relevant option instead.

11. Unmount the Agent of AdvancedCopy Manager CD-ROM by executing the following command.

```
# cd / <RETURN>
# /usr/sbin/umount /cdrom
```

12. Reboot the system.

```
# /usr/sbin/shutdown -r
```

13. For details on how to set up the environment, see "5.2 Solaris/Linux/HP-UX/AIX Platform" of "Customization of Storage Server".

Chapter 5 Customization of Storage Server

This chapter explains the customization of the Storage Server and covers how to customize the Storage Management Server.

5.1 Windows Platform

This section describes how to customize a Windows Storage Server.

5.1.1 Flow of Customizing Storage Server

The flow of customizing the Storage Server is shown below. The AdvancedCopy Manager automatically performs the customization steps shown in green.

Figure 5.1 Flow of customizing Storage Server
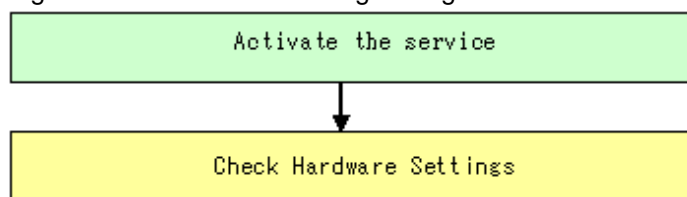
5.1.2 Details of Storage Server Customization

Set up the Storage Server, using the following procedure:

- Start the service.

  Start the AdvancedCopy Manager service mentioned below.

  Refer to "Starting and Stopping a Service" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide (Windows)" about the contents of the following services:

  - AdvancedCopy Manager COM Service

> **Note**
>
> In any of the following cases, refer to "Running the Software in an Environment Where the Windows Firewall Is Enabled" and configure the settings for the Windows firewall function.
>
> - Windows Server 2003 Service Pack 1 has been applied
>
> - Windows Server 2003 R2
>
> - Windows Server 2008
>
> - Windows Server 2008 R2

5.1.3 Port Filtering Settings

The table below shows the number and purpose of each port used to operate the Storage Server. If port filtering settings need to be made, refer to the description in the "Purpose" column to determine the object to connect to the port.

Table 5.1 Port numbers and purposes

Service name	Reception port	Purpose
Communication service	1226/tcp	This service is used for communication with the storage management server, and for communication with remote Storage Servers in inter-server replications.

Service name	Reception port	Purpose
Communication service for cluster systems (*1)	Any-number/tcp	This service is used for communication with the storage management server, and for communication with remote Storage Servers in inter-server replications.

*1 In a cluster system, this service is required for each job that is created during the cluster setup. The reception port is any port number that was specified for that job

🖙 Note
. . . .

If port numbers have been entered other than those that were initially displayed at installation, replace the port numbers listed in Table with the port numbers that have been entered.

. . . .

5.1.4 Checking Hardware Settings

The following setup is required for hardware so that the advanced copy function can be used. Please check the details with a FUJITSU systems engineer.

- AdvancedCopy Manager license setup

- Cache table size setup

5.2 Solaris/Linux/HP-UX/AIX Platform

This section describes how to customize Solaris, Linux, HP-UX, and AIX Storage Servers.

5.2.1 Flow of Customizing Storage Server

The flow of customizing the Storage Server is shown below. The AdvancedCopy Manager automatically performs the customization steps shown in green.

Figure 5.2 Flow of customizing Storage Server
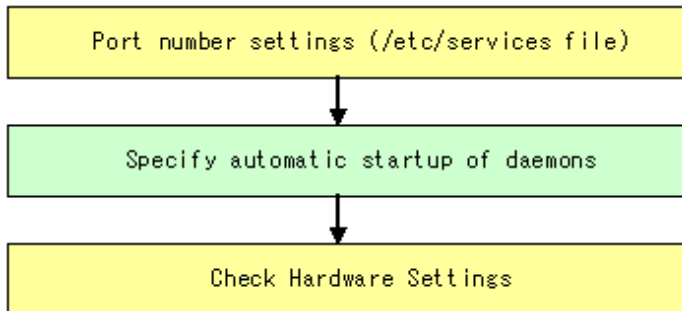
🖙 Note
. . . .

There is no need to set a port number (/etc/services file) when the easysetup command is used for installation.

. . . .

5.2.2 Setting up the port number (/etc/services File)

Operation of the Storage Server requires the assignment of port numbers.

Therefore, prepare the port numbers to be used in the Storage Server and write them in the /etc/services file.

The figure below shows the contents to be written in the /etc/services file.

The table shows the port number and purpose for each service. If settings such as port filtering are required, refer to the description in the "Purpose" column to determine the object to connect to the port before making these settings.

Table 5.2 Content written to the /etc/services file

#Service-name port-number/protocol-name stgxfws 1226/tcp

If the port numbers included in the table below have already been used in the system, designate unassigned port numbers.

Table 5.3 Port numbers and purposes

Service name	Reception port	Purpose
stgxfws	1226/tcp	This service is used for communications with the storage management server, and for communication with remote Storage Servers in inter-server replications.
stgxfws_<logical node name> (*1)	Any-number/tcp	This service is used for communications with the storage management server, and for communications with remote Storage Servers in inter-server replications.

*1 In a cluster system, this service is required for each job that is created during the cluster setup. The logical node name is the name that was specified during the cluster setup, and the reception port is any port number that was specified for that job

Note

If port numbers other than those listed in the Table 5.2 Content written to the /etc/services file "Content written to the /etc/services file" above have been specified in the /etc/services file, use the port numbers in the /etc/services file instead of the port numbers listed in the "Reception port" column of the Table 5.1 Port numbers and purposes: Port numbers and purposes.

5.2.3 Automatic Activation of Daemon

In the Storage Server, a variety of daemons must be activated for communication with the storage management server and other Storage Servers. These daemons are set to be activated automatically during installation.

5.2.4 Checking Hardware Settings

The following setup is required for hardware so that the advanced copy function can be used. Please check the details with a FUJITSU system engineer.

- AdvancedCopy Manager license setup

- Cache table size setup

Chapter 6 Installation of the GUI Client

This chapter explains the installation of the AdvancedCopy Manager GUI Client.

📑 See
. . . .

For details about the customization of GUI client, refer to "ETERNUS SF AdvancedCopy Manager GUI Operator's Guide".
. . . .

6.1 Prerequisites

This section describes the hardware and software that are required to install the AdvancedCopy Manager Client.

6.1.1 Hardware Requirements

The AdvancedCopy Manager GUI Client requires hardware that is supported by the Windows operating system, as follows.

Disk

100MB

Memory

512MB or more

CPU

Pentium III 500MHz or more

6.1.2 Software Requirements

The AdvancedCopy Manager GUI Client can only be installed on one of the following:

Product name	Remarks
Windows(R) 7 Home Basic (32-bit) Windows(R) 7 Home Premium (32-bit) Windows(R) 7 Professional (32-bit) Windows(R) 7 Enterprise (32-bit) Windows(R) 7 Ultimate (32-bit)	
Windows Vista(R) Home Basic (32-bit) Windows Vista(R) Home Premium (32-bit) Windows Vista(R) Business (32-bit) Windows Vista(R) Ultimate (32-bit) Windows Vista(R) Enterprise (32-bit)	includes SP1, SP2
Windows(R) XP Home Edition Windows(R) XP Professional	includes SP1, SP2, SP3
Windows Server(R) 2003, Standard Edition SP1 Windows Server(R) 2003, Standard Edition SP2 Windows Server(R) 2003, Enterprise Edition SP1 Windows Server(R) 2003, Enterprise Edition SP2 Windows Server(R) 2003 R2, Standard Edition Windows Server(R) 2003 R2, Standard Edition SP2 Windows Server(R) 2003 R2, Enterprise Edition Windows Server(R) 2003 R2, Enterprise Edition SP2 Windows Server(R) 2008 Standard (32-bit)(64-bit) Windows Server(R) 2008 Standard SP2 (32-bit)(64-bit)	

Product name	Remarks
Windows Server(R) 2008 Enterprise (32-bit)(64-bit) Windows Server(R) 2008 Enterprise SP2 (32-bit)(64-bit) Windows Server(R) 2008 Datacenter (32-bit)(64-bit) Windows Server(R) 2008 Datacenter SP2 (32-bit)(64-bit) Windows Server(R) 2008 R2 Standard Windows Server(R) 2008 R2 Enterprise Windows Server(R) 2008 R2 Datacenter	

6.2 Installation

AdvancedCopy Manager should be installed with the following procedure:

1. Log on to Windows as a user with Administrator rights.

2. Insert the AdvancedCopy Manager CD-ROM (Client Program).

3. Start the installation program Execute the following program

```
CD-ROM drive:\client\setup.exe
```

4. Select the language and click the [OK] button.
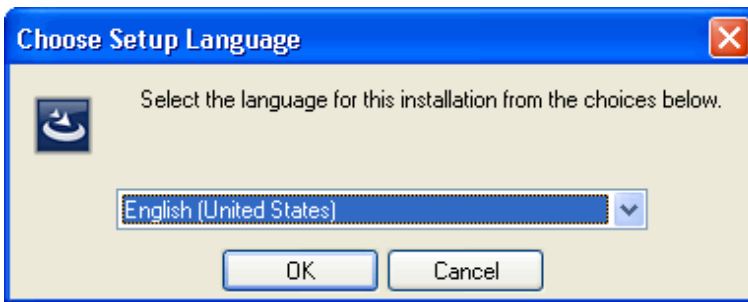
5. Click the [Next>] button.

6. Read the License Agreement and choose the [I accept the terms in the license agreement] radio button if you agree with the terms.
Then click the [Next>] button.
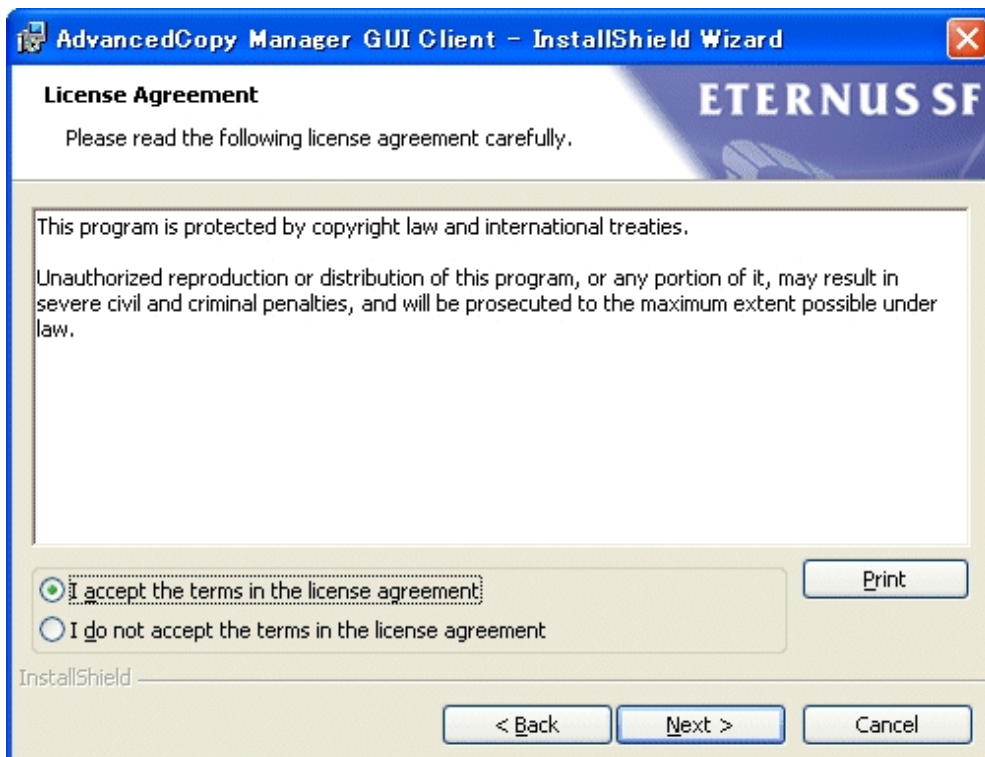
7. Read the Eclipse License Agreement and choose the [I accept the terms in the license agreement] radio button if you agree with the terms. Then click the [Next>] button.
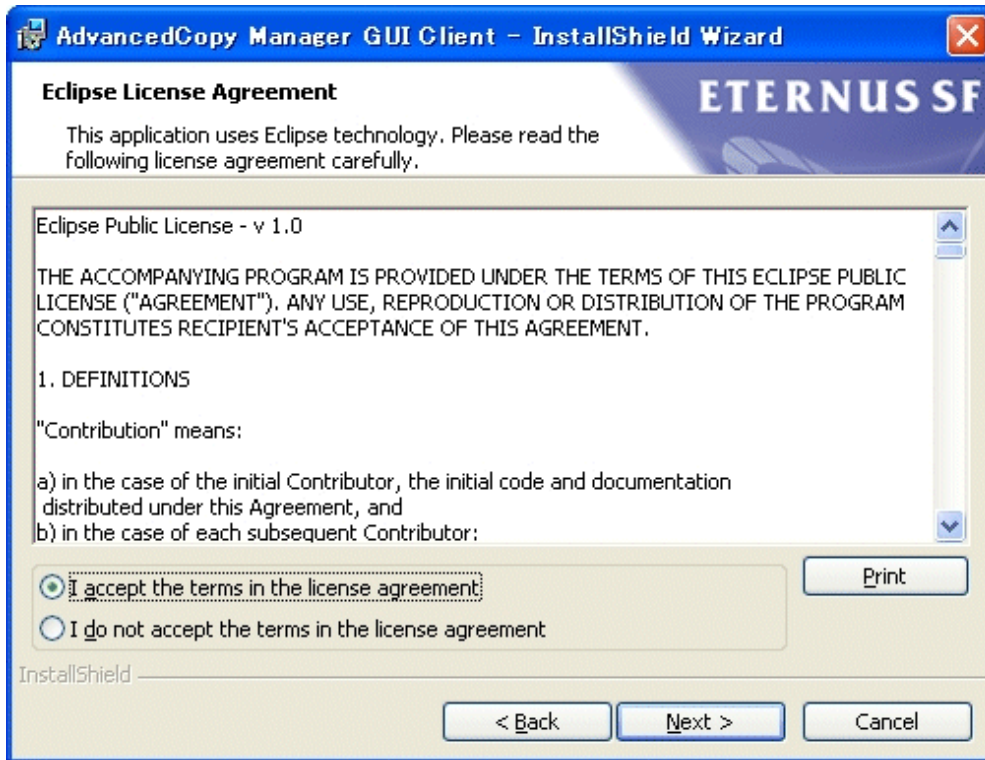
8. To specify an installation folder other than the default directory, select "Change". Do not specify the directory where the manager or agent is installed.
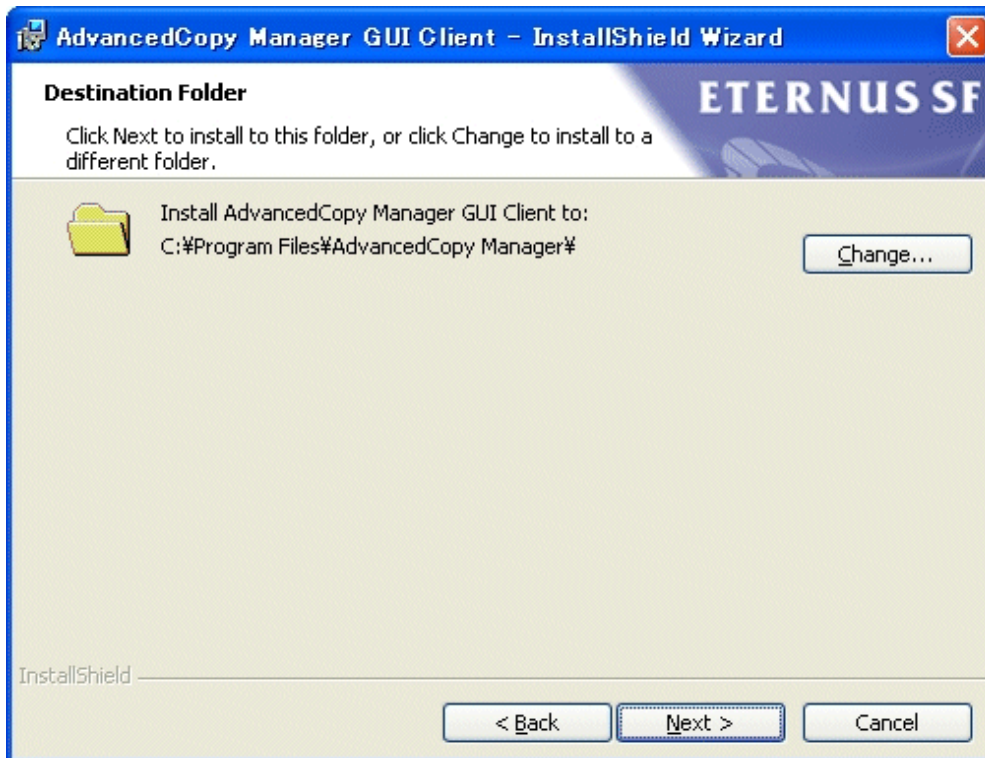
Note

· ·

Do not install the client to the same folder as the manager or agent.

· ·

9. If the destination folder has been specified, confirm that the settings are correct and click the [Next>] button.

10. Click the [Install] button to commence the installation. To change the details, click the [<Back] button. Alternatively, click the [Cancel] button to abort the installation.
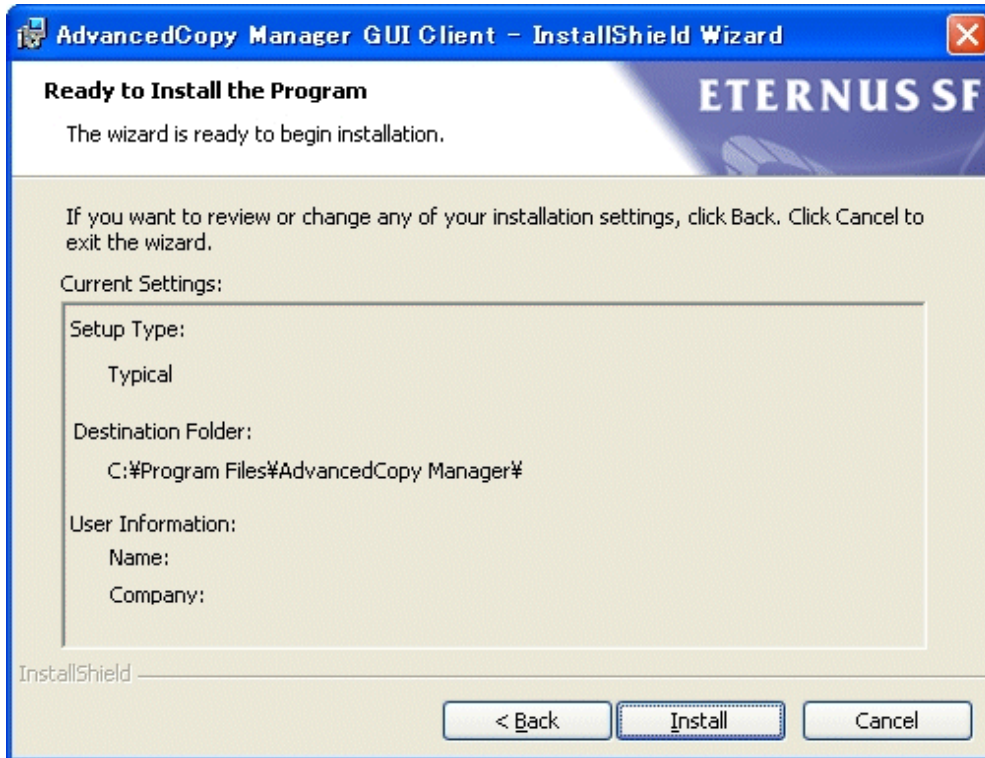
11. The installation begins, and its progress is displayed.
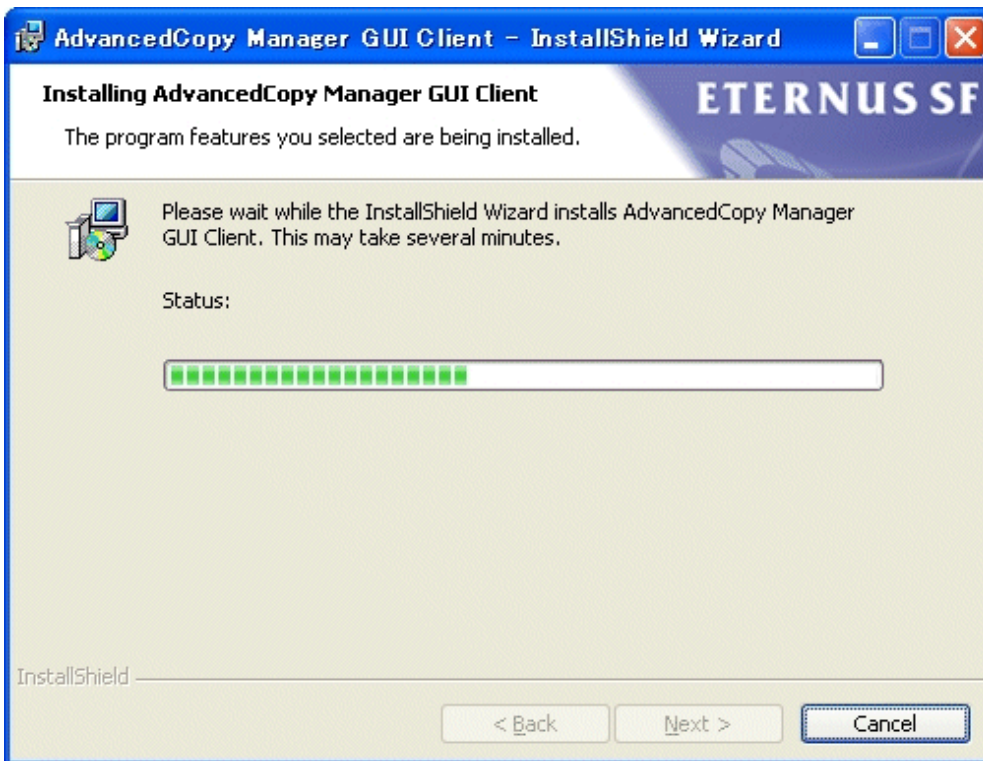
12. Click the [Finish] button to complete the installation. The AdvancedCopy Manager GUI Client starts automatically, if the [Launch ETERNUS SF AdvancedCopy Manager] check box is selected.
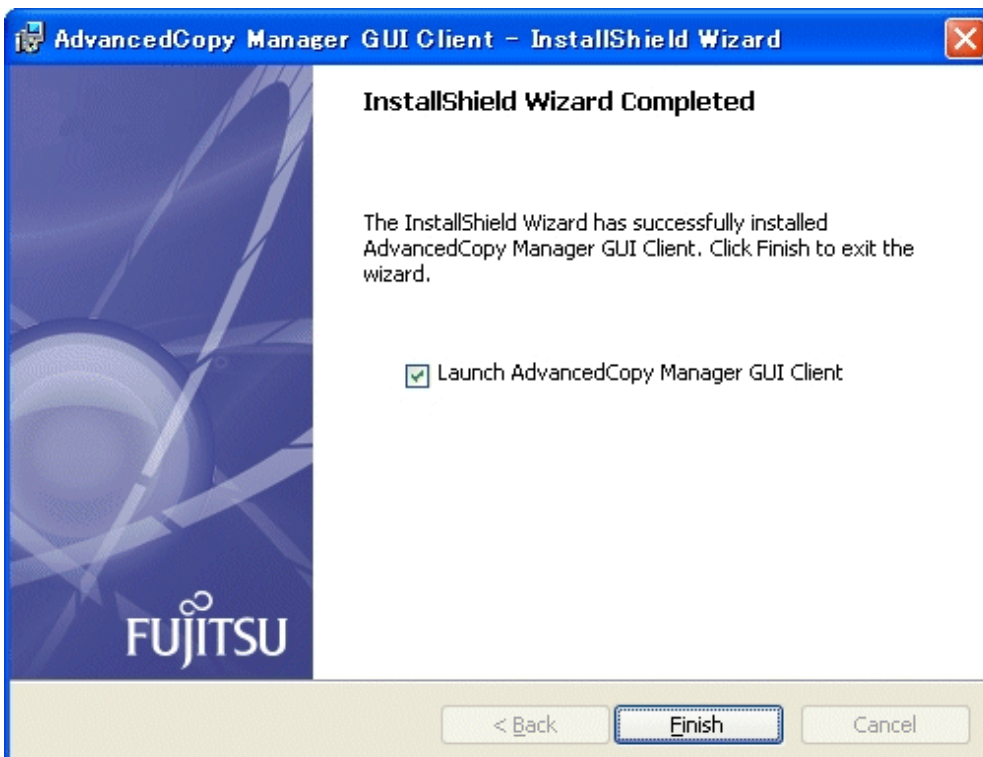
13. After installation, the GUI client can be started by selecting [Start] - [All programs] - [AdvancedCopy Manager] - [GUI Client].

Chapter 7 Installation of Tape Manager

This chapter explains how to install the Tape Manager of AdvancedCopy Manager.

📋 Note

To install the Tape Manager of AdvancedCopy Manager in the Tape Server, the Agent or Manager of AdvancedCopy Manager needs to have been installed beforehand in the same Tape Server.

For details of the procedure, see "Chapter 2 Installation of the Manager" or "Chapter 4 Installation of the Agent" for the operating system of the target Storage Server and Storage Management Server.

7.1 Hardware

Operation models

Installation devices must meet the following requirements:

- A model that enables basic software to be loaded

- Memory: 256 Megabytes or more

I/O devices

The I/O devices shown below are required to perform tape backups.

An AdvancedCopy Manager license and appropriate cache table size settings are required. These settings vary for different devices, so check with your Fujitsu systems engineer.

Table 7.1 Hardware requirements

Device name	Remarks
ETERNUS DX60/DX80/DX90 ETERNUS DX410/DX440 ETERNUS DX8100/DX8400/DX8700 ETERNUS2000 model 100 or higher ETERNUS4000 model 100 or higher ETERNUS8000 ETERNUS3000 model 100 or higher ETERNUS6000 ETERNUS GR720/GR730/GR740/GR820/GR840	Any one is required. To use ETERNUS DX60/DX80/DX90, ETERNUS DX410/DX440, ETERNUS2000, ETERNUS3000, or ETERNUS4000, it must be connected to a LAN. In addition, to use ETERNUS3000 models 100, 200, 400 and 600, its firmware version must be V20L32 or later.
ETERNUS LT20/LT40/LT60/LT130/LT160/LT220/LT230/LT250/LT270	Any one is required.
LAN card	None
Host bus adapter	An adapter that supports connection to a Fiber Channel Guard or similar storage (ETERNUS) device.

📋 Note

LTO-Ultrium4 version drives cannot read LTO-Ultrium1 version tapes.
Make sure the tape version is compatible with the drive version.

7.2 Software

7.2.1 Basic software

The Tape Manager of AdvancedCopy Manager can only be installed in one of the following system environments.

- Solaris 9 Operating System

- Solaris 10 11/06 Operating System or later

> **Note**
>
> **For Solaris 10 operating system**
>
> The Solaris 10 operating system does not support the following function:
>
> - Containers (Zones)

Please apply the following patches according to OS.

- For Solaris 9 operating system

  - 111711-12 Sun OS 5.9 32 bit shared library patch (C++)

  - 111712-12 Sun OS 5.9 64 bit shared library patch (C++)

  - 112963-22 linker patch

- For Solaris 10 operating system

  - 118833-17 kernel patch

> **Note**
>
> The system environments where the Tape Manager of AdvancedCopy Manager can be installed do not include all of those where the Agent or Manager of AdvancedCopy Manager can be installed. Because of this, you should be careful when selecting the system environment where the Tape Manager of AdvancedCopy Manager is installed.

7.2.2 Exclusive Software

AdvancedCopy Manager cannot coexist with the following software.

- SystemWalker/StorageMGR-M

- SystemWalker/StorageMGR-A

- Softek AdvancedCopy Manager tape backup option 11 or later

- Softek AdvancedCopy Manager EE 11 or later

- Softek Backup TSM Edition 5.3, and its previous versions

- ETERNUS SF TSM 5.3.2

- ETERNUS SF TSM 5.5 or later

When the Tape Manager is installed on the Storage Management Server or the Storage Server, and the Tape Server is combined with the Storage Management Server or the Storage Server, then both the Tape Manager and the Manager or the Agent of AdvancedCopy Manager should be the same version.

7.2.3 Essential Software

The following software is required. Confirm that the software has been installed.

- ETERNUS multipath driver

Table 7.2 ETERNUS multipath driver Support version

Tape server operating system	Operating environment disk array	ETERNUS multipath driver Support version
Solaris 9	ETERNUS DX60/DX80/DX90	Drivers for Solaris 8 and Solaris 9: 2.0.3 or later (912651-21 or later)
		Drivers for Solaris 9 and Solaris 10: 2.0.3 or later (914267-09 or later)
	ETERNUS DX410/DX440 ETERNUS DX8100/DX8400/DX8700	Drivers for Solaris 8 and Solaris 9: 2.0.3 or later (912651-22 or later)
		Drivers for Solaris 9 and Solaris 10: 2.0.3 or later (914267-11 or later)
	ETERNUS2000	Drivers for Solaris 8 and Solaris 9: 2.0.3 or later (912651-17 or later)
		Drivers for Solaris 9 and Solaris 10: 2.0.3 or later (914267-05 or later)
	ETERNUS4000 ETERNUS8000	Drivers for Solaris 8 and Solaris 9: 2.0.2 or later (912651-14 or later)
		Drivers for Solaris 9 and Solaris 10: 2.0.2 or later (914267-03 or later)
	ETERNUS3000 ETERNUS6000 ETERNUS GR720/GR730/GR740/GR820/GR840	2.0.0 or later
Solaris 10	ETERNUS DX60/DX80/DX90	2.0.3 or later (914267-09 or later) 3.0.0(914267-09) or later
	ETERNUS DX410/DX440 ETERNUS DX8100/DX8400/DX8700	2.0.3 or later (914267-11 or later) 3.0.0(914267-11) or later
	ETERNUS2000	2.0.3 or later (914267-05 or later) 3.0.0(914267-05) or later
	ETERNUS4000 ETERNUS8000 ETERNUS3000 ETERNUS6000 ETERNUS GR720/GR730/GR740/GR820/GR840	2.0.3 or later (914267-04 or later) 3.0.0(914267-04) or later

 Note
....

If the Tape server version is upgraded in conjunction with an operating system version upgrade, continue to use the GR multipath driver that is already being used. Do not install an ETERNUS multipath driver.
....

7.2.4 Locale

The UTF8 language environment is mandatory at a tape server and, if tape backup operations are performed, it is also mandatory at the Storage Management server. Refer to "Appendix B Locale" for details.

7.3 Essential Resources

7.3.1 Static Disk Resources

The following table lists the amount of disk space required to install the Tape Manager of AdvancedCopy Manager. If necessary, expand the size of the file system.

📌 Note
....

The following disk spaces do not include the disk space for the Agent or Manager of AdvancedCopy Manager to be installed on the same machine. If the Agent or Manager of AdvancedCopy Manager is installed on the same machine, estimate its disk space separately.
....

Table 7.3 Amount of disk space required to install the Tape Manager

Item No.	Directory	Disk space requirement (unit: MB)	Remarks
1	/$DIR1	320	None
2	/$DIR2	0.1	None
3	/$DIR3	0.1	None
4	/opt	0.1	None

- "$DIR1" is the program directory name to be specified when the Agent or Manager of AdvancedCopy Manager is installed.

- "$DIR2" is the environment setup directory name to be specified when the Agent or Manager of AdvancedCopy Manager is installed.

- "$DIR3" is the variable data directory name to be specified when the Agent or Manager of AdvancedCopy Manager is installed.

7.3.2 Dynamic Disk Resources

The table below lists disk space requirements required for different uses of the product. These requirements are in addition to the disk space requirements described in "7.3.1 Static Disk Resources". If the free space is insufficient, extend the size of the file system.

📌 Note
....

The following disk space requirements do not include the disk space for the Agent or Manager of AdvancedCopy Manager if it is installed on the same machine. If the Agent or Manager of AdvancedCopy Manager is installed on the same machine, estimate its disk space separately.
....

Table 7.4 Amount of disk space required during operation

Item No.	Directory	Disk space requirement (unit: bytes)	Operation
1	/$DIR2	$((10K + 3K \times (a+1)) \times b) + (50K \times c \times 2)$	Round the calculated value up to a multiple of 20MB.
2	/$DIR2	30M	Not classified.
3	/$DIR3	256M	Not classified.
4	/$DIR4	$(a+1) \times b \times 700$	Round the calculated value up to a multiple of 4MB, and then add 1MB more. This value is also used to format a TSM database. Estimate a value with enough space to be able to change the backup operation in the future.
5	/$DIR4	512M	Not classified.

Item No.	Directory	Disk space requirement (unit: bytes)	Operation
6	None	(Logical units of RAID groups allocated to CM0 in charge)x2 (Logical units of RAID groups allocated to CM1 in charge)x2 Total of 4 are required. (for load distribution)	Essential if the following disk array units are used: - ETERNUS DX60/DX80/DX90 - ETERNUS DX410/DX440 - ETERNUS2000 - ETERNUS3000 - ETERNUS4000 This space requirement is for use as access paths for I/O to disk array units.
7	None	Logical unitsx4 (for load distribution)	Essential if disk array units other than the above are used: This space requirement is for use as access paths for I/O to disk array units.

- "$DIR2" is the environment setup directory name to be specified when the Agent or Manager of AdvancedCopy Manager is installed.

- "$DIR3" is the variable data directory name to be specified when the Agent or Manager of AdvancedCopy Manager is installed.

- "$DIR4" is the database directory name of the ETERNUS SF TSM. Normally use "/opt/tivoli/tsm/server/bin". For details of the usage, see "8.7 TSM Configuration (to be done before Setting of Automatic Activation of Daemons)".

- a: Number of backups for one transaction volume. Add the number of backups for generation management and the number for day management.

- b: Number of transaction volumes to execute the tape backup operation.

- c: Sum of the sizes for backup, restoration, and copy to tape to be performed simultaneously. If Symfoware backup is used, it is the total value for the number of database spaces.

- The logical units used as access paths are indicated by the number of logical units, not the disk space. The logical unit can be of any size, but must be referenced as a VTOC label partition (device) from the Tape Server.

7.3.3 Memory Requirements

To operate this software under the following conditions, the amount of memory space listed in the following table is required.

Note

The following memory requirements do not include those of the Agent or Manager of AdvancedCopy Manager if it is installed on the same machine. If the Agent or Manager of AdvancedCopy Manager is installed on the same machine, estimate its memory requirements separately.

Table 7.5 Amount of memory required during operation

Item No.	Memory requirement (unit: bytes)	Operation
1	256M	Not classified.
2	32M x c x 2	Not classified.

c: Sum of the sizes for backup, restoration, and copy to tape to be performed simultaneously.

7.3.4 Swap Space Requirements

To operate this software under the following conditions, the swap space listed in the following table is required. If the requirements exceed the provided swap area, expand it.

Note

The following swap space requirements do not include those of the Agent or Manager of AdvancedCopy Manager if it is installed on the same machine. If the Agent or Manager of AdvancedCopy Manager is installed on the same machine, estimate its swap space requirements separately.

Table 7.6 Swap space required during operation

Item No.	Swap space requirement (unit: bytes)	Operation
1	128M	Not classified.
2	16M x c x 2	Not classified.

c: Sum of the sizes for backup, restoration, and copy to tape to be performed simultaneously.

7.4 Checking that Agent or Manager is installed

To install the Tape Manager of AdvancedCopy Manager, the Agent or Manager of AdvancedCopy Manager must be installed in advance.

For details of the procedure, see "Chapter 2 Installation of the Manager" or "Chapter 4 Installation of the Agent".

7.5 Installation

This section describes how to install the AdvancedCopy Manager Tape Manager.

7.5.1 Items to check before Installation

Check whether the disk has enough free space to install this software.

For details of the disk size used by this software, see "7.3.1 Static Disk Resources". If there is not enough space, set the disk partition configuration again.

7.5.2 Installation procedure

1. Login to the system as a root (superuser), and then terminate the system.

   ```
   # shutdown -y -g0 -i0
   ```

2. Activate the system in single user mode.

   ```
   [ok prompt] boot -s
   ```

   ## Information

   Input the above command at the ok prompt.

   ```
   Type Ctrl-d to proceed with normal startup.
   (or give root password for system maintenance): superuser password
   ```

3. Mount the local file system.

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

4. Mount the CD-ROM (Tape Manager Program DISC3) for this software product.

```
# mount -F hsfs -o ro /dev/dsk/c0t4d0s0 <CD-ROM mount point>
```

Information

••

The device name of the CD-ROM will be specific to the actual device.

••

5. Execute tbosetup (Installation command) for this software. Multiple packages are installed at one time.

```
# cd <CD-ROM mount point>/tape-mgr/solaris
# ./tbosetup
```

6. The install directory category type and the initial value of the install directory name are displayed, and a confirmation message asking whether to continue the installation is displayed. To change the information, input "y"; otherwise, input "n" or press the Return key.

```
# ./tbosetup
tbosetup: Installer is preparing for installation...


+-------------------------------------------------------------+
|              ETERNUS SF AdvancedCopy Manager                |
|                          14.2                               |
|                   Tape Backup Server                        |
|           All Rights Reserved, Copyright(c)                 |
|                       FUJITSU LIMITED 2010                  |
+-------------------------------------------------------------+


Welcome to Setup.
This program will install "AdvancedCopy Manager Tape Backup Server" on your system.


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]
```

7. When you input "y" in step 6, specify the install directory category type and the install directory name. Perform this procedure only after each installation destination directory is changed by the Agent or Manager of AdvancedCopy Manager.

```
Please specify install directory: (default: /opt) [?,q] /opt

Please specify fixed configuration directory: (default: /etc/opt) [?,q] /etc/opt

Please specify variable configuration directory: (default: /var/opt) [?,q] /var/opt
```

Note

••

Be sure to specify each installation destination directory that is specified before by the Agent or Manager of AdvancedCopy Manager.

••

8. To confirm the message, input "n" or press the Return key. To make any other changes, input "y".

```
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]
```

9. To confirm the final message and start the installation, input "y". To cancel the installation, input "n".

```
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 this package? [y,n,?]
```

10. Installation begins. An example of the display is shown below.

```
tbosetup: Starting installation of AdvancedCopy Manager Tape Backup Server...
                 ...
```

11. When the installation terminates normally, the system outputs the following message.

```
tbosetup: AdvancedCopy Manager Tape Backup Server was installed successfully.
```

12. When the IBM tape drive device such as ETERNUS LT160, LT220, LT230, LT250, or LT270 is used, install the IBMtape driver.

```
# cd /opt/tivoli/tsm/server
# pkgadd -d IBMtape.4.1.9.5.bin
```

13. Execute the following commands, and then press the eject button to remove the CD-ROM from the drive.

```
# cd /
# unmount <CD-ROM mount point>
```

14. Reboot the system

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

15. For details on how to set up the Tape Server environment, see "Chapter 8 Customization of Tape Server".

Chapter 8 Customization of Tape Server

This chapter explains the customization of the Tape Server of ETERNUS SF AdvancedCopy Manager.

See
．．
For details of installation in a cluster environment, see the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster environment" for the operating system of the target Storage Server.
．．

8.1 Flow of Customizing Tape Server

This section explains how to customize the Tape Server.

The procedure is as follows.

1. 8.2 Customization of Storage Server or Storage Management Server
2. 8.3 Creation of Access Path Partition
3. 8.4 Configuring the Port Number
4. 8.5 Kernel Parameter Tuning
5. 8.6 Initial Configuration of a Tape Server
6. 8.7 TSM Configuration (to be done before Setting of Automatic Activation of Daemons)
7. 8.8 Configuring Automatic Activation of Daemons
8. 8.9 TSM Configuration (the settings set after the daemon automatic start settings)

8.2 Customization of Storage Server or Storage Management Server

The Tape Server requires customization of the Storage Server. However, when the Tape Server also operates as the Storage Management Server, customization of the Storage Management Server is required. This customization needs to be performed before that of the Tape Server.

For details, see "Chapter 5 Customization of Storage Server" or "Chapter 3 Customization of Storage Management Server".

8.3 Creation of Access Path Partition

To operate the Tape Server, access path partitions are required for each disk array unit.

The word "partition" in this chapter refers to a partition (slice) that represents the entire logical unit.

This section explains how to create the partitions (devices) detailed in No.5 of "Table 7.4 Amount of disk space required during operation".

Note
．．
A file system does not need to be configured in each access path partition.

Four partitions are required for each disk array unit to distribute load.

Use a GR multipath driver or an ETERNUS multipath driver to create an access path in a multipath configuration.

If an ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000 or ETERNUS4000 is used, create two access paths from each disk managed by each CM of the ETERNUS disk storage systems.
．．

Create each partition so that it can be referenced from the Tape Server. If the Tape Server is a cluster system, set up the partition so that it can be referenced as the same one from each node. For details on creating the partitions, see related Solaris manuals.

8.4 Configuring the Port Number

To operate the Tape Server, port numbers for the ETERNUS SF TSM are required.

Purpose of use	Explanation
TCP/IP port for shared memory	Shared memory used by TSM for communication

Refer to the following sections for the setup method and to the "SHMPort" section for port settings.

- 8.7.2 Configuration of a Server Option File

- 8.7.3 Configuration of a Client System Option File

8.5 Kernel Parameter Tuning

The Tape Server requires tuning of the kernel parameters, which are necessary for operation. This tuning depends on the system type to be set.

Note

- To perform the operation indicated in "8.2 Customization of Storage Server or Storage Management Server", the values of kernel parameters in that section must be added to the values that are indicated below.

- In addition to the conventional method, in which kernel parameters are defined in the /etc/system file, Solaris 10 has added a method in which they are defined in the /etc/project file.

Under Solaris 9 and Solaris 10 (tuning using /etc/system)

Kernel parameter tuning values

Table 8.1 Kernel parameter tuning values

Resource	Parameter	Tuning value	Recommended settings
Shared memory	shmsys:shminfo_shmmax	268435456	Maximum value
	shmsys:shminfo_shmmni	Tape backup concurrency (*1)	Addition
Semaphore	semsys:seminfo_semmni	50	Addition
	semsys:seminfo_semmns (*2)	300	Addition
	semsys:seminfo_semmnu (*2)	150	Addition
	semsys:seminfo_semopm	50	Maximum value
	semsys:seminfo_semume (*2)	50	Maximum value
	semsys:seminfo_semmsl	125	Maximum value
Messages	msgsys:msginfo_msgtql	Tape backup concurrency x 8 (*1)	Addition
	msgsys:msginfo_msgmni	Tape backup concurrency x 4 (*1)	Addition

*1 The backup concurrency indicates the number of times backup to tape and restoration from tape are performed during operation. Specify the maximum value for the backup concurrency that is enabled during operation. A transaction volume has a concurrency of one for one backup command.

*2 This setting is not required under Solaris 10.

Tuning procedure

To edit a kernel parameter, add a record for tuning into the /etc/system file or change the current values of the corresponding record.

1. Use the following command to check the values of the parameters set in the current system.

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

2. Refer to "Table: Kernel parameter tuning values" to calculate new settings for each parameter, using the higher of the tuning value and the existing value wherever Maximum value is specified, and adding the tuning value to the existing value wherever Addition is specified.

3. An example of editing the /etc/system file is shown below. (This is only an example. Use suitable values for your system environment.)

```
set shmsys:shminfo_shmmax = 268435456
set shmsys:shminfo_shmseg = 60
set semsys:seminfo_semmni = 320
set semsys:seminfo_semmns = 670
set semsys:seminfo_semmnu = 542
set semsys:seminfo_semmsl = 35
```

4. To register the new kernel parameter values in the system, reboot the system. Use the following command to reboot the system.

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

5. After the system is rebooted, use the following command to check that the correct values have been set.

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

Under Solaris 10(tuning using /etc/project)

📙 **Note**

. . . .

- If the server where this product is used also uses other software that only supports tuning by means of the /etc/system file, those setting values must be taken into account.

- If the /etc/system file and /etc/project file are both used to implement tuning, refer to the operating system documentation for setting appropriate values.

- When the /etc/project file is used to implement tuning, ensure that the values set are not less than the Solaris default values.

. . . .

The Tape Manager operates under the following projects:

- System projects

  Projects operated by the daemons that exist in the operating systems default state and similar daemons

- user.root projects

  Projects belonging to processes run with root authority in the operating systems default state

Resource control tuning values

Table 8.2 Resource control tuning values

Resource	Parameter	Tuning value	Recommended setting	Privilege level
Shared memory	project.max-shm-memory	268435456	Addition	Privileged
	project.max-shm-ids	Tape backup concurrency (*1)	Addition	Privileged
Semaphore	project.max-sem-ids	50	Addition	Privileged
	process.max-sem-nsems	125	Maximum value	Privileged
	process.max-sem-ops	50	Maximum value	Privileged
Messages	project.max-msg-ids	Tape backup concurrency x 4 (*1)	Addition	Privileged

*1 The backup concurrency indicates the number of times backup to tape and restoration from tape are performed during operation. Specify the maximum value for the backup concurrency that is enabled during operation. A transaction volume has a concurrency of one for one backup command.

To set the privilege level, specify "privileged" in the /etc/project file.

Tuning procedure

To edit parameters, modify the /etc/project file.

1. Check the initial values and the upper limits of the values that can be set for system projects and user.root projects.

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

2. Refer to "Table: Resource control tuning values" to calculate new settings for each parameter, using the higher of the tuning value and the existing value wherever Maximum value is specified, and adding the tuning value wherever Addition is specified.

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

An example of editing the /etc/project file is shown below. (This is only an example. Use suitable values for your system environment).

```
# projmod -s -K 'process.max-sem-nsems=(privileged,125,deny)' system
# projmod -s -K 'process.max-sem-ops=(privileged,50,deny)' system
# projmod -s -K 'project.max-sem-ids=(privileged,438,deny)' system
# projmod -s -K 'process.max-sem-nsems=(privileged,125,deny)' user.root
# projmod -s -K 'process.max-sem-ops=(privileged,50,deny)' user.root
# projmod -s -K 'project.max-sem-ids=(privileged,438,deny)' user.root
```

4. Use the following command to check the settings information.

   The following is an example of executing the commands.

```
# projects -l
system
        projid : 0
        comment: ""
        users  : (none)

        groups : (none)
        attribs: process.max-sem-nsems=(privileged,125,deny)
                 process.max-sem-ops=(privileged,50,deny)
                 project.max-sem-ids=(privileged,438,deny)
user.root
        projid : 1
        comment: ""
        users  : (none)
        groups : (none)
        attribs: process.max-sem-nsems=(privileged,125,deny)
                 process.max-sem-ops=(privileged,50,deny)
                 project.max-sem-ids=(privileged,438,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 following is an example of executing the commands. Please refer to the manual etc. of Solaris for details of the command.

   - system projects

```
# newtask -p system
```

   - user.root projects

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

6. Check the kernel parameter values after modification.

The following is an example of executing the commands. Please refer to the manual etc. of Solaris for details of the command.

- system projects

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

- user.root projects

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

8.6 Initial Configuration of a Tape Server

This explains the initial Configurations that are necessary for operating the Tape Server.

- 8.6.1 Required Configurations

- 8.6.2 Optional Configurations

8.6.1 Required Configurations

This explains the Configuration items that are necessary for operating the Tape Server.

8.6.1.1 Configuration of Access Path Definition Files

Indicate in the /etc/opt/FJSVswstm/conf/devpath.conf file the name of a device that is created in "8.3 Creation of Access Path Partition".

The procedure is as follows.

1. Copy the /etc/opt/FJSVswstm/conf/devpath.conf.sample file as /etc/opt/FJSVswstm/conf/devpath.conf.

2. Edit the contents of the /etc/opt/FJSVswstm/conf/devpath.conf file. Indicate one path on one line with "s2" added at the end of the path. An example of editing the /etc/opt/FJSVswstm/conf/devpath.conf file is shown below.

```
# devpath.conf
# AccessPath for E6000#1
/dev/FJSVmplb/rdsk/mplb2053s2
/dev/FJSVmplb/rdsk/mplb2054s2
/dev/FJSVmplb/rdsk/mplb2055s2
/dev/FJSVmplb/rdsk/mplb2056s2
# AccessPath for E6000#2
/dev/FJSVmplb/rdsk/mplb2057s2
/dev/FJSVmplb/rdsk/mplb2058s2
/dev/FJSVmplb/rdsk/mplb2059s2
/dev/FJSVmplb/rdsk/mplb2060s2
```

 Note

- Specify four device names for each one disk array unit.

- Do not use a path that is used for a volume with a GDS configuration.

- Do not use a path of physical slice that composes VxVM volume.

- A line beginning with # is assumed to be a comment line only.

- If an ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000 or ETERNUS4000 is used, select two access paths from the multi-paths managed by each CM of the ETERNUS disk storage systems.

8.6.1.2 Configuration of a TSM Linkage Definition File

Indicate in the /etc/opt/FJSVswstm/conf/tsm.conf file the information for connecting to a server and a client of the ETERNUS SF TSM.

The procedure is as follows.

1. Copy the /etc/opt/FJSVswstm/conf/tsm.conf.sample file as /etc/opt/FJSVswstm/conf/tsm.conf.

2. Change the file owner and file mode of the /etc/opt/FJSVswstm/conf/tsm.conf file. Set the file so that it can be accessed only from a super-user (owner is root, file mode is 0600). An example of changing and checking the file owner and file mode is shown below.

```
# cd /etc/opt/FJSVswstm/conf
# chown root tsm.conf
# chmod 600 tsm.conf
# ls -l tsm.conf
-rw-------   1 root     other          66  May 21 17:17 tsm.conf
#
```

3. Edit the contents of the /etc/opt/FJSVswstm/conf/tsm.conf file. An example of editing the /etc/opt/FJSVswstm/conf/tsm.conf file is shown below.

```
SERVER_USERID="admin"
SERVER_PASSWD="admin"
CLIENT_PASSWD="admin"
```

The meaning of each item is as follows.

Item	Meaning
SERVER_USERID	Defines a user ID for connecting to a TSM server, enclosed in "", following "=". This user ID defines the same administrator ID as one that is specified to register (register admin) a TSM administrative client.
SERVER_PASSWD	Defines the password for a user ID for connecting to a TSM server, enclosed in "", following "=". This password defines the same administrator password as one that is specified to register (register admin) a TSM administrative client.
CLIENT_PASSWD	Defines the password for a server name (SERVERname) that is indicated in a TSM client system option file (dsm.sys), enclosed in "", following "=". This password defines the same password as one that is specified to register (register node) a TSM client.

 Note
....

A line beginning with # is assumed to be a comment line.

....

8.6.1.3 Checking Definition Files

This explains how to check an access path definition file (devpath.conf) and a TSM linkage definition file (tsm.conf).

The procedure is indicated below.

Execute tbochkconf (Tape Server definition file check command).

```
# /opt/FJSVswstm/bin/tbochkconf
tbochkconf completed
#
```

> 📝 **Note**
> ....
>
> If an error occurs, a message indicating the corresponding file name and line number is displayed. Correct the error at that location and execute the tbochkconf command again.
>
> For details of the tbochkconf command, see "tbochkconf (Tape Server definition file check command)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for Tape Backup Option".
> ....

8.6.1.4 Collecting ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, and ETERNUS4000 information

When the RAID device connected to the Tape Server is an ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, or ETERNUS4000, the disk configuration information must be obtained.

> 📝 **Note**
> ....
>
> This operation does not need to be performed when the RAID device connected to the Tape Server is an ETERNUS6000, ETERNUS8000, or ETERNUS GR series.
> ....

The procedure is indicated below.

When GR720 and GR730 are not used together

1. Execute tbogetoluinfo (ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 information acquisition command) for the ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000.

```
# /opt/FJSVswstm/bin/tbogetoluinfo -l ETERNUS IP_address
ETERNUS IP_address completed. [total olu = VALUE]
/var/opt/FJSVmplb/mplb_ext.conf was update.
Or
The configuration file of CM information was update.
#
```

Specify an IP address of an ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 for <*ETERNUS IP_address*> in IPv4 format. An example is provided below.

```
# /opt/FJSVswstm/bin/tbogetoluinfo -l 10.124.6.10
10.124.6.10 completed. [total olu = 100]
The configuration file of CM information was update.
#
```

2. Have the GR multipath driver read the LUN information. This procedure is not required if an ETERNUS multipath driver is installed in the Tape Server.

```
# mplbconfig -q
#
```

> 📝 **Note**
> ....
>
> Do not execute this command while the RAID migration process is in progress.
> ....

When GR720 and GR730 are used together

When the RAID device connected to the Tape Server includes ETERNUS GR720/GR730 and ETERNUS3000, tbogetoluinfo (ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 information acquisition command) and the mplbconfig -q function cannot be used. In this case, perform the following procedure.

- For ETERNUS3000

    1. Login to ETERNUS Web GUI of ETERNUS3000.

    2. Click [Setting RAID/Setting Host] from the Main menu.

    3. Click [Change assigned CM for RAID Group] from the [Setting RAID/Setting Host] menu.

    4. Select the check box of [A dynamic change of CM for RAID Group is not performed.] for "CM dynamic change set up for RAID Group".

    5. Click the [Set] button.

- For ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS4000

    This procedure is not required.

8.6.1.5 Creation of a TSM Environment File to Backup

Create a TSM environment file that is required to backup the tape management information.
The procedure is indicated below.

1. Copy the /etc/opt/FJSVswstm/conf/tsmbkfile.sample file as /etc/opt/FJSVswstm/conf/tsmbkfile.

2. As required, edit the contents of the /etc/opt/FJSVswstm/conf/tsmbkfile file. If "$DIR4" (a database directory of the ETERNUS SF TSM) whose amount of disk space is estimated in "7.3.2 Dynamic Disk Resources" differs from that of the TSM standard directory, edit the contents of tsmbkfile (the standard directory is /opt/tivoli/tsm/server/bin).

    For details of the contents to be edited, see "Backup of tape management information" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for Tape Backup Option".

  See
. . . .
For details of the backup of the tape management information, see "tboresback (Tape management information backup command)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for Tape Backup Option".
. . . .

8.6.2 Optional Configurations

Valid optional settings are not currently available.

8.7 TSM Configuration (to be done before Setting of Automatic Activation of Daemons)

This explains the TSM configuration and should be performed before the configuration of Automatic Activation of Daemons.

Locate the following file and database in "$DIR4" (a database directory of the ETERNUS SF TSM) whose amount of space is estimated in "7.3.2 Dynamic Disk Resources".

- Server option file

- Database and log file

This database directory of the ETERNUS SF TSM is hereinafter called a "DB directory". Normally, specify /opt/tivoli/tsm/server/bin.

8.7.1 Driver Configuration of Tape Library System

This explains the driver Configuration of the tape library system that the TSM system of the Tape Server uses. The procedure is outlined below.

1. Set up the robot.

2. Set up the IBM Tape Driver.

3. Set up the FC-SW connection. (For the FC-SW connection only)

4. Set up the FC direction connection. (For the FC direct connection only)

Note

. . . .

The definition depends on the type of the tape library system. For details, see the "ETERNUS SF TSM ETERNUS LT Library Operation Guide (LT160)" and "Appendix D Tape Library (LT20/LT40/LT60/LT220/LT230/LT250/LT270) Setup".

. . . .

8.7.2 Configuration of a Server Option File

This explains how to write the definitions related to a TSM server operation to the dsmserv.opt file. The dsmserv.opt file is stored in "$DIR4" ("DB directory") the amount of space for which is estimated in "7.3.2 Dynamic Disk Resources".

The procedure is as follows.

1. Copy /opt/tivoli/tsm/server/bin/dsmserv.opt (that is sample file) to "DB directory". In the following example, "DB directory" is described as *DB_directory*.

   If the dsmserv.opt file is located in /opt/tivoli/tsm/server/bin, this step is not required.

   ```
   # cp /opt/tivoli/tsm/server/bin/dsmserv.opt DB_directory
   #
   ```

2. Edit the contents of the dsmserv.opt file under the "DB directory".

   An example of the contents of the dsmserv.opt file is shown below.

   ```
   VOLUMEHistory    /opt/tivoli/tsm/server/bin/volhist.out
   DEVCONFig        /opt/tivoli/tsm/server/bin/devconfig.out
   EXPInterval   1
   COMMmethod    SHAREDMEM
   SHMPort       1510
   MAXSessions      30
   ```

   The meaning of each item is as follows.

Item	Meaning
VOLUMEHistory	Specifies in a full path the name of a file to which to save the copy of sequential-volume information. For the directory, specify "DB directory". The file name is volhist.out. Normally specify "/opt/tivoli/tsm/server/bin/volhist.out".
DEVCONFig	Specifies in a full path a file to which to save the copy of device configuration information. For the directory, specify "DB directory". The file name is devconfig.out. Normally specify "/opt/tivoli/tsm/server/bin/devconfig.out".
EXPInterval	Specifies an interval (times) between automatic checks for files whose validity has expired. Beginning at the startup point of the TSM daemon, checks for term expirations are made using the specified interval (times). Normally you would specify "1".
COMMmethod	Specifies a communication protocol. Indicate the following value: - SHAREDMEM
SHMPort	Specifies the TCP/IP port number of shared memory. Indicate the following value: - "1510"

Item	Meaning
	When the system is using 1510, specify a free port number from 1000 to 32767.
MAXSessions	Specifies the simultaneous number of sessions of a TSM client that can connect to a TSM server. Specify the following value.
	Tape backup concurrency x 2 (*1)
	If the calculated value is 25 or less, specify 25. This is the TSM default value.
	(*1) The backup concurrency indicates the number of times backup to tape and restoration from tape are actually performed. Specify the maximum value of the backup concurrency that is enabled during operation. Normally, a transaction volume has a concurrency of one for one backup command.

Note

A line beginning with * is interpreted as a comment.

Be careful not to assign the port numbers specified for SHMPort to any other software product or configuration

For details on the configuration of the server option file, refer to "Tivoli Storage Manager for Sun Solaris Administrator's Guide" and "Tivoli Storage Manager for Sun Solaris Administrator's Reference".

8.7.3 Configuration of a Client System Option File

This details how to write the definitions related to a TSM client operation to the /usr/bin/dsm.sys and /usr/bin/dsm.opt files.

The procedure is as follows.

1. Edit the contents of the /usr/bin/dsm.sys file. An example of the /usr/bin/dsm.sys file is shown below. Items or values specified after the first argument (eg., "nodename") on each line must be delimited with a space (or tab).

```
SERVERname      tapeserver1
 nodename        tapeserver1
 COMMmethod      SHAREDMEM
 SHMPort         1510
 PasswordAccess generate
```

The meaning of each item is as follows.

Item	Meaning
SERVERname	Specifies a node name of Tape Server.
Nodename	Specifies a node name of Tape Server.
COMMmethod	Specifies a communication protocol. Indicate the following value:
	SHAREDMEM
SHMPort	Specifies a shared memory TCP/IP port number.
	Specify the same value as that specified in dsmserv.opt in the 8.7.2 Configuration of a Server Option File.
PasswordAccess	Specifies how to update the password that a TSM client uses.
	You would normally use the following value:
	"generate"

Lines beginning with * are interpreted as comment.

Be careful not to use in another software product the port number that is specified for SHMPort.

2. Edit the contents of the/usr/bin/dsm.opt file. An example of the /usr/bin/dsm.opt file is shown below.

```
SERVERname      tapeserver1
```

The meaning of each item is as follows.

Item	Meaning
SERVERname	Specifies a node name of Tape Server.

Lines beginning with * are interpreted as comment.

For details on configuration of the client system option file, refer to "Tivoli Storage Manager for Sun Solaris Administrator's Guide" and "Tivoli Storage Manager for Sun Solaris Administrator's Reference".

8.7.4 Formatting a Database and Log File

This explains how to format a database and log file. The database and log file are stored in "$DIR4" ("DB directory") allocated space for is estimated in "7.3.2 Dynamic Disk Resources".

The functions for extending the TSM database and log file (extend db and extend log) cannot be used. Specify a value large enough to accommodate any future requirements of the backup operation.

For details on extending the space of the ISM database and log file, refer to "Tivoli Storage Manager for Sun Solaris Administrator's Guide" and "Tivoli Storage Manager for Sun Solaris Administrator's Reference".

The procedure is as follows.

1. Set up the shell and environment variables that are required in the following operations.

Shell and environment variables are required until "8.7.5 Registration of a TSM Administrative Client and TSM Server Name" completes. If a shell or environment variable is deleted by a session disconnection or a similar process, then re-execute this configuration.

The following is an example of /bin/sh or /bin/ksh command execution in prompt.

```
# TSMDB=DB_directory; export TSMDB
# DSMSERV_DIR=/opt/tivoli/tsm/server/bin; export DSMSERV_DIR
# DSMSERV_CONFIG=$TSMDB/dsmserv.opt; export DSMSERV_CONFIG
#
```

2. Delete the database and log file that are created through installation.

```
# cat /opt/Tivoli/tsm/server/bin/dsmserv.dsk
#dsk_comment#page_shadow_token:1050524192947   <- This is a comment line
/opt/tivoli/tsm/server/bin/log.dsm             <- This is a log file
/opt/tivoli/tsm/server/bin/db.dsm              <- This is a database
# rm /opt/tivoli/tsm/server/bin/log.dsm
# rm /opt/tivoli/tsm/server/bin/db.dsm
```

```
# rm /opt/tivoli/tsm/server/bin/dsmserv.dsk
#
```

Refer the file that contains the database and log file (dsmserv.dsk) and locates the log.dsm and db.dsm file paths.

Delete the log.dsm and db.dsm files.

Finally, delete the file that contains the database and log file (dsmserv.dsk).

3. Create the database and log file and format them.

```
# cd $TSMDB
# /opt/tivoli/tsm/server/bin/dsmfmt -m -db database_file_name database_file_size
# /opt/tivoli/tsm/server/bin/dsmfmt -m -log log_file_name log_file_size
#
```

The meaning of the specified items is as follows.

Item	Meaning
database_file_name	Specifies in a full path the file name of a database to be created. For the directory, specify "DB directory". The file name is db.dsm. Normally specify "/opt/tivoli/tsm/server/bin/db.dsm".
log_file_name	Specifies in a full path the file name of a log to be created. For the directory where the file is created, specify "DB directory". The file name is log.dsm. Normally specify "/opt/tivoli/tsm/server/bin/log.dsm".
database_file_size	Specifies the size of a database to be created (in megabytes). Specify the value that is estimated in "7.3.2 Dynamic Disk Resources". Specify a value large enough to change the backup operation in the future.
log_file_size	Specifies the size of a log file to be created (in megabytes). Specify a value of 129 or greater. The specified value should be a multiple of 4MB, with 1MB added.

An example is provided below.

```
# cd $TSMDB
# /opt/tivoli/tsm/server/bin/dsmfmt -m -db $TSMDB/db.dsm 129
# /opt/tivoli/tsm/server/bin/dsmfmt -m -log $TSMDB/log.dsm 129
#
```

4. Format the database and log file.

```
# cd $TSMDB
# /opt/tivoli/tsm/server/bin/dsmserv format 1 $TSMDB/log.dsm 1 $TSMDB/db.dsm
#
```

For log.dsm and db.dsm, specify the file names that are specified with the "dsmfmt" command.

🗒 See
. . . .
For details on formatting the database and log, refer to "Tivoli Storage Manager for Sun Solaris Administrator's Guide" and "Tivoli Storage Manager for Sun Solaris Administrator's Reference".
. . . .

8.7.5 Registration of a TSM Administrative Client and TSM Server Name

This explains how to register a TSM client and TSM server name.

Use the shell and environment variables that are used in "8.7.4 Formatting a Database and Log File".
The procedure is as follows.

1. Activate the TSM server daemon manually. If the activation succeeds, a prompt with "TSM>" is displayed.

```
# cd $TSMDB
# /opt/tivoli/tsm/server/bin/dsmserv
    :
    :
TSM>
```

Note

. . . .
To perform the configuration, the TSM server daemon must be activated manually. If the daemon is automatically activated, the setting is disabled.
. . . .

2. Register the TSM administrator ID and password.

```
TSM> register admin ID password passexp=expire_prior
```

For the *ID* and *password*, use the values that are set in "8.6.1.2 Configuration of a TSM Linkage Definition File". For the password validity term,"*expire_prior*", specify a "0" value (infinite). An example is provided below.

```
TSM> register admin admin admin passexp=0
TSM>
```

3. Authorize the administrator.

```
TSM> grant authority ID class=system
```

For the *ID*, specify the administrator ID that is set above. An example is provided below.

```
TSM> grant authority admin class=system
TSM>
```

4. Set the TSM server name.

```
TSM> set servername server_name
```

For the *server_name*, specify <SERVERname> that is set in the client system option file (dsm.sys). An example is provided below.

```
TSM> set servername tapeserver1
TSM>
```

5. Deactivate the TSM server daemon.

```
TSM> halt
```

Note

. . . .
Execute the halt command at the prompt on the server where the TSM server daemon is active (not the shell command prompt).
. . . .

See

. . . .
For details on registering the TSM administrative client and TSM server name, refer to "Tivoli Storage Manager for Sun Solaris Administrator's Guide" and "Tivoli Storage Manager for Sun Solaris Administrator's Reference".
. . . .

8.8 Configuring Automatic Activation of Daemons

The Tape Server uses the following daemons.

The following explains the Configuration for automatically activating these daemons.

8.8.1 Daemon as a Storage Server or Storage Management Server

Daemons are automatically activated as Daemons as a Storage Server or Storage Management Server through the customization process.

8.8.2 Tape Server Daemon

To automatically activate the Tape Server daemon, see "8.6 Initial Configuration of a Tape Server".

Note

Even if the system is started up, the Tape Server daemon cannot be activated until "8.6 Initial Configuration of a Tape Server" is completed and the system has been rebooted.

To activate or deactivate the Tape Server daemon alone, see "Activation and Deactivation of a daemon" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for Tape Backup Option".

8.8.3 TSM Server Daemon

To automatically activate the TSM server daemon, perform the following:

1. Copy /opt/tivoli/tsm/server/bin/initTSM to /etc/init.d/initTSM.

   ```
   # cp /opt/tivoli/tsm/server/bin/initTSM /etc/init.d/initTSM
   #
   ```

2. Change the file owner and file mode of the /etc/init.d/initTSM file and set the file so that it can be accessed from the super-user only.

   Select an execution-enabled mode (owner is root, file mode is 0700).

   An example of changing and checking the file owner and file mode is shown below.

   ```
   # cd  /etc/init.d
   # chown root initTSM
   # chmod 700 initTSM
   # ls -l initTSM
   -rwx------   1 root     other       1228  May 26 17:05 initTSM
   #
   ```

3. To start up or shut down the system, create the following symbolic link files.

   | /etc/rc2.d/S99tsmsv | is TSM server daemon activation script |
   | /etc/rc0.d/K00tsmsv | is TSM server daemon deactivation script |

   An example is provided below.

```
# ln -s /etc/init.d/initTSM /etc/rc2.d/S99tsmsv
# ln -s /etc/init.d/initTSM /etc/rc0.d/K00tsmsv
#
```

4. Edit the contents of the /etc/init.d/initTSM file. An example of editing the contents of the /etc/init.d/initTSM file is shown below.

```
LANG=C; export LANG
:
:
'start')
        TSMDB=/opt/tivoli/tsm/server/bin     -> DB directory
:
:
'stop')
        ID=admin     -> User ID to connect to the TSM server
      PA=admin     -> Password corresponding to the User ID to connect to the TSM server
:
:
```

The meaning of the specified item is as follows.

Item	Meaning
TSMDB	Defines the storage path name of a TSM server database following "=". For the path name, specify a "DB directory".
ID	Defines the user ID to connect to a TSM server, following "=". This user ID defines the same administrator ID as one that is specified to register a TSM administrative client (register admin).
PA	Defines the password for the user ID to connect to a TSM server, following "=". This password defines the same administrator password as one that is specified to register a TSM administrative client (register admin).

8.9 TSM Configuration (the settings set after the daemon automatic start settings)

This section details how to configure the TSM settings after the automatic activation of daemons is completed.

📝 Note

. . . .

When the Configuration of automatically activate daemons is completed, reboot the system and activate all the daemons on the Tape Server.

. . . .

Before performing the following operations, execute dsmadmc (TSM administrative client command). If the prompt with "tsm>" is not displayed as in the execution example, re-try dsmadmc (TSM administrative client command) and if successful, then perform the operations.

The following details how to start and stop the TSM administrative client command and TSM client command.

How to start TSM administrative client command

Execute dsmadmc (TSM administrative client command).

After the successfully creating a TSM shell, the "tsm>" prompt is displayed.

An example is provided below.

```
# cd /opt/tivoli/tsm/client/ba/bin
# ./dsmadmc
```

```
IBM Tivoli Storage Manager
Command Line Administrative Interface - Version 5, Release 5, Level 2.0
(c) Copyright by IBM Corporation and other(s) 1990, 2009. All Rights Reserved.


Enter your user id:  admin


Enter your password:


Session established with server SOL-41: Solaris SPARC
  Server Version 5, Release 5, Level 2.0
  Server date/time: 06/04/09   17:41:13  Last access: 06/04/09   17:27:46
```

You will be asked to provide a user id and a password.

At the [Enter your user id] prompt, enter the TSM administrator ID and press the Return key.

At the [Enter your password] prompt, enter the TSM administrator password and press the Return key.

How to Stop TSM administrative client command

To stop dsmadmc (TSM administrative client command), enter "quit" in the "tsm>" prompt. An example is provided below.

```
tsm> quit
```

8.9.1 Registration of License

This section details how to register the license in the TSM system.

The procedure is as follows.

1. Register the license.

   Specify only tsmee.lic for the Tape Server license.

   ```
   tsm> register license file= tsmee.lic
   ```

2. Check the registered license information.

   ```
   tsm> query license
   ```

See

For details of the license registration, refer to "Tivoli Storage Manager for Sun Solaris Administrator's Guide".

8.9.2 Registration of Client Node

This explains how to register the client node in the TSM system.

The procedure is as follows.

1. Register the TSM administrator ID and password.

   ```
   tsm> register node client_node_name password passexp=expire_prior archdelete=yes
   backdelete=yes maxnummp=maxnum_mntpnt
   ```

   For the *client_node name*, specify a tape server node name. For the *password*, use the value that is set in "". For the *expire_prior*, specify 0 (infinite). For the archdelete and backdelete, specify "yes". For the *maxnum_mntpnt*, specify 999 (maximum value). An example is provided below.

```
tsm> register node tapeserver1 admin passexp=0 archdelete=yes backdelete=yes
maxnummp=999
ANR2060I Node tapeserver1 registered in policy domain STANDARD.
ANR2099I Administrative userid tapeserver1 defined for OWNER access to node
tapeserver1.
tsm>
```

2. Confirm the client node information.

```
tsm> query node format=detail
```

See
....
For details of the client node registration, refer to "Tivoli Storage Manager for Sun Solaris Administrator's Guide".
....

8.9.3 Configuring a TSM Environment

This explains how to set the TSM environment related configuration.

- Define the preservation days of an activity log.

```
tsm> set actlogretention days
```

An example is provided below.

```
tsm> set actlogretention 100
tsm>
```

See
....
For details of the TSM environment related configurations, refer to "Tivoli Storage Manager for Sun Solaris Administrator's Guide".
....

8.9.4 Configuration of a Tape Library System

This explains how to set up the tape library system in the TSM system.

8.9.4.1 When a Tape Library System is not shared between Tape Servers

The Configuration procedure applied when the tape library system is not shared between the Tape Servers (for example, there is only one Tape Server) is as follows. Refer to "Appendix D Tape Library (LT20/LT40/LT60/LT220/LT230/LT250/LT270) Setup" in Appendix D.

1. Set the tape library (controller) system. (define library)

2. Set the tape library path. (define path)

3. Set the drive. (define drive)

4. Set the drive path. (define path)

5. Execute steps 1 to 4 on each Tape Server.

Note
....
The definitions depend on the type of the tape library system. For details, see the "ETERNUS SF TSM ETERNUS LT Library Operation Guide (LT160)" and "Appendix D Tape Library (LT20/LT40/LT60/LT220/LT230/LT250/LT270) Setup".
....

8.9.4.2 When a Tape Library System is shared between Tape Servers

The Configuration procedure applied when the tape library is shared between the Tape servers is as follows.

1. Configuration on a library management server

   a. Set the shared tape library (controller) system. (define library)

   b. Set the tape library path for the library management server. (define path)

   c. Set the drive. (define drive)

   d. Define the drive path. (define path)

2. Configuration on a library client server

   Set the shared tape library (controller) system. (define library)

3. Configuration on a library management server

   Set the tape library path for the library client server. (define path)

![Note icon] **Note**

. . . .

The definitions depend on the type of the tape library system. For details, see the "ETERNUS SF TSM ETERNUS LT Library Operation Guide" and "Appendix D Tape Library (LT20/LT40/LT60/LT220/LT230/LT250/LT270) Setup"

. . . .

Chapter 9 Upgrade

This chapter describes how to upgrade from Softek AdvancedCopy Manager and ETERNUS SF AdvancedCopy Manager 13.0 or later to a later edition.

If the entire system is being upgraded, proceed in the following sequence:

1. Storage Management Server and the GUI client

2. Storage Servers

3. Tape server

📎 Note

. . . .

If the Storage Management Server or a Storage Server is also used as a Tape server, refer to "9.4 Upgrading the Tape Server".

. . . .

9.1 Upgrading the Storage Management Server and the GUI client

This section describes how to upgrade the Storage Management Server and the GUI client.

Refer to "9.2 Upgrading a Storage Management Server which also serves as a Storage Server and the GUI client" for more information.

1. 9.1.1 Backing up the repository data

   Save the existing repository data to a location outside any ACM directory paths before the upgrade.

2. 9.1.2 Backing up the license management database of License Manager

   Backup the license management database of ETERNUS SF License Manager.

3. 9.1.3 Uninstallation

   Delete the repository environment, and uninstall the existing version from the Storage Management Server.

4. 9.1.4 Installation

   Install the product, and create a new repository environment.

5. 9.1.5 Restoring the license management database of License Manager

   Restore the license management database that has been backed up.

6. 9.1.6 Restoring repository data

   Restore the backed-up repository data.

7. 9.1.7 Version Upgrade of GUI Client

   Upgrade the version of the GUI client.

8. 9.1.8 Changing server information

   Make the appropriate changes to the server information to ensure data consistency.

📎 Note

. . . .

Change to the configuration during the upgrade:

If the server name, IP address, or port number of the Storage Management Server needs to be changed during the upgrade, make the change after completing the upgrade.

Refer to "Changing the Operating Environment" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide" for more detail on how to make the change.

. . . .

9.1.1 Backing up the repository data

Execute the database backup to save all stored repository data to the specified directory as blocks of data.

1. Backup the database.

    -   For Windows, use the "DB backup" under DB setup to backup the data.

    -   For Solaris/Linux, use the stgdbbackup command to backup the data.

2. Check if backup was successful.

    Make sure that files with the extension .unl have been created in the specified directory.

For details on how to execute the command, refer to "Database backup" in the appropriate version of the "ETERNUS SF AdvancedCopy Manager Operator's Guide". Note that it is not an execution procedure of "Making a package backup of databases".

9.1.2 Backing up the license management database of License Manager

Backup the license management database of ETERNUS SF License Manager by using "esflm backup" command. For details of "esflm backup" command, refer to the "ETERNUS SF Installation and Setup Guide" for the currently using version.

-   Example of executing "esflm backup" command

```
> esflm backup Backup.dat
Backup of license database was performed successfully
```

9.1.3 Uninstallation

Refer to the OS manual that is applicable to the old version, and uninstall it.

Non-cluster operation

 Note
. . . .

Take care to not use the procedures indicated under "Deletion of all Storage servers".

. . . .

-   [For Windows edition]

    -   For AdvancedCopy Manager 13.1 or later

        Perform uninstallation using the procedures in the "ETERNUS SF AdvancedCopy Manager Installation Guide" under "Manager Uninstallation", "For the Windows edition". Perform only the procedures in "Deleting the Web server settings information" and subsequent procedures.

    -   For AdvancedCopy Manager 13.0 or earlier

        Perform the uninstall using the procedures in the "ETERNUS SF AdvancedCopy Manager Installation Guide" under "Details of Manager of AdvancedCopy Manager uninstallation". Perform only the procedures in "Deleting the Web server settings information" and subsequent procedures.

-   [For Solaris and Linux editions]

    -   For AdvancedCopy Manager 13.1 or later

        Perform the uninstall using the procedures in the "ETERNUS SF AdvancedCopy Manager Installation Guide" under "Manager Uninstallation" "For Solaris edition and Linux edition". Perform only the procedures in "Daemon deactivation" and subsequent procedures.

    -   For AdvancedCopy Manager 13.0 or earlier

        Perform the uninstall using the procedures in the "ETERNUS SF AdvancedCopy Manager Installation Guide" under "Uninstallation of the storage management server". Perform only the procedures in "Daemon deactivation" and subsequent procedures.

Cluster operation

📝 Note
....
When performing the following tasks, take care to not use the procedures indicated under "Deletion of all Storage Servers".
....

- [For Windows edition]

    1. Perform the procedures in the "ETERNUS SF AdvancedCopy Manager Cluster Operator's Guide" under "Deleting Storage Management server transactions and Storage server transactions" to perform cluster unsetup and to delete the Storage Management Server transactions.

    2. Perform the uninstall by performing the procedures in the "ETERNUS SF AdvancedCopy Manager Installation Guide" under "Details of Manager of AdvancedCopy Manager uninstallation". Perform only the procedures in "Deleting applications or programs" and subsequent procedures.

- [For Solaris and Linux editions]

    1. Perform the procedures in the "ETERNUS SF AdvancedCopy Manager Cluster Operator's Guide" under "Deleting Storage Management Server transactions and Storage Server transactions" to perform cluster unsetup and to delete the Storage Management Server transactions.

    2. Perform the uninstall by performing the procedures in the "ETERNUS SF AdvancedCopy Manager Installation Guide" under "Uninstallation of the storage management server". Perform only the procedures in "Daemon deactivation" and subsequent procedures.

9.1.4 Installation

Install the new version of ETERNUS SF AdvancedCopy Manager, and configure the repository operating environment.

For more information on this procedure, refer to the following locations as appropriate.

Installation

- Non-cluster operation:

    "Chapter 2 Installation of the Manager"

- Cluster operation:

    "Installation of the Manager function of AdvancedCopy Manager" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster environment"

📘 Point
....
If system environment is Linux 5 for Intel64, Do the "2.2.4.2 Software Installation" as follows:

- step 3: Choose an installation directory of [System environment of 5 for x86]

- step 13:Install License Manager of the Path of FJSVesflm package of "Red Hat Enterprise Linux 5 (for x86)" in "E.2.3 Installation on Linux environment"
....

Configuring the repository operating environment

- Non-cluster operation:

    "Chapter 3 Customization of Storage Management Server"

- Cluster operation:

    "Customization of Storage Management Server Transactions and Storage Server Transactions" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster environment"

9.1.5 Restoring the license management database of License Manager

Restore the license management database that has been backed up. For the restoration procedures, refer to "E.5.6 esflm restore (License management database restore command)".

- Example of executing "esflm restore" command

```
> esflm restore Backup.dat
Restoration of license database was performed successfully
```

9.1.6 Restoring repository data

Execute stgrepocnv (Repository data conversion command) to restore the repository data and then convert it for use with the current version of the repository. For more details on the command, refer to "Changing the Operating Environment" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide".

9.1.7 Version Upgrade of GUI Client

Match the version of the GUI client with that of the Storage Management Server.

The procedure for this is described below. For operation by commands only, however, this procedure can be skipped.

1. Uninstallation

   Uninstall the old version of the GUI client according to "10.3 Uninstall of GUI Client".

2. Installation

   Referring to "Chapter 6 Installation of the GUI Client", install a GUI client with the same version as the Storage Management Server.

9.1.8 Changing server information

To ensure data consistency, use the appropriate GUI client or stgxfwcmmodsrv (Server information change command) to make the necessary changes to server information.

Using the GUI client:

1. Select and right click the Storage Management Server from the site view.

2. Select the [Modify] option from the context menu, the [Modify Storage Server] dialogue is displayed. Click the [OK] button without changing anything in the display.

For details on how to use the GUI client, refer to "How to change the Storage server information" in the "ETERNUS SF AdvancedCopy Manager GUI User's Guide".

Using the command at a command prompt:

Specify the Storage Management Server name in the "-n" option of stgxfwcmmodsrv (Server information change command), and execute the command.

For details on how to use the command, refer to "stgxfwcmmodsrv (Server information change command)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide".

9.2 Upgrading a Storage Management Server which also serves as a Storage Server and the GUI client

This section describes how to upgrade a Storage Management Server which serves as a Storage Server and the GUI client.

1. 9.1.1 Backing up the repository data

   Save the repository data of the environment to a location outside the ACM directory paths before the upgrade.

2. 9.3.2 Backing up management information

   Save the management information of the environment to a location outside the ACM directory paths before the upgrade.

3. 9.1.3 Uninstallation

   Delete the repository operating environment, and uninstall the existing version from the Storage Management Server.

4. 9.1.4 Installation

   Install the new product version, and create the repository operating environment.

5. 9.1.6 Restoring repository data

   Restore the backed-up repository data.

6. 9.1.7 Version Upgrade of GUI Client

   Upgrade the version of the GUI client.

7. 9.1.8 Changing server information

   Make the appropriate changes to the server information to ensure data consistency if necessary.

8. 9.3.8 Restoring management information

   Restore the backed-up management information.

⑤ Note

Change to the configuration during the upgrade:

- Changing configuration when upgrading.

  If the server name, IP address, or port number of the Storage Management Server must be changed during the upgrade, make the change after completing the upgrade using the above procedure. Refer to "Changing the Operating Environment" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide" for details on how to make the change.

- If backup has been performed for the LVM (Logical Volume Manager) volumes.

  - For AIX
    Restart the operating system in the installation procedure while upgrading the Storage Server.
    The volume status changes from "Available" to "Defined" by restarting the operating system, but the volume may be detected as another new device.

    Refer to the following sections for the actions to be taken.

    - If the problem has already occurred.

      Refer to the "Server restart after backup or replication" in "General notes" in "ETERNUS SF AdvancedCopy Manager Operator's Guide" (AIX)

    - To avoid the problem in advance.

      For the backup volumes, refer to "Procedure which mounts backup volume" in the "Notes on restoration" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide."

9.3 Upgrading the Storage Server

This section describes how to upgrade the Storage Server.

If tape backup operations are not performed

Perform steps 1 and 5 only if cluster operation is used for Storage Servers.

1. 9.3.1 Backing up repository data

   Save the repository data. Perform this step from the Storage Management Server.

2. 9.3.2 Backing up management information

Save the management information of the environment to a location outside the ACM directory paths before the upgrade.

3. 9.3.4 Uninstall

Uninstall the existing version from the Storage Server.

4. 9.3.5 Install

Install the new product version, and create the environment.

5. 9.3.6 Restoring repository data

Restore the repository data that was backed up. Perform this step from the Storage Management Server.

6. 9.3.7 Changing server information

Make the appropriate changes to the server information to ensure data consistency if necessary.

7. 9.3.8 Restoring management information

Restore the saved management information.

8. 9.3.9 Updating the version information

Update the Storage server version information

If tape backup operations are performed

Perform steps 1, 3, 6 and 10 only if cluster operation is used for Storage Servers.

1. 9.3.1 Backing up repository data

Save the repository data. Perform this step from the Storage Management Server.

2. 9.3.2 Backing up management information

Save the management information in the environment before the upgrade.

3. 9.3.3 Backing up tape management information

Save the tape management information in the environment before the upgrade. Perform this step from the Tape Server.

4. 9.3.4 Uninstall

Uninstall the existing product.

5. 9.3.5 Install

Install the new product, and create the environment.

6. 9.3.6 Restoring repository data

Restore the repository data that was backed up. Perform this step from the Storage Management Server.

7. 9.3.7 Changing server information

Make the appropriate changes to the server information to ensure data consistency.

8. 9.3.8 Restoring management information

Restore the management information that was backed up.

9. 9.3.9 Updating the version information

Update the Storage server version information

10. 9.3.10 Restoring tape management information

Restore the tape management information that was backed up. Perform this step from the Tape Server.

Note

Notes for Upgrading:

- Changing server information during an upgrade:

If the server name, IP address, or port number of the Storage Management Server must be changed during the upgrade, make the change after completing the upgrade using the above procedure. Refer to "Changing the Operating Environment" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide" for details on how to make the change.

- Upgrading a volume that is used for backup operations with LVM (Logical Volume Manager)

  - AIX version
    When the system is rebooted during the process of installing the Storage server upgrade, the status of the volume which is used in the copy destination, changes from [enabled] to [defined], however, the volume might be detected as another new device.

    The following two options can be taken:

    - If a reboot has taken place, do the following:

      Refer to "Restarting the server after backup or replication" in"10.1.1. General Notes" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide."

    - Before starting the upgrade, do the following:

      For backup volume, refer to "Procedure for mounting a backup volume" in "10.1.4 Notes on restoration" in the"ETERNUS SF AdvancedCopy Manager Operator's Guide" (AIX).

9.3.1 Backing up repository data

Backup the Storage Management Server repository data.

- For Windows edition

  Use "DB backup" under DB setup to backup the data.

- For Solaris and Linux editions

  Use the stgdbbackup command to backup the data.

For details on how to execute the command, refer to "Database backup" in the appropriate version of the "ETERNUS SF AdvancedCopy Manager Operator's Guide". Note that it is not an execution procedure of "Making a package backup of databases".

9.3.2 Backing up management information

Back up the following management information on Storage Servers

- If backup is being performed:

  - Backup management files

  - Pre-processing and post-processing scripts for backup management

- If tape backup is used:

  - Pre-processing and post-processing scripts for copying to tape

  - Transaction volume locking specification file for backups [For Windows]

  - Backup volume locking specification file for backups [For Windows]

  - Backup restored volume locking specification file [For Windows]

  - Backup volume locking specification file for tape copy [For Windows]

- If replication is used:

  - Replication management files

  - Pre-processing and post-processing scripts for replication management

  - Copy source volume locking specification file [For Windows]

  - Copy destination volume locking specification file [For Windows]

- Timeout value specification file of concurrent suspend function

For servers that act as both a Storage Server and a Storage Management Server, and in cases where the Storage Management Server is upgraded at the same time, the repository is backed up during the upgrade procedure for the Storage Management Server. Accordingly, it is not necessary to back up the repository by copying the replication management files in the Storage Server.

For details on how to back up backup management files and replication management files, refer to "Making individual backups of databases" under "Database Maintenance" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide".

- "Backup of backup management files and recovery control files" (Solaris, Windows, Linux)

- "Backup of backup management files" (HP-UX, AIX)

- "Backup of replication management files"

Back up other management information individually using the copy command..

9.3.3 Backing up tape management information

Execute backup of the tape management information to the directory specified for tape server tape management information.

Refer to "Backing up tape management information" in the appropriate version of the "ETERNUS SF AdvancedCopy Manager Operator's Guide for Tape Backup Option" for the execution procedure.

9.3.4 Uninstall

Refer to the OS manual that is applicable to the old version, and uninstall it.

Non-cluster operation

 Note
. . . .

Take care to not use the procedures indicated under "Deletion of all Storage Servers".
. . . .

- [For Windows edition]

    - For AdvancedCopy Manager 13.1 or later

    Perform the uninstall using the procedures in the "ETERNUS SF AdvancedCopy Manager Installation Guide" under "Agent uninstallation", "For the Windows edition". Perform only the procedures in "Uninstallation" and subsequent procedures.

    - For AdvancedCopy Manager 13.0 or earlier

    Perform the uninstall using the procedures in the "ETERNUS SF AdvancedCopy Manager Installation Guide" under "Details of Agent of AdvancedCopy Manager uninstallation". Perform only the procedures in "Deleting applications or programs" and subsequent procedures.

- [For Solaris, Linux, HP-UX and AIX editions]

    - For AdvancedCopy Manager 13.1 or later

    Perform the uninstall using the procedures in the "ETERNUS SF AdvancedCopy Manager Installation Guide" under "Agent Uninstallation", "For Solaris, Linux, HP-UX and AIX editions". Perform only the procedures in "Daemon deactivation" and subsequent procedures.

    - For AdvancedCopy Manager 13.0 or earlier

    Perform the uninstall using the procedures in the "ETERNUS SF AdvancedCopy Manager Installation Guide" under "Storage server uninstallation". Perform only the procedures in "Daemon deactivation" and subsequent procedures.

Cluster operation

If cluster operations are used for Storage Servers as Storage Server transactions, cluster settings need to be removed before the uninstallation process.

Refer to the appropriate version of the "ETERNUS SF AdvancedCopy Manager Operator's Guide for Cluster Environment" under "Deleting Storage Management Server transactions and Storage Server transactions" for information concerning these procedures.

9.3.5 Install

Install the new version of ETERNUS SF AdvancedCopy Manager, and configure the environment.

For more information on this procedure, refer to the following locations as appropriate:

Installation

- Non-cluster operation:

    "Chapter 4 Installation of the Agent"

- Cluster operation:

    "Installation of the Agent function of ETERNUS SF AdvancedCopy Manager" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for the cluster environment"

📘 Point

. . . .

If system environment is Linux 5 for Intel64, Do the "2.2.4.2 Software Installation" as follows:

- step 3: Choose an installation directory of [System environment of 5 for x86]

. . . .

Setting up the repository operating environment

- Non-cluster operation:

    "Chapter 5 Customization of Storage Server"

    After the above, activate AdvancedCopy Manager on the Storage Server. For details, refer to "Starting and stopping daemons" or "Starting and stopping services" in the appropriate "ETERNUS SF AdvancedCopy Manager Operator's Guide".

- Cluster operation:

    "Customization of Storage Management Server Transactions and Storage Server Transactions" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for the cluster environment"

9.3.6 Restoring repository data

Restore the backed up repository data of the Storage Management Server. Refer to "9.1.6 Restoring repository data" for information on this procedure.

9.3.7 Changing server information

To ensure data consistency, use the appropriate GUI client or stgxfwcmmodsrv (Server information change command) at a command prompt to make the necessary changes to server information.

Using the GUI client:

Select and right click the Storage server from the site view.
Select the [Modify] option from the context menu, the [Modify Storage Server] dialogue is displayed. Click the [OK] button without changing anything in the display.

For details on how to use the GUI client, refer to "Modify Storage Server Information" in the "ETERNUS SF AdvancedCopy Manager GUI Operator's Guide."

Using the command:

Specify the Storage Server name in the "-n" option of stgxfwcmmodsrv (Server information change command), and execute the command at a command prompt.

For details on how to use the command, refer to "stgxfwcmmodsrv (Server information change command)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide".

Note
. . . .
Changing the server information may fail due to the influence of the Java Plug-in cache. If changing the server information fails, use the following steps to clear the Java Plug-in cache at the GUI client, then re-execute the command. If the GUI client is running, clear the cache, then stop and restart the GUI client.

1. Select [Control Panel], then [Java Plug-in].

2. Select the [Cache] tab, then [Clear].
. . . .

9.3.8 Restoring management information

Restore the following backed up information:

- If backup is being performed:

    - Backup management files

- If tape backup linkage is being performed:

    - Transaction volume locking specification file for backups [For Windows]

    - Backup volume locking specification file for backups [For Windows]

    - Backup restored volume locking specification file [For Windows]

    - Backup volume locking specification file for tape-copy [For Windows]

- If replication is being performed:

    - Replication management files

    - Copy source volume locking specification file [For Windows]

    - Copy destination volume locking specification file [For Windows]

    - Timeout value specification file of concurrent suspend function

Note
. . . .
If replication is used.

- For servers that act as both a Storage Server and a Storage Management Server, and in cases where the Storage Management Server is upgraded at the same time, the repository is restored during the upgrade procedure for the Storage Management Server. Accordingly, do not restore the repository when restoring the replication management files.

- If the Storage Server is cluster, then the repository is also restored during upgrade of the Storage Management Server. Accordingly, do not restore the repository when restoring the replication management files.
. . . .

For details on how to restore backup management files and replication management files, refer to the following chapters of "Making individual backups of databases" under "Database Maintenance" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide".

- "Restore of backup management files and recovery control files" (Solaris, Windows, Linux)

- "Restore of backup management files" (HP-UX, AIX)

- "Restore of replication management files"

Restore other management information individually using the copy command.

📔 Note

The following management information (pre-processing and post-processing scripts) is not restored.

- If backup is being performed:

    - Pre-processing and post-processing scripts for backup management.

- If tape backup is used:

    - Pre-processing and post-processing scripts for copying to tape.

- If replication is used:

    - Pre-processing and post-processing scripts for replication management.

Pre-processing and post-processing scripts may change as a result of an upgrade. If they have been customized before the upgrade, then they must be customized again after it, with reference to the backed up pre-processing and post-processing scripts.

📔 Note

[Upgrading AdvancedCopy Manager for Linux]

After upgrading, the udev device names listed below are used with priority in environments that have udev device names:

- normal device

- PRIMECLUSTER GDS SDX object (operating time of slice unit only)

Refer to "Devices supported for AdvancedCopy Manager" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide (Linux)" for details of udev device names.

After the upgrade, take the following actions in accordance with the device names used for operations:

- For operations that use compatible device names

    Use stgxfwcmsetmode (Information capture mode setting command) to change the information collection command such that udev device names are not used.

    Refer to "Devices supported for AdvancedCopy Manager" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide (Linux)" for details of changing the information collection mode.

- For operations that use udev device names

    Delete the backup management, replication management and tape backup definition information and incorporate the udev device names, then redefine the backup, replication and tape backup using udev device names.

    Refer to "Changing the devices configuration" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide (Linux)" for the backup management and replication management procedures.

    Refer to "Changing the devices configuration" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide (Tape Backup Option).

📔 Note

[Upgrading AdvancedCopy Manager for HP-UX]

- For HP-UX 11i v2 or earlier

    If you use HP-UX 11i v2 or earlier, then you must fetch device information. If necessary, reflect the settings when new, changed or deleted devices are detected. For details on how to fetch device information, refer to the "ETERNUS SF AdvancedCopy Manager Operator's Guide (HP-UX)", section "Backup Operations" > "Preparing to Start the Backup" > "Fetching device information on a Storage Server".

- For HP-UX 11i v3 or later

  In HP-UX 11i v3 or later, the device has two names in new and conventional format. For details on device names, refer to the "ETERNUS SF AdvancedCopy Manager Operator's Guide (HP-UX)", section "Overview of AdvancedCopy Manager" > "Managing a Device on AdvancedCopy Manager". Depending on the device format, perform the procedure below.

  - In case a different format is used for device names before and after upgrading

    Before upgrading, set the device format using stgxfwcmsetmode (Information collection mode setup command), and then delete the definition for the backup management, replication management and tape backup.

    After that, set the device format used after upgrading using stgxfwcmsetmode (Information collection mode setup command), and then fetch the device information and redefine the backup/replication and tape backup.

    For details on setting the information collection mode, refer to the "ETERNUS SF AdvancedCopy Manager Operator's Guide (HP-UX)", section "Commands" > "Configuration Management Commands".

    For details on backup and replication management, refer to the "ETERNUS SF AdvancedCopy Manager Operator's Guide (HP-UX)", section "Operational Maintenance" > "Changing the Operating Environment" > "Changing the device configuration".

    For details on how to back up to a tape, refer to the "ETERNUS SF AdvancedCopy Manager Operator's Guide for Tape Backup Option", section "Operational Maintenance" > "Changing the Operating Environment" > "Changing the device configuration".

  - In case the same format is used for device names before and after upgrading

    It is necessary to set the format of the device names using stgxfwcmsetmode (information collection mode setup command) even if the same device name format is used before and after upgrading.

    For details on setting the information collection mode, refer to , refer to the "ETERNUS SF AdvancedCopy Manager Operator's Guide (HP-UX)", section "Commands" > "Configuration Management Commands".

. . . .

9.3.9 Updating the version information

To update the Storage server version information use the GUI client or stgxfwcmmodsrv (Server information change command). Make sure that cluster operations are not in use and that the repository data is restored in the replication management file.

Using the GUI client

1. Select and right click the Storage server from the site view.

2. Select the [Modify] option from the context menu, the [Modify Storage Server] dialogue is displayed. Click the [OK] button without changing anything in the display.

For details on how to use the GUI client, refer to "Modify Storage Server Information" in the "ETERNUS SF AdvancedCopy Manager GUI Operator's Guide."

Using the command:

Execute stgxfwcmmodsrv (Server information change command) with the server name specified in the "-n" option.

For details on how to use the command, refer to "stgxfwcmmodsrv (Server information change command)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide".

Note

. . . .

An attempt to change server information may fail due to the effects of Java cache. If this is the case, follow the steps below to clear the cache (for the Java Plug-in) and then re-execute the command. If the GUI Client is running, clear the cache and then stop and re-start the GUI Client.

1. Select [Control Panel], then [Java Plug-in].

2. Select the [Cache] tab, then [Clear].

. . . .

9.3.10 Restoring tape management information

Restore the backed up tape management information of the Tape Server. Refer to "Restoring tape management information" in the ETERNUS SF AdvancedCopy Manager Operator's Guide for Tape Backup Option for the execution procedure.

9.4 Upgrading the Tape Server

This section describes how to upgrade an independent Tape Server and a server that includes a Tape Server.

Note
. . . .
A new disk may be required in the access path during an upgrade if the operating system is upgraded, or if multipath drivers are changed, or similar. Before performing an upgrade, read the tape server upgrade procedures to gain an understanding of the entire process.
. . . .

9.4.1 Upgrading a Tape Server (independent)

The procedure for upgrading a Tape Server that operates on an independent server is as follows.

The tasks required in step 4 differ depending on whether or not cluster operation is used.

1. 9.4.1.1 Back up the tape management information

   Save the tape management information from the pre-upgrade environment.

2. 9.4.1.2 Uninstall

   Uninstall the existing software product.

3. 9.4.1.3 Install

   Install the new product version and configure the environment

4. 9.4.1.4 Change or register server information

   - Non-cluster operation

     In order to guarantee data consistency, perform server information change if necessary.

   - Cluster operation

     Register the Tape Server.

5. 9.4.1.5 Restore tape management information

   Restore the tape management information saved from the uninstalled version.

6. 9.4.1.6 Setting access path definitions

   Set the access path definitions for the Tape Server.

7. 9.4.1.7 Customize the Tape Server

   Recover the Tape Server environment configuration.

Note
. . . .
If the configuration is changed at the time of the upgrade

If the server name, IP address, or port numbers of the Storage Management server need to be changed during the upgrade, perform the above upgrade procedures, then perform the steps described in "Operating environment changes" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide".

9.4.1.1 Back up the tape management information

Back up the tape server tape management information. The procedure is shown below.

1. Execute backup of the tape management information to the directory specified for the tape management information of the Tape Server. Refer to "Tape management information backup" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide Tape Backup Option" for details on the procedure.

2. Back up the tape manager-related definition files shown below.

   - /etc/opt/FJSVswstm/conf/devpath.conf

   - /etc/opt/FJSVswstm/conf/tsm.conf

   - /etc/opt/FJSVswstm/conf/tsmbkfile

   - /usr/bin/dsm.opt

   - /usr/bin/dsm.sys

9.4.1.2 Uninstall

Uninstall the Tape Server and the mandatory AdvancedCopy Manager Agent for a Tape Server.

The procedure is as follows:

- For non-cluster operation

  1. Stop the Tape Server daemon. Refer to "Starting and stopping daemons" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for Tape Backup Option" for the execution procedure.

  2. Uninstall the Tape Manager from the Tape Server. Refer to the appropriate version of the following manuals for Tape Manager uninstallation procedures.

     - AdvancedCopy Manager13.1

     Refer to "Uninstall" under "Tape Manager uninstallation" in the "ETERNUS SF AdvancedCopy Manager Installation Guide".

     - AdvancedCopy Manager13.0 or earlier

     Refer to "Uninstall" under "Tape Manager Unsetup" in "Unsetup" of the "ETERNUS SF AdvancedCopy Manager Tape Backup Installation Guide".

  3. Delete the manually created startup file.

     ```
     # /usr/bin/rm -rf /opt/FJSVswstm/* /etc/opt/FJSVswst[mu]/* /var/opt/
     FJSVswst[mr]/*
     # /usr/bin/rm -rf /opt/FJSVswstm /etc/opt/FJSVswst[mu] /var/opt/FJSVswst[mr]
     # /usr/bin/rm -f /etc/init.d/initTSM /etc/rc0.d/K00tsmsv /etc/rc2.d/S99tsmsv
     ```

  4. Uninstall the agent of AdvancedCopy Manager. For details, refer to the appropriate edition of the following manuals:

     - AdvancedCopy Manager13.1 or later

     Refer to "Uninstall" under "Solaris/Linux/HP-UX/AIX" of "Agent Uninstallation" in the "ETERNUS SF AdvancedCopy Manager Installation Guide".

     - AdvancedCopy Manager13.0 or earlier

     Refer to "Uninstall" under "Storage Server Unsetup" in "Unsetup" of the "ETERNUS SF AdvancedCopy Manager Installation Guide".

- For cluster operation

    If the Tape Server performs Tape Server tasks as cluster operations, cluster unsetup is required before performing uninstall.

    Refer to "Tape Server task deletion" in the appropriate edition of the "Operator's Guide for cluster environment" for the procedures for executing cluster unsetup.

9.4.1.3 Install

Install the new version of AdvancedCopy Manager. The procedure is as follows:

- For non-cluster operation

    1. Before the AdvancedCopy Manager Tape Manager can be installed on a Tape Server, this Tape Server must already have an Agent or Manager of AdvancedCopy Manager installed. Refer to "Chapter 4 Installation of the Agent" for the installation procedure for AdvancedCopy Manager Agent.

    2. Install the Tape Manager that is required for the server to operate as a Tape Server. Refer to "Chapter 7 Installation of Tape Manager" for the Tape Manager installation procedure.

- For cluster operation

    Refer to "Installing Tape Manager functions" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster operations". Note that, when performing the "AdvancedCopy Manager installation" procedures under "Installing Tape Manager functions", the AdvancedCopy Manager Agent, which is mandatory software for a Tape Server, must be selected and installed.

9.4.1.4 Change or register server information

Non-cluster operation

To guarantee data consistency, use GUI client or stgxfwcmmodsrv (Server information change command) at a command prompt to change the server information.

Using GUI client

1. Select and right click the Storage server from the site view.

2. Select the [Modify] option from the context menu, the [Modify Storage Server] dialogue is displayed. Click the [OK] button without changing anything in the display.

For details on how to use the GUI client, refer to "Modify Storage Server Information" in the "ETERNUS SF AdvancedCopy Manager GUI Operator's Guide."

Using commands

Specify the name of the Storage Management Server in the "-n" option, and execute stgxfwcmmodsrv (Server information change command) at a command prompt.

Refer to "stgxfwcmmodsrv (Server information change command)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide" for information on using commands.

Cluster operation

Register the server where the operational environment was setup as a Tape Server.

Refer to "Registering Storage Servers" in the appropriate ETERNUS SF AdvancedCopy Manager Operator's Guide for information about this procedure.

Note

Changing the server information may fail due to the influence of the Java Plug-in cache. If changing the server information fails, use the following steps to clear the Java Plug-in cache at the GUI client, then re-execute the command. If the GUI client is running, clear the cache, then stop and restart the GUI client.

1. Select [Control Panel], then [Java Plug-in].

2. Select the [Cache] tab, then [Clear].

9.4.1.5 Restore tape management information

Restore the tape server tape management information. The procedure is shown below.

Note

- In Cluster operation, the cluster setup must have been done before restoring the tape server tape management information.

  Execute procedure 1 to 20 excluding procedure 11 and 19 refer to "Customizing Tape Server Transactions" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster environment".

- Make sure the following shared disks are mounted, then restore the tape management information.

    - The shared disk for AdvancedCopy Manager shared data

    - The shared disk for AdvancedCopy Manager repository

    - The shared disk for TSM

1. Restore the tape server tape management information. The procedure is shown below.

   Recover the tape management information that was backed up for the Tape Server. Refer to "Restoring tape management information" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide Tape Backup Option" for the execution procedure.

2. Restore the backed up tape manager-related definition files shown below.

    - /etc/opt/FJSVswstm/conf/devpath.conf

    - /etc/opt/FJSVswstm/conf/tsm.conf

    - /etc/opt/FJSVswstm/conf/tsmbkfile

    - /usr/bin/dsm.opt

    - /usr/bin/dsm.sys

3. Updating TSM server daemon

   Execute the following command to update the TSM server daemon information.

   ```
   # TSMDB=<TSM database directory>; export TSMDB
   # DSMSERV_DIR=/opt/tivoli/tsm/server/bin; export DSMSERV_DIR
   # DSMSERV_CONFIG=$TSMDB/dsmserv.opt; export DSMSERV_CONFIG
   # cd $TSMDB
   # /opt/tivoli/tsm/server/bin/dsmserv UPGRADEDB
       :
   tsm: TAPESERVER1> halt
   # /opt/tivoli/tsm/server/bin/dsmserv
       :
   tsm: TAPESERVER1> halt
   ```

   After the command (dsmserv UPGRADEDB) execution, press the Enter key periodically (once per minute). When the prompt re-appears, the command is completed.
   Then use the dsmserv command to check TSM server daemon started.

9.4.1.6 Setting access path definitions

Set the Tape Server access path definitions.

> 📖 **Note**
> ....
> This procedure is required only for the ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 operating environments.
> ....

If the conditions below apply, implement the "Access path recovery" procedures.
If the conditions below do not apply, implement the "Resetting access path definitions" procedures.

- The operating system of the Tape Server is not upgraded, and

- GR multipath drivers continue to be used after the upgrade.

Access path recovery

Execute tboactmplbext (Tape Server upgrade settings command).

```
# /opt/FJSVswstm/bin/tboactmplbext
/etc/opt/FJSVmplb/conf/mplb_ext_active was created.
#
```

For cluster operation, execute the upgrade settings command on the active node that currently references shared volumes. This command does not need to be executed on the standby node.

> 📖 **Note**
> ....
> **If the tboactmplbext command is executed by mistake**
>
> If the tboactmplbext command is executed in unsuitable conditions, the backup function may not operate correctly. In this case refer to "tboactmplbext (Tape Server upgrade settings command)" in the ETERNUS SF AdvancedCopy Manager Operator's Guide for Tape Backup Option, to take the appropriate action.
> ....

Resetting access path definitions

Re-create the access paths and reset the access path definitions.

> 📖 **Note**
> ....
> The following procedure is required only for the ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 access path.
> ....

If the access paths used before the upgrade meet the following conditions, only execute step 4 and subsequent steps:

- A total of four access paths are set, two each from the disks of CM0 and CM1 disk array units, and

- The access paths used before the upgrade will continue to be used.

Execution procedure

1. Re-create access path partitions.

   Refer to "Creating access path partitions" for the procedure.

2. Delete access path definition information.

   Delete the definition information of the access paths used before the upgrade.

   ```
   # rm -f /etc/opt/FJSVswstm/data/ctrl/.boxid_*
   #
   ```

3. Reset the access path definition file.

   Refer to "Setting the access path definition file" for the procedure.

4. Inspect the definition file.

   Refer to "Definition file inspection" for the procedure.

5. ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 information collection.

   Refer to "8.6.1.4 Collecting ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, and ETERNUS4000 information" for the procedure.

9.4.1.7 Customize the Tape Server

Recover the Tape Server environment settings.

For non-cluster operation

If the following conditions apply, execute from Step 3. If these conditions do not apply, execute from Step 1.

- [Conditions]

  If the ETERNUS disk storage systems and LUN configurations are not changed

- [Execution procedure]

   1. Inspect the definition file.

      Refer to "8.6.1.3 Checking Definition Files" for the execution procedure.

   2. Collect ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 information

      Refer to "8.6.1.4 Collecting ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, and ETERNUS4000 information" for the execution procedure.

      Note: This procedure is not required if ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 is not used in the operating environment.

   3. Tape library driver settings

      Refer to "Driver Configuration of Tape Library System" for the procedure.

   4. Daemon automatic startup settings

      Refer to "8.8 Configuring Automatic Activation of Daemons" for the execution procedure.

      A pre-upgrade settings file for the TSM server daemon settings may exist. This procedure need not be executed if the file that is set by this procedure already exists.

   5. TSM settings

      TSM setting has to be same before upgraded. For details, refer to "8.9 TSM Configuration (the settings set after the daemon automatic start settings)".

For cluster operation

If the Tape Server performs Tape Server tasks as cluster operations, procedures for clusters are required.

Execute procedure 21 to 26, refer to "Customizing Tape Server Transactions" in the appropriate version of the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster environment".

Note

The setting of procedure 24 "Set the TSM setting" has already been completed when restoring management information. Confirm that the setting is correct.

9.4.2 Upgrading a Tape Server also used as a Storage Server

This section describes how to upgrade a Tape Server that also operates as a Storage Server.

Implement steps 1 and 6 only if the Tape Server operates in a cluster.

1. 9.4.2.1 Repository data backup

   Save the repository data. Perform this step from the Storage Management Server.

2. 9.4.2.2 Management information backup

   Save the management information from the pre-update environment.

3. 9.4.2.3 Tape management information backup

   Save the tape management information from the pre-upgrade environment.

4. 9.4.2.4 Uninstall

   Delete the operating environment and uninstall the existing software product.

5. 9.4.2.5 Install

   Install the new product and perform the environment setup.

6. 9.4.2.6 Restore repository data

   Restore the repository data that was backed up. Perform this step from the Storage Management Server.

7. 9.4.2.7 Change server information

   In order to guarantee data consistency, perform the server information change if necessary.

8. 9.4.2.8 Restore management informationn

   Restore the management information that was saved from the previous version.

9. 9.4.2.9 Updating the version information

   Update the tape server version information

10. 9.4.2.10 Restore tape management information

    Restore the tape management information that was saved from the previous version.

11. 9.4.2.11 Set access path definitions

    Set the definitions for the Tape Server access paths.

12. 9.4.2.12 Customize the Tape Server

    Recover the Tape Server environment configuration.

Note

If the configuration is changed at the time of the upgrade

If the server name, IP address, or port numbers of the Storage Management Server need to be changed during the upgrade, perform the above upgrade procedures, then perform the change tasks described in "Operating environment changes" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide".

9.4.2.1 Repository data backup

Back up the repository data of the Storage Management Server.

- For Windows edition

  Use "DB backup" under DB setup to backup the data.

- For Solaris and Linux editions

    Use the stgdbbackup command to backup the data.

Refer to "Database backup" in the appropriate "ETERNUS SF AdvancedCopy Manager Operator's Guide" for the procedure. Note that it is not an execution procedure of "Making a package backup of databases".

9.4.2.2 Management information backup

Back up the Storage Server management information.

Refer to "Backing up databases separately" under "Database maintenance" in the relevant operating system edition of the "ETERNUS SF AdvancedCopy Manager Operator's Guide" for the execution procedures.

9.4.2.3 Tape management information backup

Back up the tape server tape management information. The procedure is shown below.

1. Execute backup of the tape management information to the directory specified for the tape management information of the Tape Server. Refer to "Tape management information backup" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide Tape Backup Option" for details on the procedure.

2. Back up the tape manager-related definition files shown below.

    - /etc/opt/FJSVswstm/conf/devpath.conf

    - /etc/opt/FJSVswstm/conf/tsm.conf

    - /etc/opt/FJSVswstm/conf/tsmbkfile

    - /usr/bin/dsm.opt

    - /usr/bin/dsm.sys

9.4.2.4 Uninstall

Uninstall the Tape Server and the Storage Server. The procedure is as follows:

- For non-cluster operation

    1. Stop the Tape Server and Storage Server daemons. Refer to "Starting and stopping daemons" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for Tape Backup Option" for the execution procedure.

    2. Uninstall the Tape Manager from the Tape Server. For procedures on Tape Manager uninstallation, refer to the appropriate sections of the following manuals.

        - AdvancedCopy Manager13.1 or later

        Refer to "Uninstall" under "Tape Manager uninstallation" in the "ETERNUS SF AdvancedCopy Manager Installation Guide".

        - AdvancedCopy Manager13.0 or earlier

        Refer to "Uninstall" under "Tape Manager Unsetup" in "Unsetup" of the "ETERNUS SF AdvancedCopy Manager Tape Backup Installation Guide".

    3. Delete the manually created startup file.

```
# /usr/bin/rm -rf /opt/FJSVswstm/* /etc/opt/FJSVswst[mu]/* /var/opt/FJSVswst[mr]/
*
# /usr/bin/rm -rf /opt/FJSVswstm /etc/opt/FJSVswst[mu] /var/opt/FJSVswst[mr]
# /usr/bin/rm -f /etc/init.d/initTSM /etc/rc0.d/K00tsmsv /etc/rc2.d/S99tsmsv
```

4. Uninstall the agent of AdvancedCopy Manager from the Storage Server. For details, refer to the appropriate edition of the following manuals:

- AdvancedCopy Manager13.1 or later

  Refer to "Uninstall" under "Solaris/Linux/HP-UX/AIX" of "Agent Uninstallation" in the "ETERNUS SF AdvancedCopy Manager Installation Guide".

- AdvancedCopy Manager13.0 or earlier

  Refer to "Uninstall" under "Storage Server Unsetup" in "Unsetup" of the "ETERNUS SF AdvancedCopy Manager Installation Guide".

- For cluster operation

  If the Tape Server performs Tape Server tasks as cluster operations, cluster unsetup is required before performing uninstall.

  Refer to "Tape Server task deletion" in the appropriate version edition of the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster environment" for the procedures for executing cluster unsetup.

9.4.2.5 Install

Install the new version of AdvancedCopy Manager, and configure the operating environment. The procedure is as follows:

Installation

- For non-cluster operation

  1. Install the AdvancedCopy Manager Agent, which is mandatory software for the server to operate as a Storage Server. Refer to "Chapter 4 Installation of the Agent" for the installation procedure for AdvancedCopy Manager Agent.

  2. Install the Tape Manager that is required for the server to operate as a Tape Server. Refer to "Chapter 7 Installation of Tape Manager" for the Tape Manager installation procedure.

- For cluster operation

  Refer to "Installing Tape Manager functions" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster operations" for the Tape Server and Storage Server installation procedures. Note that, when performing the "AdvancedCopy Manager installation" procedures under "Installing Tape Manager functions", the AdvancedCopy Manager Agent, which is mandatory software for a Storage Server, must be selected and installed.

Operating environment setup

- For non-cluster operation

  Refer to "Chapter 5 Customization of Storage Server" for the execution procedure.

- For cluster operation

  Refer to "Customizing Storage Management Server transactions and Storage Server transactions" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster operations" for the execution procedure.

9.4.2.6 Restore repository data

Recover the backed up repository data of the Storage Management Server. Refer to "9.1.6 Restoring repository data" for the procedure.

9.4.2.7 Change server information

In order to guarantee data consistency, use GUI client or stgxfwcmmodsrv (Server information change command) at a command prompt to change the server information.

Using GUI client

Select and right click the Storage server from the site view.
Select the [Modify] option from the context menu, the [Modify Storage Server] dialogue is displayed. Click the [OK] button without changing anything in the display.

For details on how to use the GUI client, refer to "Modify Storage Server Information" in the "ETERNUS SF AdvancedCopy Manager GUI Operator's Guide."

Using commands

Specify the name of the Storage Management Server in the -n option, and execute stgxfwcmmodsrv (Server information change command) at a command prompt.

Refer to "stgxfwcmmodsrv (Server information change command)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide" for additional information.

 Note

. . . .

Changing the server information may fail due to the influence of the Java Plug-in cache. If changing the server information fails, use the following steps to clear the Java Plug-in cache at the GUI client, then re-execute the command. If the GUI client is running, clear the cache, then stop and restart the GUI client.

1. Select [Control Panel] then [Java Plug-in].

2. Select the [Cache] tab, then [Clear].

. . . .

9.4.2.8 Restore management information

Recover the management information that was backed up for the Storage Server. Refer to "9.3.8 Restoring management information" for the execution procedure.

9.4.2.9 Updating the version information

To update the Storage server version information use either the GUI client or stgxfwcmmodsrv (Server information change command). Make sure that cluster operations are not in use and that the repository data is restored in the replication management file.

Using GUI client

Select and right click the Storage server from the site view.
Select the [Modify] option from the context menu, the [Modify Storage Server] dialogue is displayed. Click the [OK] button without changing anything in the display.

For details on how to use the GUI client, refer to "Modify Storage Server Information" in the "ETERNUS SF AdvancedCopy Manager GUI Operator's Guide."

Using the command:

Execute stgxfwcmmodsrv (Server information change command) with the server name specified in the "-n" option.

For details on how to use the command, refer to "stgxfwcmmodsrv (Server information change command)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide".

 Note

. . . .

An attempt to change server information may fail due to the effects of Java cache. If this is the case, follow the steps below to clear the cache (for the Java Plug-in) and then re-execute the command. If the GUI Client is running, clear the cache and then stop and re-start the GUI Client.

1. Select [Control Panel], then [Java Plug-in].

2. Select the [Cache] tab, then [Clear].

. . . .

9.4.2.10 Restore tape management information

Restore the tape server tape management information. The procedure is shown below.

- In Cluster operation, the cluster setup must have been done before restoring the tape server tape management information.

    Execute procedure 1 to 20 excluding procedure 11 and 19 refer to "Customizing Tape Server Transactions" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster environment".

- Make sure the following shared disks are mounted, then restore the tape management information.

    - The shared disk for AdvancedCopy Manager shared data

    - The shared disk for AdvancedCopy Manager repository

    - The shared disk for TSM

1. Restore the tape server tape management information. The procedure is shown below.

    Recover the tape management information that was backed up for the Tape Server. Refer to "Restoring tape management information" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide Tape Backup Option" for the execution procedure.

2. Restore the backed up tape manager-related definition files shown below.

    - /etc/opt/FJSVswstm/conf/devpath.conf

    - /etc/opt/FJSVswstm/conf/tsm.conf

    - /etc/opt/FJSVswstm/conf/tsmbkfile

    - /usr/bin/dsm.opt

    - /usr/bin/dsm.sys

3. Updating TSM server daemon

    Execute the following command to update the TSM server daemon information.

```
# TSMDB=<TSM database directory>; export TSMDB
# DSMSERV_DIR=/opt/tivoli/tsm/server/bin; export DSMSERV_DIR
# DSMSERV_CONFIG=$TSMDB/dsmserv.opt; export DSMSERV_CONFIG
# cd $TSMDB
# /opt/tivoli/tsm/server/bin/dsmserv UPGRADEDB
     :
tsm: TAPESERVER1> halt
# /opt/tivoli/tsm/server/bin/dsmserv
     :
tsm: TAPESERVER1> halt
```

    After the command (dsmserv UPGRADEDB) execution, press the Enter key periodically (once per minute). When the prompt re-appears, the command is completed.
    Then use the dsmserv command to check TSM server daemon started.

9.4.2.11 Set access path definitions

Set the definitions for the Tape Server access paths.

This procedure is required only for an ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 operating environment.

If the conditions below apply, implement the "Access path recovery" procedures.
If the conditions below do not apply, implement the "Re-setting access path definitions" procedures.

  - The Tape Server operating system is not upgraded, and

- GR multipath drivers will continue to be used after the upgrade.

Access path recovery

Execute tboactmplbext (Tape Server upgrade settings command).

```
# /opt/FJSVswstm/bin/tboactmplbext
/etc/opt/FJSVmplb/conf/mplb_ext_active was created.
#
```

For cluster operation, execute the upgrade settings command on the active node that currently references shared volumes. This command does not need to be executed on the standby node.

Note

- -

If the tboactmplbext command is executed by mistake

If the tboactmplbext command is executed in unsuitable conditions, the backup function may not operate correctly. In this case refer to "tboactmplbext (Tape Server upgrade settings command)" in the ETERNUS SF AdvancedCopy Manager Operator's Guide for Tape Backup Option, to take the appropriate action.

- -

Re-setting access path definitions

Re-create access paths and re-set the access path definitions.

Note

- -

The following procedure is required only for the ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 access path.

- -

If the access paths used before the upgrade meet the following conditions, only execute step 4 and subsequent steps:

- - A total of four access paths are set, two each from the disks of CM0 and CM1 disk array units, and

- - The access paths used before the upgrade will continue to be used.

Execution procedure

1. Recreate access path partitions

   Refer to "Creating access path partitions" for the procedure.

2. Delete access path definition information

   Delete the access path definition information that was used before the upgrade.

   ```
   # rm -f /etc/opt/FJSVswstm/data/ctrl/.boxid_*
   #
   ```

3. Reset the access path definition file

   Refer to "Setting the access path definition file" for the procedure.

4. Inspect the definition file

   Refer to "Definition file inspection" for the procedure.

5. ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 information collection.

   Refer to "8.6.1.4 Collecting ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, and ETERNUS4000 information" for the procedure.

9.4.2.12 Customize the Tape Server

Recover the Tape Server environment settings.

For non-cluster operation

If the following conditions apply, execute from Step 3. If these conditions do not apply, execute from Step 1.

- [Conditions]

    If the ETERNUS disk storage systems and LUN configurations are not changed

- [Execution procedure]

    1. Inspect the definition file.

        Refer to "8.6.1.3 Checking Definition Files" for the execution procedure.

    2. Collect ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 information

        Refer to "8.6.1.4 Collecting ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, and ETERNUS4000 information" for the execution procedure.

        Note: This procedure is not required if ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 is not used.

    3. Tape library driver settings

        Refer to "8.7.1 Driver Configuration of Tape Library System" for the procedure.

    4. Daemon automatic startup settings

        Refer to "8.8 Configuring Automatic Activation of Daemons" for the execution procedure.

        A pre-upgrade settings file for the TSM server daemon settings may exist. This procedure need not be executed if the file that is set by this procedure already exists.

    5. TSM settings

        TSM setting has to be same before upgraded. For details, refer to "8.9 TSM Configuration (the settings set after the daemon automatic start settings)".

For cluster operation

If the Tape Server performs Tape Server tasks as cluster operations, procedures for clusters are required.

Execute procedure 21 to 26, refer to "Customizing Tape Server Transactions" in the appropriate version of the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster environment".

Note

The setting of procedure 24 "Set the TSM setting" has already been completed when restoring management information. Confirm that the setting is correct.

9.4.3 Upgrading a Tape Server also used as a Storage Management Server

This section describes how to upgrade a Tape Server that also operates as a Storage Management Server.

1. 9.4.3.1 Repository data backup

    Save the repository data from the pre-update environment to a location outside the ACM directory paths.

2. 9.4.3.2 Tape management information backup

    Save the tape management information from the pre-upgrade environment to a location outside the ACM directory paths.

3. 9.4.3.3 Uninstall

   Delete the repository operating environment, and uninstall the existing software product.

4. 9.4.3.4 Install

   Install the new product and perform the environment configuration.

5. 9.4.3.5 Restore repository data

   Recover the repository data that was saved from the previous version.

6. 9.4.3.6 Change server information

   In order to guarantee data consistency, perform the server information change if necessary.

7. 9.4.3.7 Restore tape management information

   Restore the tape management information that saved from the previous version.

8. 9.4.3.8 Set access path definitions

   Set the definitions for the Tape Server access paths.

9. 9.4.3.9 Customize the Tape Server

   Recover the Tape Server environment configuration.

Note

If the configuration is changed at the time of the upgrade

If the server name, IP address, or port numbers of the Storage Management Server need to be changed during the upgrade, perform the above upgrade procedures, then perform the change tasks described in "Operating environment changes" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide".

9.4.3.1 Repository data backup

Back up the Storage Management Server repository data.

  - For the Windows edition

    Use "DB backup" under DB setup to backup the data.

  - For Solaris and Linux editions

    Use the stgdbbackup command to backup the data.

Refer to "Backing up databases" in the appropriate "ETERNUS SF AdvancedCopy Manager Operator's Guide" for the execution procedures. Note that it is not an execution procedure of "Making a package backup of databases".

9.4.3.2 Tape management information backup

Back up the tape server tape management information. The procedure is shown below.

1. Execute backup of the tape management information to the directory specified for the tape management information of the Tape Server. Refer to "Tape management information backup" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide Tape Backup Option" for details on the procedure.

2. Back up the tape manager-related definition files shown below.

     - /etc/opt/FJSVswstm/conf/devpath.conf

     - /etc/opt/FJSVswstm/conf/tsm.conf

     - /etc/opt/FJSVswstm/conf/tsmbkfile

9.4.3.3 Uninstall

Uninstall the Tape Server and the Storage Management Server. The procedure is as follows:

- For non-cluster operation

    1. Stop the Tape Server and Storage Management Server daemons. Refer to "Starting and stopping daemons" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for Tape Backup Option" for the execution procedure.

    2. Uninstall the Tape Manager from the Tape Server. Refer to the appropriate edition of the following manuals for the Tape Manager uninstallation procedure.

        - AdvancedCopy Manager 13.1 or later

        Refer to "Uninstall" under "Tape Manager uninstallation" of "Uninstall" in the "ETERNUS SF AdvancedCopy Manager Installation Guide".

        - AdvancedCopy Manager13.0 or earlier

        Refer to "Uninstall" under "Tape Manager Unsetup" in "Unsetup" of the "ETERNUS SF AdvancedCopy Manager Tape Backup Installation Guide".

    3. Delete the manually created startup file.

    ```
    # /usr/bin/rm -f /etc/init.d/initTSM /etc/rc0.d/K00tsmsv /etc/rc2.d/S99tsmsv
    ```

    4. For uninstall procedures for the manager of AdvancedCopy Manager, refer to the appropriate edition of the following manuals:

        - AdvancedCopy Manager13.1 or later

        Refer to "Cancelling Repository Settings" and after under "Solaris/Linux" "Manager Uninstall" in "Uninstall" of the "ETERNUS SF AdvancedCopy Manager Installation Guide".

        - AdvancedCopy Manager13.0 or earlier

        Refer to "Cancelling Repository Settings" and after under "Storage Management Server Unsetup" in "Unsetup" of the "ETERNUS SF AdvancedCopy Manager Installation Guide".

- For cluster operation

    If the Tape Server performs Tape Server transactions as cluster operations, cluster "unsetup" is required before performing uninstall.

    Refer to "Tape Server task deletion" in the appropriate edition of the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster environment" for the procedures for executing cluster unsetup.

9.4.3.4 Install

Install the new version of AdvancedCopy Manager, and setup the repository operating environment. The procedure is as follows:

Installation

- For non-cluster operation

    1. Install the Manager of AdvancedCopy Manager, which is mandatory software for the server to operate as a Storage Management Server. Refer to "Chapter 2 Installation of the Manager" for the installation procedure for the Manager of AdvancedCopy Manager.

    2. Install the Tape Manager, which is required for the server to operate as a Tape Server. Refer to "Chapter 7 Installation of Tape Manager" for the Tape Manager installation procedure.

- For cluster operation

    Refer to "Installing Tape Manager functions" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster operations" for the Tape Server and Storage Management Server installation procedures.

    Note that, when performing the "AdvancedCopy Manager installation" procedures under "Installing Tape Manager functions", the Manager agent of AdvancedCopy Manager, must also be selected and installed.

Repository operating environment setup

- For non-cluster operation

  Refer to "Chapter 3 Customization of Storage Management Server" for the execution procedure.

- For cluster operation

  Refer to "Customizing Storage Management Server transactions and Storage Server transactions" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster operations" for the execution procedure.

9.4.3.5 Restore repository data

Restore the Storage Management Server repository data that was saved. Refer to "9.1.6 Restoring repository data" for the execution procedure.

9.4.3.6 Change server information

In order to guarantee data consistency, use GUI client or stgxfwcmmodsrv (Server information change command) at a command prompt to change the server information.

Using GUI client

Select and right click the Storage server from the site view.
Select the [Modify] option from the context menu, the [Modify Storage Server] dialogue is displayed. Click the [OK] button without changing anything in the display.

For details on how to use the GUI client, refer to "Modify Storage Server Information" in the "ETERNUS SF AdvancedCopy Manager GUI Operator's Guide."

Using commands

Specify the name of the Storage Management Server in the -n option, and execute stgxfwcmmodsrv (Server information change command) at a command prompt.

Refer to "stgxfwcmmodsrv (Server information change command)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide" for information on using commands.

Note

Changing the server information may fail due to the influence of the Java Plug-in cache. If changing the server information fails, use the following steps to clear the Java Plug-in cache at the GUI client, then re-execute the command. If the GUI client is running, clear the cache, then stop and restart the GUI client.

1. Select [Control Panel], then [Java Plug-in].

2. Select the [Cache] tab, then [Clear].

9.4.3.7 Restore tape management information

Restore the tape server tape management information. The procedure is shown below.

Note

- In Cluster operation, the cluster setup must have been done before restoring the tape server tape management information.

  Execute procedure 1 to 20 excluding procedure 11 and 19 refer to "Customizing Tape Server Transactions" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster environment".

- Make sure the following shared disks are mounted, then restore the tape management information.

  - The shared disk for AdvancedCopy Manager shared data

  - The shared disk for AdvancedCopy Manager repository

- The shared disk for TSM

. . . .

1. Recover the tape management information that was saved for the Tape Server. Refer to "Restoring tape management information" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide Tape Backup Option" for the execution procedure.

2. Restore the backed up tape manager-related definition files shown below.

   - /etc/opt/FJSVswstm/conf/devpath.conf

   - /etc/opt/FJSVswstm/conf/tsm.conf

   - /etc/opt/FJSVswstm/conf/tsmbkfile

   - /usr/bin/dsm.opt

   - /usr/bin/dsm.sys

3. Updating TSM server daemon

   Execute the following command to update the TSM server daemon information.

```
# TSMDB=<TSM database directory>; export TSMDB
# DSMSERV_DIR=/opt/tivoli/tsm/server/bin; export DSMSERV_DIR
# DSMSERV_CONFIG=$TSMDB/dsmserv.opt; export DSMSERV_CONFIG
# cd $TSMDB
# /opt/tivoli/tsm/server/bin/dsmserv UPGRADEDB
    :
tsm: TAPESERVER1> halt
# /opt/tivoli/tsm/server/bin/dsmserv
    :
tsm: TAPESERVER1> halt
```

   After the command (dsmserv UPGRADEDB) execution, press the Enter key periodically (once per minute). When the prompt re-appears, the command is completed.
   Then use the dsmserv command to check TSM server daemon started.

9.4.3.8 Set access path definitions

Set the tape server access path definitions.

📓 Note

. . . .

This procedure is required only for the ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 operating environments.

. . . .

If the conditions below apply, implement the "Access path recovery" procedures.

If the conditions below do not apply, implement the "Resetting access path definitions" procedures.

- The operating system of the Tape Server is not upgraded, and

- The GR multipath driver continues to be used after the upgrade.

Access path recovery

Execute tboactmplbext (Tape Server upgrade settings command).

```
# /opt/FJSVswstm/bin/tboactmplbext
/etc/opt/FJSVmplb/conf/mplb_ext_active was created.
#
```

For cluster operation, execute the upgrade settings command on the active node that currently references shared volumes. This command does not need to be executed on the standby node.

> 📘 **Note**
> ···
> **If the tboactmplbext command is executed by mistake**
>
> If the tboactmplbext command is executed in unsuitable conditions, the backup process may not operate correctly. In this case, refer to "tboactmplbext (Tape Server upgrade settings command)" in the ETERNUS SF AdvancedCopy Manager Operator's Guide for Tape Backup Option, ad then take the appropriate action.
> ···

Re-setting access path definitions

Re-create the access paths and reset the access path definitions.

> 📘 **Note**
> ···
> The following procedure is required only for the ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 access path.
> ···

If the access paths used before the upgrade meet the following conditions, only execute step 4 and subsequent steps:

- A total of four access paths, two from the disk of CM0 of the disk array unit and two from the disk of CM1, are set and

- The access paths used before the upgrade will continue to be used.

Execution procedure

1. Re-create access path partitions.

   Refer to "Creating access path partitions" for the procedure.

2. Delete access path definition information.

   Delete the definition information of the access paths used before the upgrade.

   ```
   # rm -f /etc/opt/FJSVswstm/data/ctrl/.boxid_*
   #
   ```

3. Re-set the access path definition file.

   Refer to "Setting the access path definition file" for the procedure.

4. Inspect the definition file.

   Refer to "Definition file inspection" for the procedure.

5. ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 information collection.

   Refer to "8.6.1.4 Collecting ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, and ETERNUS4000 information" for the procedure.

9.4.3.9 Customize the Tape Server

Recover the Tape Server environment settings.

For non-cluster operation

If the following conditions apply, execute from Procedure 3. If these conditions do not apply, execute from Procedure 1.

- [Conditions]

  If the ETERNUS disk storage systems and LUN configurations have not changed

- [Execution procedure]

  1. Inspect the definition file.

     Refer to "8.6.1.3 Checking Definition Files" for the execution procedure.

  2. Collect ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 information

     Refer to "8.6.1.4 Collecting ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, and ETERNUS4000 information" for the execution procedure.

     Note: This procedure is not required if ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 is not used.

  3. Tape library driver settings

     Refer to "Driver Configuration of Tape Library System" for the procedure.

  4. Daemon automatic startup settings

     Refer to "8.8 Configuring Automatic Activation of Daemons" for the execution procedure.

     A pre-upgrade settings file for the TSM server daemon settings may exist. This procedure need not be executed if the file that is set by this procedure already exists.

  5. TSM settings

     TSM setting has to be same before upgraded. For details, refer to "8.9 TSM Configuration (the settings set after the daemon automatic start settings)".

For cluster operation

If the Tape Server performs Tape Server tasks as cluster operations, procedures for clusters are required.

Execute procedure 21 to 26, refer to "Customizing Tape Server Transactions" in the appropriate version of the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster environment".

📒 **Note**

. . . .

The setting of procedure 24 "Set the TSM setting" has already been completed when restoring management information. Confirm that the setting is correct.

. . . .

9.4.4 Upgrading a Tape Server also used as a Storage Management Server and Storage Server

This section describes how to upgrade a Tape Server that also operates as a Storage Management Server and a Storage Server.

  1. 9.4.4.1 Repository data backup

     Save the repository data from the pre-update environment.

  2. 9.4.4.2 Management information backup

     Save the management information from the pre-upgrade environment.

  3. 9.4.4.3 Tape management information backup

     Save the tape management information from the pre-upgrade environment.

  4. 9.4.4.4 Uninstall

     Delete the repository operating environment, and uninstall the existing software product.

  5. 9.4.4.5 Install

     Install the new product and perform the repository operating environment configuration.

6.

   Recover the repository data that was saved from the previous version.

7.

   In order to guarantee data consistency, implement the server information change processing.

8.

   Restore the management information that was saved from the previous version.

9.

   Restore the tape management information that was saved from the previous version.

10.

    Set the Tape Server access path definitions.

11.

    Recover the Tape Server environment configuration.

📎 Note

If the configuration is changed at the time of the upgrade

If the server name, IP address, or port numbers of the Storage Management Server need to be changed during the upgrade, perform the above upgrade procedures, then perform the change tasks described in "Operating environment changes" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide".

9.4.4.1 Repository data backup

Back up the Storage Management Server repository data.

- For the Windows edition

  Use "DB backup" under DB setup to backup the data.

- For Solaris and Linux editions

  Use the stgdbbackup command to backup the data.

Refer to "Backing up databases" in the appropriate "ETERNUS SF AdvancedCopy Manager Operator's Guide" for the execution procedures. Note that it is not an execution procedure of "Making a package backup of databases".

9.4.4.2 Management information backup

Back up the Storage Server management information.

Refer to "Backing up databases separately" under "Database maintenance" in the relevant operating system and version edition of the "ETERNUS SF AdvancedCopy Manager Operator's Guide" for the execution procedures.

9.4.4.3 Tape management information backup

Back up the tape server tape management information. The procedure is shown below.

1. Execute backup of the tape management information to the directory specified for the tape management information of the Tape Server. Refer to "Tape management information backup" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide Tape Backup Option" for details on the procedure.

2. Back up the tape manager-related definition files shown below.

   - /etc/opt/FJSVswstm/conf/devpath.conf

   - /etc/opt/FJSVswstm/conf/tsm.conf

   - /etc/opt/FJSVswstm/conf/tsmbkfile

9.4.4.4 Uninstall

Uninstall the Tape Server, the Storage Management Server, and the Storage Server. The procedure is as follows:

- For non-cluster operation

    1. Stop the Tape Server, Storage Management Server, and Storage Server daemons. Refer to "Starting and stopping daemons" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for Tape Backup Option" for the execution procedure.

    2. Uninstall the Tape Manager from the Tape Server. Refer to the appropriate edition of the following manuals for the Tape Manager uninstallation procedure.

        - AdvancedCopy Manager 13.1 or later

        Refer to "Uninstall" under "Tape Manager uninstallation" of "Uninstall" in the "ETERNUS SF AdvancedCopy Manager Installation Guide".

        - AdvancedCopy Manager13.0 or earlier

        Refer to "Uninstall" under "Tape Manager Unsetup" in "Unsetup" of the "ETERNUS SF AdvancedCopy Manager Tape Backup Installation Guide".

    3. Delete the manually created startup file.

    ```
    # /usr/bin/rm -f /etc/init.d/initTSM /etc/rc0.d/K00tsmsv /etc/rc2.d/S99tsmsv
    ```

    4. For uninstall procedures for the manager of AdvancedCopy Manager, refer to the appropriate edition of the following manuals:

        - AdvancedCopy Manager13.1 or later

        Refer to "Cancelling Repository Settings" and after under "Solaris/Linux" "Manager Uninstall" in "Uninstall" of the "ETERNUS SF AdvancedCopy Manager Installation Guide".

        - AdvancedCopy Manager13.0 or earlier

        Refer to "Cancelling Repository Settings" and after under "Storage Management Server Unsetup" in "Unsetup" of the "ETERNUS SF AdvancedCopy Manager Installation Guide".

- For cluster operation

    If the Tape Server performs Tape Server tasks as cluster operations, cluster unsetup is required before performing uninstall.

    Refer to "Tape Server task deletion" in the appropriate edition of the "Operator's Guide for cluster environment" for the procedures for executing cluster unsetup.

9.4.4.5 Install

Install the new version of AdvancedCopy Manager, and set up the repository operating environment. The procedure is as follows:

Installation

- For non-cluster operation

    1. Install the Manager of AdvancedCopy Manager, which is mandatory software for the server, to operate as a Storage Management Server and a Storage Server. Refer to "Chapter 2 Installation of the Manager" for the installation procedure for the Manager of AdvancedCopy Manager.

    2. Install the Tape Manager that is required for the server to operate as a Tape Server. Refer to "Chapter 7 Installation of Tape Manager" for the Tape Manager installation procedure.

- For cluster operation

    Refer to "Installing Tape Manager functions" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster operations" for the Tape Server and Storage Management Server installation procedures. Note that, when performing the "AdvancedCopy Manager installation" procedures under "Installing Tape Manager functions", the Manager of AdvancedCopy Manager, which is mandatory software for a server to operate as a Storage Management Server and a Storage Server, must be selected and installed.

Repository operating environment setup

- For non-cluster operation

  Refer to "Chapter 3 Customization of Storage Management Server" for the execution procedure.

- For cluster operation

  Refer to "Customizing Storage Management Server transactions and Storage Server transactions" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster operations" for the execution procedure.

9.4.4.6 Restore repository data

Restore the Storage Management Server repository data that was backed up. Refer to "9.1.6 Restoring repository data" for the execution procedure.

9.4.4.7 Change server information

In order to guarantee data consistency, use Web GUI screens or stgxfwcmmodsrv (Server information change command) to change the server information.

Using the GUI client

Select and right click the Storage server from the site view.
Select the [Modify] option from the context menu, the [Modify Storage Server] dialogue is displayed. Click the [OK] button without changing anything in the display.

For details on how to use the GUI client, refer to "How Modify Storage Server Information" in the "ETERNUS SF AdvancedCopy Manager GUI Operator's Guide."

Using commands

Specify the name of the Storage Management Server in the -n option, and execute stgxfwcmmodsrv (Server information change command) at a command prompt.

Refer to "stgxfwcmmodsrv (Server information change command)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide" for information on using commands.

🖅 Note

Changing the server information may fail due to the influence of the Java Plug-in cache. If changing the server information fails, use the following steps to clear the Java Plug-in cache at the GUI client, then re-execute the command. If the GUI client is running, clear the cache, then stop and restart the GUI client.

1. Select [Control Panel] item [Java Plug-in].

2. Select the [Cache] tab, then [Clear].

9.4.4.8 Restore management information

Recover the management information that was backed up for the Management server. Refer to "9.3.8 Restoring management information" for the execution procedure.

9.4.4.9 Restore tape management information

Restore the tape server tape management information. The procedure is shown below.

> 📝 **Note**
> ....
>
> - In Cluster operation, the cluster setup must have been done before restoring the tape server tape management information.
>
>   Execute procedure 1 to 20 excluding procedure 11 and 19 refer to "Customizing Tape Server Transactions" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster environment".
>
> - Make sure the following shared disks are mounted, then restore the tape management information.
>
>   - The shared disk for AdvancedCopy Manager shared data
>
>   - The shared disk for AdvancedCopy Manager repository
>
>   - The shared disk for TSM
>
> ....

1. Recover the tape management information that was backed up for the Tape Server. Refer to "Restoring tape management information" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide Tape Backup Option" for the execution procedure.

2. Restore the following backed up tape manager-related definition files.

   - /etc/opt/FJSVswstm/conf/devpath.conf

   - /etc/opt/FJSVswstm/conf/tsm.conf

   - /etc/opt/FJSVswstm/conf/tsmbkfile

   - /usr/bin/dsm.opt

   - /usr/bin/dsm.sys

3. Updating TSM server daemon

   Execute the following command to update the TSM server daemon information.

   ```
   # TSMDB=<TSM database directory>; export TSMDB
   # DSMSERV_DIR=/opt/tivoli/tsm/server/bin; export DSMSERV_DIR
   # DSMSERV_CONFIG=$TSMDB/dsmserv.opt; export DSMSERV_CONFIG
   # cd $TSMDB
   # /opt/tivoli/tsm/server/bin/dsmserv UPGRADEDB
        :
   tsm: TAPESERVER1> halt
   # /opt/tivoli/tsm/server/bin/dsmserv
        :
   tsm: TAPESERVER1> halt
   ```

   After the command (dsmserv UPGRADEDB) execution, press the Enter key periodically (once per minute). When the prompt re-appears, the command is completed.
   Then use the dsmserv command to check TSM server daemon started.

9.4.4.10 Set access path definitions

Set the Tape Server access path definitions.

> 📝 **Note**
> ....
> This procedure is required only for the ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 operating environments.
> ....

If the conditions below apply, implement the "Access path recovery" procedures.
If the conditions below do not apply, implement the "Resetting access path definitions" procedures.

- The operating system of the Tape Server is not upgraded, and

- The GR multipath driver continues to be used after the upgrade.

Access path recovery

Execute tboactmplbext (Tape Server upgrade settings command).

```
# /opt/FJSVswstm/bin/tboactmplbext
/etc/opt/FJSVmplb/conf/mplb_ext_active was created.
#
```

For cluster operation, execute the upgrade settings command on the active node that currently references shared volumes. This command does not need to be executed on the standby node.

Note

. . . .

If the tboactmplbext command is executed by mistake

If the tboactmplbext command is executed in unsuitable conditions, the backup function may not operate correctly. In this case refer to "tboactmplbext (Tape Server upgrade settings command)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for Tape Backup Option", and then take appropriate action.

. . . .

Resetting access path definitions

Re-create the access paths and reset the access path definitions.

Note

. . . .

The following procedure is required only for the ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 access path.

. . . .

If the access paths used before the upgrade meet the following conditions, only execute step 4 and subsequent steps:

- A total of four access paths are set, two from the disk of CM0 of the disk array unit and two from the disk of CM1, are set A total of four access paths are set, two each from the disks of CM0 and CM1 disk array units, and

- The access paths used before the upgrade will continue to be used.

Execution procedure

1. Re-create access path partitions.

   Refer to "Creating access path partitions" for the procedure.

2. Re-set the access path definition file.

   Refer to "Setting the access path definition file" for the procedure.

3. Delete access path definition information.

   Delete the definition information of the access paths used before the upgrade.

   ```
   # rm -f /etc/opt/FJSVswstm/data/ctrl/.boxid_*
   #
   ```

4. Inspect the definition file.

   Refer to "Definition file inspection" for the procedure.

5. ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 information collection.

   Refer to "8.6.1.4 Collecting ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, and ETERNUS4000 information" for the procedure.

9.4.4.11 Customize the Tape Server

Recover the Tape Server environment settings.

For non-cluster operation

If the following conditions apply, execute from Step 3. If these conditions do not apply, execute from Step 1.

- [Conditions]

  If the ETERNUS disk storage systems and LUN configurations are not changed

- [Execution procedure]

  1. Inspect the definition file.

     Refer to "8.6.1.3 Checking Definition Files" for the execution procedure.

  2. Collect ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 information

     Refer to "8.6.1.4 Collecting ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, and ETERNUS4000 information" for the execution procedure.

     Note: This procedure is not required if ETERNUS DX60/DX80/DX90, ETERNUS DX400 series, ETERNUS2000, ETERNUS3000, ETERNUS4000 is not used.

  3. Tape library driver settings

     Refer to "8.7.1 Driver Configuration of Tape Library System" for the procedure.

  4. Daemon automatic start-up settings

     Refer to "8.8 Configuring Automatic Activation of Daemons" for the execution procedure.

     A pre-upgrade settings file for the TSM server daemon settings may exist. This procedure need not be executed if the file that is set by this procedure already exists.

  5. TSM settings

     TSM setting has to be same before upgraded. For details, refer to "8.9 TSM Configuration (the settings set after the daemon automatic start settings)".

For cluster operation

If the Tape Server performs Tape Server tasks as cluster operations, procedures for clusters are required.

Execute procedure 21 to 26, refer to "Customizing Tape Server Transactions" in the appropriate version of the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster environment".

Note
. . . .

The setting of procedure 24 "Set the TSM setting" has already been completed when restoring management information. Confirm that the setting is correct.
. . . .

Chapter 10 Uninstall

This chapter explains the removal of the AdvancedCopy Manager.

10.1 Uninstall of Manager

The uninstall method of the manager of AdvancedCopy Manager is explained.

10.1.1 Windows Platform

 Note

Please be sure to refer to "11.1.2 Notes on Uninstall" before uninstalling AdvancedCopy Manager.

The flow of uninstalling the Manager of AdvancedCopy Manager is shown below:

 Note
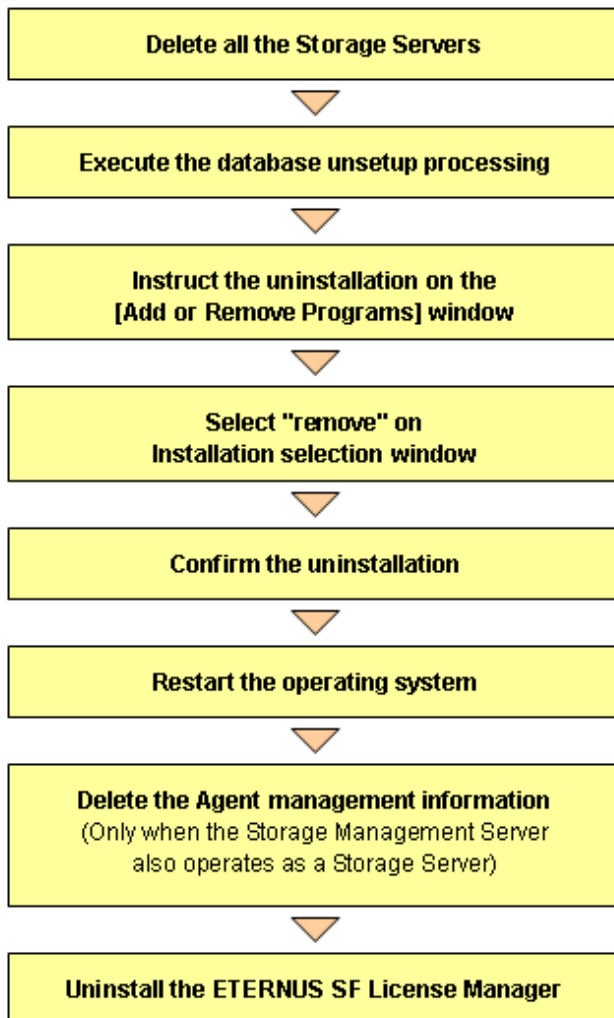
When the storage management server operates in a cluster

The "Cancel Web Server configuration information" and "Execute the database uninstall process" are unnecessary because the configurations are canceled when the storage management server transaction is deleted. Refer to "Deleting Storage Management server transactions and Storage server transactions" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster environment" when Canceling the configuration for a cluster environment.

If the uninstall is executed without deletion of the configurations, the uninstall process terminates abnormally.

. . . .

10.1.1.1 Deletion of all storage servers

Delete all the Storage servers, which are managed by the Storage management server to be uninstalled, from the control of AdvancedCopy Manager. For more information on how to delete Storage servers using a GUI client, see "Delete the Registration of a Storage Server" in the "ETERNUS SF AdvancedCopy Manager GUI User's Guide".

Refer to "stgxfwcmdelsrv (Server information deletion command)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide" for information on how to delete Storage servers using the command line.

10.1.1.2 Uninstall the database

P Point

. . . .

Delete the database by a user who executed its setup.

The deletion may be failed, when it executed by a different user.

. . . .

1. Activate the [AdvancedCopy Manager Setup Menu].

Note

. . . .

- Executing this process with the service listed below must be paid attention.

  - Terminal service (via a remote desktop connection)

    If the Storage Management Server is running on Windows Server 2003, the Terminal Service must be used by making a console session connection to it. Refer to the following link for information on how to make console session connections:
    http://support.microsoft.com/kb/947723
    http://support.microsoft.com/kb/278845

  Do not use service listed below, as it will not work properly.

  - Telnet server service

- 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.

. . . .

Click [Start] -> [Programs] -> [AdvancedCopy Manager] -> [DB setup tool]. This activates the [AdvancedCopy Manager setup] menu.
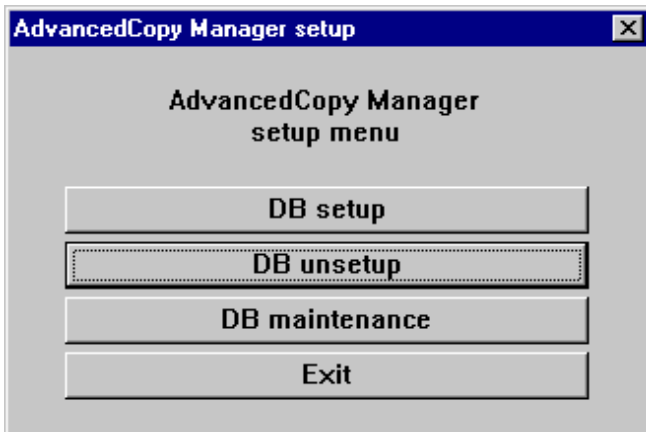
2. Start the Database uninstall.

   Click the [DB unsetup] button.

   The following window is displayed.

   Be certain that deleting the database will not cause any problems in other applications or systems.

   Click the [Start] button.
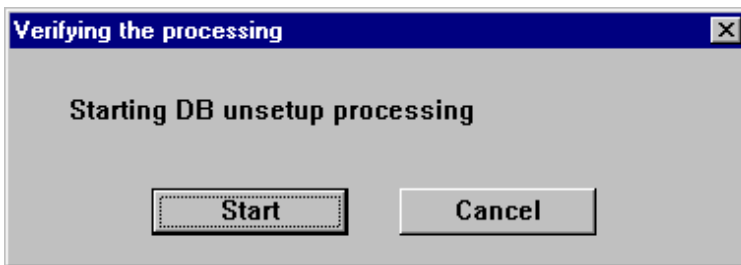
3. Terminate the DB uninstall dialog.

   After the DB unsetup is completed, the following window is displayed.

   Click the [Close] button.
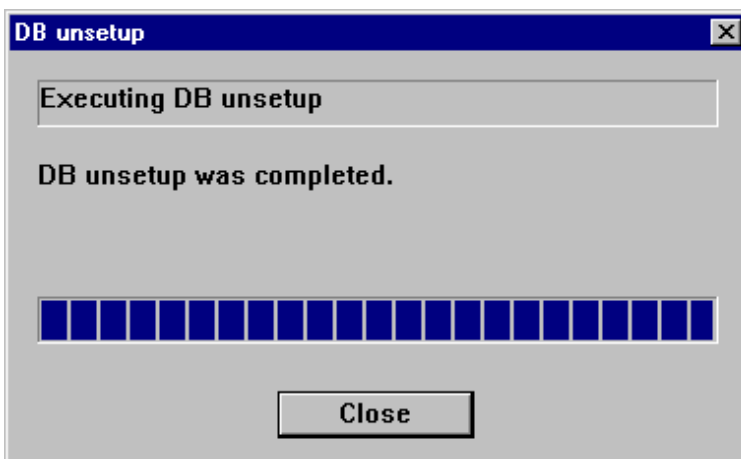
10.1.1.3 Uninstall

1. Remove the AdvancedCopy Manager program from your system by the following procedures.

    - Windows Server 2003

        When [Control Panel] > [Add or Remove Programs] is double-clicked, the following window is displayed.
        Select "AdvancedCopy Manager", and then click the [Change/Remove] button.
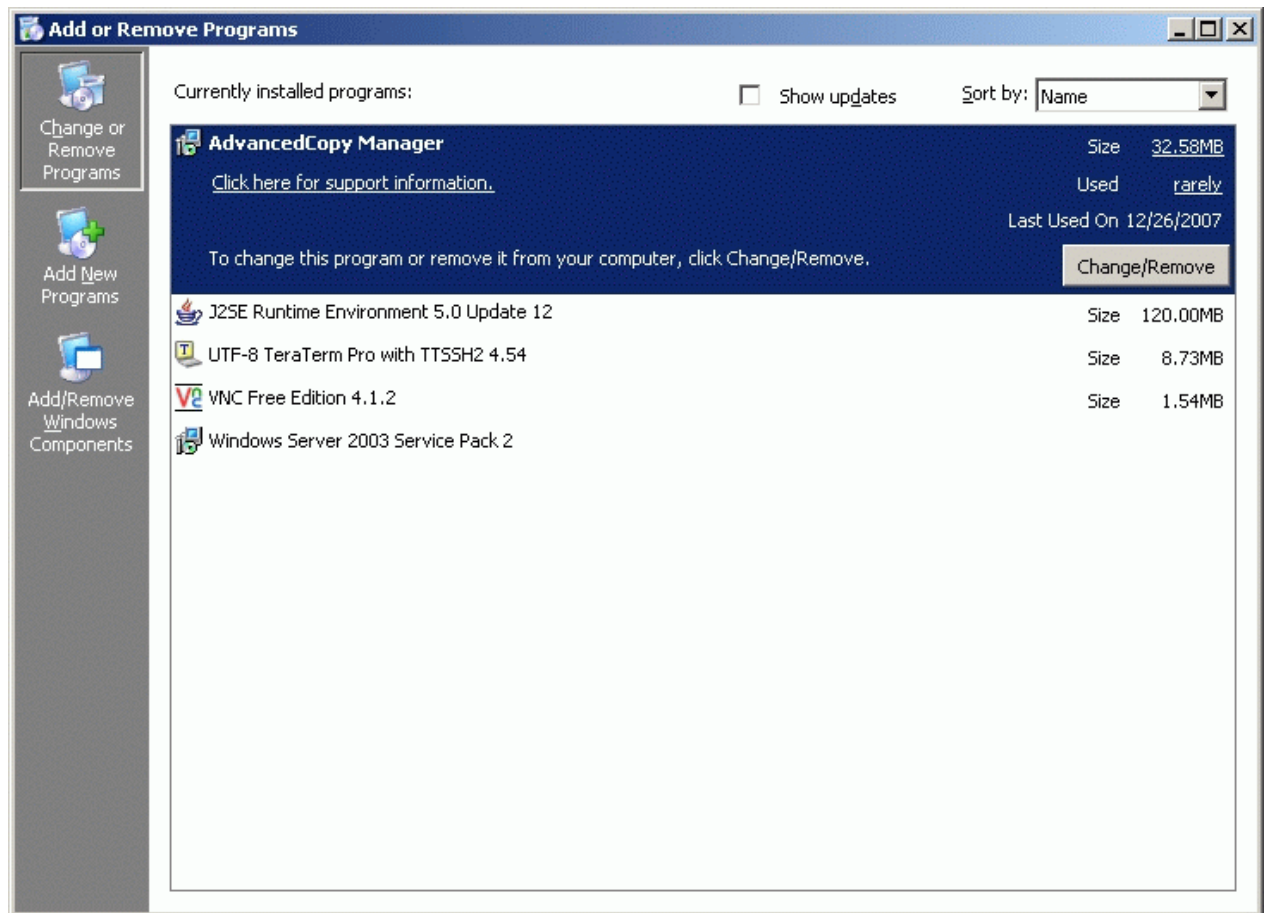
- Windows Server 2008 or Windows Server 2008 R2

    When [Control Panel] > [Programs and Features] is double-clicked, the following window is displayed.
    Select "AdvancedCopy Manager", and then click the [Uninstall/Change] button.
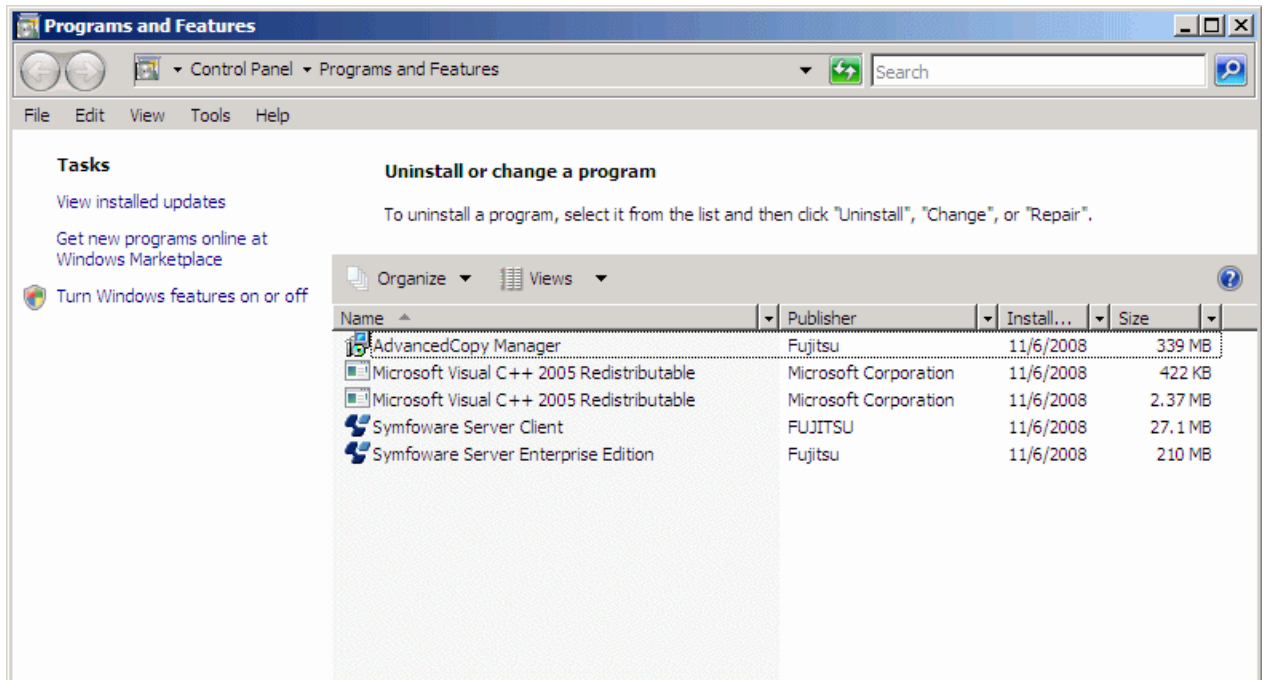
2. Select "Remove" on the [Welcome] window and click the [Next] button.
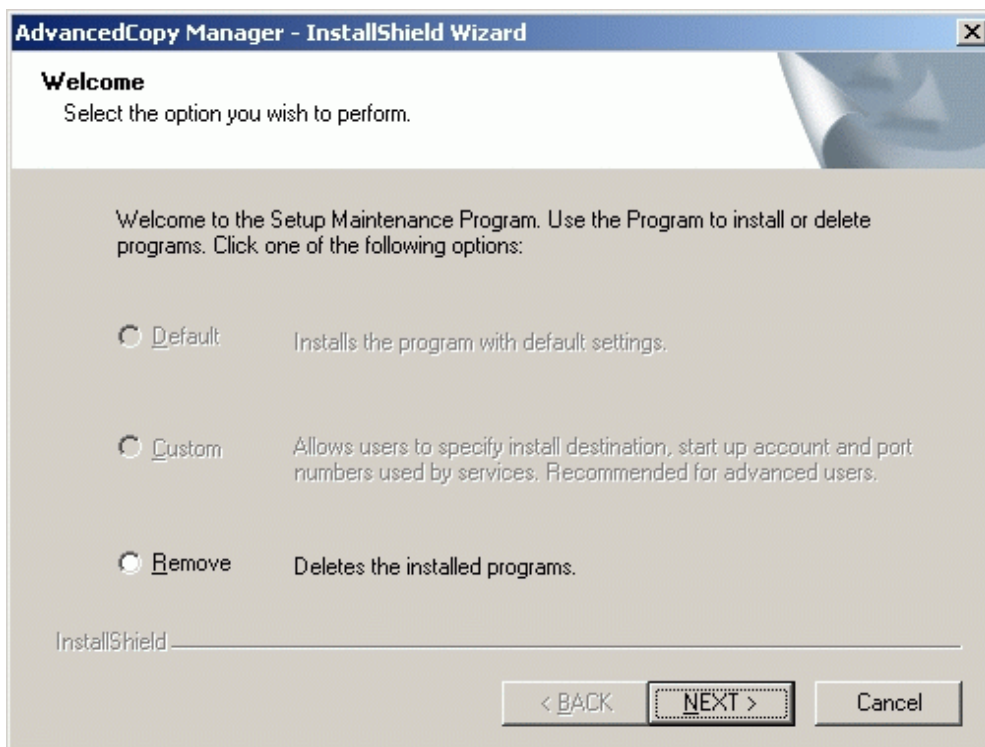
3. The following confirmation window is displayed. Click the [OK] button.
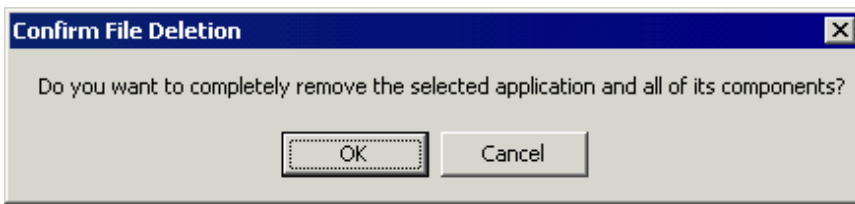
4. After the uninstall is completed, the following confirmation window is displayed. Click the [OK] button to complete the uninstall of the AdvancedCopy Manager.

   - Windows Server 2003
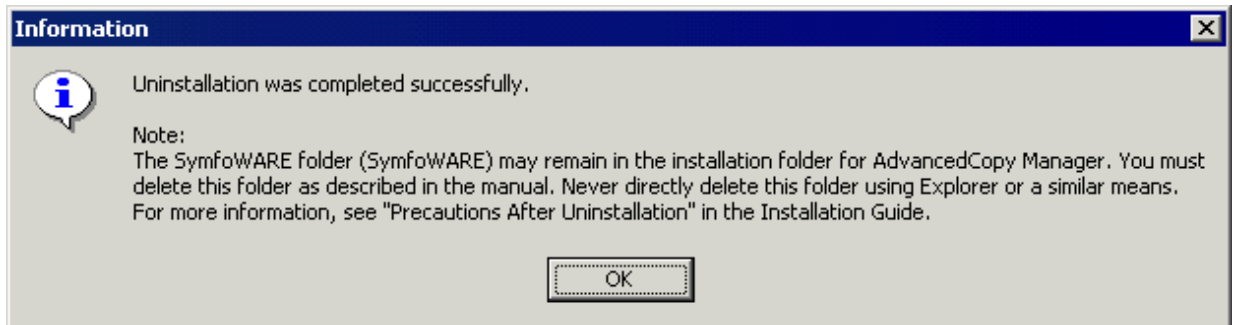
   - Windows Server 2008 or Windows Server 2008 R2
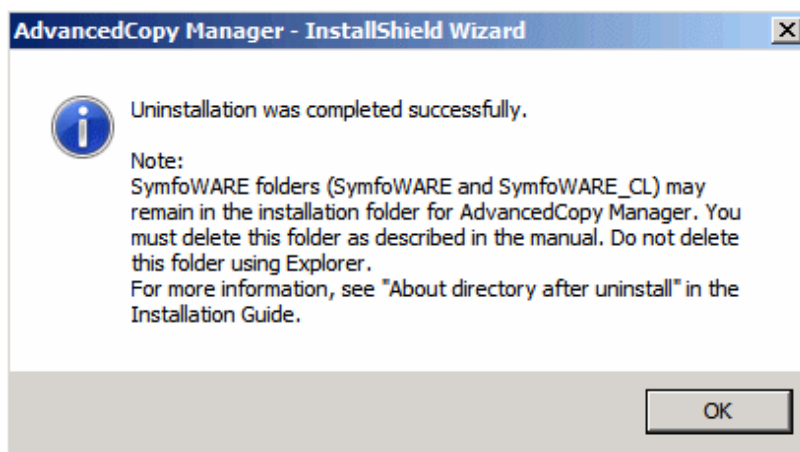
5. Restart the system.

10.1.1.4 Delete agent management information

Delete agent management information.

If the Storage management server also performs backup or replication operations, save the data of all files stored in the environment configuration directory \etc, if required, and delete it by using MS Explorer or similar.

10.1.1.5 Uninstall the ETERNUS SF License Manager

Uninstall the ETERNUS SF License Manager. For the uninstallation procedure, refer to "E.4.1 Uninstallation from Windows environment".

10.1.2 Solaris/Linux Platform

Use the following procedures at the Storage Management server to perform the uninstall:
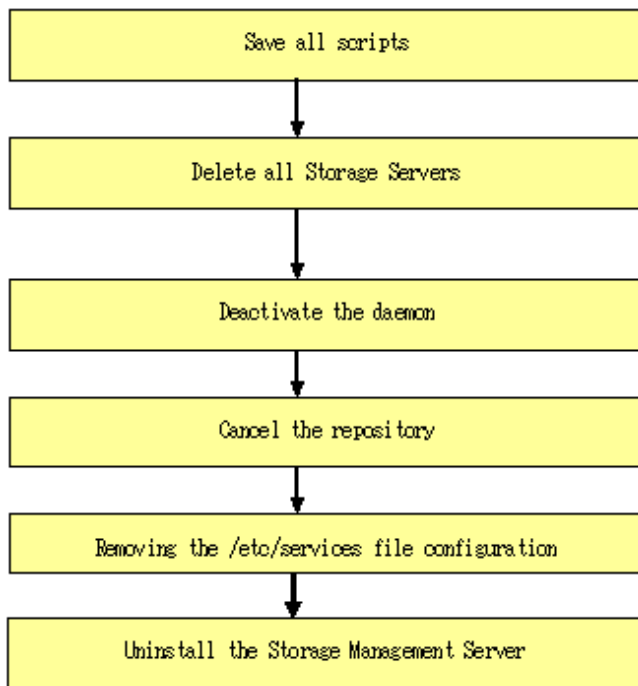
To uninstall in cluster operation it is necessary to delete the environment of all Storage Server transactions / Storage Management Server transactions of AdvancedCopy Manager currently created by the node.

10.1.2.1 Saving all script

As uninstall deletes the shell scripts used before and after backup/restore processing and replication processing, if any customized scripts are to be reused they need to be saved.

10.1.2.2 Deletion of all storage servers

Delete all target storage servers of the storage management server to uninstall them from the AdvancedCopy Manager control panel.

For an explanation on how to delete the storage server using the GUI client, see "Delete the Registration of a Storage Server" in the "ETERNUS SF AdvancedCopy Manager GUI User's Guide".

For an explanation on how to use the command line to delete the storage server, see "stgxfwcmdelsrv (Server information deletion command)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide".

10.1.2.3 Daemon deactivation

Deactivate the daemon of the storage management server with the following command:

```
# /opt/swstorage/bin/stopacm
```

10.1.2.4 Cancel of repository configurations

Start uninstall of the database integration.

Delete the database and its environment.

Cancel the repository configurations.

🛈 **Note**

....

- To start uninstall of the database integration, log in as a root user.

- When the Storage Management Server is being operated on the cluster system, the repository configurations are cancelled when Storage Management Server daemons are deactivated and removed. Therefore, it is not necessary to carry out this operation.

- Cancel the configurations at the location specified at the time of installation on the Storage management server.

- 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.

1. Place the system in superuser mode.

```
# su
```

2. Start uninstall of the database integration.

   Enter the following command to start uninstall of the database integration.

```
# /opt/swstorage/bin/stgdbunset
```

3. Confirm whether to continue processing.

   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] ==> y
```

4. Deletion of the storage management server database is complete.

   During deletion of the storage management server database, the progress is displayed on the screen. The following is an example of execution progress.

> **Note**

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.

#
```

10.1.2.5 Removing the /etc/services file configurations

Delete the service that is set in the description in "Contents of the /etc/services file".

10.1.2.6 De-installation

Solaris

1. Place the system in superuser mode.

   ```
   # su
   ```

2. Execute the swunsetup command. Execution of this command will delete most of the packages listed in "A.1 Solaris Platform" of "Program Components of AdvancedCopy Manager".

   ```
   # /opt/swstorage/setup/stg/swunsetup
   ```

 Note
. . . .

To re-install into another directory after executing the swunsetup command, check that none of the directories of the package shown in "A.1 Solaris Platform" of "Program Components of AdvancedCopy Manager" remain.

If the directory remains even if the swunsetup command is executed, remove the directories after saving data if necessary.
. . . .

3. Before deleting the Symfoware package, check and confirm that none of the package functions used by ETERNUS SF AdvancedCopy Manager are used by any system other than ETERNUS SF AdvancedCopy Manager.

   ```
   # /opt/symfoware/setup/symfo_remove
   ```

4. To confirm the final message and start the re-installation, input "all" or "y". To cancel the installation, input "n."

```
Removal of all packages, Ok? (default:n) [y,n]:
```

5. The following messages will be output if uninstall of Symfoware is completed normally.

```
Removal of "Symfoware Server Enterprise Edition" was successful.
```

6. If ETERNUS SF AdvancedCopy Manager uses some of the functions of the GR Series Access API (FJSVgrapi) package, the package cannot be deleted by the swunsetup command. Confirm that no other software is using the functions of this package before deleting it.

```
# pkgrm FJSVgrapi
```

7. Delete the FJSVswtrc package.

```
# pkgrm FJSVswtrc
```

8. Uninstall the ETERNUS SF License Manager. For the uninstallation procedure, refer to "E.4.2 Uninstallation from Solaris environment".

Linux

1. Place the system in superuser mode.

```
# su
```

2. Execute the swunsetup command. Execution of this command will delete most of the packages, listed in "A.2 Linux Platform" of "Program Components of AdvancedCopy Manager".

```
# /opt/swstorage/setup/stg/swunsetup
```

Note

To re-install into another directory after executing the swunsetup command, check that none of the directories of the package shown in "A.2 Linux Platform" of "Program Components of AdvancedCopy Manager" remain.

If the directory remains even if the swunsetup command is executed, remove the directories after saving data if necessary.

3. Before deleting the Symfoware package, check and confirm that none of the package functions used by ETERNUS SF AdvancedCopy Manager are used by any system other than ETERNUS SF AdvancedCopy Manager.

```
# /opt/symfoware/setup/symfo_remove
```

4. In response to the confirmation message to uninstall Symfoware, enter "all" or the number of the function to be uninstalled, and then enter "y" in response to the second confirmation message. To cancel the process, enter "q".

The following is an example of uninstallation with the specification "all":

```
Uninstallation of "Symfoware Server Enterprise Edition" begins.

Please select the functions to be uninstalled.
1: RDB function
2: JDBC function
3: WebAdmin function
4: WebDBtools function
Separate multiple selections with ",". (Example: 1, 2)
[all:All functions,1,2,3,4,q]: all

Selected functions
```

```
- RDB function
- JDBC function
- WebAdmin function
- WebDBtools 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.
```

5. The following messages will be output if uninstall of Symfoware is completed normally.

[System environment of v.4 for x86, v.4 for EM64T, 5 for x86, and 5 for Intel64]

```
Uninstallation of "Symfoware Server Enterprise Edition" is ended normally.
```

[System environment of v.4 for Itanium, 5 for Itanium]

```
Uninstallation of "Symfoware Server Enterprise Extended Edition" is ended normally.
```

6. Uninstall the ETERNUS SF License Manager. For the uninstallation procedure, refer to "E.4.3 Uninstallation from Linux environment".

10.2 Uninstall of Agent

The uninstall method of the agent of AdvancedCopy Manager is explained as follows.

10.2.1 Windows Platform

Note

Please be sure to refer to "11.1.2 Notes on Uninstall" before performing the uninstall for AdvancedCopy Manager.

The flow of the uninstall process for the Agent of AdvancedCopy Manager is shown below:
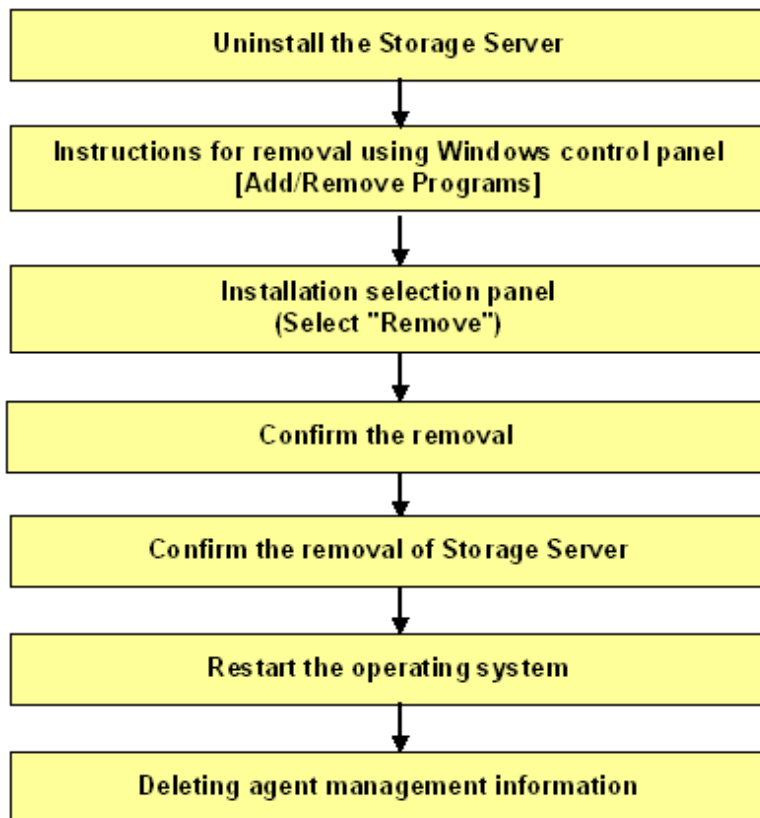
10.2.1.1 Removal of a Storage Server

Delete the Storage servers, which are managed by the Storage Management Server to be uninstalled, from the control of AdvancedCopy Manager. For more information on Server deletion method, see "Delete the Registration of a Storage Server" in the "ETERNUS SF AdvancedCopy Manager GUI User's Guide."

Please refer to "stgxfwcmdelsrv (Server information deletion command) of "ETERNUS SF AdvancedCopy Manager Operator's Guide" about the deletion method of the Storage Server in a command.

10.2.1.2 Uninstall procedure

1. Logon to the system.

   Log on to the system which uninstalls AdvancedCopy Manager using an Administrator's user id.

2. Remove the AdvancedCopy Manager program from your system by the following procedures.

   - Windows Server 2003

     When [Control Panel] > [Add or Remove Programs] is double-clicked, the following window is displayed.
     Select "AdvancedCopy Manager", and then click the [Change/Remove] button.
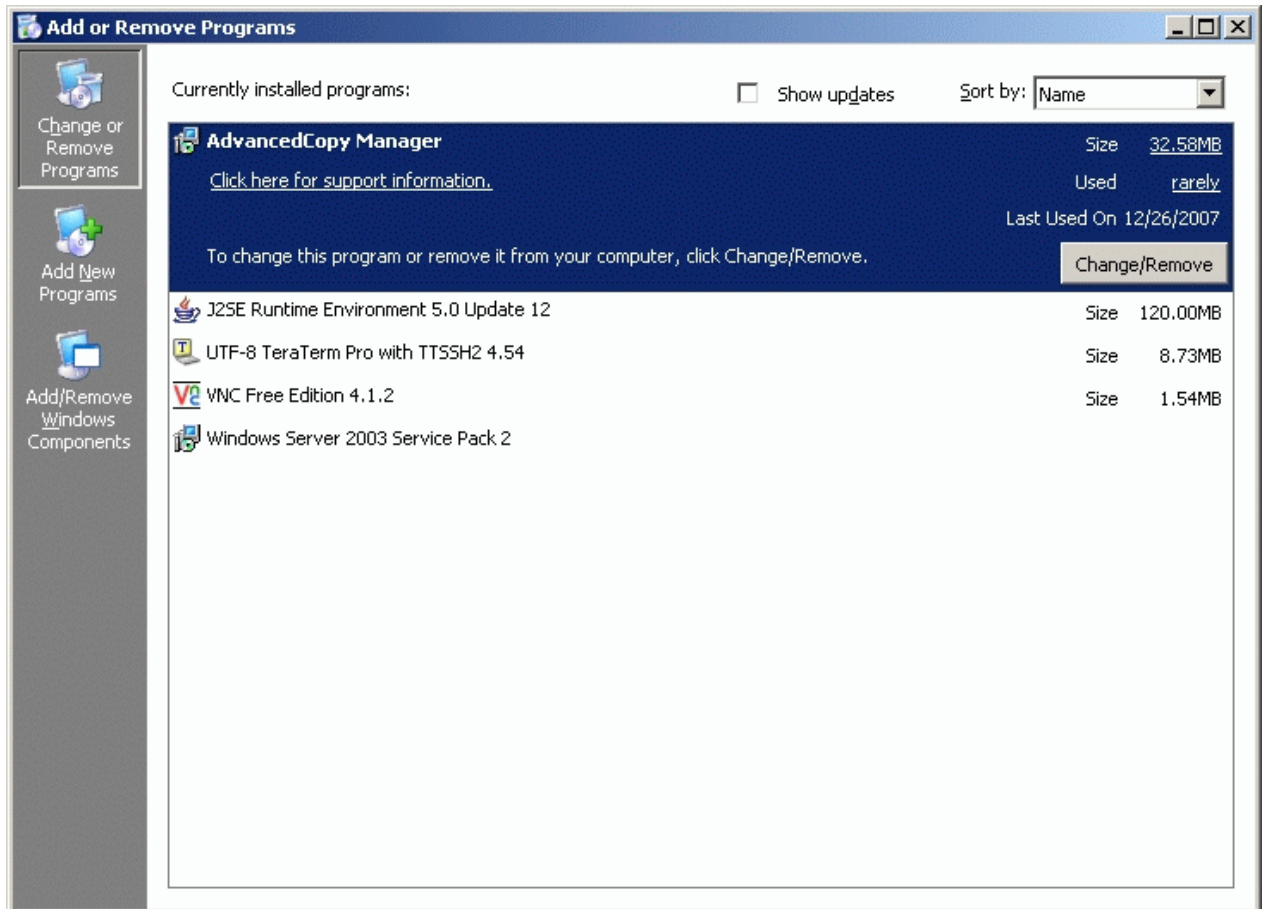
- Windows Server 2008 or Windows Server 2008 R2

  When [Control Panel] > [Programs and Features] is double-clicked, the following window is displayed.
  Select "AdvancedCopy Manager", and then click the [Uninstall/Change] button.
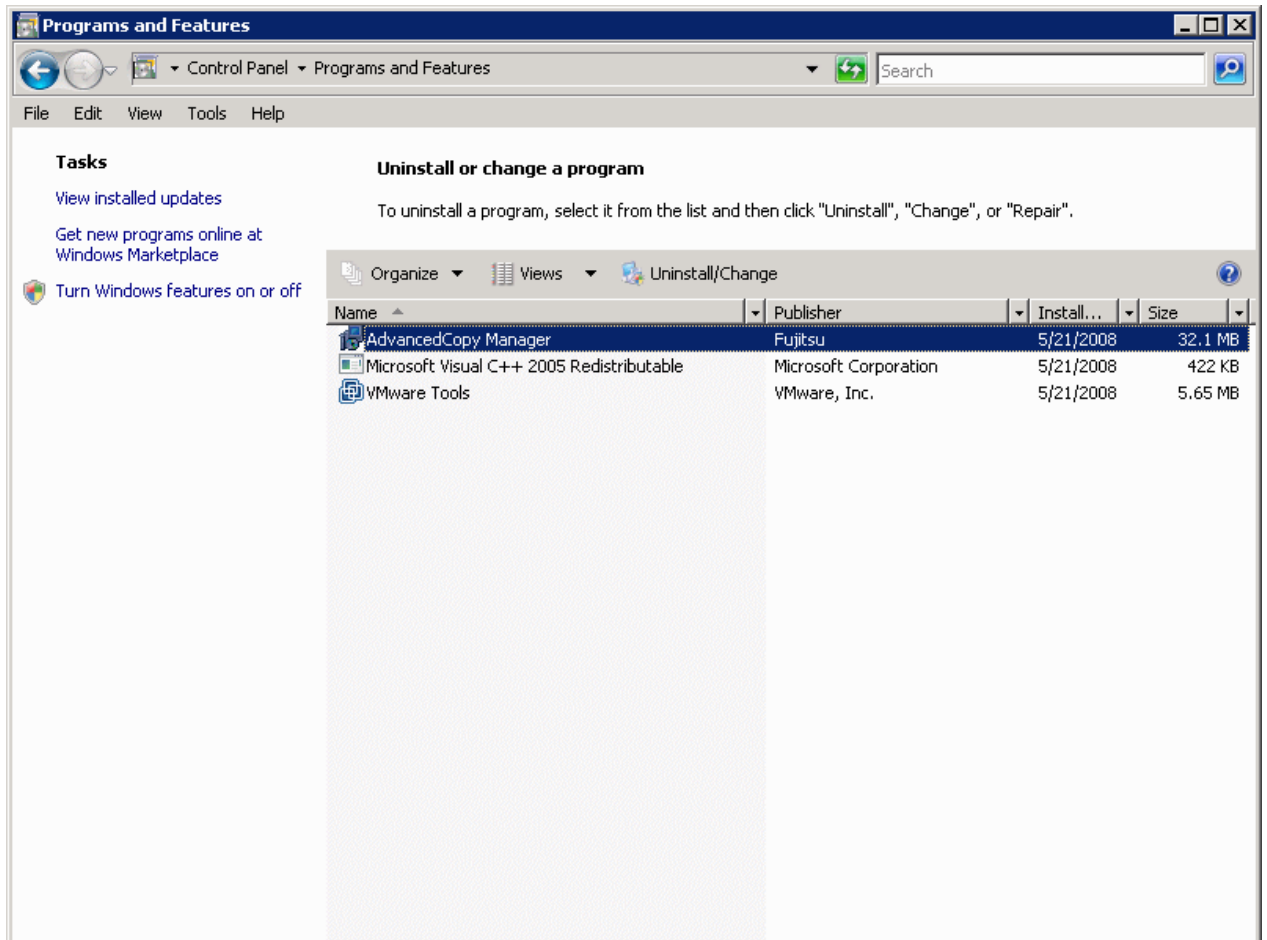
3. Select "Remove" on the [Welcome] window, and then click the [Next] button.
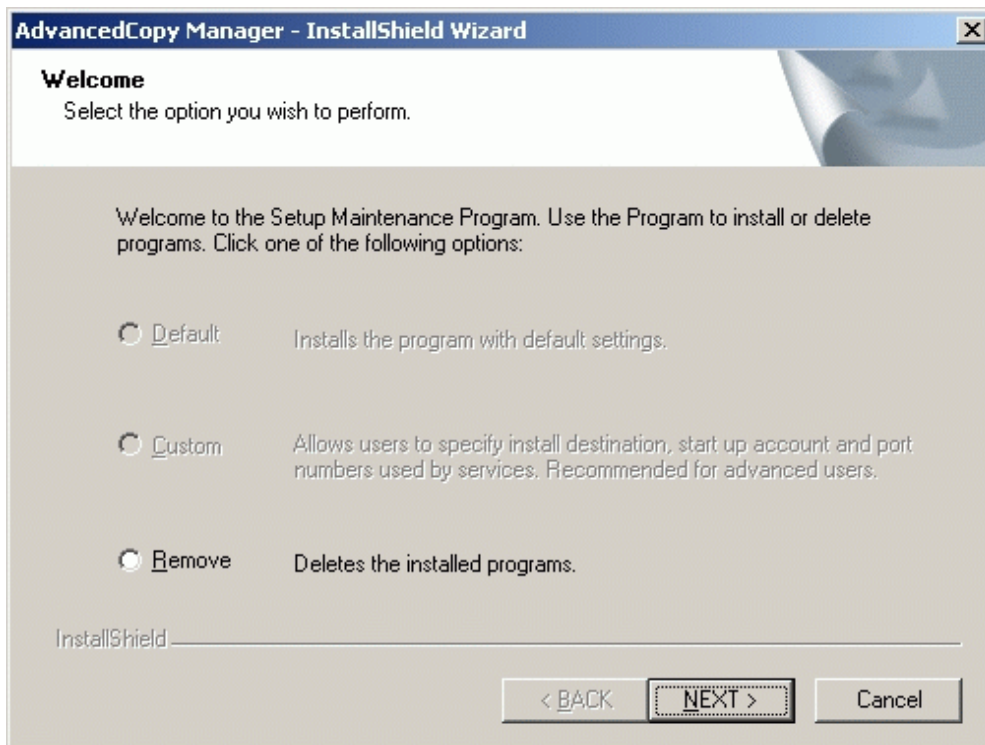
4. The following window is displayed; click the [OK] button.
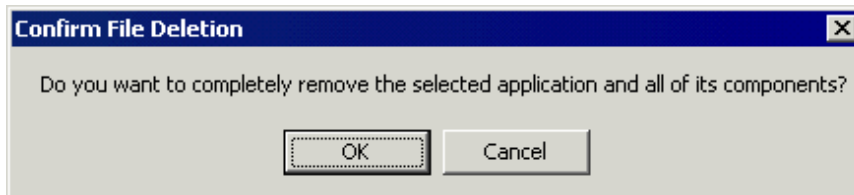
5. A dialog box will open to request confirmation for deleting the storage server. To delete the server, click the [OK] button.

This starts the AdvancedCopy Manager uninstall process.

If you are not sure about deleting the storage server, click the [Cancel] button to cancel processing.
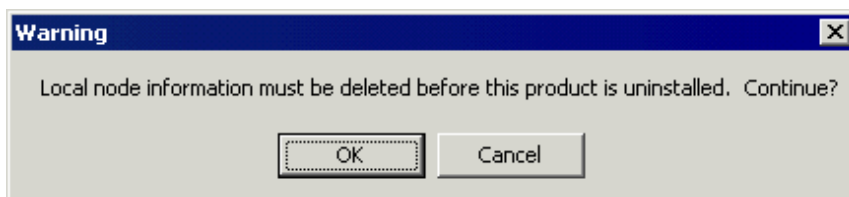
6. After the uninstall has completed, the following confirmation window is displayed.

Click the [OK] button to complete the uninstall of AdvancedCopy Manager.

7. Restart the system.

10.2.1.3 Delete agent management information

Delete agent management information.

Save the data of each file stored in the environment configuration directory \etc as required and delete it using MS Explorer.

10.2.2 Solaris/Linux/HP-UX/AIX Platform

In the storage server, execute unsetup by using the following procedures.
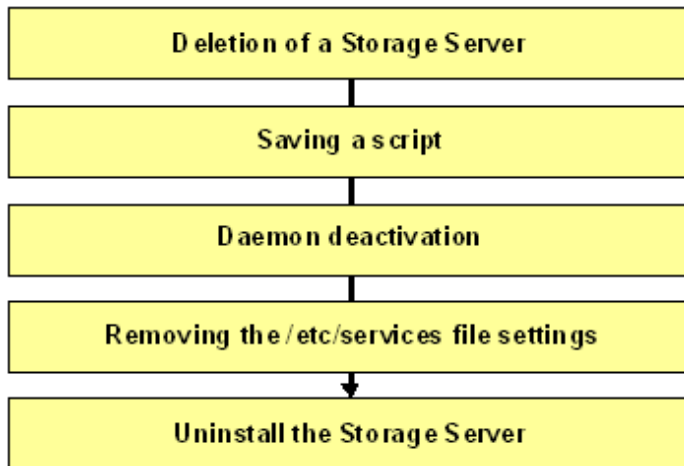
To uninstall in cluster operation it is necessary to delete the environment of all Storage Server transactions of AdvancedCopy Manager currently created by the node.

10.2.2.1 Deletion of a Storage Server

The Storage Server which is uninstalled is deleted from an AdvancedCopy Manager management subordinate.

Refer to "Delete the Registration of a Storage Server" in the "ETERNUS SF AdvancedCopy Manager GUI User's Guide" for information on how to delete Storage servers using the GUI client.

Refer to "stgxfwcmdelsrv (Server information deletion command)" in the "AdvancedCopy Manager Operator's Guide" for information on using the command line to delete Storage Servers.

 Note
. . . .
The chapter numbers in the referenced Operator's Guide may vary according to the host operating system of the Storage Management Server.
. . . .

10.2.2.2 Saving a script

The uninstall deletes the pre- and post-processing shell scripts used in conjunction with backup/restore and replication. If a customized script is to be reused it will need to be saved in a directory outside of the Advanced Copy parent directories.

10.2.2.3 Daemon deactivation

Deactivate the daemon of the Storage Server with the following command:

```
# /opt/swstorage/bin/stopacm
```

10.2.2.4 Removing the /etc/services file configurations

Delete the service that was configured as described in "Table 5.2 Content written to the /etc/services file".

10.2.2.5 Uninstall

Solaris edition

1. Place the system in superuser mode.

```
# su
```

2. Execute the swunsetup command. Execution of this command will delete most of the packages listed in "Appendix A Program Components of AdvancedCopy Manager".

```
# /opt/swstorage/setup/stg/swunsetup
```

To re-install into another directory after executing the swunsetup command, check that none of the directories of the package shown in "Appendix A Program Components of AdvancedCopy Manager" remain.

When the directory remains even if the swunsetup command is executed, remove the directories after saving data if necessary.

3. The command below should be executed to delete the FJSVgrapi (ETERNUS disk storage systems Access API) package after checking that only the AdvancedCopy Manager uses this package function.

```
# pkgrm FJSVgrapi
```

4. The command below should be executed to delete the FJSVswtrc package after checking that only the AdvancedCopy Manager uses this package function.

```
# pkgrm FJSVswtrc
```

Linux and HP-UX editions

1. Place the system in superuser mode.

```
# su
```

2. Execute the swunsetup command. Execution of this command will delete most of the packages listed in "Appendix A Program Components of AdvancedCopy Manager".

```
# /opt/swstorage/setup/stg/swunsetup
```

To re-install into another directory after executing the swunsetup command, check that none of the directories of the package shown in "Appendix A Program Components of AdvancedCopy Manager" remain.

Some directories of this package may not be deleted when the swunsetup command is executed. If directories remain, delete the directories, if required.

AIX edition

1. Place the system in superuser mode.

```
# su
```

2. Execute the swunsetup command. Execution of this command will delete most of the packages listed in "Appendix A Program Components of AdvancedCopy Manager".

```
# /opt/swstorage/setup/stg/swunsetup
```

To re-install into another directory after executing the swunsetup command, check that none of the directories of the package shown in "Appendix A Program Components of AdvancedCopy Manager" remain.

Some directories of this package may not be deleted when the swunsetup command is executed. If directories remain, delete the directories, if required.

3. Delete the following line that was added during Step 10 of "AIX" in the "4.2.4.2 Installation procedures".

```
/opt/FJSVswstf/daemon/stop_smgr0
```

10.3 Uninstall of GUI Client

This explains how to remove the GUI client of the AdvancedCopy Manager.

Follow the procedure below to remove the GUI client of the AdvancedCopy Manager.

1. Log on to Windows as a user with Administrator rights.

2. Select [Start] -> [Programs] -> [ETERNUS SF AdvancedCopy Manager] -> [Uninstall].

3. Click the [Yes] button.
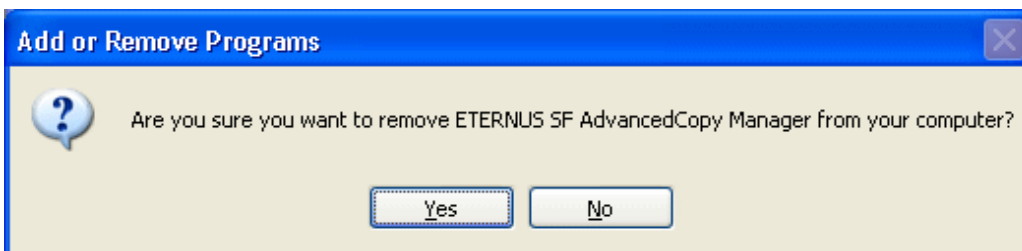
4. The progress window is displayed.
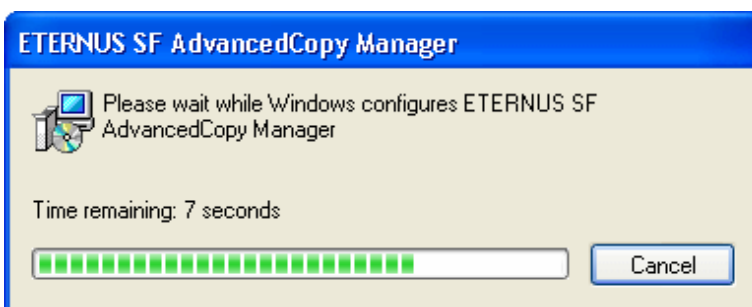
5. After the client is removed you may be asked to restart your computer.

10.4 Uninstall of Tape Manager

This section explains how to uninstall the Tape Manager that is included in the Tape Server.

The procedure is as follows.

1. 10.4.1 Saving Definition Files

2. 10.4.2 Deletion of Storage Server

10.4.1 Saving Definition Files

When the Tape Manager is uninstalled, the following definition files of the Tape Manager are deleted.

- /etc/opt/FJSVswstm/conf/devpath.conf

- /etc/opt/FJSVswstm/conf/tsm.conf

- /etc/opt/FJSVswstm/conf/tsmbkfile

- /usr/kernel/drv/IBMtape.conf

- /usr/bin/dsm.opt

- /usr/bin/dsm.sys

- /etc/tmd.conf

- /etc/ibmekm.conf

If these definition files are to be used again, save the files before the Tape Manager is uninstalled.

10.4.2 Deletion of Storage Server

Before the Tape Manager is uninstalled, all of the Storage Servers that the Tape Server manages must be deleted.

For details on deleting the Storage Server, see "stgxfwcmdelsrv (Server information deletion command)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for Tape Backup Option".

10.4.3 Deletion of a Tape Library System Configuration

The procedure for deleting the tape library device configurations from TSM is as follows:

1. Delete the drive path. (delete path)

2. Delete the configuration of the drive. (delete drive)

3. Delete the configuration of the tape library path. (delete path)

4. Delete the configuration of the tape library (controller) system. (delete library)

Note

Before deleting the configuration of the tape library system, execute dsmadmc (TSM administrative client command).

For details, see the "Tivoli Storage Manager for Sun Solaris Administrator's Reference" and the "ETERNUS SF TSM ETERNUS LT Library Operational Guide".

10.4.4 Daemon Deactivation

Deactivate the Tape Manager daemon.

The procedure is as follows.

1. Deactivate the Tape Server daemon. An example is provided below.

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

2. Deactivate the TSM server daemon. An example is provided below.

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

10.4.5 Uninstall

1. Place the system in super-user mode.

```
# su
```

2. If an IBM tape drive device such as ETERNUS LT160 is used, uninstall the IBM tape driver.

```
# pkgrm IBMtape
```

3. When Step 2 is executed, the setting file of IBM tape drive should be deleted.

```
# /usr/bin/rm /usr/kernel/drv/IBMtape.conf
# /usr/bin/rm /etc/tmd.conf
# /usr/bin/rm /etc/ibmekm.conf
```

4. Execute the tbounsetup command.

```
# /opt/swstorage/setup/stg/tbounsetup
```

5. Delete the package directory. Check that a common disk is mounted if the cluster is used.

```
# /usr/bin/rm -rf /opt/FJSVswstm/* /etc/opt/FJSVswst[mu]/* /var/opt/FJSVswst[mr]/*
# /usr/bin/rm -rf /opt/FJSVswstm /etc/opt/FJSVswst[mu] /var/opt/FJSVswst[mr]
```

6. Delete a customizing file.

```
# /usr/bin/rm -f /usr/bin/dsm.opt /usr/bin/dsm.sys
```

7. Delete the start-up file created manually.

```
# /usr/bin/rm -f /etc/init.d/initTSM /etc/rc0.d/K00tsmsv /etc/rc2.d/S99tsmsv
```

📝 Note

- If the installation destination directory is changed during installation, delete the each package directory under the installation destination directory in addition to the above procedure.

- After executing uninstall, check whether the package directory in "Tape manager" of "AdvancedCopy Manager configuration program" remains or not if the package is uninstalled but installed again. If the package directory is left undeleted, remove it as required.

10.4.6 Uninstall of the Agent or Manager of AdvancedCopy Manager

In the Tape Server, the Agent or Manager of AdvancedCopy Manager is installed in addition to the Tape Manager.

To uninstall the Agent, see "10.2 Uninstall of Agent".

To uninstall the Manager, see "10.1 Uninstall of Manager".

Chapter 11 Notes

This chapter details notes for installing AdvancedCopy Manager.

11.1 Windows Platform

11.1.1 Notes on Installation

11.1.1.1 User Account for Installation

Log on as the user with the Administrator's authority on the system for the AdvancedCopy Manager installation.

11.1.1.2 Installation in BDC

When installing the AdvancedCopy Manager in a backup domain controller (BDC), specify an existing user. If a new user is specified, it may be impossible to install the AdvancedCopy Manager because a new account is not immediately registered.

11.1.1.3 Reinstallation

If reinstallation is required, it should be done as follows:

- When the Agent of AdvancedCopy Manager is installed in the system where the Agent of AdvancedCopy Manager has been previously installed

- When the Manager of AdvancedCopy Manager is installed in the system where the Manager of AdvancedCopy Manager has been previously installed

- When the Manager and Agent of AdvancedCopy Manager are both installed in the same system.

11.1.1.3.1 Procedure to be completed before reinstallation

When the Manager of AdvancedCopy Manager or Agent of AdvancedCopy Manager is reinstalled in the system where the Manager of AdvancedCopy Manager has been previously installed, the DB Unsetup process must be executed beforehand.

If the DB Unsetup processing has not been executed, reinstallation cannot be performed.

For details of the DB Unsetup processing, refer to "Database unsetup" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide".

11.1.1.3.2 About reinstallation

If AdvancedCopy Manager has already been previously installed, it will be uninstalled.

After the older version has been uninstalled, restart the system and reinstall by issuing the install instruction for AdvancedCopy Manager.

11.1.1.4 If SystemWalker/StorageMGR has already been installed

If installing AdvancedCopy Manager on the system into which SystemWalker/StorageMGR is installed, the message "The SystemWalker/StorageMGR product has already been installed" is displayed and the attempt will abort with an error.

11.1.1.5 When SystemWalker/StorageMGR was installed previously

When installing AdvancedCopy Manager on the system on which SystemWalker/StorageMGR has been installed before, be aware that since OS remembers the former icon, the icon of [DB setup tool] is displayed as StorageMGR.

The following steps are needed in order to display the icon of AdvancedCopy Manager.

1. [Start] -> [program] -> [AdvancedCopy Manager] of a start menu is chosen, and a right click is carried out on [DB setup].

2. Choose [property] and click the [shortcut] tag in the dialog displayed.

3. Click [change of icon] button and choose the icon of AdvancedCopy Manager.

4. Click the [OK] button if correct.

11.1.1.6 Running the Software in an Environment Where the Windows Firewall Is Enabled

The firewall for the following versions of Windows (R) must be disabled or its settings must be configured by performing the following steps.

- Windows Server 2003 Service Pack 1 has been applied.

- Windows Server 2003 R2

- Windows Server 2008

- Windows Server 2008 R2

For the Storage management server

1. Select the [Windows Firewall] window from the [Control Panel].

2. Click the [Add Port] button on the [Exceptions] tab to open the [Add Port] dialog box.

3. Enter the following settings for the communication service:

    - [Name]: Specify any name that you want.

    - [Port number]: Specify the port number assigned to the communication service at the time of installation, and select "TCP" for the protocol.

4. To change the scope, specify the scope available for communication with the Storage server.

5. Click the [OK] button in the [Add Port] dialog box.

6. Close the [Windows Firewall] window by clicking the [OK] button.

For the Storage server

1. Open the [Windows Firewall] window from the [Control Panel].

2. Click the [Add Port] button on the [Exceptions] tab to open the [Add Port] dialog box.

3. Make the following settings for the communication service:

    - [name]: Specify any name that you want.

    - [Port number]: Specify the port number assigned to the communication service at the time of installation, and select "TCP" for the protocol.

4. To change the scope, specify the scope available for communication with the Storage management server and other Storage servers.

5. Click the [OK] button in the [Add Port] dialog box.

6. Close the [Windows Firewall] window by clicking the [OK] button.

11.1.2 Notes on Uninstall

11.1.2.1 Notes before Uninstall

11.1.2.1.1 About backup directory

The backup directory must be saved before uninstall is performed if the backup directory needs to be used for migration or similar after uninstall is executed. To save the backup directory, use the resource backup command. For details of the resource backup command, see "swstresback (Resource backup command)" in "ETERNUS SF AdvancedCopy Manager Operator's Guide."

The following circumstances will require saving the backup directory:

- When the user is uninstalling the Agent of AdvancedCopy Manager and has a need for the backup directory of the system after the uninstall.

- When the user is uninstalling the Manager of AdvancedCopy Manager in a system where the Storage management server is operated also as the Storage server and has a need for the backup directory of the system after the uninstall.

11.1.2.1.2 About repository

The repository of AdvancedCopy Manager must be deleted before the manager of AdvancedCopy Manager is uninstalled. An uninstall error occurs if the repository has not been deleted.

11.1.2.1.3 Cluster operation

Under cluster operation, the user must delete the environment of all AdvancedCopy Manager Storage server transactions and Storage Management server transactions created at the node being uninstalled.

If the storage management server operates in a cluster, deleting Storage Management server transactions deletes the repository. Therefore, the AdvancedCopy Manager uninstall tasks need not include DB unsetup.

11.1.2.1.4 When Exchange database backup operation has been performed

If AdvancedCopy Manager is to be uninstalled in an environment where an Exchange database backup operation has been performed, some operations must be performed before starting the uninstall.

For details of the operations, see "Backing up and Restoring Exchange Databases" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide".

11.1.2.2 Notes on Uninstall

11.1.2.2.1 About account for uninstall

For uninstallation, the user must belong to the "Administrator's" group.

11.1.2.3 Notes after Uninstall

11.1.2.3.1 About directory after uninstall

When Symfoware is installed by the Manager of AdvancedCopy Manager, there may be Symfoware resources remaining in the directory after uninstalling the Manager of AdvancedCopy Manager. Before deleting the directory, Symfoware must be uninstalled using the [Add or Remove Programs] window.

However, Symfoware must be uninstalled only after confirming that no other products (such as Systemwalker Centric Manager, or similar) are using it. If both Symfoware Server and Symfoware Client are installed, then uninstall Symfoware Client first.

AdvancedCopy Manager resources will remain in the install destination directory even after AdvancedCopy Manager is uninstalled. Save all files under environment-settings-directory\etc, then use Explorer or similar to delete the AdvancedCopy Manager resources.

Appendix A Program Components of AdvancedCopy Manager

A.1 Solaris Platform

A.1.1 Program Components of the Agent of AdvancedCopy Manager

Each of the program units that constitute a system is called a package. The Agent of AdvancedCopy Manager product consists of the following packages.

Table A.1 Program components of Agent (Solaris version)

No.	Package name	Version No.	Function
1	FJSVgrapi	2.17	ETERNUS disk storage systems Access API
2	FJSVswsrp	14.2	Replication Management
3	FJSVswstc	13.3	Tape Backup Agent
4	FJSVswstf	14.2	AdvancedCopy Manager Basic
5	FJSVswsts	14.2	Backup Management
6	FJSVswtrc	13.4	Common Trace

A.1.2 Program Components of the Manager of AdvancedCopy Manager

Each of the program units that constitute a system is called a package. The Manager of AdvancedCopy Manager product consists of the following packages.

Table A.2 Program components of Manager (Solaris version)

No.	Package name	Version No.	Function
1	FJSVgrapi	2.17	ETERNUS disk storage systems Access API
2	FJSVswsrp	14.2	Replication Management
3	FJSVswssc	13.4	Security Framework
4	FJSVswstc	13.3	Tape Backup Agent
5	FJSVswstf	14.2	AdvancedCopy Manager Basic
6	FJSVswsts	14.2	Backup Management
7	FJSVswtrc	13.4	Common Trace
8	FJSVrdbap	V28L10	Symfoware/RDB Client Package
9	FJSVrdbdb	V28L10	Symfoware/RDB Server Package
10	FJSVsymee	8.0	SymfoWARE Server Enterprise Edition Common Package
11	FSUNiconv	1.2.2	Iconv Standard Code Converter
12	FJSVsymjd	V20L81	Symfoware JDBC Driver package
13	FSUNrdb2b	V28L10	Symfoware/RDB Common Package
14	FSUNrdbps	V28L10	Symfoware/RDB Parallel Query Option
15	FJSVsymwa	V12L11	Symfoware WebAdmin
16	FJSVsymme	8.0.0	Symfoware Server Enterprise Edition Manual Package
17	FJSVsymwd	V15L11	Symfoware WebDBtools
18	FJSVapccm	V38L10	Symfoware/RDB Connection Manager Common Package

No.	Package name	Version No.	Function
19	FJSVapcdb	V38L10	Symfoware/RDB Connection Manager Server Package
20	FJSVesflm	14.2	ETERNUS SF License Manager

A.2 Linux Platform

A.2.1 Program Components of the Agent of AdvancedCopy Manager

The group of programs that constitute a system is called a package. The package configuration of the Agent of AdvancedCopy Manager varies depending on the version of the system environment where the Agent is installed.

System environment of v.4/v.5

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 AS (v.4 for Itanium)

- Red Hat Enterprise Linux 5 (for x86)

- Red Hat Enterprise Linux 5 (for Intel64)

- Red Hat Enterprise Linux 5 (for Intel Itanium)

Table A.3 Program components of Agent (Linux version: v.4 and 5)

No.	Package	Version	Function

1	FJSVgrapi	- 1.13-1
		  v.4 (for Itanium), 5 (for Intel Itanium)
		
		- 1.14-1
		  v.4 (for x86, for EM64T), 5 (for x86, for Inten64)
			ETERNUS disk storage systems Access API

2	FJSVswsrp	14.2-01	Replication Management

3	FJSVswstc	- 13.3-01
		  v.4, 5 (for x86, for Intel Itanium)
		
		- 14.2-01
		  5 (for Intel64)
			Tape Backup Agent

4	FJSVswstf	14.2-01	AdvancedCopy Manager Basic
5	FJSVswsts	14.2-01	Backup Management

6	FJSVswtrc	- 13.0-01
		  v.4
		
		- 13.1-01
		  5 (for x86, for Intel Itanium)
		
		- 14.2-01
		  5 (for Intel64)
			Common Trace

A.2.2 Program Components of the Manager of AdvancedCopy Manager

Each of the program units that constitute a system is called a package. Different packages constitute the Manager of AdvancedCopy Manager, depending on the version of the system environment in which the Manager is installed.

System environment of V4:

The table lists the package configuration for either of the following system environments in which Manager 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)

Table A.4 Program components of Manager (Linux version: v.4)

No.	Package	Version	Function
1	FJSVgrapi	1.14-1	ETERNUS disk storage systems Access API
2	FJSVswsrp	14.2-01	Replication Management
3	FJSVswssc	13.4-01	Security Framework
4	FJSVswstc	13.3-01	Tape Backup Agent
5	FJSVswstf	14.2-01	AdvancedCopy Manager Basic
6	FJSVswsts	14.2-01	Backup Management
7	FJSVswtrc	13.0-01	Common Trace
8	FJSVrdb2b	2910.40-1	Symfoware/RDB Common Package
9	FJSVrdbap	2910.40-1	Symfoware/RDB Client Package
10	FJSVrdbdb	2910.40-1	Symfoware/RDB Server Package
11	FJSVsymee	9010.40-1	Symfoware Server Enterprise Edition Common Package
12	FJSVsymjd	9010.40-1	Symfoware JDBC Driver Package
13	FJSVrdbps	2910.40-1	Symfoware/RDB Parallel Query Package
14	FJSVsymwd	1610.40-1	Symfoware WebDBtools
15	FJSVsymwa	1310.40-1	Symfoware WebAdmin
16	FJSVsymme	9010.40-1	Symfoware Server Enterprise Edition Manual Package
17	FJSVapccm	2910.40-1	Symfoware Server Connection Manager Common Package
18	FJSVapcdb	2910.40-1	Symfoware Server Connection Manager Database Package
19	FJSVesflm	14.2-01	ETERNUS SF License Manager

The table lists the package configuration for the following system environment in which the Manager is installed:

- Red Hat Enterprise Linux AS (v.4 for Itanium)

Table A.5 Program components of Manager (Linux version: v.4 for Itanium)

No.	Package	Version	Function
1	FJSVgrapi	1.13-1	ETERNUS disk storage systems Access API
2	FJSVswsrp	14.2-01	Replication Management
3	FJSVswssc	13.4-01	Security Framework
4	FJSVswstc	13.3-01	Tape Backup Agent
5	FJSVswstf	14.2-01	AdvancedCopy Manager Basic

No.	Package	Version	Function
6	FJSVswsts	14.2-01	Backup Management
7	FJSVswtrc	13.0-01	Common Trace
8	FJSVrdb2b	3910.40-1	Symfoware Server RDB Common Part
9	FJSVrdbap	3910.40-1	Symfoware Server RDB Application Part
10	FJSVrdbdb	3910.40-1	Symfoware Server RDB Database part
11	FJSVrdbps	3910.40-1	Symfoware/RDB Parallel Query Package
12	FJSVrdbse	3910.40-1	Symfoware/RDB Security Package
13	FJSVsymex	9010.40-1	Symfoware Server Enterprise Extended Edition Common Package
14	FJSVsymjd	9010.40-1	Symfoware JDBC Driver Package
15	FJSVsymwd	1610.40-1	Symfoware WebDBtools
16	FJSVsymwa	1310.40-1	Symfoware WebAdmin
17	FJSVsymmx	9010.40-1	Symfoware Server Enterprise Edition Manual Package
18	FJSVapccm	3910.40-1	Symfoware Server Connection Manager Common Package
19	FJSVapcdb	3910.40-1	Symfoware Server Connection Manager Database Package
20	FJSVesflm	14.2-01	ETERNUS SF License Manager

System environment of 5:

The table lists the package configuration for the following system environment in which Manager is installed:

- Red Hat Enterprise Linux 5 (for x86)

Table A.6 Program components of Manager (Linux version: 5 for x86)

No.	Package	Version	Function
1	FJSVgrapi	1.14-1	ETERNUS disk array Access API
2	FJSVswsrp	14.2-01	Replication Management
3	FJSVswssc	13.4-01	Security Framework
4	FJSVswstc	13.3-01	Tape Backup Agent
5	FJSVswstf	14.2-01	AdvancedCopy Manager Basic
6	FJSVswsts	14.2-01	Backup Management
7	FJSVswtrc	13.1-01	Common Trace
8	FJSVrdb2b	2910.50-1	Symfoware/RDB Common Package
9	FJSVrdbap	2910-50-1	Symfoware/RDB Client Package
10	FJSVrdbdb	2910-50-1	Symfoware/RDB Server Package
11	FJSVsymee	9010.50-1	Symfoware Server Enterprise Edition Common Package
12	FJSVsymjd	9010.50-1	Symfoware JDBC Driver Package
13	FJSVrdbps	2910.50-1	Symfoware/RDB Parallel Query Package
14	FJSVsymwd	1610.50-1	Symfoware WebDBtools
15	FJSVsymwa	1310.50-1	Symfoware WebAdmin
16	FJSVsymme	9010.50-1	Symfoware Server Enterprise Edition Manual Package
17	FJSVapccm	2910.50-1	Symfoware Server Connection Manager Common Package
18	FJSVapcdb	2910.50-1	Symfoware Server Connection Manager Database Package

No.	Package	Version	Function
19	FJSVesflm	14.2-01	ETERNUS SF License Manager

The table lists the package configuration for the following system environment in which Manager is installed:

- Red Hat Enterprise Linux 5 (for Intel64)

Table A.7 Program components of Manager (Linux version: 5 for Intel64)

No.	Package	Version	Function
1	FJSVgrapi	1.14-1	ETERNUS disk array Access API
2	FJSVswsrp	14.2-01	Replication Management
3	FJSVswssc	14.2-01	Security Framework
4	FJSVswstc	14.2-01	Tape Backup Agent
5	FJSVswstf	14.2-01	AdvancedCopy Manager Basic
6	FJSVswsts	14.2-01	Backup Management
7	FJSVswtrc	14.2-01	Common Trace
8	FJSVrdb2b	3920.50-1	Symfoware/RDB Common Package
9	FJSVrdbap	3920.50-1	Symfoware/RDB Client Package
10	FJSVrdbdb	3920.50-1	Symfoware/RDB Server Package
11	FJSVsymee	9020.50-1	Symfoware Server Enterprise Edition Common Package
12	FJSVsymjd	9020.50-2	Symfoware JDBC Driver Package
13	FJSVrdbps	3920.50-1	Symfoware/RDB Parallel Query Package
14	FJSVsymwd	1620.50-1	Symfoware WebDBtools
15	FJSVsymwa	1320.50-1	Symfoware WebAdmin
16	FJSVsymme	9020.50-1	Symfoware Server Enterprise Edition Manual Package
17	FJSVapccm	2920.50-1	Symfoware Server Connection Manager Common Package
18	FJSVapcdb	2920.50-1	Symfoware Server Connection Manager Database Package
19	FJSVesflm	14.2-01	ETERNUS SF License Manager

The table lists the package configuration for the following system environment in which the Manager is installed:

- Red Hat Enterprise Linux 5 (for Intel Itanium)

Table A.8 Program components of Manager (Linux version: 5 for Intel Itanium)

No.	Package	Version	Function
1	FJSVgrapi	1.13-1	ETERNUS disk storage systems Access API
2	FJSVswsrp	14.2-01	Replication Management
3	FJSVswssc	13.4-01	Security Framework
4	FJSVswstc	13.3-01	Tape Backup Agent
5	FJSVswstf	14.2-01	AdvancedCopy Manager Basic
6	FJSVswsts	14.2-01	Backup Management
7	FJSVswtrc	13.1-01	Common Trace
8	FJSVrdb2b	3910.50-1	Symfoware Server RDB Common Part
9	FJSVrdbap	3910.50-1	Symfoware Server RDB Application Part
10	FJSVrdbdb	3910.50-1	Symfoware Server RDB Database part

No.	Package	Version	Function
11	FJSVrdbps	3910.50-1	Symfoware/RDB Parallel Query Package
12	FJSVrdbse	3910.50-1	Symfoware/RDB Security Package
13	FJSVsymex	9010.50-1	Symfoware Server Enterprise Extended Edition Common Package
14	FJSVsymjd	9010.50-1	Symfoware JDBC Driver Package
15	FJSVsymwd	1610.50-1	Symfoware WebDBtools
16	FJSVsymwa	1310.50-1	Symfoware WebAdmin
17	FJSVsymmx	9010.50-1	Symfoware Server Enterprise Edition Manual Package
18	FJSVapccm	3910.50-1	Symfoware Server Connection Manager Common Package
19	FJSVapcdb	3910.50-1	Symfoware Server Connection Manager Database Package
20	FJSVesflm	14.2-01	ETERNUS SF License Manager

A.3 HP-UX Platform

A.3.1 Program Components of Agent of AdvancedCopy Manager

Each of the program units that constitute a system is called a package. The Agent of AdvancedCopy Manager consists of the following packages.

Table A.9 Program components of Agent (HP-UX version)

No.	Package name	Version No.	Function
1	FJSVgrapi	2.16	ETERNUS disk storage systems Access API
2	FJSVswsrp	14.2	Replication Management
3	FJSVswstc	13.4	Tape Backup Agent
4	FJSVswstf	14.2	AdvancedCopy Manager Basic
5	FJSVswsts	14.2	Backup Management
6	FJSVswtrc	13.1	Common Trace

A.4 AIX Platform

A.4.1 Program Components of Agent of AdvancedCopy Manager

Each of the program units that constitute a system is called a package. The Agent of AdvancedCopy Manager consists of the following packages.

Table A.10 Program components of Agent (AIX version)

No.	Package name	Version No.	Function
1	FJSVgrapi	2.16	ETERNUS disk storage systems Access API
2	FJSVswsrp	14.2	Replication Management
3	FJSVswstc	13.3	Tape Backup Agent
4	FJSVswstf	14.2	AdvancedCopy Manager Basic
5	FJSVswsts	14.2	Backup Management
6	FJSVswtrc	13.1	Common Trace

A.5 Tape Manager

A.5.1 Program Components of Tape Manager of AdvancedCopy Manager

Each of the program units that constitute a system is called a package. The Tape Manager of AdvancedCopy Manager consists of the following packages.

Table A.11 Program components of Tape Manager

No.	Package name	Version No.	Function
1	FJSVswstm	14.2	Tape Backup Manager
2	FJSVswstr	14.2	TSM Access Command for Tape Backup
3	FJSVswstu	13.3	Tape Backup Utility
4	FJSVtsmrc	5.3	Special Device Name correspondence
5	TIVsmCapi	5.5.2.0	TSM API Package
6	TIVsmCba	5.5.2.0	TSM B/A Client Package
7	TIVsmS	5.5.2.0	TSM Server
8	TIVsmSdev	5.5.2.0	TSM equipment driver
9	TIVsmSlic	5.5.0	TSM Licenses

Appendix B Locale

The locale of the internal code system used by AdvancedCopy Manager (the code system specified when AdvancedCopy Manager is installed on a Storage Management Server) must be installed on all Storage Servers and Tape servers.

B.1 Storage Server

Action is required if there are differences in the language environments (LANG) of the Storage Management Server and the Storage Servers.

The following table shows the actions required for various combinations:

Table B.1 Language environments of the Storage Management Server and Storage Server

Storage Management Server	Storage Server	Action required
Windows (SJIS)	Windows (SJIS)	None
	Solaris (EUC)	Install the SJIS package in the Storage Server.
	HP-UX (EUC)	Install the SJIS package in the Storage Server.
	Linux (EUC)	None
	Linux (UTF8)	None
	AIX (SJIS)	None
	AIX (EUC)	Add the SJIS language environment to the Storage Server.
Solaris: In accordance with the locale setting (standard: EUC)	Windows (SJIS)	None. (If the Storage Management Server locale is EUC, Storage Server processing will not have any problems)
	Solaris (EUC)	None (if same code). If the Storage Management Server locale is SJIS, install the SJIS package on the Storage Servers.
	HP-UX (EUC)	None (if LANG is the same). If the Storage Management Server locale is SJIS, install the SJIS package on the Storage Servers.
	Linux (EUC)	None
	Linux (UTF8)	None
	AIX (SJIS)	None (if LANG is the same). If the Storage Management Server locale is EUC, add the EUC language environment to the Storage Servers.
	AIX (EUC)	None (if LANG is the same). If the Storage Management Server locale is SJIS, add the SJIS language environment to the Storage Servers.
Linux (EUC)	Windows (SJIS)	None. (If the Storage Management Server locale is EUC, Storage Server processing is problem free.)
	Solaris (EUC)	None
	HP-UX (EUC)	None
	Linux (EUC)	None
	Linux (UTF8)	None
	AIX (SJIS)	Add the EUC language environment to the Storage Server.
	AIX (EUC)	None
Linux (UTF8)	Windows (SJIS)	None

Storage Management Server	Storage Server	Action required
	Solaris (EUC)	Add the UTF language environment to the Storage Server.
	HP-UX (EUC)	Add the UTF language environment to the Storage Server.
	Linux (EUC)	None
	Linux (UTF8)	None
	AIX (SJIS)	Add the UTF language environment to the Storage Server.
	AIX (EUC)	Add the UTF language environment to the Storage Server.

If tape backup operations are also performed, the UTF8 language environment is required on Storage Servers. Take the action shown in the table.

B.2 Tape server

The UTF8 language environment is required on Tape servers. Take the action shown in the following table:

Table B.2 Tape Server language environment

Tape server	Action required
Solaris	Add the UTF language environment to the Tape server.

The UTF8 language environment is mandatory for the Storage Management Server if backup operations are performed. The UTF8 language environment is mandatory for the Storage Management Server and Storage server if tape backup operations are performed. Action is required if there are differences in the language environments (LANG) of the Storage Management Server and the Tape servers.

The following table shows the actions required for various combinations of these two types of server:

Table B.3 Storage Management Server and Tape Server language environments

Storage Management Server	Tape server	Action required (except for UTF8)
Windows (SJIS)	Solaris (EUC)	Add the UTF8 language environment to the Tape Server.
	Solaris (SJIS)	None
Solaris (EUC)	Solaris (EUC)	None
	Solaris (SJIS)	Install the SJIS package on the Storage Management Server.
Solaris (SJIS)	Solaris (EUC)	Install the SJIS package on the Tape server.
	Solaris (SJIS)	None
Linux (UTF8)	Solaris (EUC)	None
	Solaris (SJIS)	None
Linux (EUC)	Solaris (EUC)	None
	Solaris (SJIS)	None

Action is required if there are differences in the language environments (LANG) of the Storage Servers and the Tape servers.

The following table shows the actions required for various combinations of these two types of server:

Table B.4 Storage Server and Tape Server language environments

Storage Server	Tape Server	Action required
Windows (SJIS)	Solaris (EUC)	Add the UTF8 language environment to the Tape Server.
	Solaris (SJIS)	None
Solaris (EUC)	Solaris (EUC)	None
	Solaris (SJIS)	None
Solaris (SJIS)	Solaris (EUC)	Install the SJIS package on the Tape server.

Storage Server	Tape Server	Action required
	Solaris (SJIS)	None
HP-UX (EUC)	Solaris (EUC)	Add the UTF8 language environment to the Storage server
	Solaris (SJIS)	Add the UTF8 language environment to the Storage server
Linux (UTF8)	Solaris (EUC)	None
	Solaris (SJIS)	None
Linux (EUC)	Solaris (EUC)	None
	Solaris (SJIS)	None
AIX (SJIS)	Solaris (EUC)	Install the following two types of language environment: UTF8 language environment to the Storage server SJIS package to the tape server
	Solaris (SJIS)	Add the UTF8 language environment to the Storage server
AIX (EUC)	Solaris (EUC)	Add the UTF8 language environment to the Storage server
	Solaris (SJIS)	Add the UTF8 language environment to the Storage server

After the appropriate package is installed, re-execute the "All device information fetch/reflect" operation from the GUI client.

Appendix C JRE Use Conditions

Before using this software product, you must agree to the following conditions regarding the handling of the JRE packaged together with this software product.

If you do not agree to these conditions, you cannot use this software product.

1. Observe the JRE use conditions described in the license text file.

   The license text file is stored in the following directory:

   - Windows Platform

   ```
   <Program Directory of AdvancedCopy Manager>\jre\LICENSE
   ```

   - Solaris/Linux Platform

   ```
   /opt/FJSVswstf/jre/LICENSE
   ```

2. The JRE packaged together with AdvancedCopy Manager cannot be used for purposes other than AdvancedCopy Manager operation.

3. Fujitsu shall not be liable for loss or damage caused by using JRE under conditions other than (1) and (2) above.

Appendix D Tape Library (LT20/LT40/LT60/LT220/LT230/ LT250/LT270) Setup

This chapter describes how to perform the setup that connects a tape library to Solaris and how to perform setup so that the tape library can be used by TSM.

D.1 Tape library setup for connection to Solaris

This section describes how to perform the setup that connects a tape library to Solaris.

D.1.1 ETERNUS LT20/LT40/LT60

This section describes how to set up the ETERNUS LT20/LT40/LT60 tape libraries.

D.1.1.1 FC connection settings

Disabling the st driver

🖙 **Note**
. . . .
To build a tape server in cluster, do not disable the st driver in this step; the device should be recognized by the st driver as well.
. . . .

1. Execute the ls command to display the device file.

```
# ls -l /dev/rmt/*[0-9]
lrwxrwxrwx 1 root root 40 27 Feb 15:07 /dev/rmt/0 -> ../../devices/pci@16,2000/scsi@1/st@5,0:
lrwxrwxrwx 1 root root 50 27 Feb 15:07 /dev/rmt/1 -> ../../devices/pci@17,4000/fibre-channel@4/
st@1,0:
...
```

2. Check the displayed device file to confirm that the st driver recognizes the LT20/LT40/LT60 device.

```
../../devices/pci@17,4000/fibre-channel@4/st@1,0:
                      1                2   3

1:"devices/pci@17,4000/fibre-channel@4" = This is the physical path name that indicates where
the HBA is installed.
2:"st"= Indicates that the LT20/LT40/LT60 is controlled by the st driver
3:"1,0"= Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, the user can determine if the physical path is an HBA connected to the LT20/LT40/LT60, check whether or not the target ID (LOOP ID) and LUN information match the LT20/LT40/LT60 drive, and find out if the LT20/LT40/LT60 drive is controlled by the st driver.

🖙 **Note**
. . . .
If the LT20/LT40/LT60 is not included in the drives controlled by the st driver, steps 3 to 5 below are not required.
. . . .

3. If there are programs that access the drive, stop all those programs.

4. If the LT20/LT40/LT60 is controlled by the st driver, comment out the target definition that corresponds to the LT20/LT40/LT60 drive in /kernel/drv/st.conf.

···

To comment out the target definition, insert "#" at the start of the part that matches the target ID (LOOP ID) and LUN of the LT20/LT40/LT60 drive.

···

···

If the server has in-built drives, ensure that you do not comment out the definitions for the in-built drives.

···

5. Delete the device file of the LT20/LT40/LT60 drive that is controlled by the st driver.

   The following is an example of how to delete the device file confirmed in Step 1 and 2.

```
# rm -i /dev/rmt/*
rm: remove /dev/rmt/0 (yes/no)? n
rm: remove /dev/rmt/0b (yes/no)? n
            :
rm: remove /dev/rmt/1 (yes/no)? y
rm: remove /dev/rmt/1b (yes/no)? y
            :
```

···

When executing the rm command, be careful not to accidentally delete other files.

···

Robot settings

1. Enter the Target ID of the LT20/LT40/LT60 robot in the /usr/kernel/drv/lb.conf file. Refer to the sample lb.conf file and enter the robot SCSI ID as the Target ID. In the following coding example, the Target ID is 4 and the LUN number is 1.

```
#
#       -------------------------------------------------------------
#       IBM Tivoli Storage Manager for Sun Solaris Server
#       Licensed Materials - Property of IBM
#       5765-303 (C) Copyright IBM Corporation 1999.
#       All rights reserved.
#       Refer to Copyright Instructions Form Number G120-2083
#       -------------------------------------------------------------

...

name="lb" class="scsi"
        target=4 lun=1;
```

···

In the /usr/kernel/drv/lb.conf file, the "name" value "lb" and the "class" value "scsi" are fixed values.

···

2. Register the lb driver.

```
# /opt/tivoli/tsm/devices/bin/autoconf
```

Driver configuration of drive

Set the configuration file (mt.conf) of mt driver, which is one of the TSM device drivers.

Installing TSM device drivers stores the mt driver configuration file (mt.conf) at the following location:

```
/usr/kernel/drv/mt.conf
```

Edit the mt.conf file by adding definitions that specify the drive device target ID and the LUN number.

In the following example, the Target ID is 6 and the LUN number is 0.

```
#
#       --------------------------------------------------------------
#       IBM Tivoli Storage Manager for Sun Solaris Server
#       Licensed Materials - Property of IBM
#       5765-303 (C) Copyright IBM Corporation 1999.
#       All rights reserved.
#       Refer to Copyright Instructions Form Number G120-2083
#       --------------------------------------------------------------
#
#       --------------------------------------------------------------
#       Tivoli Storage Manager SCSI Device Driver for Tape Drives
#       Configuration File
#       --------------------------------------------------------------
#
...

  name="mt" class="scsi" target=6 lun=0;
```

Note

In the /usr/kernel/drv/mt.conf file, the "name" value "mt" and the "class" value "scsi" are fixed values.

HBA driver settings

Set the robot and driver's alias name, port and fcp-bind-target in the /kernel/drv/fjpfca.conf file. For the Target ID of the robot, use the target ID that was set in the /usr/kernel/drv/lb.conf file.

```
#
# All Rights Reserved, Copyright (c) FUJITSU LIMITED  2000
#
#ident "@(#)$Id: fjpfca.conf,v 3.1.1.1 2001/04/20 11:19:47 hiroki Exp $ FUJITSU"

...

alias=
        "CTRL:0x200100e0000e100c",
        "DRV00:0x201000e0000e100d";

...

port=
    "fjpfca0:nport",
    "fjpfca1:nport";

...

fcp-bind-target=
        "fjpfca0t4:CTRL",
```

```
        "fjpfca1t6:DRV00";
```

Note

These examples are for the Fujitsu HBA driver (FJSVpfca). Refer to the HBA manual of your product if another HBA driver, such as Emulex, NetMarks, is used. This setting is only required for fiber channel switch connection (FC-SW connection). Settings that include target ID set by the LT library are required for direct connection. Refer to "ETERNUS SF TSM ETERNUS LT Library Operator's Guide" for details.

Creating a device file

1. Reboot the server.

```
# touch /reconfigure
# /usr/sbin/shutdown -y -i6 -g0
```

2. After the server is rebooted, execute the ls command to display the device file (lb).

```
# ls -l /dev/rmt/?lb
lrwxrwxrwx 1 root root 40 27 Feb 15:07 /dev/rmt/0lb -> ../../devices/pci@16,2000/scsi@1/
st@5,0:
lrwxrwxrwx 1 root other 51 27 Feb 16:50 /dev/rmt/5lb -> ../../devices/pci@17,4000/fibre-
channel@4/lb@4,1:lb
#
```

3. Check the displayed device file to see if the lb driver recognizes the LT20/LT40/LT60 robot.

```
../../devices/pci@17,4000/fibre-channel@4/lb@4,1:lb
                       1                2   3
1:"devices/pci@17,4000/fibre-channel@4" = This is the physical path name that indicates
where the HBA is installed.
2:"lb"= Indicates that the LT20/LT40/LT60 is controlled by the lb driver
3:"4,1"= Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, the user can find out if the physical path is an HBA connected to the LT20/LT40/LT60, check whether or not the target ID (LOOP ID) and LUN information match the LT20/LT40/LT60 robot, and find out if the LT20/LT40/LT60 robot is controlled by the lb driver.

4. Execute the ls command to display the device file (mt).

```
# ls -l /dev/rmt/*mt
lrwxrwxrwx 1 root sys 52 14 Jul 10:02 /dev/rmt/5mt ->../../devices/pci@17,4000/fibre-
channel@2/mt@6,0:mt
lrwxrwxrwx 1 root sys 42 14 Jul 10:02 /dev/rmt/6mt ->../../devices/pci@16,4000/scsi@2/
mt@0,0:mt
```

5. Check the displayed device file to see if the mt driver recognizes the LT20/LT40/LT60 drive.

```
../../devices/pci@17,4000/fibre-channel@2/mt@6,0:mt
                       1                2   3
1:"devices/pci@17,4000/fibre-channel@2" = This is the physical path name that indicates
where the HBA is installed.
2:"mt"= Indicates that the LT20/LT40/LT60 is controlled by the mt driver
3:"6,0"= Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, the user can find out if the physical path is an HBA connected to the LT20/LT40/LT60, check whether or not the target ID (LOOP ID) and LUN information match the LT20/LT40/LT60 drive, and find out if the LT20/LT40/LT60 drive is controlled by the mt driver.

D.1.1.2 SCSI connection settings

📑 **Note**

. . . .

The SCSI-ID or LU for the robot or the drive of the ETERNUS LT library may differ depending on the model of the device or settings. For details, refer to the manual of the hardware or contact a Fujitsu Engineer (CE).

. . . .

Disabling the st driver

1. Execute the ls command to display the device files.

```
# ls -l /dev/rmt/*[0-9]
lrwxrwxrwx 1 root root 40 27 Feb 15:07 /dev/rmt/0 -> ../../devices/pci@16,2000/scsi@1/
st@5,0:
lrwxrwxrwx 1 root root 50 27 Feb 15:07 /dev/rmt/1 -> ../../devices/pci@1f,4000/FJSV,ulsa@3/
st@1,0:
...
```

2. Check the displayed device file to see if the st driver recognizes the LT20/LT40/LT60 device.

```
../../devices/pci@1f,4000/FJSV,ulsa@3/st@1,0:
                     1              2   3
1:"devices/pci@1f,4000/FJSV,ulsa@3" = This is the physical path name that indicates where
the HBA is installed.
2:"st"= Indicates that the LT20/LT40/LT60 is controlled by the st driver
3:"1,0"= Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, the user can find out if the physical path is an HBA connected to the LT20/LT40/LT60, check whether or not the target ID (LOOP ID) and LUN information match the LT20/LT40/LT60 drive, and find out if the LT20/LT40/LT60 drive is controlled by the st driver.

📑 **Note**

. . . .

If the LT20/LT40/LT60 is not included in the drives controlled by the st driver, steps 3 to 5 below are not required.

. . . .

3. If there are programs that access the drive, stop all those programs.

4. If the LT20/LT40/LT60 is controlled by the st driver, comment out the target definition that corresponds to the LT20/LT40/LT60 drive in /kernel/drv/st.conf.

🅿 **Point**

. . . .

To comment out the target definition, insert "#" at the start of the part that matches the target ID (LOOP ID) and LUN of the LT20/LT40/LT60 drive.

. . . .

📑 **Note**

. . . .

If the server has in-built drives, ensure that you do not comment out the definitions for the in-built drives.

. . . .

5. Delete the device file of the LT20/LT40/LT60 drive that is controlled by the st driver.

The following is an example of how to delete the device file confirmed in Step 1 and 2.

```
# rm -i /dev/rmt/*
rm: remove /dev/rmt/0 (yes/no)? n
rm: remove /dev/rmt/0b (yes/no)? n
            :
rm: remove /dev/rmt/1 (yes/no)? y
rm: remove /dev/rmt/1b (yes/no)? y
            :
```

📑 **Note**

··

When executing the rm command, be careful not to accidentally delete other files.

··

Checking SCSI ID and LUN number

Use the probe-scsi-all command to check the SCSI ID and the LUN number of the robot and the drive.
In the following coding example, the SCSI ID is 4, the LUN number of drive is 0, and the LUN number of robot is 1.

```
{0} ok probe-scsi-all
...
/pci@500/pci@0/pci@9/pci@0/FJSV,eulsa@8,1

/pci@500/pci@0/pci@9/pci@0/FJSV,eulsa@8
Target 4              SCSI ID
  Unit 0   Removable Tape     HP      Ultrium 4-SCSI  W51W
  Unit 1   Removable Device type 8     HP      1x8 G2 AUTOLDR  B.72


...
{0} ok
```

Robot settings

1. Enter the Target ID of the LT20/LT40/LT60 robot in the /usr/kernel/drv/lb.conf file. Refer to the sample lb.conf file and enter the robot SCSI ID as the Target ID. In the following coding example, the Target ID is 4 and the LUN number is 1.

```
#
#       ----------------------------------------------------------------
#       IBM Tivoli Storage Manager for Sun Solaris Server
#       Licensed Materials - Property of IBM
#       5765-303 (C) Copyright IBM Corporation 1999.
#       All rights reserved.
#       Refer to Copyright Instructions Form Number G120-2083
#       ----------------------------------------------------------------


...


name="lb" class="scsi"
        target=4 lun=1;
```

📑 **Note**

··

In the /usr/kernel/drv/lb.conf file, the "name" value "lb" and the "class" value "scsi" are fixed values.

··

2. Register the lb driver.

```
# /opt/tivoli/tsm/devices/bin/autoconf
```

Driver configuration of drive

If a non-IBM drive device is used, set the configuration file (mt.conf) of the mt driver, which is one of the TSM device drivers. Installing TSM device drivers stores the mt driver configuration file (mt.conf) at the following location:

```
/usr/kernel/drv/mt.conf
```

Edit the mt.conf file by adding definitions that specify the drive device target ID and the LUN number.

In the following coding example, the Target ID is 4 and the LUN number is 0.

```
#
#       --------------------------------------------------------------
#       IBM Tivoli Storage Manager for Sun Solaris Server
#       Licensed Materials - Property of IBM
#       5765-303 (C) Copyright IBM Corporation 1999.
#       All rights reserved.
#       Refer to Copyright Instructions Form Number G120-2083
#       --------------------------------------------------------------
#
#       --------------------------------------------------------------
#       Tivoli Storage Manager SCSI Device Driver for Tape Drives
#       Configuration File
#       --------------------------------------------------------------
#
...

  name="mt" class="scsi" target=4 lun=0;
```

📖 Note

In the /usr/kernel/drv/mt.conf file, the "name" value "mt" and the "class" value "scsi" are fixed values.

Creating a device file

1. Reboot the server.

```
# touch /reconfigure
# /usr/sbin/shutdown -y -i6 -g0
```

2. After the server is rebooted, execute the ls command to display the device file (lb).

```
# ls -l /dev/rmt/?lb
lrwxrwxrwx 1 root root 40 27 Feb 15:07 /dev/rmt/0lb -> ../../devices/pci@16,2000/scsi@1/
st@5,0:
lrwxrwxrwx 1 root other 51 27 Feb 16:50 /dev/rmt/3lb -> ../../devices/pci@1f,4000/
FJSV,ulsa@3/lb@4,1:lb
#
```

3. Check the displayed device file to see if the lb driver recognizes the LT20/LT40/LT60 robot.

```
../../devices/pci@1f,4000/FJSV,ulsa@3/lb@4,1:lb
                     1                2   3
1:"devices/pci@1f,4000/FJSV,ulsa@3" = This is the physical path name that indicates where
the HBA is installed.
2:"lb"= Indicates that the LT20/LT40/LT60 is controlled by the lb driver
3:"4,1"= Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, the user can find out if the physical path is an HBA connected to the LT20/LT40/LT60, check whether or not the target ID (LOOP ID) and LUN information match the LT20/LT40/LT60 robot, and find out if the LT20/LT40/LT60 robot is controlled by the lb driver.

4. Execute the ls command to display the device file (mt).

```
# ls -l /dev/rmt/*mt
lrwxrwxrwx 1 root root 56 27 Feb 16:50 /dev/rmt/1mt -> ../../devices/pci@1f,4000/
FJSV,ulsa@3/mt@4,0:mt
```

5. Check the displayed device file to see if the mt driver recognizes the LT20/LT40/LT60 drive.

```
../../devices/pci@1f,4000/FJSV,ulsa@3/mt@4,0:mt
                        1                 2   3
1:"devices/pci@1f,4000/FJSV,ulsa@3" = This is the physical path name that indicates where
the HBA is installed.
2:"lb"= Indicates that the LT20/LT40/LT60 is controlled by the driver other than made by IBM.
3:"4,0"= Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, the user can find out if the physical path is an HBA connected to the LT20/LT40/LT60, check whether or not the target ID (LOOP ID) and LUN information match the LT20/LT40/LT60 drive, and find out if the LT20/LT40/LT60 drive is controlled by the mt driver.

D.1.2 ETERNUS LT220

This section describes how to set up the ETERNUS LT220 tape library.

Note

The SCSI-ID or LU for the robot or the drive of the ETERNUS LT library may differ depending on the model of the device or settings. For details, refer to the manual of the hardware or contact a Fujitsu Engineer (CE).

Disabling the st driver

1. Execute the ls command to display the device file.

```
# ls -l /dev/rmt/*[0-9]
lrwxrwxrwx 1 root root 40 Feb 27 15:07 /dev/rmt/0 -> ../../devices/pci@16,2000/scsi@1/st@5,0:
lrwxrwxrwx 1 root root 50 Feb 27 15:07 /dev/rmt/1 -> ../../devices/pci@1f,4000/FJSV,ulsa@3/
st@1,0:
...
```

2. Check the displayed device file to see if the st driver recognizes the LT220 device.

```
../../devices/pci@1f,4000/FJSV,ulsa@3/st@1,0:
                  1                 2     3
1:"devices/pci@1f,4000/FJSV,ulsa@3" = This is the physical path name that indicates where the
HBA is installed.
2:"st"= Indicates that the LT220 is controlled by the st driver
3:"1,0"= Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, the user can find out if the physical path is an HBA connected to the LT220, check whether or not the target ID (LOOP ID) and LUN information match the LT220 drive, and find out if the LT220 drive is controlled by the st driver.

Note

If the LT220 is not included in the drives controlled by the st driver, steps 3 to 5 below are not required.

3. If there are programs that access the drive, stop all those programs.

4. If the LT220 is controlled by the st driver, comment out the target definition that corresponds to the LT220 drive in /kernel/drv/st.conf.

P Point

To comment out the target definition, insert "#" at the start of the part that matches the target ID (LOOP ID) and LUN of the LT220 drive.

Note

If the server has in-built drives, ensure that you do not comment out the definitions for the in-built drives.

5. Delete the device file of the LT220 drive that is controlled by the st driver.

The following is an example of how to delete the device file confirmed in Step 1 and 2.

```
# rm -i /dev/rmt/*
rm: remove /dev/rmt/0 (yes/no)? n
rm: remove /dev/rmt/0b (yes/no)? n
          :
rm: remove /dev/rmt/1 (yes/no)? y
rm: remove /dev/rmt/1b (yes/no)? y
          :
```

Note

When executing the rm command, be careful not to accidentally delete other files.

Robot settings

1. Enter the Target ID of the LT220 robot in the /usr/kernel/drv/lb.conf file. Refer to the sample lb.conf file and enter the robot SCSI ID as the Target ID. In the following coding example, the SCSI ID is 0.

```
#
#       --------------------------------------------------------------
#       IBM Tivoli Storage Manager for Sun Solaris Server
#       Licensed Materials - Property of IBM
#       5765-303 (C) Copyright IBM Corporation 1999.
#       All rights reserved.
#       Refer to Copyright Instructions Form Number G120-2083
#       --------------------------------------------------------------

     :
     :

name="lb" class="scsi"
        target=0 lun=0;
```

Note

In the /usr/kernel/drv/lb.conf file, the "name" value is "lb" and the "class" value is "scsi".

For the "lun" value, check the set value for LT220 and set it accordingly.

2. Register the lb driver.

```
#/opt/tivoli/tsm/devices/bin/autoconf
```

IBM Tape Driver settings

Verify the Target ID and LUN ID of the drive in the /usr/kernel/drv/IBMtape.conf file. However, these values are normally set during installation and usually need not be changed. Simply check the contents.

```
##############################################################################
##############################################################################
##                                                                          ##
##   IBM SCSI Tape & Medium Changer Device Driver for Solaris  8, 9 and 10   ##
##                   (C) COPYRIGHT IBM Corporation, 1994 -                   ##
##                                                                          ##
##                    IBMtape.conf - Configuration File                      ##
##                  Licensed Materials - Property of IBM                     ##
##                          All Rights Reserved                              ##
##                                                                          ##
##     US Government Users Restricted Rights  -  Use, duplication, or        ##
##     disclosure restricted by GSA ADP Schedule Contract with IBM Corp.     ##
##                                                                          ##
##############################################################################
##############################################################################


# An example entry for high numbers of target and lun
# name="IBMtape" class="scsi" target=200 lun=3;

# An example entry for QLogic HBA running qla HBA driver
# name="IBMtape" parent="qla2100" target=0; # for qla2100 only
# name="IBMtape" parent="qla2200" target=0; # for qla2200 only
# name="IBMtape" parent="qla2300" target=0; # for qla2300 only

# An example entry for AMCC JNI HBA
# name="IBMtape" parent="jnic146x" target=0;

# An example entry for Emulex HBA
# name="IBMtape" parent="lpfc" target=0;

name="IBMtape" parent="pseudo" instance=16383;

name="IBMtape" class="scsi" target=0 lun=0 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;
name="IBMtape" class="scsi" target=0 lun=1 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;

        :
        :

name="IBMtape" class="scsi" target=255 lun=0 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;
name="IBMtape" class="scsi" target=255 lun=1 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;
```

Creating a device file

1. Reboot the server.

```
# touch /reconfigure
# /usr/sbin/shutdown -y -i6 -g0
```

2. After the server is rebooted, execute the ls command to display the device file (lb).

```
# ls -l /dev/rmt/?lb
lrwxrwxrwx 1 root root 40 2 month 27 day 15:07 /dev/rmt/0lb -> ../../devices/pci@16,2000/
scsi@1/st@5,0:
lrwxrwxrwx 1 root root 51 2 month 27 day 16:50 /dev/rmt/1lb -> ../../devices/pci@1f,4000/
FJSV,ulsa@3/lb@0,0:lb
#
```

3. Check the displayed device file to see if the lb driver recognizes the LT220 robot.

```
../../devices/pci@1f,4000/FJSV,ulsa@3/lb@0,0:lb
                   1                 2 3
1: "devices/pci@1f,4000/FJSV,ulsa@3" = This is the physical path name that indicates where
the HBA is installed.
2: "lb" = Indicates that the LT220 is controlled by the lb driver
3: "0,0" = Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, the user can find out if the physical path is an HBA connected to the LT220, check whether or not the target ID (LOOP ID) and LUN information match the LT220 robot, and find out if the LT220 robot is controlled by the lb driver.

4. Execute the ls command to display the device file (st).

```
# ls -l /dev/rmt/?st
lrwxrwxrwx 1 root root 56 2 month 27 day 16:50 2st -> ../../devices/pci@1f,4000/FJSV,ulsa@3/
IBMtape@1,0:st
#
```

5. Check the displayed device file to see if the IBM tape driver recognizes the LT220 drive.

```
../../devices/pci@1f,4000/FJSV,ulsa@3/IBMtape@1,0:st
                   1                 2   3
1:"devices/pci@1f,4000/FJSV,ulsa@3" = This is the physical path name that indicates where the
HBA is installed.
2:"IBMtape" = Indicates that the LT220 is controlled by the IBM tape driver
3:"1,0" = Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, the user can find out if the physical path is an HBA connected to the LT220, check whether or not the target ID (LOOP ID) and LUN information match the LT220 drive, and find out if the LT220 drive is controlled by the IBM tape driver.

D.1.3 ETERNUS LT230

This section describes how to set up the ETERNUS LT230 (SCSI connection) tape library.

D.1.3.1 FC connection settings

Disabling the st driver

🗒 Note

· ·

To build a tape server in cluster, do not disable the st driver in this step, but the device should be recognized by the st driver as well.

· ·

1. Execute the ls command to display the device file

```
# ls -l /dev/rmt/*[0-9]
lrwxrwxrwx 1 root root 40 17 Feb  15:07 /dev/rmt/0 -> ../../devices/pci@16,2000/scsi@1/st@5,0:
lrwxrwxrwx 1 root root 50  27 Feb  15:07 /dev/rmt/1 -> ../../devices/pci@1f,4000/FJSV,ulsa@3/
st@1,0:
...
```

2. Check the displayed device file to see if the st driver recognizes the LT230 device.

```
../../devices/pci@1f,4000/FJSV,ulsa@4/st@1,0:
                     1              2   3
1: "devices/pci@1f,4000/FJSV,ulsa@4" = This is the physical path name that indicates where the
HBA is installed
2: "st" = Indicates that the LT230 is controlled by the st driver
3: "1,0" = Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, check whether the physical path is an HBA connected to the LT230, and whether the target ID (LOOP ID) and LUN information match the LT230 drive. Then determine whether or not the LT230 drive is controlled by the st driver.

📙 Note
. . . .
If the LT230 is not included in the drives controlled by the st driver, steps 3 to 5 below are not required.
. . . .

3. If there are programs that access the drive, stop all of those programs.

4. If the LT230 is controlled by the st driver, comment out the target definition that corresponds to the LT230 drive in /kernel/drv/st.conf.

P Point
. . . .
To comment out the target definition, insert "#" at the start of the part that matches the target ID (LOOP ID) and LUN of the LT230 drive.
. . . .

📙 Note
. . . .
Make sure that the definition is not commented out if there is a driver on the server.
. . . .

5. Delete the device file of the LT230 drive that is controlled by the st driver.

The following is an example of how to delete the device file confirmed in Step 1 and 2.

```
# rm -i /dev/rmt/*
 rm: remove /dev/rmt/0  (yes/no)? n
 rm: remove /dev/rmt/0b  (yes/no)? n
...
 rm: remove /dev/rmt/1  (yes/no)? y
 rm: remove /dev/rmt/1b  (yes/no)? y
...
```

📙 Note
. . . .
When executing the rm command, be careful not to accidentally delete other files.
. . . .

Robot settings

1. Enter the Target ID of the LT230 robot in the /usr/kernel/drv/lb.conf file. Refer to the sample lb.conf file and enter the robot SCSI ID as the Target ID. In the following coding example, the Target ID is 2.

```
#
#       -------------------------------------------------------------
#       IBM Tivoli Storage Manager for Sun Solaris Server
#       Licensed Materials - Property of IBM
#       5765-303 (C) Copyright IBM Corporation 1999.
```

```
#        All rights reserved.
#        Refer to Copyright Instructions Form Number G120-2083
#        ------------------------------------------------------------

...


name="lb" class="scsi"
        target=2 lun=1;
```

> ### 🔔 Note
> ....
> In the /usr/kernel/drv/lb.conf file, the "name" value "lb", the "class" value "scsi", and the "lun" value of 0 are fixed values.
> ....

2. Register the lb driver.

```
#/opt/tivoli/tsm/devices/bin/autoconf
```

IBM Tape Driver settings

Check the definition of the LUN ID, and the Target ID of the drive in the /usr/kernel/drv/IBMtape.conf file.

However, as this is normally set up at the time of installation, change is not particularly required, only a check of the contents.

```
###########################################################################
###########################################################################
##                                                                       ##
##   IBM SCSI Tape & Medium Changer Device Driver for Solaris  8, 9 and 10   ##
##                 (C) COPYRIGHT IBM Corporation, 1994 -                  ##
##                                                                       ##
##                   IBMtape.conf - Configuration File                   ##
##                Licensed Materials - Property of IBM                    ##
##                        All Rights Reserved                            ##
##                                                                       ##
##     US Government Users Restricted Rights  -  Use, duplication, or     ##
##     disclosure restricted by GSA ADP Schedule Contract with IBM Corp.  ##
##                                                                       ##
###########################################################################
###########################################################################


# An example entry for high numbers of target and lun
# name="IBMtape" class="scsi" target=200 lun=3;

# An example entry for QLogic HBA running qla HBA driver
# name="IBMtape" parent="qla2100" target=0; # for qla2100 only
# name="IBMtape" parent="qla2200" target=0; # for qla2200 only
# name="IBMtape" parent="qla2300" target=0; # for qla2300 only

# An example entry for AMCC JNI HBA
# name="IBMtape" parent="jnic146x" target=0;

# An example entry for Emulex HBA
# name="IBMtape" parent="lpfc" target=0;

name="IBMtape" parent="pseudo" instance=16383;

name="IBMtape" class="scsi" target=0 lun=0 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;
name="IBMtape" class="scsi" target=0 lun=1 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;

...
```

```
name="IBMtape" class="scsi" target=255 lun=0 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;
name="IBMtape" class="scsi" target=255 lun=1 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;
```

HBA driver settings

Set the robot and driver's alias name, port and fcp-bind-target in the /kernel/drv/fjpfca.conf file. For the Target ID of the robot, use the target ID that was set in the /usr/kernel/drv/lb.conf file.

```
#
# All Rights Reserved, Copyright (c) FUJITSU LIMITED  2000
#
#ident "@(#)$Id: fjpfca.conf,v 3.1.1.1 2001/04/20 11:19:47 hiroki Exp $ FUJITSU"

...

alias=
        "DRV00:0x201000e0000e100d",
        "DRV01:0x201100e0000e100d";

...

port=
    "fjpfca0:nport",
    "fjpfca1:nport";

...

fcp-bind-target=
        " fjpfca0t2:DRV00",
        " fjpfca1t3:DRV01";
```

Creating a device file

1. Reboot the server.

```
# touch /reconfigure
# /usr/sbin/shutdown -y -i6 -g0
```

2. After the server starts up, execute the ls command to display the device file (1b).

```
# ls -l /dev/rmt/?lb
lrwxrwxrwx 1 root root 40 Feb 27 15:07 /dev/rmt/0lb -> ../../devices/pci@16,2000/scsi@1/
st@5,0:
lrwxrwxrwx 1 root other 51 Feb 27 16:50 /dev/rmt/5lb -> ../../devices/pci@17,4000/fibre-
channel@4/lb@2,1:lb
#
```

3. Check the displayed device file to see if the 1b driver recognizes the LT230 robot.

```
../../devices/pci@17,4000/fibre-channel@4/lb@2,1:lb
                        1                   2   3
1:"devices/pci@17,4000/fibre-channel@4"= Physical path name that indicates the location where
HBA is mounted.
2:"lb"= Indicates that the LT230 is controlled by the lb driver
3:"2,1"= Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, check whether the physical path is an HBA connected to the LT230, and whether the target ID (LOOP ID) and LUN information match the LT230 robot. Then, determine whether or not the LT230 robot is being controlled by the 1b driver.

4. Execute the ls command to display the device file (st)

```
# ls -l /dev/rmt/?st
lrwxrwxrwx 1 root root 56 Feb 27 16:50 /dev/rmt/1st -> ../../devices/pci@17,4000/fibre-
channel@4/IBMtape@2,0:st
lrwxrwxrwx 1 root root 56 Feb 27 16:50 /dev/rmt/2st -> ../../devices/pci@17,4000/fibre-
channel@4/IBMtape@3,0:st
#
```

5. Check the displayed device file to see if the IBMtape driver recognizes the LT230 driver.

```
../../devices/pci@17,4000/fibre-channel@4/IBMtape@2,0:st
                      1                   2      3
1:"devices/pci@17,4000/fibre-channel@4"= This is the physical path name that indicates where
the HBA is installed.
2:"IBMtape"= Indicates that the LT230 is controlled by the st driver
3:"2,0"= Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, check whether the physical path is an HBA connected to the LT230, and whether the target ID (LOOP ID) and LUN information match the LT230 drive. Then, determine whether or not the LT230 drive is being controlled by the IBMtape driver.

D.1.3.2 SCSI connection settings

Note
The SCSI-ID or LU for the robot or the drive of the ETERNUS LT library may differ depending on the model of the device or settings. For details, refer to the manual of the hardware or contact a Fujitsu Engineer (CE).

Disabling the st driver

1. Execute the ls command to display the device files.

```
# ls -l /dev/rmt/*[0-9]
lrwxrwxrwx 1 root root 40 Feb 27 15:07 /dev/rmt/0 -> ../../devices/pci@16,2000/scsi@1/st@5,0:
lrwxrwxrwx 1 root root 50 Feb 27 15:07 /dev/rmt/1 -> ../../devices/pci@17,4000/scsi@3/st@0,0:
    :
```

2. Check the displayed device files to see if the st driver recognizes the LT230 device.

```
../../devices/pci@17,4000/scsi@3/st@0,0:
               1           2   3
1:"devices/pci@1f,4000/scsi@3" = This is the physical path name that indicates where the HBA
is installed.
2:"st" = Indicates that the LT230 is controlled by the st driver
3:"0,0" = Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, the user can find out if the physical path is an HBA connected to the LT230, check whether or not the target ID (LOOP ID) and LUN information match the LT230 drive, and find out if the LT230 drive is controlled by the st driver.

Note
If the LT230 is not included in the drives controlled by the st driver, steps 3 to 5 below are not required.

3. If there are programs that access the drive, stop all those programs.

4. If the LT230 is controlled by the st driver, comment out the target definition that corresponds to the LT230 drive in /kernel/drv/st.conf.

P Point
. . . .
To comment out the target definition, insert "#" at the start of the part that matches the target ID (LOOP ID) and LUN of the LT230 drive.
. . . .

Note
. . . .
If the server has in-built drives, ensure that you do not comment out the definitions for the in-built drives.
. . . .

5. Delete the device file of the LT230 drive that is controlled by the st driver.
The following is an example of how to delete the device file confirmed in Step 1 and 2.

```
# rm -i /dev/rmt/*
rm: remove /dev/rmt/0 (yes/no)? n
rm: remove /dev/rmt/0b (yes/no)? n
            :
rm: remove /dev/rmt/1 (yes/no)? y
rm: remove /dev/rmt/1b (yes/no)? y
            :
```

Note
. . . .
When executing the rm command, be careful not to accidentally delete other files.
. . . .

Robot settings

1. Enter the Target ID of the LT230 robot in the /usr/kernel/drv/lb.conf file. Refer to the sample lb.conf file and enter the robot SCSI ID as the Target ID. In the following coding example, the SCSI ID is 0.

```
#
#       ----------------------------------------------------------------
#       IBM Tivoli Storage Manager for Sun Solaris Server
#       Licensed Materials - Property of IBM
#       5765-303 (C) Copyright IBM Corporation 1999.
#       All rights reserved.
#       Refer to Copyright Instructions Form Number G120-2083
#       ----------------------------------------------------------------

          :
          :

name="lb" class="scsi"
        target=0 lun=0;
```

Note
. . . .
In the /usr/kernel/drv/lb.conf file, the "name" value "lb", the "class" value "scsi". For the "lun", check the setting of LT230 and set it accordingly.
. . . .

2. Register the lb driver.

```
# #/opt/tivoli/tsm/devices/bin/autoconf
```

IBM Tape Driver settings

Enter the Target ID and LUN ID of the drive in the /usr/kernel/drv/IBMtape.conf file. However, these values are normally set during installation and usually need not be changed. Simply check the contents.

```
##############################################################################
##############################################################################
##                                                                          ##
##  IBM SCSI Tape & Medium Changer Device Driver for Solaris  8, 9 and 10    ##
##                   (C) COPYRIGHT IBM Corporation, 1994 -                   ##
##                                                                          ##
##                     IBMtape.conf - Configuration File                    ##
##                   Licensed Materials - Property of IBM                   ##
##                          All Rights Reserved                             ##
##                                                                          ##
##     US Government Users Restricted Rights  -  Use, duplication, or        ##
##     disclosure restricted by GSA ADP Schedule Contract with IBM Corp.     ##
##                                                                          ##
##############################################################################
##############################################################################


# An example entry for high numbers of target and lun
# name="IBMtape" class="scsi" target=200 lun=3;

# An example entry for QLogic HBA running qla HBA driver
# name="IBMtape" parent="qla2100" target=0; # for qla2100 only
# name="IBMtape" parent="qla2200" target=0; # for qla2200 only
# name="IBMtape" parent="qla2300" target=0; # for qla2300 only

# An example entry for AMCC JNI HBA
# name="IBMtape" parent="jnic146x" target=0;

# An example entry for Emulex HBA
# name="IBMtape" parent="lpfc" target=0;

name="IBMtape" parent="pseudo" instance=16383;

name="IBMtape" class="scsi" target=0 lun=0 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;
name="IBMtape" class="scsi" target=0 lun=1 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;

        :
        :

name="IBMtape" class="scsi" target=255 lun=0 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;
name="IBMtape" class="scsi" target=255 lun=1 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;
```

Creating a device file

1. Re-boot the server.

```
# touch /reconfigure
# /usr/sbin/shutdown -y -i6 -g0
```

2. After the server is activated, execute the ls command to display the device file (lb).

```
# ls -l /dev/rmt/?lb
lrwxrwxrwx 1 root root 40 Feb 27 15:07 /dev/rmt/0lb -> ../../devices/pci@16,2000/scsi@1/st@5,0:
```

```
lrwxrwxrwx 1 root root 51 Feb 27 16:50 /dev/rmt/1lb -> ../../devices/pci@17,4000/scsi@3/
lb@0,0:lb
#
```

3. Check the displayed device file to see if the lb driver recognizes the LT230 robot.

```
../../devices/pci@17,4000/scsi@3/lb@0,0:lb
                  1              2 3
1: "devices/pci@17,4000/scsi@3" = This is the physical path name that indicates where the HBA
is installed.
2: "lb" = Indicates that the LT230 is controlled by the lb driver
3: "0,0" = Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, the user can find out if the physical path is an HBA connected to the LT230, check whether or not the target ID (LOOP ID) and LUN information match the LT230 robot, and find out if the LT230 robot is controlled by the lb driver.

4. Execute the ls command to display the device file (st).

```
# ls -l /dev/rmt/?st
lrwxrwxrwx 1 root root 56 Feb 27 16:50 /dev/rmt/1st -> ../../devices/pci@17,4000/scsi@3/
IBMtape@1,0:st
lrwxrwxrwx 1 root root 56 2 month 27 day 16:50 /dev/rmt/2st -> ../../devices/pci@17,4000/
scsi@3/IBMtape@2,0:st
#
```

5. Check the displayed device file to see if the IBM tape driver recognizes the LT230 drive.

```
../../devices/pci@17,4000/scsi@3/IBMtape@1,0:st
                  1                2    3
1: "devices/pci@17,4000/scsi@3" = This is the physical path name that indicates where the HBA
is installed.
2: "IBMtape" = Indicates that the LT230 is controlled by the IBM tape driver
3: "1,0" = Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, the user can find out if the physical path is an HBA connected to the LT230, check whether or not the target ID (LOOP ID) and LUN information match the LT230 drive, and find out if the LT230 drive is controlled by the IBM tape driver.

D.1.4 ETERNUS LT250

This section describes how to set up the ETERNUS LT230 tape library

D.1.4.1 FC connection settings

Disabling the st driver

📑 Note
. . . .
To build a tape server in cluster, do not disable the st driver in this step, but the device should be recognized by the st driver as well.
. . . .

1. Execute the ls command to display the device file

```
# ls -l /dev/rmt/*[0-9]
lrwxrwxrwx 1 root root 40 Feb 27 15:07 /dev/rmt/0 -> ../../devices/pci@16,2000/scsi@1/st@5,0:
lrwxrwxrwx 1 root root 50 Feb 27 15:07 /dev/rmt/1 -> ../../devices/pci@17,4000/fibre-
channel@4/st@1,0:
...
```

2. Check the displayed device file to see if the st driver recognizes the LT250 device.

```
../../devices/pci@17,4000/fibre-channel@4/st@1,0:
                       1                    2   3
1:"devices/pci@17,4000/fibre-channel@4" = This is the physical path name that indicates where
the HBA is installed.
2:"st" = Indicates that the LT250 is controlled by the st driver
3:"1,0" = Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, check whether the physical path is an HBA connected to the LT250, and whether the target ID (LOOP ID) and LUN information match the LT250 drive. Then determine whether or not the LT250 drive is controlled by the st driver.

Note

If LT250 is not included in the drive being controlled by the st driver, steps 3-5 of the steps below are not required.

3. If there are programs that access the drive, stop all of those programs.

4. If the LT250 is controlled by the st driver, comment out the target definition that corresponds to the LT250 drive in /kernel/drv/st.conf

Point

To comment out the target definition, insert "#" at the start of the part that matches the target ID (LOOP ID) and LUN of the LT250 drive.

Note

Make sure that the definition is not commented out if there is a driver on the server.

5. Delete the device files of the LT230 drive that are controlled by the st driver.
   The following is an example of how to delete the device files confirmed in Step 1 and 2.

```
# rm -i /dev/rmt/*
rm: remove /dev/rmt/0   (yes/no)? n
rm: remove /dev/rmt/0b  (yes/no)? n
...
rm: remove /dev/rmt/1   (yes/no)? y
rm: remove /dev/rmt/1b  (yes/no)? y
...
```

Note

Make sure that another file is not deleted by mistake while executing the rm command.

Robot settings

1. Enter the Target ID of the LT250 robot in the /usr/kernel/drv/lb.conf file. Refer to the sample lb.conf file and enter the robot SCSI ID as the Target ID. In the following coding example, the SCSI ID is 4.

```
#
#       ------------------------------------------------------------
#       IBM Tivoli Storage Manager for Sun Solaris Server
#       Licensed Materials - Property of IBM
#       5765-303 (C) Copyright IBM Corporation 1999.
#       All rights reserved.
#       Refer to Copyright Instructions Form Number G120-2083
```

```
#       -------------------------------------------------------------

...

name="lb" class="scsi"
        target=4 lun=0;
```

📑 **Note**

In the /usr/kernel/drv/lb.conf file, the "name" value "lb", the "class" value "scsi", and the "lun" value of 0 are fixed values.

2. Register the lb driver.

```
#/opt/tivoli/tsm/devices/bin/autoconf
```

IBM Tape Driver settings

Enter the Target ID and LUN ID of the drive in the /usr/kernel/drv/IBMtape.conf file. However, these values are normally set during installation and usually need not be changed. Simply check the contents.

```
##############################################################################
##############################################################################
##                                                                          ##
##   IBM SCSI Tape & Medium Changer Device Driver for Solaris  8, 9 and 10  ##
##                   (C) COPYRIGHT IBM Corporation, 1994 -                   ##
##                                                                          ##
##                    IBMtape.conf - Configuration File                     ##
##                  Licensed Materials - Property of IBM                    ##
##                          All Rights Reserved                             ##
##                                                                          ##
##     US Government Users Restricted Rights  -  Use, duplication, or       ##
##     disclosure restricted by GSA ADP Schedule Contract with IBM Corp.    ##
##                                                                          ##
##############################################################################
##############################################################################


# An example entry for high numbers of target and lun
# name="IBMtape" class="scsi" target=200 lun=3;

# An example entry for QLogic HBA running qla HBA driver
# name="IBMtape" parent="qla2100" target=0; # for qla2100 only
# name="IBMtape" parent="qla2200" target=0; # for qla2200 only
# name="IBMtape" parent="qla2300" target=0; # for qla2300 only

# An example entry for AMCC JNI HBA
# name="IBMtape" parent="jnic146x" target=0;

# An example entry for Emulex HBA
# name="IBMtape" parent="lpfc" target=0;

name="IBMtape" parent="pseudo" instance=16383;

name="IBMtape" class="scsi" target=0 lun=0 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;
name="IBMtape" class="scsi" target=0 lun=1 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;

...

name="IBMtape" class="scsi" target=255 lun=0 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;
name="IBMtape" class="scsi" target=255 lun=1 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;
```

HBA driver settings

Set the robot and driver's alias name, port and fcp-bind-target in the /kernel/drv/fjpfca.conf file. For the Target ID of the robot, use the target ID that was set in the /usr/kernel/drv/lb.conf file.

```
#
# All Rights Reserved, Copyright (c) FUJITSU LIMITED   2000
#
#ident "@(#)$Id: fjpfca.conf,v 3.1.1.1 2001/04/20 11:19:47 hiroki Exp $ FUJITSU"

...

alias=
        "CTRL:0x200100e0000e100c",
        "DRV00:0x201000e0000e100d",
        "DRV01:0x201100e0000e100d";

...

port=
    "fjpfca0:nport",
    "fjpfca1:nport";

...

fcp-bind-target=
        "fjpfca0t4:CTRL",
        " fjpfca1t2:DRV00",
        " fjpfca0t3:DRV01";
```

🖙 Note
....

These settings apply if the Fujitsu-made HBA driver (FJSVpfca) is used. If using a different HBA driver (for example Emulex or NetMarks), refer to the HBA manual applicable for the product.

In addition, these settings only apply for fiber channel switch connection (FC-S connection).

For direct connections (FC-AL connections), the settings must use Target Id set on the LT library. For details, refer to "ETERNUS SF TSM ETERNUS LT Library Operator's Guide".
....

Creating a device file

1. Reboot the server.

```
# touch /reconfigure
# /usr/sbin/shutdown -y -i6 -g0
```

2. After the server is rebooted, execute the ls command to display the device file (lb).

```
# ls -l /dev/rmt/?lb
lrwxrwxrwx 1 root root 40 Feb 27 15:07 /dev/rmt/0lb -> ../../devices/pci@16,2000/scsi@1/st@5,0:
lrwxrwxrwx 1 root other 51 Feb 27 16:50 /dev/rmt/5lb -> ../../devices/pci@17,4000/fibre-
channel@4/lb@4,0:lb
#
```

3. Check the displayed device file to see if the lb driver recognizes the LT250 drive.

```
../../devices/pci@17,4000/fibre-channel@4/lb@4,0:lb
                        1                   2   3
```

```
1: "devices/pci@17,4000/fibre-channel@4" =This is the physical path name that indicates where
the HBA is installed.
2: "lb" =Indicates that the LT250 is controlled by the st driver
3: "4,0" = "Hexadecimal display indicating" Target ID (LOOP ID),LUN"
```

From these contents, check whether the physical path is an HBA connected to the LT250, check whether or not the target ID (LOOP ID) and LUN information match the LT250 robot, and if the LT250 robot is controlled by the lb driver.

4. Execute the ls command to display the device file (st).

```
# ls -l /dev/rmt/?st
lrwxrwxrwx 1 root root 56 Feb 27 16:50 /dev/rmt/1st -> ../../devices/pci@17,4000/fibre-
channel@4/IBMtape@0,0:st
lrwxrwxrwx 1 root root 56 Feb 27 16:50 /dev/rmt/2st -> ../../devices/pci@17,4000/fibre-
channel@4/IBMtape@1,0:st#
```

5. Check the displayed device file to see if the IBM tape driver recognizes the LT250 drive.

```
../../devices/pci@17,4000/fibre-channel@4/IBMtape@0,0:st
                          1              2         3
1: "devices/pci@17,4000/fibre-channel@4" =This is the physical path name that indicates where
the HBA is installed.
2: "BMtape" =Indicates that the LT250 is controlled by the st driver
3: "0,0" = Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, check whether the physical path is an HBA connected to the LT250, check whether or not the target ID (LOOP ID) and LUN information match the LT250 drive, and if the LT250 drive is controlled by the IBM tape driver.

D.1.4.2 SCSI connection settings

Disabling the st driver

📖 Note

. . . .
The SCSI-ID or LU for the robot or the drive of the ETERNUS LT library may differ depending on the model of the device or settings.
For details, refer to the manual of the hardware or contact a Fujitsu Engineer (CE).
. . . .

1. Execute the ls command to display the device file.

```
# ls -l /dev/rmt/*[0-9]
lrwxrwxrwx 1 root root 40 Feb 27 15:07 /dev/rmt/0 -> ../../devices/pci@16,2000/scsi@1/st@5,0:
lrwxrwxrwx 1 root root 50 Feb 27 15:07 /dev/rmt/1 -> ../../devices/pci@17,4000/fibre-channel@4/
st@1,0:
...
```

2. Check the displayed device file to see if the st driver recognizes the LT250 device.

```
../../devices/pci@17,4000/fibre-channel@4/st@1,0:
      1    2   3
1: "devices/pci@17,4000/fibre-channel@4" = This is the physical path name that indicates where
the HBA is installed.
2: "st" = Indicates that the LT250 is controlled by the st driver
3: "1,0" = Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, check whether the physical path is an HBA connected to the LT250, check whether or not the target ID (LOOP ID) and LUN information match the LT250 drive, and if the LT250 drive is controlled by the st driver.

3. If there are programs that access the drive, stop all those programs.

4. If the LT250 is controlled by the st driver, comment out the target definition that corresponds to the LT250 drive in /kernel/drv/st.conf.

5. Delete the device file of the LT250 drive that is controlled by the st driver.
   The following is an example of how to delete the device file confirmed in Step 1 and 2.

```
# rm -i /dev/rmt/*
rm: remove /dev/rmt/0 (yes/no)? n
rm: remove /dev/rmt/0b (yes/no)? n
...
rm: remove /dev/rmt/1 (yes/no)? y
rm: /dev/rmt/1b (yes/no)? y
...
```

Robot settings

1. Enter the Target ID of the LT250 robot in the /usr/kernel/drv/lb.conf file. Refer to the sample lb.conf file and enter the robot SCSI ID as the Target ID. In the following coding example, the SCSI ID is 0.

```
#
#       ----------------------------------------------------------------
#       IBM Tivoli Storage Manager for Sun Solaris Server
#       Licensed Materials - Property of IBM
#       5765-303 (C) Copyright IBM Corporation 1999.
#       All rights reserved.
#       Refer to Copyright Instructions Form Number G120-2083
#       ----------------------------------------------------------------

...

name="lb" class="scsi"
        target=0 lun=0;
```

2. Register the lb driver.

```
#/opt/tivoli/tsm/devices/bin/autoconf
```

IBM Tape Driver settings

Enter the Target ID and LUN ID of the drive in the /usr/kernel/drv/IBMtape.conf file. However, these values are normally set during installation and usually need not be changed. Simply check the contents.

```
################################################################################
################################################################################
##                                                                          ##
##   IBM SCSI Tape & Medium Changer Device Driver for Solaris  8, 9 and 10  ##
##                     (C) COPYRIGHT IBM Corporation, 1994 -                ##
##                                                                          ##
##                      IBMtape.conf - Configuration File                   ##
##                    Licensed Materials - Property of IBM                  ##
##                             All Rights Reserved                          ##
##                                                                          ##
##      US Government Users Restricted Rights  -  Use, duplication, or      ##
##      disclosure restricted by GSA ADP Schedule Contract with IBM Corp.   ##
##                                                                          ##
################################################################################
################################################################################


# An example entry for high numbers of target and lun
# name="IBMtape" class="scsi" target=200 lun=3;

# An example entry for QLogic HBA running qla HBA driver
# name="IBMtape" parent="qla2100" target=0; # for qla2100 only
# name="IBMtape" parent="qla2200" target=0; # for qla2200 only
# name="IBMtape" parent="qla2300" target=0; # for qla2300 only

# An example entry for AMCC JNI HBA
# name="IBMtape" parent="jnic146x" target=0;

# An example entry for Emulex HBA
# name="IBMtape" parent="lpfc" target=0;

name="IBMtape" parent="pseudo" instance=16383;


name="IBMtape" class="scsi" target=0 lun=0 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;
name="IBMtape" class="scsi" target=0 lun=1 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;

...

name="IBMtape" class="scsi" target=255 lun=0 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;
name="IBMtape" class="scsi" target=255 lun=1 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;
```

Creating a device file

1. Reboot the server.

```
# touch /reconfigure
# /usr/sbin/shutdown -y -i6 -g0
```

2. After the server is rebooted, execute the ls command to display the device file (lb).

```
# ls -l /dev/rmt/?lb
lrwxrwxrwx 1 root root 40 Feb 27 15:07 /dev/rmt/0lb -> ../../devices/pci@16,2000/scsi@1/st@5,0:
lrwxrwxrwx 1 root other 51 Feb 27 16:50 /dev/rmt/3lb -> ../../ devices/pci@1f,4000/FJSV,ulsa@3/
lb@0,0:lb
#
```

3. Check the displayed device file to see if the lb driver recognizes the LT250 driver

```
../../devices/pci@1f,4000/FJSV,ulsa@3/lb@0,0:lb
                     1                2   3
1: "devices/pci@1f,4000/FJSV,ulsa@3" =This is the physical path name that indicates where the
HBA is installed.
2: "lb" = Indicates that the LT250 is controlled by the lb driver
3: "0,0" =Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, check whether the physical path is an HBA connected to the LT250, check whether or not the target ID (LOOP ID) and LUN information match the LT250 robot, and if the LT250 robot is controlled by the lb driver.

4. Execute the ls command to display the device file (st).

```
# ls -l /dev/rmt/?st
lrwxrwxrwx 1 root root 56 Feb 27 16:50 /dev/rmt/1st -> ../../devices/pci@1f,4000/FJSV,ulsa@3/
IBMtape@1,0:st
lrwxrwxrwx 1 root root 56 Feb 27 16:50 /dev/rmt/2st -> ../../devices/pci@1f,4000/FJSV,ulsa@3/
IBMtape@2,0:st
#
```

5. Check the displayed device file to see if the IBM tape driver recognizes the LT250 drive.

```
../../devices/pci@1f,4000/FJSV,ulsa@3/IBMtape@1,0:st
                     1                2    3
1: "devices/pci@1f,4000/FJSV,ulsa@3" = This is the physical path name that indicates where the
HBA is installed.
2: "IBMtape" = Indicates that the LT250 is controlled by the st driver
3: "1,0" = Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, check whether the physical path is an HBA connected to the LT250, check whether or not the target ID (LOOP ID) and LUN information match the LT250 drive, and if the LT250 drive is controlled by the IBM tape driver.

D.1.5 ETERNUS LT270

This section describes how to set up the ETERNUS LT270 tape library.

Disabling the st driver

🗒 **Note**

. . . .
To build a tape server in cluster, do not disable the st driver in this step, but the device should be recognized by the st driver as well.
. . . .

1. Execute the ls command to display the device file.

```
# ls -l /dev/rmt/*[0-9]
lrwxrwxrwx 1 root root 40 Feb 27 15:07 /dev/rmt/0 -> ../../devices/pci@16,2000/scsi@1/st@5,0:
```

```
lrwxrwxrwx 1 root root 50 Feb 27 15:07 /dev/rmt/1 -> ../../devices/pci@17,4000/fibre-channel@4/
st@1,0:
...
```

2. Check the displayed device file to see if the st driver recognizes the LT270 device.

```
../../devices/pci@17,4000/fibre-channel@4/st@1,0:
                        1                    2  3
1: "devices/pci@17,4000/fibre-channel@4 " = This is the physical path name that indicates where
the HBA is installed.
2: "st" = Indicates that the LT270 is controlled by the st driver
3: "1,0" = Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, the user can find out if the physical path is an HBA connected to the LT270, check whether or not the target ID (LOOP ID) and LUN information match the LT270 drive, and find out if the LT270 drive is controlled by the st driver.

Note

If the LT270 is not included in the drives controlled by the st driver, steps 3 to 5 below are not required.

3. If there are programs that access the drive, stop all those programs.

4. If the LT270 is controlled by the st driver, comment out the target definition that corresponds to the LT270 drive in /kernel/drv/st.conf.

Point

To comment out the target definition, insert "#" at the start of the part that matches the target ID (LOOP ID) and LUN of the LT270 drive.

Note

If the server has in-built drives, ensure that you do not comment out the definitions for the in-built drives.

5. Delete the device file of the LT270 drive that is controlled by the st driver.
   The following is an example of how to delete the device file confirmed in Step 1 and 2.

```
# rm -i /dev/rmt/*
rm: remove /dev/rmt/0 (yes/no)? n
rm: remove /dev/rmt/0b (yes/no)? n
           :
rm: remove /dev/rmt/1 (yes/no)? y
rm: remove /dev/rmt/1b (yes/no)? y
           :
```

Note

When executing the rm command, be careful not to accidentally delete other files.

Robot settings

1. Enter the Target ID of the LT270 robot in the /usr/kernel/drv/lb.conf file. Refer to the sample lb.conf file and enter the Target ID.
   In the following coding example, the Target ID is 4.

```
#
#       -------------------------------------------------------------
#       IBM Tivoli Storage Manager for Sun Solaris Server
#       Licensed Materials - Property of IBM
#       5765-303 (C) Copyright IBM Corporation 1999.
#       All rights reserved.
#       Refer to Copyright Instructions Form Number G120-2083
#       -------------------------------------------------------------

        :
        :


name="lb" class="scsi"
        target=4 lun=0;
```

Note

In the /usr/kernel/drv/lb.conf file, the "name" value "lb", the "class" value "scsi", and the "lun" value of 0 are fixed values.

2. Register the lb driver.

```
#/opt/tivoli/tsm/devices/bin/autoconf
```

IBM Tape Driver settings

Enter the Target ID and LUN ID of the drive in the /usr/kernel/drv/IBMtape.conf file. However, these values are normally set during installation and usually need not be changed. Simply check the contents.

```
###########################################################################
###########################################################################
##                                                                       ##
##   IBM SCSI Tape & Medium Changer Device Driver for Solaris  8, 9 and 10   ##
##                    (C) COPYRIGHT IBM Corporation, 1994 -              ##
##                                                                       ##
##                    IBMtape.conf - Configuration File                 ##
##                  Licensed Materials - Property of IBM                 ##
##                         All Rights Reserved                          ##
##                                                                       ##
##     US Government Users Restricted Rights  -  Use, duplication, or    ##
##     disclosure restricted by GSA ADP Schedule Contract with IBM Corp. ##
##                                                                       ##
###########################################################################
###########################################################################


# An example entry for high numbers of target and lun
# name="IBMtape" class="scsi" target=200 lun=3;

# An example entry for QLogic HBA running qla HBA driver
# name="IBMtape" parent="qla2100" target=0; # for qla2100 only
# name="IBMtape" parent="qla2200" target=0; # for qla2200 only
# name="IBMtape" parent="qla2300" target=0; # for qla2300 only

# An example entry for AMCC JNI HBA
# name="IBMtape" parent="jnic146x" target=0;

# An example entry for Emulex HBA
# name="IBMtape" parent="lpfc" target=0;

name="IBMtape" parent="pseudo" instance=16383;
```

```
name="IBMtape" class="scsi" target=0 lun=0 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;
name="IBMtape" class="scsi" target=0 lun=1 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;

        :
        :

name="IBMtape" class="scsi" target=255 lun=0 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;
name="IBMtape" class="scsi" target=255 lun=1 block_size=0 buffering=1 immediate=0 trailer=0 sili=0;
```

HBA driver settings

The HBA driver setup method is shown below.

Set the robot, the alias name of the drive, the port and fcp-bind-target in the /kernel/drv/fjpfca.conf file. For the robot Target ID, enter the Target ID that was set in the /usr/kernel/drv/lb.conf file.

```
#
# All Rights Reserved, Copyright (c) FUJITSU LIMITED  2000
#
#ident "@(#)$Id: fjpfca.conf,v 3.1.1.1 2001/04/20 11:19:47 hiroki Exp $ FUJITSU"

        :

alias=
        "CTRL:0x200100e0000e100c",
        "DRV00:0x201000e0000e100d",
        "DRV01:0x201100e0000e100d",
        "DRV02:0x201200e0000e100d",
        "DRV03:0x201300e0000e100d";


        :

port=
"fjpfca0:nport";

         :

fcp-bind-target=
        "fjpfca0t4:CTRL",
        "fjpfca0t0:DRV00",
        "fjpfca0t1:DRV01",
        "fjpfca0t2:DRV02",
        "fjpfca0t3:DRV03";
```

For details of the HBA driver settings, refer to the Fujitsu HBA driver settings under "Solaris OS settings" in the "ETERNUS LT270 Tape Library Setup Guide".

Note

. . . .

These examples are for the Fujitsu HBA driver (FJSVpfca). Refer to the HBA manual of your product if another HBA driver, such as Emulex, NetMarks, is used. This setting is only required for fiber channel switch connection (FC-SW connection). Settings that include target ID set by the LT library are required for direct connection. Refer to "ETERNUS SF TSM ETERNUS LT Library Operator's Guide" for details.

. . . .

Creating a device file

1. Reboot the server.

```
# touch /reconfigure
# /usr/sbin/shutdown -y -i6 -g0
```

2. After the server is rebooted, execute the ls command to display the device file (lb).

```
# ls -l /dev/rmt/?lb
lrwxrwxrwx 1 root root 40 Feb 27 15:07 /dev/rmt/0lb -> ../../devices/pci@16,2000/scsi@1/st@5,0:
lrwxrwxrwx 1 root other 51 Feb 27 16:50 /dev/rmt/5lb-> ../../devices/pci@17,4000/fibre-
channel@4/lb@4,0:lb
#
```

3. Check the displayed device file to see if the lb driver recognizes the LT270 robot.

```
../../devices/pci@17,4000/scsi@3/lb@0,4:lb
                   1                2  3
1: "devices/pci@17,4000/scsi@3" = This is the physical path name that indicates where the HBA
is installed.
2: "lb" = Indicates that the LT270 is controlled by the lb driver
3: "4,0" = Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, the user can find out if the physical path is an HBA connected to the LT270, check whether or not the target ID (LOOP ID) and LUN information match the LT270 robot, and find out if the LT270 robot is controlled by the lb driver.

4. Execute the ls command to display the device file (st).

```
# ls -l /dev/rmt/?st
lrwxrwxrwx 1 root root 56 Feb 27 16:50 /dev/rmt/1st-> ../../devices/pci@17,4000/fibre-
channel@4/IBMtape@0,0:st
lrwxrwxrwx 1 root root 56 Feb 27 16:50 /dev/rmt/2st-> ../../devices/pci@17,4000/fibre-
channel@4/IBMtape@1,0:st
lrwxrwxrwx 1 root root 56 Feb 27 16:50 /dev/rmt/3st-> ../../devices/pci@17,4000/fibre-
channel@4/IBMtape@2,0:st
lrwxrwxrwx 1 root root 56 Feb 27 16:50 /dev/rmt/4st-> ../../devices/pci@17,4000/fibre-
channel@4/IBMtape@3,0:st
#
```

5. Check the displayed device file to see if the IBM tape driver recognizes the LT270 drive.

```
../../devices/pci@17,4000/fibre-channel@4/IBMtape@0,0:st
                           1                    2    3
1: "devices/pci@17,4000/fibre-channel@4" = This is the physical path name that indicates where
the HBA is installed.
2: "IBMtape" = Indicates that the LT270 is controlled by the IBM tape driver
3: "0,0" = Hexadecimal display indicating "Target ID (LOOP ID),LUN"
```

From these contents, the user can find out if the physical path is an HBA connected to the LT270, check whether or not the target ID (LOOP ID) and LUN information match the LT270 drive, and find out if the LT270 drive is controlled by the IBM tape driver.

D.2 Tape library setup for use by TSM

This section describes how to perform setup so that the tape library can be used by TSM.

1. Define the library as the "SCSI" type.

```
tsm> define library <library_name> libtype=scsi
```

<library_name>: Specify the library name.

In the following example, "LT270" is set as the library name.

```
tsm> define library LT270 libtype=scsi
ANR8400I Library LT270 defined.

tsm>
```

2. Define the library path (device file).

```
tsm> define path <server_name> <library_name> srctype=server desttype=library
device=<library_path>
```

<server_name>: Specify the node name of the tape server.
<library_name>: Specify the library name.
<library_path>: Specify the robot device filename (/dev/rmt/Xlb: where X is a number).

In the following example, "tapeserver1" is set as the node name, "LT270" is set as the library name, and "/dev/rmt/5lb" is set as the device filename.

```
tsm> define path tapeserver1 LT270 srctype=server desttype=library device=/dev/rmt/5lb
ANR1720I A path from TAPESERVER1 to LT270 has been defined.

tsm>
```

3. Define the drive.

- For LT20/LT40/LT60

```
tsm> define drive <library_name> <drive_name>
```

<library_name>: Specify the library name.
<drive_name>: Specify the drive name.

- For LT220/LT230/LT250/LT270

```
tsm> define drive <library_name> <drive_name> element=<number>
```

<library_name>: Specify the library name.
<drive_name>: Specify the drive name.
<number>: Specify the element number of the drive.

The drive element number varies in accordance with the type of tape library device. Refer to the following:

- For ETERNUS LT220

Drive# [element number]
Drive#1 [257]

- For ETERNUS LT230

Drive# [element number]	Drive# [element number]
Drive#1 [257]	Drive#2 [258]

- ETERNUS LT250

Drive# [element number]	Drive# [element number]
Drive#00 [500]	Drive#03 [503]
Drive#01 [501]	Drive#04 [504]
Drive#02 [502]	Drive#05 [505]

Drive# [element number]	Drive# [element number]
Drive#00 [500]	Drive#10 [510]
Drive#01 [501]	Drive#11 [511]
Drive#02 [502]	Drive#12 [512]
Drive#03 [503]	Drive#13 [513]
Drive#04 [504]	Drive#14 [514]
Drive#05 [505]	Drive#15 [515]
Drive#06 [506]	Drive#16 [516]
Drive#07 [507]	Drive#17 [517]
Drive#08 [508]	Drive#18 [518]
Drive#09 [509]	Drive#19 [519]

In the following example, "LT270" is set as the library name, "DRV00" is set as the drive name, and "500" is set as the element number.

```
tsm> define drive LT270 DRV00 element=500
ANR8404I Drive DRV00 defined in library LT270.

tsm>
```

4. Define the drive path (device file).

```
tsm> define path <server_name> <drive_name> srctype=server desttype=drive
library=<library_name> device=<device_path>
```

<server_name>: Specify the node name of the tape server.
<drive_name>: Specify the name of the drive.
<library_name>: Specify the library name.
<device_path>: Specify the drive device filename (For LT220/LT230/LT250/LT270: /dev/rmt/Xst: where X is a number, LT20/LT40/LT60: /dev/rmt/Xmt where X is a number).

In the following example, "tapeserver1" is set as the node name, "DRV00" is set as the drive name, "LT270" is set as the library name, and "/dev/rmt/2st" is set as the device filename.

```
tsm> define path tapeserver1 DRV00 srctype=server desttype=drive library=LT270 device=/dev/rmt/
1st
ANR1720I A path from TAPESERVER1 to LT270 DRV00 has been defined.

tsm>
```

Appendix E About ETERNUS SF License Manager

This appendix explains how to register a license for ETERNUS DX60/DX80/DX80 S2/DX90/DX90 S2 on the following environment.

- Manager of AdvancedCopy Manager

- AdvancedCopy Manager Copy Control Module
  (hereinafter called " AdvancedCopy Manager CCM")

E.1   License management overview

This section explains an overview of the license management in the AdvancedCopy Manager.

E.1.1   About license management

In the AdvancedCopy Manager, in order to use a value-added function such as an Advanced Copy, the corresponding license is required. In the Manager of AdvancedCopy Manager and AdvancedCopy Manager CCM, the license management component, which is called ETERNUS SF License Manager (hereinafter called "License Manager"), manage and certify license for ETERNUS DX60/DX80/DX80 S2/DX90/DX90 S2.

E.1.2   System configuration

The License Manager is a common component of ETERNUS SF products. The system configuration diagrams of the products using License Manager are shown below.

System configuration of AdvancedCopy Manager

Figure E.1 Case that Manager of AdvancedCopy Manager is on a non-cluster system
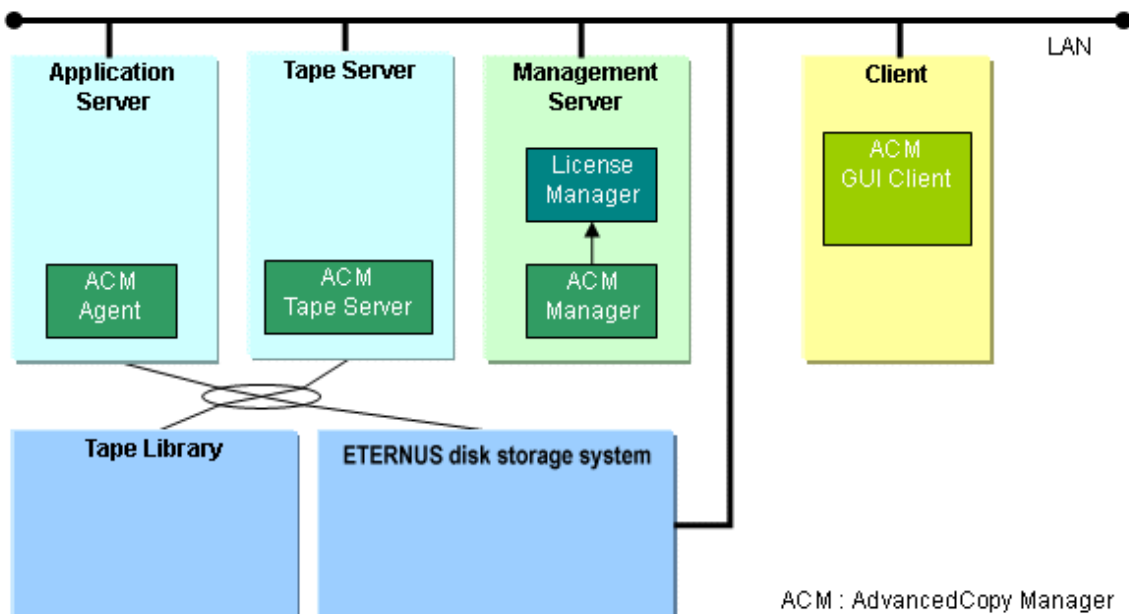
Figure E.2 Case that Manager of AdvancedCopy Manager is on a cluster system
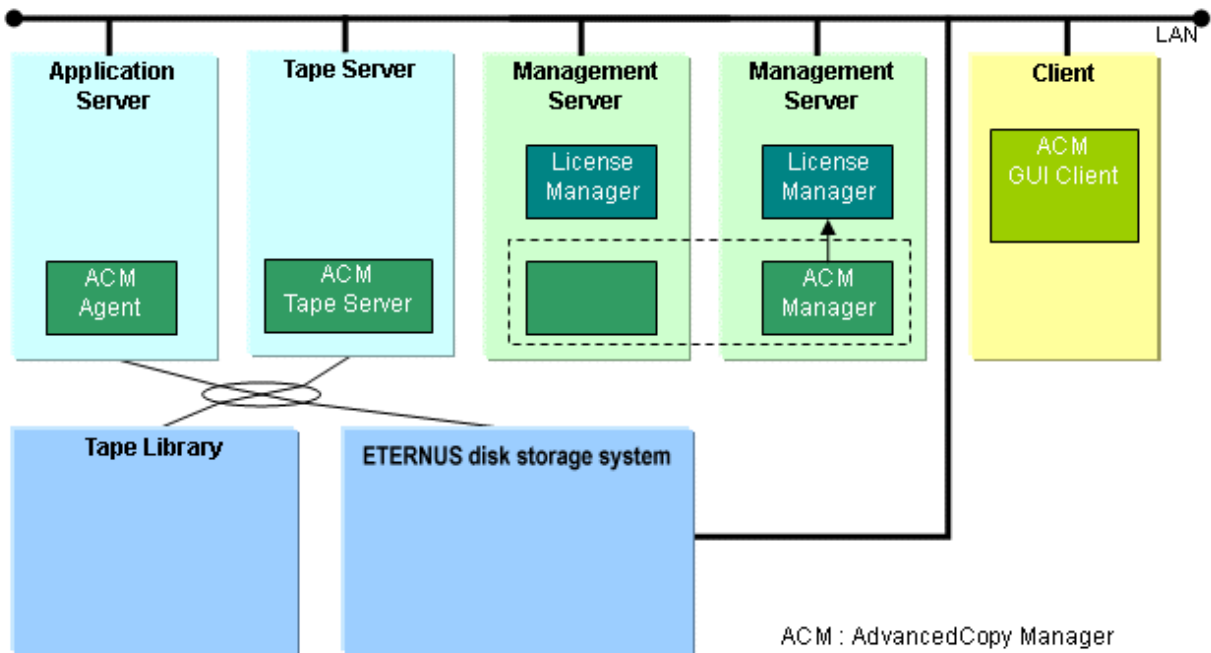
System configuration of AdvancedCopy Manager CCM

Figure E.3 System configuration of AdvancedCopy Manager CCM
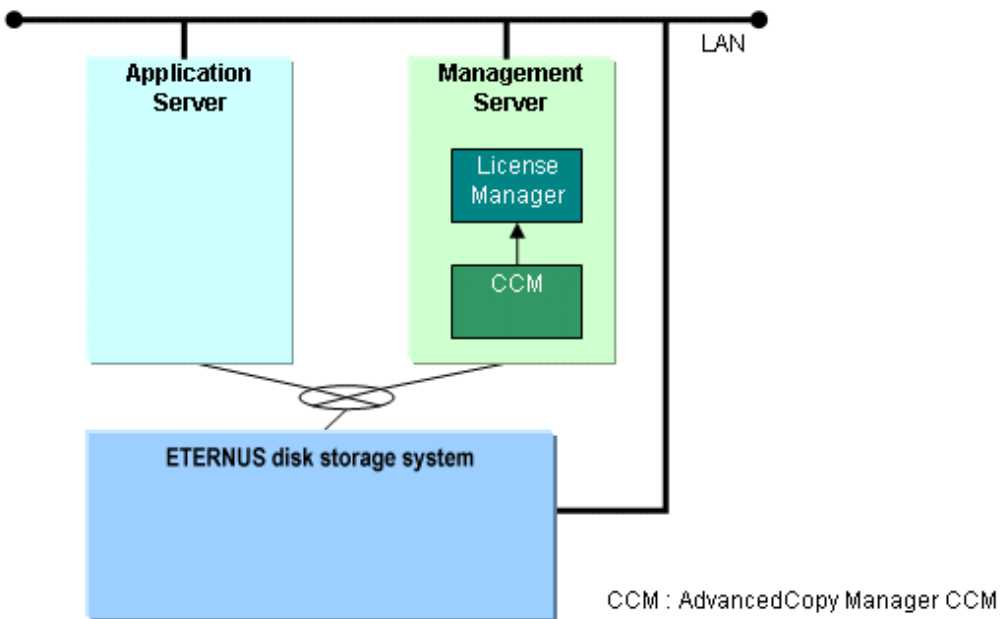
E.1.3 Operating Environment

Hardware Requirement

The License Manager manages the licenses for the ETERNUS DX60/DX80/DX80 S2/DX90/DX90 S2.

Software Requirement

  Case of using AdvancedCopy Manager

    The License Manager can operate in the system environment that the Manager of AdvancedCopy Manager supports. For details, refer to "Chapter 2 Installation of the Manager".

  Case of using AdvancedCopy Manager CCM

    The License Manager can operate in the system environment that the Copy Control Module server supports.

E.2 Installation of License Manager

This section explains how to install the License Manager.

E.2.1 Installation on Windows environment

The installation procedures of License Manager are as follows.

1. Log on to the system where the License Manager is to be installed.

   Log on as a user that has Administrator privileges on the terminal where the License Manager is to be installed.

2. Insert the CD-ROM of Manager of AdvancedCopy Manager or AdvancedCopy Manager CCM into the CD-ROM drive.

3. Open the directory described as below, using Explorer or another tool, and execute setup.exe.

OS	Directory
Windows Server 2003 Windows Server 2008 (x86,x64) Windows Server 2008 R2	*CD-ROM_drive*:\license_manager\windows_x86
Windows Server 2008 for Itanium-Based Systems	*CD-ROM_drive*:\license_manager\windows_ia64

4. The following window will be displayed. Check the displayed information, and then click the [Next] button.
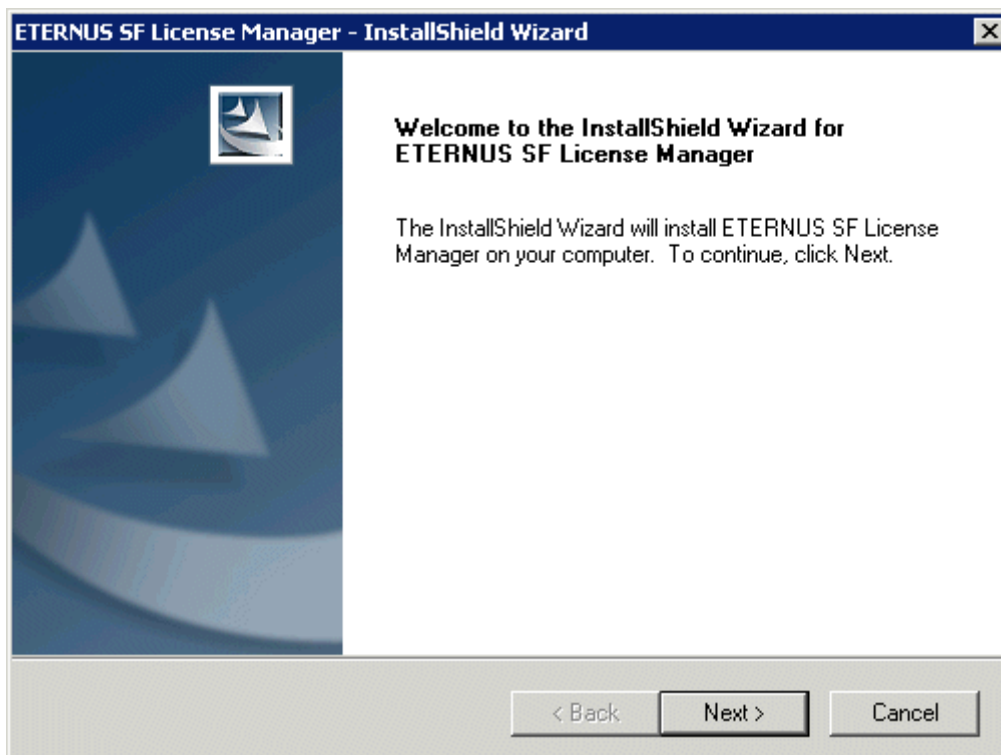
5. Agree to the license agreement in the [License Agreement] window. Check the displayed information, and then click the [Yes] button.
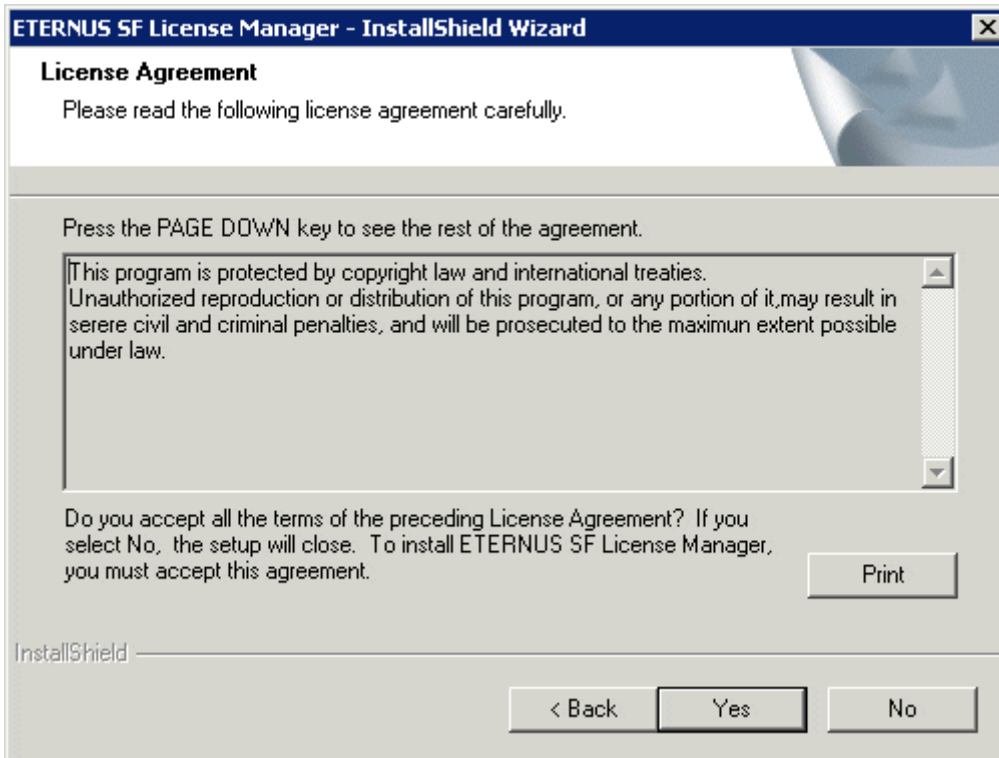
6. Specify the installation directory for License Manager in the [Choose Destination Location] window. To install License Manager in a directory other than the directory displayed by default, click the [Change] button and change the installation directory.
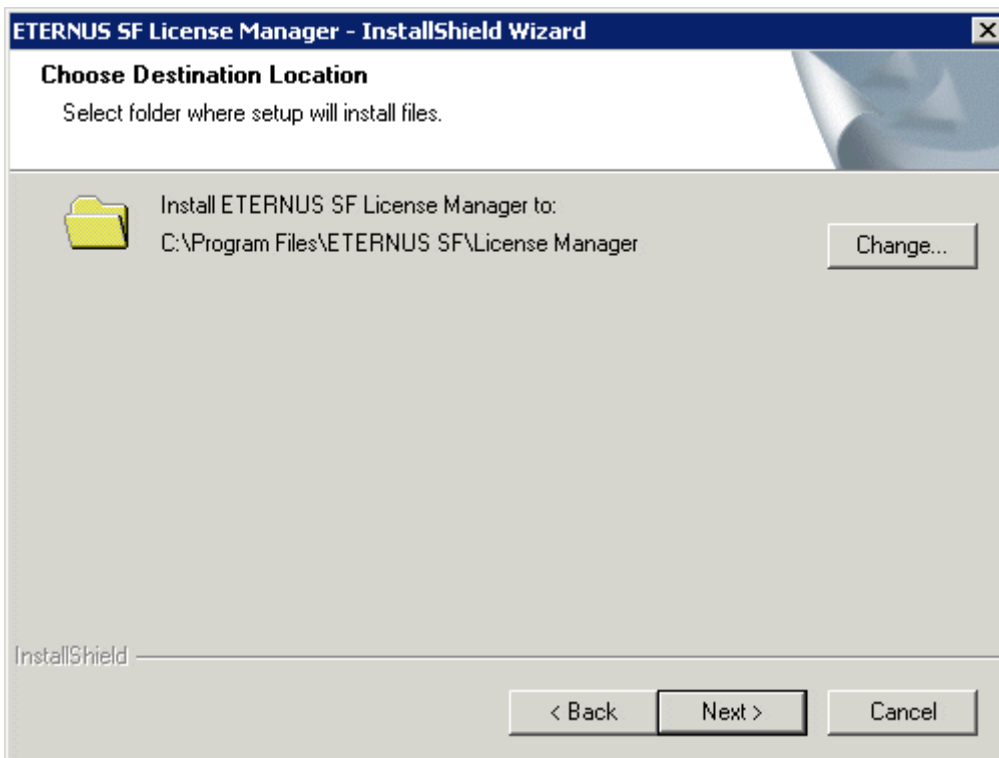
If the [Change] button is clicked, the following window will be displayed. Select the directory where License Manager is to be installed, and then click the [OK] button.
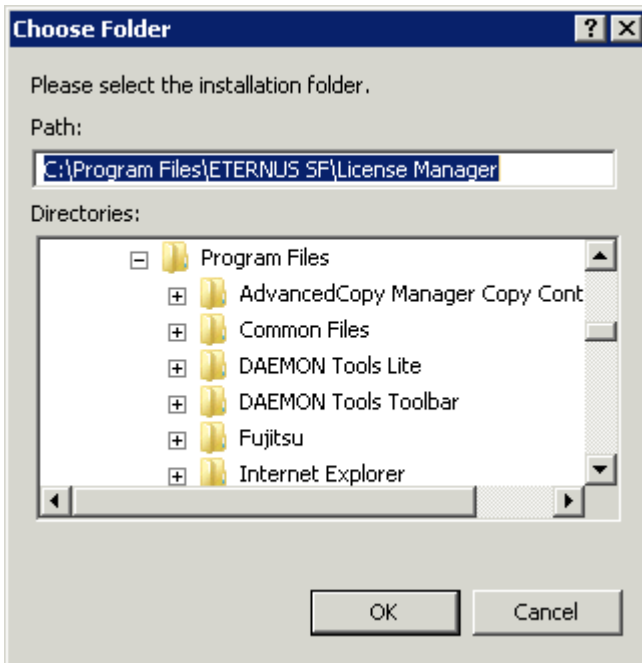
After all directories have been specified, click the [Next] button in the [Choose Destination Location] window.

7. Check the information displayed in the [Start Copying Files] window, and then click the [Next] button. To change the settings, click the [Back] button.
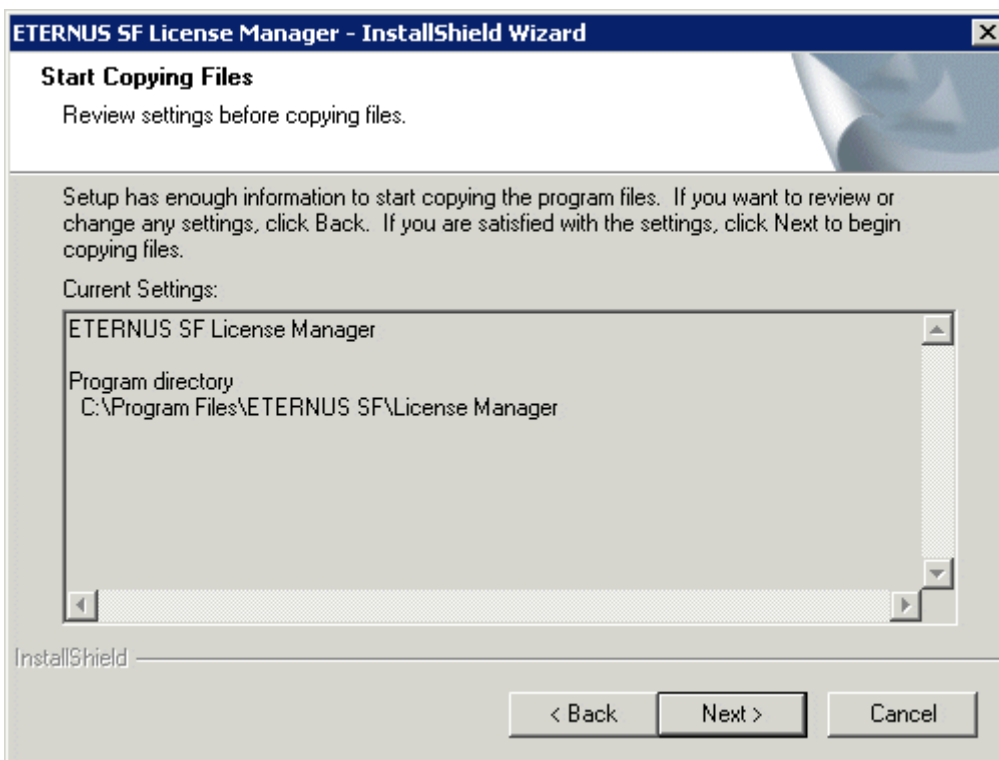
The installation of License Manager begins.
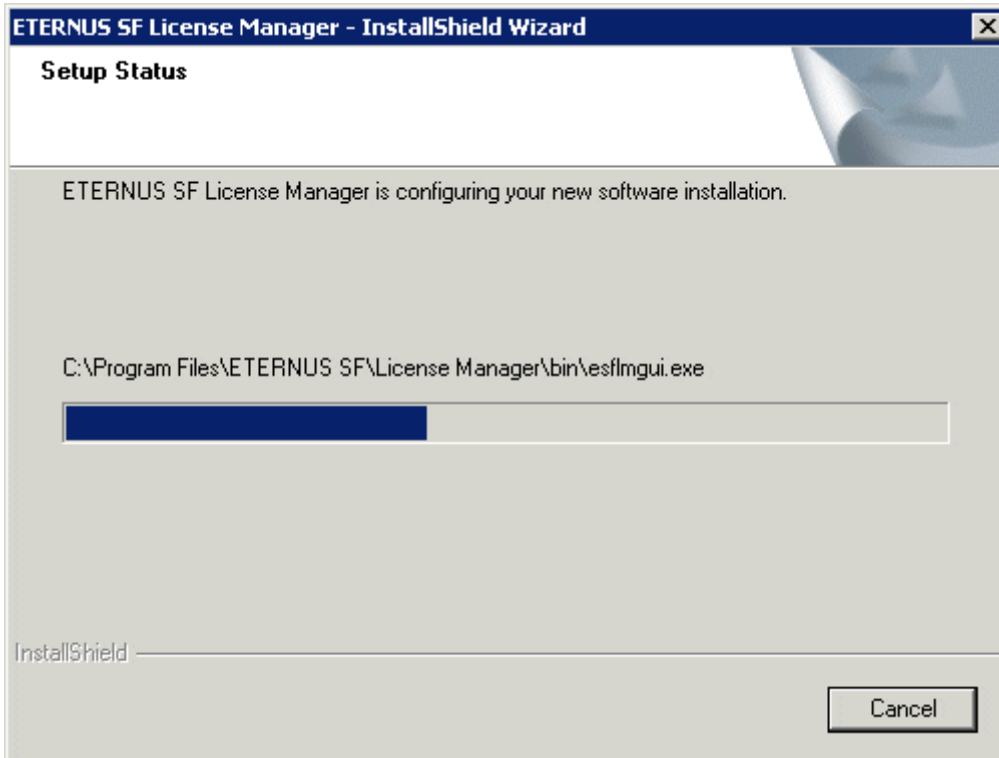
8. The installation of License Manager completes when the following window is displayed. Click the [Finish] button to close the installer.
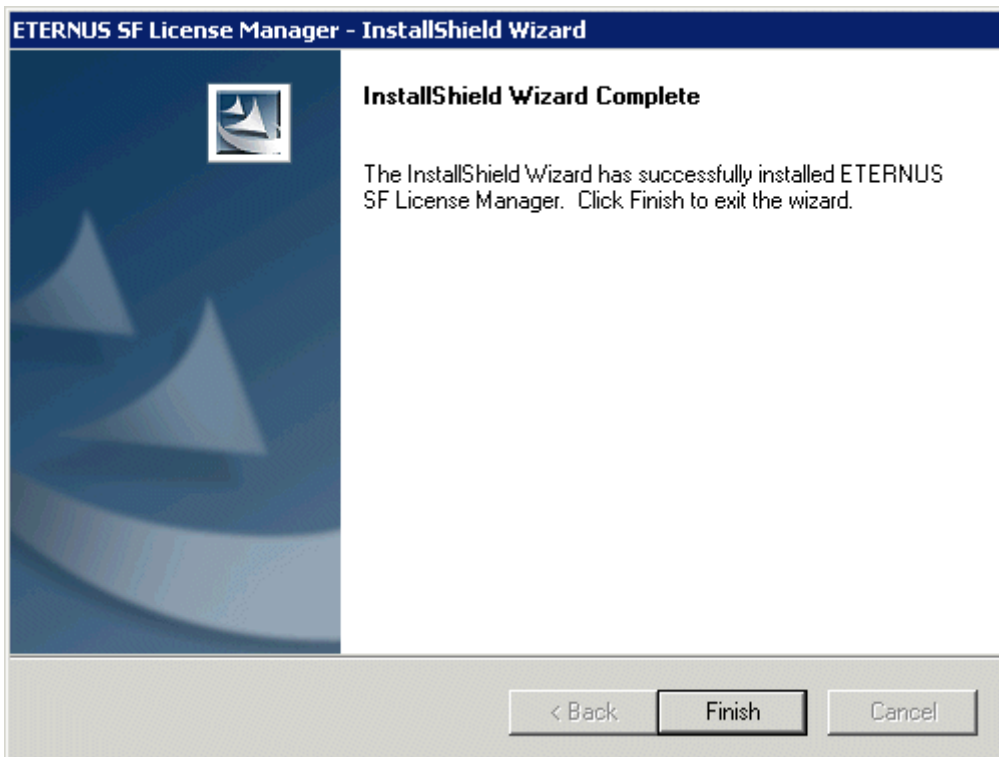
E.2.2 Installation on Solaris environment

The installation procedures of License Manager are as follows.

1. Log in as a root user. (Alternatively, log in as a general user, and then switch to a root user by su command.)

2. Insert the CD-ROM of Manager of AdvancedCopy Manager or AdvancedCopy Manager CCM into the CD-ROM drive and mount the CD-ROM.

```
# mount -F hsfs -o ro /dev/dsk/c0t4d0s0 <CD-ROM mount point>
```

Note: The CD-ROM device name differs depending on the device.

3. Start the installation.

```
# pkgadd -d <CD-ROM mount point>/license_manager/solaris/pkg/FJSVesflm.pkg FJSVesflm
```

The command will display the default installation directory and a message asking if you would like to change the installation settings.

```
ETERNUS SF License Manager
(sparc) 14.2
Copyright (c) FUJITSU LIMITED 2010 All Rights Reserved.

THIS PACKAGE CONTAINS UNPUBLISHED PROPRIETARY SOURCE CODE OF FUJITSU.

The copyright notice above does not evidence any
actual or intended publication of such source code.

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]
```

Note 1 - Program install directory (installation directory of the package)
/opt is set as the default.

Note 2 - Fixed configuration directory (installation directory of file for environment settings)
/etc/opt is set as the default.

Note 3 - Modifying configuration directory (installation directory of the file to be modified. For example: log file, temporary file)
/var/opt is set as the default.

- If not modifying, enter "n", or hit the return key to continue.

```
Do you want to change the installation settings? (default: n) [y,n,?,q] n
```

- If modifying, enter "y", and then specify the installation directory to be modified.

```
Do you want to change the installation settings? (default: n) [y,n,?,q] y

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

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]
```

A message asking for confirmation will be displayed. To accept, enter "n", or hit the return key to continue. To make another modification, enter "y".

4. A message to confirm continuation of installation is displayed. Enter "y".

```
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 <FJSVesflm> [y,n,?] y
```

5. When installation completes, the message below is displayed.

```
<Installation of <FJSVesflm> was successful.
```

6. Unmount the CD-ROM using the command below, and then press the CD tray's Eject button.

```
# umount <CD-ROM mount point>
```

E.2.3 Installation on Linux environment

The installation procedures of License Manager are as follows.

1. Log in as a root user. (Alternatively, log in as a general user, and then switch to a root user by su command.)

2. Insert the CD-ROM of Manager of AdvancedCopy Manager or AdvancedCopy Manager CCM into the CD-ROM drive and mount the CD-ROM. The example below mounts the CD-ROM to /dev/cdrom (set in /etc/fstab as the CD media default mount).

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

3. Start the installation.

```
# rpm -ivh <path of FJSVesflm package>
Preparing...               ########################################## [100%]
   1:FJSVesflm             ########################################## [100%]
```

The path of FJSVesflm package is as follows:

OS	Path of FJSVesflm package
Red Hat Enterprise Linux 4 (for x86) Red Hat Enterprise Linux 4 (for Intel64)	*<CD-ROM mount point>*/license_manager/linux4_x86/rpm/ FJSVesflm-14.2-01.i386.rpm
Red Hat Enterprise Linux 4 (for Intel Itanium)	*<CD-ROM mount point>*/license_manager/linux4_ia64/rpm/ FJSVesflm-14.2-01.ia64.rpm
Red Hat Enterprise Linux 5 (for x86)	*<CD-ROM mount point>*/license_manager/linux5_x86/rpm/ FJSVesflm-14.2-01.i386.rpm
Red Hat Enterprise Linux 5 (for Intel64)	*<CD-ROM mount point>*/license_manager/linux5_x64/rpm/ FJSVesflm-14.2-01.x86_64.rpm
Red Hat Enterprise Linux 5 (for Intel Itanium)	*<CD-ROM mount point>*/license_manager/linux5_ia64/rpm/ FJSVesflm-14.2-01.ia64.rpm

If changing the installation directory, use the -relocate option to specify the directory set as the default, and the installation directory you wish to change. The default installation directories are displayed below:

- Package installation directory

  /opt is set as the default.

- Installation directory of file for environment settings

  /etc/opt is set as the default.

- Installation directory of the file to be modified (for example: log file, temporary file)

  /var/opt is set as the default.

Below is an execution example of changing the installation directory.

```
# rpm -ivh <path of FJSVesflm package> --relocate /opt=/acm/opt --relocate /etc/opt=/acm/etc/opt
--relocate /var/opt=/acm/var/opt
Preparing...               ########################################### [100%]
   1:FJSVesflm             ########################################### [100%]
```

4. Unmount and eject the CD-ROM using the commands below.

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

E.3 Operation of License Manager

This section explains the procedures to manage licenses using GUI and CLI (Command Line Interface) of the License Manager.

P Point

The CLI is available in all platforms, but the GUI is available only on Windows.

- How to start the License Manager GUI:

   Open "<*Install Directory of License Manager*>\bin" folder, and double-click the esflmgui.exe program file.

   Or from the Windows [Start] menu, select [Run] and input following strings.

   ```
   <Install Directory of License Manager>\bin\esflmgui.exe
   ```

- How to use the License Manager CLI:

   Refer to "E.5 Commands of License Manager".

Note

The License Manager operations that can be executed depend on the user authority.

Operation	Administrator privilege
Register license	Required
View license information	Not required
Remove license	Required
Backup or restore license management database	Required

   The meaning of "Administrator privilege" is different in each OS.

- For Linux or Solaris, it means that the effective user id of a user is 0.

- For Windows, it means that a user belongs to "Administrators" group.

E.3.1 Register license

This sub section explains how to register a license.

E.3.1.1 Registration by using GUI

1. Right-click on the [License] node and then select the [Add License] option to invoke the [Add License] dialog.

2. Select the license to register and enter the license key. And then, click the [Next] button to invoke the following dialog.

3. To register a Snap/Clone license, enter the IP address, user account and password of the target disk array, and then click the [OK] button.

   To register a Remote Copy license, how to register varies depending on whether the target disk array can be accessed from License Manager or not.

   - If the License Manager can access the target disk array

     Enter the IP address, user name and password of the target disk array, and then click the [OK] button.

   - If the License Manager can not access the target disk array

     Enter the serial number of the target disk array after checking the [Remote Storage] box, and then click the [OK] button.

E.3.1.2 Registration by using CLI

1. Find the license ID of the license to register by the esflm listid command.

   ```
   > esflm listid
   ```

2. Execute the following command.

   - If the License Manager can access the target disk array

     ```
     > esflm add License-ID License-Key -i IP-Address -u User-Name -p Password
     ```

   - If the License Manager can not access the target disk array

     ```
     > esflm add License-ID License-Key -s Serial-Number
     ```

E.3.1.3 Registration by using GUI/CLI on cluster environment

In the case where the manager function of AdvancedCopy Manager is on a cluster environment, a license must be registered in each node of which the cluster environment is made. Using "E.3.4 Backup and restoration of license management database" can ease registration task in a cluster environment.

The following example registers a license in a cluster environment. In this example, the manager function of AdvancedCopy Manager is an active/standby cluster application in a three-node cluster system.
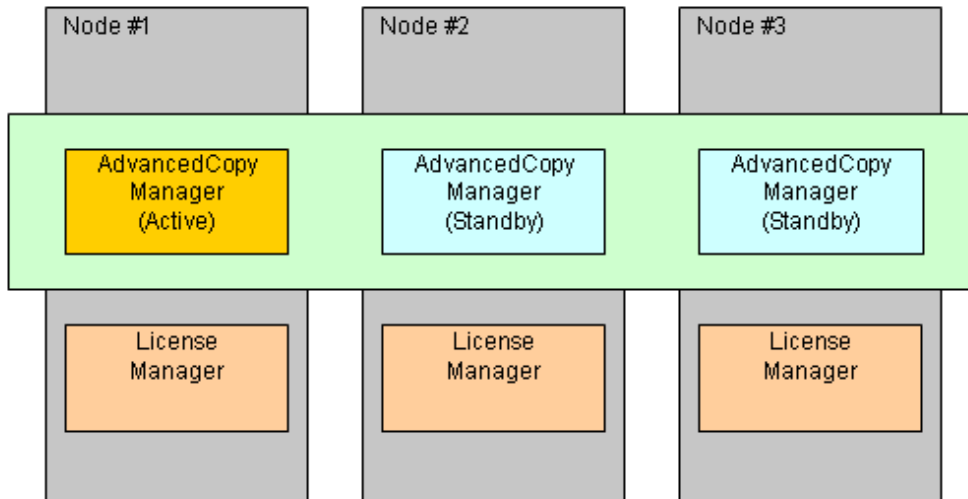
1. Register a license in arbitrary one node of the cluster.

2. In the node where the previous step was done, backup license database by the esflm backup command.

   ```
   > esflm backup Backup-File-Name
   ```

3. Restore the license database by the esflm restore command in other nodes. By this operation, a license is registered in these nodes.

   ```
   > esflm restore Backup-File-Name
   ```

E.3.2 View the registered license

This sub section explains how to view the registered licenses.

E.3.2.1 View by using GUI

1. Expand the [License] node.

2. Execute the following operation.

   - To view the registered license information on an ETERNUS SF product basis

     Expand the [ETERNUS SF Product] node, and then click the node of the target product.

   - To view the registered license information on a disk array basis

     Expand the [Disk Array] node, and then click the node of the target disk array.

E.3.2.2 View by using CLI

To view the registered licenses, use the esflm list command.

- To view all the registered license information

  Execute the esflm list command without operand.

  ```
  > esflm list
  ```

- To view the registered license information associated with a particular ETERNUS SF product

  Execute the esflm list command by specifying the product name.

```
> esflm list Product-Name
```

- To view the registered license information associated with a particular disk array

  Execute the esflm list command by specifying the serial number of the disk array.

```
> esflm list Serial-Number
```

E.3.3 Remove the registered license

This sub section explains how to remove the registered licenses.

E.3.3.1 Removal by using GUI

1. Expand the [License] node.

2. Expand the [ETERNUS SF Product] node, and then click the node of the target product. Or, expand the [Disk Array] node, and then click the node of the target disk array.

3. Right-click the license to remove in the license list in the right-hand side, and select the [Remove License] option to invoke the [Remove License] dialog.

4. Confirm the license name and the serial number in the dialog, and then click the [OK] button.

E.3.3.2 Removal by using CLI

To remove the registered licenses, use the esflm remove command.

- To remove a particular license

  Execute the following command.

```
> esflm remove Serial-Number License-ID
```

- To remove all the licenses of a particular disk array

  Execute the following command.

```
> esflm remove Serial-Number -all
```

E.3.4 Backup and restoration of license management database

The license information registered in the License Manager is saved in the database, which is called "license management database".

This sub section explains how to backup and restore the license management database.

E.3.4.1 Backup and restoration by using GUI

- To backup the license management database

  1. On the [File] menu, click the [Backup] button to invoke the [Backup] dialog.

  2. In the [Backup] dialog, type or select a backup file name.

  3. Click the [Backup] button.

- To restore the license management database

    1. On the [File] menu, click the [Restore] button to invoke the [Restore] dialog.

    2. In the [Restore] dialog, type or select a backup file name.

    3. Click the [Restore] button.

E.3.4.2 Backup and restoration by using CLI

- To backup the license management database

  Execute the following command.

  ```
  > esflm backup Backup-File-Name
  ```

- To restore the license management database

  Execute the following command.

  ```
  > esflm restore Backup-File-Name
  ```

E.4 Uninstallation of License Manager

This section explains how to uninstall the License Manager.

If multiple ETERNUS SF software products are used on the same server, or if AdvancedCopy Manager or AdvancedCopy Manager CCM is singly used, uninstall the License Manager according to the below instructions.

E.4.1 Uninstallation from Windows environment

The uninstallation procedures of License Manager are as follows.

1. Log on to the system where the License Manager is to be uninstalled.

   Log on as a user that has Administrator privileges on the terminal where the License Manager is to be uninstalled.

2. Remove the License Manager from the list of programs by following the procedure appropriate to the operating system being used.

   - For Windows Server 2003

       1. Double-click on the [Add or Remove Programs] icon in the Control Panel.

       2. On the "Add or Remove Programs" window, select [ETERNUS SF License Manager] and then click the [Change/ Remove] button.

   - For Windows Server 2008 or Windows Server 2008 R2

       1. Double-click on the [Programs and Features] icon in the Control Panel.

       2. On the "Programs and Features" window, select [ETERNUS SF License Manager] and then click the [Uninstall] button.

3. The following dialog will be displayed. Check and then click the [Yes] button.

ETERNUS SF License Manager Setup

Are you sure you want to remove ETERNUS SF License Manager
from this computer?

Yes   No
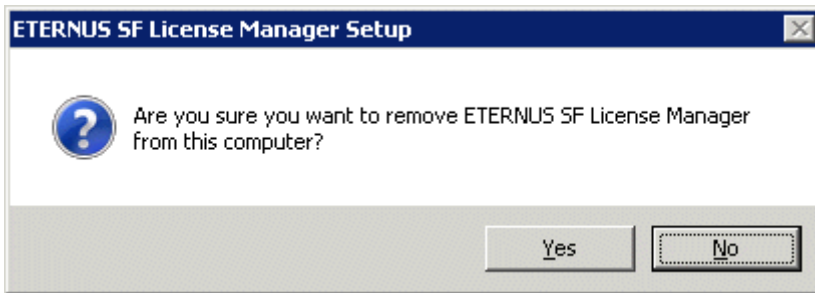
If the license information has been registered to License Manager, the following dialog will be displayed. Check if the installed ETERNUS SF products are using license. If it is no problem even if license information is removed, click the [Yes] button.

ETERNUS SF License Manager Setup

The license information has been registered. Are you sure you
want to remove ETERNUS SF License Manager from this
computer?

Yes   No
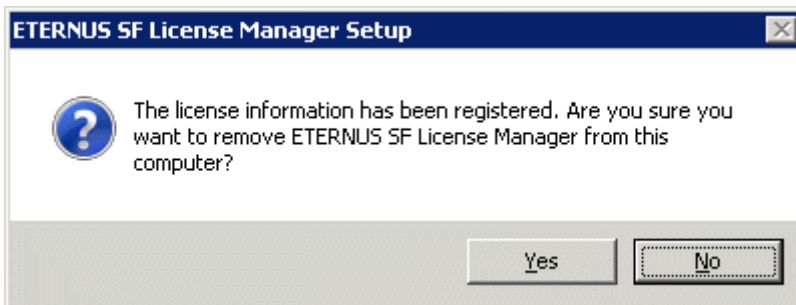
When the uninstallation is started, the following window is displayed.

ETERNUS SF License Manager - InstallShield Wizard

Setup Status

ETERNUS SF License Manager is configuring your new software installation.

Updating component registration

InstallShield

Cancel
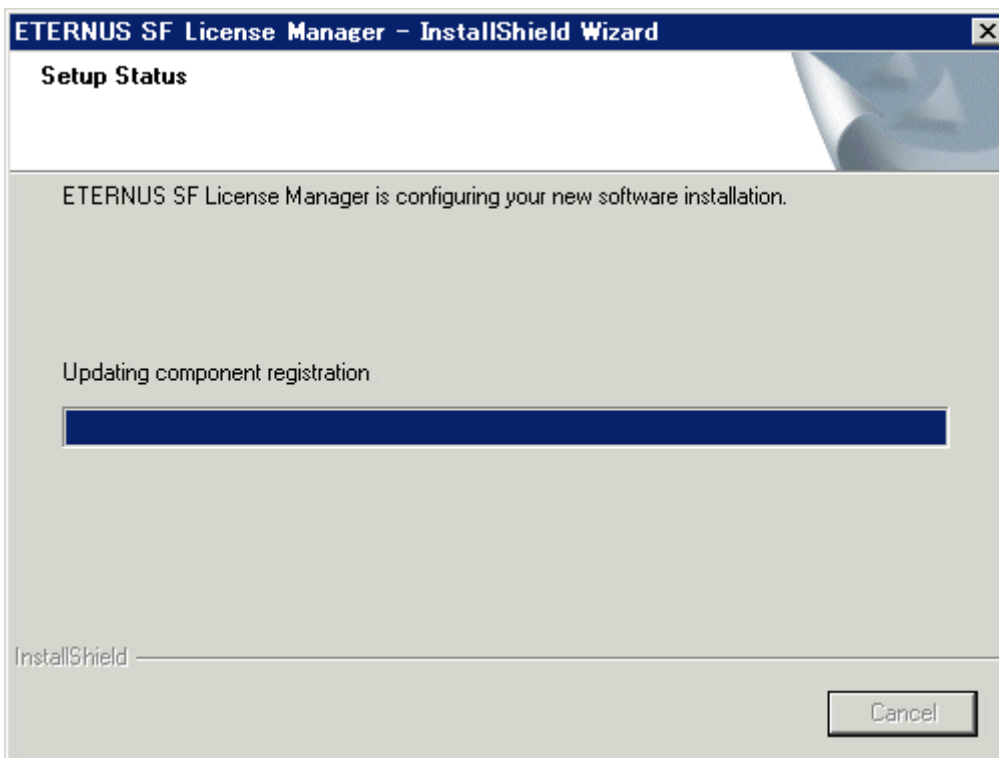
4. The uninstallation of License Manager completes when the following window is displayed. Click the [Finish] button to close the uninstaller.
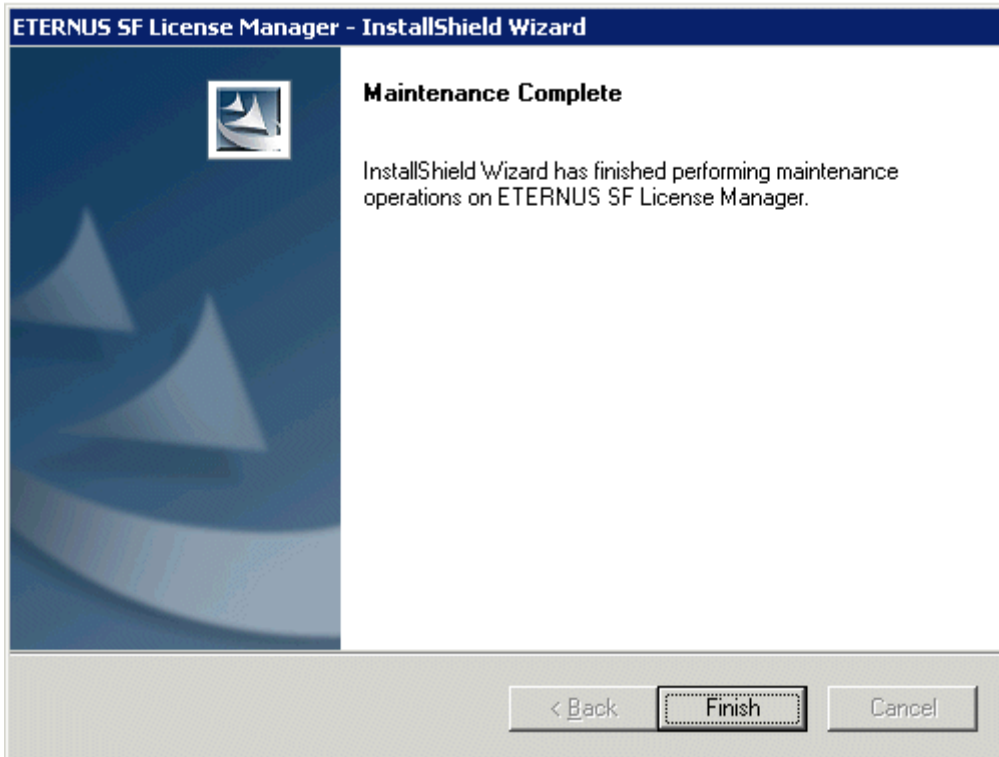
Even if uninstall is carried out, the package directory may not be removed. If the directory remains, remove as required.

E.4.2   Uninstallation from Solaris environment

The uninstallation procedures of License Manager are as follows.

1. Log in as a root user. (Alternatively, log in as a general user, and then switch to a root user by su command.)

2. Check the registration status of license.

```
# /opt/FJSVesflm/bin/esflm list
```

If the license information has been registered to License Manager, its license may be used by ETERNUS SF products. Check if the installed ETERNUS SF products are using license. If it is no problem even if license information is removed, go to next step.

3. Uninstall the License Manager package.

```
# pkgrm FJSVesflm
```

Even if uninstall is carried out, the package directory may not be removed. If the directory remains, remove as required.

E.4.3   Uninstallation from Linux environment

The uninstallation procedures of License Manager are as follows.

1. Log in as a root user. (Alternatively, log in as a general user, and then switch to a root user by su command.)

2. Check the registration status of license.

```
# /opt/FJSVesflm/bin/esflm list
```

If the license information has been registered to License Manager, its license may be used by ETERNUS SF products. Check if the installed ETERNUS SF products are using license. If it is no problem even if license information is removed, go to next step.

3. Uninstall the License Manager package.

```
# rpm -e FJSVesflm
```

Even if uninstall is carried out, the package directory may not be removed. If the directory remains, remove as required.

E.5 Commands of License Manager

This section explains a command reference of License Manager.

The commands of License Manager are as follows.

Command name	Description
esflm	Performs various functions for license management.

The commands of License Manager are stored in the following directory.

Platform	Command Directory
Windows	<*Install Directory of License Manager*>\bin
Solaris Linux	/opt/FJSVesflm/bin

 Note

The License Manager commands that can be executed depend on the user authority.

Command	Administrator privilege
esflm add	Required
esflm backup	Required
esflm list	Not required
esflm listid	Not required
esflm remove	Required
esflm restore	Required

The meaning of "Administrator privilege" is different in each OS.

- For Linux or Solaris, it means that the effective user id of a user is 0.

- For Windows, it means that a user belongs to "Administrators" group.

E.5.1 esflm add (License registration command)

NAME

esflm add - Registers a license information to License Manager

SYNOPSIS

```
esflm add License-ID License-Key {-s Serial-Number |-i IP-Address -u User-Name -p Password }
```

DESCRIPTION

This command registers a license information to License Manager.

OPTIONS

-s *Serial-Number*

This option is used to specify the serial number of the target disk array if a license for remote copy is registered and License Manager can not access the target disk array.

-i *IP-Address*

This option is used to specify an IP address of the target disk array.

-u *User-Name*

This option is used to specify a user name to access the target disk array.

-p *Password*

This option is used to specify the password of the user specified by the -u option.

OPERANDS

License-ID

This operand is used to specify a license ID.

*License-Ke*y

This operand is used to specify a license key.

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
```

E.5.2 esflm backup (License management database backup command)

NAME

esflm backup - Performs a backup of the license management database

SYNOPSIS

```
esflm backup Backup-File
```

DESCRIPTION

This command performs a backup of the license management database.

OPERANDS

Backup-File

This operand is used to specify a backup file.

EXIT STATUS

=0 : Completed successfully

>0 : Terminated abnormally

EXAMPLES

```
> esflm backup Backup.dat
Backup of license database was performed successfully
```

E.5.3   esflm list (License list command)

NAME

esflm list - Displays the list of license information registered to License Manager

SYNOPSIS

```
esflm list [{Product-Name | Serial-Number}]
```

DESCRIPTION

This command displays the list of license information registered to License Manager. The contents to be displayed are as follows:

Title	Description
Product	Product name Express : ETERNUS SF Express ACM : ETERNUS SF AdvancedCopy Manager
License ID	License ID
License	License name
Serial Number	Serial number of disk array
Registration Date	Date of license registration

OPERANDS

Product-Name

This option 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

Serial-Number

> This option is used to specify a serial number of the target disk array if you would like to display the license information associated with a particular disk array.

EXIT STATUS

=0 : Completed successfully

>0 : Terminated abnormally

EXAMPLES

```
> esflm list Express
Product License ID License                                        Serial Number Registration Date
Express 01000001   ETERNUS SF Snap/Clone License for ETERNUS DX60 V14       abcdefghijkl  2010/01/13
Express 01000002   ETERNUS SF Snap/Clone License for ETERNUS DX80/DX90 V14 abcdefghijkm  2010/01/13
```

E.5.4   esflm listid (License ID list command)

NAME

esflm listid - Displays the list of license IDs that can be registered to License Manager

SYNOPSIS

```
esflm listid
```

DESCRIPTION

This command displays the list of license IDs that can be registered to License Manager. The contents to be displayed are as follows:

Title	Description
Product	Product name Express : ETERNUS SF Express ACM : ETERNUS SF AdvancedCopy Manager
License ID	License ID
License	License name

EXIT STATUS

=0 : Completed successfully

>0 : Terminated abnormally

EXAMPLES

```
> esflm listid
Product License ID License Name
Express 00000803L  ETERNUS SF Snap/Clone License for ETERNUS DX80S2 V14
Express 00000903L  ETERNUS SF Snap/Clone License for ETERNUS DX90S2 V14
Express 01000001   ETERNUS SF Snap/Clone License for ETERNUS DX60 V14
Express 01000002   ETERNUS SF Snap/Clone License for ETERNUS DX80/DX90 V14
Express 01000004   ETERNUS SF Remote Copy License for ETERNUS DX90 V14
Express 01000904R  ETERNUS SF Remote Copy License for ETERNUS DX90S2 V14
ACM     02000001   ETERNUS SF AdvancedCopy Manager V14 Local Copy License for ETERNUS DX60
ACM     02000002   ETERNUS SF AdvancedCopy Manager V14 Local Copy License for ETERNUS DX80
ACM     02000003   ETERNUS SF AdvancedCopy Manager V14 Local Copy License for ETERNUS DX90
ACM     02000004   ETERNUS SF AdvancedCopy Manager V14 Remote Copy License for ETERNUS DX90
ACM     02000006   ETERNUS SF AdvancedCopy Manager V14 Local Copy License for ETERNUS DX60 Software
Upgrade
ACM     02000007   ETERNUS SF AdvancedCopy Manager V14 Local Copy License for ETERNUS DX80 Software
Upgrade
ACM     02000008   ETERNUS SF AdvancedCopy Manager V14 Local Copy License for ETERNUS DX90 Software
Upgrade
ACM     02000009   ETERNUS SF AdvancedCopy Manager V14 Remote Copy License for ETERNUS DX90 Software
Upgrade
ACM     04000603L  ETERNUS SF AdvancedCopy Manager V14 Local Copy License for ETERNUS DX60S2
ACM     04000606L  ETERNUS SF AdvancedCopy Manager V14 Local Copy License for ETERNUS DX60S2 Software
Upgrade
ACM     04000803L  ETERNUS SF AdvancedCopy Manager V14 Local Copy License for ETERNUS DX80S2
ACM     04000806L  ETERNUS SF AdvancedCopy Manager V14 Local Copy License for ETERNUS DX80S2 Software
Upgrade
ACM     04000903L  ETERNUS SF AdvancedCopy Manager V14 Local Copy License for ETERNUS DX90S2
ACM     04000904R  ETERNUS SF AdvancedCopy Manager V14 Remote Copy License for ETERNUS DX90S2
ACM     04000906L  ETERNUS SF AdvancedCopy Manager V14 Local Copy License for ETERNUS DX90S2 Software
Upgrade
ACM     04000906R  ETERNUS SF AdvancedCopy Manager V14 Remote Copy License for ETERNUS DX90S2 Software
Upgrade
```

E.5.5   esflm remove (License remove command)

NAME

esflm remove - Removes a registered license information from License Manager

SYNOPSIS

```
esflm remove Serial-Number {License-ID| -all}}
```

DESCRIPTION

This command removes a registered license information from License Manager.

OPTIONS

-all

This option is used to remove all the registered licenses of the specified disk array.

OPERANDS

Serial-Number

This operand is used to specify a serial number of the target disk array.

License-ID

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
```

E.5.6   esflm restore (License management database restore command)

NAME

esflm restore - Performs a restoration of the license management database

SYNOPSIS

```
esflm restore Backup-File
```

DESCRIPTION

This command performs a restoration of the license management database.

OPERANDS

Backup-File

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
```

E.6   Messages of License Manager

This section explains the messages output from License Manager.

E.6.1 Message format

Messages consist of a message ID and message text.

Each message is explained according to the items described in the following table.

Table E.1 Format of message explanations

Item	Description
Message text	This item shows the message that is output.
Description	This item explains the reason why the message is output or the situations where the message is output.
Parameters	This item explains the meanings of the parameters in the message text.
System response	This item explains the processing that the system performs when the message is output.
System administrator response	This item explains the actions that the system administrator should take in response to the message.

E.6.2 Message explanations

ERROR:1010:There is no permission to perform this operation.

Description

There is no permission to perform this operation.

System response

Interrupts the processing.

System administrator response

Try this operation again under administrator privilege.

ERROR:1011:Syntax error occurred in parameters or arguments.

Description

Syntax error occurred in parameters or arguments.

System response

Interrupts the processing.

System administrator response

Confirm the syntax of the command, and then try this operation again.

ERROR:1012:License ID, Serial Number, or License Key is incorrect.

Description

At least one of the specified license ID, serial number and license key is incorrect.

System response

Interrupts the processing.

System administrator response

Confirm these parameters, and then try this operation again.

ERROR:1020:The specified license information has been already registered.

Description

The specified license information has been already registered.

System response

Interrupts the processing.

System administrator response

Confirm the specified license ID, serial number and license key, and then try this operation again.

ERROR:1021:The specified license information does not exist.

Description

The specified license information does not exist.

System response

Interrupts the processing.

System administrator response

Confirm the specified serial number and/or license ID, and then try this operation again.

ERROR:1032: Registration of license information failed.

Description

The License Manager failed to register license information to the target disk array.

System response

Interrupts the processing.

System administrator response

Confirm that the specified parameters related to the disk array are correct, and then try this operation again.

ERROR:1099:An input parameter is incorrect.

Description

An input parameter is incorrect.

System response

Interrupts the processing.

System administrator response

Confirm all the parameters you specified, and then try this operation again.

ERROR:3030:The configuration of License Manager is invalid.

Description

The License Manager can not work correctly because the configuration of License Manager is invalid.

System response

Interrupts the processing.

System administrator response

Collect the information described in "E.8.1 How to collect troubleshooting data", and then contact a Fujitsu system engineer (SE).

ERROR:5001:Reading license database failed.

Description

The License Manager failed to read the license management database. The database may be broken.

System response

Interrupts the processing.

System administrator response

Restore the license management database from a backup, and then try this operation again.

ERROR:5002:Updating license database failed.

Description

The License Manager failed to update the license management database. The database may be broken.

System response

Interrupts the processing.

System administrator response

Restore the license management database from a backup, and then try this operation again.

ERROR:7000:An unknown error occurred.

Description

An unknown error occurred.

System response

Interrupts the processing.

System administrator response

Collect the information described in "E.8.1 How to collect troubleshooting data", and then contact a Fujitsu system engineer (SE).

E.7 Change the operating environment

This section explains how to change the operating environment of License Manager.

E.7.1 Changing the JRE pathname used by License Manager

The License Manager uses the Java Runtime Environment (JRE) that is included in ETERNUS SF products (e.g. Manager of AdvancedCopy Manager, AdvancedCopy Manager CCM and ETERNUS SF Express). The License Manager obtains the JRE pathname from the following configuration file (esflm.conf).

Platform	Full pathname of esflm.conf
Windows	*<Install Directory of License Manager>*\etc\esflm.conf
Solaris Linux	/etc/opt/FJSVesflm/esflm.conf

If the License Manager is installed after the installation of an ETERNUS SF product, the License Manager installer automatically writes the JRE pathname of the ETERNUS SF product to esflm.conf file.

However, if ETERNUS SF product is installed after the installation of License Manager, or, if ETERNUS SF product is re-installed in a directory different from previous installation after the installation of License Manager, the License Manager installer cannot write the JRE

pathname of the ETERNUS SF product to esflm.conf file. Therefore, the content of esflm.conf file may become incorrect. For those cases, take appropriate actions.

- If the esflm.conf file does not exist:

  Create esflm.conf file. And then write the correct JRE path manually in its file, following the specification shown below.

- If the esflm.conf file exists:

  Change the content of esflm.conf file manually, following the specification shown below.

The file format of esflm.conf is shown as follows. The *<JRE path used by License Manager>* must be one of the JRE paths of ETERNUS SF products.

```
JAVA_HOME=<JRE path used by License Manager>
```

📖 Information
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The JRE pathname of ETERNUS SF AdvancedCopy Manager

The JRE pathname of ETERNUS SF AdvancedCopy Manager is shown as follows.

Components	Platform	Full pathname of JRE
Manager of AdvancedCopy Manager	Windows	*<Install Directory of Manager of AdvancedCopy Manager>*\jre
	Solaris Linux	/opt/FJSVswstf/jre
AdvancedCopy Manager CCM	Windows	*<Install Directory of AdvancedCopy Manager CCM>*\jre
	Solaris Linux	/opt/FJSVccm/jre

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E.8 Troubleshooting of License Manager

This section contains information about troubleshooting of License Manager.

E.8.1 How to collect troubleshooting data

Log into the server where the License Manager runs, and then collect the following information, and then send the collected data to your Fujitsu systems engineer (SE).

Platform	File type	Files that should be collected
Windows	Log files	The files in the "var" subdirectory of the License Manager installation directory.
	Definition files	The files in the "etc" subdirectory of the License Manager installation directory.
Solaris Linux	Log files	The files in the "/var/opt/FJSVesflm" directory.
	Definition files	The files in the "/etc/opt/FJSVesflm" directory.

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