ETERNUS SF
AdvancedCopy Manager V13.2

Installation and Setup Guide

FUJITSU

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 10 and appendixes A through D.
+ Chapter 1 Overview of Installation Procedure
This chapter contains an overview of the installation of ETERNUS SF AdvancedCopy Manager in a number of different operating environments, as well as the settings of these environments.
+ Chapter 2 Installation of Manager
This chapter describes the procedure for installing the Manager of ETERNUS SF AdvancedCopy Manager.
+ Chapter 3 Customization of Storage Management Server
This chapter describes the procedure for customizing the Storage Management Server.
+ Chapter 4 Installation of Agent
This chapter describes the procedure for installing the Agent of ETERNUS SF AdvancedCopy Manager.
+ Chapter 5 Customization of Storage Server
This chapter describes the procedure of customizing the Storage Server.
+ Chapter 6 Installation of Tape Manager
This chapter describes the procedure for installing the Tape Manager of ETERNUS SF AdvancedCopy Manager.
+ Chapter 7 Customization of Tape Server
This chapter describes the procedure for customizing the Tape Server.
+ Chapter 8 Upgrade
This chapter describes the procedure for upgrading the Storage Management Server.
+ Chapter 9 Uninstall
This chapter describes the procedure for uninstalling ETERNUS SF AdvancedCopy Manager.
+ Chapter 10 Notes
This chapter provides notes concerning ETERNUS SF AdvancedCopy Manager installation.
+ Appendix A Program Components of AdvancedCopy Manager
This appendix describes Program Components of ETERNUS SF AdvancedCopy Manager.
+ Appendix B Locale
This appendix describes the Installation Location of ETERNUS SF AdvancedCopy Manager.
+ Appendix C JRE Use Conditions
This appendix describes the JRE Use Conditions.
+ Appendix D Tape Library (LT220/LT230/LT270) Setup
This appendix describes the tape library (LT220/LT230/LT270) settings.

++ 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 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 Web-GUI 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 Backup Option
  Describes the operating procedures for performing tape backup with ETERNUS SF AdvancedCopy Manager.

Users are recommended to read the "ETERNUS SF AdvancedCopy Manager Operator's Guide" 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(R) 2000 Professional, Microsoft(R) Windows(R) 2000 Server, and Microsoft(R) Windows(R) 2000 Advanced Server are abbreviated as Windows 2000.
- ● 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(R) XP Home Edition operating system and the Microsoft(R) Windows(R) XP Professional operating system are abbreviated as Windows XP.
- ● Microsoft(R) Windows Vista(R) Home Basic, Microsoft(R) Windows Vista(R) Home Premium, Microsoft(R) Windows Vista(R) Business, Microsoft(R) Windows Vista(R) Enterprise, and Microsoft(R) Windows Vista(R) Ultimate are abbreviated as Windows Vista.
- ● Solaris (TM) Operating System is referred to as Solaris.
- ● "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.
- ● ETERNUS2000, ETERNUS3000, ETERNUS4000, ETERNUS6000, ETERNUS8000, and ETERNUS GR series are referred to as ETERNUS storage system.
- ● LT270, LT230, LT160, and LT130 are referred to as ETERNUS tape library.

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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 an ETERNUS storage system, 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).

● 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 an ETERNUS storage system, and issues instructions to the tape server to perform backups from disk to tape.
  The Tape Agent is included in the Agent software.

1.2 Server type of AdvancedCopy Manager

AdvancedCopy Manager defines the server types shown below.

Table: 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.

A Tape server can be constructed only if the "ETERNUS SF AdvancedCopy Manager Tape Server Option" is installed.

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: 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

Storage Server also used as Storage Management Server

〔Configuration A〕

```
Storage Management
Server and
Storage Server
        |
       SAN
        |
ETERNUS storage system
```

〔Configuration B〕

```
Storage Management         LAN
Server and        ──────  Storage Server
Storage Server
       \                 /
            SAN
             |
   ETERNUS storage system
```

Storage Management Server configured on separate server

```
     Storage Management
          Server
              |         LAN
    ┌─────────┴─────────┐
Storage Server     Storage Server
     \                 /
          SAN
           |
  ETERNUS storage system
```
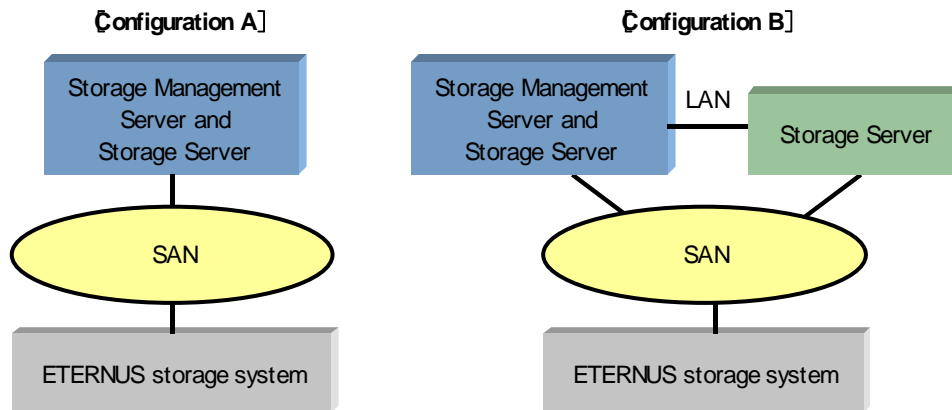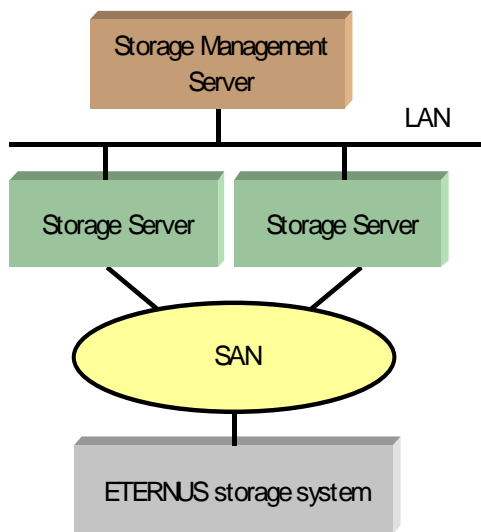
Installation procedure

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

1. Installation of Storage Management Server
2. Installation of Storage Server

Point

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.

When a Tape server is installed

Tape server configured on separate server
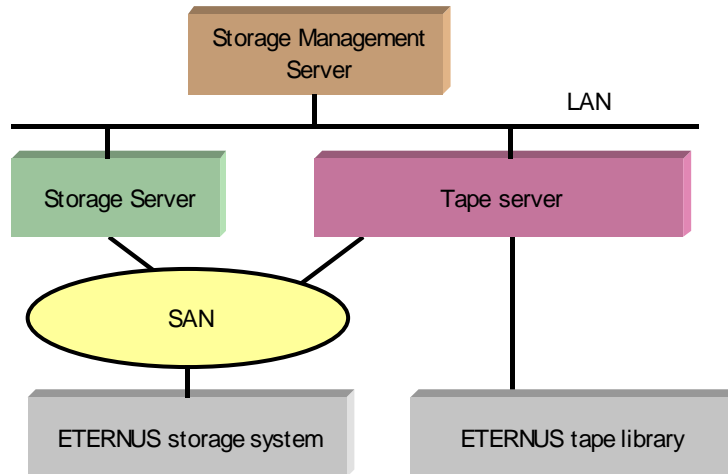
Tape server configured on Storage Management Server
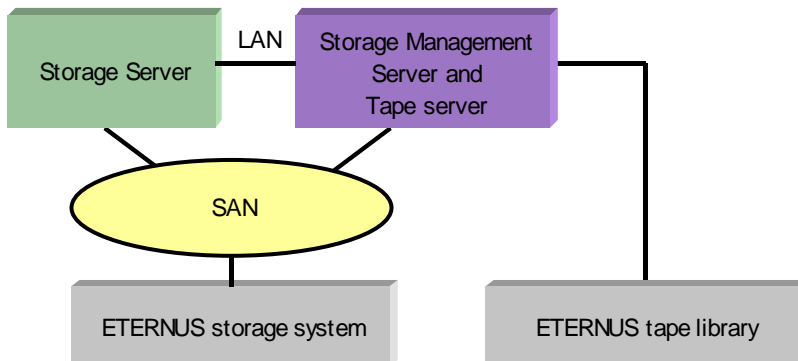
Tape server configured on Storage Server
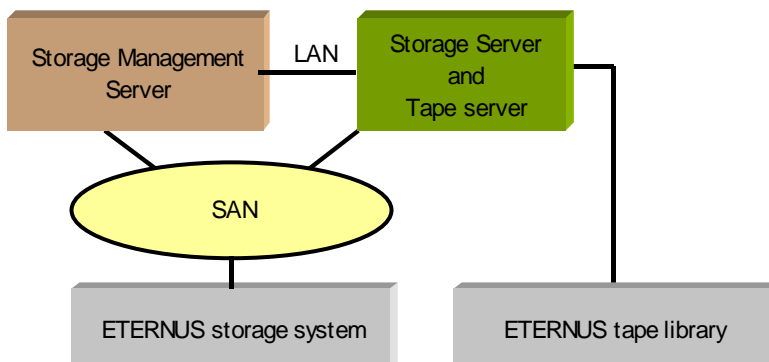
Installation procedure

Use the following procedures to install AdvancedCopy Manager:
1. Installation of Storage Management Server
2. Installation of Storage Server
3. Installation of Tape Server

Note

If the Storage Server is Solaris and following conditions apply, use a configuration in which the Tape server and the Storage Server are on separate servers:
— Synchronous replication operations target areas that include VTOC, and
— 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 "Installation of the Manager" for the installation method.
2. Customize as the Storage Management Server
   Refer to "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 "Installation of the Agent" for the installation method.
2. Customize as a Storage Server
   Refer to "Customization of Storage Server" for the customization method.

Note

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 Tape Server

Use the following procedures to install a Tape server:
1. Install the Tape Manager.
   Refer to "Installation of Tape Manager" for the installation method.
2. Customize as a Tape server.
   Refer to "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.

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.

The PRIMERGY FT model is not supported.

I/O device

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

Note that an AdvancedCopy licence 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: Hardware requirements

Component name	Remarks
ETERNUS2000 models 100 or later, ETERNUS3000 models 100 or later, ETERNUS4000 models 100 or later, ETERNUS6000, ETERNUS8000, ETERNUS GR720, ETERNUS GR730, ETERNUS GR740, ETERNUS GR820, ETERNUS 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	

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(R) 2000 Server SP4 or later
- Microsoft(R) Windows(R) 2000 Advanced Server SP4 or later
- 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

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

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

2.1.2.3 Required software products

The Manager agent of AdvancedCopy Manager will require the following pre-requisite software:

2.1.2.3.1 Web Server Component

When the Web screen is used, verify that one of the following Web servers has been installed. If it has not been installed, install it. If only the command is used without the Web screen used, the Web server need not be installed.
- ● Microsoft(R) Internet Information Services 5.0
- ● Microsoft(R) Internet Information Services 6.0

2.1.2.3.2 Microsoft(R) Windows Scripting Host

Windows Scripting Host is used in the context processing script of the backup and restore/replication commands.
Make sure that the product listed below is installed on the installation destination system. If it is not installed, install it.
If the storage management server at the installation destination does not serve as the storage server, then this software need not be installed.

Method of confirming the installation of Windows Scripting Host

Enter "cscript" on the command prompt line, and check whether Version 5.1 or later is installed. If the software is not installed or the version is earlier than Version 5.1, then download the latest version from the following URL:
http://www.microsoft.com/japan/msdn/scripting/default.aspx

2.1.2.4 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:
- Symfoware Server Enterprise Edition V5.0 or later

If an earlier level of Symfoware was installed, uninstall Symfoware server, then install Symfoware Server Enterprise Edition V5.0 or later.

2.1.2.5 Estimation of Database area

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

2.1.2.5.1 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 below gives the minimum space required for each database. Check that the required capacity is securable. (Enter these specifications with reference to "Details of Non-Cluster Storage Management Server Customization".)

Table: 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: 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.

● 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.

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 of the local computer.
● 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

Note

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

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: Disk space required at installation

Directory	Disk space requirement (Unit: megabytes)	Remarks
Program storing	130(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.

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: Disk space required during operation

Directory	Disk space requirement (Unit: MB)	Operation
Environmental setup	(a+35 x b)/1024	For Backup Management
Environmental setup	(1.1 x c)/1024	For Replication Management
Work	71	Mandatory

a: Number of backup volumes
b: Number of transaction volumes
c: Number of volume pairs for replication management

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

[Port numbers used for each service]
Communication service:1226
Remote access service:9851
Exclusive control service: 9852
Authentication feature 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.

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".

2.1.5.1 Flow of installation

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

Figure: Flow of installation

```
┌─────────────────────────────────────────────────────┐
│                  Insert the CD-ROM                   │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│                Display the initial menu              │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│                Start the installation                │
│ (Select "Install Function for Storage management Server") │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│                Select the install menu               │
│                  (Select "Install")                  │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│              License agreement declaration           │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│            Specify the system to be installed        │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│              Register the startup account            │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│                Register the port number              │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│              Confirm the setup information           │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│              Copy (Install) the resources            │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│          Execute and confirm the created environment │
│   (Non confirmation here will terminate the process  │
│                    immediately.)                     │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│            Configure the database information        │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│            Configure the database access user        │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│            Confirm the configuration settings        │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│                 End of installation                  │
└─────────────────────────────────────────────────────┘
```

2.1.5.2 Installation procedure

Note

Defects occur if the following services are used to install the product, so do not use these services:
  ― Terminal service (use via remote desktop connection)
  ― Telnet server service
Note that if the Storage Management Server is Windows Server 2003, a console session connection to the terminal service can be used. Refer to the following site for the console session connection method:

http://support.microsoft.com/kb/278845

Install AdvancedCopy Manager, using the following procedure:
1. Logon to the system.
    Logon as Administrator on the system where the AdvancedCopy Manager will be installed.
2. Insert the AdvancedCopy Manager CD-ROM (Manager Program DISC1) 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, then click the [Next] button.
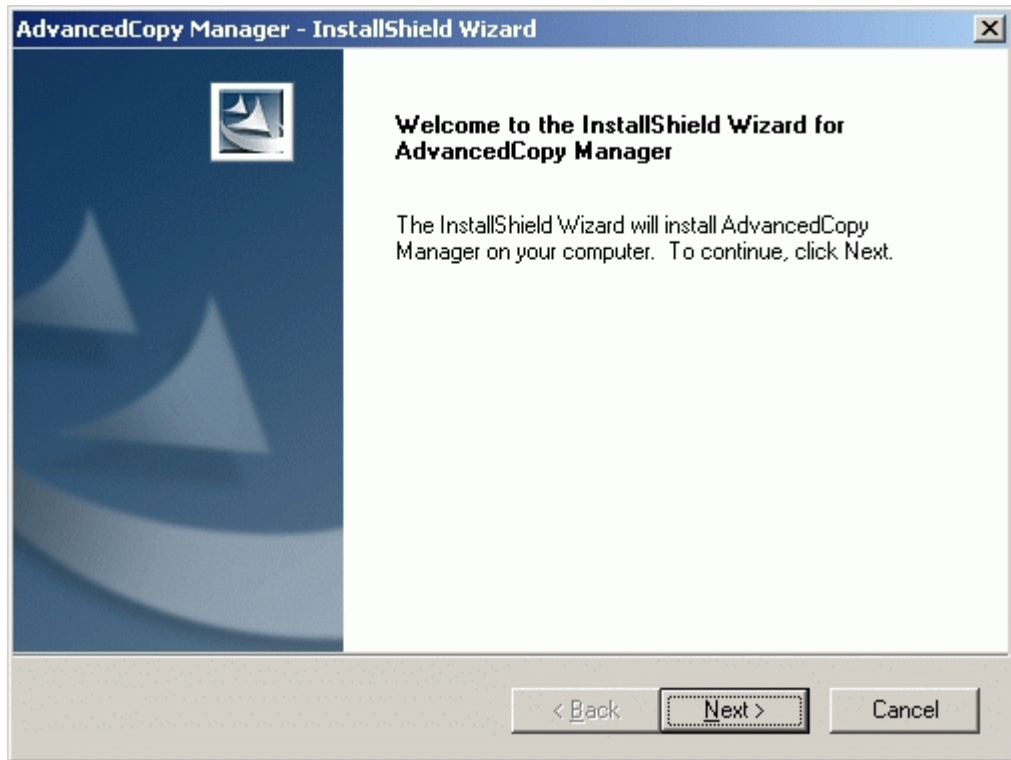
4. Accept the license usage terms and conditions displayed on the [License Agreement] window. Check the displayed contents, and then click the [Yes] button.

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/Authentication feature manager] 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 "Installation of the Manager" 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 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.
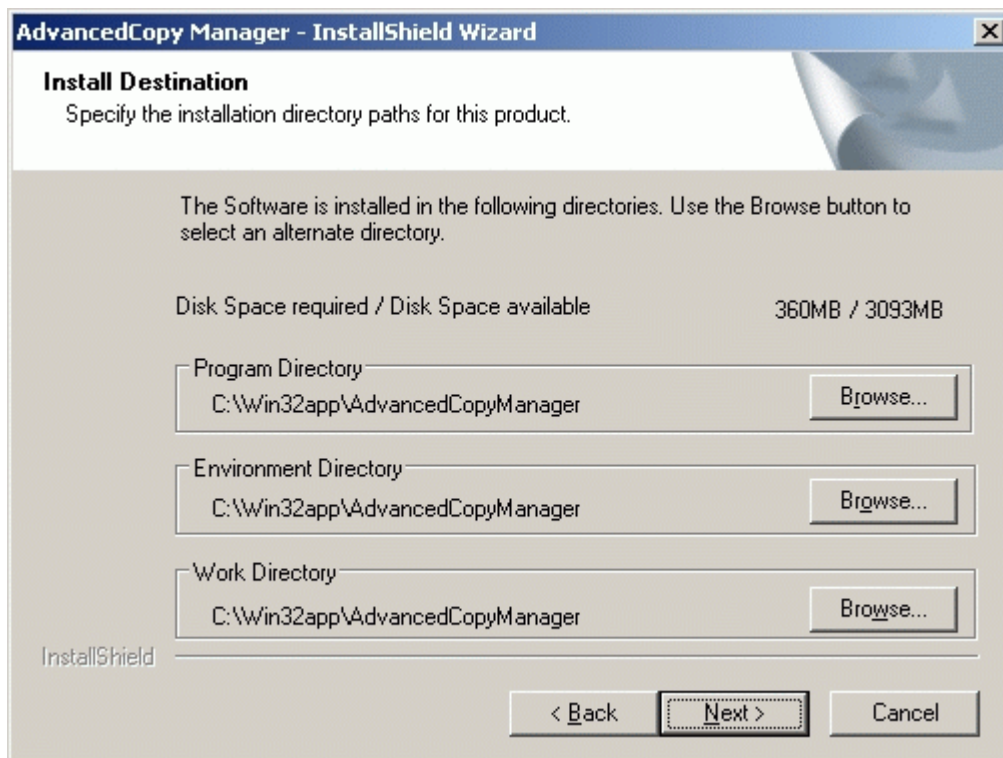
If the [Browse] button is clicked, the following screen is displayed.
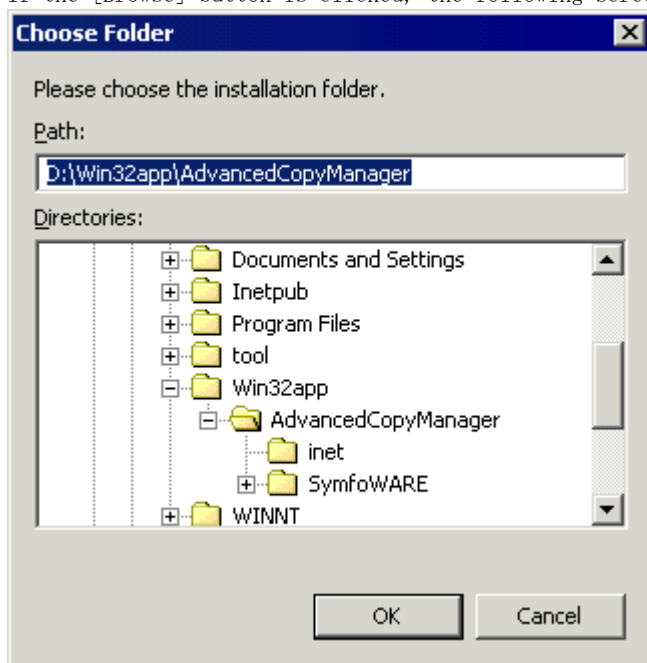
7. Specify the startup account on the [Startup/Authentication feature manager] window.
    Enter the account name belonging to the Administrator's group with a password, and click
    the [Next] button. The account name and password must satisfy all of the validation
    requirements of the Windows OS naming convention the following conditions.

    For details of the startup account, see "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
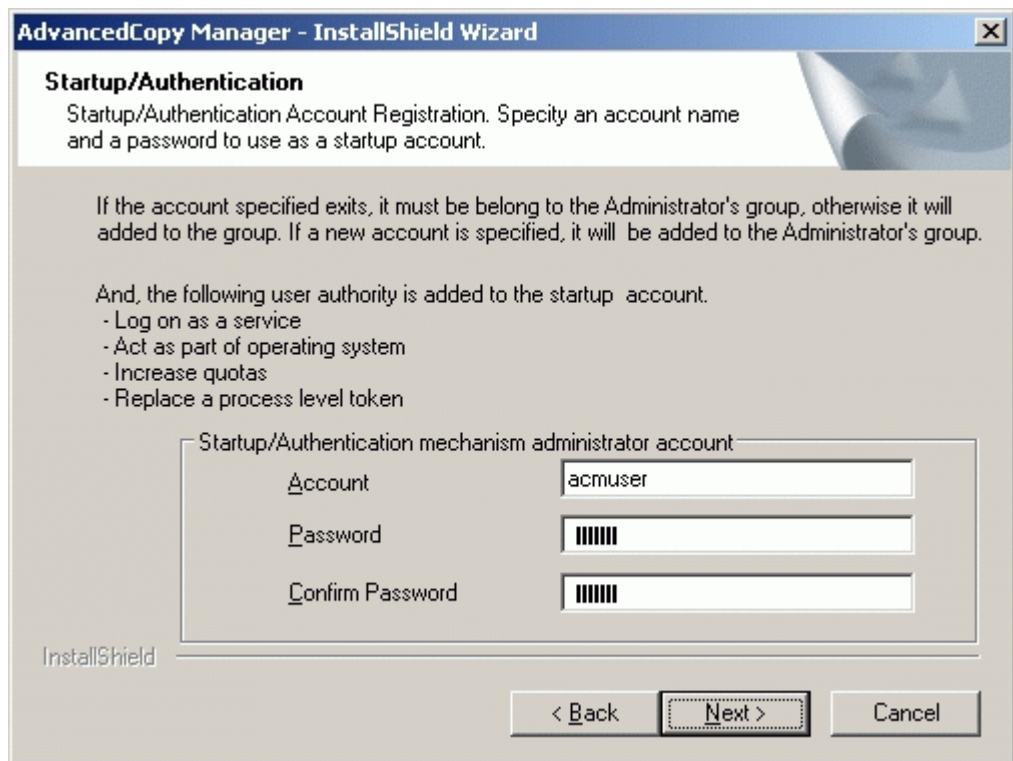
8. Specify the port number to be allocated for the service in the [The registration of the port] window.
    The first displayed numeric value is the recommended value for cluster operation, but it is not necessarily unique. Enter an appropriate port number that suits your operations

    If changing to a value other than the recommended value, enter a number in the following range:
    —From 5001 to 65535

    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.
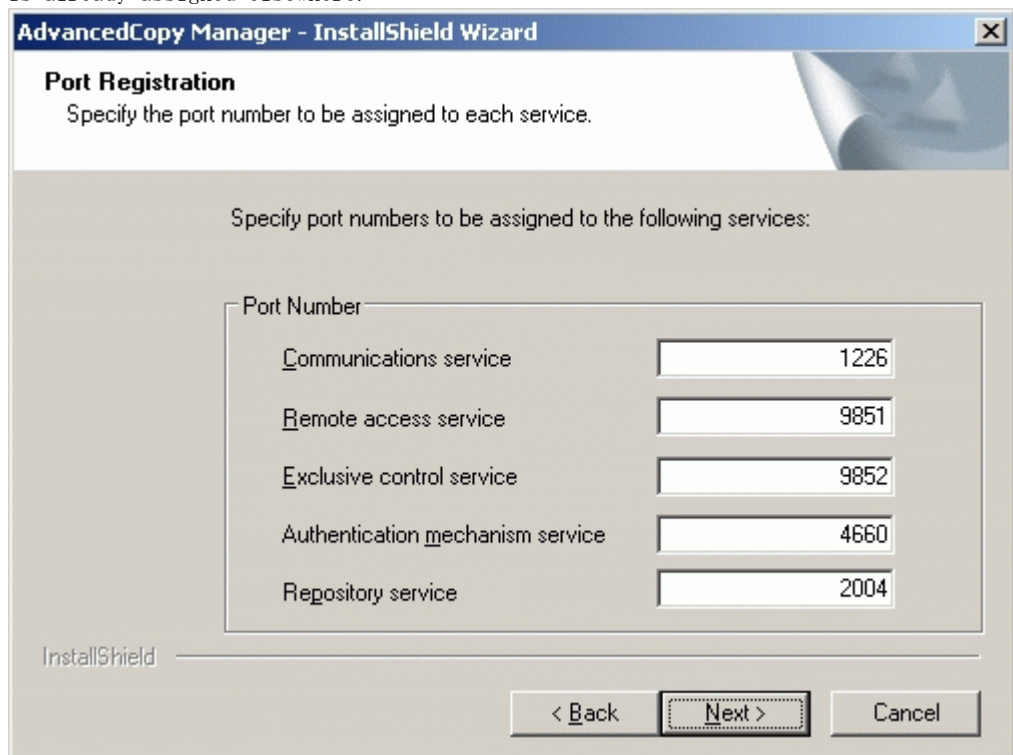
If the AdvancedCopy Manager service name is defined with an ALIAS, the following window will be displayed and the port number specified on the previous screen is ignored. The installation will proceed.
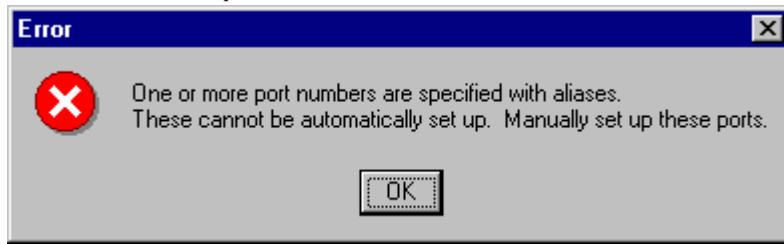
Edit the following file to set the port number manually:

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.
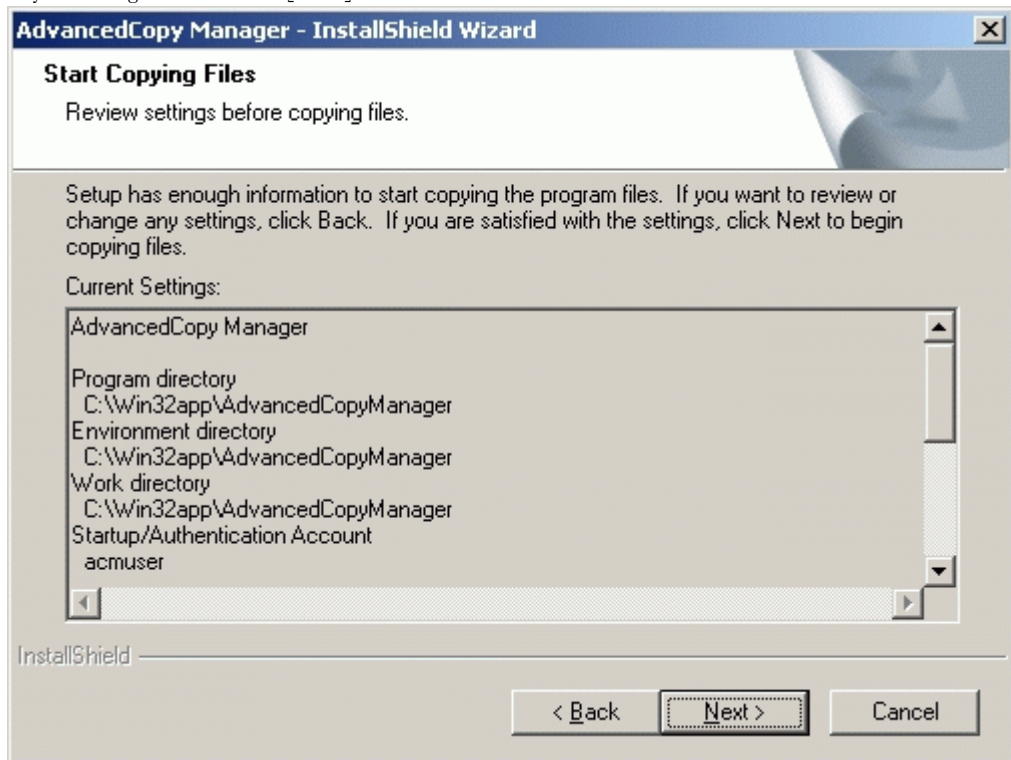
10. Start the copying.
    The file transfer in progress can be viewed on the [Setup Status] window.
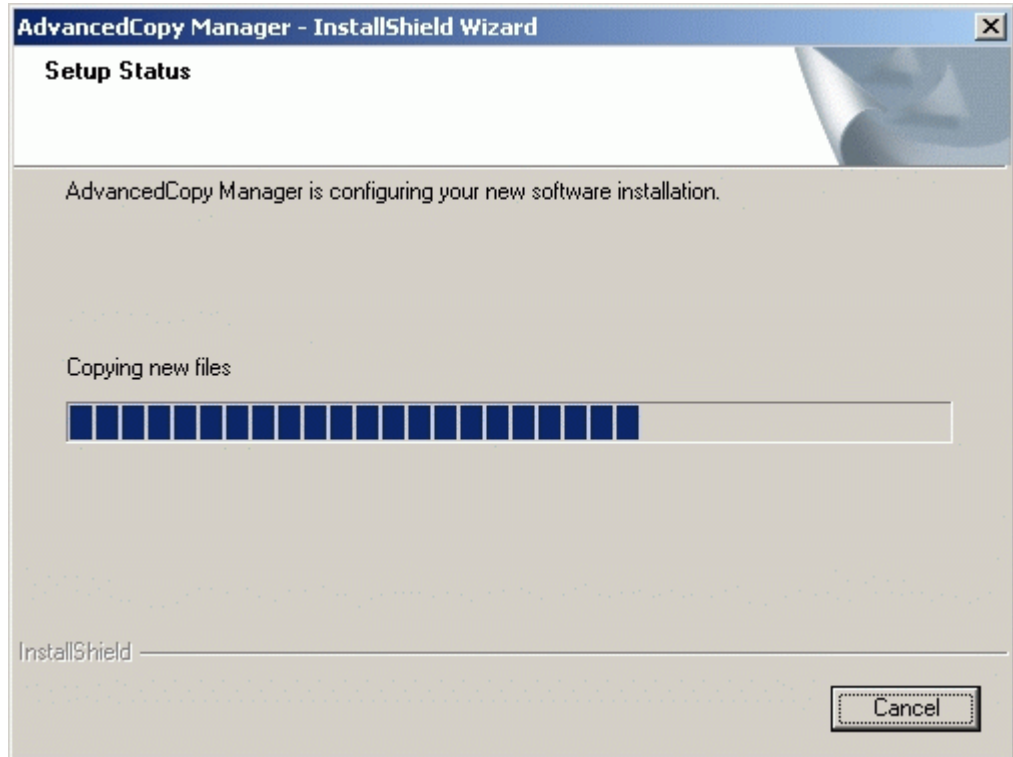
11. Confirm the environment settings.
    In the [Environment setup] dialog click the [Yes] button to set up the environment now
    or [No] to do the settings after rebooting the system. If you click [No], the
    installation-completed window is displayed.
    Click the [End] button and the [Environment setup] window will be automatically displayed
    after restarting the system.
    For cluster operation of the storage management server, click [No].
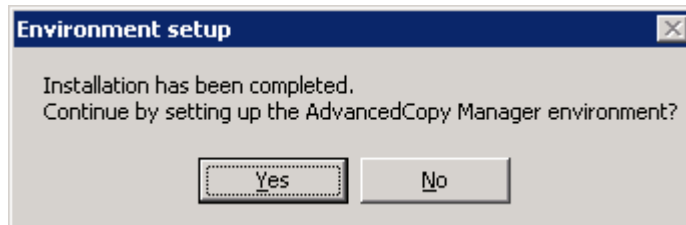
12. Finish the Installer.
    Click the [Finish] button to end the install process.

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 licence 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: Hardware requirements

Component name	Remarks
ETERNUS2000models 100 or later, ETERNUS3000models 100 or later, ETERNUS4000models 100 or later, ETERNUS6000, ETERNUS8000, ETERNUS GR720, ETERNUS GR730, ETERNUS GR740, ETERNUS GR820, ETERNUS 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	

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

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. 3 for x86)
- Red Hat Enterprise Linux ES (v. 3 for x86)
- 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)

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 "Items to check before Installation" for further detail.

Linux

It cannot coexist with the following software.
- ● System environment is v 3
  — Softek AdvancedCopy Manager-M
  — Softek AdvancedCopy Manager-A
  — Symfoware Server Client Function V6.0 or later
  — Symfoware Server Standard Edition V6.0 or later
  — Symfoware Server Connection Manager V6.0 or later

- ● 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 Intel Itanium)
    - Symfoware Server Client Function V9.0 or later
    - Symfoware Server Connection Manager 9.0 or later

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

2.2.2.3 Required Software products

The Manager agent of AdvancedCopy Manager will require the following pre-requisite software:.

2.2.2.3.1 Web Server Component

When the Web screen is used, verify that one of the following Web servers has been installed. If it has not been installed, install it. If only commands are used, rather than Web screens, the Web server need not be installed.

Solaris

- Apache 1.3.4 or later

Linux

- Apache 1.3.23 or later

2.2.2.4 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 or later
● 64-bit version
  - Symfoware Server Enterprise Extended Edition 6.0 or later

If it was installed previously at a lower 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.

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

Linux

● System environment of V3:
  - Symfoware Server Enterprise Edition V6.0 or later
● System environment of V4 for x86:
  - Symfoware Server Enterprise Edition V7.0 or later
● System environment of v.4 for EM64T
  - Symfoware Server Enterprise Edition V8.0.1 or later
● System environment of V4 for Itanium:
  - Symfoware Server Enterprise Extended Edition V7.0 or later
● System environment of Linux 5 (for Intel Itanium)
  - Symfoware Server Enterprise Extended Edition V9.0 or later
   or
  - Symfoware Server Enterprise Edition V9.0 or later
  -

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

2.2.2.5 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.

 Solaris

When configuring a Tape Server on the Storage management server, you must also estimate
the dynamic resources used by Tape Server. For details, see "Dynamic Disk Resources".

2.2.2.5.1 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 provides information on the minimum space required for each database.

Table: 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: 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 "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: 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 "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 "Estimation of Database area"

Table: 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

No.	Directory	Disk space requirement (Unit: MB)	Operation
5	/$DIR3	13+4xd	Cluster operation.
6	/var	70	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: 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: 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 "Static Disk Resource" 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
1. 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  <RETURN>
```

If SystemWalker/StorageMGR is installed, uninstall it using the following methods.
   a) 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.
   b) 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.
   c) 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 FJSVswscm  <RETURN>
```

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

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

```
# rpm -qi FJSVswsts  <RETURN>
```

If it is installed, uninstall it using the following methods.
   a) 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.
   b) 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 FJSVswscm  <RETURN>
```

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 <RETURN>
```

2.2.4.2 Software Installation

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

Solaris

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

```
# shutdown -y -g0 -i0 <RETURN>
```

2. Activate the system in single user mode.

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

*1) 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 <RETURN>
```

3. Mount the local file system

```
# /usr/sbin/mountall - l <RETURN>
```

4. Mount the CD-ROM (Manager Program DISC1) for this software product.

```
# mount -F hsfs -o ro /dev/dsk/c0t4d0s0 CD-ROM-mount-destination <RETURN>   (*2)
```

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

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

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

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.
   — 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            |
|                          13.2                            |
|          All Rights Reserved, Copyright ( c )            |
|                     FUJITSU LIMITED 2008                 |
+----------------------------------------------------------+


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.
Installation of <FJSVswscm> 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 / <RETURN>
# umount CD-ROM-mount-point <RETURN>
```

13. Reboot the system.

```
# /usr/sbin/shutdown - y - i6 - g0 <RETURN>
```

14. Refer to "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 "Installation of Tape Manager" and "Customization of Tape Server" to install the software and set up the 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 DISC1) 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 <RETURN>
```

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

```
# cd CD-ROM mounting-point/mgr-linux/30 <RETURN>
# ./swsetup  <RETURN>
```

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

```
# cd CD-ROM mounting-point/mgr-linux/40 <RETURN>
# ./swsetup  <RETURN>
```

   [System environment of v.4 for Itanium]

```
# cd CD-ROM mounting-point/mgr-linux/40-pq <RETURN>
# ./swsetup  <RETURN>
```

   [System environment of v.5 for Itanium]

```
# cd CD-ROM mounting-point/mgr-linux/50-pq<RETURN>
# ./swsetup  <RETURN>
```

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.
   — 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            |
|                         13.2                               |
|              All Rights Reserved, Copyright(c)             |
|                     FUJITSU LIMITED 2008                   |
+------------------------------------------------------------+


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-13.2-01.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 / <RETURN>
# umount /dev/cdrom <RETURN>
# ejectcdrom <RETURN>
```

11. Reboot the system.

```
# shutdown - r now <RETURN>
```

12. Refer to "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 "Installation of Tape Manager" and "Customization of Tape Server" to install the software and set up the 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: Flow chart of customizing Storage Management Server

```
┌─────────────────────────────────────────────────────┐
│              Reactivate the system                   │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│            Set the database information              │
│  (Only when the database is not set at the installation) │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│           Set the database access user name          │
│  (Only when the database is not set at the installation) │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│            Confirm the setting information            │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│              Execute the database setup              │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│                 Set the Web server                   │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│                 Activate the service                 │
└─────────────────────────────────────────────────────┘
```
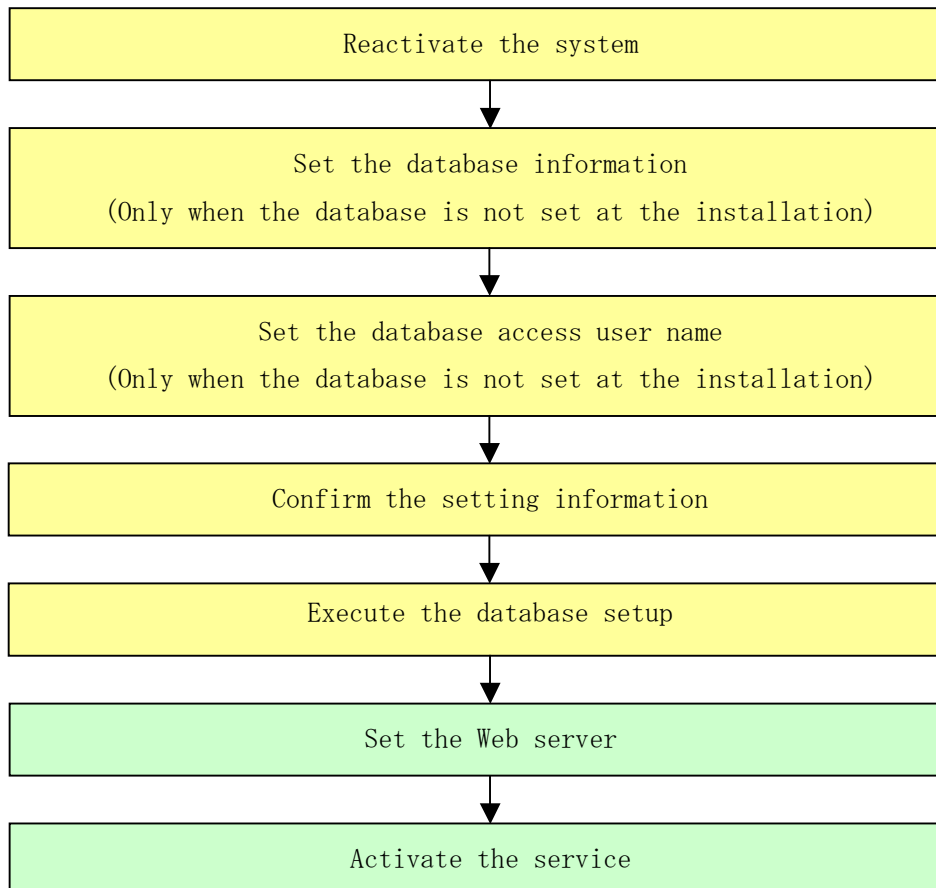
3.1.2 Details of Non-cluster Storage Management Server Customization

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.
Refer to "Specifics of Storage Management Server Transaction, Storage Server Transaction and Tape server transaction Customization" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster environment" for information on Configuring the cluster server environment.

Perform the following steps:
1. Restart the system in order to make it the installed environment.
   If the system has already been rebooted prior to the installation of Manager agent of AdvancedCopy Manager, go to the step 2.

Note

> When logging on to the system, log on using an account that belongs to an 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.

Note

Executing this process with either of the services listed below causes output of a message such as "Database name definition failed" and normal operations are not possible.
Do not use these services:
   — Terminal service (via a remote desktop connection)
   — Telnet server service
   However, if the Storage Management Server is running Windows Server 2003, the Terminal Service can 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/278845

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.

  ![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.
  For cluster operation of the Storage Management Server, click [Cancel].

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

   IP address and repository access user settings   ✕

   Specify the IP address of the Storage management server.

   ┌ IP address ─────────────────────────────
   │   ┌─────────────────────────────────┐
   │   │ 10 . 10 . 10 . 10 │
   │   └─────────────────────────────────┘
   └──

   Specify the name of a user who will access the repository and a password.

   ┌ Repository access user ─────────────────────
   │
   │   User   │repouser   │
   │
   │   Password   │********   │
   │
   └──

                              [Settings]   [Cancel]

   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.

   ![Point icon]
   Point

   — 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 to it.
   — 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.
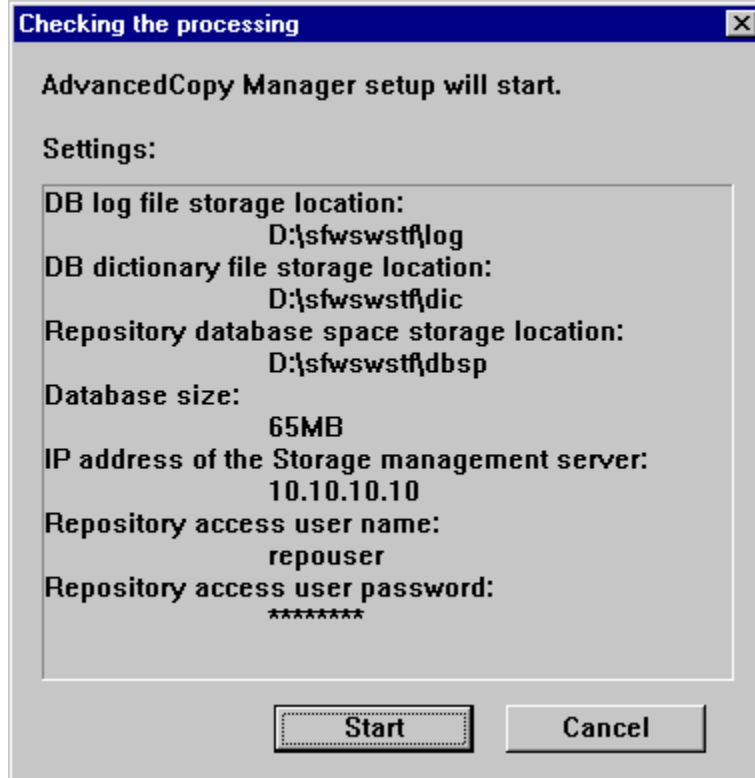
5. The DB Setup processing started.
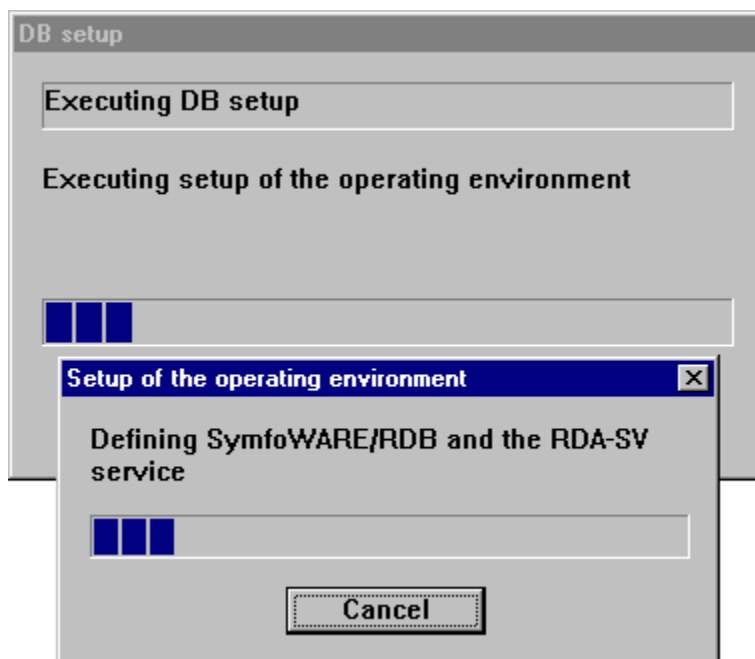
6. The DB Setup processing is completed.
   The DB Setup completion window is displayed; click the [Close] button.
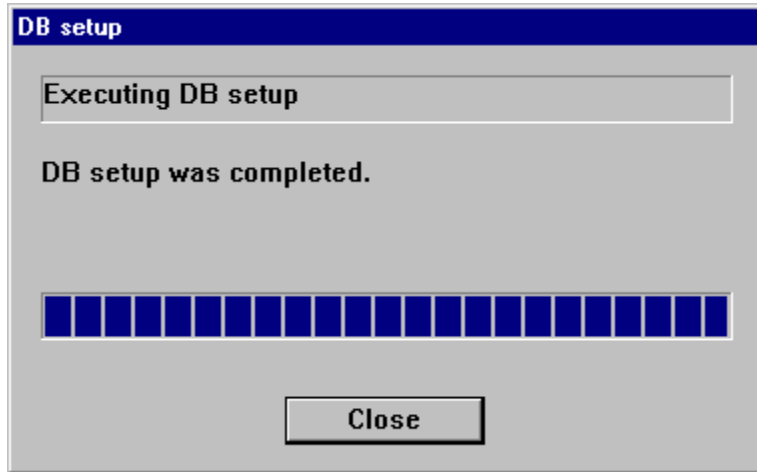
7. Setup the Web server.
   The following confirmation dialog box is displayed. If you are using the Web client
   screen, click the [Yes] button and set the Web server to Microsoft Internet Information
   Services IIS.
   If the relevant command is used at the command line (I.E., without the Web client),
   click the [No] button.

   Set the following virtual directory names in the Web server:

Table: Virtual directory types set in the Web server

Virtual directory	Directory name	Property of virtual directory
Swstorage	program-directory¥inet¥wwwroot	Addition of "read"
swstorage-j	program-directory¥java	Addition of "read"
swstorage-cgi	program-directory¥inet¥cgi	Addition of "Execute permissions" (CGI script is stored.)
swstorage-d	environment-setting-directory¥etc¥data	Addition of "read"

Note
— If version 6.0 of Internet Information Service is installed, then the confirmation
  dialog box shown below opens when the [Yes] button in the Confirmation of Web Server
  configuration dialog box is clicked. To enable execution of CGI scripts, click
  the [Yes] button and set up the Web server.
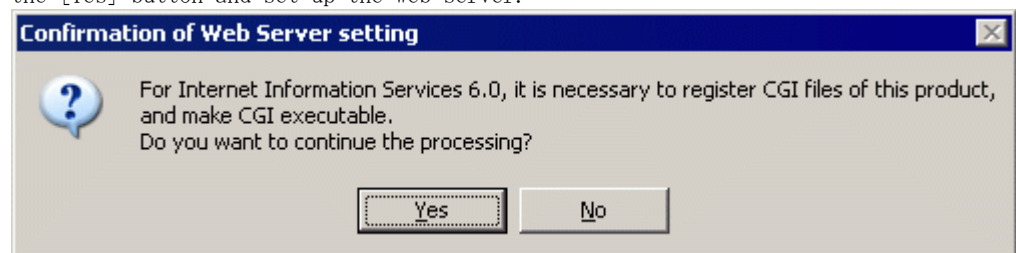
— If Windows SharePoint Services have been installed in a Windows Server 2003 R2 environment, SharePoint server management configuration and IIS configuration must be performed in order to use the Web client. Refer to "Running the Software in an Environment where Windows SharePoint Services have been Installed" for more information about these settings.

8. 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 Windows Server 2003 Service Pack 1 or Windows Server 2003 R2 has been applied
   If Windows Server 2003 Service Pack 1 or Windows Server 2003 R2 has been applied, see "Running the Software in an Environment Where the Windows Firewall Is Enabled" and configure the Windows firewall settings accordingly.

9. Web server MIME configuration
   A file may need to be downloaded to use the Web client. Therefore, if the [Yes] button selected in step 7 and the Web server is set to IIS, configure the following so that the file can be loaded.
   — For Microsoft Internet Information Service 5.0
   Configure the settings by performing the following steps:
   1) Select [Start]-[Programs]-[Management Tool]-[Internet Service Manager].
   2) From the displayed tree, select [Internet Information Service]-[Machine Name], then right-click to open the pop-up menu, and select [Properties].
   3) In the computer MIME map in the Internet Information Server tab, click the [Edit] button.
   4) Select the [Add] button and enter the following items:
       Related extension : policy
       Detail type (MIME): application/x-swstf
   5) Restart the service "IIS Admin Service." When this service stops, World Wide Web Publishing Service also stops. Therefore, always start World Wide Web Publishing Service with IIS Admin Service.
   — For Microsoft Internet Information Service 6.0
   Specify the settings by performing the following steps:
   1) Select [Start] - [All Programs] - [Administrative Tools] - [Internet Information Services(IIS) Manager].
   2) Select [Internet Information Services (IIS) Manager] - [Machine Name] in the displayed tree, and then select [Properties] from the popup menu displayed by right-clicking the selection.
   3) Click the [MIME Types...] button in [MIME types] of the [Internet Information Services] tag.
   4) Click the [New...] button, and input as follows.
   Extension: policy
   MIME type: application/x-swstf
   5) Restart the IIS Admin Service. The World Wide Web Publishing Service must also be restarted as part of the restart for of the IIS Admin Service.

10. 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 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 Web window.
Exclusive control service	9852/tcp	This service is used for communications with client machines that use the Web window.
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

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.

3.2 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

Set up the Storage Management Server according to the following procedure:

Figure: Flow of customizing Storage Management Server

```
┌─────────────────────────────────────────────────────────────┐
│                Set up the /etc/services                      │
└─────────────────────────────────────────────────────────────┘
                              │
                              ▼
┌─────────────────────────────────────────────────────────────┐
│                Set up the repository                         │
└─────────────────────────────────────────────────────────────┘
                              │
                              ▼
┌─────────────────────────────────────────────────────────────┐
│                Set up the Web server                         │
└─────────────────────────────────────────────────────────────┘
                              │
                              ▼
┌─────────────────────────────────────────────────────────────┐
│   Set up the daemon so that it is activated automatically    │
└─────────────────────────────────────────────────────────────┘
```
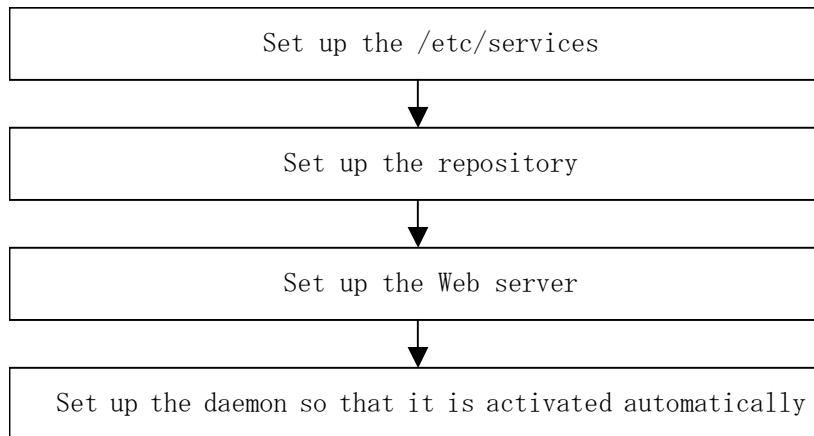
3.2.2 Configuring the port number (/etc/services file)

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

Figure: 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 in Figure above have already been used in the installed system, assign other numbers of available ports.

Note 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: 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 Web window.
semswstf	9852/tcp	This service is used for communications with client machines that use the Web window.
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 Figure 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: 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. Estimation of database area
2. Directory creation
3. Kernel parameter tuning
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 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	Addition

*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 "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)

— 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: Tuning values for resource control

Resource	Parameter	Required value	Standard configuration	Privilege level
Shared memory	project.max-shm-memory	2150000	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

Resource	Parameter	Required value	Standard configuration	Privilege level
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 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:
#
```

3.2.3.3.2 Linux Platform

The Table 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 icon]

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
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: 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..
  Refer to "Specifics of Storage Management Server Transaction, Storage Server Transaction and Tape server transaction Customization" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for cluster environment" for information on Configuring the cluster server environment.
  In advance, refer to "Estimation of database area" "Directory creation" and "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
```

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 "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 "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
    "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 "Directory creation". Then, enter the repository data size that has been estimated in "Estimation of a 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.

    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.

#
```

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 Configuring up the Web Server

The following configuration needs to be made to display data from the Web client screen.
If command mode is to be used, the configuration does not need to be made to display data from
the WEB client screen.
● Web server user settings
● Automatic startup of web server

3.2.4.1 Web server user settings

The web server user settings are dependent on which web server is to be used.
The following sections explain how to set up the directory (alias) for each major web server.
The following example of configuration settings is explained with the default installation
destination and filenames of each web server. If the Web server is used with custom
(nondefault) settings, be sure those settings conform to the installation destination and file
name used.

        A symbolic link exists under the real directory set for an alias.
        Therefore, enable the symbolic link under the real directory when entering detailed
        settings for the alias.

3.2.4.1.1 Setting up Apache

        This section provides an example of setting up the directory (alias) for Apache.

  Solaris

        Add the following lines to configuration file "/etc/apache/httpd.conf."
        Lines to be added:

```
Alias       /swstorage/      /opt/swstorage/inet/wwwroot/
Alias       /swstorage-j/    /opt/swstorage/java/
Alias       /swstorage-d/    /opt/swstorage/java/data/
ScriptAlias /swstorage-cgi/  /opt/swstorage/inet/cgi-bin/
```

        Add the following line to configuration file "/etc/apache/mime.types". If "policy" has
        already been registered, the line need not be added.

```
application/x-swstf-policy    policy
```

Linux

The following records are added in a configuration file "/etc/httpd/conf/httpd.conf."
Lines to be added:

```
Alias       /swstorage/      "/opt/swstorage/inet/wwwroot/"
Alias       /swstorage-j/    "/opt/swstorage/java/"
Alias       /swstorage-d/    "/opt/swstorage/java/data/"
ScriptAlias /swstorage-cgi/  "/opt/swstorage/inet/cgi-bin/"
```

The following records are added in a configuration file "/etc/mime.types." If "policy"
has already been registered, this item need not be set.

```
application/x-swstf-policy    policy
```

Note Linux

The Web content displayed in the browser may have garbled characters when the
AddDefaultCharset directive definition is set in /etc/httpd/conf/httpd.conf and
the character code specified in the AddDefaultCharset directive definition is not
UTF-8:
        AddDefaultCharset UTF-8
In this event, change the character encoding configuration of the browser to
Auto-Select, and redisplay the content.

3.2.4.2 Configuration up automatic startup of the web server

The Web server must be operating before it can be used. Therefore, Fujitsu recommends that
the web server service be started automatically when the Storage Management Server machine
is started.
For details on automatic starting of the machine, refer to the manual of the web server program
to be used.

3.2.5 Automatic Activation of Daemons

Accessing data from the web screen in the Storage Management Server requires the activation
of several daemons of the Storage Management Server. However, the system determines the setup
so that all the daemons are automatically activated during database setup and installation.
However, separately set up the web server so that it starts up automatically. For more
information on setting up the web server, refer to the manual of the relevant web server.

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.

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 licence 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: Hardware requirements

Component name	Remarks
ETERNUS2000 (models 100 or more), ETERNUS3000 (models 100 or more), ETERNUS4000 (models 100 or more), ETERNUS6000, ETERNUS8000, ETERNUS GR720, ETERNUS GR730, ETERNUS GR740, ETERNUS GR820, ETERNUS 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(R)2000 Server SP4 or later
- Microsoft(R) Windows(R)2000 Advanced Server SP4
- 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

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.

4.1.2.3 Required software products

The following software products are essential prerequisites for the installation and operation of the Agent of AdvancedCopy Manager installed.

4.1.2.3.1 Microsoft(R) Windows Scripting Host

Windows Scripting Host is used in the context processing script of the backup and restore/replication commands.
Make sure that the product listed below is installed on the installation-destination system. If it is not installed, install it.

Method of confirming the installation of Windows Scripting Host

Enter cscript at a command shell prompt, and check whether Version 5.1 or later is installed. If the software is not installed or the version is earlier than Version 5.1, then download the latest version from the following URL:
http://www.microsoft.com/japan/msdn/scripting/default.aspx

4.1.3 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 the AdvancedCopy Manager. To specify the "startup account", the user must satisfy the following conditions:
● The user belongs to the Administrators group of the local computer.
● The indefinite password 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 the 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 Essential Resources

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

4.1.4.1 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: 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.

4.1.4.2 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: Disk space requirement during operation

Directory	Disk space requirement (Unit: megabytes)	Operation
Environmental setup	(a+35 x b)/1024	For Backup Management
Environmental setup	(1.1 x c)/1024	For Replication Management
Work	35	-

a: Number of backup disks
b: Number of transaction disks
c: Number of volume pairs for replication management

4.1.4.3 Memory Requirements

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

4.1.5 Installation

This section explains the installation method of the Agent 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

(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.

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".

4.1.5.1 Flow of installation

A flowchart of the installation process is shown below:

Figure: Flow of installation

```
┌──────────────────────────────────────────────┐
│            Insert the CD-ROM                   │
└──────────────────────────────────────────────┘
                     │
                     ▼
┌──────────────────────────────────────────────┐
│          Display the initial menu              │
└──────────────────────────────────────────────┘
                     │
                     ▼
┌──────────────────────────────────────────────┐
│           Start the installation               │
│  (Select "Install Function for Storage Server")│
└──────────────────────────────────────────────┘
                     │
                     ▼
┌──────────────────────────────────────────────┐
│          Select the install menu               │
│             (Select "Install")                 │
└──────────────────────────────────────────────┘
                     │
                     ▼
┌──────────────────────────────────────────────┐
│      Accept the license terms and conditions   │
└──────────────────────────────────────────────┘
                     │
                     ▼
┌──────────────────────────────────────────────┐
│       Specify the system to be installed       │
└──────────────────────────────────────────────┘
                     │
                     ▼
┌──────────────────────────────────────────────┐
│          Register the startup account          │
└──────────────────────────────────────────────┘
                     │
                     ▼
┌──────────────────────────────────────────────┐
│           Register the port number             │
└──────────────────────────────────────────────┘
                     │
                     ▼
┌──────────────────────────────────────────────┐
│          Confirm the setup information         │
└──────────────────────────────────────────────┘
                     │
                     ▼
┌──────────────────────────────────────────────┐
│         Copy (Install) the resources           │
└──────────────────────────────────────────────┘
                     │
                     ▼
┌──────────────────────────────────────────────┐
│             End of installation                │
└──────────────────────────────────────────────┘
```
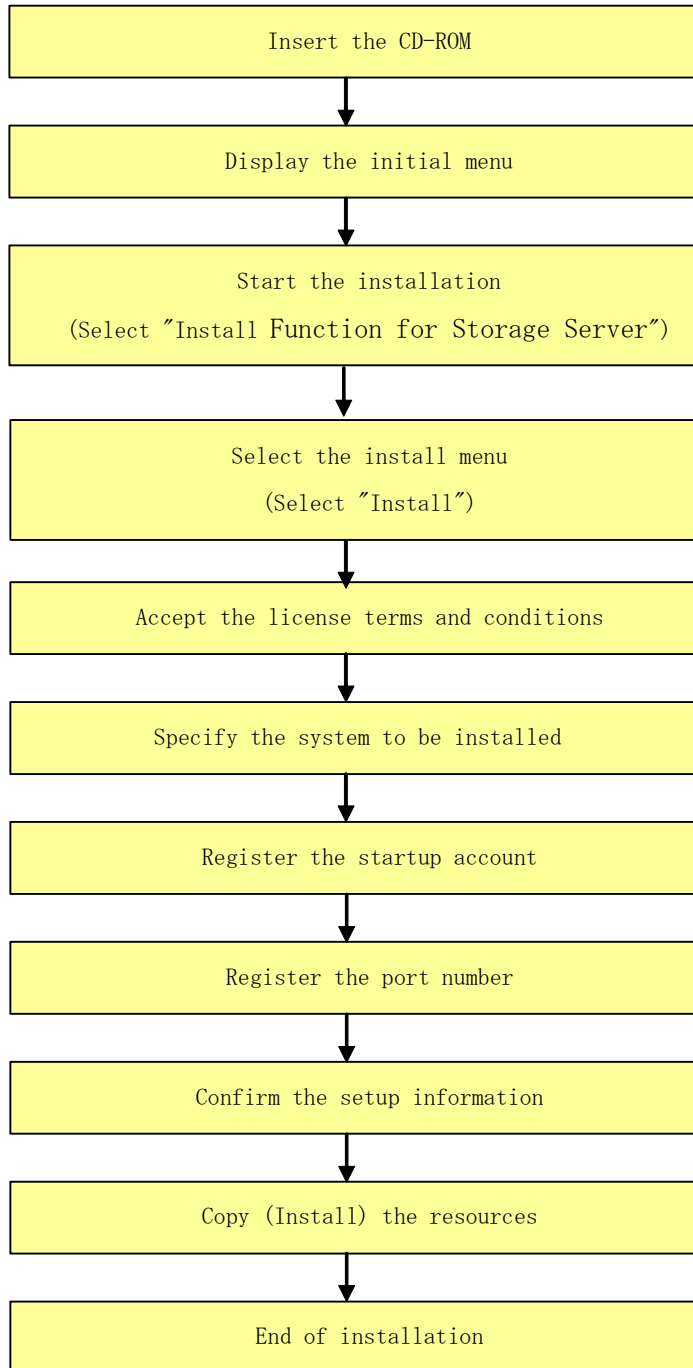
4.1.5.2 Installation procedure

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

1. Logon as Administrator

2. Insert the AdvancedCopy Manager CD-ROM (Agent Program DISC2) into the CD drive and the initial window will be displayed.
   Click [Install Function for storage server].

3. The next window is displayed. Check the displayed contents, then click the [Next] button.

4. Accept the license 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/Authentication feature manager] 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: A warning dialog is displayed and the [Start Copying Files] window is displayed.

Refer to "Installation of the Agent" 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 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) must not be specified.
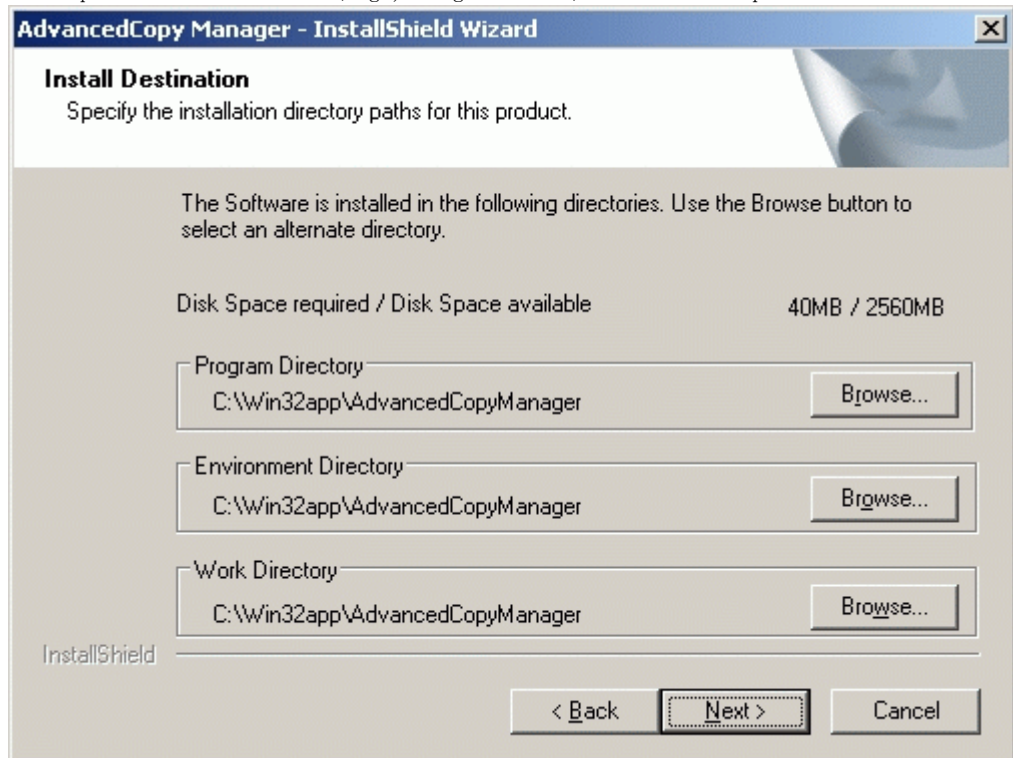
If the [Browse] button is clicked, the following screen is displayed.
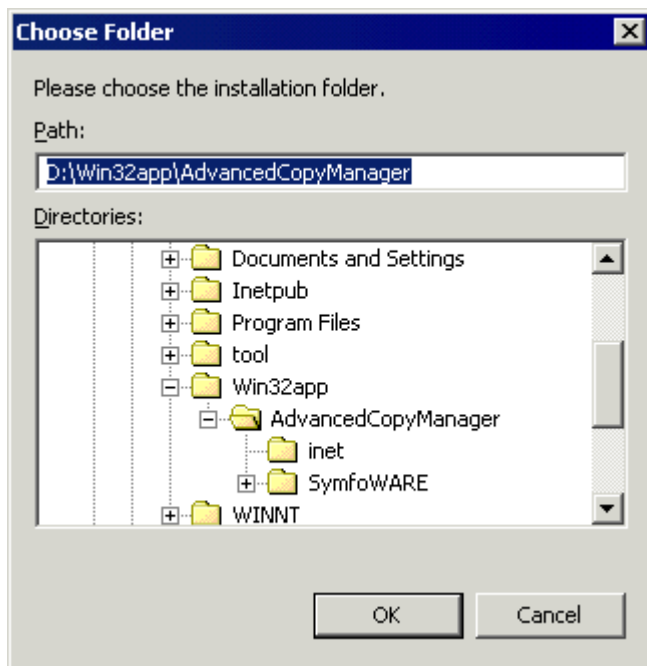
7. Specify the startup account in the [Register a Startup Account] window.
   Input the account's name belonging to the Administrator's group with a password, and
   click the [Next] button. The account name and password must satisfy must satisfy all
   requirements of the file system naming convention supported by the Windows OS

   For details of the startup account, see "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
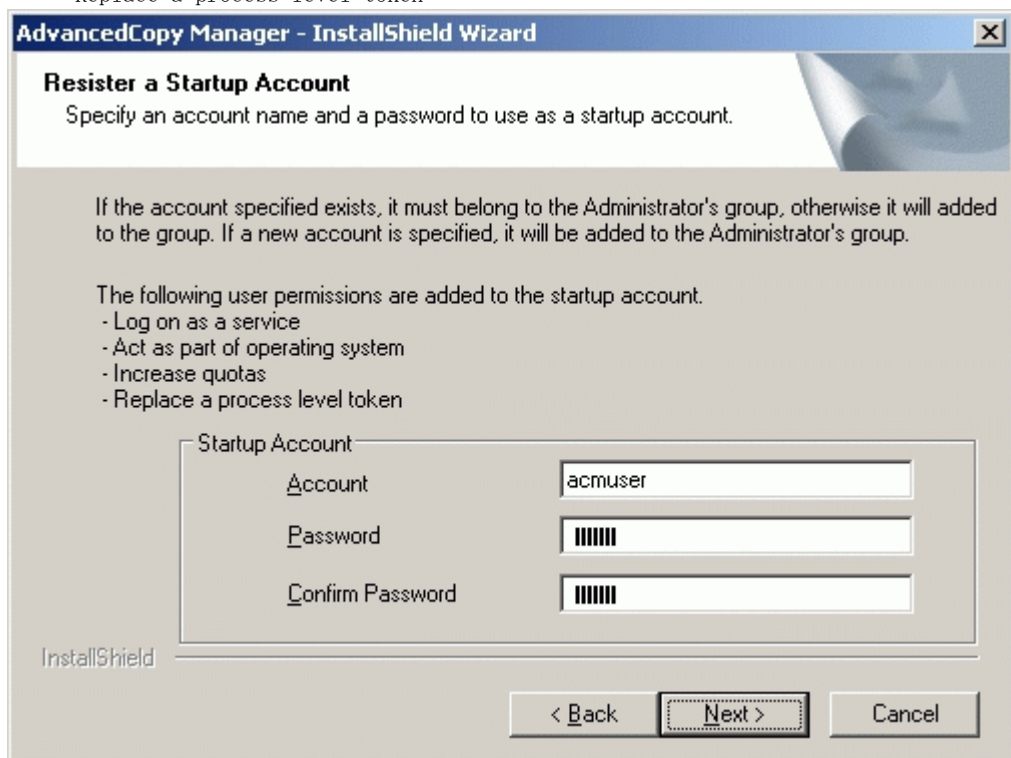
8. Specify the port number to be allocated for the service in the [Port Registration] window.
    If changing the port number from the recommended value, enter a number in the following
    range:
    ― 5001 to 65535
    The first displayed value is the recommended value for a non cluster environment, and
    does not necessarily need to be a unique number.
    For cluster operations, 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.
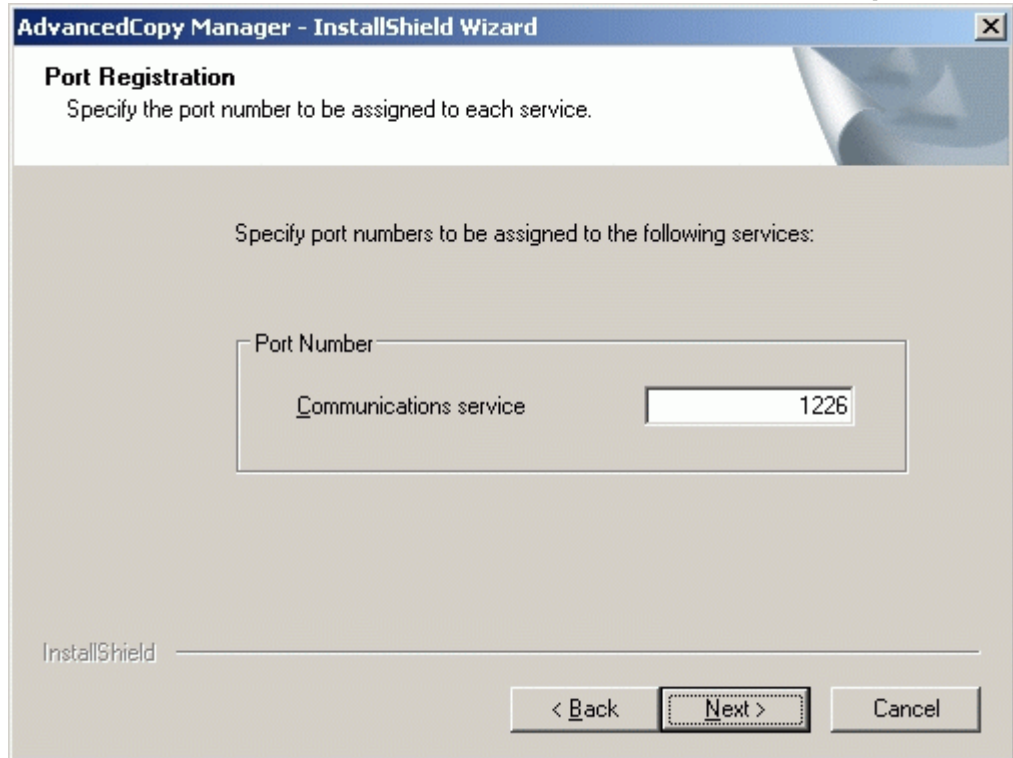
    If the AdvancedCopy Manager service name is defined with an ALIAS, the following window
    will be displayed and the port number specified on the previous window is ignored.
    The installation however will proceed.
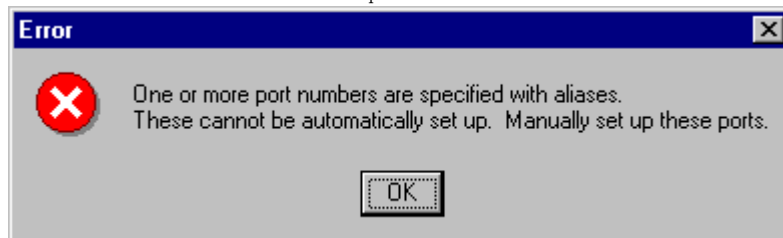
9. Confirm the settings on the [Start Copying Files] window. If the information entered is correct and no mistakes have been detected, click the [Next] button. To correct or modify any settings click the [Back] button.
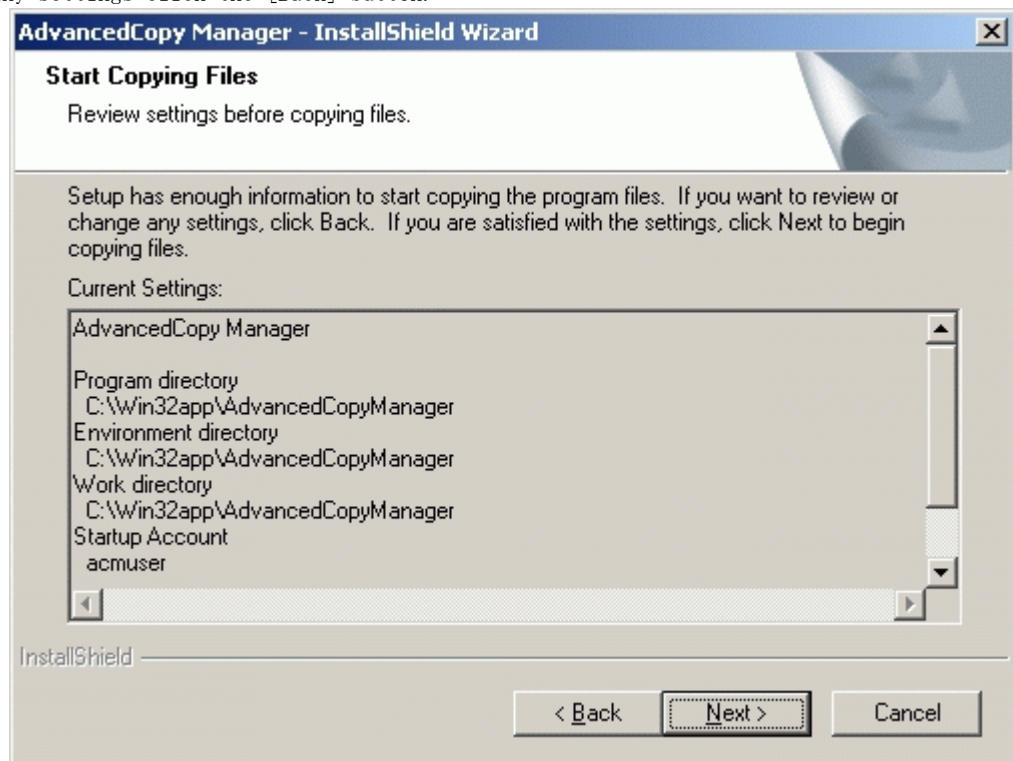
10. The copy process will begin, and its progress will be displayed on the [Setup Status] window.
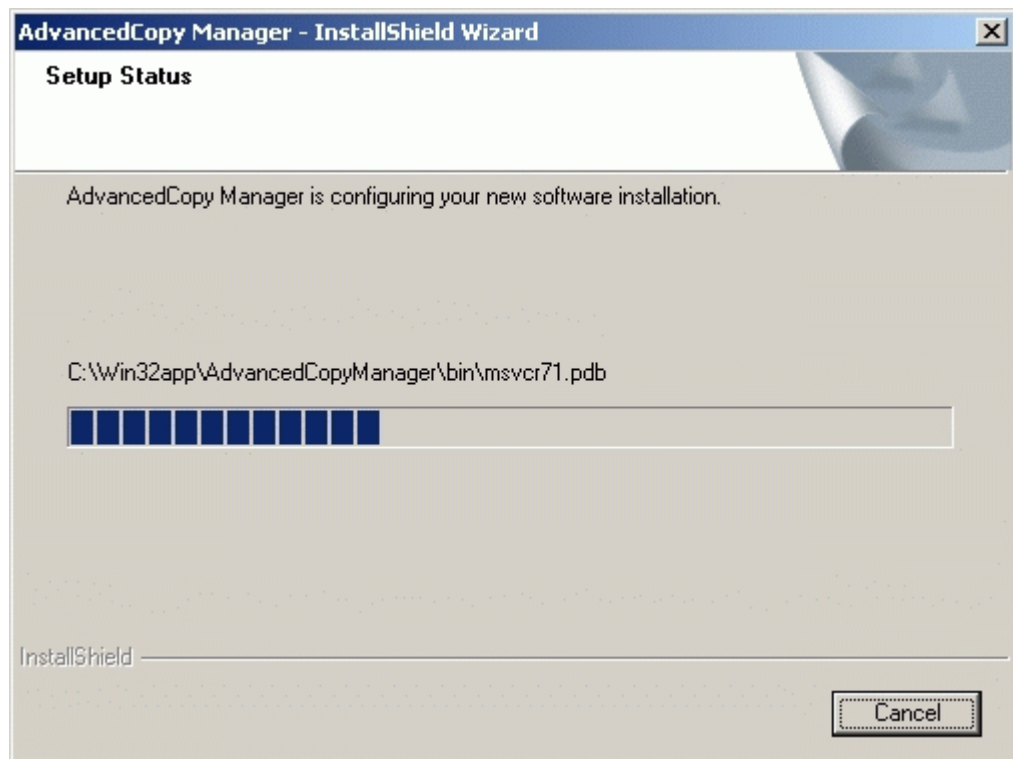
11. To complete the installation, click the [Finish] button.
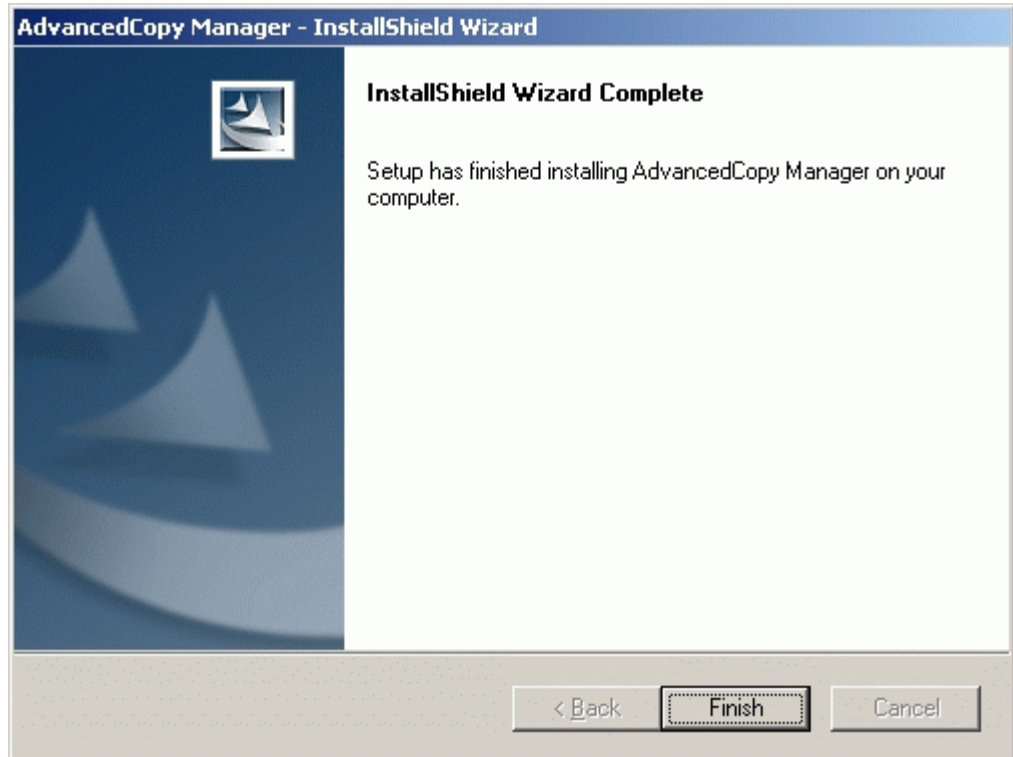
4.2 Solaris/Linux/HP-UX/AIX Platform

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 licence 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: Hardware requirements

Component name	Remarks
ETERNUS2000 (models 100 or more), ETERNUS3000 (models 100 or more), ETERNUS4000 (models 100 or more), ETERNUS6000, ETERNUS8000, ETERNUS GR720, ETERNUS GR730, ETERNUS GR740, ETERNUS GR820, ETERNUS 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.3 for x86)
— Red Hat Enterprise Linux ES (v.3 for x86)
— 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) *Action with 32-bit compatibility modes
— Red Hat Enterprise Linux ES (v.4 for EM64T) *Action with 32-bit compatibility modes
— Red Hat Enterprise Linux AS (v.4 for Itanium)
— Red Hat Enterprise Linux (v.5 for x86)
— Red Hat Enterprise Linux (v.5 for Intel64) *Action with 32-bit compatibility modes
— Red Hat Enterprise Linux (v.5 for Itanium)

HP-UX

— HP-UX 11.00, 11i, v2 (PA-RISC)
— HP-UX 11i V2.0 (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 edition 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 edition of "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 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 filesystem may require to be reconfigured if there is insufficient free space.

Table: Disk space requirement at installation

No.	Directory	Disk space requirements (Unit: megabytes)				Remarks
		Solaris	Linux	HP-UX	AIX	
1	/$DIR1	130	120	120	200	
2	/$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 the initial value for install directory name of an install directory for specification of a directory name.
For Linux, refer to the initial value for install directory name of an install directory for specification of a directory name.
For HP-UX, refer to the initial value for install directory name of an install directory for specification of a directory name.
For AIX, refer to the initial value for install directory name 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 "Static Disk Resources".

Table: 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 "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.

<div align="center">Table: Amount of memory required during operation</div>

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.

<div align="center">Table: Swap space requirement during operation</div>

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 "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  <RETURN>
```

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 "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 FJSVswscm  <RETURN>
```

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 <RETURN>
```

Uninstall it if the package is shown to be installed by the output of this command:
a) 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 "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 FJSVswscm <RETURN>
```

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 "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.
a) If described AdvancedCopy Manager in /opt/swstorage/setup/stg/swsetup.ini, AdvancedCopy Manager is installed.
Uninstall with reference to "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 <RETURN>
```

2. Activate the system in single user mode.

```
[ok prompt] boot -s <RETURN>
```

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 <RETURN>
```

3. Mount the local file system.

```
# /usr/sbin/mountall -l <RETURN>
```

4. Mount the CD-ROM(Agent Program DISC2) for this software product.

```
# mount -F hsfs -o ro /dev/dsk/c0t4d0s0 CD-ROM mount destination <RETURN>  (*)
```

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

5. When you execute the installation command (swsetup) 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 "Solaris Platform" of "Program Components of AdvancedCopy Manager"

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

6. If SystemWalker/StorageMGR, AdvancedCopy Manager or ETERNUS SF AdvancedCopy Manager has been installed, either of the following messages are 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.
    — 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.

```
# ./swsetup
swsetup: Installer is preparing for installation...
+------------------------------------------------------------+
|              ETERNUS SF AdvancedCopy Manager              |
|                           13.2                            |
|              All Rights Reserved, Copyright (c)           |
|                        FUJITSU LIMITED 2008              |
+------------------------------------------------------------+


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]
```

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 mounting point <RETURN>
```

14. Reboot the system.

```
# /usr/sbin/shutdown -y -i6 -g0 <RETURN>
```

15. For details on how to set up the environment, see "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 DISC2) 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 <RETURN>
```

3. When you execute the installation command (swsetup) 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 "Linux Platform" of "Program Components of AdvancedCopy Manager"
[System environment of v. 3 for x86]

```
# cd CD-ROM mounting-point/agent/linux/30 <RETURN>
# ./swsetup  <RETURN>
```

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

```
# cd CD-ROM mounting-point/agent/linux/40 <RETURN>
# ./swsetup  <RETURN>
```

[System environment of 5 for x86 and 5 for Intel64]

```
# cd CD-ROM mounting-point/agent/linux/50 <RETURN>
# ./swsetup  <RETURN>
```

[System environment of v. 4 for Itanium]

```
# cd CD-ROM mounting-point/agent/linux/40-pq <RETURN>
# ./swsetup  <RETURN>
```

```
# cd CD-ROM mounting-point/agent/linux/50-pq <RETURN>
# ./swsetup  <RETURN>
```

4. 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.
   — 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.

```
# ./swsetup
swsetup: Installer is preparing for installation...
+-----------------------------------------------------------+
|              ETERNUS SF AdvancedCopy Manager              |
|                          13.2                             |
|              All Rights Reserved, Copyright (c)           |
|                       FUJITSU LIMITED 2008                |
+-----------------------------------------------------------+


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]
```

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-13.2-01.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


FJSVswtrc RPM installing......
rpm -ivh --nodeps ./pkg/FJSVswtrc-13.2-01.i386.rpm
Preparing...                ######################################### [100%]
   1:FJSVswtrc              ######################################### [100%]


swsetup: Package is successfully installed. : FJSVswtrc
                 ...
```

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 / <RETURN>
# umount /dev/cdrom
# eject <RETURN>
```

11. Reboot the system.

```
# shutdown -r now <RETURN>
```

12. For details on how to set up the environment, see "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 & <RETURN>
# /usr/sbin/pfsd & <RETURN>
```

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

```
# mkdir -p /cdrom <RETURN>
```

3. Mount the CD-ROM(Agent Program DISC2). 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 <RETURN>
```

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

```
# cd /cdrom/agent/hp-ux <RETURN>
# ./swsetup <RETURN>
```

5. If SystemWalker/StorageMGR, Softek AdvancedCopy Manager or ETERNUS SF AdvancedCopy Manager has been installed, either of the following messages are 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.

```
# ./swsetup
#swsetup: Installer is preparing for installation...
+----------------------------------------------------------+
|              ETERNUS SF AdvancedCopy Manager             |
|                          13.2                            |
|            All Rights Reserved, Copyright (c)            |
|                       FUJITSU LIMITED 2008              |
+----------------------------------------------------------+


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. If you replied with "n", proceed to step 9.

```
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. Umount the Agent of AdvancedCopy Manager CD-ROM by executing the following command.

```
# cd / <RETURN>
# /usr/sbin/pfs_umount /cdrom <RETURN>
```

13. Reboot the system.

```
# /usr/sbin/shutdown - y - r now <RETURN>
```

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

Note

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 <RETURN>
# chown root:root /etc/pfs_fstab <RETURN>
# chmod 644 /etc/pfs_fstab <RETURN>
```

 ─ 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 <RETURN>
```

2- After installing Agent of AdvancedCopy Manager, restore the environment.

```
# mv resolv.conf.org resolv.conf <RETURN>
```

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 <RETURN>
```

2. Mount the CD-ROM(Agent Program DISC2). 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 <RETURN>
```

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

```
# cd /cdrom/agent/aix <RETURN>
# ./swsetup <RETURN>
```

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.

```
# ./swsetup
#swsetup: Installer is preparing for installation...
+------------------------------------------------------------+
|                ETERNUS SF AdvancedCopy Manager             |
|                            13.2                            |
|              All Rights Reserved, Copyright (c)            |
|                        FUJITSU LIMITED 2008                |
+------------------------------------------------------------+


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. If you replied with "n", proceed to step 9.

```
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.
```

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. Umount the Agent of AdvancedCopy Manager CD-ROM by executing the following command.

```
# cd / <RETURN>
# /usr/sbin/umount /cdrom <RETURN>
```

12. Reboot the system.

```
# /usr/sbin/shutdown - r <RETURN>
```

13. For details on how to set up the environment, see "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.
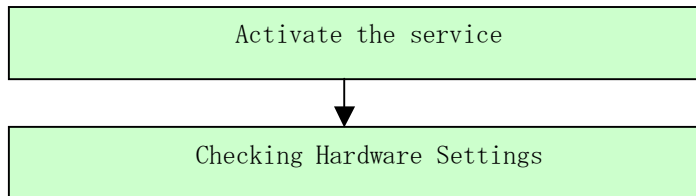
5.1 Windows Platform

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: Flow of customizing Storage Server

```
┌─────────────────────────────────────────────┐
│            Activate the service              │
└─────────────────────────────────────────────┘
                      │
                      ▼
┌─────────────────────────────────────────────┐
│          Checking Hardware Settings          │
└─────────────────────────────────────────────┘
```

5.1.2 Details of Storage Server Customization

Set up the Storage Server, using the following procedure:

1. 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 **If Windows Server 2003 Service Pack 1 or Windows Server 2003 R2 has been applied**

If Windows Server 2003 Service Pack 1 or Windows Server 2003 R2 has been applied, see "Running the Software in an Environment Where the Windows Firewall Is Enabled" and configure the settings for the Windows firewall function.

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: 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.
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.
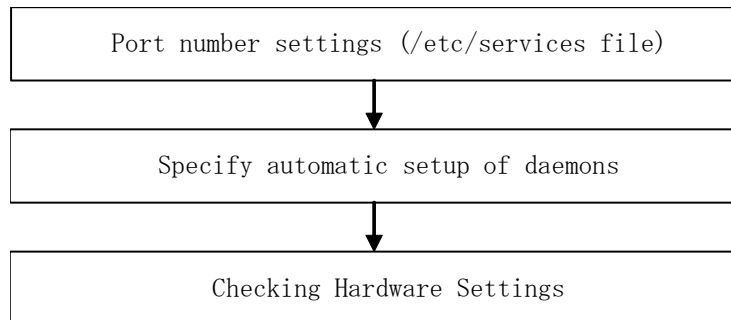
● Advanced copy license setup
● Cache table size setup

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

Use the following procedure to set up the Storage Server:

Figure: Flow of customizing Storage Server

```
┌─────────────────────────────────────────────┐
│   Port number settings (/etc/services file)  │
└─────────────────────────────────────────────┘
                      │
                      ▼
┌─────────────────────────────────────────────┐
│      Specify automatic setup of daemons      │
└─────────────────────────────────────────────┘
                      │
                      ▼
┌─────────────────────────────────────────────┐
│          Checking Hardware Settings          │
└─────────────────────────────────────────────┘
```

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.

Figure: 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: 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 Figure "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: 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.
● Advanced copy license setup
● Cache table size setup

Chapter 6   Installation of Tape Manager

This chapter explains how to install the Tape Manager of AdvancedCopy Manager.

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 "Installation of the Manager" or "Installation of the Agent" for the operating system of the target Storage Server and Storage Management Server.

6.1 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 licence and appropriate cache table size settings are required. These settings vary for different devices, so check with your Fujitsu systems engineer.

Table: Hardware requirements

Device name	Remarks
ETERNUS2000 model 100 or higher, ETERNUS3000 model 100 or higher, ETERNUS4000 model 100 or higher, ETERNUS6000, ETERNUS8000, ETERNUS GR720, ETERNUS GR730, ETERNUS GR740, ETERNUS GR820, ETERNUS GR840	Any one is required. To use ETERNUS2000, ETERNUS3000, or ETERNUS4000, it must be connected to a LAN. In addition, to use ETERNUS3000 model 100/200/400/600, its firmware version must be V20L32 or later.
ETERNUS LT130, ETERNUS LT160, ETERNUS LT220 ETERNUS LT230(SCSI), ETERNUS 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.

6.2 Software

6.2.1 Basic software

The Tape Manager of AdvancedCopy Manager can only be installed in one of the following system environments.
- Solaris 8 Operating System
- 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)

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.

6.2.2 Exclusive Software

AdvancedCopy Manager cannot coexist with the following software.
- SystemWalker/StorageMGR-M
- SystemWalker/StorageMGR-A
- Softek Backup TSM Edition 5.3, and its previous versions
- ETERNUS SF TSM 5.3.2

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.

6.2.3 Essential Software

The following software is required. Confirm that the software has been installed.
- ETERNUS multipath driver

Table: ETERNUS multipath driver version support table

Tape server operating system	Operating environment disk array	ETERNUS multipath driver Support version
Solaris 8	ETERNUS GR720 ETERNUS GR730 ETERNUS GR740 ETERNUS GR820	2.0.0 or later

Tape server operating system	Operating environment disk array	ETERNUS multipath driver Support version
	ETERNUS GR840 ETERNUS3000 ETERNUS6000	
	ETERNUS4000 ETERNUS8000	2.0.2 or later (912651-14 or later)
	ETERNUS2000	2.0.3 or later (912651-17 or later)
Solaris 9	ETERNUS GR720 ETERNUS GR730 ETERNUS GR740 ETERNUS GR820 ETERNUS GR840 ETERNUS3000 ETERNUS6000	2.0.0 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)
	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)
Solaris 10	ETERNUS GR720 ETERNUS GR730 ETERNUS GR740 ETERNUS GR820 ETERNUS GR840 ETERNUS2000 ETERNUS3000 ETERNUS4000 ETERNUS6000 ETERNUS8000	2.0.3 or later (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.

6.2.4 Location

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 "Locale" for details.

6.3 Essential Resources

6.3.1 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.

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: 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.

6.3.2 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 "Static Disk Resources". If the free space is insufficient, extend the size of the file system.

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: Amount of disk space required during operation

Item No.	Directory	Disk space requirement (unit: bytes)	Operation
1	/$DIR2	((10K + 3K x (a+1)) x b) + (50K x c x 2)	Round the calculated value up to a multiple of 20MB.
2	/$DIR2	30M	Not classified.

Item No.	Directory	Disk space requirement (unit: bytes)	Operation
3	/$DIR3	256M	Not classified.
4		(p+1)×r×700	If file unit backup is used: Add this value to the estimated value for non-file-unit backup. Round the calculated value up to a multiple of 4 megabytes, and add this value. This value is also used to format a TSM database. Estimate a value large enough to be able to change the backup operation in the future.
5		512M	Not classified.
6	None	(Logical units of RAID groups allocated to CM0 in charge)×2 (Logical units of RAID groups allocated to CM1 in charge)×2 Total of 4 are required.	Essential if the following disk array units are used: - ETERNUS2000 - ETERNUS3000 - ETERNUS4000 This space requirement is for use as access paths for I/O to disk array units.
7		Logical units×4	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 "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.

● p: Number of save generations set for file unit backup. The number of generations to be saved is set in the copy group settings for file unit backup.
Example: If 10 generations are saved and the total number of directories and files is 1000:
(10+1)×1000×700＝7700000≒8M

● r: Total value of the number of directories and number of files which are backed up to tape

● 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.

6.3.3 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: 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.

6.3.4 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: 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.

6.4 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 "Installation of the Manager" or "Installation of the Agent".

6.5 Installation

This section describes how to install the AdvancedCopy Manager Tape Manager.

6.5.1 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 "Static Disk Resources". If there
is not enough space, set the disk partition configuration again.

6.5.2 Installation procedure

1. Login to the system as a root (superuser), and then terminate the system.

```
# shutdown -y -g0 -i0 <RETURN>
```

2. Activate the system in single user mode.

```
[ok prompt] boot -s <RETURN>
```

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 <RETURN>
```

3. Mount the local file system.

```
# /usr/sbin/mountall -l <RETURN>
```

4. Mount the CD-ROM (Tape Manager Program DISC3) for this software product.

```
# mount -F hsfs -o ro /dev/dsk/c0t4d0s0 CD-ROM mount destination <RETURN>  (*)
```

*: The device name of the CD-ROM will be specific to the actual device.

5. Execute the installation command (tbosetup) for this software. Multiple packages are
   installed at one time.

```
# cd CD-ROM mount-point/tape-mgr/solaris <RETURN>
# ./tbosetup <RETURN>
```

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              |
|                          13.2                            |
|                    Tape Backup Server                    |
|            All Rights Reserved, Copyright(c)             |
|                          FUJITSU LIMITED 2008            |
+----------------------------------------------------------+


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, or LT270 is used, install the IBMtape driver.

```
# cd /opt/tivoli/tsm/server <RETURN>
# pkgadd -d IBMtape.4.1.2.6.bin <RETURN>
```

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

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

14. Reboot the system

```
# /usr/sbin/shutdown -y -i6 -g0 <RETURN>
```

15. For details on how to set up the Tape Server environment, see "Customization of Tape Server".

Chapter 7 Customization of Tape Server

This chapter explains the customization of the Tape Server of ETERNUS SF AdvancedCopy Manager.

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.

7.1 Flow of Customizing Tape Server

This section explains how to customize the Tape Server.
The procedure is as follows.

1. Customization of Storage Server or Storage Management Server
2. Creation of Access Path Partition
3. Configuring the Port Number
4. Kernel Parameter Tuning
5. Initial Configuration of a Tape Server
6. TSM Configuration (to be done before Configuration of Automatic Activation of Daemons)
7. Configuring Automatic Activation of Daemons
8. TSM Configuration (to be done after Configuration of Automatic Activation of Daemons)

7.2 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 "Customization of Storage Server" or "Customization of Storage Management Server".

7.3 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 "Dynamic Disk Resources".

A file system does not need to be configured in each access path partition.

Four partitions are required for each disk array unit.

Use a GR multipath driver or an ETERNUS multipath driver to create an access path in a multipath configuration.

If an ETERNUS2000, ETERNUS3000 or ETERNUS4000 disk array unit is used, create two access paths from each disk managed by each CM of the ETERNUS disk array.

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.

7.4 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

Refer to the following sections for the setup method and to the "SHMPort" section for port settings.

● Configuration of a Server Option File

● Configuration of a Client System Option File

7.5 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.

● To perform the operation indicated in "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 8/9 and Solaris 10 (tuning using /etc/system)

Kernel parameter tuning values

Table: Kernel parameter tuning values

Resource	Parameter	Tuning value	Recommended settings
Shared memory	shmsys:shminfo_shmmax	268435456	Maximum value (*4)
	shmsys:shminfo_shmseg (*1)	Tape backup concurrency x 2 (*2)	Maximum value
Semaphore	semsys:seminfo_semmap (*1)	50	Addition (*5)
	semsys:seminfo_semmni	50	Addition
	semsys:seminfo_semmns (*3)	300	Addition
	semsys:seminfo_semmnu (*3)	150	Addition
	semsys:seminfo_semopm	50	Maximum value
	semsys:seminfo_semume (*3)	50	Maximum value
	semsys:seminfo_semmsl	125	Maximum value
Messages	msgsys:msginfo_msgmni	Tape backup concurrency x 3 (*2)	Addition
	msgsys:msginfo_msgtql	Tape backup concurrency x 8 (*2)	Addition

*1 The parameters need not be set for Solaris 9 or later version.
*2 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. Normally, a transaction volume has a concurrency of one for one backup command. For Symfoware backup, the concurrency value for one log group is the total number of databases included in that log group.
*3 This setting is not required under Solaris 10.
*4 Use whichever value is the higher of the tuning value and the existing value.
*5 Add the tuning value to the existing value.

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: Resource control tuning values

Resource	Parameter	Tuning value	Recommended setting	Privilege level
Shared memory	project.max-shm-memory	268435456	Addition (*2)	Privileged
Semaphore	project.max-sem-ids	50	Addition	Privileged
	process.max-sem-nsems	125	Maximum value (*3)	Privileged
	process.max-sem-ops	50	Maximum value	Privileged
Messages	project.max-msg-ids	Tape backup concurrency x 3 (*1)	Addition	Privilege

To set the privileged value, specify "privileged" in the /etc/project file.

*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. Normally, a transaction volume has a concurrency of one for one backup command. For Symfoware backup, the concurrency value for one log group is the total number of databases included in that log group.

*2 Add the tuning value to the existing value

*3 Use whichever value is the higher of the tuning value and the existing value.

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:
#
```

group.staff
        projid : 10
        comment: ""

7.6 Initial Configuration of a Tape Server

This explains the initial Configurations that are necessary for operating the Tape Server.
- ● Required Configurations
- ● Optional Configurations

7.6.1 Required Configurations

This explains the Configuration items that are necessary for operating the Tape Server.

7.6.1.1 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 "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 ETERNUS2000, ETERNUS3000 or ETERNUS4000 disk array unit is used, select two access paths from the multi-paths managed by each CM of the ETERNUS disk array.

7.6.1.2 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.

A line beginning with # is assumed to be a comment line.

7.6.1.3 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.
1. Execute a Tape Server definition file check command (tbochkconf).

```
# /opt/FJSVswstm/bin/tbochkconf
tbochkconf completed
#
```

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 "Tape Server definition file check command (tbochkconf)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for Tape Backup Option".

7.6.1.4 Collecting ETERNUS2000, ETERNUS3000, and ETERNUS4000 information

When the RAID device connected to the Tape Server is an ETERNUS2000, ETERNUS3000, or ETERNUS4000 disk array unit, the disk configuration information must be obtained.

This operation does not need to be performed when the RAID device connected to the Tape Server is an ETERNUS6000, ETERNUS8000, or GR series unit.

The procedure is indicated below.

When GR720 and GR730 are not used together

1. Execute an information collection command (tbogetoluinfo) for the ETERNUS2000/ETERNUS3000/ETERNUS4000 disk array unit.

```
# /opt/FJSVswstm/bin/tbogetoluinfo -l ETERNUS2000/ETERNUS3000/ETERNUS4000
IP_address
ETERNUS2000/ETERNUS3000/ETERNUS4000 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 ETERNUS2000/ETERNUS3000/ETERNUS4000 disk array unit for <ETERNUS2000/ETERNUS3000/ETERNUS4000 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
#
```

When GR720 and GR730 are used together

When the RAID device connected to the Tape Server includes a GR720, GR730, and ETERNUS3000 disk array unit, the ETERNUS3000 information collection command (tbogetoluinfo) and the mplbconfig -q function cannot be used. In this case, perform the following procedure.

● For ETERNUS3000
1. Login to ETERNUSmgr of ETERNUS3000 disk array unit.
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 checkbox 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 ETERNUS2000/ETERNUS4000
This procedure is not required.

7.6.1.5 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 "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".

Note

For details of the backup of the tape management information, see "Tape management information backup command (tboresback)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for Tape Backup Option".

7.6.2 Optional Configurations

Valid optional settings are not currently available.

7.7 TSM Configuration

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 "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.

7.7.1 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 "Tape Library (LT220/LT230/LT270) Setup".

7.7.2 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 "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 (days) 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 (days). 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" 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 assumed as a comment line.

Be careful not to assign the port numbers specified for SHMPort and HTTPport to any other software product or configuration

For details on the configuration of the server option file, see the "ETERNUS SF TSM Administrator's Guide" and the "ETERNUS SF TSM Administrator's Reference".

7.7.3 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 server option file settings.
PasswordAccess	Specifies how to update the password that a TSM client uses. You would normally use the following value: "generate"

A line beginning with * is assumed as a comment line.
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.

A line beginning with * is assumed as a comment line.
For details on Configuration of the client system option file, see the "ETERNUS
SF TSM Administrator's Guide" and the "ETERNUS SF TSM Administrator's
Reference".

7.7.4 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 "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, see the "ETERNUS SF TSM Administrator's Guide" and the "ETERNUS SF TSM Administrator's Reference".

The procedure is as follows.

1. Set up the shell and environment variables that are required in the following operations. 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 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.

3. Create the database and log file and format them.

```
# cd $TSMDB
# /opt/tivoli/tsm/server/bin/dsmfmt -m -db database_file_namedatabase_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 "Dynamic Disk Resources".

Item	Meaning
	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. Specify the following or larger value (in megabytes). Specify a value large enough to change the backup operation in the future. 129

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.

> **Note**
>
> For details on formatting the database and log, see the "ETERNUS SF TSM Administrator's Guide" and the "ETERNUS SF TSM Administrator's Reference".

7.7.5 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 "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>
```

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 "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).

Note

For details on registering the TSM administrative client and TSM server name, see the "ETERNUS SF TSM Administrator's Guide" and the "ETERNUS SF TSM Administrator's Reference".

7.8 Configuring Automatic Activation of Daemons

The Tape Server uses the following daemons.

● Daemon as Storage Server or Storage Management Server

● Tape Server Daemon

● TSM Server Daemon

The following explains the Configuration for automatically activating these daemons.

7.8.1 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.

7.8.2 Tape Server Daemon

To automatically activate the Tape Server daemon, see "Initial Configuration of Tape Server".

Even if the system is started up, the Tape Server daemon cannot be activated until "Initial Configuration of 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".

7.8.3 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).

7.9 TSM Configuration

This section details how to configure the TSM settings after the automatic activation of daemons is completed.

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 a TSM administrative client command (dsmadmc). If the prompt with "tsm>" is not displayed as in the execution example, re-try the TSM administrative client command (dsmadmc) 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

1. Execute the TSM administrative client command (dsmadmc).
   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 3, Level 4.0
(c) Copyright by IBM Corporation and other(s) 1990, 2006. All Rights Reserved.


Enter your user id:  admin


Enter your password:


Session established with server ********: Solaris 8/9
   :
   :
tsm>
```

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

1. To stop the TSM administrative client command (dsmadmc), enter "quit" in the "tsm>" prompt. An example is provided below.

```
tsm> quit
```

7.9.1 Registration of License Password

This section details how to register the license password in the TSM system.
The procedure is as follows.

1. Register the license password.

```
tsm> register license file=license_file_name number=number_of_license
```

2. Check the registered license information.

```
tsm> query license
```

> **Note**
>
> For details of the license registration, see "Managing Server Operations" in the "ETERNUS SF TSM Administrator's Guide".
> The required license depends on whether a library is shared between the Tape servers.
> For details of the license, see the "ETERNUS SF TSM Administrator's Guide".

7.9.2 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_ID password passexp=expire_prior maxnummp=maxnum_mntpnt
```

For the *client_ID*, specify a tape server node name. For the *password*, use the value that is set in "Configuration of a TSM Linkage Definition File". For the *expire_prior*, specify 0 (infinite). For the *maxnum_mntpnt*, specify 999 (maximum value). An example is provided below.

```
tsm> register node tapeserver1 admin passexp=0 maxnummp=999
tsm>
```

2. Confirm the client node information.

```
tsm> query node format=detail
tsm>
```

For details of the client node registration, see the "ETERNUS SF TSM Administrator's Guide".

7.9.3 Configuring a TSM Environment

This explains how to set the TSM environment related configuration.
The procedure is as follows.

1. Define the preservation days of an activity log.

```
tsm> set actlogretention days
```

An example is provided below.

```
tsm> set actlogretention 100
tsm>
```


For details of the TSM environment related Configurations, see the "ETERNUS SF TSM Administrator's Guide".

7.9.4 Configuration of a Tape Library System

This explains how to set up the tape library system in the TSM system.

7.9.4.1 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 "Tape Library (LT220/LT230/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.

The definitions depend on the type of the tape library system. For details, see the "ETERNUS SF TSM ETERNUS LT Library Operation Guide (LT160)".

7.9.4.2 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.

Configuration on a library management server

1. Set the shared tape library (controller) system. (define library)
2. Set the tape library path for the library management server. (define path)
3. Set the drive. (define drive)
4. Define the drive path. (define path)

Configuration on a library client server

1. Set the shared tape library (controller) system. (define library)

Configuration on a library management server

1. Set the tape library path for the library client server. (define path)

The definitions depend on the type of the tape library system. For details, see the
"ETERNUS SF TSM ETERNUS LT Library Operation Guide".

Chapter 8 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
2. Storage Servers
3. Tape server

If the Storage Management Server or a Storage Server is also used as a Tape server, refer to "Upgrading the Tape server".

8.1 Upgrading the Storage Management Server

This section describes how to upgrade the Storage Management Server.
Refer to "Upgrading a Storage Management Server which also serves as a Storage Server" for more information.

1. Backing up the repository data
   Save the existing repository data to a location outside any ACM directory paths before the upgrade.
2. Uninstallation
   Delete the repository environment, and uninstall the existing version from the Storage Management Server.
3. Installation
   Install the product, and create a new repository environment.
4. Restoring repository data
   Restore the backed-up repository data.
5. Changing server information
   Make the appropriate changes to the server information to ensure data consistency.

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.

8.1.1 Backing up the repository data

Execute the database backup to save all stored repository data to the specified directory as blocks of data.
- For Windows
  Use "DB backup" under DB setup to backup the data.
- For Solaris/Linux
  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 Operator's Guide.

After backing up the repository database information, confirm that the "unl" file (with a file extension of .unl) has been created.

8.1.2 Uninstallation

Refer to the OS manual that is applicable to the old version, and uninstall it.

Non-cluster operation

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 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 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 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 Installation Guide under "Uninstallation of the storage management server". Perform only the procedures in "Daemon deactivation" and subsequent procedures.

Cluster operation

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 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 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 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 Installation Guide under "Uninstallation of the storage management server". Perform only the procedures in "Daemon deactivation" and subsequent procedures.

8.1.3 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:
"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"

Configuring the repository operating environment
● Non-cluster operation:
"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"

8.1.4 Restoring repository data

Execute the repository data conversion command (stgrepocnv) to restore the repository data

and then convert it for use with the current version of the repository.
a. Syntax

Windows

```
program-directory¥bin¥stgrepocnv -d dir-name
```

Solaris/Linux

```
/opt/FJSVswstf/bin/stgrepocnv -d dir-name
```

b. Description of options

Option	Description
-d	Specifies the absolute path to the directory where the repository data to be converted is stored.

c. End status
- = 0: Normal end
- > 0: Abnormal end

d. Example

Windows

```
C:¥>C:¥Win32app¥AdvancedCopyManager¥bin¥stgrepocnv -d C:¥backdir
................
stgrepocnv completed
```


— This command can be executed only by an account belonging to the Administrators group.
— For Storage Management Server transactions, execute the command on the server that hosts the daemons/services.   The SWSTGNODE environment variable then need not be set.
— With the Windows edition, do not use the following services because operations will not function correctly if these services are used to execute this command:
  - Terminal service (use via remote desktop connection)
  - Telnet server service
  Note that if the Storage Management Server is a Windows 2003 Server, these services can be used by means of a console session connection to the terminal service. Refer to the following for the console session connection method:
  http://support.microsoft.com/kb/278845/

8.1.5 Changing server information

To ensure data consistency, use the appropriate Web client GUI or the server information change command (stgxfwcmmodsrv) to make the necessary changes to server information.

Using the Web client GUI:

Select the Storage Management Server in the Servers List view, then select [Update Server...] from the [Operations] menu.
Click the [OK] button without changing anything in the display.
For details on how to use the Web client GUI, refer to "Server modification method" 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 the server information change command (stgxfwcmmodsrv), and execute the command.

For details on how to use the command, refer to "Server information change command (stgxfwcmmodsrv)" 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 Web client, then re-execute the command. If the Web browser is running, clear the cache, then stop and restart the Web browser.

1. Select [Control Panel], then [Java Plug-in].

2. Select the [Cache] tab, then [Clear].

8.2 Upgrading a Storage Management Server which also serves as a Storage Server

This section describes how to upgrade a Storage Management Server which serves as a Storage Server.

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. Backing up management information
   Save the management information of the environment to a location outside the ACM directory paths before the upgrade.
3. Uninstallation
   Delete the repository operating environment, and uninstall the existing version from the Storage Management Server.
4. Installation
   Install the new product version, and create the repository operating environment.
5. Restoring repository data
   Restore the backed-up repository data.
6. Changing server information
   Make the appropriate changes to the server information to ensure data consistency if necessary.
7. Restoring management information
   Restore the backed-up management information.

Change to the configuration during the 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.

8.3 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. Backing up repository data
   Save the repository data. Perform this step from the Storage Management Server.
2. Backing up management information
   Save the management information of the environment to a location outside the ACM directory paths before the upgrade.
3. Uninstall
   Uninstall the existing version from the Storage Server.
4. Install
   Install the new product version, and create the environment.
5. Restoring repository data
   Restore the repository data that was backed up. Perform this step from the Storage Management Server.
6. Changing server information
   Make the appropriate changes to the server information to ensure data consistency if necessary.
7. Restoring management information
   Restore the saved management information.

If tape backup operations are performed

Perform steps 1, 3, 6 and 9 only if cluster operation is used for Storage Servers.

1. Backing up repository data
   Save the repository data. Perform this step from the Storage Management Server.
2. Backing up management information
   Save the management information in the environment before the upgrade.
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. Uninstall
   Uninstall the existing product.
5. Install
   Install the new product, and create the environment.
6. Restore the repository data
   Restore the repository data that was backed up. Perform this step from the Storage Management Server.
7. Changing server information
   Make the appropriate changes to the server information to ensure data consistency.
8. Restoring management information
   Restore the management information that was backed up.
9. Restoring tape management information
   Restore the tape management information that was backed up. Perform this step from the Tape Server.

Note

Change to the configuration during the 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.

8.3.1 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.

8.3.2 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
  - ― Backup volume locking specification file for backups
  - ― Backup restored volume locking specification file
  - ― Backup volume locking specification file for tape copy
- ● If replication is used:
  - ― Replication management files
  - ― Pre-processing and post-processing scripts for replication management
  - ― Copy source volume locking specification file
  - ― Copy destination volume locking specification file

Refer to "Making individual backups of databases" under "Database Maintenance" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide" for information on how to back up databases.

8.3.3 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.

8.3.4 Uninstall

Refer to the OS manual that is applicable to the old version, and uninstall it.

Non-cluster operation

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 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 Installation Guide under "Details of Agent of AdvancedCopy Manager uninstallation". Perform only the procedures in "Deleting applications or programs" and subsequent procedures.

[For Solaris and Linux editions]
- ● For AdvancedCopy Manager 13.1 or later
  Perform the uninstall using the procedures in the 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 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 Cluster Operator's Guide under "Deleting Storage Management Server transactions and Storage Server transactions" for information concerning these procedures.

8.3.5 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:
  "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"

Setting up the repository operating environment
- ● Non-cluster operation:
  "Customization of Storage Server"
  After the above, activate AdvancedCopy Manager on the Storage Server. Refer to "Starting and stopping daemons" or "Starting and stopping services" in the appropriate Operator's Guide for information on this procedure.
- ● 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"

8.3.6 Restoring repository data

Restore the backed up repository data of the Storage Management Server. Refer to "Restoring repository data" for information on this procedure.

8.3.7 Changing server information

Non-cluster operation

To ensure data consistency, use the appropriate Web client GUI or the server information change command (stgxfwcmmodsrv) at a command prompt to make the necessary changes to server information.

Using the Web client GUI:

Select the Storage Server in the Servers List view, then select [Update Server...] from the [Operations] menu.
Click the [OK] button without changing anything in the dialog box that is displayed.
For details on how to use the Web client GUI, refer to "Server modification method" in the "ETERNUS SF AdvancedCopy Manager GUI User's Guide".

Using the command:

Specify the Storage Server name in the "-n" option of the server information change command (stgxfwcmmodsrv), and execute the command at a command prompt.
For details on how to use the command, refer to "Server information change command (stgxfwcmmodsrv)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide".

Cluster operation

Register the server where the operational environment was setup as a Storage Server. Refer to "Registering Storage Servers" in the appropriate ETERNUS SF AdvancedCopy Manager Operator's Guide for the 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 Web client, then re-execute the command. If the Web browser is running, clear the cache, then stop and restart the Web browser.

1. Select [Control Panel], then [Java Plug-in] .

2. Select the [Cache] tab, then [Clear].

8.3.8 Restoring management information

Restore the following backed up information:
- ● If backup is being performed:
  — Backup management files
  — Pre-processing and post-processing scripts for backup management
- ● If tape backup linkage is being performed:
  — Pre-processing and post-processing scripts for copying to tape
  — Transaction volume locking specification file for backups
  — Backup volume locking specification file for backups
  — Backup restored volume locking specification file
  — Backup volume locking specification file for tape-copy
- ● If replication is being performed:

If replication is used.

For servers that act as both a Storage Server and a Storage Management Server, and in cases when Storage Server is cluster, 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.

  — Replication management files
  — Pre-processing and post-processing scripts for replication management
  — Copy source volume locking specification file
  — Copy destination volume locking specification file

Refer to "Making individual backups of databases" under "Database Maintenance" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide" for information on how to restore databases.

For the Linux edition of AdvancedCopy Manager, after it has been upgraded, give priority to using udev device names in environments that have udev device names.
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 the information collection mode setting command (stgxfwcmsetmode) 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).

8.3.9 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.

8.4 Upgrading the Tape Server

This section describes how to upgrade an independent Tape Server and a server that includes a Tape Server.

1. Upgrading a Tape Server (independent)
2. Upgrading a Tape Server also used as a Storage Server
3. Upgrading a Tape Server also used as a Storage Management Server
4. Upgrading a Tape Server also used as a Storage Management Server and Storage 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.

8.4.1 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. Back up the tape management information
   Save the tape management information from the pre-upgrade environment.
2. Uninstall
   Uninstall the existing software product.
3. Install
   Install the new product version and configure the environment
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. Restore tape management information
   Restore the tape management information saved from the uninstalled version.
6. Setting access path definitions
   Set the access path definitions for the Tape Server.
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".

8.4.1.1 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

8.4.1.2 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 "Uninstallation" under "Tape Manager unsetup" in the appropriate version of the "Tape Backup Installation Guide" for the Tape Manager uninstall procedure.

3) In addition to the Tape Manager, an Agent or Manager of AdvancedCopy Manager is also installed on Tape Servers. Refer to "Uninstallation" under "Storage Server unsetup" in the appropriate version and operating system edition of the "Installation Guide" for the AdvancedCopy Manager Agent uninstall procedure.

● 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.

8.4.1.3 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 "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 "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.

8.4.1.4 Change or register server information

Non-cluster operation

To guarantee data consistency, use Web client GUI or the server information change command (stgxfwcmmodsrv) at a command prompt to change the server information.

Using Web client GUI

In the server list screen, select the Storage Management Server, then select [Change server...] from the [Operation] menu.

Click the [OK] button without changing anything in the display.

Refer to "Changing servers" in the "ETERNUS SF AdvancedCopy Manager GUI Operator's Guide" for information on how to use the Web client GUI.

Using commands

Specify the name of the Storage Management Server in the "- n" option, and execute the server information change command (stgxfwcmmodsrv) at a command prompt.

Refer to "Server information change command (stgxfwcmmodsrv)" 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 Web client, then re-execute the command. If the Web browser is running, clear
the cache, then stop and restart the Web browser.

1. Select [Control Panel", then [Java Plug-in] .

2. Select the [Cache] tab, then [Clear].

8.4.1.5 Restore tape management information

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.

8.4.1.6 Setting access path definitions

Set the Tape Server access path definitions.

This procedure is required only for the 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 the Tape Server upgrade settings command (tboactmplbext).

```
# /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.

 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 "Tape Server upgrade settings command
(tboactmplbext)" 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.

In an environment that includes ETERNUS2000/ETERNUS3000/ETERNUS4000 as well as other disk array units, implement the following procedures for the ETERNUS2000/ETERNUS3000/ETERNUS4000 access paths only.

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. ETERNUS2000/ETERNUS3000/ETERNUS4000 information collection
   Refer to "Collecting ETERNUS2000/ETERNUS3000/ETERNUS4000 information" for the procedure.

8.4.1.7 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 storage system and LUN configurations are not changed
      ―
   [Execution procedure]
   1. Inspect the definition file.
      Refer to "Checking Definition Files" for the execution procedure.

   2. Collect ETERNUS2000/ETERNUS3000/ETERNUS4000 information
      Refer to "Collecting ETERNUS2000/ETERNUS3000/ETERNUS4000 information" for the execution procedure.
      Note: This procedure is not required if ETERNUS2000/ETERNUS3000/ETERNUS4000 is not used in the operating environment.

   3. Daemon automatic startup settings
      Refer to "Daemon automatic startup settings" 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.

4. TSM settings
   Refer to "TSM settings (the settings set after the daemon automatic start settings)"for the execution procedure.
● For cluster operation
  If the Tape Server performs Tape Server tasks as cluster operations, procedures for clusters are required.
  Refer to "Customizing Tape Server transactions" in the relevant version of the "Cluster Operation Guide" for the procedures.

8.4.2 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. Repository data backup
   Save the repository data. Perform this step from the Storage Management Server.
2. Management information backup
   Save the management information from the pre-update environment.
3. Tape management information backup
   Save the tape management information from the pre-upgrade environment.
4. Uninstall
   Delete the operating environment and uninstall the existing software product.
5. Install
   Install the new product and perform the environment setup.
6. Restore repository data
   Restore the repository data that was backed up. Perform this step from the Storage Management Server.
7. Change server information
   In order to guarantee data consistency, perform the server information change if necessary.
8. Restore management information
   Restore the management information that was saved from the previous version.
9. Restore tape management information
   Restore the tape management information that was saved from the previous version.
10. Set access path definitions
    Set the definitions for the Tape Server access paths.
11. Customize the Tape Server
    Recover the Tape Server environment configuration.

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".

8.4.2.1 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.

8.4.2.2 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.

8.4.2.3 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

8.4.2.4 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. Refer to "Uninstall" under "Tape Manager unsetup" in the appropriate edition of the "Tape Backup Installation Guide" for the Tape Manager uninstall procedure.
    3) Uninstall the Agent of AdvancedCopy Manager from the Storage Server. Refer to "Uninstall" under "Storage Server unsetup" in the appropriate version and operating system edition of the "Installation Guide" for the AdvancedCopy Manager Agent uninstall procedure.
- ● 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 "Operator's Guide for cluster environment" for the procedures for executing cluster unsetup.

8.4.2.5 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 "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 "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 "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.

8.4.2.6 Restore repository data

Recover the backed up repository data of the Storage Management Server. Refer to "Restoring repository data" for the procedure.

8.4.2.7 Change server information

In order to guarantee data consistency, use Web client GUI or the server information change command (stgxfwcmmodsrv) at a command prompt to change the server information.

Using Web client GUI

In the server list screen, select the Storage Management Server then, select [Change server...] from the [Operation] menu.
Click the [OK] button without changing anything in the display.
Refer to "Changing servers' in the "ETERNUS SF AdvancedCopy Manager GUI Operator's Guide" for information on how to use Web client GUI.

Using commands

Specify the name of the Storage Management Server in the - n option, and execute the server information change command (stgxfwcmmodsrv) at a command prompt.
Refer to "Server information change command (stgxfwcmmodsrv)" 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 Web client, then re-execute the command. If the Web browser is running, clear the cache, then stop and restart the Web browser.

1. Select [Control Panel] then [Java Plug-in].

2 Select the [Cache] tab, then [Clear].

8.4.2.8 Restore management information

Recover the management information that was backed up for the Storage Server. Refer to "Restoring management information" for the execution procedure.

8.4.2.9 Restore tape management information

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.

8.4.2.10 Set access path definitions

Set the definitions for the Tape Server access paths.

This procedure is required only for an 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 the Tape Server upgrade settings command (tboactmplbext).

```
# /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 "Tape Server upgrade settings command (tboactmplbext)" 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
In an environment that includes ETERNUS2000/ETERNUS3000/ETERNUS4000 as well as other disk array units, implement the following procedures for the ETERNUS2000/ETERNUS3000/ETERNUS4000 access paths only.

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. ETERNUS2000/ETERNUS3000/ETERNUS4000 information collection
   Refer to "Collecting ETERNUS2000/ETERNUS3000/ETERNUS4000 information" for the procedure.

8.4.2.11 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 storage system and LUN configurations are not changed
—

[Execution procedure]

1) Inspect the definition file.
   Refer to "Checking Definition Files" for the execution procedure.

2) Collect ETERNUS2000/ETERNUS3000/ETERNUS4000 information
   Refer to "Collecting ETERNUS2000/ETERNUS3000/ETERNUS4000 information" for the execution procedure.
   Note: This procedure is not required if ETERNUS2000/ETERNUS3000/ETERNUS4000 is not used.

3) Daemon automatic startup settings
   Refer to "Daemon automatic startup settings" 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.

4) TSM settings
   Refer to "TSM Configuration (the settings set after the daemon automatic start settings)" for the execution procedure.

● For cluster operation

If the Tape Server performs Tape Server tasks as cluster operations, procedures for clusters are required.
Refer to "Customizing Tape Server transactions" in the relevant edition of the "Cluster Operation Guide" for the procedures.

8.4.3 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. Repository data backup
   Save the repository data from the pre-update environment to a location outside the ACM directory paths.
2. Tape management information backup
   Save the tape management information from the pre-upgrade environment to a location outside the ACM directory paths.
3. Uninstall
   Delete the repository operating environment, and uninstall the existing software product.
4. Install
   Install the new product and perform the environment configuration.
5. Restore repository data
   Recover the repository data that was saved from the previous version.
6. Change server information
   In order to guarantee data consistency, perform the server information change if necessary.
7. Restore tape management information
   Restore the tape management information that saved from the previous version.
8. Set access path definitions
   Set the definitions for the Tape Server access paths.
9. Customize the Tape Server
   Recover the Tape Server environment configuration.

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".

8.4.3.1 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.

8.4.3.2 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

8.4.3.3 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 "Uninstall" under "Tape Manager unsetup" in the appropriate edition of the "Tape Backup Installation Guide" for the Tape Manager uninstall procedure.
  3) Uninstall the Agent of AdvancedCopy Manager from the Storage Server. Refer to "Uninstall" under "Storage Server unsetup" in the appropriate version and operating system edition of the "Installation Guide" for the uninstall procedure for the Manager of AdvancedCopy Manager.
- 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 "Operator's Guide for cluster environment" for the procedures for executing cluster unsetup.

8.4.3.4 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 "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 "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 "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.

8.4.3.5 Restore repository data

Restore the Storage Management Server repository data that was saved. Refer to "Restoring repository data" for the execution procedure.

8.4.3.6 Change server information

In order to guarantee data consistency, use Web client GUI or the server information change command (stgxfwcmmodsrv) at a command prompt to change the server information.

Using Web client GUI

In the server list screen, select the Storage Management Server, then select [Change server...] from the [Operation] menu.
Click the [OK] button without changing anything in the display.
Refer to "Changing servers' in the "ETERNUS SF AdvancedCopy Manager GUI Operator's Guide" for information on how to use Web client GUI.

Using commands

Specify the name of the Storage Management Server in the - n option, and execute the server information change command (stgxfwcmmodsrv) at a command prompt.
Refer to "Server information change command (stgxfwcmmodsrv)" 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 Web client, then re-execute the command. If the Web browser is running, clear the cache, then stop and restart the Web browser.

1. Select [Control Panel], then [Java Plug-in].

2. Select the [Cache] tab, then [Clear].

8.4.3.7 Restore tape management information

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.

8.4.3.8 Set access path definitions

Set the tape server access path definitions.

> This procedure is required only for the 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 the Tape Server upgrade settings command (tboactmplbext).

```
# /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.

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 "Tape Server upgrade settings command (tboactmplbext)" 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.

> In an environment that includes ETERNUS2000/ETERNUS3000/ETERNUS4000 as well as other disk array units, implement the following procedures for only the ETERNUS2000/ETERNUS3000/ETERNUS4000 access paths.

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. ETERNUS2000/ETERNUS3000/ETERNUS4000 information collection
   Refer to "Collecting ETERNUS2000/ETERNUS3000/ETERNUS4000 information" for the procedure.

8.4.3.9 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 storage system and LUN configurations have not changed —

[Execution procedure]
1) Inspect the definition file.
   Refer to "Checking Definition Files" for the execution procedure.

2) Collect ETERNUS2000/ETERNUS3000/ETERNUS4000 information
   Refer to "Collecting ETERNUS2000/ETERNUS3000/ETERNUS4000 information" for the execution procedure.
   Note: This procedure is not required if ETERNUS2000/ETERNUS3000/ETERNUS4000 is not used.

3) Daemon automatic startup settings
   Refer to "Daemon automatic startup settings" 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.

4) TSM settings
   Refer to "TSM Configuration (the settings set after the daemon automatic start settings)"for the execution procedure.

5) For cluster operation
   If the Tape Server performs Tape Server tasks as cluster operations, procedures for clusters are required.
   Refer to "Customizing Tape Server transactions" in the relevant edition of the "Cluster Operation Guide" for the work procedures.

8.4.4 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. Repository data backup
   Save the repository data from the pre-update environment.
2. Management information backup
   Save the management information from the pre-upgrade environment.

3. Tape management information backup
   Save the tape management information from the pre-upgrade environment.
4. Uninstall
   Delete the repository operating environment, and uninstall the existing software product.
5. Install
   Install the new product and perform the repository operating environment configuration.
6. Restore repository data
   Recover the repository data that was saved from the previous version.
7. Change server information
   In order to guarantee data consistency, implement the server information change processing.
8. Restore management information
   Restore the management information that was saved from the previous version.
9. Restore tape management information
   Restore the tape management information that was saved from the previous version.
10. Set access path definitions
    Set the Tape Server access path definitions.
11. Customize the Tape Server
    Recover the Tape Server environment configuration.

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".

8.4.4.1 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.

8.4.4.2 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.

8.4.4.3 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

8.4.4.4 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 "Uninstall" under "Tape Manager unsetup" in the appropriate edition of the "Tape Backup Installation Guide" for the Tape Manager uninstall procedure.
3) Uninstall the Agent of AdvancedCopy Manager from the Storage Server. Refer to "Uninstall" under "Storage Server unsetup" in the appropriate version and operating system edition of the "Installation Guide" for the uninstall procedure for the Manager of AdvancedCopy Manager.
● 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.

8.4.4.5 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 "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 "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 "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.

8.4.4.6 Restore repository data

Restore the Storage Management Server repository data that was backed up. Refer to "Restoring repository data" for the execution procedure.

8.4.4.7 Change server information

In order to guarantee data consistency, use Web GUI screens or the server information change command (stgxfwcmmodsrv) to change the server information.

Using the Web Client GUI

In the server list screen, select the Storage Management Server, then select [Change server...] from the [Operation] menu.
Click the [OK] button without changing anything in the display.
Refer to "Changing servers' in the "ETERNUS SF AdvancedCopy Manager GUI Operator's Guide" for information on how to use Web client GUI.

Using commands

Specify the name of the Storage Management Server in the - n option, and execute the server information change command (stgxfwcmmodsrv) at a command prompt.
Refer to "Server information change command (stgxfwcmmodsrv)" 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 Web client, then re-execute the command. If the Web browser is running, clear the cache, then stop and restart the Web browser.
1. Select [Control Panel] item [Java Plug-in].
2. Select the [Cache] tab, then [Clear].

8.4.4.8 Restore management information

Recover the management information that was backed up for the Management server. Refer to "Restoring management information" for the execution procedure.

8.4.4.9 Restore tape management information

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.

8.4.4.10 Set access path definitions

Set the Tape Server access path definitions.

Note

This procedure is required only for the 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 the Tape Server upgrade settings command (tboactmplbext).

```
# /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.

Resetting access path definitions

Re-create the access paths and reset the access path definitions.

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. ETERNUS2000/ETERNUS3000/ETERNUS4000 information collection
   Refer to "Collecting ETERNUS2000/ETERNUS3000/ETERNUS4000 information" for the procedure.

8.4.4.11 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 storage system and LUN configurations are not changed
[Execution procedure]
1. Inspect the definition file.
   Refer to "Checking Definition Files" for the execution procedure.

2. Collect ETERNUS2000/ETERNUS3000/ETERNUS4000 information
   Refer to "Collecting ETERNUS2000/ETERNUS3000/ETERNUS4000 information" for the execution procedure.
   Note: This procedure is not required if ETERNUS2000/ETERNUS3000/ETERNUS4000 is not used.

3. Daemon automatic startup settings
    Refer to "Daemon automatic startup settings" 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.

● For cluster operation
  If the Tape Server performs Tape Server tasks as cluster operations, procedures for
  clusters are required.
  Refer to "Customizing Tape Server transactions" in the relevant version edition of
  the "Cluster Operation Guide" for the work procedures.

Chapter 9 Uninstall

This chapter explains the removal of the AdvancedCopy Manager.

9.1 Uninstall of Manager

The uninstall method of the manager of AdvancedCopy Manager is explained.

9.1.1 Windows Platform

Note

Please be sure to refer to "Notes on Uninstall" before uninstalling AdvancedCopy Manager.

The flow of uninstalling the Manager of AdvancedCopy Manager is shown below:

```
┌─────────────────────────────────────────────┐
│          Delete all the Storage servers      │
└─────────────────────────────────────────────┘
                       │
                       ▼
┌─────────────────────────────────────────────┐
│  Release the setting information for the Web server │
└─────────────────────────────────────────────┘
                       │
                       ▼
┌─────────────────────────────────────────────┐
│       Execute the database unsetup processing │
└─────────────────────────────────────────────┘
                       │
                       ▼
┌─────────────────────────────────────────────┐
│       Instruct the uninstallation on the     │
│         [Add/Remove Programs] window         │
└─────────────────────────────────────────────┘
                       │
                       ▼
┌─────────────────────────────────────────────┐
│          Installation selection Panel        │
│             (Select "Remove")                │
└─────────────────────────────────────────────┘
                       │
                       ▼
┌─────────────────────────────────────────────┐
│   Confirm the uninstallation and respond to the system │
└─────────────────────────────────────────────┘
                       │
                       ▼
┌─────────────────────────────────────────────┐
│             Reactivate the system            │
└─────────────────────────────────────────────┘
                       │
                       ▼
┌─────────────────────────────────────────────┐
│        Deleting agent management information │
│  (only when the Storage management server also operates │
│            as a Storage server)              │
└─────────────────────────────────────────────┘
```
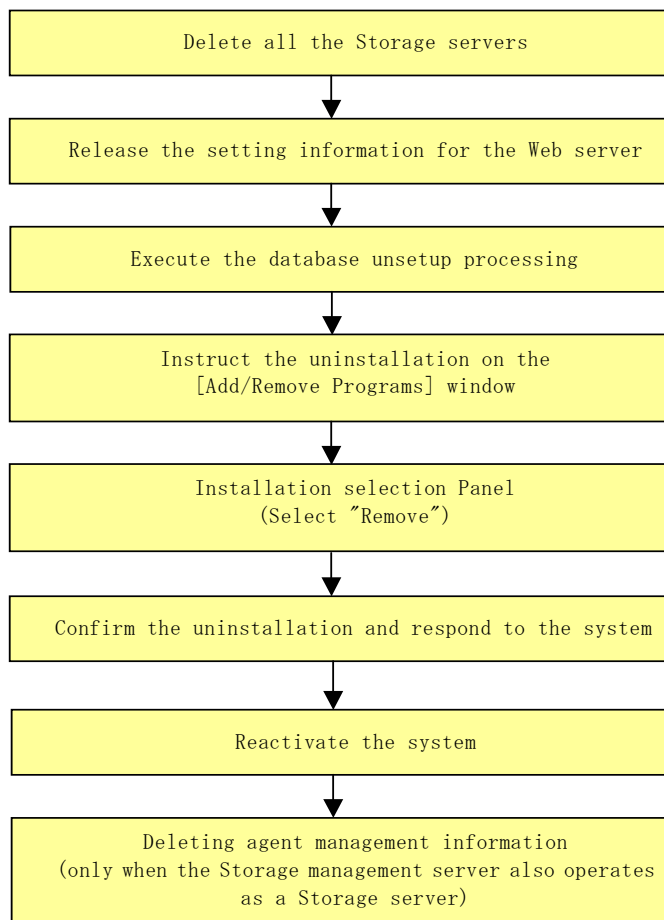
Note

If the storage management server operates in a cluster, then "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.

9.1.1.1 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 Web client, see "Deleting servers" in the "ETERNUS SF AdvancedCopy Manager GUI User's Guide".

Refer to "Server information deletion command (stgxfwcmdelsrv)" in the "ETERNUS SF AdvancedCopy Manager Operator's guide" for information on how to delete Storage servers using the command line.

9.1.1.2 Cancel Web Server configuration information

1. Logon to the system.
    Log on to the system where AdvancedCopy Manager is to be uninstalled as Administrator of that system.
2. If the Web server was setup during installation, cancel the Web server configuration information.
    Execute the following command from the command prompt window:

    ```
    C:¥>program directory¥bin¥alias -u
    ```

    For details of the above command, see "Web server configuration and configuration cancellation command (alias)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide."

9.1.1.3 Uninstall the database

1. Activate the [AdvancedCopy Manager Setup Menu].

    Note

    - Executing this process with either of the services listed below causes an error. Do not use these services:
        - Terminal service (use via a remote desktop connection)
        - Telnet server service

    If the Storage Management Server is running Windows Server 2003, the Terminal Service can 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/278845
    - 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.
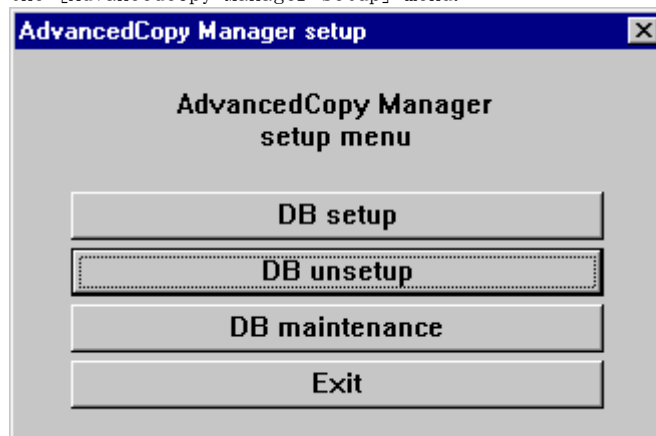
2.   Start the Database uninstall.
       Click the [DB unsetup] button.
       The following window is displayed.
       Be certain that deleting the database will not cause any problems in other applications
       or systems.
       Click the [Start] button.
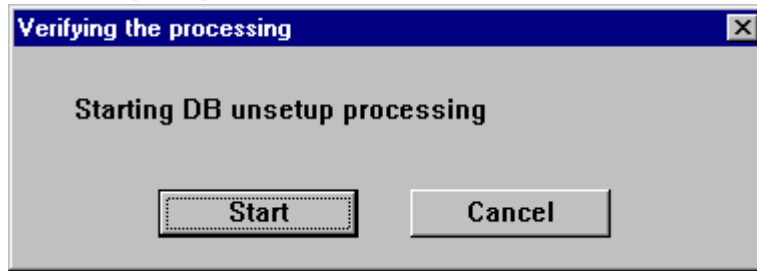
3.   Terminate the DB uninstall dialog.
       After the DB unsetup is completed, the following window is displayed.
       Click the [Close] button.
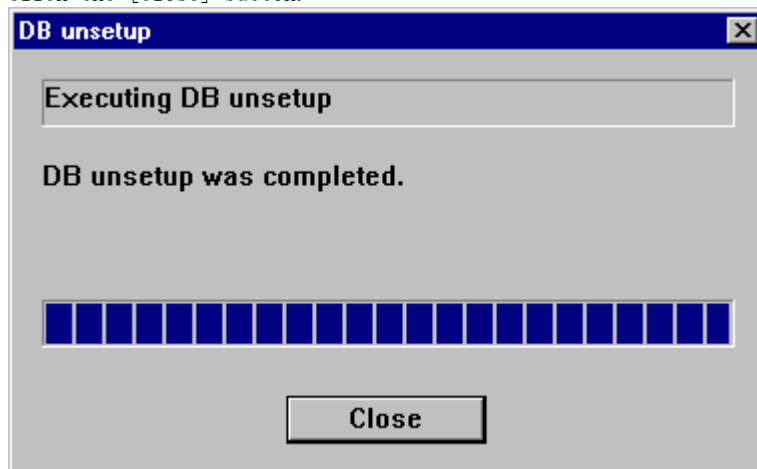
9.1.1.4 Uninstall

1. Remove the AdvancedCopy Manager program from your system by the following procedures.
              ─   For Windows 2000
         1- Select the [Add/Remove Programs] on the [Control Panel].
         2- Select "AdvancedCopy Manager" on [Add/Remove programs] window.
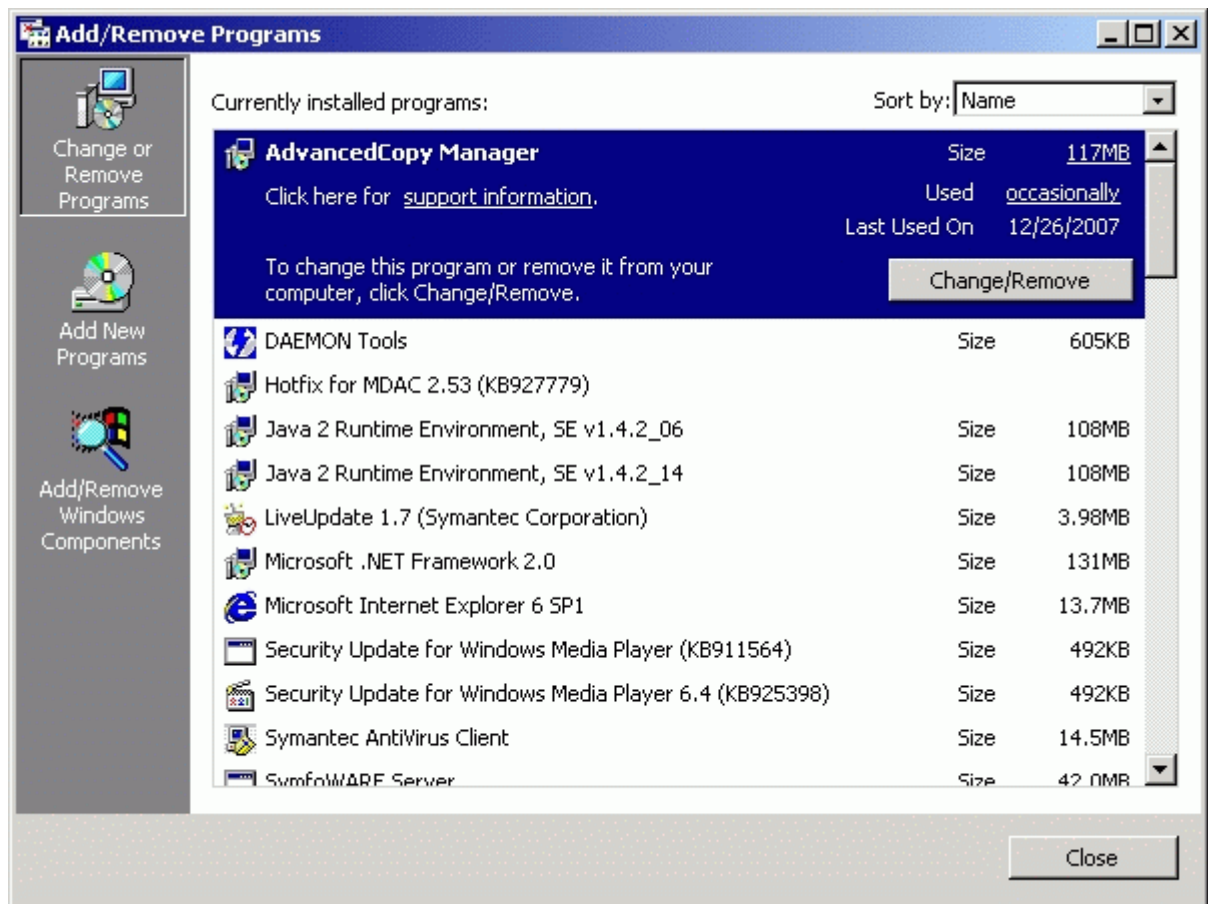
3- Click the [Change/Remove] button.
— For Windows Server 2003
1- Select the [Add or Remove Programs] on the [Control Panel].
2- Select "AdvancedCopy Manager" on [Add or Remove Programs] window.
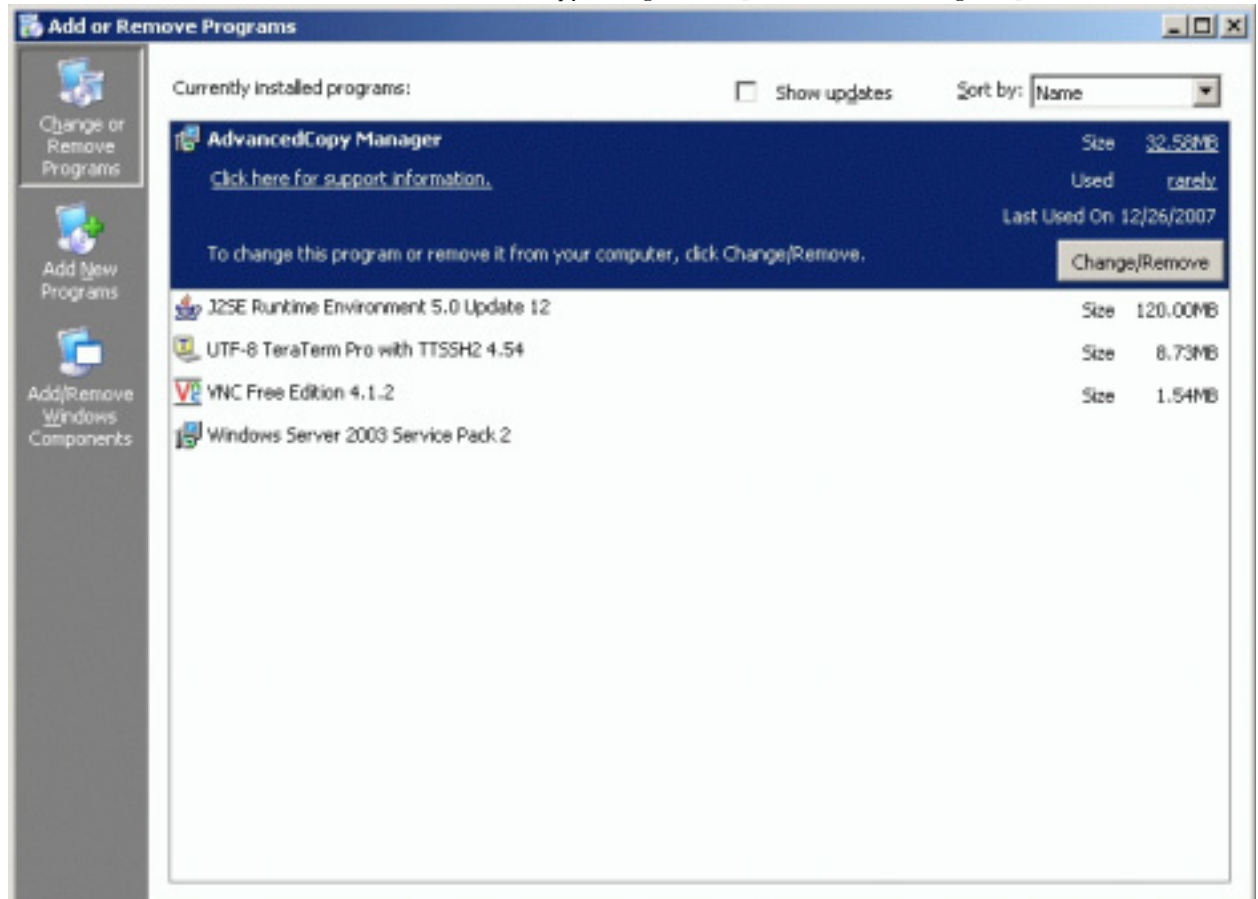
3- Click the [Change/Remove] button.

2. Select "Remove" on the [Welcome] window and click the [Next] button.
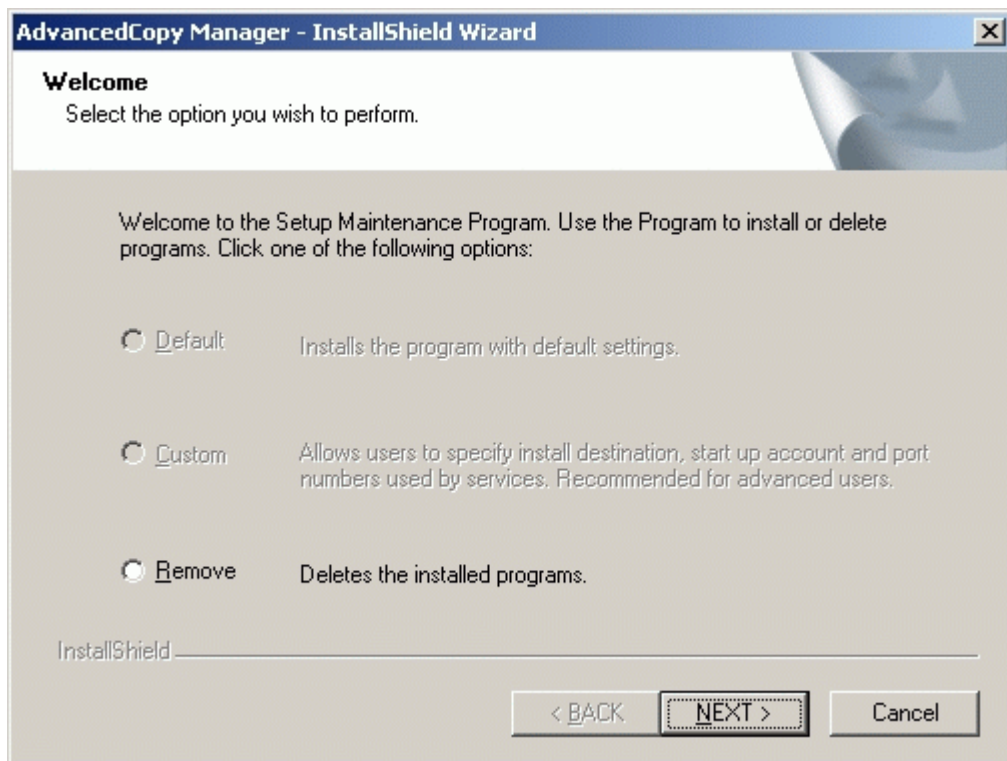
3. The following confirmation window is displayed. Click the [OK] button.
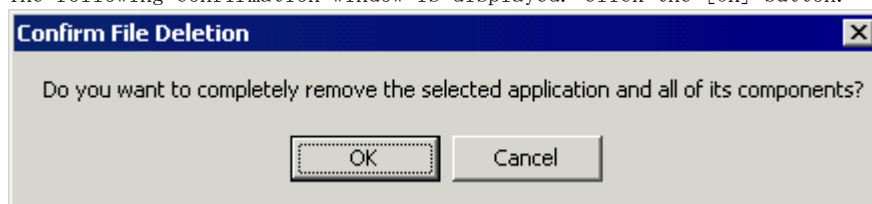
4. After the uninstall is completed, the following confirmation window is displayed. Click
   the [OK] button to complete the uninstall of the AdvancedCopy Manager.
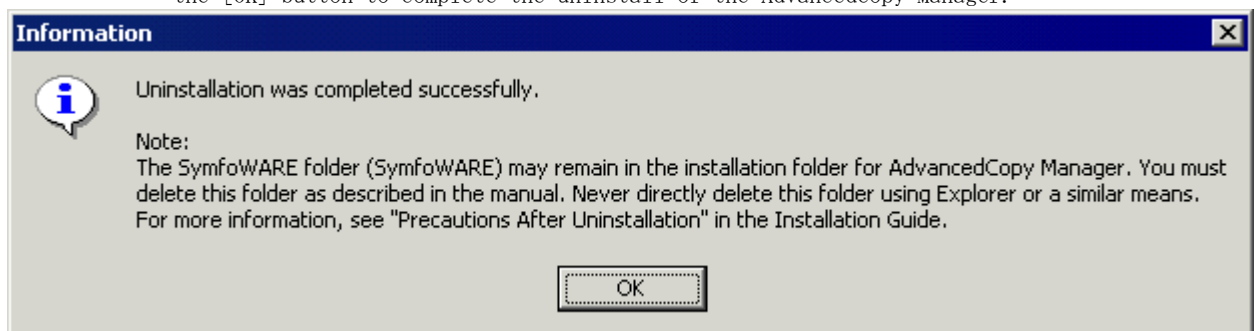
5. Restart the system.

9.1.1.5 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.

9.1.2 Solaris/Linux Platform

Use the following procedures at the Storage Management server to perform the uninstall:
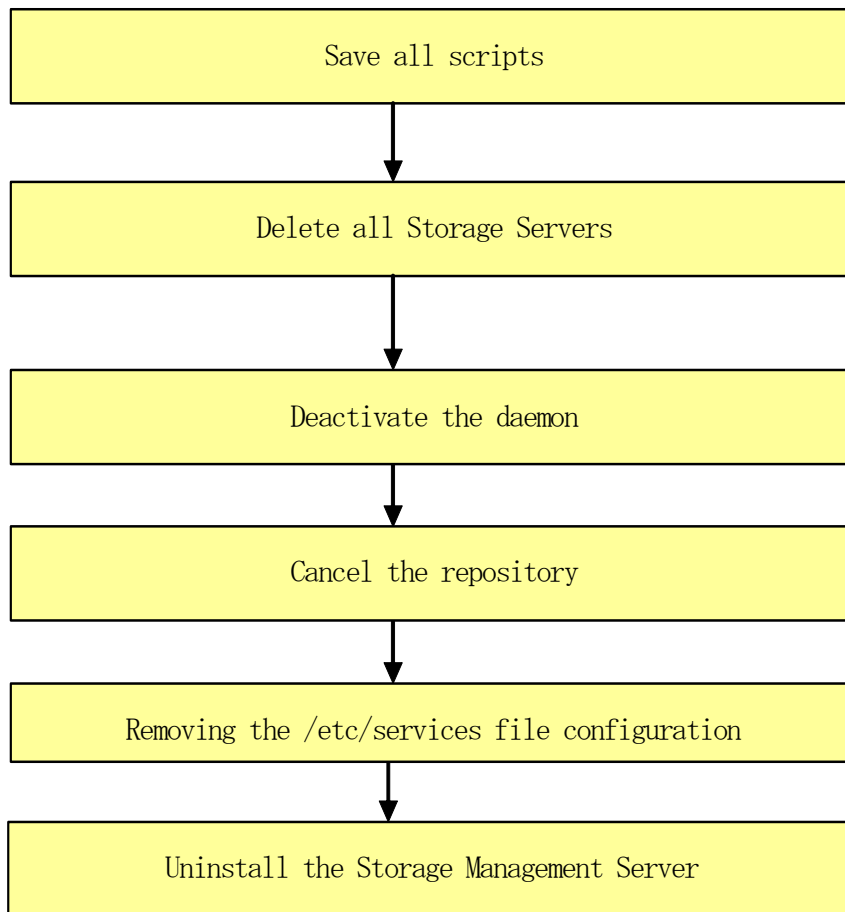
```
┌─────────────────────────────────────────┐
│              Save all scripts            │
└─────────────────────────────────────────┘
                     │
                     ▼
┌─────────────────────────────────────────┐
│          Delete all Storage Servers      │
└─────────────────────────────────────────┘
                     │
                     ▼
┌─────────────────────────────────────────┐
│            Deactivate the daemon         │
└─────────────────────────────────────────┘
                     │
                     ▼
┌─────────────────────────────────────────┐
│            Cancel the repository         │
└─────────────────────────────────────────┘
                     │
                     ▼
┌─────────────────────────────────────────┐
│   Removing the /etc/services file configuration │
└─────────────────────────────────────────┘
                     │
                     ▼
┌─────────────────────────────────────────┐
│      Uninstall the Storage Management Server │
└─────────────────────────────────────────┘
```

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.

9.1.2.1 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.

9.1.2.2 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 Web client, see "Server deletion method" 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 "Server information deletion command (stgxfwcmdelsrv)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide".

9.1.2.3 Daemon deactivation

Deactivate the daemon of the storage management server with the following command:

```
# /opt/swstorage/bin/stopacm
```

9.1.2.4 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 <RETURN>
```

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.

#
```

9.1.2.5 Removing the /etc/services file configurations

Delete the service that is set in the description in "Figure: Content written to the /etc/services file.

9.1.2.6 De-installation

Solaris

1. Place the system in superuser mode.

```
# su <RETURN>
```

2. Execute the "swunsetup" command. Execution of this command will delete most of the

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packages listed in "Solaris Platform" of "Program Components of AdvancedCopy Manager".

```
# /opt/swstorage/setup/stg/swunsetup <RETURN>
```


Note

To re-install into another directory after executing the swunsetup command, check that none of the directories of the package shown in "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 <RETURN>
```

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 <RETURN>
```

7. Delete the FJSVswtrc package.

```
# pkgrm FJSVswtrc <RETURN>
```

Linux

1. Place the system in superuser mode.

```
# su <RETURN>
```

2. Execute the swunsetup command. Execution of this command will delete most of the packages, listed in "Linux Platform" of "Program Components of AdvancedCopy Manager".

```
# /opt/swstorage/setup/stg/swunsetup <RETURN>
```


Note

To re-install into another directory after executing the swunsetup command, check that none of the directories of the package shown in "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 <RETURN>
```

4. In response to the confirmation message to remove Symfoware, input "all" or "y". To cancel the installation, input "n".
Enter 'y' in response to the second confirmation message.
[System environment of v.3]

```
Is removal started? (all:all packages y:except common packages n:end (default:n)
[all,y,n]:
```

[System environment of v.4 for x86, EM64 and Itanium and v.5 for Itanium]
In response to the confirmation message to remove Symfoware, input 'y'. To cancel the process input 'n'.

```
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]:

Removal of all packages, Ok? (default:n) [y,n]:y
```

5. The following messages will be output if uninstall of Symfoware is completed normally.

[System environment of v.3]

```
Removal of "Symfoware Server Enterprise Edition" was successful.
```

[System environment of v.4 for x86 and EM64]

```
Uninstallation of "Symfoware Server Enterprise Edition" is ended normally.
```

【System environment of v.4 for Itanium】

```
Uninstallation of "Symfoware Server Enterprise Extended Editor" is ended
normally.
```

【System environment of v.5 for Itanium】

```
Uninstallation of "Symfoware Server Enterprise Extended Edition" is ended
normally.
```

9.2 Uninstall of Agent

The uninstall method of the agent of AdvancedCopy Manager is explained as follows.

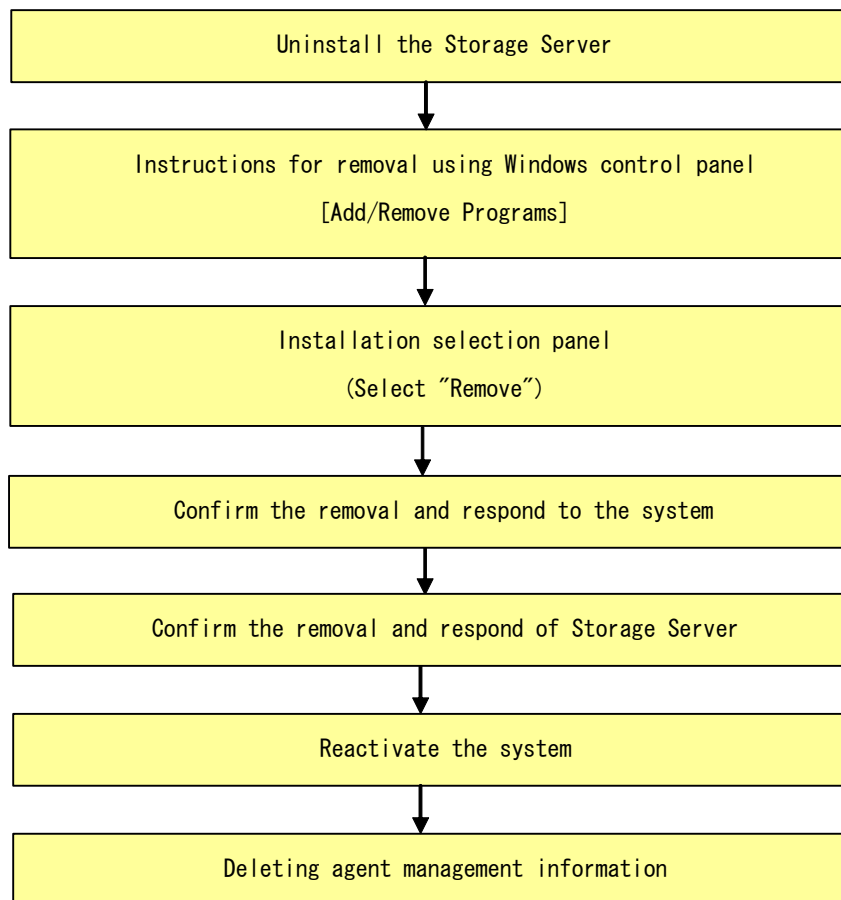## 9.2.1 Windows Platform

Note

Please be sure to refer to "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:

```
┌─────────────────────────────────────────────────┐
│          Uninstall the Storage Server            │
└─────────────────────────────────────────────────┘
                        │
                        ▼
┌─────────────────────────────────────────────────┐
│   Instructions for removal using Windows control panel │
│              [Add/Remove Programs]               │
└─────────────────────────────────────────────────┘
                        │
                        ▼
┌─────────────────────────────────────────────────┐
│           Installation selection panel           │
│               (Select "Remove")                  │
└─────────────────────────────────────────────────┘
                        │
                        ▼
┌─────────────────────────────────────────────────┐
│      Confirm the removal and respond to the system      │
└─────────────────────────────────────────────────┘
                        │
                        ▼
┌─────────────────────────────────────────────────┐
│    Confirm the removal and respond of Storage Server    │
└─────────────────────────────────────────────────┘
                        │
                        ▼
┌─────────────────────────────────────────────────┐
│              Reactivate the system               │
└─────────────────────────────────────────────────┘
                        │
                        ▼
┌─────────────────────────────────────────────────┐
│        Deleting agent management information      │
└─────────────────────────────────────────────────┘
```

9.2.1.1 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 "ETERNUS SF AdvancedCopy Manager GUI User's Guide."
Please refer to "Server information deletion command (stgxfwcmdelsrv) of "ETERNUS SF AdvancedCopy Manager Operator's Guide" about the deletion method of the Storage server in a command.

9.2.1.2 Uninstall procedure

1. Logon to the system.
    Logs on to the system which uninstalls AdvancedCopy Manager using an Administrators user id.. .
2. Remove the AdvancedCopy Manager program from your system by the following procedures.
    ―   For Windows 2000
    1- Select the [Add/Remove Programs] on the [Control Panel].
    2- Select "AdvancedCopy Manager" on [Add/Remove programs] window.
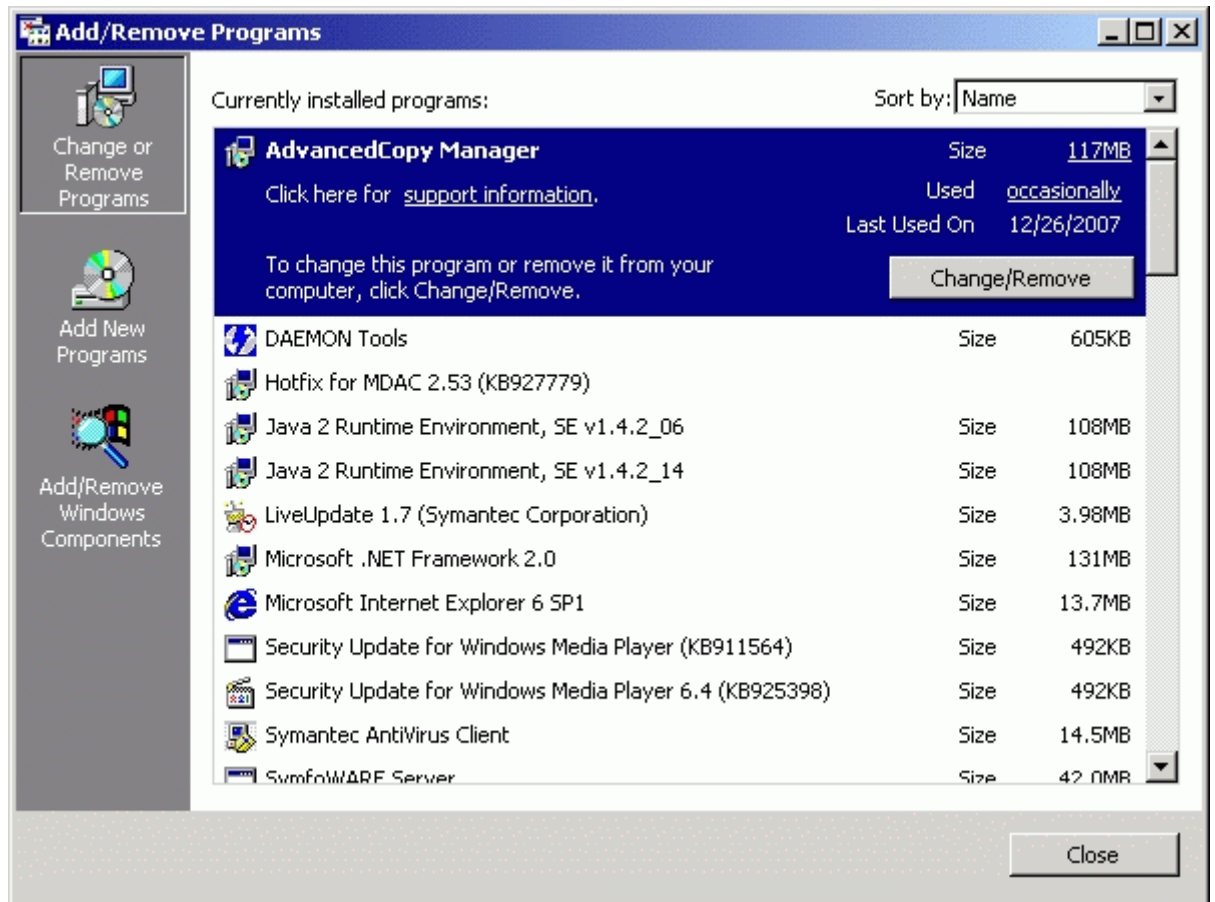
3- Click the [Change/Remove] button.
―   For Windows Server 2003
1- Select the [Add or Remove Programs] on the [Control Panel].
2- Select "AdvancedCopy Manager" on [Add or Remove Programs] window.
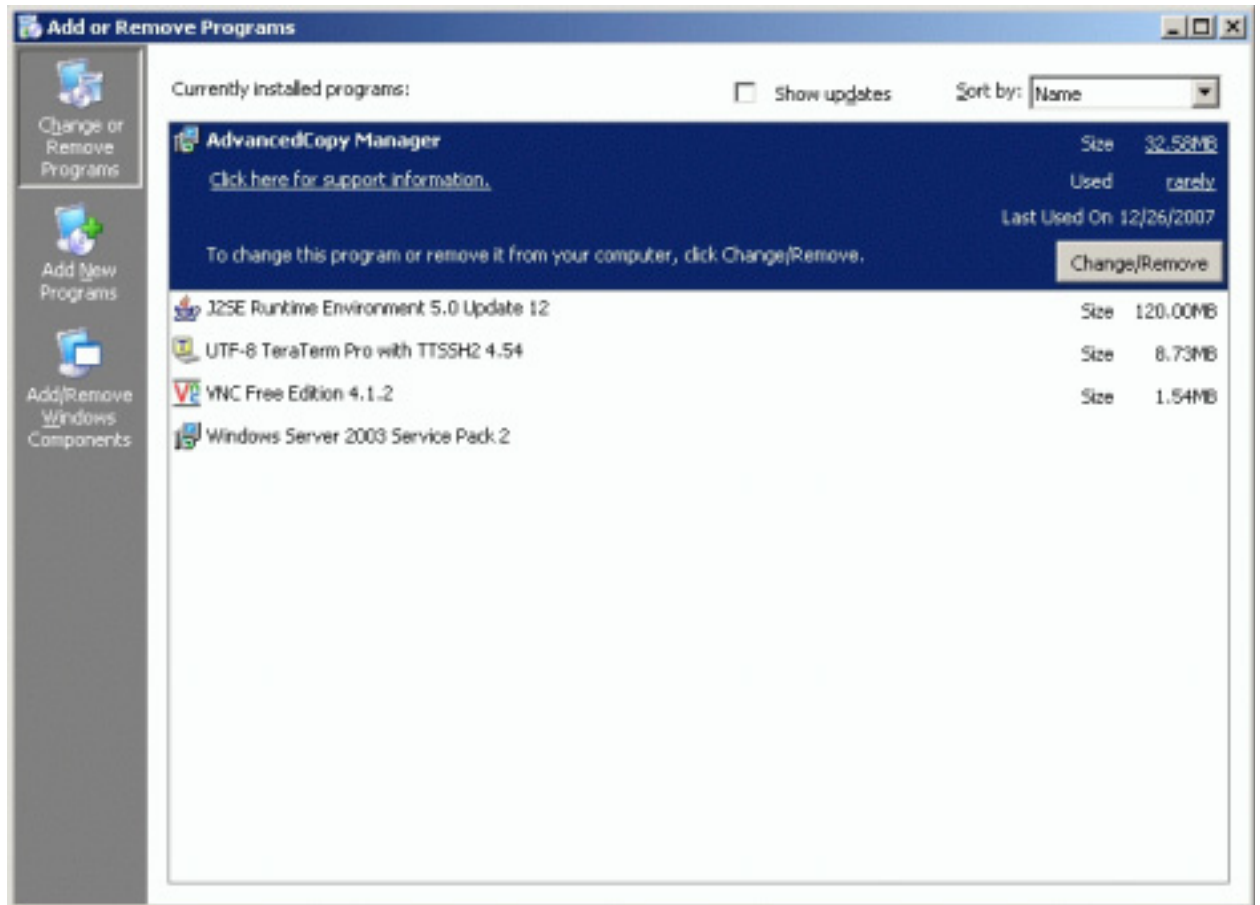
3- Click the [Change/Remove] button.

3.   Select "Remove" on the [Welcome] window, and then click the [Next] button.
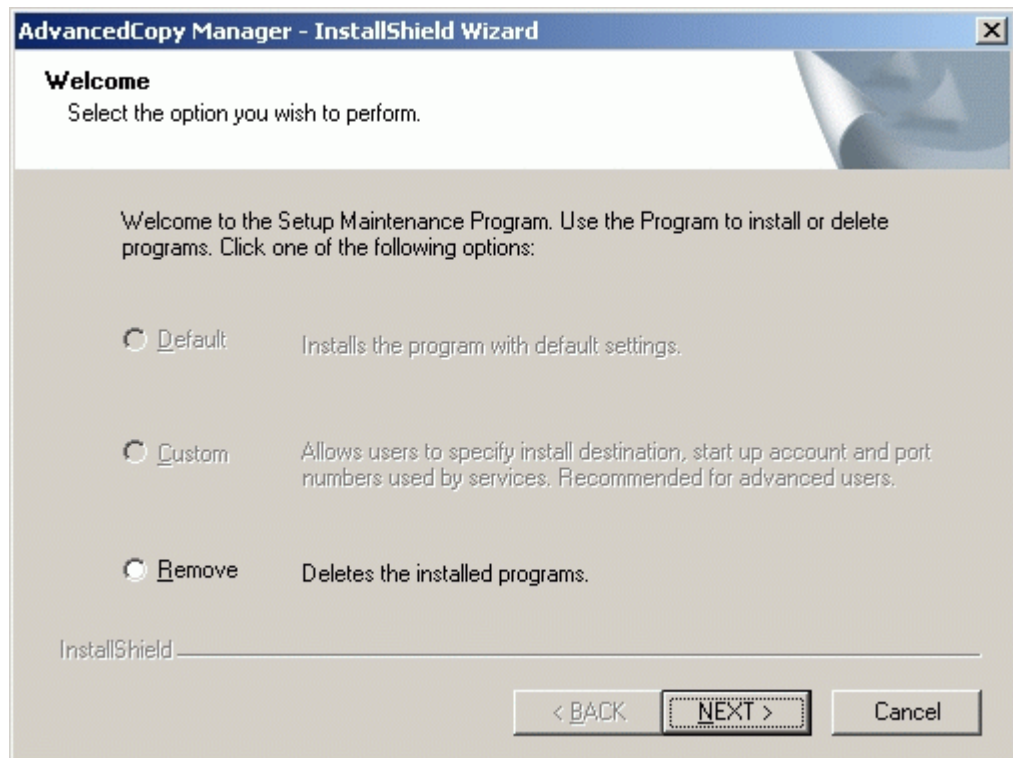
4. The following window is displayed; click the [OK] button.
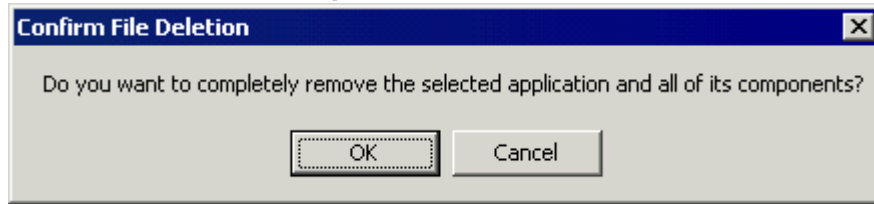
5. A dialog box will open to request confirmation for deleting the storage server. To delete the server, click the [OK] button.
   This starts the AdvancedCopy Manager uninstall process.
   If you are not sure about deleting the storage server, click the [Cancel] button to cancel processing.
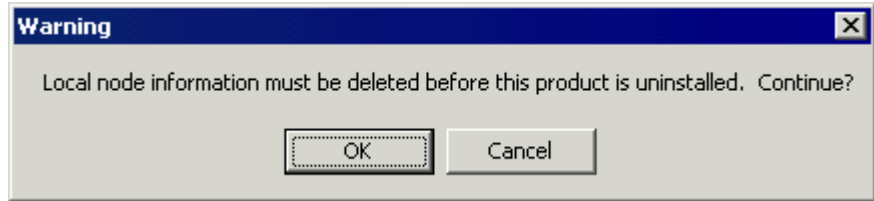
6. After the uninstall has completed, the following confirmation window is displayed.
   Click the [OK] button to complete the uninstall of AdvancedCopy Manager.
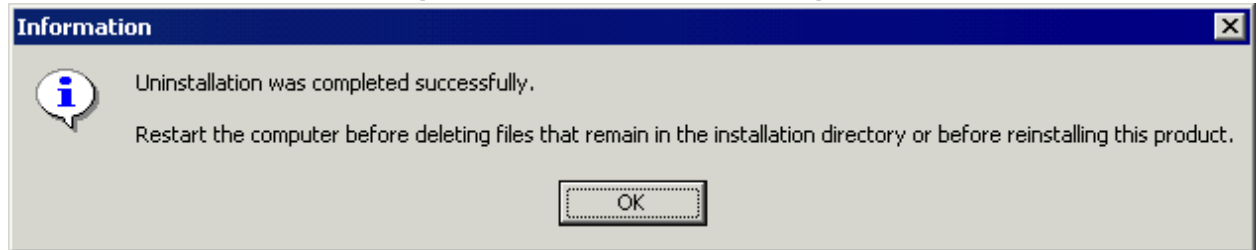
7. Restart the system.

9.2.1.3 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.

9.2.2 Solaris/Linux/HP-UX/AIX Platform

In the storage server, execute unsetup by using the following procedures.
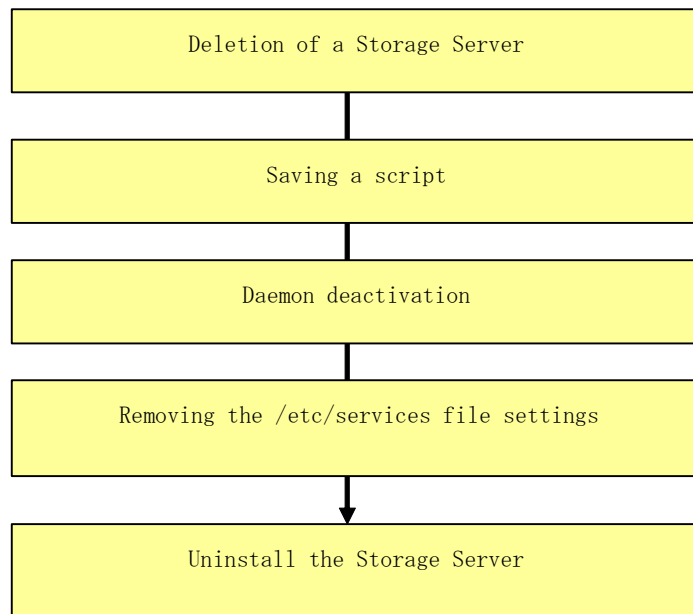
To uninstall in cluster operation it is necessary to delete the environment of all Storage Server transactions of AdvancedCopy Manager currently created by the node.

9.2.2.1 Deletion of a Storage Server

The Storage Server which is uninstalled is deleted from an AdvancedCopy Manager management subordinate.
Refer to "Server deletion method" in the "ETERNUS SF AdvancedCopy Manager GUI User's Guide" for information on how to delete Storage servers using a Web client.
Refer to "Server information deletion command (stgxfwcmdelsrv)" 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 on the host operating system of the Storage Management Server.

9.2.2.2 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.

9.2.2.3 Daemon deactivation

Deactivate the daemon of the Storage Server with the following command:

```
# /opt/swstorage/bin/stopacm
```

9.2.2.4 Removing the /etc/services file configurations

Delete the service that was configured as described in "Figure Content written to the /etc/services file"

9.2.2.5 Uninstall

Solaris edition

1. Place the system in superuser mode.

```
# su <RETURN>
```

2. Execute the swunsetup command. Execution of this command will delete most of the packages listed in "Program Components of AdvancedCopy Manager".

```
# /opt/swstorage/setup/stg/swunsetup <RETURN>
```

— To re-install into another directory after executing the swunsetup command, check that none of the directories of the package shown in "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 storage system Access API) package after checking that only the AdvancedCopy Manager uses this package function.

```
# pkgrm FJSVgrapi<RETURN>
```

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<RETURN>
```

Linux and HP-UX editions

1. Place the system in superuser mode.

```
# su <RETURN>
```

2. Execute the swunsetup command. Execution of this command will delete most of the packages listed in "Program Components of AdvancedCopy Manager".

```
# /opt/swstorage/setup/stg/swunsetup <RETURN>
```

To re-install into another directory after executing the swunsetup command, check that none of the directories of the package shown in "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 <RETURN>
```

2. Execute the swunsetup command. Execution of this command will delete most of the packages listed in "Program Components of AdvancedCopy Manager".

```
# /opt/swstorage/setup/stg/swunsetup <RETURN>
```

To re-install into another directory after executing the swunsetup command, check that none of the directories of the package shown in "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 the "Install procedures" for "AIX edition" in this manual:

```
# /opt/FJSVswstf/daemon/stop_smgr0
```

9.3 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.
4. Saving Definition Files
5. Deletion of Storage Server
6. Deletion of a Tape Library System Configuration
7. Daemon Deactivation
8. Uninstall software
9. Uninstall the Agent or Manager of AdvancedCopy Manager

9.3.1 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

If these definition files are to be used again, save the files before the Tape Manager is uninstalled.

9.3.2 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 "Server information deletion command (stgxfwcmdelsrv)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide for Tape Backup Option".

9.3.3 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)

Before deleting the configuration of the tape library system, execute a TSM administrative client command (dsmadmc).
For details, see the "ETERNUS SF TSM Administrator's Reference" and the "ETERNUS SF TSM ETERNUS LT Library Operational Guide".

9.3.4 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
```

9.3.5 Uninstall

1. Place the system in super-user mode.

```
# su <RETURN>
```

2. If an IBM tape drive device such as ETERNUS LT160 is used, uninstall the IBM tape driver.

```
# pkgrm IBMtape <RETURN>
```

3. Execute the tbounsetup command.

```
# /opt/swstorage/setup/stg/tbounsetup <RETURN>
```


Note

To reinstall the package in another directory after the tbounsetup command is executed, verify that the package directory in "Tape Manager" of "Program Components of AdvancedCopy Manager" does not remain.
Even if the tbounsetup command is executed, the package directory may not be removed. If the package directory is left undeleted, remove it as required.

9.3.6 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 "Uninstall of Agent".
To uninstall the Manager, see "Uninstall of Manager".

Chapter 10 Notes

This chapter details notes for installing AdvancedCopy Manager.

10.1 Windows Platform

10.1.1 Notes on Installation

10.1.1.1 User Account for Installation

You must be logged on to the system on which as Administrator on which AdvancedCopy Manager is to be installed as Administrator.

10.1.1.2 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.

10.1.1.3 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.

10.1.1.3.1 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."

10.1.1.3.2 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.

10.1.1.4 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.

10.1.1.5 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.

10.1.1.6 Running the Software in an Environment Where the Windows Firewall Is Enabled

If Windows Server 2003 Service Pack 1 or Windows Server 2003 R2 has been applied, disable the Windows firewall function or configure the Windows firewall settings by performing the following steps.

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.

On a Web client, perform the following changes:

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. Enter the following settings:
   — [name]: Specify any name that you want.
   — [Port number: Specify the port number (normally 80) that is set on the Web server. Select "TCP" for the protocol.
4. To change the scope, specify the scope available for communication with the client.
5. Click the [OK] button in the [Add Port] dialog box.
6. Click the [Add Program] button on the [Exceptions] tab to open the [Add Program] dialog box.
7. Click the [Reference] button, and specify the following program in the [Reference] dialog box:
   <program-directory-of- -AdvancedCopy-Manager>¥jre¥bin¥java.exe
8. To change the scope, specify the scope available for communication with the client.
9. Click the [OK] button in the [Add Program] dialog box.
10. 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.

10.1.1.7 Running the Software in an Environment where Windows SharePoint Services have been Installed

Using the Web client when the Storage Management Server works in the Windows Server2003 R2 environment where Windows SharePoint Services have been installed.
The following procedure is used to change SharePoint server management and IIS settings.

SharePoint server management settings

1. Select [Start], [Administrative Tools] and then [SharePoint Central Administrator] to open the management window.
2. Click [Virtual server settings configuration] under [Configure virtual server settings].
3. If there are multiple virtual servers, a list of virtual servers will be displayed, so click on [Default Web Site].
4. Click on [Define managed paths] under [Virtual Server Management].
5. Enter the excluded paths shown below in the [Path] box under [Add a New Path].
6. Select [Excluded path] under [Type], and click the [OK] button.
7. Repeat steps 4 and 5 for each path to be excluded.

The following four paths need to be excluded. (Be sure to enter a forward slash "/" at the beginning).

- /swstorage
- /swstorage-j
- /swstorage-d
- /swstorage-cgi

IIS settings

1. Select [Start], [Administrative Tools] and then [Internet Information Services (IIS) Manager] to open the management window.
2. Open the [Default Web site].
3. Open the [Properties] window by selecting the manipulated paths shown below.
4. Click the [Edit] button under [Authentication and access control] on the [Directory Security] tab.
5. Select the [Enable anonymous access] checkbox in the [Authentication methods] window, and click the [OK] button.
6. Click the [OK] button in the [Properties] window.

The following four paths need to be manipulated.

- swstorage
- swstorage-j
- swstorage-d
- swstorage-cgi

> These settings must be made again if Windows SharePoint Services is reinstalled, or if the Web server settings for AdvancedCopy Manager are modified.

10.1.2 Notes on Uninstall

10.1.2.1 Notes before Uninstall

10.1.2.1.1 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 "Resource backup command (swstresback)" 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.

10.1.2.1.2 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.

10.1.2.1.3 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 and cancels the Web server configuration information. Therefore, the AdvancedCopy Manager uninstall tasks need not include DB unsetup and cancellation of Web server configuration information.

10.1.2.1.4 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".

10.1.2.2 Notes on Uninstall

10.1.2.2.1 About account for uninstall

To execute the uninstall, the system must be logged on by the local account belonging to the Administrators group. If the system has been logged on by the domain account, or if the system has been logged on by the local account not belonging to the Administrators group, the system must be logged off and on again by a local account belonging to the Administrators group.

10.1.2.3 Notes after Uninstall

10.1.2.3.1 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] (under Windows 2000, on the [Add/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.

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: Program components of Agent (Solaris edition)

No.	Package name	Version No.	Function
1	FJSVgrapi	2.12	ETERNUS storage system Access API
2	FJSVswsrp	13.2	Replication Management
3	FJSVswstc	13.2	Tape Backup Agent
4	FJSVswstf	13.2	AdvancedCopy Manager Basic
5	FJSVswsts	13.2	Backup Management
6	FJSVswtrc	13.0	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: Program components of Manager (Solaris edition)

No.	Package name	Version No.	Function
1	FJSVgrapi	2.12	GR-API for Solaris
2	FJSVswscm	13.2	AdvancedCopy Manager Online Manual
3	FJSVswsrp	13.2	Replication Management
4	FJSVswssc	13.2	Security Framework
5	FJSVswstc	13.2	Tape Backup Agent
6	FJSVswstf	13.2	AdvancedCopy Manager Basic
7	FJSVswsts	13.2	Backup Management
8	FJSVswtrc	13.0	Common Trace
9	FJSVrdbap	V28L10	Symfoware/RDB Client Package
10	FJSVrdbdb	V28L10	Symfoware/RDB Server Package
11	FJSVsymee	8.0	SymfoWARE Server Enterprise Edition Common Package
12	FSUNiconv	1.2.2	Iconv Standard Code Converter
13	FJSVsymjd	V20L81	Symfoware JDBC Driver package
14	FSUNrdb2b	V28L10	Symfoware/RDB Common Package
15	FSUNrdbps	V28L10	Symfoware/RDB Parallel Query Option
16	FJSVsymwa	V12L11	Symfoware WebAdmin ＊ Not installed if the operating system default location is other than ja, japanese, ja_JP.eucJP, ja_JP.PCK, or ja_JP.WINDOWS-31J
17	FJSVsymme	8.0.0	Symfoware Server Enterprise Edition Manual Package ＊ Not installed if the operating system default location is other than ja, japanese, ja_JP.eucJP, ja_JP.PCK, or ja_JP.WINDOWS-31J
18	FJSVsymwd	V15L11	Symfoware WebDBtools ＊ Not installed if the operating system default location is other than ja, japanese, ja_JP.eucJP, ja_JP.PCK, ja_JP.WINDOWS-31J or ja_JP.UTF-8
19	FJSVapccm	V38L10	Symfoware/RDB Connection Manager Common Package
20	FJSVapcdb	V38L10	Symfoware/RDB Connection Manager Server Package
21	FSUNrdasv	V20L20	SymfoWARE RDA-SV ＊ Not installed if the operating system default location is other than ja_JP.PCK

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 3

The package configurations are represented as follows based on the system environment where the Agent is installed:

● Red Hat Enterprise Linux AS (v.3 for x86)
● Red Hat Enterprise Linux ES (v.3 for x86)

Table: Program components of Agent (Linux edition: v.3)

No.	Packge	Version	Function
1	FJSVgrapi	1.08-1	ETERNUS storage system Access API
2	FJSVswsrp	13.2-01	Replication Management
3	FJSVswstc	13.2-01	Tape Backup Agent
4	FJSVswstf	13.2-01	AdvancedCopy Manager Basic
5	FJSVswsts	13.2-01	Backup Management
6	FJSVswtrc	13.0-01	Common Trace

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 (v.5 for x86)
● Red Hat Enterprise Linux (v.5 for EM64T)
● Red Hat Enterprise Linux (v.5 for Intel Itanium)

Table: Program components of Agent (Linux edition: v.4 and v.5)

No.	Package	Version	Function
1	FJSVgrapi	1.08-1 (for v.4 and v.5 for Intel Itanium) 1.09-1 (for v.4 for x86, for EM64T and for v.5 for x86, for Intel64)	ETERNUS storage system Access API
2	FJSVswsrp	13.2-01	Replication Management
3	FJSVswstc	13.2-01	Tape Backup Agent
4	FJSVswstf	13.2-01	AdvancedCopy Manager Basic
5	FJSVswsts	13.2-01	Backup Management
6	FJSVswtrc	13.0-01 (for v.4) 13.1-01 (for v.5)	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 V3:

The table lists the package configuration for either of the following system environments in which the Manager is installed:

● Red Hat Enterprise Linux AS (v.3 for x86)
● Red Hat Enterprise Linux ES (v.3 for x86)

Table: Program components of Manager (Linux edition: v.3)

No.	Package	Version	Function
1	FJSVgrapi	1.08-1	ETERNUS storage system Access API
2	FJSVswscm	13.2-01	AdvancedCopy Manager Online Manual
3	FJSVswsrp	13.2-01	Replication Management
4	FJSVswssc	13.2-01	Security Framework
5	FJSVswstc	13.2-01	Tape Backup Agent
6	FJSVswstf	13.2-01	AdvancedCopy Manager Basic
7	FJSVswsts	13.2-01	Backup Management
8	FJSVswtrc	13.0-01	Common Trace
9	FJSVrdb2b	2710.30-1	Symfoware Server RDB Common Part
10	FJSVrdbap	2710.30-1	Symfoware Server RDB Application Part
11	FJSVrdbdb	2710.30-1	Symfoware Server RDB Database part
12	FJSVsymee	7010.30-1	Symfoware Server Enterprise Edition Common
13	FJSVsymjd	6012.30-1	Symfoware JDBC Driver Package Common
14	FJSVrdbps	2710.30-1	Symfoware/RDB Parallel Query Package
15	FJSVsymwd	1411.30-1	Symfoware WebDBtools ＊ Not installed if the operating system default location is other than ja, japanese, ja_JP.eucJP, ja_JP.PCK, or ja_JP.WINDOWS-31J
16	FJSVsymwa	1111.30-1	Symfoware WebAdmin ＊ Not installed if the operating system default location is other than ja, japanese, ja_JP.eucJP, ja_JP.PCK, ja_JP.WINDOWS-31J or ja_JP.UTF-8
17	FJSVsymme	7010.30-1	Symfoware Server Enterprise Edition Manual Package ＊ Not installed if the operating system default location is other than ja, japanese, ja_JP.eucJP, ja_JP.PCK, ja_JP.WINDOWS-31J or ja_JP.UTF-8

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)

Table: Program components of Manager (Linux edition: v.4)

No.	Package	Version	Function
1	FJSVgrapi	1.09-1	ETERNUS storage system Access API
2	FJSVswscm	13.2-01	AdvancedCopy Manager Online Manual
3	FJSVswsrp	13.2-01	Replication Management
4	FJSVswssc	13.2-01	Security Framework
5	FJSVswstc	13.2-01	Tape Backup Agent
6	FJSVswstf	13.2-01	AdvancedCopy Manager Basic
7	FJSVswsts	13.2-01	Backup Management
8	FJSVswtrc	13.0-01	Common Trace
9	FJSVrdb2b	2910.40-1	Symfoware Server RDB Common Part

No.	Package	Version	Function
10	FJSVrdbap	2910.40-1	Symfoware Server RDB Application Part
11	FJSVrdbdb	2910.40-1	Symfoware Server RDB Database part
12	FJSVsymee	9010.40-1	Symfoware Server Enterprise Edition Common
13	FJSVsymjd	9010.40-1	Symfoware JDBC Driver Package
14	FJSVrdbps	2910.40-1	Symfoware/RDB Parallel Query Package
15	FJSVsymwd	1610.40-1	Symfoware WebDBtools ＊Not installed if the operating system default location is other than ja, japanese, ja_JP.eucJP, ja_JP.PCK, or ja_JP.WINDOWS-31J
16	FJSVsymwa	1310.40-1	Symfoware WebAdmin ＊Not installed if the operating system default location is other than ja, japanese, ja_JP.eucJP, ja_JP.PCK, ja_JP.WINDOWS-31J or ja_JP.UTF-8
17	FJSVsymme	9010.40-1	Symfoware Server Enterprise Edition Manual Package ＊Not installed if the operating system default location is other than ja, japanese, ja_JP.eucJP, ja_JP.PCK, ja_JP.WINDOWS-31J or ja_JP.UTF-8
18	FJSVapccm	2910.40-1	Symfoware Server Connection Manager Common Package
19	FJSVapcdb	2910.40-1	Symfoware Server Connection Manager Database Package

The table lists the package configuration for either of the following system environments in which the Manager is installed:

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

Table: Program components of Manager (Linux edition: v.4 for Itanium)

No.	Package	Version	Function
1	FJSVgrapi	1.08-1	ETERNUS storage system Access API
2	FJSVswscm	13.2-01	AdvancedCopy Manager Online Manual
3	FJSVswsrp	13.2-01	Replication Management
4	FJSVswssc	13.2-01	Security Framework
5	FJSVswstc	13.2-01	Tape Backup Agent
6	FJSVswstf	13.2-01	AdvancedCopy Manager Basic
7	FJSVswsts	13.2-01	Backup Management
8	FJSVswtrc	13.0-01	Common Trace
9	FJSVrdb2b	3910.40-1	Symfoware Server RDB Common Part
10	FJSVrdbap	3910.40-1	Symfoware Server RDB Application Part
11	FJSVrdbdb	3910.40-1	Symfoware Server RDB Database part
12	FJSVrdbps	3910.40-1	Symfoware/RDB Parallel Query Package
13	FJSVrdbse	3910.40-1	Symfoware/RDB Security Package
14	FJSVsymex	9010.40-1	Symfoware Server Enterprise Extended Edition Common Package
15	FJSVsymjd	9010.40-1	Symfoware JDBC Driver Package
16	FJSVsymwd	1610.40-1	Symfoware WebDBtools ＊Not installed if the operating system default location is other than ja, japanese, ja_JP.eucJP, ja_JP.PCK, or ja_JP.WINDOWS-31J
17	FJSVsymwa	1310.40-1	Symfoware WebAdmin ＊Not installed if the operating system default location is other than ja, japanese, ja_JP.eucJP, ja_JP.PCK, ja_JP.WINDOWS-31J or ja_JP.UTF-8
18	FJSVsymmx	9010.40-1	Symfoware Server Enterprise Edition Manual Package ＊Not installed if the operating system default location is other than ja, japanese, ja_JP.eucJP, ja_JP.PCK, ja_JP.WINDOWS-31J or ja_JP.UTF-8

No.	Package	Version	Function
19	FJSVapccm	3910.40-1	Symfoware Server Connection Manager Common Package
20	FJSVapcdb	3910.40-1	Symfoware Server Connection Manager Database Package

System environment of V5:

The table lists the package configuration for the following system environment in which Manager is installed:

● Red Hat Enterprise Linux AS (v.5 for Itanium)

Table: Program components of Manager (Linux edition: v.5 for Itanium)

No.	Package	Version	Function
1	FJSVgrapi	1.08-1	ETERNUS storage system Access API
2	FJSVswscm	13.2-01	AdvancedCopy Manager Online Manual
3	FJSVswsrp	13.2-01	Replication Management
4	FJSVswssc	13.2-01	Security Framework
5	FJSVswstc	13.2-01	Tape Backup Agent
6	FJSVswstf	13.2-01	AdvancedCopy Manager Basic
7	FJSVswsts	13.2-01	Backup Management
8	FJSVswtrc	13.0-01	Common Trace
9	FJSVrdb2b	3910.50-1	Symfoware Server RDB Common Part
10	FJSVrdbap	3910.50-1	Symfoware Server RDB Application Part
11	FJSVrdbdb	3910.50-1	Symfoware Server RDB Database part
12	FJSVrdbps	3910.50-1	Symfoware/RDB Parallel Query Package
13	FJSVrdbse	3910.50-1	Symfoware/RDB Security Package
14	FJSVsymex	9010.50-1	Symfoware Server Enterprise Extended Edition Common Package
15	FJSVsymjd	9010.50-1	Symfoware JDBC Driver Package
16	FJSVsymwd	1610.50-1	Symfoware WebDBtools
17	FJSVsymwa	1310.50-1	＊Not installed if the operating system default location is other than ja, japanese, ja_JP.eucJP, ja_JP.PCK, or ja_JP.WINDOWS-31J
18	FJSVsymmx	9010.50-1	Symfoware WebAdmin
19	FJSVapccm	3910.50-1	Symfoware Server Connection Manager Common Package
20	FJSVapcdb	3910.50-1	Symfoware Server Connection Manager Database Package

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: Program components of Agent (HP-UX edition)

No.	Package name	Version No.	Function
1	FJSVgrapi	2.11	ETERNUS storage system Access API
2	FJSVswsrp	13.2	Replication Management
3	FJSVswstc	13.1	Tape Backup Agent
4	FJSVswstf	13.1	AdvancedCopy Manager Basic
5	FJSVswsts	13.1	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: Program components of Agent (AIX edition)

No.	Package name	Version No.	Function
1	FJSVgrapi	2.11	ETERNUS storage system Access API
2	FJSVswsrp	13.2	Replication Management
3	FJSVswstc	13.1	Tape Backup Agent
4	FJSVswstf	13.1	AdvancedCopy Manager Basic
5	FJSVswsts	13.1	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: Program components of Tape Manager

Item No.	Package Name	Version No.	Function
1	FJSVswstm	13.2	Tape Backup Manager
2	FJSVswstr	13.2	TSM Access Command of Tape Backup
3	FJSVswstu	13.2	Utility of Tape Backup
4	FJSVtsmrc	5.3	Module for Block/Character Device
5	TIVsmCapi	5.3.4	TSM API Package
6	TIVsmCba	5.3.4	TSM B/A Client Package
7	TIVsmCdoc	5.3.4	TSM Document
8	TIVsmS	5.3.3	TSM Server
9	TIVsmSdev	5.3.3	Device Driver for TSM
10	TIVsmSlic	5.3.0	TSM License

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: 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

Storage Management Server	Storage Server	Action required
Linux (UTF8)	Windows (SJIS)	None
	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 following table:

Table: Storage Server language environment (for tape backup operations)

Storage Server	Action required
Windows	None
Solaris	None
Linux	None
HP-UX	Add the UTF language environment to the Storage Server.
AIX	Add the UTF language environment to the Storage Server.

After the appropriate package is installed, re-execute the "All device information fetch/reflect" operation from the Web client.

B.2 Tape server

The UTF8 language environment is required on Tape servers. Take the action shown in the following table:

Table: 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. 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: 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: Storage Server and Tape Server language environments

Storage 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)	None
Solaris (SJIS)	Solaris (EUC)	Install the SJIS package on the Tape server.
	Solaris (SJIS)	None
HP-UX (EUC)	Solaris (EUC)	None
	Solaris (SJIS)	None
Linux (UTF8)	Solaris (EUC)	None
	Solaris (SJIS)	None

Storage Server	Tape Server	Action required (except for UTF8)
Linux (EUC)	Solaris (EUC)	None
	Solaris (SJIS)	None
AIX (SJIS)	Solaris (EUC)	Install the SJIS package on the Tape server.
	Solaris (SJIS)	None
AIX (EUC)	Solaris (EUC)	None
	Solaris (SJIS)	None

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 (LT220/LT230/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 LT220

This section describes how to set up the ETERNUS LT220 tape library.

D.1.1.1 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@17,4000/scsi@3/st@0,0:
 ...
```

2. Check the displayed device file to see if the st driver recognizes the LT220 device.

```
../../devices/pci@17,4000/scsi@3/st@1,0:
                  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 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.

> 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.

> 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.

Note

> When executing the rm command, be careful not to accidentally delete other files.

```
# 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
            :
```

D.1.1.2 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.

```
# ------------------------------------
# Tivoli Storage Management Server for Sun Solaris
# 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", and the "lun" value of 0 are fixed values.

2. In /usr/kernel/drv/, create a symbolic link for the lb driver in
/opt/tivoli/tsm/devices/bin/.

```
# ln -s /opt/tivoli/tsm/devices/bin/lb /usr/kernel/drv/
#
```

3. Register the lb driver.

```
# /usr/sbin/add_drv -m ' * 0666 bin bin'  lb
#
```

D.1.1.3 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 7, 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;
```

D.1.1.4 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 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/scsi@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/scsi@3/lb@0,0:lb
                   1              2  3
1:" devices/pci@1f,4000/scsi@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/scsi@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/scsi@3/IBMtape@1,0:st
                     1                    2     3
1 : ” devices/pci@1f,4000/scsi@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.1.2 ETERNUS LT230 (SCSI connection)

This section describes how to set up the ETERNUS LT230 (SCSI connection) tape library.

D.1.2.1 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@17,4000/scsi@3/st@0,0:
     :
```

2.   Check the displayed device file 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.

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.

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.

Note

When executing the rm command, be careful not to accidentally delete other files.

```
# 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
          :
```

D.1.2.2 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.

```
# -------------------------------------
# Tivoli Storage Management Server for Sun Solaris
# 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", and the "lun" value of 0 are fixed values.

2. In /usr/kernel/drv/, create a symbolic link for the lb driver in
/opt/tivoli/tsm/devices/bin/.

```
# ln -s /opt/tivoli/tsm/devices/bin/lb /usr/kernel/drv/
#
```

3. Register the lb driver.

```
# /usr/sbin/add_drv -m ' * 0666 bin bin'  lb
#
```

D.1.2.3 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 7, 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;
```

D.1.2.4 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.1.3 ETERNUS LT270

This section describes how to set up the ETERNUS LT270 tape library.

D.1.3.1 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@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.

Note

　　　When executing the rm command, be careful not to accidentally delete other
　　　files.

```
# 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
              :
```

D.1.3.2 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.

```
# --------------------------------------
# Tivoli Storage Management Server for Sun Solaris
# 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.   In /usr/kernel/drv/, create a symbolic link for the lb driver in
/opt/tivoli/tsm/devices/bin/.

```
# ln -s /opt/tivoli/tsm/devices/bin/lb /usr/kernel/drv/
#
```

3.   Register the lb driver.

```
# /usr/sbin/add_drv -m ' * 0666 bin bin'  lb
#
```

D.1.3.3 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 7, 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;
```

D.1.3.4 HBA driver settings

Note

This section describes the HBA driver settings for use of the Fujitsu HBA driver
(FJSVpfca). If a different HBA driver, such as Emulex or NetMarks, is used, refer
to the HBA manual for that product.
These settings are required only for fibre channel switch connections (FC-SW
connections). These settings are not required for direct connections (FC-AL
connections).

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".

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/0
-> ../../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/6lb" is set as the device filename.

```
tsm> define path tapeserver1 LT270 srctype=server desttype=library
device=/dev/rmt/6lb
ANR1720I A path from TAPESERVER1 to LT270 has been defined.

tsm>
```

3. Define the drive.

```
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]

— For ETERNUS LT270

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 (/dev/rmt/Xst: 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>
```