



FUJITSU Storage
ETERNUS SF
Storage Cruiser V16.4 /
AdvancedCopy Manager V16.4

Cluster Environment Setup Guide

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Preface

Purpose

This manual provides information on installation and operation for FUJITSU Storage ETERNUS SF Storage Cruiser or FUJITSU Storage ETERNUS SF AdvancedCopy Manager of the following products on storage systems in a clustered system.

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

Intended Readers

This manual is intended for system managers responsible for managing storage with Storage Cruiser or AdvancedCopy Manager in a clustered system.

Organization

This manual is composed as follows:

[Chapter 1 Overview](#)

This chapter provides an overview of clustered systems.

[Chapter 2 Operating Environment](#)

This chapter explains operating environments for installing Storage Cruiser and AdvancedCopy Manager in a clustered system.

[Chapter 3 Installation of ETERNUS SF Manager](#)

This chapter explains how to install ETERNUS SF Manager in a clustered system.

[Chapter 4 Preparations for Customizing Management Server Transactions](#)

This chapter explains the preparations that are required to customize Management Server transactions.

[Chapter 5 Customization for Management Server Transaction](#)

This chapter explains how to customize Management Server transactions.

[Chapter 6 Installation of ETERNUS SF Agent](#)

This chapter explains how to install ETERNUS SF Agent in a clustered system.

[Chapter 7 Preparations for Customizing Managed Server Transactions](#)

This chapter explains the resources and input items that are required to customize Managed Server transactions.

[Chapter 8 Customization for Managed Server Transactions](#)

This chapter explains how to customize Managed Server transactions.

[Chapter 9 Installation of AdvancedCopy Manager CCM](#)

This chapter explains how to install AdvancedCopy Manager CCM in a clustered system.

[Chapter 10 Preparations for Customizing CCM Server Transactions](#)

This chapter explains the preparations that are required to customize CCM Server transactions when you have installed AdvancedCopy Manager CCM.

[Chapter 11 Customization for CCM Server Transactions](#)

This chapter explains how to customize CCM Server transactions.

[Chapter 12 Changing Operational Environment](#)

This chapter explains how to change the environment for ETERNUS SF Manager when it is being operated in a clustered system.

[Chapter 13 Deletion of Cluster Environment for Management Server Transactions](#)

This chapter explains how to delete cluster environments for Management Server transactions.

[Chapter 14 Deletion of Cluster Environment for Managed Server Transactions](#)

This chapter explains how to delete the cluster environment of a Managed Server transaction.

[Chapter 15 Deletion of Cluster Environment for CCM Server Transactions](#)

This chapter explains how to delete cluster environments for CCM Server transactions.

[Chapter 16 Command References](#)

This chapter explains how to use commands.

Notation

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

Operating Systems

Formal Name	Abbreviation	
Microsoft(R) Windows Server(R) 2008 Standard (32-bit)(64-bit) Microsoft(R) Windows Server(R) 2008 Standard without Hyper-V(TM) (32-bit)(64-bit) Microsoft(R) Windows Server(R) 2008 Enterprise (32-bit)(64-bit) Microsoft(R) Windows Server(R) 2008 Enterprise without Hyper-V(TM) (32-bit)(64-bit) Microsoft(R) Windows Server(R) 2008 Datacenter (32-bit)(64-bit) Microsoft(R) Windows Server(R) 2008 Datacenter without Hyper-V(TM) (32-bit)(64-bit)	Windows Server 2008	Windows
Microsoft(R) Windows Server(R) 2008 R2 Foundation Microsoft(R) Windows Server(R) 2008 R2 Standard Microsoft(R) Windows Server(R) 2008 R2 Enterprise Microsoft(R) Windows Server(R) 2008 R2 Datacenter	Windows Server 2008 R2	
Microsoft(R) Windows Server(R) 2012 Standard Microsoft(R) Windows Server(R) 2012 Datacenter	Windows Server 2012	
Microsoft(R) Windows Server(R) 2012 R2 Standard Microsoft(R) Windows Server(R) 2012 R2 Datacenter	Windows Server 2012 R2	
Windows Vista(R) Home Basic Windows Vista(R) Home Premium Windows Vista(R) Business Windows Vista(R) Enterprise Windows Vista(R) Ultimate	Windows Vista	
Windows(R) 7 Home Basic Windows(R) 7 Home Premium Windows(R) 7 Professional Windows(R) 7 Enterprise Windows(R) 7 Ultimate	Windows 7	
Windows(R) 8 Windows(R) 8 Pro	Windows 8	
Windows(R) 8.1 Windows(R) 8.1 Pro	Windows 8.1	
Windows(R) 10 Home Windows(R) 10 Pro Windows(R) 10 Mobile	Windows 10	
Solaris(TM) 9 Operating System	Solaris 9	Solaris or Solaris OS
Oracle Solaris 10	Solaris 10	
Oracle Solaris 11	Solaris 11	

Formal Name	Abbreviation	
Red Hat(R) Enterprise Linux(R) 5 (for x86) Red Hat(R) Enterprise Linux(R) 5 (for Intel64)	RHEL5	Linux
Red Hat(R) Enterprise Linux(R) 6 (for x86) Red Hat(R) Enterprise Linux(R) 6 (for Intel64)	RHEL6	
Red Hat(R) Enterprise Linux(R) 7 (for Intel64)	RHEL7	
SUSE(R) Linux Enterprise Server 11 for x86 SUSE(R) Linux Enterprise Server 11 for EM64T	SUSE Linux Enterprise Server 11	
HP-UX 11i v3	HP-UX	
AIX(R) V6.1 AIX(R) V7.1	AIX	
VMware vSphere(R) 5	VMware vSphere 5	VMware
VMware vSphere(R) 6	VMware vSphere 6	

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

FUJITSU Storage ETERNUS

Formal Name	Abbreviation	
FUJITSU Storage ETERNUS DX60	-	ETERNUS DX series or ETERNUS Disk storage system
FUJITSU Storage ETERNUS DX410 FUJITSU Storage ETERNUS DX440	ETERNUS DX400 series	
FUJITSU Storage ETERNUS DX8100 FUJITSU Storage ETERNUS DX8400 FUJITSU Storage ETERNUS DX8700	ETERNUS DX8000 series	
FUJITSU Storage ETERNUS DX60 S2 FUJITSU Storage ETERNUS DX80 S2 FUJITSU Storage ETERNUS DX90 S2	-	ETERNUS DX S2 series
FUJITSU Storage ETERNUS DX410 S2 FUJITSU Storage ETERNUS DX440 S2	ETERNUS DX400 S2 series	
FUJITSU Storage ETERNUS DX8100 S2 FUJITSU Storage ETERNUS DX8700 S2	ETERNUS DX8000 S2 series	
FUJITSU Storage ETERNUS DX60 S3 FUJITSU Storage ETERNUS DX100 S3 FUJITSU Storage ETERNUS DX200 S3	-	ETERNUS DX S3 series
FUJITSU Storage ETERNUS DX500 S3 FUJITSU Storage ETERNUS DX600 S3	-	
FUJITSU Storage ETERNUS DX8700 S3 FUJITSU Storage ETERNUS DX8900 S3	ETERNUS DX8000 S3 series	
FUJITSU Storage ETERNUS AF250 FUJITSU Storage ETERNUS AF650	ETERNUS AF series	
FUJITSU Storage ETERNUS DX200F	-	ETERNUS All-Flash Arrays
FUJITSU Storage ETERNUS Multipath Driver	ETERNUS Multipath Driver	

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

Software Products

Formal Name	Abbreviation
Windows(R) Internet Explorer(R)	Internet Explorer
Mozilla(R) Firefox(R)	Firefox
Google Chrome(TM)	Chrome
Microsoft(R) Windows Server(R) Failover Clustering	WSFC
Microsoft(R) Exchange Server	Exchange Server
Microsoft(R) SQL Server(R)	SQL Server
VMware(R) ESX(R)	VMware ESX
VMware(R) ESXi(TM)	VMware ESXi
VMware(R) vCenter(TM) Server	VMware vCenter Server or vCenter Server
FUJITSU Software PRIMECLUSTER Global Disk Services	GDS
FUJITSU Software PRIMECLUSTER Global File Services	GFS

Manuals

Formal Name	Abbreviation
FUJITSU Storage ETERNUS SF Express / Storage Cruiser / AdvancedCopy Manager Quick Reference	ETERNUS SF Quick Reference
FUJITSU Storage ETERNUS SF Express / Storage Cruiser / AdvancedCopy Manager Release Notes	ETERNUS SF Release Notes
FUJITSU Storage ETERNUS SF Express / Storage Cruiser / AdvancedCopy Manager Installation and Setup Guide	ETERNUS SF Installation and Setup Guide
FUJITSU Storage ETERNUS SF Express / Storage Cruiser / AdvancedCopy Manager Migration Guide	ETERNUS SF Migration Guide
FUJITSU Storage ETERNUS SF Express / Storage Cruiser / AdvancedCopy Manager Web Console Guide	ETERNUS SF Web Console Guide
FUJITSU Storage ETERNUS SF Storage Cruiser / AdvancedCopy Manager Cluster Environment Setup Guide	ETERNUS SF Cluster Environment Setup Guide
FUJITSU Storage ETERNUS SF Storage Cruiser / AdvancedCopy Manager Operation Guide for VMware vSphere Virtual Volumes	ETERNUS SF Operation Guide for VMware vSphere Virtual Volumes
FUJITSU Storage ETERNUS SF Express / Storage Cruiser / AdvancedCopy Manager Messages	ETERNUS SF Messages
FUJITSU Storage ETERNUS SF Express / Storage Cruiser Event Guide	ETERNUS SF Event Guide
FUJITSU Storage ETERNUS SF Express / Storage Cruiser / AdvancedCopy Manager Glossary	ETERNUS SF Glossary

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

Others

- In this manual, the following products are collectively described as "Windows Server 2008 or later".
 - Windows Server 2008
 - Windows Server 2008 R2
 - Windows Server 2012
 - Windows Server 2012 R2

- In this manual, the following products are collectively described as "Windows Server 2012 or later".
 - Windows Server 2012
 - Windows Server 2012 R2
 - In this manual, unless there is a special explanatory note, ETERNUS Disk storage system includes ETERNUS All-Flash Arrays. However, the following functions are not supported in ETERNUS All-Flash Arrays:
 - Energy saving operation for storage device
 - NAS operation for storage device
- The following function is not supported in ETERNUS DX200F All-Flash Arrays:
- Automated Storage Tiering operation at multiple tiers (two or more)

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Notes

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Update History

Content of Update	Updated Section	Revision
The information related to ETERNUS DX200F is described.	"Others" in Preface	1.1
Unnecessary information is removed.	4.1.3, 5.2.3, 7.3, (previous version)12.1.4, (previous version)12.2.4, 13.1.4, 13.2.7, 13.3.7, 16.3.4, A.1.1, (previous version)A.1.2, A.2.3, A.3.1, A.3.2	2
The work procedure is improved.	3.1.2, 3.2.2, 5.1.1.4, 5.1.2.4, 12.1.1 to 12.1.4, 12.2.1 to 12.2.4, 13.1.2.1, 13.1.3.1, A.2.2, A.4.2	
It is described to have to perform procedures by the user with Administrator privileges or root (superuser) as notes.	5.1.1.4, 5.1.2.4, 8.1.2, 13.1.2, 13.1.3, 14.1.2, 16.1, 16.2, 16.3, A.2.2, A.4.2	
The [Note] is added.	5.1, 5.2, 5.3	
Information related to the ETERNUS DX200F is modified.	"Others" in Preface	3
Information related to Red Hat(R) Enterprise Linux(R) 7 is modified.	2.1.2, 2.2.1.2, 2.3.2, 5.3.1.1.2, 5.3.2.1.1, 13.3.4.4, 13.3.6.4, A.2.3, A.4.3	
Information related to Red Hat(R) Enterprise Linux(R) AS v.4 and Red Hat(R) Enterprise Linux(R) ES v.4 is deleted.	2.2.1.2	
The composition in the chapter is changed.	Chapter 3, 15, and 16	
Information related to the VMware associated operations is added.	3.2, 5.1.1.1.4, 5.1.1.1.5, 5.1.2.1.3, 5.1.3, 13.1.4	
The Function Terminate() is described in the generic script file (start script and stop script) for Windows environment.	4.1.1	
The path name of the startSFmanager command is changed in the generic script file (start script and stop script) for Solaris or Linux environment.	4.1.1	
The work procedure for Windows Server 2012 environments is added.	5.1.1.1.2, 5.1.1.4, 5.1.3, 5.2.1.1.1, 5.2.1.5, 5.2.2.1.2, 5.2.2.5, 5.3.1.1.1, 5.3.1.5, 5.3.2.1.2, 5.3.2.5, 7.2, 7.3, 8.1.2, 11.1.2, 11.2.2, 13.1.3.1, 13.1.4, 13.2.3, 13.2.4.4, 13.2.5, 13.2.6.4, 13.3.3, 13.3.4.4, 13.3.5, 13.3.6.4	
The work procedure is modified.	5.1.1.2, 5.1.2.2	
A depending resource is added in Table 5.4.	5.1.3	

Content of Update	Updated Section	Revision
The term "VMware Virtual Volumes" is changed to "VMware vSphere Virtual Volumes" according to the terms used by VMware, Inc.	Throughout this manual	3.1
Information related to VMware vSphere(R) 6 is added.	"Notation" in Preface	
Information related to the VMware associated operations is deleted.	3.2, 5.1.1.1.4, 5.1.1.1.5, 5.1.2.1.3, 5.1.3, 13.1.4	
A note about the swstg.ini file is added.	A.2.3, A.4.3	
Information related to the ETERNUS DX8700 S3/DX8900 S3 is added.	"Notation" in Preface	3.2
Information related to Windows Server 2003 is deleted.	"Notation" in Preface, 2.2.1.2, 2.4.1.2, 2.4.2, 7.3, 8.1, 8.1.2, 14.1.2, 16.1.1, 16.1.2	4
Information related to Windows 10 is added.	"Notation" in Preface	
Brush up the described contents.	Chapter 4 - 8 and 10 - 16	
Information about the sample of generic script is added.	4.1, 8.2.2, Chapter 10	
The display example of registry key is modified.	5.1.1.4, 5.1.2.3	
The work procedure is modified.	12.1.1 - 12.1.3, 12.2.1 - 12.2.3	
Information related to HP-UX 11i v1/v2 is deleted.	"Notation" in Preface, 2.2.1.2	5
Information related to VMware vSphere 4 is deleted.	"Notation" in Preface	
Information related to the ETERNUS DX80/DX90 is deleted.	"Notation" in Preface	
Information related to the ETERNUS AF250/AF650 is added.	"Notation" and "Others" in Preface	
The explanation of the item "Resource type" is modified.	4.1, 7.3	

Manual Organization and Reading Suggestions

Manual Organization

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

When to Read	Related Manuals (Abbreviated)	Related Products (*1)			Explanation
		EXP	SC	ACM	
Before installation	Quick Reference	Yes	Yes	Yes	This manual is common for all products.
	Release Notes	Yes	Yes	Yes	This manual is common for all products.
	Overview	-	-	Yes	This manual is unique for the product.
During installation	Installation and Setup Guide	Yes	Yes	Yes	This manual is common for all products.
	Cluster Environment Setup Guide	-	Yes	Yes	This manual is common for Storage Cruiser and AdvancedCopy Manager.
	Migration Guide	Yes	Yes	Yes	This manual is common for all products.
During operation	Operation Guide	Yes	Yes	Yes	This manual is unique for each product. The following manuals are available: <ul style="list-style-type: none"> - Express Operation Guide - Storage Cruiser Operation Guide

When to Read	Related Manuals (Abbreviated)	Related Products (*1)			Explanation
		EXP	SC	ACM	
					<ul style="list-style-type: none"> - Storage Cruiser Operation Guide for Optimization Function - AdvancedCopy Manager Operation Guide (for Windows) - AdvancedCopy Manager Operation Guide (for Solaris) - AdvancedCopy Manager Operation Guide (for Linux) - AdvancedCopy Manager Operation Guide (for HP-UX) - AdvancedCopy Manager Operation Guide (for AIX) - AdvancedCopy Manager Operation Guide for Copy Control Module - Storage Cruiser / AdvancedCopy Manager Operation Guide for VMware vSphere Virtual Volumes
	Web Console Guide	Yes	Yes	Yes	This manual is common for all products.
Anytime	Event Guide	Yes	Yes	-	This manual is common for Express and Storage Cruiser.
	Messages	Yes	Yes	Yes	This manual is common for all products.
	Glossary	Yes	Yes	Yes	This manual is common for all products.

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

How to Read Manuals

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

Purpose	Manual	Main Contents	How to Read
Acquiring a product overview and basic operation knowledge	Quick Reference	<ul style="list-style-type: none"> - Product overview - Installation decision - Overview of the necessary tasks from installation to first use 	Read if you want to acquire a fundamental knowledge of the product and its operation in order to decide to install it or not.
	AdvancedCopy Manager Overview	<ul style="list-style-type: none"> - Main functions - Linkable applications - Procedure overview for Advanced Copy of ETERNUS Disk storage system 	
Confirming the updated contents	Release Notes	<ul style="list-style-type: none"> - New function overview - Incompatibilities with previous version - Fixed bugs 	Read if you want to know the updated contents from a previous version and if you perform the upgrade.
Deciding if an upgrade is required	Migration Guide	<ul style="list-style-type: none"> - Notes and cautions about the upgrade - Upgrade procedure 	Read if you want to upgrade from a previous version.

Purpose	Manual	Main Contents	How to Read
Installing and correctly operating the product Setting up operating environment depending on purpose	Installation and Setup Guide	<ul style="list-style-type: none"> - Operating environment - Installation procedure - Setup procedure - Uninstallation procedure 	Read if you want to install and setup the product.
	Cluster Environment Setup Guide	<ul style="list-style-type: none"> - Supported cluster software - Installation procedure for a clustered system - Setup procedure for a clustered system - Uninstallation procedure for a clustered system 	Read if you want to install and setup the product on a clustered system.
Administration and operation of the installed system	Express Operation Guide	<ul style="list-style-type: none"> - Starting and stopping the software - Device monitoring - Data copy inside the storage system - Necessary tasks after an architectural modification of the system as well as product maintenance 	Read if you want to start or shutdown the system, monitor the operation status, do backup/restore operations, etc.
	Storage Cruiser Operation Guide	<ul style="list-style-type: none"> - Starting and stopping the software - Device monitoring - Necessary tasks after an architectural modification of the system as well as product maintenance - Command reference 	
	Storage Cruiser Operation Guide for Optimization Function	<ul style="list-style-type: none"> - Operating environment construction - Operating status monitoring - Necessary tasks after an architectural modification of the system as well as product maintenance - Command reference 	
	AdvancedCopy Manager Operation Guide (for Windows) AdvancedCopy Manager Operation Guide (for Solaris) AdvancedCopy Manager Operation Guide (for Linux)	<ul style="list-style-type: none"> - Starting and stopping the software - Data backup/restore inside the storage system 	

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

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Chapter 1 Overview

A clustered system uses two or more server machines as a single virtual server machine to provide high level of availability.

In single-server machine operation, if the server machine or an application running on it stops, the machine or the application must be restarted. During this time, the operation stops.

A clustered system, however, uses two or more server machines. If a failure occurs on one server machine or an application running on it, the transaction can be resumed immediately by restarting the application on the other server machine. As a result, transaction downtime is reduced. The switching of a transaction from a server with a problem to another server that is operating normally is referred to as failover.

In the clustered system, each server machine in the clustered system is called "node".

The clustered system operation is classified into one of the following types. These types are explained in names of "PRIMECLUSTER".

- Standby operation
 - 1:1 standby
 - Mutual standby
 - N:1 standby
 - Cascade
 - Priority transfer
- Scalable operation



See

The clustered system operation and the names given to those that are supported by cluster software differ from each other in different systems. Refer to the cluster software manuals for more information.

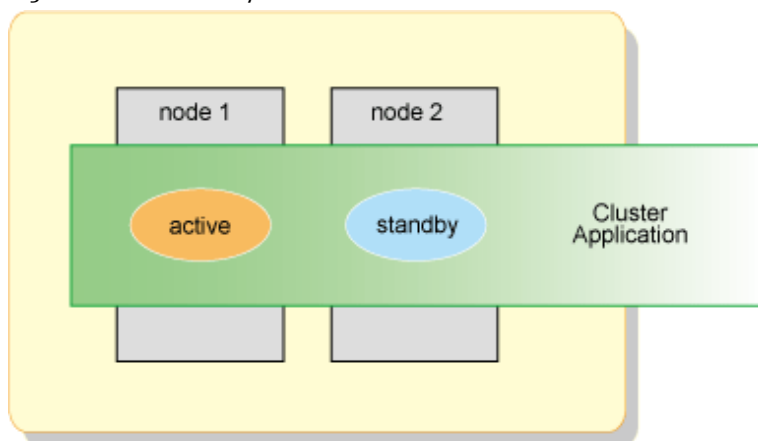
1.1 Standby Operation

In the standby operation, a standby node exists to take over transactions from an active node on which transactions are being performed.

1.1.1 1:1 Standby

The clustered system consists of one active node and one standby node. The active node performs transactions while the standby node is waiting to become the active node, when required.

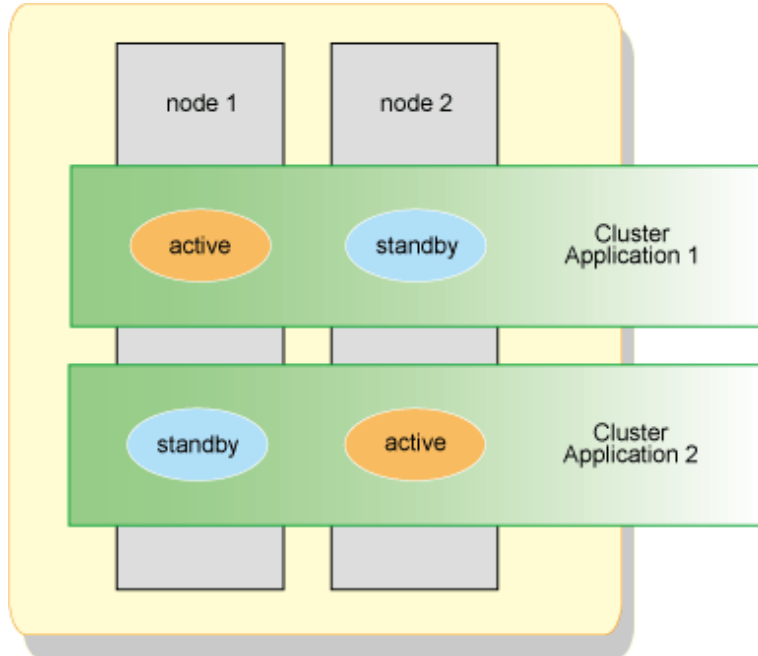
Figure 1.1 1:1 Standby



1.1.2 Mutual Standby

The clustered system consists of two or more nodes. Generally, two of the nodes are used as "active nodes". Each node performs its own transaction and, at the same time, is on standby to run the transaction of the other node. If either node fails, the other node takes over running both of the cluster applications.

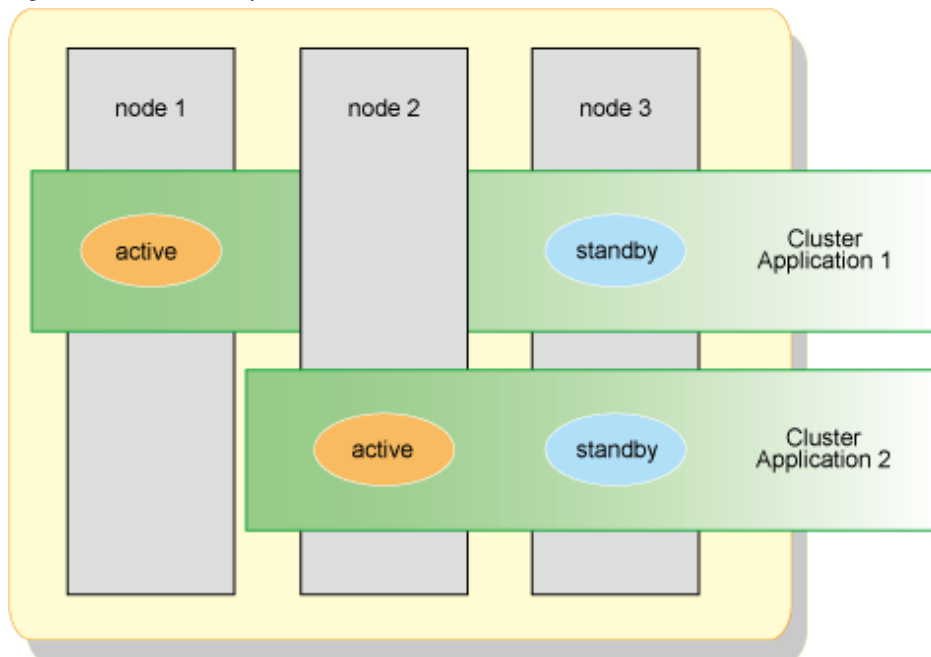
Figure 1.2 Mutual Standby



1.1.3 N:1 Standby System

The clustered system consists of N active nodes and one standby node. Each of the N active nodes performs separate transactions while a separate standby node stands by to take over from any failing active nodes.

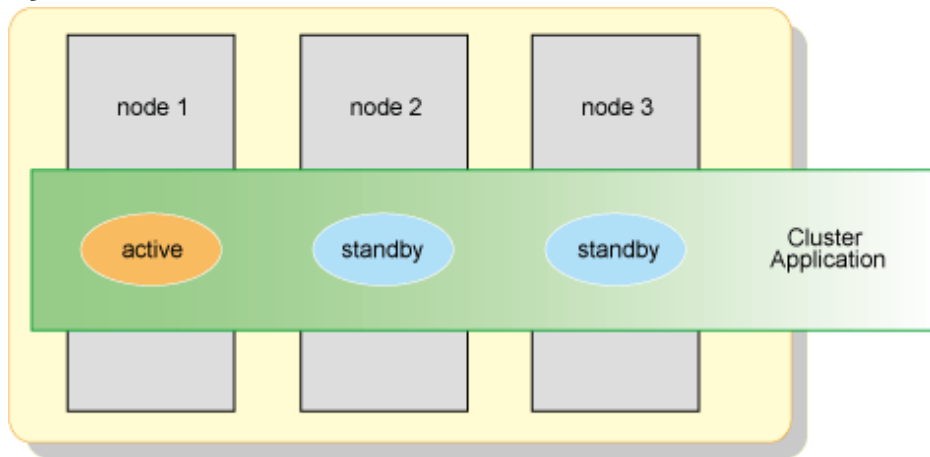
Figure 1.3 N:1 Standby



1.1.4 Cascade

The clustered system consists of three or more nodes. One node is an active node, and the remaining nodes are standby nodes.

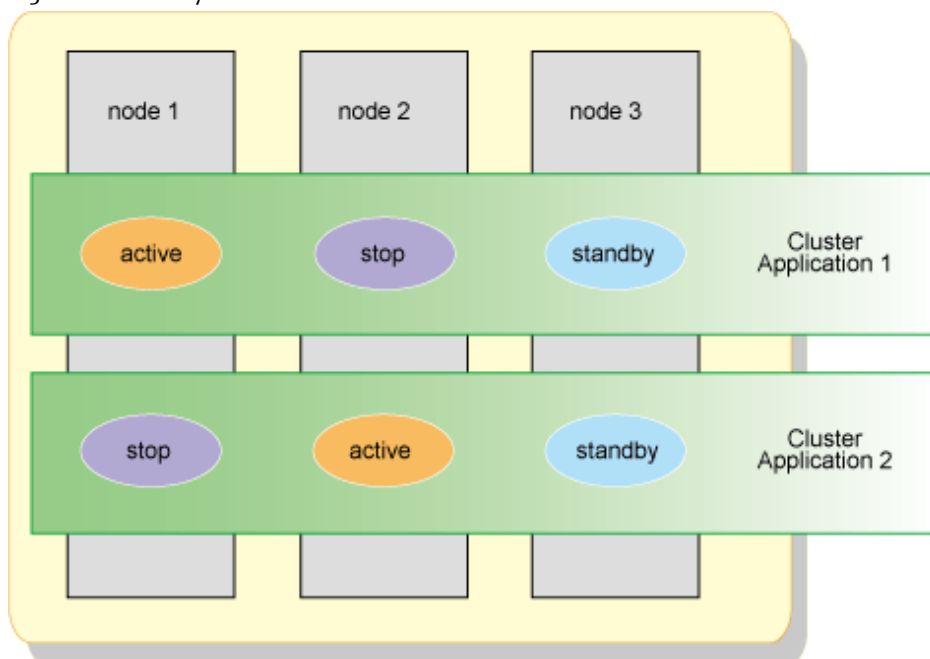
Figure 1.4 Cascade



1.1.5 Priority Transfer

The clustered system consists of three or more nodes. One node is an active node, one node is a standby node, and the remaining nodes are stop nodes.

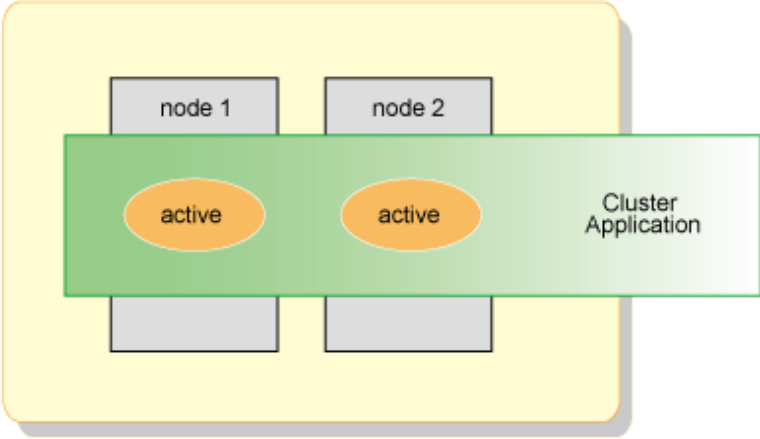
Figure 1.5 Priority Transfer



1.2 Scalable Operation

In a scalable operation, the clustered system is designed for performance improvement and degraded operation when a failure occurs by means of parallel processing on multiple server machines. In contrast to the standby operation, nodes in the scalable operation are not divided into active and standby nodes. If one server in a clustered system fails, the remaining servers in the clustered system operate at a degraded level so that the transaction continues.

Figure 1.6 Scalable Operation



Chapter 2 Operating Environment

This chapter explains operating environments for installing Storage Cruiser and AdvancedCopy Manager in a clustered system. Collectively, Storage Cruiser's manager and AdvancedCopy Manager's manager are described as "ETERNUS SF Manager".

2.1 Operating Environment of ETERNUS SF Manager

This section explains the operating environment that is required for ETERNUS SF Manager.

2.1.1 Hardware Requirements

Refer to "Hardware Requirements" in "Operating Environment of ETERNUS SF Manager" in the *ETERNUS SF Installation and Setup Guide* for information on the server on which to install ETERNUS SF Manager.

2.1.2 Software Requirements

The following cluster software can be linked with the operating system on which ETERNUS SF Manager is running.

Table 2.1 Operating Systems Running ETERNUS SF Manager and Compatible Cluster Software

OS	OS Level	Cluster Software and Version
Windows	Windows Server 2012 R2 Standard (*1)	Windows Server Failover Clustering
	Windows Server 2012 R2 Datacenter (*1)	
	Windows Server 2012 Standard (*1)	
	Windows Server 2012 Datacenter (*1)	
	Windows Server 2008 R2 Enterprise SP1	
	Windows Server 2008 R2 Datacenter SP1	
	Windows Server 2008 R2 Enterprise	
	Windows Server 2008 R2 Datacenter	
	Windows Server 2008 Enterprise SP2 (64-bit)	
	Windows Server 2008 Datacenter SP2 (64-bit)	
	Windows Server 2008 Enterprise (64-bit)	
	Windows Server 2008 Datacenter (64-bit)	
	Windows Server 2008 Enterprise SP2 without Hyper-V (64-bit)	
	Windows Server 2008 Datacenter SP2 without Hyper-V (64-bit)	
	Windows Server 2008 Enterprise without Hyper-V (64-bit)	
Windows Server 2008 Datacenter without Hyper-V (64-bit)		
Solaris	Solaris 11 (11/11 or later)	PRIMECLUSTER 4.3A10 or later (*2)
	Solaris 10	PRIMECLUSTER 4.1A40 or later (*2)
Linux	Red Hat Enterprise Linux 7 (for Intel64)	PRIMECLUSTER 4.3A40 or later (*2)
	Red Hat Enterprise Linux 6 (for Intel64)	PRIMECLUSTER 4.3A10 or later (*2)
	Red Hat Enterprise Linux 5 (for Intel64)	PRIMECLUSTER 4.2A30 or later (*2)

*1: The Failover Cluster Command Interface must be installed.

*2: Hot-standby operation for PRIMECLUSTER is not supported.



Refer to "Software Requirements" in "Operating Environment of ETERNUS SF Manager" in the *ETERNUS SF Installation and Setup Guide* for information on software required for a server in which ETERNUS SF Manager is installed.

2.2 Operating Environment of ETERNUS SF Agent

This section explains the operating environment that is required for ETERNUS SF Agent.
Note that Storage Cruiser's agents do not work in a clustered system.

2.2.1 Operating Environment of AdvancedCopy Manager's Agent

This section explains the operating environment that is required for AdvancedCopy Manager's agents.

2.2.1.1 Hardware Requirements

Refer to "Hardware Requirements" in "Operating Environment of AdvancedCopy Manager's Agent" in the *ETERNUS SF Installation and Setup Guide* for information on the servers on which to install the AdvancedCopy Manager's agent.

2.2.1.2 Software Requirements

The following cluster software can be linked with the operating system on which AdvancedCopy Manager's agents are running.

Table 2.2 Operating Systems Running AdvancedCopy Manager's Agents and Compatible Cluster Software

OS	OS Level	Cluster Software and Version
Windows	Windows Server 2012 R2 Standard (*1)	Windows Server Failover Clustering
	Windows Server 2012 R2 Datacenter (*1)	
	Windows Server 2012 Standard (*1)	
	Windows Server 2012 Datacenter (*1)	
	Windows Server 2008 R2 Enterprise SP1	
	Windows Server 2008 R2 Datacenter SP1	
	Windows Server 2008 R2 Enterprise	
	Windows Server 2008 R2 Datacenter	
	Windows Server 2008 Enterprise SP2 (32-bit) (64-bit)	
	Windows Server 2008 Datacenter SP2 (32-bit) (64-bit)	
	Windows Server 2008 Enterprise (32-bit) (64-bit)	
	Windows Server 2008 Datacenter (32-bit) (64-bit)	
	Windows Server 2008 Enterprise SP2 without Hyper-V (32-bit) (64-bit)	
	Windows Server 2008 Datacenter SP2 without Hyper-V (32-bit) (64-bit)	
	Windows Server 2008 Enterprise without Hyper-V (32-bit) (64-bit)	
Windows Server 2008 Datacenter without Hyper-V (32-bit) (64-bit)		
Solaris	Solaris 11 (11/11 or later)	PRIMECLUSTER 4.3A10 or later (*2)
	Solaris 10	PRIMECLUSTER 4.1A40 or later (*2) VERITAS Cluster Server 4.1 VERITAS Cluster Server 5.0 VERITAS Cluster Server 5.1 VERITAS Cluster Server 6.0 Sun Cluster 3.1 Sun Cluster 3.2
	Solaris 9	SynfinityCluster 2.0 PRIMECLUSTER 4.1A30 or later (*2) VERITAS Cluster Server 4.0 VERITAS Cluster Server 4.1
Linux	Red Hat Enterprise Linux 7 (for Intel64)	PRIMECLUSTER 4.3A40 or later (*2)
	Red Hat Enterprise Linux 6 (for x86)	PRIMECLUSTER 4.3A10 or later (*2)
	Red Hat Enterprise Linux 6 (for Intel64)	PRIMECLUSTER 4.3A10 or later (*2) Veritas Storage Foundation Standard HA 5.1
	Red Hat Enterprise Linux 5 (for x86)	PRIMECLUSTER 4.2A30 or later (*2)

OS	OS Level	Cluster Software and Version
	Red Hat Enterprise Linux 5 (for Intel64)	PRIMECLUSTER 4.2A30 or later (*2) Veritas Storage Foundation Standard HA 5.1
	SUSE Linux Enterprise Server 11 Service Pack 1 for EM64T SUSE Linux Enterprise Server 11 Service Pack 2 for EM64T	Veritas Storage Foundation Standard HA 5.1
HP-UX	HP-UX 11i v3(Itanium)	Serviceguard A.11.17 Serviceguard A.11.18 Serviceguard A.11.19
AIX	AIX V7.1 AIX V6.1	None.

*1: The Failover Cluster Command Interface must be installed.

*2: Hot-standby operation for PRIMECLUSTER is not supported.



Refer to "Software Requirements" in "Operating Environment of AdvancedCopy Manager's Agent" in the *ETERNUS SF Installation and Setup Guide* for information on the software requirements on the server on which AdvancedCopy Manager's agents are installed.

2.3 Operating Environment of AdvancedCopy Manager CCM

This section explains the operating environment that is required for the AdvancedCopy Manager Copy Control Module (hereafter referred to as "AdvancedCopy Manager CCM").

2.3.1 Hardware Requirements

Refer to "Hardware Requirements" in "Operating Environment of AdvancedCopy Manager CCM" in the *ETERNUS SF Installation and Setup Guide* for information on the server on which to install AdvancedCopy Manager CCM.

2.3.2 Software Requirements

The following cluster software can be linked with the operating system on which AdvancedCopy Manager CCM is running.

Table 2.3 Operating Systems Running AdvancedCopy Manager CCM and Compatible Cluster Software

OS	OS Level	Cluster Software and Version
Windows	Windows Server 2012 R2 Standard (*1) Windows Server 2012 R2 Datacenter (*1) Windows Server 2012 Standard (*1) Windows Server 2012 Datacenter (*1) Windows Server 2008 R2 Enterprise SP1 Windows Server 2008 R2 Datacenter SP1 Windows Server 2008 R2 Enterprise Windows Server 2008 R2 Datacenter Windows Server 2008 Enterprise SP2 (64-bit) Windows Server 2008 Datacenter SP2 (64-bit) Windows Server 2008 Enterprise (64-bit) Windows Server 2008 Datacenter (64-bit) Windows Server 2008 Enterprise SP2 without Hyper-V (64-bit) Windows Server 2008 Datacenter SP2 without Hyper-V (64-bit) Windows Server 2008 Enterprise without Hyper-V (64-bit) Windows Server 2008 Datacenter without Hyper-V (64-bit)	Windows Server Failover Clustering
Solaris	Solaris 11 (11/11 or later)	PRIMECLUSTER 4.3A10 or later (*2)

OS	OS Level	Cluster Software and Version
	Solaris 10	PRIMECLUSTER 4.1A40 or later (*2)
Linux	Red Hat Enterprise Linux 7 (for Intel64)	PRIMECLUSTER 4.3A40 or later (*2)
	Red Hat Enterprise Linux 6 (for Intel64)	PRIMECLUSTER 4.3A10 or later (*2)
	Red Hat Enterprise Linux 5 (for Intel64)	PRIMECLUSTER 4.2A30 or later (*2)

*1: The Failover Cluster Command Interface must be installed.

*2: Hot-standby operation for PRIMECLUSTER is not supported.



Refer to "Software Requirements" in "Operating Environment of AdvancedCopy Manager CCM" in the *ETERNUS SF Installation and Setup Guide* for information on the software requirements on the server on which AdvancedCopy Manager CCM is installed.

2.4 Operating Modes

This section explains the types of operation for running Storage Cruiser and AdvancedCopy Manager in a clustered system.

2.4.1 Supported Types of Operation

This section explains the types of operation supported by Storage Cruiser and AdvancedCopy Manager running in a clustered system.

2.4.1.1 Operation Type That ETERNUS SF Manager Supports

ETERNUS SF Manager supports the following operation types.

Table 2.4 Types of Operation Supported by ETERNUS SF Manager

OS	Cluster Software	1:1 Standby	N:1 Standby	Mutual Standby	Cascade Topology	Priority Transfer	Scalable Operation	Combined Operation with Scalable Operation
Windows	Windows Server Failover Clustering	Support	-	-	-	-	-	-
Solaris	PRIMECLUSTER	Support	-	-	-	-	-	-
Linux	PRIMECLUSTER	Support	-	-	-	-	-	-

2.4.1.2 Operation Type That AdvancedCopy Manager's Agent Supports

AdvancedCopy Manager's agent supports the following operation types.

Table 2.5 Operation Type that AdvancedCopy Manager's Agent Supports

OS	Cluster Software	1:1 Standby	N:1 Standby	Mutual Standby	Cascade Topology	Priority Transfer	Scalable Operation	Combined Operation with Scalable Operation
Windows	Windows Server Failover Clustering	Support	Support	Support	Support	-	-	-
Solaris	SynfinityCluster PRIMECLUSTER	Support	Support	Support	Support	Support	-	Support

OS	Cluster Software	1:1 Standby	N:1 Standby	Mutual Standby	Cascade Topology	Priority Transfer	Scalable Operation	Combined Operation with Scalable Operation
	VERITAS Cluster Server	Support	Support	Support	Support	-	-	-
	Sun Cluster	Support	-	Support	-	-	-	-
Linux	PRIMECLUSTER	Support	Support	Support	Support	Support	-	Support
	VERITAS Cluster Server	Support	-	Support	-	-	-	-
HP-UX	MC/ServiceGuard	Support	Support	Support	Support	-	-	-
	VERITAS Cluster Server	Support	-	Support	-	-	-	-

2.4.1.3 Operation Type That AdvancedCopy Manager CCM Supports

AdvancedCopy Manager CCM supports the following operation types.

Table 2.6 Types of Operation Supported by AdvancedCopy Manager CCM

OS	Cluster Software	1:1 Standby	N:1 Standby	Mutual Standby	Cascade Topology	Priority Transfer	Scalable Operation	Combined Operation with Scalable Operation
Windows	Windows Server Failover Clustering	Support	-	-	-	-	-	-
Solaris	PRIMECLUSTER	Support	-	-	-	-	-	-
Linux	PRIMECLUSTER	Support	-	-	-	-	-	-
	VERITAS Cluster Server	Support	-	-	-	-	-	-

2.4.2 Cluster Transaction and Local Transaction

In Storage Cruiser and AdvancedCopy Manager, a component of a group that switches over to another by failover is called a cluster transaction. The name of the cluster transaction depends on the cluster software.

Table 2.7 Names of Cluster Transactions in Cluster Software

Cluster Software	Name of Cluster Transaction
Windows Server Failover Clustering	Cluster Group
SynfinityCluster	Cluster Service
Sun Cluster	Resource Group
PRIMECLUSTER	Cluster Application or userApplication
VERITAS Cluster Server	Service Group
MC/ServiceGuard	Package

For Using AdvancedCopy Manager

To back up a transaction volume for cluster operation by using AdvancedCopy Manager backup management or replication management, add AdvancedCopy Manager to an objective cluster transaction. To back up the transaction volume in two or more cluster transactions as in the case of the mutual standby operation, add AdvancedCopy Manager to each cluster transaction.

To recognize the transaction in which an executed AdvancedCopy Manager function (such as a backup management command) is included, AdvancedCopy Manager assigns a unique name (a logical node name) to each cluster transaction. If an AdvancedCopy Manager command is executed with this logical node name specified in the environment variable SWSTGNODE, the command recognizes and executes the objective cluster transaction.

When "Logical IP address" and "Communication daemon/service port number for transaction (stgxfws_logical/NodeName)" are set in the AdvancedCopy Manager server addition processing, the objective cluster transaction is added as a server of AdvancedCopy Manager.

Note

The logical node name is a value used by AdvancedCopy Manager only. It does not link with a logical host name assigned by a cluster transaction and clustered system.

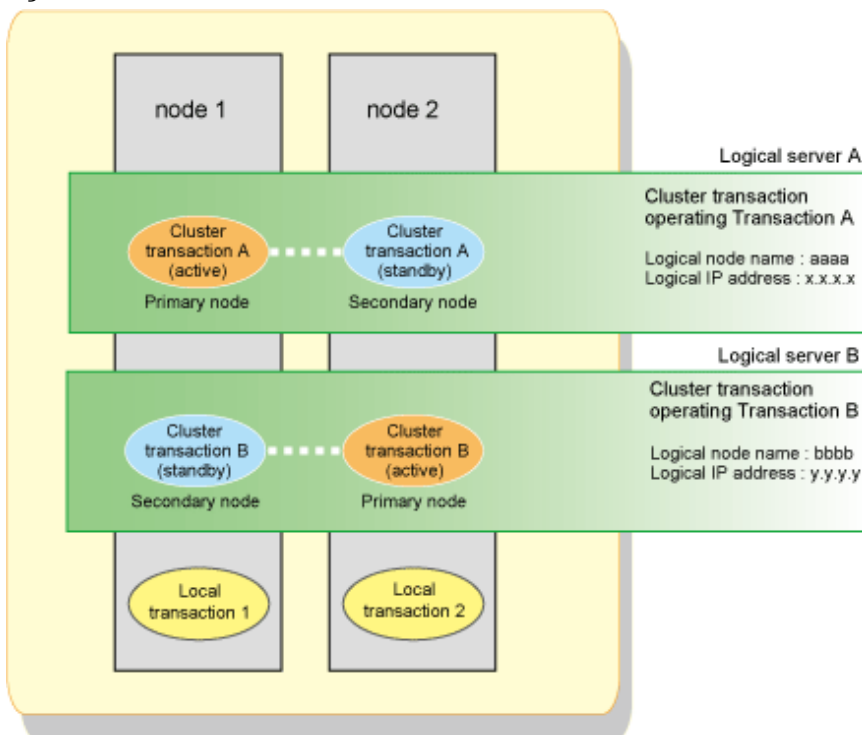
AdvancedCopy Manager can perform local disk (i.e., not in cluster operation) backup/replication with a cluster operation machine. A transaction where such a local disk backup/replication operation is performed is called a local transaction. The local transaction does not switch over to another by failure. For local transactions, set this local transaction to perform local volume backup/replication that is not included in a cluster transaction. When operating the backup/replication that is not included in a cluster transaction, set the backup/replication to the local transaction.

A local transaction does not use a logical node name. If an AdvancedCopy Manager command is executed without the environment variable SWSTGNODE, the command recognizes the transaction to be a local transaction and executes it.

When "Physical IP address" and "Communication daemon/service port number (stgxfws) for local transaction" are set in the AdvancedCopy Manager server addition processing, an objective machine is added as a server of AdvancedCopy Manager.

The relationship between cluster and local transactions is shown below.

Figure 2.1 Cluster Transactions and Local Transactions



To operate the volume of cluster transaction A by backup management or replication management, add AdvancedCopy Manager to cluster transaction A.

To operate the volume of cluster transaction B by backup management or replication management, add AdvancedCopy Manager to cluster transaction B.

To operate the volume of node 1 by backup management or replication management, create local transaction 1.

To operate the volume of node 2 by backup management or replication management, create local transaction 2.

2.4.3 Server Types and Server Transaction Types

Storage Cruiser and AdvancedCopy Manager have the following 3 server types:

- Management Server
- Managed Server
- CCM Server

A similar rule holds for clustered systems. A clustered system with ETERNUS SF Manager installed is referred to as a Management Server, and a clustered system with ETERNUS SF Agent installed is referred to as a Managed Server.

A clustered system with AdvancedCopy Manager CCM installed is referred to as a CCM Server.

These categories are called server types.

When Storage Cruiser and AdvancedCopy Manager operate in a clustered system, Management Server operations are referred to as Management Server transactions, Managed Server operations are referred to as Managed Server transactions, and CCM Server operations are referred to as CCM Server transactions.

These categories are called server transaction types.

The server types used in Storage Cruiser and AdvancedCopy Manager's cluster operation and the server transaction types that can operate on different servers are shown in the following table:

Table 2.8 Server Types Available for Operation

Server Types	Management Server Transactions	Managed Server Transactions	CCM Server Transactions
Management Server (ETERNUS SF Manager and AdvancedCopy Manager CCM)	1:1	1:1	1:1
Managed Server (ETERNUS SF Agent)	No	Yes (*1)	No
CCM Server (AdvancedCopy Manager CCM)	No	No	1:1

Yes (*1): The transactions that can be performed in clustered systems. Multiple cluster transactions can be performed in mutual standby systems.

Yes: The transactions that can be performed in clustered systems. Operation in a mutual standby system is only possible with a single transaction.

1:1: The transactions that can be performed in clustered systems. Operation in a 1:1 standby system is only possible with a single transaction.

No: Transactions not included in the package.

2.4.4 Transaction Types of Applications

The transaction types of an application in cluster operation are listed in the following table. The table describes, for each applicable transaction, the active and the standby states.

Table 2.9 Relationship between Applications and Standby States

Application (Function)	Management Server Transaction	Managed Server Transaction	Local Transaction
Configuration management Manager	Active on primary node Standby on secondary node	-	-

Application (Function)	Management Server Transaction	Managed Server Transaction	Local Transaction
Transaction configuration management Agent	Active on primary node Standby on secondary node	Active on primary node Standby on secondary node	-
Local configuration management Agent	-	-	Active on each node
Repository	Active on primary node Standby on secondary node	-	-
Transaction replication management	Active on primary node Standby on secondary node	Active on primary node Standby on secondary node	-
Local replication management	-	-	Active on each node
Transaction backup management	Active on primary node Standby on secondary node	Active on primary node Standby on secondary node	-
Local backup management	-	-	Active on each node

The resources of Managed Server transactions can be divided for operation on two or more logical servers. That is, whether a Managed Server transaction is to be operated can be selected for each logical server. Local transactions cannot operate in a cluster.

2.5 Environment Construction for Cluster Operation

This section explains how to provide the environment construction to operate Storage Cruiser and AdvancedCopy Manager on the clustered system.

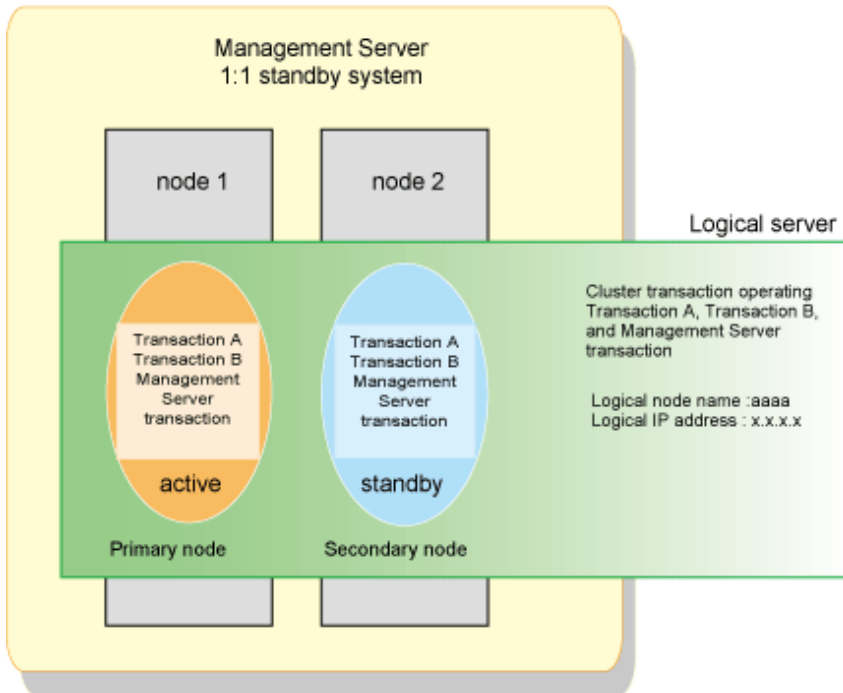
2.5.1 Construction of Clustered System of Type with 1:1 Standby

This section explains how to provide the cluster environment construction for a Management Server transaction or Managed Server transaction on the clustered system of the type with 1:1 standby.

Constructing Management Server Transactions or Managed Server Transactions

This section explains how to provide the cluster environment construction for a Management Server transaction or Managed Server transaction on the clustered system of the type with 1:1 standby.

Figure 2.2 Management Server Transactions or Managed Server Transactions in 1:1 Standby Clustered System

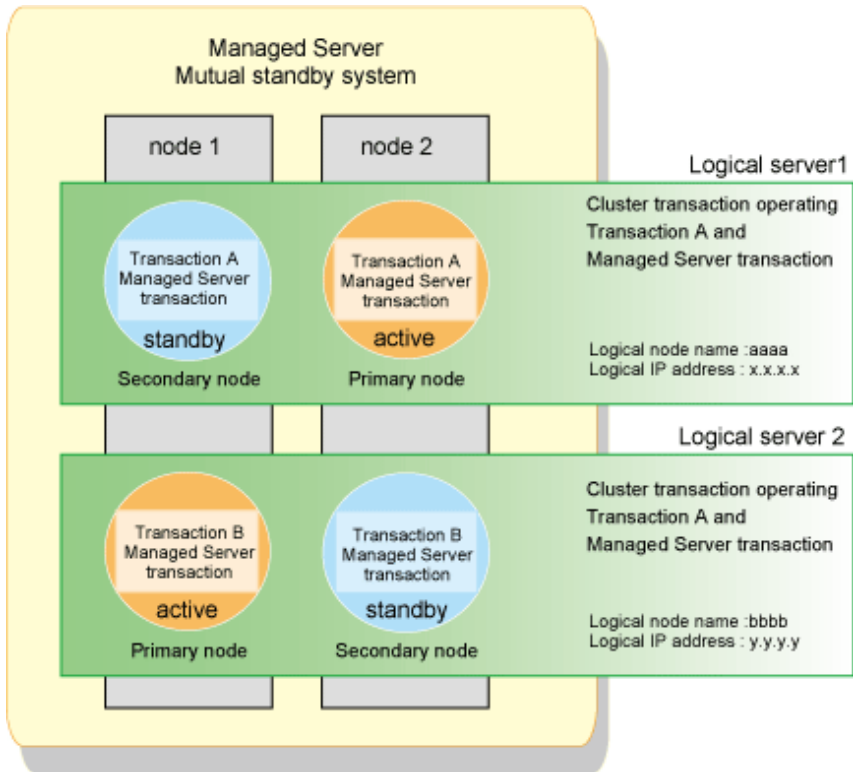


In the above configuration, the ETERNUS SF Manager is installed on node 1 and node 2 to construct the Management Server transaction. To build Management Server transactions, install the ETERNUS SF Manager on both nodes. To build Managed Server transactions, install the ETERNUS SF Agent on both nodes.

2.5.2 Construction of Clustered System of Type with Mutual Standby

This section explains how to provide the cluster environment construction for a Managed Server transaction on the clustered system of the type with mutual standby.

Figure 2.3 Managed Server Transactions in Mutual Standby Clustered System



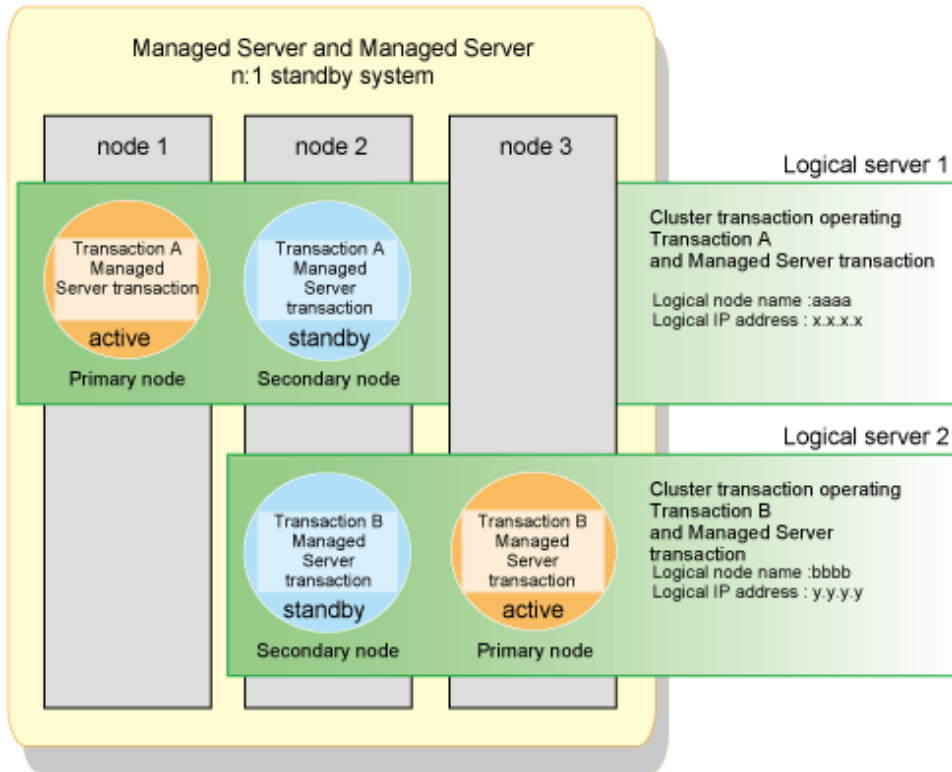
To configure a mutual standby environment for Managed Server transactions, install the AdvancedCopy Manager's agent on both nodes.

In the above configuration, the AdvancedCopy Manager's agent is installed on node 1 and node 2 to construct the Managed Server transaction.

2.5.3 Construction of Clustered System of Type with N:1 Standby

This section explains how to provide the cluster environment construction for a Managed Server transaction on the clustered system of the type with n:1 standby.

Figure 2.4 Managed Server Transactions in N:1 Standby Clustered System

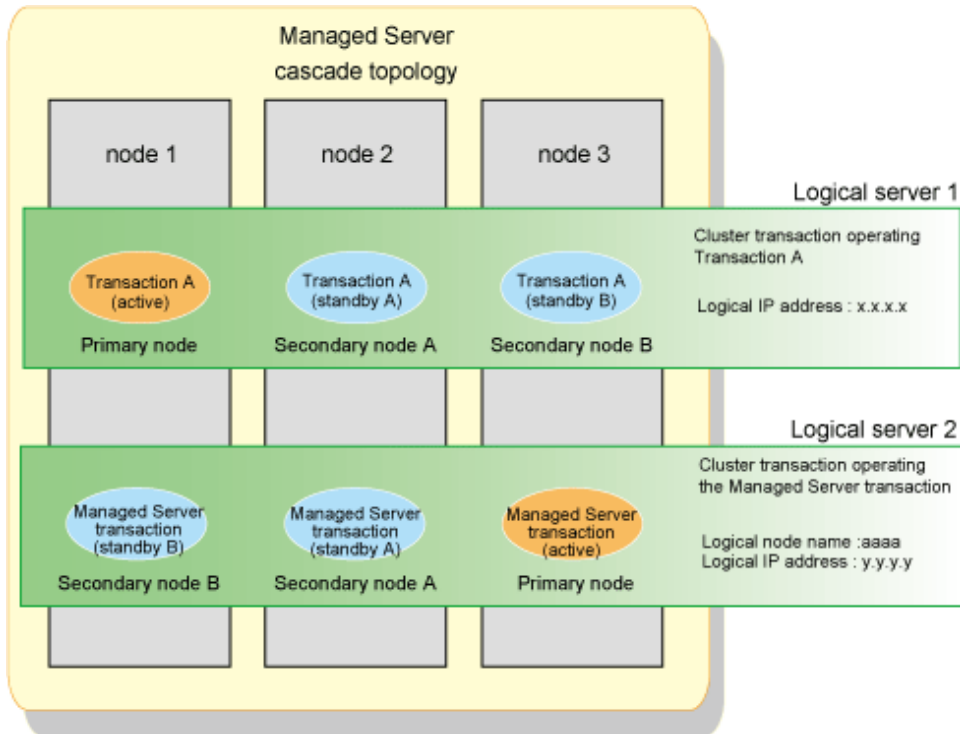


To configure an n:1 standby environment for Managed Server transactions, install the AdvancedCopy Manager's agent on all nodes. In the above configuration, the AdvancedCopy Manager's agent is installed on all nodes to construct the Managed Server transaction.

2.5.4 Construction of Clustered System of Type with Cascade Topology and Type with Priority Transfer

This section explains how to provide the cluster environment construction for a Managed Server transaction on the clustered system of the type with cascade topology and the type with priority transfer.

Figure 2.5 Managed Server Transactions in Cascade and Priority Transfer Clustered System



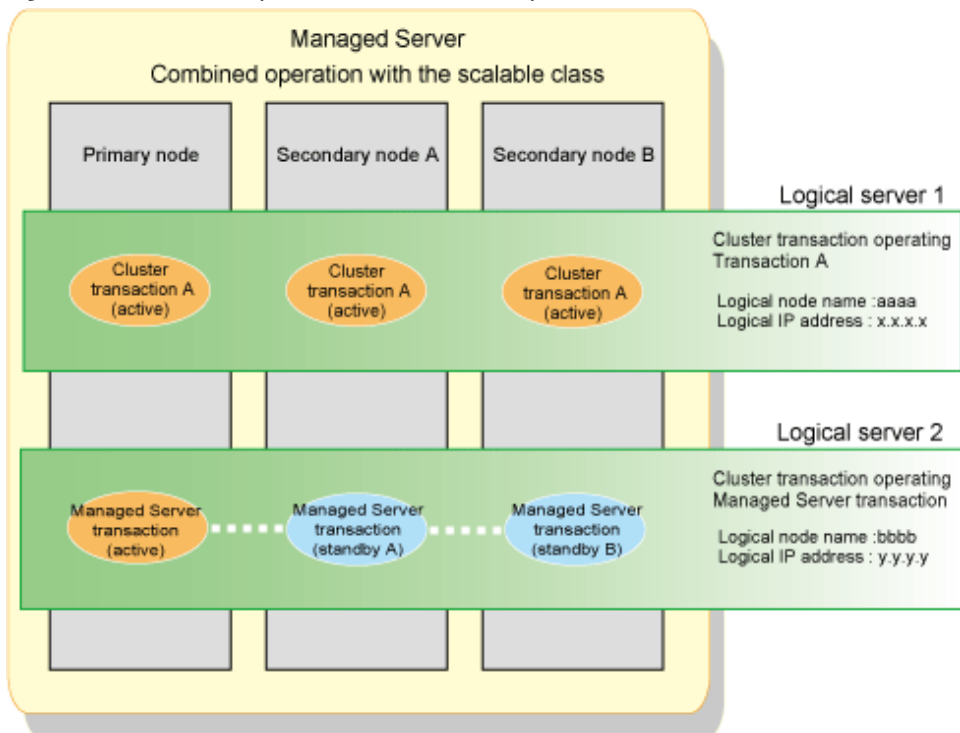
To configure a cascade topology environment and a priority transfer environment for Managed Server transactions, install the AdvancedCopy Manager's agent on all nodes.

In the above configuration, the AdvancedCopy Manager's agent is installed on all nodes to construct the Managed Server transaction.

2.5.5 Combined Operation with Scalable Operation

The method of performing backup operation or replication operation on the transaction volume in scalable operation is explained.

Figure 2.6 Combined Operation with Scalable Operation



AdvancedCopy Manager does not support the scalable operation. Therefore, the resource of AdvancedCopy Manager cannot be added to a scalable operation.

When performing backup operation and replication operation to the transaction volume in scalable operation, create the cluster service of new Managed Server transaction or Management Server transaction. When cluster service in a scalable operation consists of three or more nodes, create the Managed Server transaction in cascade topology. When cluster service in scalable operation consists of 2 nodes, create the Managed Server transaction in mutual standby.

The backup operation and replication operation are performed from the Managed Server transaction to the transaction volume in scalable operation.

The above figure shows combined operation of userApplication in scalable operation, and cluster service of Managed Server transaction. The backup operation for volume on transaction A is performed from the Managed Server transaction. The backup operation's information is managed in the Managed Server transaction.

 Note

.....
Refer to "Notes on Cluster Operation" in the *ETERNUS SF AdvancedCopy Manager Operation Guide* for notes on combined operation with transactions in scalable operation.
.....

Chapter 3 Installation of ETERNUS SF Manager

This chapter explains how to install ETERNUS SF Manager in a clustered system.

Refer to "Upgrade for Storage Cruiser" or "Upgrade for AdvancedCopy Manager" in the *ETERNUS SF Migration Guide* for upgrading from a previous version.

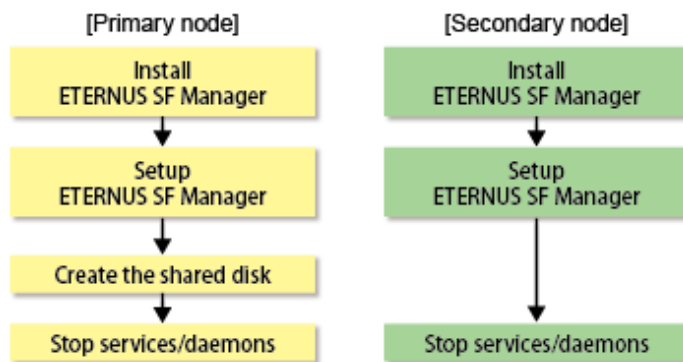
Point

To operate a Management Server transaction on the clustered system, cluster software installation and environment setting are required. Refer to your cluster software manuals for details.

3.1 Installation Workflow

The installation workflow is shown below.

Perform the installation first on the primary node and then on the secondary node.



3.2 Installation Procedure of ETERNUS SF Manager (for Windows)

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

Note

- If customization in the Windows version of WSFC is implemented by a user belonging to the Administrators of the domain, the Windows "Computer Browser Service" must be running.
- Do not use the Telnet Server service.

1. Perform the following steps on the primary node.

- a. Install ETERNUS SF Manager. However, do not install it on a shared disk.

Refer to "Installation of ETERNUS SF Manager" in the *ETERNUS SF Installation and Setup Guide* for details.

- b. Set up ETERNUS SF Manager.

Refer to "Setup of ETERNUS SF Manager" in the *ETERNUS SF Installation and Setup Guide* for details. However, the procedure of "Updating Management Server IP address information" is not required.

- c. Create a shared disk.

- d. Stop the following services.

After stopping these services, change the settings for their startup type to "Manual".

- ETERNUS SF Manager Apache Service

- ETERNUS SF Manager Tomcat Service
 - ETERNUS SF Manager Postgres Service
 - ETERNUS SF Storage Cruiser Optimization Option
2. Perform the following steps on the secondary node.
 - a. Install ETERNUS SF Manager. However, do not install it on a shared disk.
Refer to "Installation of ETERNUS SF Manager" in the *ETERNUS SF Installation and Setup Guide* for details. For the installation target, specify the same path as the one specified for the primary node.
 - b. Set up ETERNUS SF Manager.
Refer to "Setup of ETERNUS SF Manager" in the *ETERNUS SF Installation and Setup Guide* for details. However, the procedure of "Updating Management Server IP address information" is not required.
 - c. Stop the following services.
After stopping these services, change the settings for their startup type to "Manual".
 - ETERNUS SF Manager Apache Service
 - ETERNUS SF Manager Tomcat Service
 - ETERNUS SF Manager Postgres Service
 - ETERNUS SF Storage Cruiser Optimization Option

3.3 Installation Procedure of ETERNUS SF Manager (for Solaris/Linux)

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



Note

The port number for the communication daemon to be specified by installation is for communication daemon for local transactions. For setting port number of the cluster transaction communication daemon, refer to "[Chapter 8 Customization for Managed Server Transactions](#)" to perform the procedure according to the cluster software to be used.

1. Assign a user ID used by the ETERNUS SF Manager internally. (For example, 15999)
Refer to the `/etc/passwd` file for the primary node and secondary node to assign an unused user ID.
2. Perform the following steps on the primary node.
 - a. Specify the user ID determined in step 1 for the install parameter "esfpostgres_UID" and perform a custom installation of ETERNUS SF Manager. However, do not install it on a shared disk.
Refer to "Installation of ETERNUS SF Manager" in the *ETERNUS SF Installation and Setup Guide* for details.
 - b. Set up ETERNUS SF Manager.
Refer to "Setup of ETERNUS SF Manager" in the *ETERNUS SF Installation and Setup Guide* for details. However, the procedure of "Updating Management Server IP address information" is not required.
 - c. Create a shared disk as required.
 - d. Stop the daemons.
Execute the following shell script.


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

 The following daemons are stopped:
 - ETERNUS SF Manager Apache daemon
 - ETERNUS SF Manager Tomcat daemon

- ETERNUS SF Manager Postgres daemon
- ETERNUS SF AdvancedCopy Manager daemon
- SNMP Trap daemon
- ETERNUS SF Storage Cruiser Optimization Option daemon

3. Perform the following steps on the secondary node.

- a. Specify the user ID determined in step 1 for the install parameter "esfpostgres_UID" and perform a custom installation of ETERNUS SF Manager. However, do not install it on a shared disk.

Refer to "Installation of ETERNUS SF Manager" in the *ETERNUS SF Installation and Setup Guide* for details. For the installation target, specify the same path as the one specified for the primary node.

- b. Set up ETERNUS SF Manager.

Refer to "Setup of ETERNUS SF Manager" in the *ETERNUS SF Installation and Setup Guide* for details. However, the procedure of "Updating Management Server IP address information" is not required.

- c. Stop the daemons.

Execute the following shell script.

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

The following daemons are stopped:

- ETERNUS SF Manager Apache Service
- ETERNUS SF Manager Tomcat Service
- ETERNUS SF Manager Postgres daemon
- ETERNUS SF AdvancedCopy Manager daemon
- SNMP Trap daemon
- ETERNUS SF Storage Cruiser Optimization Option daemon

Chapter 4 Preparations for Customizing Management Server Transactions

This chapter explains the resources and items that are required to customize Management Server transactions.

4.1 Confirmation of Customization Items

The Management Server transaction needs the following items for customization. Confirm and prepare items required for a cluster transaction which you use.

Table 4.1 Items Required During Customization

Items	OS		
	Windows	Solaris	Linux
Transaction name	Required	Required	Required
Logical IP address	Required	Required	Required
Shared disk for shared data	Required	Required	Required
Disk resource of shared disk for shared data	Required	Required	Required
Resource type	Unnecessary	Required	Required
Cluster name	Required	Unnecessary	Unnecessary
Network name	Required	Unnecessary	Unnecessary
Network for external connections	Required	Unnecessary	Unnecessary
IP address resource	Required	Unnecessary	Unnecessary
Installing user	Required	Unnecessary	Unnecessary
Logical node name	Required	Required	Required
Communication service/daemon port number for transaction	Required	Required	Required
Access volume	Required	Required	Required
Generic script	Required	Required	Required

Each item is explained below.

Transaction name

Name of cluster transaction.

Logical IP address

IP address for data communication with the Web Console and Managed Servers.

We recommend that you use a new logical IP address for ETERNUS SF Manager.

When allocating a new logical IP address, make sure that existing transactions use the IP address as a failover resource and that adding the IP address resource has no adverse effects on transactions.

If you use an existing logical IP address, share it with ETERNUS SF Manager in order to make sure that no trouble occurs with any other product already using this logical IP address.

Shared disk for shared data

Volume for storing shared data of ETERNUS SF Manager.

With regard to such factors as reliability and update performance, we recommend that you use a new volume created only for ETERNUS SF Manager.



Note

When you specify a shared disk for shared data, be careful about the following points:

- Define the shared disk for shared data as a shared disk of a clustered system.
- Allocate a disk that does not use AdvancedCopy Manager to carry out backup and replication.
- Allocate a disk that is not used by AdvancedCopy Manager CCM as a copy source, copy destination, or access volume.
- On the shared disk for shared data, create a file system.
- In order to be used by the file system, make the shared disk mountable.
- Use a disk that is not used as a Quorum disk. (for Windows only)

Refer to "Required Disk Space for Operation" in "Operating Environment for ETERNUS SF Manager" in the *ETERNUS SF Installation and Setup Guide* for information on the disk space required for ETERNUS SF Manager.

Disk resource of shared disk for shared data

Disk resource name of shared disk for shared data.

Resource type

Cmdline resource for registering scripts that start or stop services/daemons (generic scripts).

Cluster name

Cluster name specified in WSFC.

Network name

Dedicated network name for ETERNUS SF Manager that is specified when using a new logical IP address. ETERNUS SF Manager creates a network resource under this network name.

Network for external connections

Network name for external communication specified in WSFC, to be specified when using a new logical IP address.

IP address resource

IP address resource name in which logical IP address is set up, to be specified when using an already existing logical IP address.

Installing user

User name and password that were used when installing ETERNUS SF Manager.

Logical node name

Name of logical server for AdvancedCopy Manager.

The user can freely set any logical node name, consisting of alphanumeric characters up to 8 bytes.

In order to determine to which cluster transaction an executed AdvancedCopy Manager function (e.g. backup management command) belongs, AdvancedCopy Manager assigns a unique name (logical node name) to each cluster transaction. If you specify this logical node name in the environment variable SWSTGNODE and execute an AdvancedCopy Manager command, the executed command identifies the applicable cluster transaction and carry out processing accordingly.

When "[Logical IP address](#)" and "[Communication service/daemon port number for transaction](#)" (`stgxfws_logicalNodeName`) are set in the processing for adding the AdvancedCopy Manager server, the applicable cluster transaction is added as a server of AdvancedCopy Manager.



Note

13-character strings of the following list cannot be made into a logical node name for Solaris version PRIMECLUSTER or Linux version PRIMECLUSTER:

audit, cluster, cmdevs, config, daemon, data, java, log, pid, report, samp, sh, tmp

Communication service/daemon port number for transaction

Port number allocated to the communication service/daemon for transactions of AdvancedCopy Manager. Note that the same port number needs to be specified on both the primary and secondary nodes.

Specify the unused number (the number not used for ports of other daemons/services) between 1024 and 65535.



Point

Ensure that the port number of the communication service/daemon for transaction is different from the port number of the communication service/daemon for local transaction or the other communication services/daemons for transaction.

Access volume

This is a volume for issuing Advanced Copy from the CCM Server to ETERNUS Disk storage systems.

It is required for issuing Advanced Copy to ETERNUS Disk storage systems that operate with Copy command via SAN.

From among the logical volumes in the ETERNUS Disk storage system to be backed up for AdvancedCopy Manager CCM, connect one logical volume as an access volume to all nodes making up a clustered system.

- For Windows

Make the environment settings for the connected logical volume so as to allow access from all nodes making up a clustered system to the same physical disk number (Disk # displayed on the disk management screen).

- For Solaris or Linux

Make the environment settings for the connected logical volume so as to allow access from all nodes making up a clustered system to the same physical device name.



Point

When specify a device file of ETERNUS Multipath Driver to an access volume in Solaris or Linux, setup the device file name and system. Refer to the ETERNUS Multipath Driver manual for details.

Generic script

Script for starting or stopping services/daemon.

For Windows

Create generic script files for starting and stopping the following services:

- Generic script for ETERNUS SF Manager Apache Service / Tomcat Service
- Generic script for AdvancedCopy Manager CCM



Information

As generic script samples, the following files are stored in the *programDir*\Common\sample\cluster directory.

The *programDir* is "Program Directory" specified at the ETERNUS SF Manager installation.

File Name	Explanation
esfmanager-web.vbs	Sample file of generic script for ETERNUS SF Manager Apache Service
esfmanager-tomcat.vbs	Sample file of generic script for ETERNUS SF Manager Tomcat Service
esfmanager-ccm.vbs	Sample file of generic script for AdvancedCopy Manager CCM

When using the above files, make sure to copy them to a different directory and use the copied file.

Generic Script for ETERNUS SF Manager Apache Service / Tomcat Service

Create the following script file separately for each service. You can freely specify any file name, but the file extension must be ".vbs".

Specify the corresponding service name (either "esfmanagerweb" or "esfmanagertomcat") for *serviceName* in the script.

```
Function Online()

    Dim objWmiProvider
    Dim objService
    Dim strServiceState

    ' Check to see if the service is running
    set objWmiProvider = GetObject("winmgmts:/root/cimv2")
    set objService = objWmiProvider.get("win32_service='serviceName'")
    strServiceState = objService.state

    If ucase(strServiceState) = "RUNNING" Then
        Online = True
    Else

        ' If the service is not running, try to start it.
        response = objService.StartService()

        ' response = 0 or 10 indicates that the request to start was accepted
        If ( response <> 0 ) and ( response <> 10 ) Then
            Online = False
        Else
            Online = True
        End If
    End If
End Function

Function Offline()

    Dim objWmiProvider
    Dim objService
    Dim strServiceState

    ' Check to see if the service is running
    set objWmiProvider = GetObject("winmgmts:/root/cimv2")
    set objService = objWmiProvider.get("win32_service='serviceName'")
    strServiceState = objService.state

    If ucase(strServiceState) = "RUNNING" Then

        response = objService.StopService()

        If ( response <> 0 ) and ( response <> 10 ) Then
            Offline = False
        Else
            Offline = True
        End If
    End If
End Function
```

```

Else
    Offline = True
End If
End Function

Function Terminate()

    Dim objWmiProvider
    Dim objService

    ' Stopping the service
    set objWmiProvider = GetObject("winmgmts:/root/cimv2")
    set objService = objWmiProvider.get("win32_service='serviceName' ")
    response = objService.StopService()

    Resource.LogInformation "Terminate Stop Response: " & response

    Terminate = True
End Function

Function LooksAlive()

    Dim objWmiProvider
    Dim objService
    Dim strServiceState

    set objWmiProvider = GetObject("winmgmts:/root/cimv2")
    set objService = objWmiProvider.get("win32_service='serviceName' ")
    strServiceState = objService.state

    if ucase(strServiceState) = "RUNNING" Then
        LooksAlive = True
    Else
        LooksAlive = False
    End If
End Function

Function IsAlive()

    Dim objWmiProvider
    Dim objService
    Dim strServiceState

    set objWmiProvider = GetObject("winmgmts:/root/cimv2")
    set objService = objWmiProvider.get("win32_service='serviceName' ")
    strServiceState = objService.state

    if ucase(strServiceState) = "RUNNING" Then
        IsAlive= True
    Else
        IsAlive = False
    End If

End Function

```

Generic Script for AdvancedCopy Manager CCM

This is a script for stopping the management service of AdvancedCopy Manager CCM.

Before the shared disk for shared data goes offline, the following service must be stopped:

In order to stop this service, create a generic script file that executes the `acserv stop` command with the `-lan` option. Refer to "Command References" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for information on the command.

- Management service of ETERNUS SF AdvancedCopy Manager CCM

Below is an example of a generic script file. You can freely specify any file name, but the file extension must be ".vbs".

For *installDir* in the script, specify the directory in which ETERNUS SF Manager is installed.

```
Dim WshShell
Set WshShell = CreateObject("WScript.Shell")

Function Open( )
    Open = True
End Function

Function Online( )
    Online = True
End Function

Function LooksAlive( )
    LooksAlive = True
End Function

Function IsAlive( )
    IsAlive = True
End Function

Function Offline( )
    Resource.LogInformation "--- start offline ---"
    Set oExec = WshShell.Exec("installDir\CCM\bin\acservice.exe stop -lan")
    Resource.LogInformation oExec.StdOut.ReadAll
    Resource.LogInformation oExec.Stderr.ReadAll
    Resource.LogInformation "--- end offline ---"
    Offline = True
End Function

Function Close( )
    Close = True
End Function

Function Terminate( )
    Terminate = True
End Function
```

For Solaris or Linux

Create generic scripts (Start/Stop/Check) for the following daemons:

- Generic script for ETERNUS SF Manager Apache daemon / Tomcat daemon / Postgres daemon
- Generic script for AdvancedCopy Manager CCM
- Generic script for AdvancedCopy Manager daemon

Information

As generic script samples, the following files are stored in the /opt/FJSVesfcm/sample/cluster directory.

File Name	Explanation
EsfCmdline-Start	Sample file of Start script for ETERNUS SF Manager Apache daemon / Tomcat daemon / Postgres daemon
EsfCmdline-Stop	Sample file of Stop script for ETERNUS SF Manager Apache daemon / Tomcat daemon / Postgres daemon

File Name	Explanation
EsfCmdline-Check	Sample file of Check script for ETERNUS SF Manager Apache daemon / Tomcat daemon / Postgres daemon
CcmCmdline	Sample file of generic script for AdvancedCopy Manager CCM
AcmCmdline	Sample file of generic script for AdvancedCopy Manager daemon

When using the above files, make sure to copy them to a different directory and use the copied file.

Generic Script for ETERNUS SF Manager Apache Daemon / Tomcat Daemon / Postgres Daemon

Create the generic scripts according to the following settings. Specify the unique names to the files.

Type	Owner	Group	Access Permission
Start script	root	root	544
Stop script	root	root	544
Check script	root	root	544

[Start script]

```
#!/bin/sh

#
# ETERNUS SF Manager daemon start for PRIMECLUSTER
#

/opt/FJSVesfcm/bin/startSFmanager start
if [ $? -ne 0 ]; then
    exit 1
fi

exit 0
```

[Stop script]

```
#!/bin/sh

#
# ETERNUS SF Manager daemon stop for PRIMECLUSTER
#

/opt/FJSVesfcm/bin/startSFmanager stop
if [ $? -ne 0 ]; then
    exit 1
fi

exit 0
```

[Check script]

- For Solaris

```
#!/bin/sh

#
# ETERNUS SF Manager Check script for PRIMECLUSTER
#
```

```

PATH=/bin:/usr/bin:/sbin:/usr/sbin
export PATH

check_postgres()
{
    ps -ef | grep '/opt/FJSVesfcm/postgres/bin/postgres' | grep -v grep > /dev/null
2>&1
    if [ $? -ne 0 ]; then
        return 1
    fi

    return 0
}

check_apache()
{
    ps -ef | grep '/opt/FJSVesfcm/apache/bin/httpd' | grep -v grep > /dev/null 2>&1
    if [ $? -ne 0 ]; then
        return 1
    fi;

    return 0
}

check_tomcat()
{
    ps -ef | grep '/opt/FJSVesfcm/JRE/bin/java' | grep 'FJSVesfcm' | grep -v grep > /
dev/null 2>&1
    if [ $? -ne 0 ]; then
        return 1
    fi;

    return 0
}

for EXEC in check_postgres check_apache check_tomcat
do
    eval $EXEC
    if [ $? -ne 0 ]; then
        exit 1
    fi
done

exit 0

```

- For Linux

```

#!/bin/sh

#
# ETERNUS SF Manager Check script for PRIMECLUSTER
#

PATH=/bin:/usr/bin:/sbin:/usr/sbin
export PATH

check_postgres()
{
    ps -ef --cols 90 | grep '/opt/FJSVesfcm/postgres/bin/postgres' | grep -v grep
> /dev/null 2>&1
    if [ $? -ne 0 ]; then
        return 1
    fi
}

```

```

    fi

    return 0
}

check_apache()
{
    ps -ef --cols 90 | grep '/opt/FJSVesfcm/apache/bin/httpd' | grep -v grep > /dev/
null 2>&1
    if [ $? -ne 0 ]; then
        return 1
    fi;

    return 0
}

check_tomcat()
{
    ps -ef --cols 90 | grep '/opt/FJSVesfcm/JRE/bin/java' | grep 'FJSVesfcm' | grep
-v grep > /dev/null 2>&1
    if [ $? -ne 0 ]; then
        return 1
    fi;

    return 0
}

for EXEC in check_postgres check_apache check_tomcat
do
    eval $EXEC
    if [ $? -ne 0 ]; then
        exit 1
    fi
done

exit 0

```

Generic Script for AdvancedCopy Manager CCM

This is a script for stopping the management service of AdvancedCopy Manager CCM.

Before the shared disk for shared data goes offline, the following service must be stopped:

In order to stop this service, create a generic script file that executes the `acserv stop` command with the `-lan` option. Refer to "Command References" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for information on the command.

- Management service of ETERNUS SF AdvancedCopy Manager CCM

The example of creating script as the Start/Stop script for PRIMECLUSTER Cmdline resource is shown below.

```

#!/bin/sh

case $1 in
'start')
    exit 0 ;;
'stop' )
    /opt/FJSVccm/bin/acservice stop -lan
    exit 0 ;;
esac

```

For register a Cmdline resource, specify "start" to the argument for the Start script, specify "stop" to the argument for the Stop script.

Refer to your cluster software manuals for creating procedure of Start/Stop script.

Generic Script for AdvancedCopy Manager Daemon

It is the script to start/stop the AdvancedCopy Manager daemon from the cluster application (transaction). Read the following explanation and create the start/stop script file for the AdvancedCopy Manager daemon.

- Processing when starting cluster transactions

Configure the script so that AdvancedCopy Manager service of the Management Server transaction starts.

Configure the script so that the AdvancedCopy Manager service start command (`/opt/FJVSWSWSTF/cluster/MgrStart`) is executed when the cluster transaction starts.

Point

.....

In order to have the AdvancedCopy Manager service start command executed, specify the logical node name of the Management Server transaction to be started in the environment variable `SWSTGNODE`.

.....

Note

.....

Some cluster software requires a notification of start process result. If the process result notification is required, based on the exit status of the AdvancedCopy Manager service start command, configure an appropriate value to notify the cluster software.

.....

Information required for starting the AdvancedCopy Manager service is as follows.

Item	Explanation
Environment variable <code>SWSTGNODE</code>	Logical node name
Name of AdvancedCopy Manager service start command	<code>/opt/FJVSWSWSTF/cluster/MgrStart</code>
Exit status of AdvancedCopy Manager service start command	Completed successfully: 0 Terminated abnormally: 1

- Processing when stopping cluster transactions

Configure the script so that AdvancedCopy Manager service of the Management Server transaction stops.

Configure the script so that the AdvancedCopy Manager service stop command (`/opt/FJVSWSWSTF/cluster/MgrStop`) is executed when the cluster transaction stops.

Point

.....

In order to have the AdvancedCopy Manager service stop command executed, specify the logical node name of the Management Server transaction to be stopped in the environment variable `SWSTGNODE`.

.....

Note

.....

Some cluster software requires a notification of stop process result. If the process result notification is required, based on the exit status of the AdvancedCopy Manager service stop command, configure an appropriate value to notify the cluster software.

.....

Information required for stopping the AdvancedCopy Manager service is as follows.

Item	Explanation
Environment variable <code>SWSTGNODE</code>	Logical node name
Name of AdvancedCopy Manager service stop command	<code>/opt/FJVSWSWSTF/cluster/MgrStop</code>

Item	Explanation
Exit status of AdvancedCopy Manager service stop command	Completed successfully: 0 Terminated abnormally: 1

Example

The example of creating script as the Start/Stop script for PRIMECLUSTER Cmdline resource is shown below.

```
#!/bin/sh
SWSTGNODE=acmnode1
export SWSTGNODE

case $1 in
  'start')
    /opt/FJSVswstf/cluster/MgrStart
    exit 0 ;;
  'stop' )
    /opt/FJSVswstf/cluster/MgrStop
    exit 0 ;;
esac
```

For register a Cmdline resource, specify "start" to the argument for the Start script, specify "stop" to the argument for the Stop script.

Refer to your cluster software manuals for creating procedure of Start/Stop script.

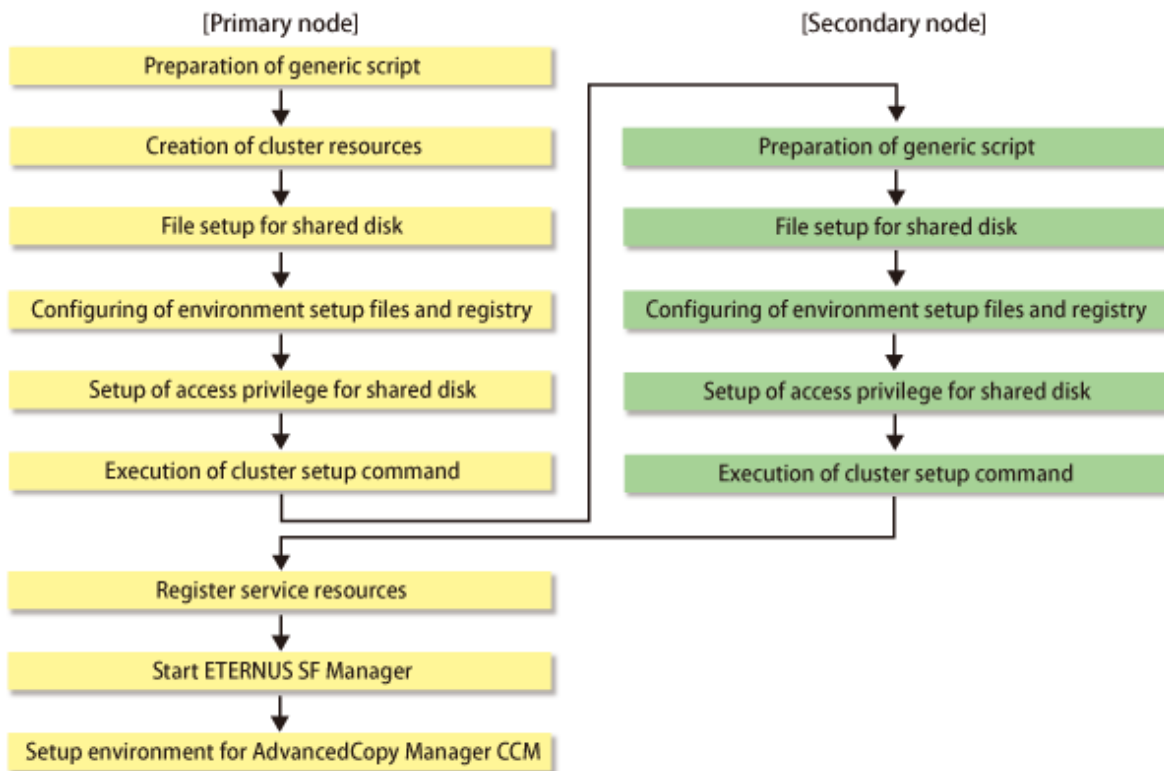
Chapter 5 Customization for Management Server Transaction

This chapter explains how to customize Management Server transactions.

The customization method is different depending on operating systems. Refer to "5.1 Customization for Windows Clustered System" for Windows. Refer to "5.2 Customization for Solaris/Linux Clustered System" for Solaris/Linux.

5.1 Customization for Windows Clustered System

The following flow is the customization procedure for Management Server transaction.



Note

Whether using Storage Cruiser or AdvancedCopy Manager separately or using both of them together, all the above steps excluding "Setup environment for AdvancedCopy Manager CCM" must be performed.

5.1.1 Customization for Primary Node

This section explains the customization procedure for a primary node.

5.1.1.1 Preparation of Generic Script

Follow the procedure below to prepare a generic script to be used on the primary node.

1. In the ETERNUS SF Manager program directory on the primary node, store the generic script file that you created in "4.1 Confirmation of Customization Items".
2. Set the access privilege for the stored generic script file.

Execute the following command by specifying the stored generic script file in *fileName*.

```
>cacls fileName /P "NT AUTHORITY\SYSTEM:F" "BUILTIN\Administrators:F" <RETURN>
```



Example

The command execution example is as follows.

```
C:\ETERNUS_SF>cacls apache.vbs /P "NT AUTHORITY\SYSTEM:F" "BUILTIN\Administrators:F"  
Are you sure (Y/N)?y  
Processing file: C:\ETERNUS_SF\apache.vbs
```

5.1.1.2 Creation of Cluster Resources

Create the cluster resources to be used on the primary node.

For Adding ETERNUS SF Manager to Already Existing Cluster Services (Transactions)

Use the **Failover Cluster Manager** screen to stop all transactions of the relevant cluster service. However, keep the shared disk being used by ETERNUS SF Manager online.

For Creating ETERNUS SF Manager in Newly Created Cluster Services (Transactions)

Follow the procedure below to create cluster resources for ETERNUS SF Manager in the cluster service.

The screen name and item name may be different depending on operating systems.

The procedures for Windows Server 2008 and Windows Server 2012 are as follows.

[For Windows Server 2008]

For explanation purposes, the name of the "Service or Application" for ETERNUS SF Manager is set to "ESF-manager" in Windows Server 2008.

1. Start the **Failover Cluster Manager** screen and connect to the clustered system.
2. Create a "Service or Application" for ETERNUS SF Manager.
 - a. Right-click **Services and Applications** in the **Failover Cluster Manager** tree, and, in the subsequently displayed menu, select **More Actions... > Create Empty Service or Application**.
Under **Services and Applications**, the **New service or application** is created.
 - b. Right-click **New service or application** and then select **Properties**.
The **New service or application Properties** dialog box is displayed.
 - c. On the **General** tab, modify the **Name**. Then, under **Preferred owners**, select the resource name for the primary node, and click **Apply**.
 - d. After applying the settings, click **OK**.
3. Allocate a shared disk to the "Service or Application" for ETERNUS SF Manager.
 - a. Right-click **Services and Applications > ESF-manager**, and then select **Add storage**.
The **Add Storage** screen is displayed.
 - b. From **Available disks**, select the shared disk for ETERNUS SF Manager and click **OK**.
4. Allocate a client access point to the "Service or Application" for ETERNUS SF Manager.
 - a. Right-click **Services and Applications > ESF-manager**, and then select **Add a resource > 1 - Client Access Point**.
The **New Resource Wizard** screen is displayed.
 - b. Set the following items and click **Next**.
 - Name
Set the network name that you prepared in "[4.1 Confirmation of Customization Items](#)".
 - Network
Check the network to be used.

- Address

Set the Logical IP address resources (the IP address resources) that you prepared in "[4.1 Confirmation of Customization Items](#)".

- Check the contents on the **Confirmation** screen and click **Next**.
- Check the contents on the **Summary** screen and click **Finish**.
- Make sure that the settings have been applied.

At the center of the screen, under **ESF-manager Summary**, confirm that the set resources have been added to the **Server Name**.

[For Windows Server 2012]

For explanation purposes, the name of the "Role" for ETERNUS SF Manager is set to "ESF-manager" in Windows Server 2012.

- Start the **Failover Cluster Manager** screen and connect to the clustered system.
- Create a Role for ETERNUS SF Manager.
 - Right-click **Roles** in the **Failover Cluster Manager** tree, and, in the subsequently displayed menu, select **Create Empty Role**.
Under **Roles**, the **New Role** is created.
 - Right-click **New Role** and then select **Properties**.
The **New Role Properties** dialog box is displayed.
 - On the **General** tab, modify the **Name**. Then, under **Preferred Owners**, select the resource name for the primary node, and click **Apply**.
 - After applying the settings, click **OK**.
- Allocate a shared disk to the Role for ETERNUS SF Manager.
 - Right-click **Roles > ESF-manager**, and then select **Add Storage**.
The **Add Storage** screen is displayed.
 - From **Available disks**, select the shared disk for ETERNUS SF Manager and click **OK**.
- Allocate a client access point to the Role for ETERNUS SF Manager.
 - Right-click **Roles > ESF-manager**, and then select **Add Resource > Client Access Point**.
The **New Resource Wizard** screen is displayed.
 - Set the following items and click **Next**.
 - Name
Set the network name that you prepared in "[4.1 Confirmation of Customization Items](#)".
 - Networks
Check the network to be used.
 - Address
Set the Logical IP address resources (the IP address resources) that you prepared in "[4.1 Confirmation of Customization Items](#)".
 - Check the contents on the **Confirmation** screen and click **Next**.
 - Check the contents on the **Summary** screen and click **Finish**.
 - Make sure that the settings have been applied.
At the center of the screen, under **ESF-manager**, confirm that the set resources have been added to the **Server Name** in the **Resources** tab.

5.1.1.3 File Setup for Shared Disk

1. Take ownership of the shared disk that is used by the Quorum disk and ETERNUS SF Manager and ownership of the transactions.
Refer to your cluster software manuals for taking ownership.

2. Copy files on the dynamic disks of ETERNUS SF Manager on the primary node to the shared disk for ETERNUS SF Manager.

Follow the procedure below to copy files.

If you recreate a cluster environment and the old environment files remain on the shared disk, after deleting them, perform the procedure below.

- a. Use Explorer or a similar tool to create the following directories on the shared disk.

Directories to Be Created on Shared Disk	Explanation
<i>storeDirForCommonData</i>	This is a stored directory for shared data of ETERNUS SF Manager common. Create it in the shared disk with the following name: - <i>driveNameOfSharedDisk:\ETERNUS_SF</i>
<i>storeDirForEscData</i>	This is a stored directory for shared data of Storage Cruiser's manager. Create it in the shared disk with any name: - Example: <i>driveNameOfSharedDisk:\escdata</i>
<i>storeDirForAstData</i>	This is a stored directory for shared data of Storage Cruiser's manager Optimization option. Create it in the shared disk with any name: - Example: <i>driveNameOfSharedDisk:\astdata</i>
<i>storeDirForCcmData</i>	This is a stored directory for shared data of AdvancedCopy Manager CCM. Create it in the shared disk with any name: - Example: <i>driveNameOfSharedDisk:\ccmdata</i>

Point

The characters that can be used for the directory path name that is created under the shared disk are alphanumeric characters excluding space character. The specifiable length of the path name is 76 characters or less including *driveNameOfSharedDisk*.

- b. Use Explorer or a similar tool to copy the files from the local disks on the primary node to the shared disk.

Copy files in the copy source directory to the copy destination directory.

The *programDir* is "Program Directory" specified at the ETERNUS SF Manager installation, the *envDir* is "Environment Directory", and the *workDir* is "Working Directory".

Local Disk (Copy Source)	Shared Disk (Copy Destination)
<i>programDir</i> \Common\sys\apache\conf	<i>storeDirForCommonData</i> \apache\conf
<i>programDir</i> \Common\sys\apache\logs	<i>storeDirForCommonData</i> \apache\logs
<i>programDir</i> \Common\sys\tomcat\conf	<i>storeDirForCommonData</i> \tomcat\conf
<i>programDir</i> \Common\sys\tomcat\logs	<i>storeDirForCommonData</i> \tomcat\logs
<i>programDir</i> \Common\sys\tomcat\webapps\esf\WEB-INF\log	<i>storeDirForCommonData</i> \tomcat\webapps\esf\WEB-INF\log
<i>envDir</i> \Common\etc\db	<i>storeDirForCommonData</i> \db
<i>envDir</i> \Common\etc\message	<i>storeDirForCommonData</i> \message
<i>envDir</i> \ESC\Manager\etc	<i>storeDirForEscData</i> \ESC\Manager\etc

Local Disk (Copy Source)	Shared Disk (Copy Destination)
<i>envDir\ASTManager\etc\opt\FJSVssast\data</i>	<i>storeDirForAstData\AST\etc\data</i>
<i>envDir\CCM\etc</i>	<i>storeDirForCcmData\etc</i>
<i>workDir\Common\var</i>	<i>storeDirForCommonData\var</i>
<i>workDir\LM\var</i>	<i>storeDirForCommonData\LM\var</i>
<i>workDir\ESC\Manager\var</i>	<i>storeDirForEscData\ESC\Manager\var</i>
<i>workDir\AST\Manager\var\opt\FJSVssast\data</i>	<i>storeDirForAstData\AST\var\data</i>
<i>workDir\CCM\var</i>	<i>storeDirForCcmData\var</i>

3. Use Explorer or a similar tool to rename the following directories:

- *programDir\Common\sys\apache\conf*
- *programDir\Common\sys\apache\logs*
- *programDir\Common\sys\tomcat\conf*
- *programDir\Common\sys\tomcat\logs*
- *programDir\Common\sys\tomcat\webapps\esf\WEB-INF\log*
- *envDir\Common\etc\db*
- *envDir\Common\etc\message*
- *envDir\ESC\Manager\etc*
- *envDir\AST\Manager\etc\opt\FJSVssast\data*
- *workDir\Common\var*
- *workDir\ESC\Manager\var*
- *workDir\AST\Manager\var\opt\FJSVssast\data*

Note

If another program is using any files in the above directories, rename of the directory may fail.
If rename of the directory fails, reboot the server and try again.

4. On the primary node, create symbolic links to the directories in the shared disk for shared data.

Create symbolic links from the following directories on the local disks on the primary node to the directories on the shared disk.

Link	Target
<i>programDir\Common\sys\apache\conf</i>	<i>storeDirForCommonData\apache\conf</i>
<i>programDir\Common\sys\apache\logs</i>	<i>storeDirForCommonData\apache\logs</i>
<i>programDir\Common\sys\tomcat\conf</i>	<i>storeDirForCommonData\tomcat\conf</i>
<i>programDir\Common\sys\tomcat\logs</i>	<i>storeDirForCommonData\tomcat\logs</i>
<i>programDir\Common\sys\tomcat\webapps\esf\WEB-INF\log</i>	<i>storeDirForCommonData\tomcat\webapps\esf\WEB-INF\log</i>
<i>envDir\Common\etc\db</i>	<i>storeDirForCommonData\db</i>
<i>envDir\Common\etc\message</i>	<i>storeDirForCommonData\message</i>
<i>envDir\ESC\Manager\etc</i>	<i>storeDirForEscData\ESC\Manager\etc</i>
<i>envDir\AST\Manager\etc\opt\FJSVssast\data</i>	<i>storeDirForAstData\AST\etc\data</i>

Link	Target
<i>workDir</i> \Common\var	<i>storeDirForCommonData</i> \var
<i>workDir</i> \ESCManager\var	<i>storeDirForEscData</i> \ESCManager\var
<i>workDir</i> \ASTManager\var\opt\FJSVssast\data	<i>storeDirForAstData</i> \AST\var\data

Symbolic links can be created by using the `mklink` command of Windows.



Example

The example of creating a symbolic link from *programDir*\Common\sys\apache\conf to *storeDirForCommonData*\apache\conf is shown below.

```
>mklink /d programDir\Common\sys\apache\conf storeDirForCommonData\apache\conf
```

5.1.1.4 Configuring of Environment Setup Files and Registry

1. Create backup directories for AdvancedCopy Manager CCM environment setup files.

On the primary node, create the following directories:

The *programDir* is "Program Directory" specified at the ETERNUS SF Manager installation.

- *programDir*\CCM\noncluster\bin
- *programDir*\CCM\noncluster\micc\sys
- *programDir*\CCM\noncluster\sys

2. Back up AdvancedCopy Manager CCM environment setup files.

On the primary node, copy the following files to the copy destination.

Copy Source File	Copy Destination File
<i>programDir</i> \CCM\micc\sys\install.sys	<i>programDir</i> \CCM\noncluster\micc\sys\install.sys
<i>programDir</i> \CCM\bin\stxc_install.sys	<i>programDir</i> \CCM\noncluster\bin\stxc_install.sys
<i>programDir</i> \CCM\sys\sys.properties	<i>programDir</i> \CCM\noncluster\sys\sys.properties



Note

The copied files are required for "[Chapter 13 Deletion of Cluster Environment for Management Server Transactions](#)".

3. Edit AdvancedCopy Manager CCM environment setup files.

On the primary node, edit the path name from *1 to *4 of files below:

[*programDir*\CCM\micc\sys\install.sys file]

```
stxs_optdir= (Do not modify these settings!)
stxs_etcdir= (Do not modify these settings!)
stxs_varDir=*1
stxs_jredir= (Do not modify these settings!)
```

[*programDir*\CCM\bin\stxc_install.sys file]

```
stxc_optdir= (Do not modify these settings!)
stxc_etcdir=*2
stxc_jredir= (Do not modify these settings!)
```

[*programDir*\CCM\sys\sys.properties file]

```
com.fujitsu.eternussf.acm.ccm.optpath= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.etcpath=*3
com.fujitsu.eternussf.acm.ccm.varpath=*4
com.fujitsu.eternussf.acm.ccm.micc.path= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.grapi.path= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.language= (Do not modify these settings!)
```

Note

- In *3 and *4, use "\" as a drive separate character.
- In *3 and *4, use "\" as a path separate character of *storeDirForCcmData*.

The setting values from *1 to *4 are as follows.
The sample setting values use "G:\ccmdata" for *storeDirForCcmData*.

Setting Item	Setting Value	Sample Setting
*1	<i>storeDirForCcmData\var\micc</i>	G:\ccmdata\var\micc
*2	<i>storeDirForCcmData\etc</i>	G:\ccmdata\etc
*3	<i>storeDirForCcmData\etc\</i>	G:\ccmdata\etc\
*4	<i>storeDirForCcmData\var\</i>	G:\ccmdata\var\

4. Edit the detailed setting file (*storeDirForEscData\ESCManager\etc\opt\FJSVssmgr\current\sanma.conf*) of the storage management.

Use the text editor to add the line of "LOGICAL_MANAGER_IP" and/or "LOGICAL_MANAGER_V6IP" in the detailed setting file. Additional line is different according to the takeover IP address for Management Server transaction as follows:

- For only IPv4 address:

```
LOGICAL_MANAGER_IP="takeoverIPAddressForManagementServerTransaction(IPv4Format)";
```

- For only IPv6 address:

```
LOGICAL_MANAGER_V6IP="takeoverIPAddressForManagementServerTransaction(IPv6Format)";
```

- For IPv4 address and IPv6 address:

```
LOGICAL_MANAGER_IP="takeoverIPAddressForManagementServerTransaction(IPv4Format)";
LOGICAL_MANAGER_V6IP="takeoverIPAddressForManagementServerTransaction(IPv6Format)";
```

Refer to "LOGICAL_MANAGER_IP" and "LOGICAL_MANAGER_V6IP" in "sanma.conf Parameter" in the *ETERNUS SF Storage Cruiser Operation Guide* for information on the detailed setting file.

5. Edit the registry.

As described below, change the path, that is written in the registry key, of the var directory of the license manager function by using the registry editor.

The *workDir* is "Working Directory" specified at the ETERNUS SF Manager installation.

Before Change	After Change
<i>workDir\LM\var</i>	<i>storeDirForCommonData\LM\var</i>

[Sample display for registry key]

```
HKEY_LOCAL_MACHINE
SOFTWARE
Fujitsu
ETERNUS SF License Manager
```

5.1.1.5 Setup of Access Privilege for Shared Disk

Set up the access privilege for the directories on the shared disk.

1. Set up the access privilege for the log directory.

On the primary node, execute the following command.

```
>cacls storeDirForCommonData\var\log /T /P "NT AUTHORITY\SYSTEM:F" "BUILTIN\Administrators:F"
```

2. Set up the access privilege for the database directory.

On the primary node, execute the following command.

```
>cacls storeDirForCommonData\db\data /T /P "NT AUTHORITY\SYSTEM:F" "BUILTIN\Administrators:F"  
"esfpostgres:C"
```

5.1.1.6 Execution of Cluster Setup Command

Follow the procedure below to set up a primary node.



Note

- Perform the procedures using Administrator privileges. The Windows "Computer Browser service" must be activated if a user belonging to the Administrators of the domain wants to perform customization.
- For Windows Server 2012 or later, install the Failover Cluster Command Interface before performing the cluster setup.
- Do not use the Telnet Server service.

1. Instruct the start of the cluster setup.

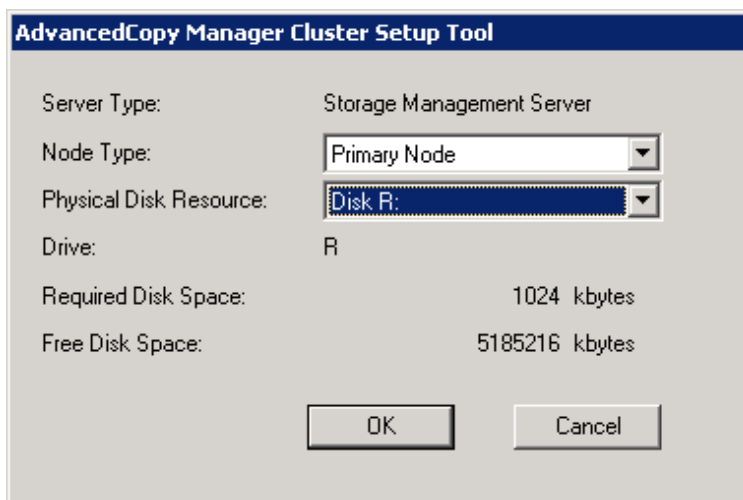
On the primary node, execute the following cluster setup command.

The *programDir* is "Program Directory" specified at the ETERNUS SF Manager installation.

```
- programDir\ACM\bin\stgclset_mscs
```

2. Select the node type and shared disk.

The initial window of the cluster setup command is displayed.



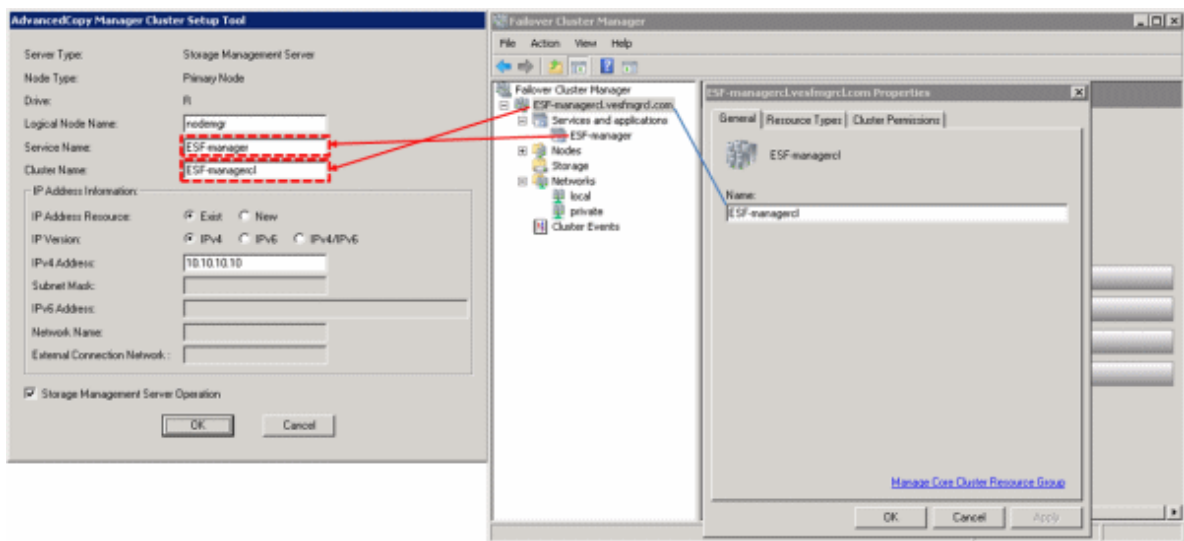
Each item is explained below. Make the required entries and then click **OK**.

Item	Explanation
Server Type	Confirm that the server is a "Storage Management Server".
Node Type	Select "Primary Node".
Physical Disk Resource	Select the "Disk resource of shared disk for shared data" that was prepared in "4.1 Confirmation of Customization Items".
Drive	The drive letter corresponding to the physical disk resource is displayed.
Required Disk Space	The minimum disk size required for the cluster environment is displayed.
Free Disk Space	The amount of free disk space of the specified drive is displayed.

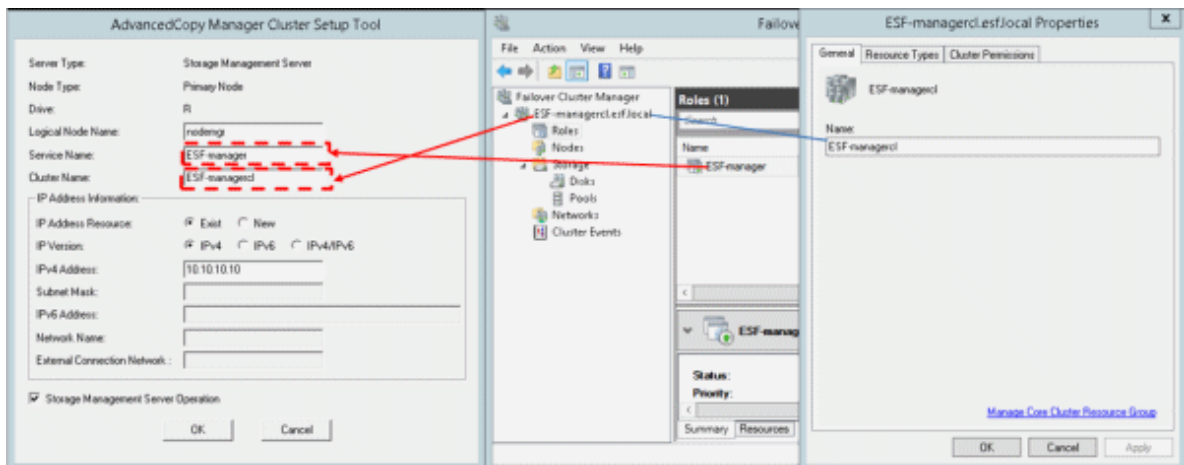
3. Set the cluster information for the primary node.

The setting screen of the cluster setup command is displayed.

The following screen is for Windows Server 2008.



The following screen is for Windows Server 2012.



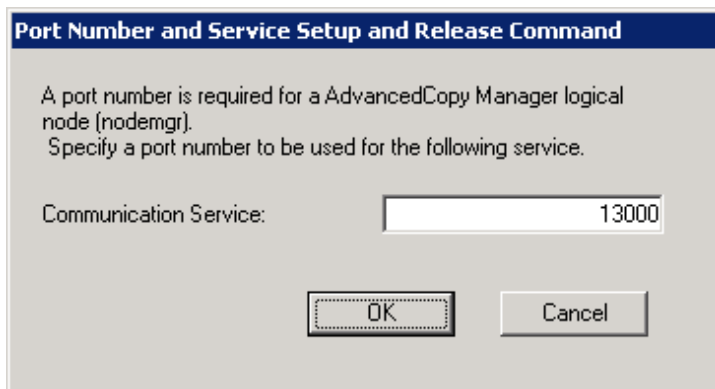
Each item is explained below. Make the required entries and then click **OK**.

Item	Explanation
Server Type	Confirm that the server is a "Storage Management Server".
Node Type	Confirm that the node is "Primary Node".

Item	Explanation
Drive	The drive letter corresponding to the physical disk resource is displayed.
Logical Node Name	Enter the "Logical node name" as defined in "4.1 Confirmation of Customization Items".
Service Name	Enter the "Transaction name" as defined in "4.1 Confirmation of Customization Items".
Cluster Name	Enter the "Cluster name" as confirmed in "4.1 Confirmation of Customization Items".
IP Address Resource	Select "Exist".
IP Version	Select the IP version of IP address.
IPv4 Address	Enter the "Logical IP address" as defined in "4.1 Confirmation of Customization Items". Enter the IPv4 address if "IPv4" or "IPv4/IPv6" is selected in the IP Version.
IPv6 Address	Enter the "Logical IP address" as defined in "4.1 Confirmation of Customization Items". Enter the IPv6 address if "IPv6" or "IPv4/IPv6" is selected in the IP Version. The specified IPv6 address should one that is usable with WSFC.
Storage Management Server Operation	Select this item.

4. Set the port number and service.

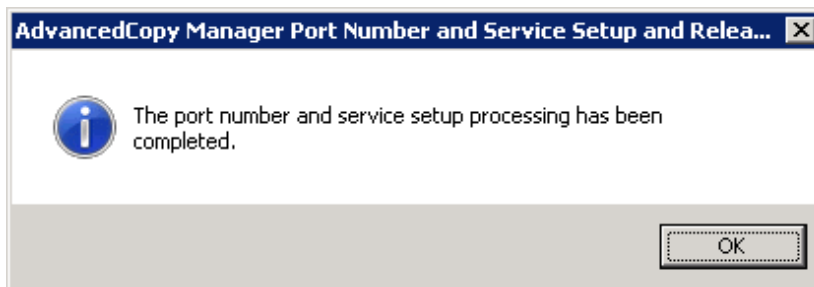
The following page is displayed. If the port number and service has already been set, this page is not displayed.



Each item is explained below. Make the required entries and then click **OK**.

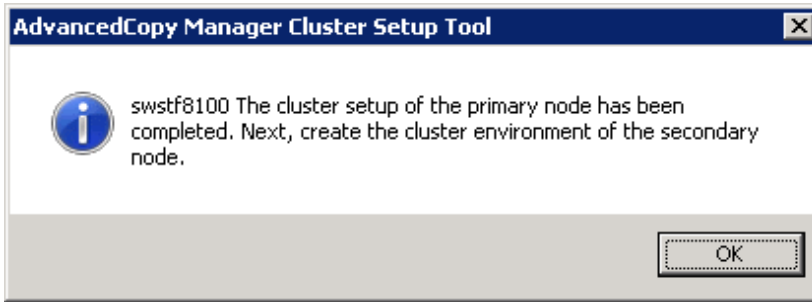
Item	Explanation
Communication Service	Enter the "Communication service/daemon port number for transaction" as defined in "4.1 Confirmation of Customization Items".

5. The following page is displayed. Click **OK**.



6. The cluster setup of the primary node has been completed.

When the cluster setup completion window is displayed, click **OK**.



5.1.2 Customization for Secondary Node

This section explains the customization procedure for secondary nodes.

5.1.2.1 Preparation of Generic Script

Follow the procedure below to prepare a generic script to be used on the secondary node.

1. In the ETERNUS SF Manager program directory on the secondary node, store the generic script file that you created in "4.1 Confirmation of Customization Items".
2. Set up the access privilege for the stored generic script file.

Execute the following command by specifying the stored generic script file in *fileName*.

```
>cacls fileName /P "NT AUTHORITY\SYSTEM:F" "BUILTIN\Administrators:F"
```

Example

The command execution example is as follows.

```
C:\ETERNUS_SF>cacls apache.vbs /P "NT AUTHORITY\SYSTEM:F" "BUILTIN\Administrators:F"  
Are you sure (Y/N)?y  
Processing file: C:\ETERNUS_SF\apache.vbs
```

5.1.2.2 File Setup for Shared Disk

1. Take ownership of the shared disk that is used by the Quorum disk and ETERNUS SF Manager and ownership of the transactions. Refer to your cluster software manuals for taking ownership.
2. Use Explorer or a similar tool to rename the following directories:

The *programDir* is "Program Directory" specified at the ETERNUS SF Manager installation, the *envDir* is "Environment Directory", and the *workDir* is "Working Directory".

- *programDir*\Common\sys\apache\conf
- *programDir*\Common\sys\apache\logs
- *programDir*\Common\sys\tomcat\conf
- *programDir*\Common\sys\tomcat\logs
- *programDir*\Common\sys\tomcat\webapps\esf\WEB-INF\log
- *envDir*\Common\etc\ldb
- *envDir*\Common\etc\message
- *envDir*\ESC\Manager\etc

- *envDir*\AST\Manager\etc\opt\FJSVssast\data
- *workDir*\Common\var
- *workDir*\ESC\Manager\var
- *workDir*\AST\Manager\var\opt\FJSVssast\data

Note

If another program is using any files in the above directories, rename of the directory may fail.
If rename of the directory fails, reboot the server and try again.

3. On the secondary node, create symbolic links to the directories of the shared disk for shared data.

Create symbolic links from the following directories on the local disks on the secondary node to the directories on the shared disk.

Link	Target
<i>programDir</i> \Common\sys\apache\conf	<i>storeDirForCommonData</i> \apache\conf
<i>programDir</i> \Common\sys\apache\logs	<i>storeDirForCommonData</i> \apache\logs
<i>programDir</i> \Common\sys\tomcat\conf	<i>storeDirForCommonData</i> \tomcat\conf
<i>programDir</i> \Common\sys\tomcat\logs	<i>storeDirForCommonData</i> \tomcat\logs
<i>programDir</i> \Common\sys\tomcat\webapps\esf\WEB-INF\log	<i>storeDirForCommonData</i> \tomcat\webapps\esf\WEB-INF\log
<i>envDir</i> \Common\etc\ldb	<i>storeDirForCommonData</i> \ldb
<i>envDir</i> \Common\etc\message	<i>storeDirForCommonData</i> \message
<i>envDir</i> \ESC\Manager\etc	<i>storeDirForEscData</i> \ESC\Manager\etc
<i>envDir</i> \AST\Manager\etc\opt\FJSVssast\data	<i>storeDirForAstData</i> \AST\etc\data
<i>workDir</i> \Common\var	<i>storeDirForCommonData</i> \var
<i>workDir</i> \ESC\Manager\var	<i>storeDirForEscData</i> \ESC\Manager\var
<i>workDir</i> \AST\Manager\var\opt\FJSVssast\data	<i>storeDirForAstData</i> \AST\var\data

Symbolic links can be created by using the `mklink` command of Windows.

Example

The example of creating a symbolic link from *programDir*\Common\sys\apache\conf to *storeDirForCommonData*\apache\conf is shown below.

```
>mklink /d programDir\Common\sys\apache\conf storeDirForCommonData\apache\conf
```

5.1.2.3 Configuring of Environment Setup Files and Registry

1. Create backup directories for AdvancedCopy Manager CCM environment setup files.

On the secondary node, create the following directories:

The *programDir* is "Program Directory" specified at the ETERNUS SF Manager installation.

- *programDir*\CCM\noncluster\bin
- *programDir*\CCM\noncluster\mic\sys
- *programDir*\CCM\noncluster\sys

2. Back up AdvancedCopy Manager CCM environment setup files.

On the secondary node, copy the following files to the copy destination.

Copy Source File	Copy Destination File
<i>programDir\CCM\micc\sys\install.sys</i>	<i>programDir\CCM\noncluster\micc\sys\install.sys</i>
<i>programDir\CCM\bin\stxc_install.sys</i>	<i>programDir\CCM\noncluster\bin\stxc_install.sys</i>
<i>programDir\CCM\sys\sys.properties</i>	<i>programDir\CCM\noncluster\sys\sys.properties</i>

 **Note**

The copied files are required for "[Chapter 13 Deletion of Cluster Environment for Management Server Transactions](#)".

3. Edit AdvancedCopy Manager CCM environment setup files

On the secondary node, edit the path name from *1 to *4 of files below:

[*programDir\CCM\micc\sys\install.sys* file]

```
stxs_optdir= (Do not modify these settings!)
stxs_etcdir= (Do not modify these settings!)
stxs_varDir=*1
stxs_jredir= (Do not modify these settings!)
```

[*programDir\CCM\bin\stxc_install.sys* file]

```
stxc_optdir= (Do not modify these settings!)
stxc_etcdir=*2
stxc_jredir= (Do not modify these settings!)
```

[*programDir\CCM\sys\sys.properties* file]

```
com.fujitsu.eternussf.acm.ccm.optpath= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.etcpath=*3
com.fujitsu.eternussf.acm.ccm.varpath=*4
com.fujitsu.eternussf.acm.ccm.micc.path= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.grapi.path= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.language= (Do not modify these settings!)
```

 **Note**

- In *3 and *4, use "\:" as a drive separate character.
- In *3 and *4, use "\\\" as a path separate character of *storeDirForCcmData*.

The setting values from *1 to *4 are as follows.

The sample setting values use "G:\ccmdata" for *storeDirForCcmData*.

Setting Item	Setting Value	Sample Setting
*1	<i>storeDirForCcmData\var\micc</i>	G:\ccmdata\var\micc
*2	<i>storeDirForCcmData\etc</i>	G:\ccmdata\etc
*3	<i>storeDirForCcmData\etc\</i>	G:\ccmdata\etc\
*4	<i>storeDirForCcmData\var\</i>	G:\ccmdata\var\

4. Edit the registry.

As described below, change the path, that is written in the registry key, of the var directory of the license manager function by using the registry editor.

The *workDir* is "Working Directory" specified at the ETERNUS SF Manager installation.

Before Change	After Change
<i>workDir\LM\var</i>	<i>storeDirForCommonData\LM\var</i>

[Sample display for registry key]

```
HKEY_LOCAL_MACHINE
SOFTWARE
  Fujitsu
    ETERNUS SF License Manager
      CurrentVersion
        VarPathName
```

5.1.2.4 Setup of Access Privilege for Shared Disk

Set up the access privilege for the ETERNUS SF Manager database directory that you copied to the shared disk.

On the secondary node, execute the following command.

```
>caccls storeDirForCommonData\db\data /T /G "esfpostgres:C" /E
```

5.1.2.5 Execution of Cluster Setup Command

Follow the procedure below to set up a secondary node.

Note

- Perform the procedures using Administrator privileges. The Windows "Computer Browser service" must be activated if a user belonging to the Administrators of the domain wants to perform customization.
- For Windows Server 2012 or later, install the Failover Cluster Command Interface before performing the cluster setup.
- Do not use the Telnet Server service.

1. Instruct the start of the cluster setup.

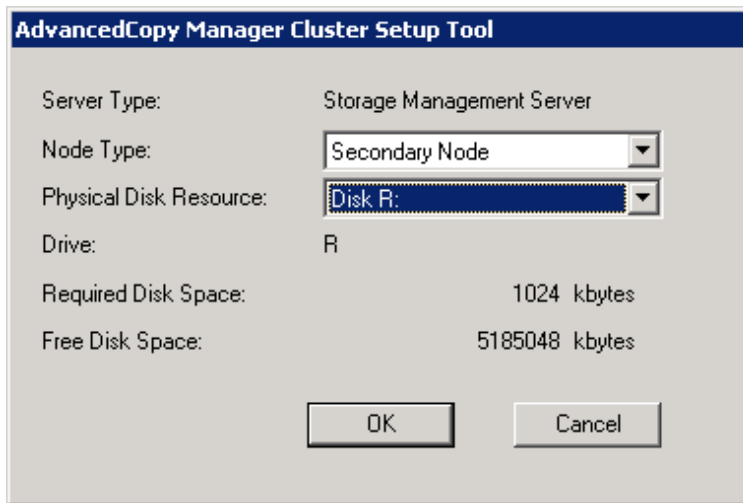
On the secondary node, execute the following cluster setup command.

The *programDir* is "Program Directory" specified at the ETERNUS SF Manager installation.

- *programDir\ACM\bin\stgclset_mscs*

2. Select the node type and shared disk.

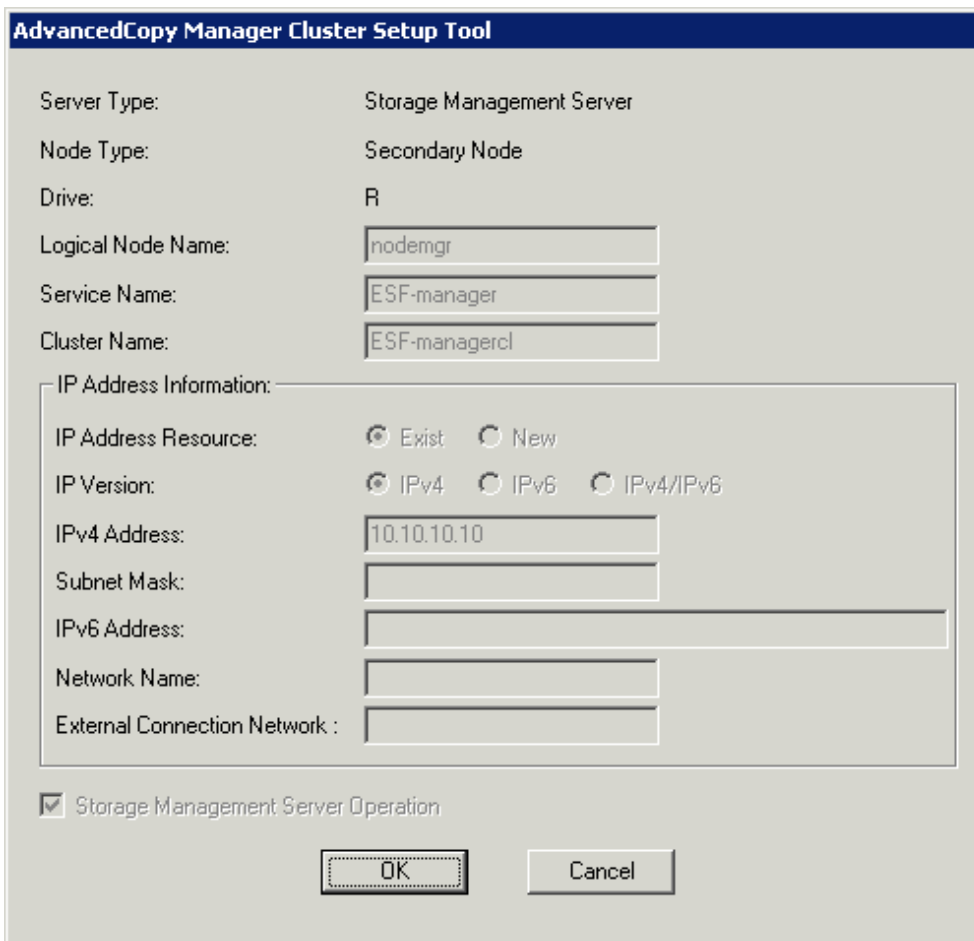
The initial window of the cluster setup command is displayed.



Each item is explained below. Make the required entries and then click **OK**.

Item	Explanation
Server Type	Confirm that the server is a "Storage Management Server".
Node Type	Select "Secondary Node".
Physical Disk Resource	Select the resource for the shared disk for shared data. Select the same resource as for the primary node.
Drive	The drive letter corresponding to the physical disk resource is displayed.
Required Disk Space	The minimum disk size required for the cluster environment is displayed.
Free Disk Space	The amount of free disk space of the specified drive is displayed.

3. Confirm the cluster information for the secondary node.



The image shows a dialog box titled "AdvancedCopy Manager Cluster Setup Tool". It contains the following fields and options:

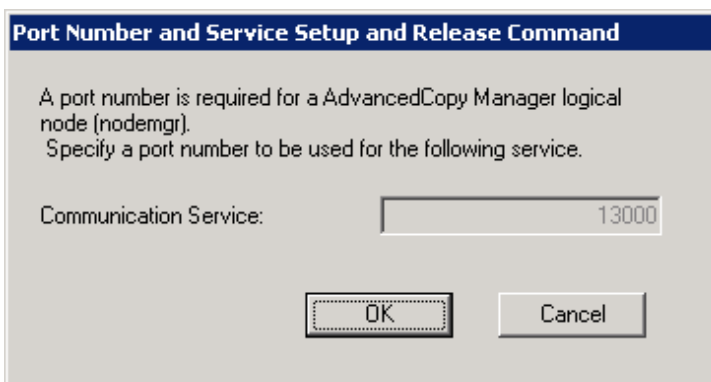
- Server Type: Storage Management Server
- Node Type: Secondary Node
- Drive: R
- Logical Node Name: nodemgr
- Service Name: ESF-manager
- Cluster Name: ESF-managercl
- IP Address Information section:
 - IP Address Resource: Exist New
 - IP Version: IPv4 IPv6 IPv4/IPv6
 - IPv4 Address: 10.10.10.10
 - Subnet Mask: (empty)
 - IPv6 Address: (empty)
 - Network Name: (empty)
 - External Connection Network: (empty)
- Storage Management Server Operation
- Buttons: OK, Cancel

The values set for the primary node is displayed (Only the Node Type needs to be changed to "Secondary Node").

After confirming each item, click **OK**.

4. Set the port number and service.

The following page displays the value that was set for the primary node. If a port number and service has already been set, this page is not displayed.

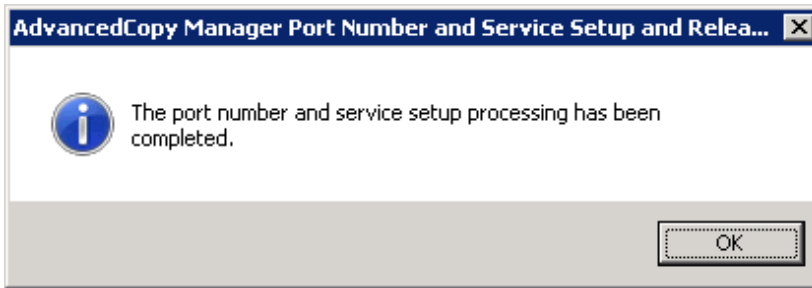


The image shows a dialog box titled "Port Number and Service Setup and Release Command". It contains the following text and fields:

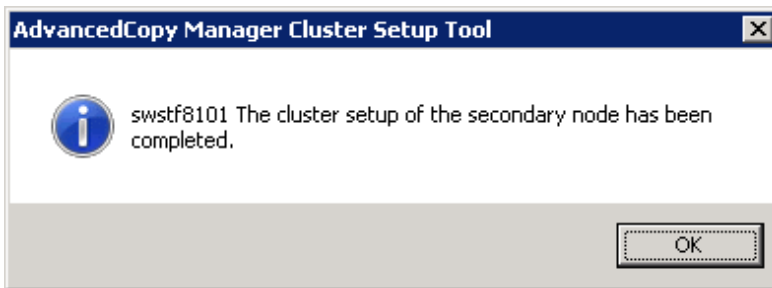
- A port number is required for a AdvancedCopy Manager logical node (nodemgr). Specify a port number to be used for the following service.
- Communication Service: 13000
- Buttons: OK, Cancel

Click **OK**.

5. The following page is displayed. Click **OK**.



6. The cluster setup of the secondary node has been completed.
When the cluster setup completion window is displayed, click **OK**.



5.1.3 Register Service Resources

Register service resources used in the Management Server on the primary node.

The screen name and item name may be different depending on operating systems.

The procedures for Windows Server 2008 and Windows Server 2012 are as follows:

[For Windows Server 2008]

For explanation purposes, the name of the "Service or Application" for ETERNUS SF Manager has been set to "ESF-manager" in Windows Server 2008.

1. Add ETERNUS SF Manager services to "Service or Application" for ETERNUS SF Manager.

Add the following services:

- ETERNUS SF Manager Postgres Service
- ETERNUS SF Storage Cruiser Optimization Option

Follow the procedure below to add new services:

- a. Right-click **Services and Applications** > **ESF-manager** in the **Failover Cluster Manager** tree, and, in the subsequently displayed menu, select **Add a resource** > **3- Generic Service**.
The **New Resource Wizard** screen is displayed.
- b. Select the new service to add on the **Select Service** screen and click **Next**.
- c. Confirm the contents that are displayed on the **Confirmation** screen and click **Next**.
- d. Click **Finish**.
- e. Make sure that the settings have been applied.

At the center of the screen, under **ESF-manager Summary**, confirm that the newly added services are displayed in the **Other Resources**.

2. Add generic scripts to the "Service or Application" for ETERNUS SF Manager.

For each of all generic script files that you stored according to "5.1.1.1 Preparation of Generic Script", perform the following procedure:

- a. Right-click **Services and Applications** > **ESF-manager** in the **Failover Cluster Manager** tree, and, in the subsequently displayed menu, select **Add a resource** > **4- Generic Script**.

The **New Resource Wizard** screen is displayed.

- b. In **Script file path** field of the **Generic Script Info** pane, specify the script file name that you stored according to "5.1.1.1 Preparation of Generic Script" by its absolute file path and click **Next**.

- c. Confirm the contents that are displayed on the **Confirmation** screen and click **Next**.

- d. Confirm the contents that are displayed on the **Summary** screen and click **Finish**.

- e. Make sure that the settings have been applied.

At the center of the screen, under **Other Resources** of **ESF-manager Summary**, confirm that the newly added generic scripts are displayed.

3. In "Service or Application" for ETERNUS SF Manager, set the resource dependencies.

Make the resource dependency settings in accordance with the chart below:

Table 5.1 Setting Resource Dependencies

Resource for Which to Make Settings	Depending Resource
ETERNUS SF Manager Apache Service script	Shared disk
ETERNUS SF Manager Tomcat Service script	ETERNUS SF Manager Apache Service script, ETERNUS SF Manager Postgres Service, ETERNUS SF Storage Cruiser Optimization Option, Shared disk, IP address
ETERNUS SF Manager Postgres Service	Shared disk
ETERNUS SF Storage Cruiser Optimization Option	Shared disk
Generic script for ETERNUS SF Manager AdvancedCopy Manager CCM	Shared disk

If you execute the AdvancedCopy Manager's manager as Management Server transactions and Managed Server transactions or as Managed Server transactions, and if you operate the backup management, add the disk resource for transactions to the following resource.

Resource for Which to Make Settings	Depending Resource
AdvancedCopy COM Service_logicalNodeName	Disk resource for transactions

Specify in *logicalNodeName* the logical node name that was prepared in "4.1 Confirmation of Customization Items".

Note

When you add or delete a transaction volume, it is necessary to review the dependency between AdvancedCopy COM Service_logicalNodeName and the disk resource for transactions. Refer to "Notes on Cluster Operation" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Windows)* for more information about this.

4. For each resource for which you made settings in step 3, make the following settings:

- a. At the center of the **Failover Cluster Manager** screen, under **Other Resources** of **ESF-manager Summary**, click the resource for which to make settings, and, in the subsequently displayed menu, select **Properties**.

The [*resourceName* Properties] screen is displayed.

- b. On the **Dependencies** tab, under **Resource**, select the name of the "Depending resource" from "[Table 5.1 Setting Resource Dependencies](#)", and then click **Apply**.
- c. When the settings have been applied, click **OK**.

[For Windows Server 2012]

For explanation purposes, the name of the "Role" for ETERNUS SF Manager has been set to "ESF-manager" in Windows Server 2012.

1. Add ETERNUS SF Manager services to the Role for ETERNUS SF Manager.

Add the following services:

- ETERNUS SF Manager Postgres Service
- ETERNUS SF Storage Cruiser Optimization Option

Follow the procedure below to add new services:

- a. Right-click **Roles > ESF-manager** in the **Failover Cluster Manager** tree, and, in the subsequently displayed menu, select **Add Resource > Generic Service**.
The **New Resource Wizard** screen is displayed.
- b. Select the new service to add on the **Select Service** screen and click **Next**.
- c. Confirm the contents that are displayed on the **Confirmation** screen and click **Next**.
- d. Click **Finish**.
- e. Make sure that the settings have been applied.

At the center of the screen, under **ESF-manager**, confirm that the newly added services are displayed in the **Resources** tab.

2. Add generic scripts to the Role for ETERNUS SF Manager.

For each of all generic script files that you stored according to "[5.1.1.1 Preparation of Generic Script](#)", perform the following procedure:

- a. Right-click **Roles > ESF-manager** in the **Failover Cluster Manager** tree, and, in the subsequently displayed menu, select **Add Resource > Generic Script**.
The **New Resource Wizard** screen is displayed.
- b. In **Script file path** field of the **Generic Script Info** pane, specify the script file name that you stored according to "[5.1.1.1 Preparation of Generic Script](#)" by its absolute file path and click **Next**.
- c. Confirm the contents that are displayed on the **Confirmation** screen and click **Next**.
- d. Confirm the contents that are displayed on the **Summary** screen and click **Finish**.
- e. Make sure that the settings have been applied.

At the center of the screen, under **ESF-manager**, confirm that the newly added generic scripts are displayed in the **Resources** tab.

3. In the Roles for ETERNUS SF Manager, set the resource dependencies.

Make the resource dependency settings in accordance with the chart below:

Table 5.2 Setting Resource Dependencies

Resource for Which to Make Settings	Depending Resource
ETERNUS SF Manager Apache Service script	Shared disk
ETERNUS SF Manager Tomcat Service script	ETERNUS SF Manager Apache Service script, ETERNUS SF Manager Postgres Service, ETERNUS SF Storage Cruiser Optimization Option, Shared disk, IP address
ETERNUS SF Manager Postgres Service	Shared disk

Resource for Which to Make Settings	Depending Resource
ETERNUS SF Storage Cruiser Optimization Option	Shared disk
Generic script for ETERNUS SF Manager AdvancedCopy Manager CCM	Shared disk

If you execute the AdvancedCopy Manager's manager as Management Server transactions and Managed Server transactions or as Managed Server transactions, and if you operate the backup management, add the disk resource for transactions to the following resource.

Resource for Which to Make Settings	Depending Resource
AdvancedCopy COM Service_logicalNodeName	Disk resource for transactions

Specify in *logicalNodeName* the logical node name that was prepared in "4.1 Confirmation of Customization Items".

Note

When you add or delete a transaction volume, it is necessary to review the dependency between AdvancedCopy COM Service_logicalNodeName and the disk resource for transactions. Refer to "Notes on Cluster Operation" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Windows)* for more information about this.

4. For each resource for which you made settings in step 3, make the following settings:
 - a. At the center of the **Failover Cluster Manager** screen, under the **Resources** tab of **ESF-manager**, click the resource for which to make settings, and, in the subsequently displayed menu, select **Properties**.
The [*resourceName* Properties] screen is displayed.
 - b. On the **Dependencies** tab, under **Resource**, select the name of the "Depending resource" from "Table 5.2 Setting Resource Dependencies", and then click **Apply**.
 - c. When the settings have been applied, click **OK**.

5.1.4 Start ETERNUS SF Manager

To Start ETERNUS SF Manager in the primary node, bring the "Service or Application" for ETERNUS SF Manager online. Select **Action > Bring this resource online** to take the resource online.

5.1.5 Setup Environment for AdvancedCopy Manager CCM

If you set up the AdvancedCopy Manager CCM environment, after starting ETERNUS SF Manager, perform the following procedure.

Point

The following commands described in this section are AdvancedCopy Manager CCM commands. Refer to "Command References" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for information on the commands.

- acarray remove command
- acutil devs command
- acarray add command

1. Set the environment variable PATH.

Add the bin directory of AdvancedCopy Manager CCM to the environment variable PATH. Refer to "Setting Environment Variable PATH" in "Setup of AdvancedCopy Manager CCM" in the *ETERNUS SF Installation and Setup Guide* for details.

2. Set up the network environment.

Refer to "Configuring Network Environment" in "Setup of AdvancedCopy Manager CCM" in the *ETERNUS SF Installation and Setup Guide* for details.

3. Create a user account.

Create a user account for using AdvancedCopy Manager CCM.

Refer to "Creating User Account for Using AdvancedCopy Manager CCM" in the *ETERNUS SF Installation and Setup Guide* for details.

4. Set up access volumes on all nodes that are operating the clustered system.

Refer to "4.1 Confirmation of Customization Items" and to "Access Volume Settings" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

5. Register the ETERNUS Disk storage system.

Follow below procedure to register the ETERNUS Disk storage system.

If an ETERNUS Disk storage system is already registered, execute the `acarray remove` command to delete the existing registration. After that, register it again according to the following procedure:

- a. Execute the `acutil devs` command and check the output results. From the Box ID (**BOX-ID**) and the logical volume number (**LV No**) of the ETERNUS Disk storage system, identify the access volume to be used and check the **Device** value.

```
> acutil devs
Device          BOX-ID          LV No Size
-----
PHYSICALDRIVE4 00E8000M9#####E890S20A####KO4070639003## 0x61 1048576
PHYSICALDRIVE5 00E8000M9#####E890S20A####KO4070639003## 0x62 1048576
PHYSICALDRIVE6 00E8000M9#####E890S20A####KO4070639003## 0x63 1048576
```

- a. To register the ETERNUS Disk storage system, execute the `acarray add` command by specifying the **Device** value you checked in the above step to `deviceValue`.

```
>acarray add -a diskArrayName -ip ipAddress -user userName -password password -path
deviceValue
```

 **Example**

If, for the access volume to be used, the BOX-ID is "00E8000M9#####E890S20A####KO4070639003##" and the LV No is "0x61", the command execution example is as follows.

```
>acarray add -a E8000 -ip 192.0.2.10 -user **** -password **** -path PHYSICALDRIVE4
Successful completion.
```

 **Point**

- Use the same access volume for all nodes in the clustered system.
- If you use an access volume, when you register the ETERNUS Disk storage system, execute the `acarray add` command with the `-path` option specified.

6. Create copy groups.

Refer to "Creating Copy Groups" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

7. Add copy pairs.

Add copy pairs to the newly created copy groups.

Refer to "Adding Copy Pairs" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

- Set up the copy volume protection.

In order to prevent destruction of the volume by any mistakes in operation, you can set the volume protection function on the transaction volume.

Refer to "Setting Copy Volume Protection" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

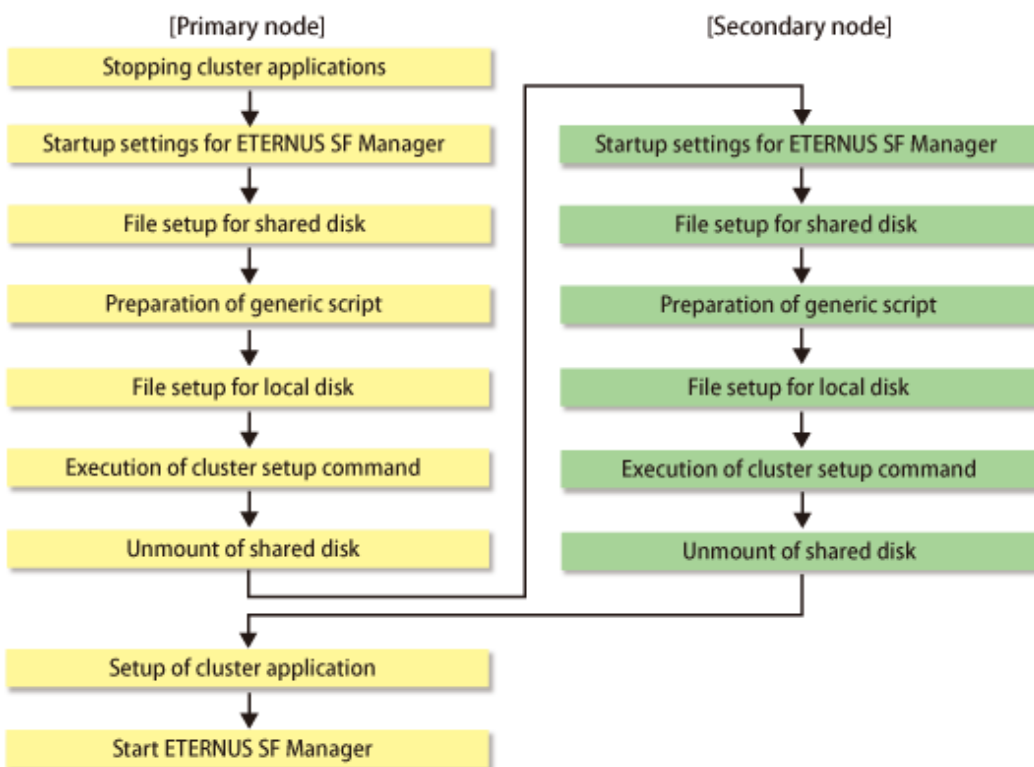
- Back up the environment setup files for the CCM Server transactions.

To be prepared for unexpected situations, back up the environment setup files. Refer to "Backing Up Environment Settings Files" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for the files to be backed up.

The customization in Windows clustered system is completed.

5.2 Customization for Solaris/Linux Clustered System

The following flow is the customization procedure for Management Server transaction.



Note

Whether using Storage Cruiser or AdvancedCopy Manager separately or using both of them together, all the above steps must be performed.

5.2.1 Customization for Primary Node

This section explains the customization procedure for a primary node.

5.2.1.1 Stopping Cluster Applications

If you add the ETERNUS SF Manager in the existing cluster application (transaction), stop the cluster application (transaction). Refer to your cluster software manuals for stopping a cluster application (transaction).

Information

This step is not required when you add the ETERNUS SF Manager in a cluster application (transaction) that is newly created.

5.2.1.2 Startup Settings for ETERNUS SF Manager

Setup the starting process of ETERNUS SF Manager to be controlled by cluster software instead of operating system.

- For Solaris

1. On the primary node, execute the following command.

```
# ls /etc/rc*.d/*SFmanager*
```

2. Rename all of the files output by executing the command above.

Rename by adding "X" to the start of the file names.

Example

The command execution example is as follows.

```
# mv /etc/rc2.d/S99startSFmanager /etc/rc2.d/XS99startSFmanager
```

- For Linux

On the primary node, execute the following commands:

- For RHEL5/RHEL6

```
# mv /etc/rc0.d/K00startSFmanager /etc/rc0.d/XK00startSFmanager
# mv /etc/rc1.d/K00startSFmanager /etc/rc1.d/XK00startSFmanager
# mv /etc/rc2.d/K00startSFmanager /etc/rc2.d/XK00startSFmanager
# mv /etc/rc3.d/S99startSFmanager /etc/rc3.d/XS99startSFmanager
# mv /etc/rc4.d/S99startSFmanager /etc/rc4.d/XS99startSFmanager
# mv /etc/rc5.d/S99startSFmanager /etc/rc5.d/XS99startSFmanager
# mv /etc/rc6.d/K00startSFmanager /etc/rc6.d/XK00startSFmanager
```

- For RHEL7

```
# /usr/bin/systemctl disable fjsvesfcm-internalDB.service
# /usr/bin/systemctl disable fjsvesfcm-webserver.service
# /usr/bin/systemctl disable fjsvesfcm-system.service
# /usr/bin/systemctl disable fjsvswstf.service
```

5.2.1.3 File Setup for Shared Disk

Point

The characters that are used for the path name of <Mountpoint-of-shared-disk-for-shared-data> described in the following procedure are alphanumeric characters excluding space character. The specifiable length of the path name is 70 characters or less.

1. Copy files on the dynamic disks of ETERNUS SF Manager on the primary node to the shared disk for ETERNUS SF Manager.

Follow the procedure below to copy files.

If you recreate a cluster environment and the old environment files remain on the shared disk, after deleting them, perform the procedure below.

- a. On the primary node, mount the shared disk for shared data for ETERNUS SF Manager.

b. Create directories on the shared disk.

On the primary node, create the following directories on the shared disk.

- <Mountpoint-of-shared-disk-for-shared-data>/etc/opt
- <Mountpoint-of-shared-disk-for-shared-data>/var/opt

Example

The example of creating directories when <Mountpoint-of-shared-disk-for-shared-data> is "/esfmnt" is as follows.

```
# mkdir -p /esfmnt/etc/opt
# mkdir -p /esfmnt/var/opt
```

c. Copy files from the local disks on the primary node to the directory on the shared disk.

Copy files in the copy source directory to the copy destination directory.

Copy Source Directory	Copy Destination Directory
/etc/opt/FJSVesfcm	<Mountpoint-of-shared-disk-for-shared-data>/etc/opt/FJSVesfcm
/etc/opt/FJSVccm	<Mountpoint-of-shared-disk-for-shared-data>/etc/opt/FJSVccm
/var/opt/FJSVesfcm	<Mountpoint-of-shared-disk-for-shared-data>/var/opt/FJSVesfcm
/var/opt/FJSVccm	<Mountpoint-of-shared-disk-for-shared-data>/var/opt/FJSVccm
/var/opt/FJSVesflm	<Mountpoint-of-shared-disk-for-shared-data>/var/opt/FJSVesflm

Point

Specify the owner, the access privilege of the copy destination files and directories the same as the copy source.

Example

The example of copying files when <Mountpoint-of-shared-disk-for-shared-data> is "/esfmnt" is as follows.

```
# cp -Rp /etc/opt/FJSVesfcm /esfmnt/etc/opt/FJSVesfcm
# cp -Rp /etc/opt/FJSVccm /esfmnt/etc/opt/FJSVccm
# cp -Rp /var/opt/FJSVesfcm /esfmnt/var/opt/FJSVesfcm
# cp -Rp /var/opt/FJSVccm /esfmnt/var/opt/FJSVccm
# cp -Rp /var/opt/FJSVesflm /esfmnt/var/opt/FJSVesflm
```

d. Rename the following copied directories:

- /etc/opt/FJSVesfcm
- /var/opt/FJSVesfcm
- /var/opt/FJSVesflm

Example

The following is an example of the case of changing a directory name by putting "_bak" at the end of a file name.

```
# mv /etc/opt/FJSVesfcm /etc/opt/FJSVesfcm_bak
# mv /var/opt/FJSVesfcm /var/opt/FJSVesfcm_bak
# mv /var/opt/FJSVesflm /var/opt/FJSVesflm_bak
```

2. Edit the environment setup file.
 - a. Create directories on the shared disk.

Create each directory in below structure.

```

<Mountpoint-of-shared-disk-for-shared-data>
+---/etc
|   ---/opt
|       ---/swstorage
+---/var
     ---/opt
         ---/swstorage
  
```

Example

The example of creating directories when <Mountpoint-of-shared-disk-for-shared-data> is "/esfmnt" is as follows.

```

# mkdir -p /esfmnt/etc/opt/swstorage
# chmod -R 755 /esfmnt/etc/opt/swstorage
# chown -R root:root /esfmnt/etc/opt/swstorage
# mkdir -p /esfmnt/var/opt/swstorage
# chmod -R 755 /esfmnt/var/opt/swstorage
# chown -R root:root /esfmnt/var/opt/swstorage
  
```

- b. Create the <Mountpoint-of-shared-disk-for-shared-data>/etc/opt/swstorage/clsetup.ini file.

Table 5.3 Setting Items of clsetup.ini File

Item Name	Explanation
Swstgnode	Logical node name. Specify the logical node name that was prepared in "4.1 Confirmation of Customization Items".
Business	Name of cluster transaction.
ShareEtc	Name of the environment setting directory for cluster transactions. <Mountpoint-of-shared-disk-for-shared-data>/etc/opt
ShareVar	Name of working directory for cluster transactions. <Mountpoint-of-shared-disk-for-shared-data>/var/opt
MountPoint	Mount point of shared disk for shared data.
IPVersion	IP version of the takeover IP address. Specify the following value according to the IP version of the takeover IP address to be used: <ul style="list-style-type: none"> - If using IPv4 address only: IPv4 - If using IPv6 address only: IPv6 - If using both IPv4 and IPv6 addresses: Dual
IPAddr	Takeover IP address. Specify the IPv4 address if using IPv4 address only or if using both IPv4 and IPv6 addresses.
IPv6Addr	Takeover IP address. Specify the IPv6 address if using IPv6 address only or if using both IPv4 and IPv6 addresses. The specified IPv6 address should one that is usable with the cluster software.
NodeName	Name of primary node (Host name of primary node).
BusiType	AdvancedCopy Manager server type.
Type	Specify "1".

Item Name	Explanation
Version	Version of AdvancedCopy Manager. Specify the same value as for the [Common]-"Version" character string in the /etc/opt/swstorage/swstg.ini file.
Language	Language used for AdvancedCopy Manager. Specify one of the following text strings according to the language to be used for AdvancedCopy Manager: <ul style="list-style-type: none"> - For Japanese: JAPANESE - For English: ENGLISH

Modify the portions in italics according to your system environment.

```
[Cluster]
System=GEN
Swstgnode=<Logical node name>
Business=<Name of cluster transaction>
ShareEtc=<Mountpoint-of-shared-disk-for-shared-data>/etc/opt
ShareVar=<Mountpoint-of-shared-disk-for-shared-data>/var/opt
MountPoint=<Mountpoint-of-shared-disk-for-shared-data>
IPVersion=<IP version of IP address>
IPAddr=<Takeover IPv4 address>
IPv6Addr=<Takeover IPv6 address>
IPUseType=0
IPRscName=
Hostname=
NodeName=<Name of primary node (Host name of primary node)>
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
BusiType=<AdvancedCopy Manager server type>
ResourceType=Procedure
[StorageMGR]
Version=<Version of AdvancedCopy Manager>
Edition=EE
Type=<AdvancedCopy Manager server type>
AFSType=1
Language=<Language used for AdvancedCopy Manager>
[Secondary]
Setup=YES
Date=00/00/00 00:00:00
[Primary]
Date=00/00/00 00:00:00
Setup=YES
```

Example

The example for editing the csetup.ini file is as follows. The italicized portions are the changes to the original file.

[For using IPv4 only]

```
[Cluster]
System=GEN
Swstgnode=acmnode1
Business=acmbiz01
ShareEtc=/esfmnt/etc/opt
ShareVar=/esfmnt/var/opt
MountPoint=/esfmnt
```

```
IPVersion=IPv4
IPAddr=192.0.2.10
IPv6Addr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
BusiType=1
ResourceType=Procedure
[StorageMGR]
Version=V16.4
Edition=EE
Type=1
AFSType=1
Language=ENGLISH
[Secondary]
Setup=YES
Date=00/00/00 00:00:00
[Primary]
Date=00/00/00 00:00:00
Setup=YES
```

[For using IPv6 only]

```
[Cluster]
System=GEN
Swstgnode=acmnode1
Business=acmbiz01
ShareEtc=/esfmnt/etc/opt
ShareVar=/esfmnt/var/opt
MountPoint=/esfmnt
IPVersion=IPv6
IPAddr=
IPv6Addr=2001:db8::1234:0:0:1
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
BusiType=1
ResourceType=Procedure
[StorageMGR]
Version=V16.4
Edition=EE
Type=1
AFSType=1
Language=ENGLISH
[Secondary]
Setup=YES
Date=00/00/00 00:00:00
[Primary]
Date=00/00/00 00:00:00
Setup=YES
```


[For using both IPv4 and IPv6]

```
[Cluster]
System=GEN
Swstgnode=acmnode1
Business=acmbiz01
ShareEtc=/esfmnt/etc/opt
ShareVar=/esfmnt/var/opt
MountPoint=/esfmnt
IPVersion=Dual
IPAddr=192.0.2.10
IPv6Addr=2001:db8::1234:0:0:1
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
BusiType=1
ResourceType=Procedure
[StorageMGR]
Version=V16.4
Edition=EE
Type=1
AFSType=1
Language=ENGLISH
[Secondary]
Setup=YES
Date=00/00/00 00:00:00
[Primary]
Date=00/00/00 00:00:00
Setup=YES
```

c. Copy the /etc/opt/swstorage/swstg.ini file.

Copy the swstg.ini file to the following copy destination.

Copy Source File	Copy Destination File
/etc/opt/swstorage/swstg.ini	<Mountpoint-of-shared-disk-for-shared-data>/etc/opt/swstorage/swstg.ini

Example

The copy execution example is as follows.

```
# cp -p /etc/opt/swstorage/swstg.ini /esfmnt/etc/opt/swstorage/swstg.ini
```

d. Edit the <Mountpoint-of-shared-disk-for-shared-data>/etc/opt/swstorage/swstg.ini file.

Table 5.4 Setting Items of swstg.ini File

Item Name	Explanation
Type	AdvancedCopy Manager server type. Specify "1".

Note

After starting operation, the program in this product may add/modify/delete parameters other than those of "Table 5.4 Setting Items of swstg.ini File" for the swstg.ini file. For this reason, do not add/modify/delete parameters other than those of "Table 5.4 Setting Items of swstg.ini File".

Modify the portions in italics according to your system environment.

```
[Common]
Edition=EE
Version=V16.4
Type=<AdvancedCopy Manager server type>
AFSType=1
Language=ENGLISH
BaseDir_Opt=/opt
BaseDir_Var=/var/opt
BaseDir_Etc=/etc/opt
[Install]
FJSVswstf=20101116
FJSVswtrc=20101116
FJSVgrapi=20101116
FJSVswsts=20101116
FJSVswsrp=20101116
```

Example

The example for editing the swstg.ini file is as follows. The italicized portions are the changes to the original file.

```
[Common]
Edition=EE
Version=V16.4
Type=1
AFSType=1
Language=ENGLISH
BaseDir_Opt=/opt
BaseDir_Var=/var/opt
BaseDir_Etc=/etc/opt
[Install]
FJSVswstf=20101116
FJSVswtrc=20101116
FJSVgrapi=20101116
FJSVswsts=20101116
FJSVswsrp=20101116
```

- e. Create symbolic links to the directories in the shared disk for shared data.

Specify in *logicalNodeName* the logical node name that was prepared in "4.1 Confirmation of Customization Items".

Link Source Directory	Link Target Directory (Symbolic Link File)
<Mountpoint-of-shared-disk-for-shared-data>/etc/opt/FJSVesfcm	/etc/opt/FJSVesfcm
<Mountpoint-of-shared-disk-for-shared-data>/etc/opt/swstorage	/etc/opt/swstorage/ <i>logicalNodeName</i>
<Mountpoint-of-shared-disk-for-shared-data>/var/opt/FJSVesfcm	/var/opt/FJSVesfcm
<Mountpoint-of-shared-disk-for-shared-data>/var/opt/FJSVesflm	/var/opt/FJSVesflm
<Mountpoint-of-shared-disk-for-shared-data>/var/opt/swstorage	/var/opt/swstorage/ <i>logicalNodeName</i>

Example

The example of creating symbolic links is as follows.

```
# ln -s /esfmnt/etc/opt/FJSVesfcm /etc/opt/FJSVesfcm
# ln -s /esfmnt/etc/opt/swstorage /etc/opt/swstorage/acmnode1
# ln -s /esfmnt/var/opt/FJSVesfcm /var/opt/FJSVesfcm
# ln -s /esfmnt/var/opt/FJSVesflm /var/opt/FJSVesflm
# ln -s /esfmnt/var/opt/swstorage /var/opt/swstorage/acmnode1
```

5.2.1.4 Preparation of Generic Script

Follow the procedure below to prepare a generic script to be used on the primary node.

1. In the ETERNUS SF Manager program directory on the primary node, store the generic script file that you created in "4.1 Confirmation of Customization Items".
2. Set up the access privilege for the stored generic script file.
Specify the authority that the root (super user) can access.

5.2.1.5 File Setup for Local Disk

1. Create backup directories for AdvancedCopy Manager CCM environment setup files.

On the primary node, create the following directories:

- /opt/FJSVccm/noncluster/bin
- /opt/FJSVccm/noncluster/micc/sys
- /opt/FJSVccm/noncluster/sys

Point

- Set "root (super user)" to the directory owner.
- Set "755" to the directory permissions.

Example

The example of creating directories is as follows.

```
# mkdir -p /opt/FJSVccm/noncluster/bin
# chmod -R 755 /opt/FJSVccm/noncluster/bin
# chown -R root:root /opt/FJSVccm/noncluster/bin
# mkdir -p /opt/FJSVccm/noncluster/micc/sys
# chmod -R 755 /opt/FJSVccm/noncluster/micc/sys
# chown -R root:root /opt/FJSVccm/noncluster/micc/sys
# mkdir -p /opt/FJSVccm/noncluster/sys
# chmod -R 755 /opt/FJSVccm/noncluster/sys
# chown -R root:root /opt/FJSVccm/noncluster/sys
```

2. Back up AdvancedCopy Manager CCM environment setup files.

On the primary node, copy the following files to the copy destination.

Copy Source File	Copy Destination File
/opt/FJSVccm/micc/sys/.install.sys	/opt/FJSVccm/noncluster/micc/sys/.install.sys

Copy Source File	Copy Destination File
/opt/FJsvccm/bin/.stxc_install.sys	/opt/FJsvccm/noncluster/bin/.stxc_install.sys
/opt/FJsvccm/sys/sys.properties	/opt/FJsvccm/noncluster/sys/sys.properties

Example

The copy execution example is as follows.

```
# cp -p /opt/FJsvccm/micc/sys/.install.sys /opt/FJsvccm/noncluster/micc/sys/.install.sys
# cp -p /opt/FJsvccm/bin/.stxc_install.sys /opt/FJsvccm/noncluster/bin/.stxc_install.sys
# cp -p /opt/FJsvccm/sys/sys.properties /opt/FJsvccm/noncluster/sys/sys.properties
```

Note

The copied files are required for "Chapter 13 Deletion of Cluster Environment for Management Server Transactions".

3. Edit AdvancedCopy Manager CCM environment setup files.

On the primary node, edit the path name from *1 to *4 of files below:

[/opt/FJsvccm/micc/sys/.install.sys file]

```
stxs_optdir= (Do not modify these settings!)
stxs_etcdir= (Do not modify these settings!)
stxs_varDir=*1
stxs_jredir= (Do not modify these settings!)
```

[/opt/FJsvccm/bin/.stxc_install.sys file]

```
stxc_optdir= (Do not modify these settings!)
stxc_etcdir=*2
stxc_jredir= (Do not modify these settings!)
```

[/opt/FJsvccm/sys/sys.properties file]

```
com.fujitsu.eternussf.acm.ccm.optpath= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.etcpath=*3
com.fujitsu.eternussf.acm.ccm.varpath=*4
com.fujitsu.eternussf.acm.ccm.micc.path= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.grapi.path= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.language= (Do not modify these settings!)
```

The setting values from *1 to *4 are as follows.

The sample setting values use "/esfmnt" for <Mountpoint-of-shared-disk-for-shared-data>.

Setting Item	Setting Value	Sample Setting
*1	<Mountpoint-of-shared-disk-for-shared-data>/var/opt/FJsvccm/micc	/esfmnt/var/opt/FJsvccm/micc
*2	<Mountpoint-of-shared-disk-for-shared-data>/etc/opt/FJsvccm/acc/etcc	/esfmnt/etc/opt/FJsvccm/acc/etcc
*3	<Mountpoint-of-shared-disk-for-shared-data>/etc/opt/FJsvccm/	/esfmnt/etc/opt/FJsvccm/
*4	<Mountpoint-of-shared-disk-for-shared-data>/var/opt/FJsvccm/	/esfmnt/var/opt/FJsvccm/

4. Register a port number.

Use the vi command etc. of OS, and describe the port number and the following service name of the transaction communication daemon in /etc/services file.

- Transaction communication daemon: `stgxfws_logicalNodeName`

Note

Describe the same port number on the primary node and all secondary nodes.
Specify in *logicalNodeName* the logical node name that was prepared in "4.1 Confirmation of Customization Items".

5. Edit the `/opt/FJSVswstf/cluster/swcluster.ini` file.

Table 5.5 Setting Items of `swcluster.ini` File

Item Name	Explanation
Env_N	Logical node name. Specify the logical node name that was prepared in "4.1 Confirmation of Customization Items". For N, specify a non-duplicate value from 1 to 20.
BusiType	AdvancedCopy Manager server type. Specify "1".
Business	Name of cluster transaction.
ShareEtc	Name of the environment setting directory for cluster transactions. <i><Mountpoint-of-shared-disk-for-shared-data>/etc/opt</i>
ShareVar	Name of working directory for cluster transactions. <i><Mountpoint-of-shared-disk-for-shared-data>/var/opt</i>
MountPoint	Mount point of shared disk for shared data.
IPVersion	IP version of the takeover IP address. Specify the following value according to the IP version of the takeover IP address to be used: <ul style="list-style-type: none"> - If using IPv4 address only: IPv4 - If using IPv6 address only: IPv6 - If using both IPv4 and IPv6 addresses: Dual
IPAddr	Takeover IP address. Specify the IPv4 address if using IPv4 address only or if using both IPv4 and IPv6 addresses.
IPv6Addr	Takeover IP address. Specify the IPv6 address if using IPv6 address only or if using both IPv4 and IPv6 addresses. The specified IPv6 address should one that is usable with the cluster software.
NodeName	Name of primary node (Host name of primary node).

Modify or add the portions in italics according to your system environment.

```
[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_N=<Logical node name>
[<Logical node name>]
Type=Primary
BusiType=<AdvancedCopy Manager server type>
Business=<Name of cluster transaction>
ShareEtc=<Mountpoint-of-shared-disk-for-shared-data>/etc/opt
ShareVar=<Mountpoint-of-shared-disk-for-shared-data>/var/opt
MountPoint=<Mountpoint-of-shared-disk-for-shared-data>
IPVersion=<IP version of IP address>
IPAddr=<Takeover IPv4 address>
```

```

IPv6Addr=<Takeover IPv6 address>
IPUseType=0
IPRscName=
Hostname=
NodeName=<Name of primary node (Host name of primary node)>
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure

```



Example

When creating the first cluster transactions on the same server, the example for editing the swcluster.ini file is as follows.

[Before editing]

```

[ClusterCommon]
Cluster=OFF
Max=20
StartTimeOut=300
StopTimeOut=300

```

[After editing: for using IPv4 only]

The italicized portions are the changes and additions to the original file.

```

[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_1=acmnode1
[acmnode1]
Type=Primary
BusiType=1
Business=acmbiz01
ShareEtc=/esfmnt/etc/opt
ShareVar=/esfmnt/var/opt
MountPoint=/esfmnt
IPVersion=IPv4
IPAddr=192.0.2.10
IPv6Addr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure

```

[After editing: for using IPv6 only]

The italicized portions are the changes and additions to the original file.

```

[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_1=acmnode1
[acmnode1]
Type=Primary
BusiType=1
Business=acmbiz01
ShareEtc=/esfmnt/etc/opt
ShareVar=/esfmnt/var/opt
MountPoint=/esfmnt
IPVersion=IPv6
IPAddr=
IPv6Addr=2001:db8::1234:0:0:1
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure

```

[After editing; for using both IPv4 and IPv6]

The italicized portions are the changes and additions to the original file.

```

[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_1=acmnode1
[acmnode1]
Type=Primary
BusiType=1
Business=acmbiz01
ShareEtc=/esfmnt/etc/opt
ShareVar=/esfmnt/var/opt
MountPoint=/esfmnt
IPVersion=Dual
IPAddr=192.0.2.10
IPv6Addr=2001:db8::1234:0:0:1
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00

```

```
Setup=YES
ResourceType=Procedure
```



Example

When using IPv4 only and when cluster transactions have already been created on the same server, the example for editing the swcluster.ini file is as follows.

[Before editing]

```
[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_2=acmnode2
[acmnode2]
Type=Primary
BusiType=2
Business=acmbiz02
ShareEtc=/esfmnt02/etc/opt
ShareVar=/esfmnt02/var/opt
MountPoint=/esfmnt02
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure
```

[After editing]

The italicized portions are the additions to the original file.

```
[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_2=acmnode2
Env_1=acmnode1
[acmnode2]
Type=Primary
BusiType=2
Business=acmbiz02
ShareEtc=/esfmnt02/etc/opt
ShareVar=/esfmnt02/var/opt
MountPoint=/esfmnt02
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
```



```

ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure
[acmnode1]
Type=Primary
BusiType=1
Business=acmbiz01
ShareEtc=/esfmnt/etc/opt
ShareVar=/esfmnt/var/opt
MountPoint=/esfmnt
IPVersion=IPv4
IPAddr=192.0.2.10
IPv6Addr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure

```

6. Edit the /etc/opt/swstorage/swstg.ini file.

Table 5.6 Setting Items of swstg.ini File

Item Name	Explanation
Type	AdvancedCopy Manager local transaction server type. Specify "2".

Note

After starting operation, the program in this product may add/modify/delete parameters other than those of "Table 5.6 Setting Items of swstg.ini File" for the swstg.ini file. For this reason, do not add/modify/delete parameters other than those of "Table 5.6 Setting Items of swstg.ini File".

Modify the portions in italics according to your system environment.

```

[Common]
Edition=EE
Version=V16.4
Type=<AdvancedCopy Manager local transaction server type>
AFSType=1
Language=ENGLISH
BaseDir_Opt=/opt
BaseDir_Var=/var/opt
BaseDir_Etc=/etc/opt
[Install]
FJSVswstf=20101116
FJSVswtrc=20101116
FJSVgrapi=20101116

```

```
FJSVswsts=20101116
FJSVswsrp=20101116
```

Example

The example for editing the swstg.ini file is as follows. The italicized portions are the changes to the original file.

```
[Common]
Edition=EE
Version=V16.4
Type=2
AFSType=1
Language=ENGLISH
BaseDir_Opt=/opt
BaseDir_Var=/var/opt
BaseDir_Etc=/etc/opt
[Install]
FJSVswstf=20101116
FJSVswtrc=20101116
FJSVgrapi=20101116
FJSVswsts=20101116
FJSVswsrp=20101116
```

5.2.1.6 Execution of Cluster Setup Command

Follow the procedure below to set up a primary node.

1. Stop the daemons.

Execute the following shell script.

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

The following daemons are stopped:

- ETERNUS SF Manager Apache Service
- ETERNUS SF Manager Tomcat Service
- ETERNUS SF Manager Postgres daemon
- ETERNUS SF AdvancedCopy Manager daemon
- SNMP Trap daemon
- ETERNUS SF Storage Cruiser Optimization Option daemon

2. On the primary node, execute the cluster setup command of the Storage Cruiser's manager.

On the primary node, execute the following command after blocking other users from accessing the shared disk for shared data. When an IPv6 address is used as the takeover IP address for Management Server transaction, specify "127.0.0.1" in *takeoverIPAddressForManagementServerTransaction(IPv4Format)*.

```
# /opt/FJSVssmgr/cluster/esc_clsetup -k Primary -m <Mountpoint-of-shared-disk-for-shared-data> -
i takeoverIPAddressForManagementServerTransaction(IPv4Format)
```

3. Check the setup object.

Information specified by the command is displayed.

```
# /opt/FJSVssmgr/cluster/esc_clsetup -k Primary -m /esfmnt -i 192.0.2.10
ETERNUS SF Storage Cruiser settings are as follows.
Cluster system : PRIMECLUSTER
Node type : Primary
Mount point : /esfmnt
```

```
IP Address : 192.0.2.10
Manager cluster setup : Are you sure? [y,n,?]
```

After confirming the displayed information, input "y". The primary node is set up.
To interrupt the cluster environmental setting processing, input "n".

- Confirm that the displayed message is as follows.

```
FJSVrcx:INFO:27700:esc_clsetup:primary node setup completed
```

- On the primary node, execute the cluster setup command of the AdvancedCopy Manager's manager.

Execute the following commands in the given sequence.

If the value of the environment variable PATH is more than 800 characters, after changing it to 800 characters or less, execute the [StgDbSetup](#) command.

Sequence of Execution	Command Name
1	clset_FJSVswstf command
2	clset_FJSVswsts command
3	clset_FJSVswsrp command
4	StgDbSetup command



Example

The command execution example is as follows.

```
# /opt/FJSVswstf/bin/clset_FJSVswstf -f /esfmnt/etc/opt/swstorage/clsetup.ini -t Primary
clset_FJSVswstf completed
# /opt/FJSVswsts/bin/clset_FJSVswsts -f /esfmnt/etc/opt/swstorage/clsetup.ini -t Primary
clset_FJSVswsts completed
# /opt/FJSVswsrp/bin/clset_FJSVswsrp -f /esfmnt/etc/opt/swstorage/clsetup.ini -t Primary
clset_FJSVswsrp completed
# /opt/FJSVswstf/bin/StgDbSetup -f /esfmnt/etc/opt/swstorage/clsetup.ini -t Primary
```

- Only when you set the IPv6 address to the takeover IP address of the Management Server transaction, edit the detailed setting file (<Mountpoint-of-shared-disk-for-shared-data>/FJSVssmgr/etc/opt/FJSVssmgr/2.0/sanma.conf) of the storage management.

Use the text editor to add the line of "LOGICAL_MANAGER_V6IP" in the detailed setting file.

Additional line is as follows.

```
LOGICAL_MANAGER_V6IP="takeoverIPAddressForManagementServerTransaction(IPv6Format)";
```

In addition, when you do not use the IPv4 address to the takeover IP address of the Management Server transaction, delete the following line from the detailed setting file.

```
LOGICAL_MANAGER_IP="takeoverIPAddressForManagementServerTransaction(IPv4Format)";
```

Refer to "LOGICAL_MANAGER_IP" and "LOGICAL_MANAGER_V6IP" in "sanma.conf Parameter" in the *ETERNUS SF Storage Cruiser Operation Guide* for information on the detailed setting file.

5.2.1.7 Unmount of Shared Disk

On the primary node, unmount the shared disk for shared data that is used by the ETERNUS SF Manager.

5.2.2 Customization for Secondary Node

This section explains the customization procedure for a secondary node.

5.2.2.1 Startup Settings for ETERNUS SF Manager

Setup the starting process of ETERNUS SF Manager to be controlled by cluster software instead of operating system.

- For Solaris

1. On the secondary node, execute the following command.

```
# ls /etc/rc*.d/*SFmanager*
```

2. Rename all of the files exported by executing the command above.

Rename by adding "X" to the start of the file names.



The command execution example is as follows.

```
# mv /etc/rc2.d/S99startSFmanager /etc/rc2.d/XS99startSFmanager
```

- For Linux

On the primary node, execute the following commands:

- For RHEL5/RHEL6

```
# mv /etc/rc0.d/K00startSFmanager /etc/rc0.d/XK00startSFmanager
# mv /etc/rc1.d/K00startSFmanager /etc/rc1.d/XK00startSFmanager
# mv /etc/rc2.d/K00startSFmanager /etc/rc2.d/XK00startSFmanager
# mv /etc/rc3.d/S99startSFmanager /etc/rc3.d/XS99startSFmanager
# mv /etc/rc4.d/S99startSFmanager /etc/rc4.d/XS99startSFmanager
# mv /etc/rc5.d/S99startSFmanager /etc/rc5.d/XS99startSFmanager
# mv /etc/rc6.d/K00startSFmanager /etc/rc6.d/XK00startSFmanager
```

- For RHEL7

```
# /usr/bin/systemctl disable fjsvesfcm-internalDB.service
# /usr/bin/systemctl disable fjsvesfcm-webserver.service
# /usr/bin/systemctl disable fjsvesfcm-system.service
# /usr/bin/systemctl disable fjsvswstf.service
```

5.2.2.2 File Setup for Shared Disk

On the secondary node, create symbolic links to the directories in the shared disk for shared data. The procedure is as follows:

1. On the secondary node, mount the shared disk for shared data that is used by the ETERNUS SF Manager.
2. Rename the following directories.
 - /etc/opt/FJSVesfcm
 - /var/opt/FJSVesfcm
 - /var/opt/FJSVesflm



The following is an example of the case of changing a directory name by putting "_bak" at the end of a file name.

```
# mv /etc/opt/FJSVesfcm /etc/opt/FJSVesfcm_bak
# mv /var/opt/FJSVesfcm /var/opt/FJSVesfcm_bak
# mv /var/opt/FJSVesflm /var/opt/FJSVesflm_bak
```

3. Create symbolic links to the directories in the shared disk for shared data.

Specify in *logicalNodeName* the logical node name that was prepared in "4.1 Confirmation of Customization Items".

Link Source Directory	Link Target Directory (Symbolic Link File)
<Mountpoint-of-shared-disk-for-shared-data>/etc/opt/FJSVesfcm	/etc/opt/FJSVesfcm
<Mountpoint-of-shared-disk-for-shared-data>/etc/opt/swstorage	/etc/opt/swstorage/ <i>logicalNodeName</i>
<Mountpoint-of-shared-disk-for-shared-data>/var/opt/FJSVesfcm	/var/opt/FJSVesfcm
<Mountpoint-of-shared-disk-for-shared-data>/var/opt/FJSVesflm	/var/opt/FJSVesflm
<Mountpoint-of-shared-disk-for-shared-data>/var/opt/swstorage	/var/opt/swstorage/ <i>logicalNodeName</i>

Example

The example of creating symbolic links is as follows.

```
# ln -s /esfmnt/etc/opt/FJSVesfcm /etc/opt/FJSVesfcm
# ln -s /esfmnt/etc/opt/swstorage /etc/opt/swstorage/acmnode1
# ln -s /esfmnt/var/opt/FJSVesfcm /var/opt/FJSVesfcm
# ln -s /esfmnt/var/opt/FJSVesflm /var/opt/FJSVesflm
# ln -s /esfmnt/var/opt/swstorage /var/opt/swstorage/acmnode1
```

5.2.2.3 Preparation of Generic Script

Follow the procedure below to prepare a generic script to be used on the secondary node.

1. In the ETERNUS SF Manager program directory on the secondary node, store the generic script file that you created in "4.1 Confirmation of Customization Items".
2. Set up the access privilege for the stored generic script file.
Specify the authority that the root (super user) can access.

5.2.2.4 File Setup for Local Disk

1. Create backup directories for AdvancedCopy Manager CCM environment setup files.

On the secondary node, create the following directories:

- /opt/FJSVccm/noncluster/bin
- /opt/FJSVccm/noncluster/micc/sys
- /opt/FJSVccm/noncluster/sys

Point

- Set "root (super user)" to the directory owner.
- Set "755" to the directory permissions.

Example

The example of creating directories is as follows.

```
# mkdir -p /opt/FJSVccm/noncluster/bin
# chmod -R 755 /opt/FJSVccm/noncluster/bin
```

```
# chown -R root:root /opt/FJSVccm/noncluster/bin
# mkdir -p /opt/FJSVccm/noncluster/micc/sys
# chmod -R 755 /opt/FJSVccm/noncluster/micc/sys
# chown -R root:root /opt/FJSVccm/noncluster/micc/sys
# mkdir -p /opt/FJSVccm/noncluster/sys
# chmod -R 755 /opt/FJSVccm/noncluster/sys
# chown -R root:root /opt/FJSVccm/noncluster/sys
```

2. Back up AdvancedCopy Manager CCM environment setup files.

On the secondary node, copy the following files to the copy destination.

Copy Source File	Copy Destination File
/opt/FJSVccm/micc/sys/.install.sys	/opt/FJSVccm/noncluster/micc/sys/.install.sys
/opt/FJSVccm/bin/.stxc_install.sys	/opt/FJSVccm/noncluster/bin/.stxc_install.sys
/opt/FJSVccm/sys/sys.properties	/opt/FJSVccm/noncluster/sys/sys.properties

 Example

The copy execution example is as follows.

```
# cp -p /opt/FJSVccm/micc/sys/.install.sys /opt/FJSVccm/noncluster/micc/sys/.install.sys
# cp -p /opt/FJSVccm/bin/.stxc_install.sys /opt/FJSVccm/noncluster/bin/.stxc_install.sys
# cp -p /opt/FJSVccm/sys/sys.properties /opt/FJSVccm/noncluster/sys/sys.properties
```

 Note

The copied files are required for "[Chapter 13 Deletion of Cluster Environment for Management Server Transactions](#)".

3. Edit AdvancedCopy Manager CCM environment setup files.

On the secondary node, edit the path name from *1 to *4 of files below:

[/opt/FJSVccm/micc/sys/.install.sys file]

```
stxs_optdir= (Do not modify these settings!)
stxs_etcdir= (Do not modify these settings!)
stxs_varidir=*1
stxs_jredir= (Do not modify these settings!)
```

[/opt/FJSVccm/bin/.stxc_install.sys file]

```
stxc_optdir= (Do not modify these settings!)
stxc_etcdir=*2
stxc_jredir= (Do not modify these settings!)
```

[/opt/FJSVccm/sys/sys.properties file]

```
com.fujitsu.eternussf.acm.ccm.optpath= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.etcpath=*3
com.fujitsu.eternussf.acm.ccm.varpath=*4
com.fujitsu.eternussf.acm.ccm.micc.path= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.grapi.path= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.language= (Do not modify these settings!)
```

The setting values from *1 to *4 are as follows.

The sample setting values use "/esfmnt" for <Mountpoint-of-shared-disk-for-shared-data>.

Setting Item	Setting Value	Sample Setting
*1	<Mountpoint-of-shared-disk-for-shared-data>/var/opt/FJsvccm/micc	/esfmnt/var/opt/FJsvccm/micc
*2	<Mountpoint-of-shared-disk-for-shared-data>/etc/opt/FJsvccm/accc/etc	/esfmnt/etc/opt/FJsvccm/accc/etc
*3	<Mountpoint-of-shared-disk-for-shared-data>/etc/opt/FJsvccm/	/esfmnt/etc/opt/FJsvccm/
*4	<Mountpoint-of-shared-disk-for-shared-data>/var/opt/FJsvccm/	/esfmnt/var/opt/FJsvccm/

4. Register a port number.

Use the vi command etc. of OS, and describe the port number and the following service name of the transaction communication daemon in the /etc/services file.

- Transaction communication daemon: stgxfws_logicalNodeName



Describe the same port number on the primary node and all secondary nodes. Specify in *logicalNodeName* the logical node name that was prepared in "4.1 Confirmation of Customization Items".

5. Edit the /opt/FJsvstf/cluster/swcluster.ini file.

Table 5.7 Setting Items of swcluster.ini File

Item Name	Explanation
Env_N	Logical node name. Specify the logical node name that was prepared in "4.1 Confirmation of Customization Items". For N, specify a non-duplicate value from 1 to 20.
BusiType	AdvancedCopy Manager server type. Specify "1".
Business	Name of cluster transaction.
ShareEtc	Name of the environment setting directory for cluster transactions. <Mountpoint-of-shared-disk-for-shared-data>/etc/opt
ShareVar	Name of working directory for cluster transactions. <Mountpoint-of-shared-disk-for-shared-data>/var/opt
MountPoint	Mount point of shared disk for shared data.
IPVersion	IP version of the takeover IP address. Specify the following value according to the IP version of the takeover IP address to be used: - If using IPv4 address only: IPv4 - If using IPv6 address only: IPv6 - If using both IPv4 and IPv6 addresses: Dual
IPAddr	Takeover IP address. Specify the IPv4 address if using IPv4 address only or if using both IPv4 and IPv6 addresses.
IPv6Addr	Takeover IP address. Specify the IPv6 address if using IPv6 address only or if using both IPv4 and IPv6 addresses. The specified IPv6 address should one that is usable with the cluster software.
NodeName	Name of primary node (Host name of primary node).

Modify or add the portions in italics according to your system environment.

```
[ClusterCommon]
Cluster=ON
```

```

Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_N=<Logical node name>
[<Logical node name>]
Type=Secondary
BusiType=<AdvancedCopy Manager server type>
Business=<Name of cluster transaction>
ShareEtc=<Mountpoint-of-shared-disk-for-shared-data>/etc/opt
ShareVar=<Mountpoint-of-shared-disk-for-shared-data>/var/opt
MountPoint=<Mountpoint-of-shared-disk-for-shared-data>
IPVersion=<IP version of IP address>
IPAddr=<Takeover IPv4 address>
IPv6Addr=<Takeover IPv6 address>
IPUseType=0
IPRscName=
Hostname=
NodeName=<Name of primary node (Host name of primary node)>
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure

```



Example

When creating the first cluster transactions on the same server, the example for editing the swcluster.ini file is as follows.

[Before editing]

```

[ClusterCommon]
Cluster=OFF
Max=20
StartTimeOut=300
StopTimeOut=300

```

[After editing: for using IPv4 only]

The italicized portions are the changes and additions to the original file.

```

[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_1=acmnode1
[acmnode1]
Type=Secondary
BusiType=1
Business=acmbiz01
ShareEtc=/esfmnt/etc/opt
ShareVar=/esfmnt/var/opt
MountPoint=/esfmnt
IPVersion=IPv4
IPAddr=192.0.2.10
IPv6Addr=
IPUseType=0
IPRscName=

```



```
Hostname=  
NodeName=m40001  
ClusterName=  
DiskName=  
GroupName=  
SubNetMask=  
MSCSNetName=  
Date=00/00/00 00:00:00  
Setup=YES  
ResourceType=Procedure
```

[After editing: for using IPv6 only]

The italicized portions are the changes and additions to the original file.

```
[ClusterCommon]  
Cluster=ON  
Max=20  
StartTimeOut=300  
StopTimeOut=300  
System=GEN  
Env_1=acmnode1  
[acmnode1]  
Type=Secondary  
BusiType=1  
Business=acmbiz01  
ShareEtc=/esfmnt/etc/opt  
ShareVar=/esfmnt/var/opt  
MountPoint=/esfmnt  
IPVersion=IPv6  
IPAddr=  
IPv6Addr=2001:db8::1234:0:0:1  
IPUseType=0  
IPRscName=  
Hostname=  
NodeName=m40001  
ClusterName=  
DiskName=  
GroupName=  
SubNetMask=  
MSCSNetName=  
Date=00/00/00 00:00:00  
Setup=YES  
ResourceType=Procedure
```

[After editing: for using both IPv4 and IPv6]

The italicized portions are the changes and additions to the original file.

```
[ClusterCommon]  
Cluster=ON  
Max=20  
StartTimeOut=300  
StopTimeOut=300  
System=GEN  
Env_1=acmnode1  
[acmnode1]  
Type=Secondary  
BusiType=1  
Business=acmbiz01  
ShareEtc=/esfmnt/etc/opt  
ShareVar=/esfmnt/var/opt  
MountPoint=/esfmnt  
IPVersion=Dual
```

```
IPAddr=192.0.2.10
IPv6Addr=2001:db8::1234:0:0:1
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure
```



Example

When using IPv4 only and when cluster transactions have already been created on the same server, the example for editing the swcluster.ini file is as follows.

[Before editing]

```
[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_2=acmnode2
[acmnode2]
Type=Secondary
BusiType=2
Business=acmbiz02
ShareEtc=/esfmnt02/etc/opt
ShareVar=/esfmnt02/var/opt
MountPoint=/esfmnt02
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure
```

[After editing]

The italicized portions are the additions to the original file.

```
[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_2=acmnode2
Env_1=acmnode1
```

```

[acmnode2]
Type=Secondary
BusiType=2
Business=acmbiz02
ShareEtc=/esfmnt02/etc/opt
ShareVar=/esfmnt02/var/opt
MountPoint=/esfmnt02
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure
[acmnode1]
Type=Secondary
BusiType=1
Business=acmbiz01
ShareEtc=/esfmnt/etc/opt
ShareVar=/esfmnt/var/opt
MountPoint=/esfmnt
IPVersion=IPv4
IPAddr=192.0.2.10
IPv6Addr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure

```

6. Edit the /etc/opt/swstorage/swstg.ini file.

Table 5.8 Setting Items of swstg.ini File

Item Name	Explanation
Type	AdvancedCopy Manager local transaction server type. Specify "2".

Note

After starting operation, the program in this product may add/modify/delete parameters other than those of "Table 5.8 Setting Items of swstg.ini File" for the swstg.ini file. For this reason, do not add/modify/delete parameters other than those of "Table 5.8 Setting Items of swstg.ini File".

Modify the portions in italics according to your system environment.

```
[Common]
Edition=EE
Version=V16.4
Type=<AdvancedCopy Manager local transaction server type>
AFSType=1
Language=ENGLISH
BaseDir_Opt=/opt
BaseDir_Var=/var/opt
BaseDir_Etc=/etc/opt
[Install]
FJSVswstf=20101116
FJSVswtrc=20101116
FJSVgrapi=20101116
FJSVswsts=20101116
FJSVswsrp=20101116
```



Example

The example for editing the swstg.ini file is as follows. The italicized portions are the changes to the original file.

```
[Common]
Edition=EE
Version=V16.4
Type=2
AFSType=1
Language=ENGLISH
BaseDir_Opt=/opt
BaseDir_Var=/var/opt
BaseDir_Etc=/etc/opt
[Install]
FJSVswstf=20101116
FJSVswtrc=20101116
FJSVgrapi=20101116
FJSVswsts=20101116
FJSVswsrp=20101116
```

5.2.2.5 Execution of Cluster Setup Command

Follow the procedure below to set up a secondary node.

1. Stop the daemons.

Execute the following shell script.

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

The following daemons are stopped:

- ETERNUS SF Manager Apache Service
 - ETERNUS SF Manager Tomcat Service
 - ETERNUS SF Manager Postgres daemon
 - ETERNUS SF AdvancedCopy Manager daemon
 - SNMP Trap daemon
 - ETERNUS SF Storage Cruiser Optimization Option daemon
2. On the secondary node, execute the cluster setup command of the Storage Cruiser's manager.
On the secondary node, execute the following command after blocking other users from accessing the shared disk for shared data.

```
# /opt/FJSVssmgr/cluster/esc_clsetup -k Secondary -m <Mountpoint-of-shared-disk-for-shared-data>
```

3. Check the setup object.

Information specified by the command is displayed.

```
# /opt/FJSVssmgr/cluster/esc_clsetup -k Secondary -m /esfmnt
ETERNUS SF Storage Cruiser settings are as follows.
Cluster system : PRIMECLUSTER
Node type : Secondary
Mount point : /esfmnt
IP Address : 192.0.2.10
Manager cluster setup : Are you sure? [y,n,?]
```

After confirming the displayed information, input "y". The secondary node is set up.
To interrupt the cluster environmental setting processing, input "n".

4. Confirm that the displayed message is as follows.

```
FJSVrcx:INFO:27701:esc_clsetup:secondary node setup completed
```

5. On the secondary node, execute the cluster setup command of the AdvancedCopy Manager's manager.

Execute the following commands in the given sequence.

If the value of the environment variable PATH is more than 800 characters, after changing it to 800 characters or less, execute the [StgDbSetup](#) command.

Sequence of Execution	Command Name
1	clset_FJSVswstf command
2	clset_FJSVswsts command
3	clset_FJSVswsrp command
4	StgDbSetup command

Example

The command execution example is as follows.

```
# /opt/FJSVswstf/bin/clset_FJSVswstf -f /esfmnt/etc/opt/swstorage/clsetup.ini -t Secondary
clset_FJSVswstf completed
# /opt/FJSVswsts/bin/clset_FJSVswsts -f /esfmnt/etc/opt/swstorage/clsetup.ini -t Secondary
clset_FJSVswsts completed
# /opt/FJSVswsrp/bin/clset_FJSVswsrp -f /esfmnt/etc/opt/swstorage/clsetup.ini -t Secondary
clset_FJSVswsrp completed
# /opt/FJSVswstf/bin/StgDbSetup -f /esfmnt/etc/opt/swstorage/clsetup.ini -t Secondary
```

5.2.2.6 Unmount of Shared Disk

On the secondary node, unmount the shared disk for shared data that is used by the ETERNUS SF Manager.

5.2.3 Setup of Cluster Application

Setup the cluster application (transaction) for ETERNUS SF Manager.

- When you add the ETERNUS SF Manager in a new cluster application (transaction)

After creating a new cluster application (transaction), register the required resources to the cluster application (transaction).

- When you add the ETERNUS SF Manager in the existing cluster application (transaction)

Register the required resources to the cluster application (transaction).

Refer to your cluster software manuals for details of the setup procedure.

The following resources are required for the ETERNUS SF Manager:

- Cmdline resource
 - Cmdline resource of the generic script that was prepared in "5.2.1.4 Preparation of Generic Script"
Set a path for the generic script that was prepared in "5.2.1.4 Preparation of Generic Script" and any necessary arguments to create a Cmdline resource.
 - Cmdline resource for Automated Storage Tiering
Create a Cmdline resource with the following configurations.

Type	Input Pathname
Start script	/opt/FJSVssast/cluster/cmd/rcxclstartcmd
Stop script	/opt/FJSVssast/cluster/cmd/rcxclstopcmd
Check script	/opt/FJSVssast/cluster/cmd/rcxclcheckcmd

- Shared disk for shared data
Shared disk for shared data that was prepared in "4.1 Confirmation of Customization Items".
- Logical IP address
Logical IP address that was prepared in "4.1 Confirmation of Customization Items".

Note

Check that all of the following conditions are fulfilled before starting each service of the ETERNUS SF Manager to be registered with the Management Server transaction (before executing generic scripts):

- Data communication is possible with the failover IP address.
- The shared disk for shared data is mounted.

If any settings to your cluster software are necessary, refer to your cluster software manuals and make them.

5.2.4 Start ETERNUS SF Manager

Startup cluster application (transaction) for the ETERNUS SF Manager.
Refer to your cluster software manuals for starting cluster application (transaction).

Note

The communication daemon for local transactions of AdvancedCopy Manager's manager is stopped.
When you use the communication daemon for local transactions of AdvancedCopy Manager's manager, execute the following command to start the daemon.

```
# /opt/FJSVswstf/bin/stgfwcom start
```

Refer to "Starting and Stopping Communication Daemon" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Solaris or Linux)* for details.

Chapter 6 Installation of ETERNUS SF Agent

This chapter explains how to install ETERNUS SF Agent in a clustered system.
Note that only AdvancedCopy Manager's agent can be installed.

Point

Cluster software installation and environment settings are required before installing AdvancedCopy Manager's agent.
Refer to your cluster software manuals for details of cluster software installation and environment settings.

Refer to "[2.5 Environment Construction for Cluster Operation](#)" and the *ETERNUS SF Installation and Setup Guide*.

Unify the installation information (installation destination directory and communication service/daemon port number) and install AdvancedCopy Manager's agent in all the nodes.

In N:1 standby, AdvancedCopy Manager's agent installation to the secondary node may already be completed. At this time, install AdvancedCopy Manager's agent in the primary node with the same installation information as the secondary node.

Note

- Do not install the AdvancedCopy Manager's agent on a shared disk.
- The port number for the communication service/daemon that is specified during installation or customization is for communication service/daemon for local transactions. For setting port number of the cluster transaction communication service/daemon, refer to "[Chapter 8 Customization for Managed Server Transactions](#)" to perform the procedure according to your cluster software.

Chapter 7 Preparations for Customizing Managed Server Transactions

This chapter explains the following resources and input items that are required to customize Managed Server transactions.

7.1 Resources Required for Clustered System

When you install AdvancedCopy Manager on a clustered system, the following resources are required:

- [Takeover IP address for AdvancedCopy Manager](#)
- [Partitions for storing shared data of AdvancedCopy Manager](#)

Each item is explained below.

Takeover IP address for AdvancedCopy Manager

Allocate a new IP address that is unique in the network for operating AdvancedCopy Manager's agent in a clustered system. IP address is required for each AdvancedCopy Manager transaction.

It is recommended that you prepare and add a new logical IP address for AdvancedCopy Manager.

When allocating a new IP address, check whether existing transactions use the IP address as a takeover resource, and make sure that adding the corresponding IP address has no adverse effect on transactions.

When using an existing logical IP address, make sure that sharing the logical IP address with AdvancedCopy Manager does not cause a problem in (does not restrict) existing products that already use the logical IP address.

Partitions for storing shared data of AdvancedCopy Manager

Prepare partitions on the shared disk for storing shared data of AdvancedCopy Manager. The number of required partitions are listed below. Note that the number of partitions are required for each transaction. Refer to "[7.2 Capacity Required for Shared Disk](#)" for information on the required size of the shared disks.

Table 7.1 Number of Partitions Required for Each AdvancedCopy Manager Transaction

Name	Managed Server Transaction
Shared disk for shared data	1
Total number of partitions	1



Note

When you specify a shared disk for shared data, be careful about the following points:

- Define the shared disk for shared data as a shared disk of a clustered system.
- Assign a disk that is not used by the AdvancedCopy Manager backup/replication operation.
- Allocate a disk that is not used by AdvancedCopy Manager CCM as a copy source, copy destination, or access volume.
- Create a file system on the shared disk for shared data.
- Use disks other than the Quorum disk. (for Windows only)
- Do not create the multiple partitions on the shared disk for shared data. (for Windows only)

7.2 Capacity Required for Shared Disk

The capacity required for the shared disk for shared data of AdvancedCopy Manager's agent is as follows.

Table 7.2 Capacity Required for Shared Disk for Shared Data of AdvancedCopy Manager's Agent

Transaction Type	Required Disk Space
Managed Server transaction	The total value of "Replication operations", "Backup operations", and "Capacity required for cluster operation management data" below

Replication operations

If the number of paired replication source/destination volumes used for a replication operation is p, use the following formula:
 $1.1 * p$ [KB]

Backup operations

If the number of backup volumes is "a", the number of transaction volumes is "b", and the number of DSIs of all database spaces to be backed up is "c":

- When backing up Symfoware database resources:
 $((a + b * 35) + (b + c * 0.5)) / 1024$ [MB]
- When not backing up Symfoware database resources:
 $(a + b * 35) / 1024$ [MB]

Capacity required for cluster operation management data

1024 [KB]

7.3 Confirmation of Customization Items

The Managed Server transaction needs the following items for customization. Confirm and prepare items required for a cluster transaction which you use.

Table 7.3 Items Required for Customization

Item Name	Windows	Solaris			Linux		HP-UX	
	WSFC	SynfinityCluster, PRIMECLUSTER	VERITAS Cluster Server	Sun Cluster	PRIMECLUSTER	VERITAS Cluster Server	MC/ServiceGuard	VERITAS Cluster Server
Logical node name	R	R	R	R	R	R	R	R
Communication service/daemon port number for transaction	R	R	R	R	R	R	R	R
Transaction name	R	R	R	R	R	R	R	R
Logical IP address	R	R	R	R	R	R	R	R
Shared disk for shared data	R	R	R	R	R	R	R	R
Resource type	-	R	-	-	R	-	-	-
Installing user	R	-	-	-	-	-	-	-
Cluster name	R	-	-	-	-	-	-	-
Disk resource of shared disk for shared data	R	-	-	-	-	-	-	-
Network name	R	-	-	-	-	-	-	-

Item Name	Windows	Solaris			Linux		HP-UX	
	WSFC	SynfinityCluster, PRIMECLUSTER	VERITAS Cluster Server	Sun Cluster	PRIMECLUSTER	VERITAS Cluster Server	MC/ServiceGuard	VERITAS Cluster Server
Network for external connections	R	-	-	-	-	-	-	-
Volume Group name	-	-	-	-	-	-	R	-
Generic script	-	R	R	R	R	R	R	R

R: Required item
 -: Not required item

Each item is explained below.

Logical node name

Name of logical server for AdvancedCopy Manager.
 The user can freely set any logical node name, consisting of alphanumeric characters up to 8 bytes.
 Refer to "[2.4.2 Cluster Transaction and Local Transaction](#)" for information on the logical node name.



Note

13-character strings of the following list cannot be made into a logical node name for Solaris version SynfinityCluster/PRIMECLUSTER, Solaris version VERITAS Cluster Server, Solaris version Sun Cluster, Linux version PRIMECLUSTER, HP-UX version MC/ServiceGuard, or HP-UX version VERITAS Cluster Server:

audit, cluster, cmdevs, config, daemon, data, java, log, pid, report, samp, sh, tmp

Communication service/daemon port number for transaction

Port number allocated to the communication service/daemon for transactions. Note that the same port number needs to be specified on both the primary and secondary nodes.
 Specify the unused number (the number not used for ports of other daemons/services) between 1024 and 65535.



Point

Ensure that the port number of the communication service/daemon for transaction is different from the port number of the communication service/daemon for local transaction or the other communication services/daemons for transaction.

Transaction name

Name of cluster transaction.

Logical IP address

Refer to "[Takeover IP address for AdvancedCopy Manager](#)" in "[7.1 Resources Required for Clustered System](#)".



Point

When using WSFC (if IPv4 address is used) or HP-UX version MC/ServiceGuard, check also the subnet mask.

Shared disk for shared data

Refer to "[Partitions for storing shared data of AdvancedCopy Manager](#)" in "[7.1 Resources Required for Clustered System](#)".

Resource type

Cmdline resource for registering scripts that start or stop services/daemons (generic scripts).
In Solaris version SynfinityCluster, it is the status transition procedure.

Installing user

User name and password that were used when installing AdvancedCopy Manager.

Cluster name

Cluster name specified in WSFC. Refer to the WSFC manuals for details.

Disk resource of shared disk for shared data

Disk resource name of shared disk for shared data of AdvancedCopy Manager.

Network name

Dedicated network name for AdvancedCopy Manager that is specified when using a new logical IP address.
AdvancedCopy Manager creates a network resource under this network name. Refer to the WSFC manuals for details.

Network for external connections

Network name for external communication specified in WSFC, to be specified when using a new logical IP address of IPv4. Refer to the WSFC manuals for details.

Volume Group name

Volume Group name of shared disk for shared data.

Generic script

Script for starting or stopping services/daemon.

Create generic scripts (Start/Stop) for the following daemon:

- Generic script for AdvancedCopy Manager daemon



Information

As a generic script sample, the following file is stored in the /opt/FJSVswstf/cluster directory.

File Name	Explanation
AgtCmdline	Sample file of the Start/Stop script for PRIMECLUSTER Cmdline resource

When using the above file, make sure to copy it to a different directory and use the copied file.

Generic Script for AdvancedCopy Manager Daemon

It is the script to start/stop the AdvancedCopy Manager daemon from the cluster application (transaction). Read the following explanation and create the start/stop script file for the AdvancedCopy Manager daemon.

- Processing when starting cluster transactions

Configure the script so that AdvancedCopy Manager service of the Managed Server transaction starts.

Configure the script so that the AdvancedCopy Manager service start command (/opt/FJSVswstf/cluster/AgtStart) is executed when the cluster transaction starts.

Point

In order to have the AdvancedCopy Manager service start command executed, specify the logical node name of the Managed Server transaction to be started in the environment variable SWSTGNODE.

Note

Some cluster software requires a notification of start process result. If the process result notification is required, based on the exit status of the AdvancedCopy Manager service start command, configure an appropriate value to notify the cluster software.

Information required for starting the AdvancedCopy Manager service is as follows.

Item	Explanation
Environment variable SWSTGNODE	Logical node name
Name of AdvancedCopy Manager service start command	/opt/FJVSswstf/cluster/AgtStart
Exit status of AdvancedCopy Manager service start command	Completed successfully: 0 Terminated abnormally: 1

- Processing when stopping cluster transactions

Configure the script so that AdvancedCopy Manager service of the Managed Server transaction stops.

Configure so that the following AdvancedCopy Manager service stop command is executed when the cluster transaction stops:

- /opt/FJVSswstf/cluster/AgtStop
(However, for HP-UX version MC/ServiceGuard, /opt/FJVSswstf/cluster/mcsg/SmgrStop_mcsg)

Point

In order to have the AdvancedCopy Manager service stop command executed, specify the logical node name of the Managed Server transaction to be stopped in the environment variable SWSTGNODE.

Note

Some cluster software requires a notification of start process result. If the process result notification is required, based on the exit status of the AdvancedCopy Manager service start command, configure an appropriate value to notify the cluster software.

Information required for stopping the AdvancedCopy Manager service is as follows.

Item	Explanation
Environment variable SWSTGNODE	Logical node name
Name of AdvancedCopy Manager service stop command	/opt/FJVSswstf/cluster/AgtStop
Exit status of AdvancedCopy Manager service stop command	Completed successfully: 0 Terminated abnormally: 1

Example

The example of creating script as the Start/Stop script for PRIMECLUSTER Cmdline resource is shown below.

```
#!/bin/sh
SWSTGNODE=acmnode1
```

```
export SWSTGNODE

case $1 in
'start')
    /opt/FJSVswstf/cluster/AgtStart
    exit 0 ;;
'stop' )
    /opt/FJSVswstf/cluster/AgtStop
    exit 0 ;;
esac
```

.....

For register a Cmdline resource, specify "start" to the argument for the Start script, specify "stop" to the argument for the Stop script. Refer to your cluster software manuals for creating procedure of Start/Stop script.

Chapter 8 Customization for Managed Server Transactions

This chapter explains how to customize Managed Server transactions.

In this document, the primary node is an active node in a cluster transaction performing Managed Server transactions, and the secondary node is the standby node in the cluster transaction.

The secondary node A shows the node which creates the environment of Managed Server transactions first in the secondary nodes in this cluster transaction. The secondary node B shows the remaining secondary nodes in this cluster transaction.

If you use a 1:1 Standby system, a Mutual Standby system, or a n:1 Standby system, perform the customizing work of a primary node and a secondary node A. If you use a Cascade system or a Priority Transfer system, perform the customizing work of a primary node, a secondary node A, and a secondary node B.



Example

- When creating a Cascade system with three nodes, one node is a primary node, one node is the secondary node A, and one node is the secondary node B.
- When creating a Cascade system with four nodes, one node is a primary node, one node is the secondary node A, and two other nodes are the secondary node B.



Note

- The environment of all nodes must be the same.
- In case of n:1 Standby system, the secondary node environment may already have been set up earlier. In such a case, set up the environment for the primary node in the same way as it is on the secondary node.
- Each execution of the Managed Server transaction creates the settings for one cluster transaction. To build a Mutual Standby system, execute the procedure for customizing as many times as necessary.
- Before starting customization, add to an existing cluster transaction or decide whether to create a new cluster transaction.
- Do not move the resource used by Managed Server transactions from a cluster transaction after setup to another cluster transaction.

The customization method is different depending on operating systems. Refer to "[8.1 Customization for Windows Clustered System](#)" for Windows. Refer to "[8.2 Customization for Solaris/Linux/HP-UX Clustered System](#)" for Solaris/Linux/HP-UX.

8.1 Customization for Windows Clustered System

This section explains how to customize the Managed Server transaction on the Windows clustered system.



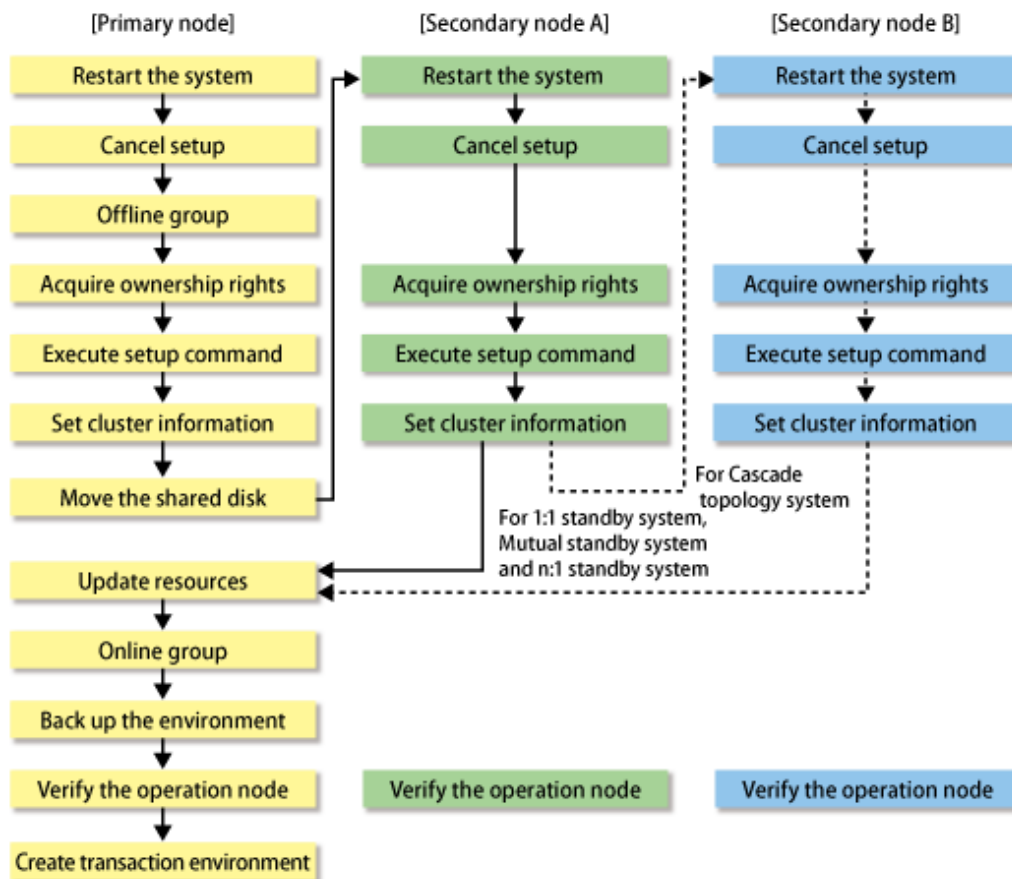
Note

Refer to "Firewall Setting (Windows Environment Only)" in the *ETERNUS SF Installation and Setup Guide* to set the firewall function.

8.1.1 Customization Flow

The following flow is the customization procedure for Managed Server transaction.

Figure 8.1 Customization Flow for Windows Clustered System



8.1.2 Customization Procedure

Follow the procedure below to set up a Managed Server transaction.



Note

- Perform the procedures using Administrator privileges. The Windows "Computer Browser service" must be activated if a user belonging to the Administrators of the domain wants to perform customization.
- For Windows Server 2012 or later, install the Failover Cluster Command Interface before performing the cluster setup.
- Do not use the Telnet Server service.

1. Restart the primary node.
2. Offline the existing cluster transaction as required.

To add a Managed Server transaction to an existing cluster transaction, switch the cluster transaction offline using the Failover Cluster Manager. This step is not required if you create a new cluster transaction.

Leave the shared disk for shared data of AdvancedCopy Manager online.

Refer to your cluster software manuals for information on how to stop the cluster transaction and how to vary the shared disk online.

3. Take the ownership.

On the primary node, using the Failover Cluster Manager, take ownership of the Quorum disk and the shared disk that is used by AdvancedCopy Manager and ownership of the transactions.

Refer to your cluster software manuals for taking ownership.

4. Instruct the start of the cluster setup.

On the primary node, execute the following cluster setup command:

The *programDir* is "Program Directory" specified at the AdvancedCopy Manager's agent installation.

- When executing in Management Server

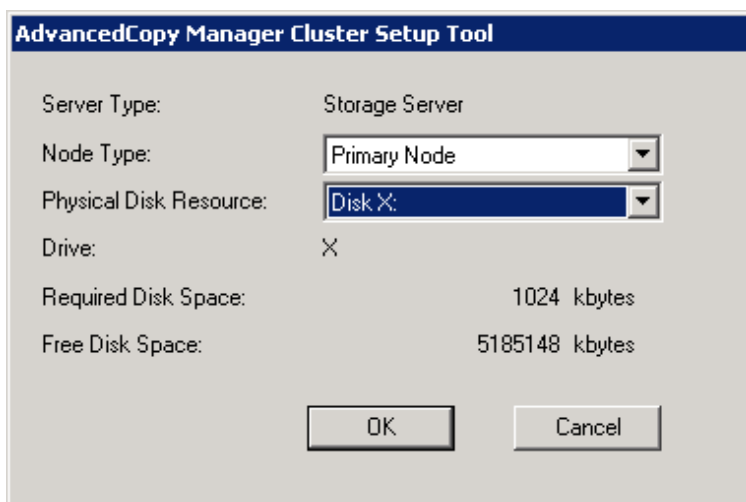
```
programDir\ACM\bin\stgclset_mscs
```

- When executing in Managed Server

```
programDir\bin\stgclset_mscs
```

5. Select the node type and shared disk.

The initial window of the cluster setup command is displayed.



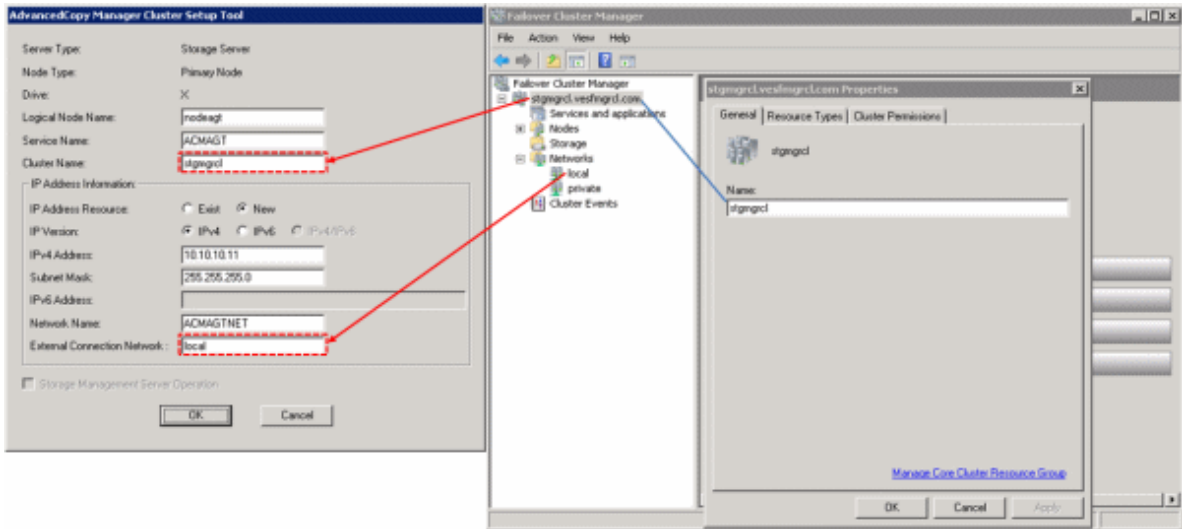
Each item is explained below. Make the required entries and then click **OK**.

Item	Explanation
Server Type	Confirm that the server is a "Storage Server".
Node Type	Select "Primary Node".
Physical Disk Resource	Select the "Disk resource of shared disk for shared data" that was prepared in " 7.3 Confirmation of Customization Items ".
Drive	The drive letter corresponding to the physical disk resource is displayed.
Required Disk Space	The minimum disk size required for the AdvancedCopy Manager cluster environment is displayed. Use the calculated shared disk size for the required disk size. Make sure that there is enough free space.
Free Disk Space	The amount of free disk space of the specified drive is displayed.

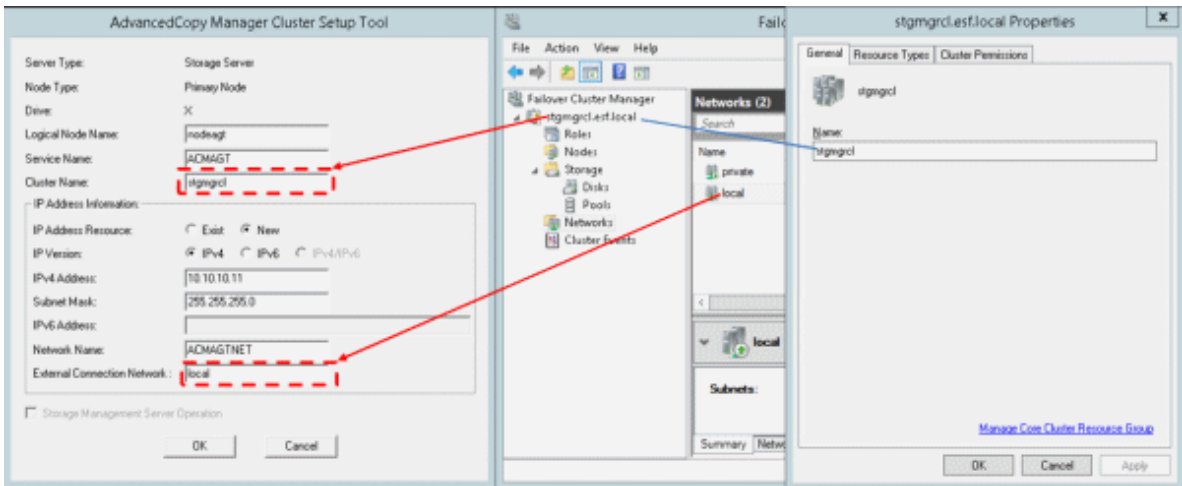
6. Set the cluster information for the primary node.

The setting screen of the cluster setup command is displayed. A displayed screen may vary from operating system to operating system.

The following screen is for Windows Server 2008.



The following screen is for Windows Server 2012.



Each item is explained below. Make the required entries and then click **OK**.

Item	Explanation
Server Type	Confirm that the server is a "Storage Server".
Node Type	Confirm that the node is "Primary Node".
Drive	The drive letter corresponding to the physical disk resource is displayed.
Logical Node Name	Enter the "Logical node name" as defined in "7.3 Confirmation of Customization Items".
Service Name	Enter the "Transaction name" as confirmed in "7.3 Confirmation of Customization Items".
Cluster Name	Enter the "Cluster name" as confirmed in "7.3 Confirmation of Customization Items".
IP Address Resource	<ul style="list-style-type: none"> - Exist Select if you use an existing IP address resource. - New Select if you create a new IP address resource. If "IPv4" or "IPv6" is selected in the IP Version, this can be specified. If "IPv4/IPv6" is selected in the IP Version, this cannot be specified.

Item	Explanation
IP Version	Select the IP version of Managed Server IP address. "IPv4" or "IPv6" can be selected for the Managed Server. "IPv4/IPv6" cannot be selected.
IPv4 Address	Enter the "Logical IP address" (IPv4) as defined in "7.3 Confirmation of Customization Items" when using IPv4 to operate the Managed Server.
Subnet Mask	Enter the subnet mask of the IP address in the IPv4 Address, when "New" is selected in the IP Address Resource and "IPv4" is selected in the IP Version .
IPv6 Address	Enter the "Logical IP address" (IPv6) as defined in "7.3 Confirmation of Customization Items" when using IPv4 to operate the Managed Server. The specified IPv6 address should one that is usable with WSFC.
Network Name	Enter the "Network name" as confirmed in "7.3 Confirmation of Customization Items" when "New" is selected in the IP Address Resource .
External Connection Network	Enter the "Network for external connections" as confirmed in "7.3 Confirmation of Customization Items", when "New" is selected in the IP Address Resource and "IPv4" is selected in the IP Version .
Storage Management Server Operation	Do not select this item for setting the Managed Server transaction.

7. Set the port number and service.

The following page is displayed. If the port number and service has already been set, this page is not displayed.

The item is explained below. Make the required entries and then click **OK**.

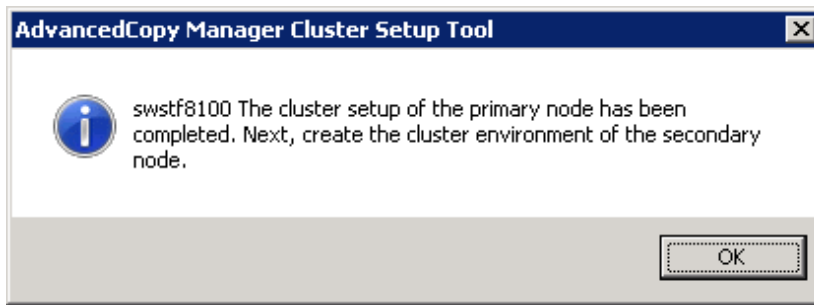
Item	Explanation
Communication Service	Enter the "Communication service/daemon port number for transaction" as defined in "7.3 Confirmation of Customization Items".

8. The port number and service settings have been completed.

Click **OK**.

9. The cluster setup of the primary node has been completed.

When the cluster setup completion window is displayed, click **OK**. Continue by setting up the secondary node.



10. Restart the secondary node A.

11. On the secondary node A, take the ownership.

On the secondary node A, using the Failover Cluster Manager, take ownership of the transactions. Refer to your cluster software manuals for taking ownership.

12. Instruct the start of the cluster setup.

On the secondary node A, execute the following cluster setup command:

The *programDir* is "Program Directory" specified at the AdvancedCopy Manager's agent installation.

- When executing in Management Server

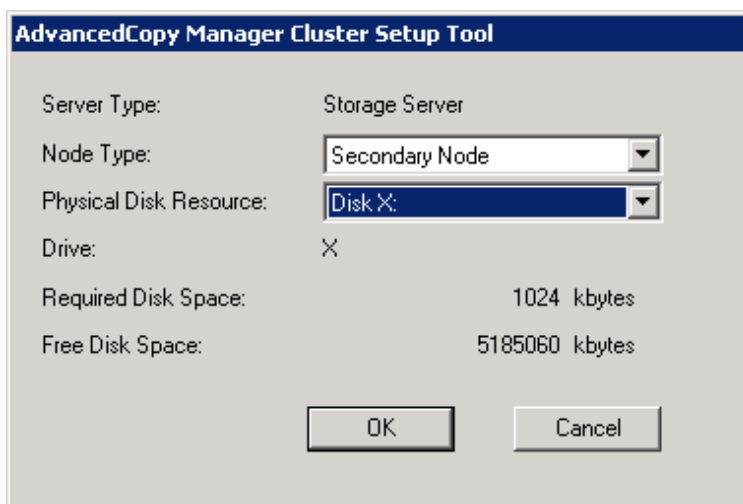
```
programDir\ACM\bin\stgclset_mscs
```

- When executing in Managed Server

```
programDir\bin\stgclset_mscs
```

13. Select the node type and shared disk.

The initial window of the cluster setup command is displayed.



Each item is explained below. Make the required entries and then click **OK**.

Item	Explanation
Server Type	Confirm that the server is a "Storage Server".
Node Type	Select "Secondary Node".

Item	Explanation
Physical Disk Resource	Select the "Disk resource of shared disk for shared data" that was prepared in "7.3 Confirmation of Customization Items".
Drive	The drive letter corresponding to the physical disk resource is displayed.
Required Disk Space	The minimum disk size required for the AdvancedCopy Manager cluster environment is displayed.
Free Disk Space	The amount of free disk space of the specified drive is displayed.

14. Set the cluster information for the secondary node A.

The values set for the primary node is displayed in the following page (The **Node Type** is displayed as a "Secondary Node"). After confirming each item, click **OK**.

AdvancedCopy Manager Cluster Setup Tool

Server Type: Storage Server

Node Type: Secondary Node

Drive: X

Logical Node Name:

Service Name:

Cluster Name:

IP Address Information:

IP Address Resource: Exist New

IP Version: IPv4 IPv6 IPv4/IPv6

IPv4 Address:

Subnet Mask:

IPv6 Address:

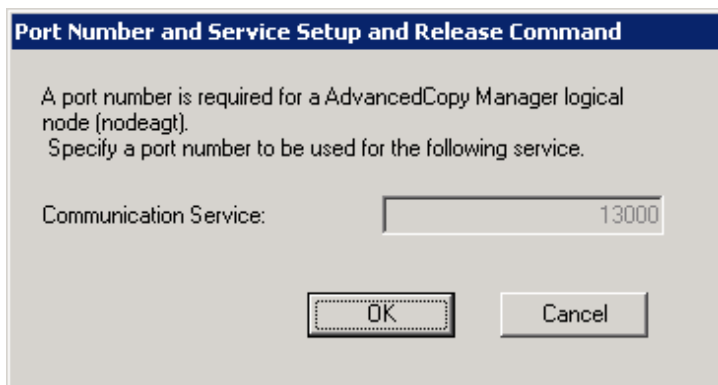
Network Name:

External Connection Network :

Storage Management Server Operation

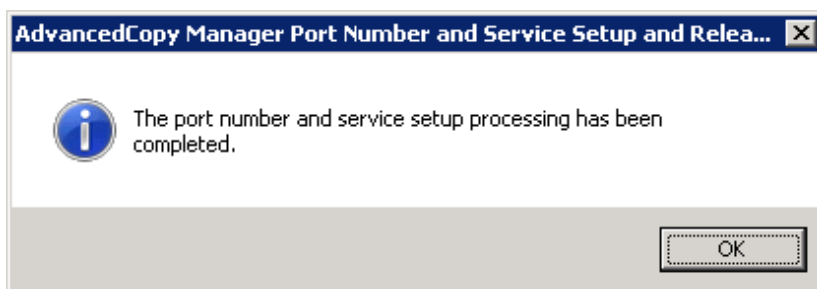
15. Set the port number and service.

The following page is displayed. The same value as those set for the primary node is displayed. If a port number and service has already been set, this page is not displayed.



Click **OK**.

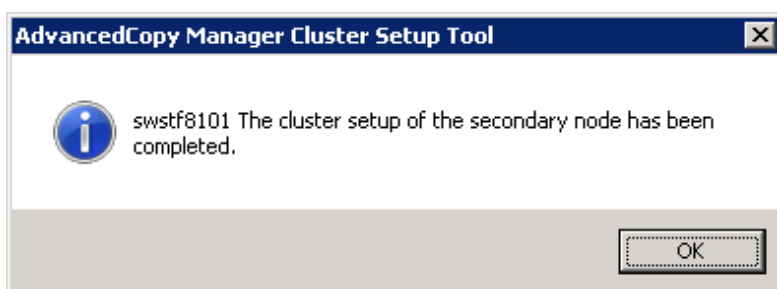
16. The port number and service settings have been completed.



Click **OK**.

17. The cluster setup of the secondary node has been completed.

When the cluster setup completion window is displayed, click **OK**.



If the clustered system is the 1:1 Standby system, the Mutual Standby system, or the n:1 Standby system, go to step 27.
If the system is the Cascade system, go to step 18.

18. Restart the secondary node B.

Note

When the secondary node B consists of two or more nodes, perform from step 18 to step 26 on all of the secondary nodes B.

19. On the secondary node B, take the ownership.

On the secondary node B, using the Failover Cluster Manager, take ownership of the transactions. Refer to your cluster software manuals for taking ownership.

20. Instruct the start of the cluster setup.

On the secondary node B, execute the following cluster setup command:

The *programDir* is "Program Directory" specified at the AdvancedCopy Manager's agent installation.

- When executing in Management Server

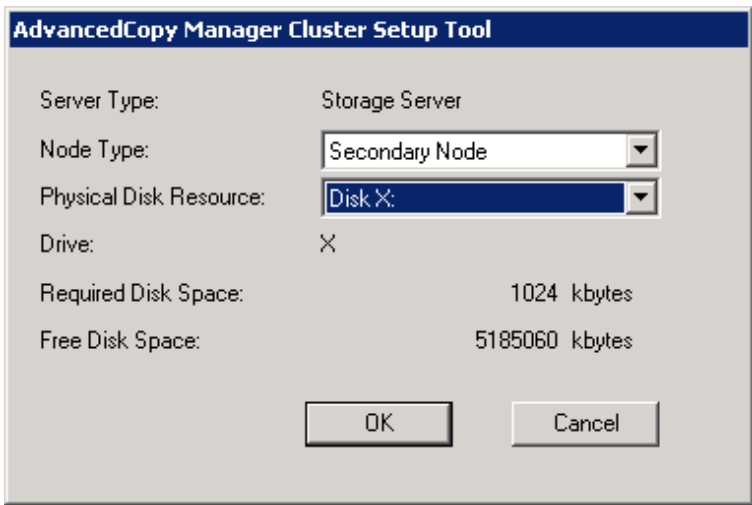
```
programDir\ACM\bin\stgclset_mscs
```

- When executing in Managed Server

```
programDir\bin\stgclset_mscs
```

21. Select the node type and shared disk.

The initial window of the cluster setup command is displayed.

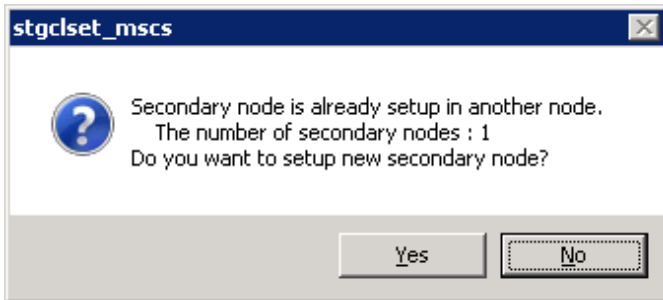


Each item is explained below. Make the required entries and then click **OK**.

Item	Explanation
Server Type	Confirm that the server is a "Storage Server".
Node Type	Select "Secondary Node".
Physical Disk Resource	Select the "Disk resource of shared disk for shared data" that was prepared in " 7.3 Confirmation of Customization Items ". Select the same resource as that selected for the primary node.
Drive	The drive letter corresponding to the physical disk resource is displayed.
Required Disk Space	The minimum disk size required for the AdvancedCopy Manager cluster environment is displayed.
Free Disk Space	The amount of free disk space of the specified drive is displayed.

22. Confirm the addition of the secondary node B.

A confirmation dialog box for adding a secondary node to a Cascade system is displayed. Confirm that the service is for a Cascade system, and then click **Yes**.



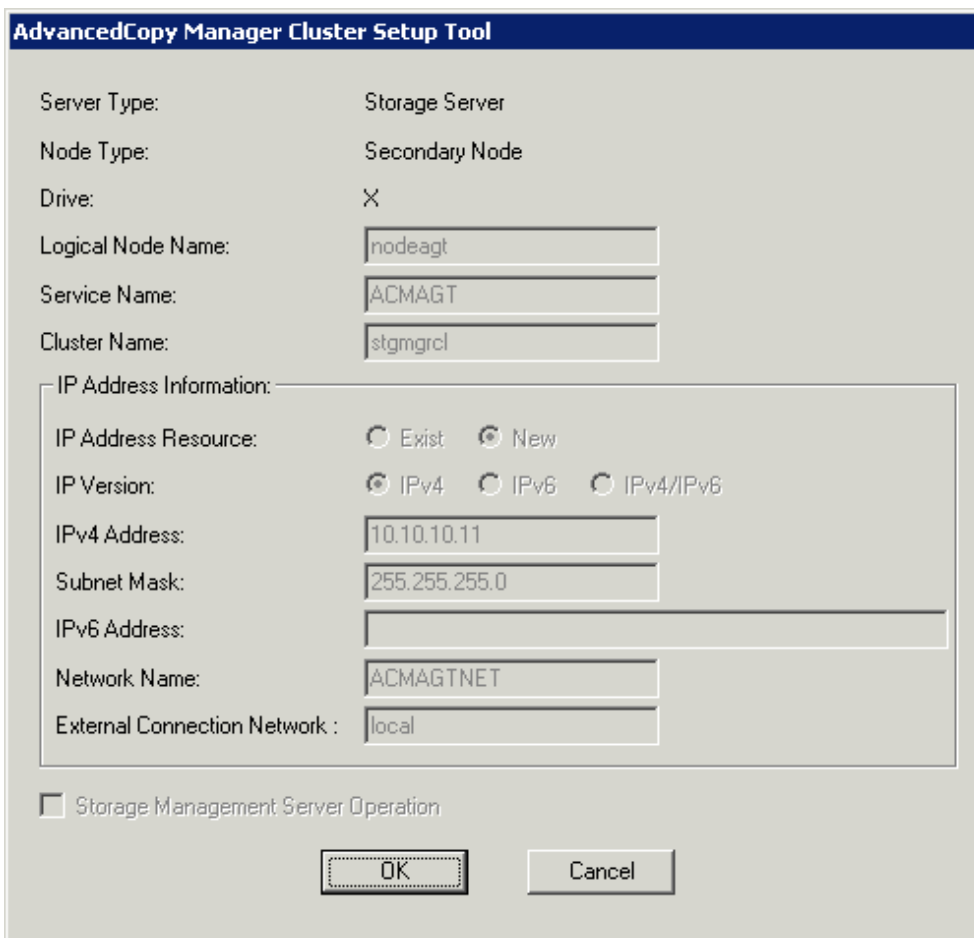
The number of secondary nodes already set up is displayed at the item "The number of secondary nodes".

Note

Note that the default is **No** (cancellation of processing).

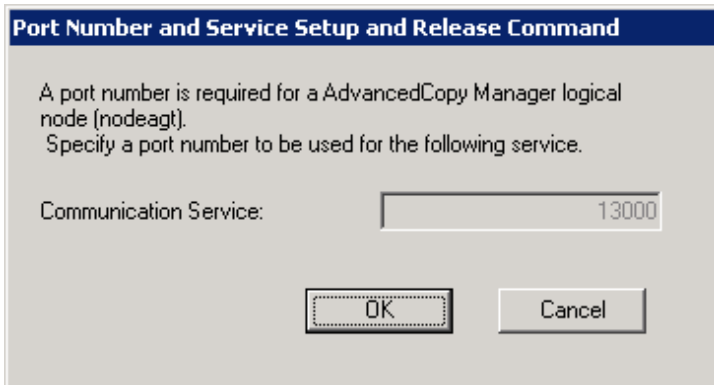
23. Set the cluster information for the secondary node B.

The values set for the primary node is displayed in the following page (The **Node Type** is displayed as a "Secondary Node"). After confirming each item, click **OK**.



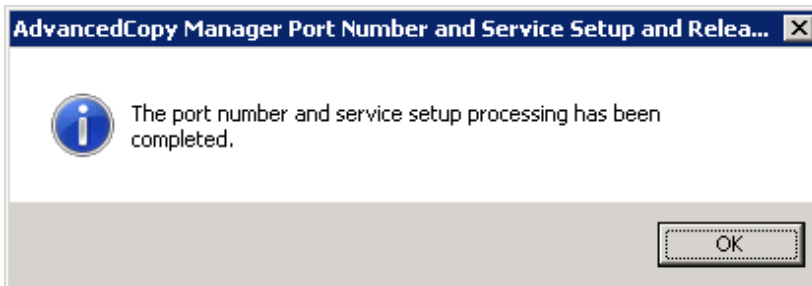
24. Set the port number and service.

The following page is displayed. The same value as those set for the primary node is displayed. If a port number and service has already been set, this page is not displayed.



Click **OK**.

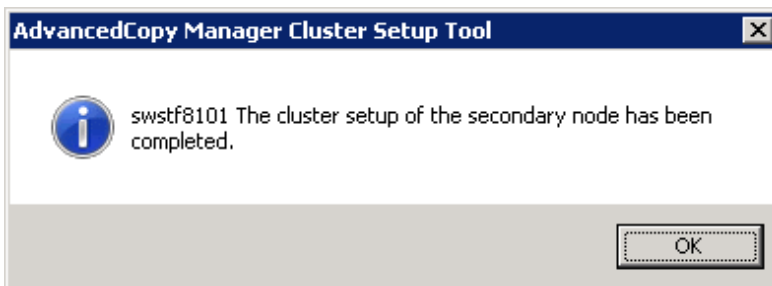
25. The port number and service settings have been completed.



Click **OK**.

26. The cluster setup of the secondary node B has been completed.

When the cluster setup completion window is displayed, click **OK**.



Note

If more secondary nodes B remain (steps from step 18 to step 26 have not been performed on them), perform from step 18 in the remaining nodes. After operation from step 18 to step 26 is completed for all secondary nodes B, go to step 27.

27. If necessary, specify the resource dependency and the ownership required for execution.

Add a transaction disk resource to the dependency of the following resources by using the Failover Cluster Manager.

- AdvancedCopy COM Service_logicalNodeName

Note

When a volume is added, or when it is deleted, it is necessary to again set up the above-mentioned dependency. Refer to "Notes on Cluster Operation" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Windows)* for information about this.

If the number of clustered system nodes is greater than the number of cluster transaction nodes (such as in an n:1 standby system), using the Failover Cluster Manager, change the property information (ownership required for execution) of the AdvancedCopy Manager resources belonging to the cluster transaction for only the nodes operating in the cluster transaction. Refer to your cluster software manuals for information on how to change the ownership required for execution.

The property information must be changed for the following resources:

- AdvancedCopy COM Service_ *logicalNodeName*
- AdvancedCopy IP Address_ *logicalNodeName* (if "New" has been selected in the **IP Address Resource** with the cluster setup command of AdvancedCopy Manager.)
- AdvancedCopy Network_ *logicalNodeName* (if "New" has been selected in the **IP Address Resource** with the cluster setup command of AdvancedCopy Manager.)
- Shared disk for shared data of AdvancedCopy Manager
- Backup volume or replication destination volume

28. On the primary node, start the AdvancedCopy Manager service.

Use the Failover Cluster Manager to take the cluster transaction whose settings have been completed online and to start AdvancedCopy Manager service.

29. Back up the environment.

As a safeguard against accidental loss of data or file corruption, using the copy function (for example, Windows Explorer), back up the following folders in the shared disk for shared data of AdvancedCopy Manager:

- <Drive of the shared disk for shared data of AdvancedCopy Manager>:\etc
- <Drive of the shared disk for shared data of AdvancedCopy Manager>:\var

30. Check the operation node.

Using the Failover Cluster Manager, check that the cluster transaction operates on the node.

31. Create an environment for the Managed Server transaction.

Create an environment for the replication operation or backup/restore operation, which is executed in AdvancedCopy Manager, in a Managed Server transaction.

Refer to the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Windows)* to create the environment for Managed Server transactions according to the operation type.

Note

When adding a Managed Server to a Managed Server transaction, execute the `stgxfwcmaddsrv` command.

```
programDir\ACM\bin\stgxfwcmaddsrv [-n serverName] -i logicalIpAddr -p portNumber
```

programDir : "Program Directory" specified at the AdvancedCopy Manager's agent installation

serverName : Server name

logicalIpAddr : Logical IP address

portNumber : Port number

Refer to "[2.4.2 Cluster Transaction and Local Transaction](#)" for information on the specified argument for command option.

Refer to "Command References" in the *ETERNUS SF AdvancedCopy Manager Operation Guide* for information on the command.

32. Restart all nodes.

If the secondary node in n:1 Standby system was already completely installed and customized (including the restart) earlier, restart only the primary node.

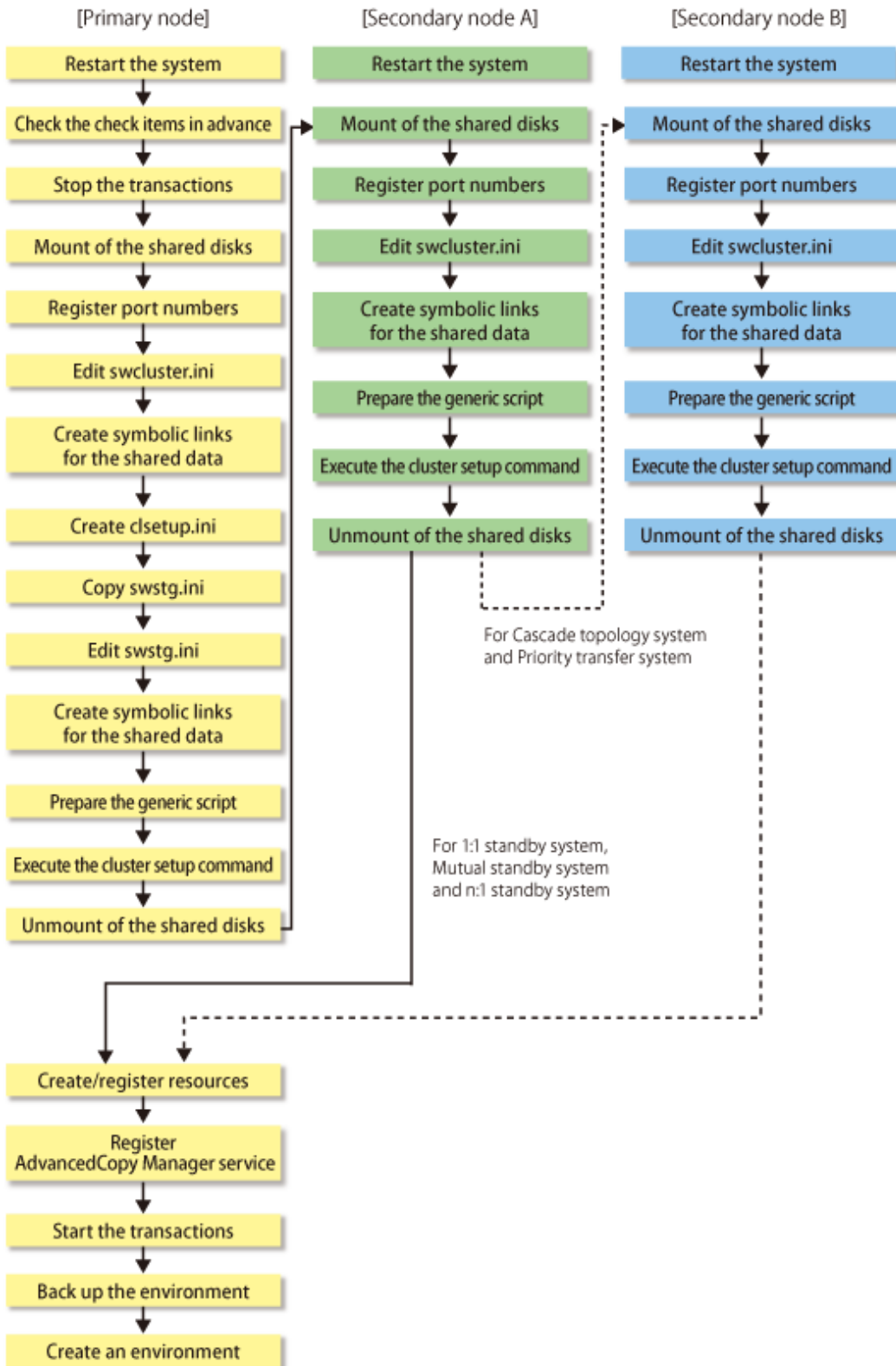
8.2 Customization for Solaris/Linux/HP-UX Clustered System

This section explains how to customize the Managed Server transaction on the Solaris/Linux/HP-UX clustered system.

8.2.1 Customization Flow

The following flow is the customization procedure for Managed Server transaction.

Figure 8.2 Customization Flow for Solaris/Linux/HP-UX Clustered System



8.2.2 Customization Procedure

Follow the procedure below to set up a Managed Server transaction.

Point

For explanatory purposes, the command execution examples in this section use the following settings:

- `<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>: /acmdata01`
- Logical node name: acmnode1

Note

Perform the procedures by root (super user).

1. Restart the system.

Restart all primary and secondary nodes that create Managed Server transactions.

2. If you add a Managed Server transaction to an existing cluster transaction, stop the cluster transaction.

Refer to your cluster software manuals for the procedure for stopping cluster transactions.

3. Customize the primary node.

On the primary node, perform from step a to step j.

a. Mount the shared disk.

Mount the shared disk for shared data of AdvancedCopy Manager.

b. Register port numbers.

Use the vi command etc. of OS, and describe the port number and the following service name of the transaction communication daemon in `/etc/services` file.

- Transaction communication daemon: `stgxfws_<logicalNodeName>`

Note

Describe the same port number on the primary node and all secondary nodes.

Specify the same value as **Swstgnode** in "[Table 8.2 Setting Items of swcluster.ini File](#)" for `logicalNodeName`.

c. Edit the `/opt/FJSSwstf/cluster/swcluster.ini` file.

Table 8.1 Setting Items of swcluster.ini File

Item Name	Explanation
Env_N	Logical node name. Specify the same value as Swstgnode in " Table 8.2 Setting Items of swcluster.ini File ". For N, specify a non-duplicate value from 1 to 20.
BusiType	AdvancedCopy Manager server type. Specify "2".
Business	Name of cluster transaction.
ShareEtc	Name of the environment setting directory for cluster transactions. <code><Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/etc/opt</code>
ShareVar	Name of working directory for cluster transactions. <code><Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/var/opt</code>
MountPoint	Mount point of shared disk for shared data of AdvancedCopy Manager.
NodeName	Name of primary node (Host name of primary node).

Modify or add the portions in italics according to your system environment.

```
[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_N=<Logical node name>
[<Logical node name>]
Type=Primary
BusiType=<AdvancedCopy Manager server type>
Business=<Name of cluster transaction>
ShareEtc=<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/etc/opt
ShareVar=<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/var/opt
MountPoint=<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=<Name of primary node (Host name of primary node)>
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure
```

Example

When creating the first cluster transactions on the same server, the example for editing the swcluster.ini file is as follows.

[Before editing]

```
[ClusterCommon]
Cluster=OFF
Max=20
StartTimeOut=300
StopTimeOut=300
```

[After editing]

The italicized portions are the changes and additions to the original file.

```
[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_1=acmnode1
[acmnode1]
Type=Primary
BusiType=2
Business=acmbiz01
ShareEtc=/acmdata01/etc/opt
ShareVar=/acmdata01/var/opt
MountPoint=/acmdata01
IPAddr=
IPUseType=0
IPRscName=
```

```
Hostname=  
NodeName=m40001  
ClusterName=  
DiskName=  
GroupName=  
SubNetMask=  
MSCSNetName=  
Date=00/00/00 00:00:00  
Setup=YES  
ResourceType=Procedure
```

Example

When cluster transactions have already been created on the same server, the example for editing the swcluster.ini file is as follows.

[Before editing]

```
[ClusterCommon]  
Cluster=ON  
Max=20  
StartTimeOut=300  
StopTimeOut=300  
System=GEN  
Env_2=acmnode2  
[acmnode2]  
Type=Primary  
BusiType=2  
Business=acmbiz02  
ShareEtc=/acmdata02/etc/opt  
ShareVar=/acmdata02/var/opt  
MountPoint=/acmdata02  
IPAddr=  
IPUseType=0  
IPRscName=  
Hostname=  
NodeName=m40001  
ClusterName=  
DiskName=  
GroupName=  
SubNetMask=  
MSCSNetName=  
Date=00/00/00 00:00:00  
Setup=YES  
ResourceType=Procedure
```

[After editing]

The italicized portions are the additions to the original file.

```
[ClusterCommon]  
Cluster=ON  
Max=20  
StartTimeOut=300  
StopTimeOut=300  
System=GEN  
Env_2=acmnode2  
Env_1=acmnode1  
[acmnode2]  
Type=Primary  
BusiType=2  
Business=acmbiz02
```

```

ShareEtc=/acmdata02/etc/opt
ShareVar=/acmdata02/var/opt
MountPoint=/acmdata02
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure
[acmnode1]
Type=Primary
BusiType=2
Business=acmbiz01
ShareEtc=/acmdata01/etc/opt
ShareVar=/acmdata01/var/opt
MountPoint=/acmdata01
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure

```

- d. Create directories on the shared disk for shared data of AdvancedCopy Manager.

Create each directory in below structure.

```

<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>
+---/etc
|   ---/opt
|       ---/swstorage
+---/var
     ---/opt
         ---/swstorage

```

Example

The example of creating directories is as follows.

```

# mkdir -p /acmdata01/etc/opt/swstorage
# chmod -R 755 /acmdata01/etc/opt/swstorage
# chown -R root:root /acmdata01/etc/opt/swstorage
# mkdir -p /acmdata01/var/opt/swstorage
# chmod -R 755 /acmdata01/var/opt/swstorage
# chown -R root:root /acmdata01/var/opt/swstorage

```

- e. Create the <Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/etc/opt/swstorage/clsetup.ini file.

Table 8.2 Setting Items of swcluster.ini File

Item Name	Explanation
Swstgnode	Logical node name. Use only alphanumeric characters up to 8 bytes for logical node name. Refer to "Logical node name" in "7.3 Confirmation of Customization Items" about other restrictions for logical node name.
Business	Name of cluster transaction.
ShareEtc	Name of the environment setting directory for cluster transactions. <Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/etc/opt
ShareVar	Name of working directory for cluster transactions. <Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/var/opt
MountPoint	Mount point of shared disk for shared data of AdvancedCopy Manager.
NodeName	Name of primary node (Host name of primary node).
BusiType	AdvancedCopy Manager server type.
Type	Specify "2".
Version	Version of AdvancedCopy Manager. Specify the same value as for the [Common]-"Version" character string in the /etc/opt/swstorage/swstg.ini file.
Language	Language used for AdvancedCopy Manager. Specify one of the following text strings according to the language to be used for AdvancedCopy Manager: <ul style="list-style-type: none"> - For Japanese: JAPANESE - For English: ENGLISH

Modify the portions in italics according to your system environment.

```
[Cluster]
System=GEN
Swstgnode=<Logical node name>
Business=<Name of cluster transaction>
ShareEtc=<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/etc/opt
ShareVar=<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/var/opt
MountPoint=<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=<Name of primary node (Host name of primary node)>
ClusterName=
DiskName=
GroupName=
SubNetMask=
MCSNetName=
BusiType=<AdvancedCopy Manager server type>
ResourceType=Procedure
[StorageMGR]
Version=<Version of AdvancedCopy Manager>
Edition=EE
Type=<AdvancedCopy Manager server type>
AFSType=1
Language=<Language used for AdvancedCopy Manager>
[Secondary]
Setup=YES
Date=00/00/00 00:00:00
```



```
[Primary]
Date=00/00/00 00:00:00
Setup=YES
```

Example

The example for editing the csetup.ini file is as follows. The italicized portions are the changes to the original file.

```
[Cluster]
System=GEN
Swstgnode=acmnode1
Business=acmbiz01
ShareEtc=/acmdata01/etc/opt
ShareVar=/acmdata01/var/opt
MountPoint=/acmdata01
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
BusiType=2
ResourceType=Procedure
[StorageMGR]
Version=V16.4
Edition=EE
Type=2
AFSType=1
Language=ENGLISH
[Secondary]
Setup=YES
Date=00/00/00 00:00:00
[Primary]
Date=00/00/00 00:00:00
Setup=YES
```

- f. Copy the /etc/opt/swstorage/swstg.ini file.

Copy the swstg.ini file to the following copy destination.

Copy Source File	Copy Destination File
/etc/opt/swstorage/swstg.ini	<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/etc/opt/swstorage/swstg.ini

Example

The copy execution example is as follows.

```
# cp -p /etc/opt/swstorage/swstg.ini /acmdata01/etc/opt/swstorage/swstg.ini
```

- g. Edit the <Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/etc/opt/swstorage/swstg.ini file.

Table 8.3 Setting Items of swstg.ini File

Item Name	Explanation
Type	AdvancedCopy Manager server type. Specify "2".

Note

After starting operation, the program in this product may add/modify/delete parameters other than those of "Table 8.3 Setting Items of swstg.ini File" for the swstg.ini file. For this reason, do not add/modify/delete parameters other than those of "Table 8.3 Setting Items of swstg.ini File".

Modify the portions in *italics* according to your system environment.

```
[Common]
Edition=EE
Version=V16.4
Type=<AdvancedCopy Manager server type>
AFSType=1
Language=ENGLISH
BaseDir_Opt=/opt
BaseDir_Var=/var/opt
BaseDir_Etc=/etc/opt
[Install]
FJSVswstf=20101116
FJSVswtrc=20101116
FJSVgrapi=20101116
FJSVswsts=20101116
FJSVswsrp=20101116
```

Example

The example for editing the swstg.ini file is as follows. The *italicized* portions are the changes to the original file.

```
[Common]
Edition=EE
Version=V16.4
Type=2
AFSType=1
Language=ENGLISH
BaseDir_Opt=/opt
BaseDir_Var=/var/opt
BaseDir_Etc=/etc/opt
[Install]
FJSVswstf=20101116
FJSVswtrc=20101116
FJSVgrapi=20101116
FJSVswsts=20101116
FJSVswsrp=20101116
```

- h. Create symbolic links to the directories in the shared disk for shared data of AdvancedCopy Manager.

Specify the same value as **Swstgnode** in "Table 8.2 Setting Items of swcluster.ini File" for *logicalNodeName* of link target directories.

Link Source Directory	Link Target Directory (Symbolic Link File)
<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/etc/opt/swstorage	/etc/opt/swstorage/logical/NodeName
<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/var/opt/swstorage	/var/opt/swstorage/logical/NodeName

Example

The example of creating symbolic links is as follows.

```
# ln -s /acmdata01/etc/opt/swstorage /etc/opt/swstorage/acmnode1
# ln -s /acmdata01/var/opt/swstorage /var/opt/swstorage/acmnode1
```

i. Prepare a generic script.

Follow the procedure below to prepare a generic script to be used on the primary node.

1. In the AdvancedCopy Manager's agent program directory on the primary node, store the generic script file that you created in "7.3 Confirmation of Customization Items".
2. Set up the access privilege for the stored generic script file.
Specify the authority that the root (super user) can access.

j. Execute the following commands in the given sequence.

Sequence of Execution	Command Name
1	clset_FJSVswstf command
2	clset_FJSVswsts command
3	clset_FJSVswsrp command

Example

The command execution example is as follows.

```
# /opt/FJSVswstf/bin/clset_FJSVswstf -f /acmdata01/etc/opt/swstorage/clsetup.ini -t Primary
clset_FJSVswstf completed
# /opt/FJSVswsts/bin/clset_FJSVswsts -f /acmdata01/etc/opt/swstorage/clsetup.ini -t Primary
clset_FJSVswsts completed
# /opt/FJSVswsrp/bin/clset_FJSVswsrp -f /acmdata01/etc/opt/swstorage/clsetup.ini -t Primary
clset_FJSVswsrp completed
```

k. Unmount the shared disk.

Unmount the shared disk for shared data of AdvancedCopy Manager.

4. Customize the secondary nodes.

On the secondary node A, perform from step a to step f.

In addition, if you use a Cascade system or a Priority Transfer system, perform from step a to step f on the secondary node B.

a. Mount the shared disk.

Mount the shared disk for shared data of AdvancedCopy Manager.

b. Register port numbers.

Use the vi command etc. of OS, and describe the port number and the following service name of the transaction communication daemon in /etc/services file.

- Transaction communication daemon: `stgxfws_logicalNodeName`

Note

Describe the same port number on the primary node and all secondary nodes.
Specify the same value as **Swstgnode** in "Table 8.2 Setting Items of `swcluster.ini` File" for `logicalNodeName`.

c. Edit the `/opt/FJVSvswstf/cluster/swcluster.ini` file.

Table 8.4 Setting Items of `swcluster.ini` File

Item Name	Explanation
Env_N	Logical node name. Specify the same value as Swstgnode in "Table 8.2 Setting Items of <code>swcluster.ini</code> File". For N, specify a non-duplicate value from 1 to 20.
BusiType	AdvancedCopy Manager server type. Specify "2".
Business	Name of cluster transaction.
ShareEtc	Name of the environment setting directory for cluster transactions. <i><Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/etc/opt</i>
ShareVar	Name of working directory for cluster transactions. <i><Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/var/opt</i>
MountPoint	Mount point of shared disk for shared data of AdvancedCopy Manager.
NodeName	Name of primary node (Host name of primary node).

Modify or add the portions in italics according to your system environment.

```
[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_N=<Logical node name>
[<Logical node name>]
Type=Secondary
BusiType=<AdvancedCopy Manager server type>
Business=<Name of cluster transaction>
ShareEtc=<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/etc/opt
ShareVar=<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/var/opt
MountPoint=<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=<Name of primary node (Host name of primary node)>
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure
```

Example

When creating the first cluster transactions on the same server, the example for editing the swcluster.ini file is as follows.

[Before editing]

```
[ClusterCommon]
Cluster=OFF
Max=20
StartTimeOut=300
StopTimeOut=300
```

[After editing]

The italicized portions are the changes and additions to the original file.

```
[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_1=acmnode1
[acmnode1]
Type=Secondary
BusiType=2
Business=acmbiz01
ShareEtc=/acmdata01/etc/opt
ShareVar=/acmdata01/var/opt
MountPoint=/acmdata01
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure
```

Example

When cluster transactions have already been created on the same server, the example for editing the swcluster.ini file is as follows.

[Before editing]

```
[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_2=acmnode2
[acmnode2]
Type=Secondary
BusiType=2
Business=acmbiz02
```

```
ShareEtc=/acmdata02/etc/opt
ShareVar=/acmdata02/var/opt
MountPoint=/acmdata02
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure
```

[After editing]

The italicized portions are the additions to the original file.

```
[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_2=acmnode2
Env_1=acmnode1
[acmnode2]
Type=Secondary
BusiType=2
Business=acmbiz02
ShareEtc=/acmdata02/etc/opt
ShareVar=/acmdata02/var/opt
MountPoint=/acmdata02
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure
[acmnode1]
Type=Secondary
BusiType=2
Business=acmbiz01
ShareEtc=/acmdata01/etc/opt
ShareVar=/acmdata01/var/opt
MountPoint=/acmdata01
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
```

```
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure
```

- d. Create symbolic links to the directories in the shared disk for shared data of AdvancedCopy Manager.

Specify the same value as **Swstgnode** in "Table 8.2 Setting Items of swcluster.ini File" for *logicalNodeName* of link target directories.

Link Source Directory	Link Target Directory (Symbolic Link File)
<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/etc/opt/swstorage	/etc/opt/swstorage/ <i>logicalNodeName</i>
<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/var/opt/swstorage	/var/opt/swstorage/ <i>logicalNodeName</i>

Example

The example of creating symbolic links is as follows.

```
# ln -s /acmdata01/etc/opt/swstorage /etc/opt/swstorage/acmnode1
# ln -s /acmdata01/var/opt/swstorage /var/opt/swstorage/acmnode1
```

- e. Prepare a generic script.

Follow the procedure below to prepare a generic script to be used on the secondary node.

1. In the AdvancedCopy Manager's agent program directory on the secondary node, store the generic script file that you created in "7.3 Confirmation of Customization Items".
2. Set up the access privilege for the stored generic script file.
Specify the authority that the root (super user) can access.

- f. Execute the following commands in the given sequence.

Sequence of Execution	Command Name
1	clset_FJsvswstf command
2	clset_FJsvswsts command
3	clset_FJsvswsrp command

Example

The command execution example is as follows.

```
# /opt/FJsvswstf/bin/clset_FJsvswstf -f /acmdata01/etc/opt/swstorage/clsetup.ini -t
Secondary
clset_FJsvswstf completed
# /opt/FJsvswsts/bin/clset_FJsvswsts -f /acmdata01/etc/opt/swstorage/clsetup.ini -t
Secondary
clset_FJsvswsts completed
# /opt/FJsvswsrp/bin/clset_FJsvswsrp -f /acmdata01/etc/opt/swstorage/clsetup.ini -t
Secondary
clset_FJsvswsrp completed
```

- g. Unmount the shared disk.

Unmount the shared disk for shared data of AdvancedCopy Manager.

5. On the primary node, create a cluster transaction and resources.

Refer to your cluster software manuals for the procedure for creating them.

6. On the primary node, register the AdvancedCopy Manager service to your cluster software.

Set the script that was prepared in step 3-i in your cluster software so as to enable the AdvancedCopy Manager service to be started and stopped with the Managed Server transactions.

Refer to your cluster software manuals for the setup methods.

Point

To get the AdvancedCopy Manager service start command executed, configure your cluster software so that all of the following conditions are fulfilled:

In addition, the first and second conditions must be configured as a resource dependency.

- Data communication is possible with the failover IP address for AdvancedCopy Manager.
- The file system in the shared disk for shared data of AdvancedCopy Manager is mounted.
- The logical node name of the Managed Server transactions is set to the environment variable SWSTGNODE.

Example

The example of creating a generic script as the Start/Stop script for PRIMECLUSTER Cmdline resource is shown below.

```
#!/bin/sh
SWSTGNODE=acmnode1
export SWSTGNODE

case $1 in
'start')
    /opt/FJSVswstf/cluster/AgtStart
    exit 0 ;;
'stop' )
    /opt/FJSVswstf/cluster/AgtStop
    exit 0 ;;
esac
```

For register a Cmdline resource, specify "start" to the argument for the Start script, specify "stop" to the argument for the Stop script.

Register the following resources as cluster resources to the cluster transaction.

- Failover IP address for AdvancedCopy Manager
- Shared disk for shared data of AdvancedCopy Manager

In addition, register cluster resources so that the file system in the shared disk for shared data of AdvancedCopy Manager is mounted when starting the cluster transaction.

7. On the primary node, start the AdvancedCopy Manager service that has been registered to the cluster software.

8. On the primary node, back up the environment.

As a safeguard against accidental loss of data or file corruption, using the cp command etc. of OS, back up the following directories in the shared disk for shared data of AdvancedCopy Manager:

- <Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/etc
- <Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/var

The customization is completed.

Chapter 9 Installation of AdvancedCopy Manager CCM

This chapter explains how to install AdvancedCopy Manager CCM as a standalone in a clustered system.

Point

Cluster software installation and environment settings are required before installing AdvancedCopy Manager CCM. Refer to your cluster software manuals for details of cluster software installation and environment settings.

Refer to "Installation of AdvancedCopy Manager CCM" in the *ETERNUS SF Installation and Setup Guide*, and unify the installation information (installation destination directory) to install AdvancedCopy Manager CCM in all the nodes.

Note

Do not install AdvancedCopy Manager CCM on a shared disk.

Chapter 10 Preparations for Customizing CCM Server Transactions

This chapter explains the preparations that are required to customize CCM Server transactions when you have installed AdvancedCopy Manager CCM as a standalone.

If you have installed ETERNUS SF Manager, refer to "[Chapter 4 Preparations for Customizing Management Server Transactions](#)".

For installing AdvancedCopy Manager CCM, the following resources are required:

- [Shared disk for shared data](#)
- [Generic script for AdvancedCopy Manager CCM](#)
- [Access volume](#)

Each item is explained below.

Shared disk for shared data

Volume for storing shared data of AdvancedCopy Manager CCM.

With regard to such factors as reliability and update performance, it is recommended that you use a new volume created only for AdvancedCopy Manager CCM.

Refer to "Required Disk Space for Operation" in "Operating Environment for AdvancedCopy Manager CCM" in the *ETERNUS SF Installation and Setup Guide* for information on the free space required for this volume.



When you specify a shared disk for shared data, be careful about the following points:

- Define the shared disk for shared data as a shared disk of a clustered system.
- Allocate a disk that does not use AdvancedCopy Manager to carry out backup and replication.
- Allocate a disk that is not used by AdvancedCopy Manager CCM as a copy source, copy destination, or access volume.
- On the shared disk for shared data, create a file system.
- In order to be used by the file system, make the shared disk mountable.
- Use a disk that is not used as a Quorum disk. (for Windows only)

Partitions for storing shared data of AdvancedCopy Manager CCM

Prepare partitions on the shared disk for storing shared data of AdvancedCopy Manager CCM. The number of required partitions are listed below. Note that the number of partitions are required for each AdvancedCopy Manager CCM transaction.

Table 10.1 Number of Partitions Required for Each AdvancedCopy Manager CCM Transaction

Name	CCM Server Transaction
Shared disk for shared data	1
Total amount of partitions	1

Generic script for AdvancedCopy Manager CCM

This is a script for stopping the management service of AdvancedCopy Manager CCM.

Before the shared disk for shared data goes offline, the following service must be stopped:

In order to stop this service, create a generic script file that executes the `acservice stop` command with the `-lan` option. Refer to

"Command References" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for information on the command.

- Management service of ETERNUS SF AdvancedCopy Manager CCM

For Windows version WSFC

Information

As a generic script sample, the following file is stored in the *programDir*\Common\sample\cluster directory. The *programDir* is "Program Directory" specified at the AdvancedCopy Manager CCM installation.

File Name	Explanation
esfmanager-ccm.vbs	Sample file of generic script for AdvancedCopy Manager CCM

When using the above file, make sure to copy it to a different directory and use the copied file.

Below is an example of a generic script file. You can freely specify any file name, but the file extension must be ".vbs".

For *installDir* in the script, specify the directory in which AdvancedCopy Manager CCM is installed.

```
Dim WshShell
Set WshShell = CreateObject("WScript.Shell")

Function Open( )
    Open = True
End Function

Function Online( )
    Online = True
End Function

Function LooksAlive( )
    LooksAlive = True
End Function

Function IsAlive( )
    IsAlive = True
End Function

Function Offline( )
    Resource.LogInformation "--- start offline ---"
    Set oExec = WshShell.Exec("installDir\CCM\bin\acservice.exe stop -lan")
    Resource.LogInformation oExec.StdOut.ReadAll
    Resource.LogInformation oExec.StdErr.ReadAll
    Resource.LogInformation "--- end offline ---"
    Offline = True
End Function

Function Close( )
    Close = True
End Function

Function Terminate( )
    Terminate = True
End Function
```

For Solaris/Linux version PRIMECLUSTER

Information

As a generic script sample, the following file is stored in the /opt/FJSvesfcm/sample/cluster directory.

File Name	Explanation
CcmCmdline	Sample file of generic script for AdvancedCopy Manager CCM

When using the above file, make sure to copy it to a different directory and use the copied file.

The example of creating script as the Start/Stop script for PRIMECLUSTER Cmdline resource is shown below.

```
#!/bin/sh

case $1 in
'start')
    exit 0 ;;
'stop' )
    /opt/FJSVccm/bin/acservice stop -lan
    exit 0 ;;
esac
```

For register a Cmdline resource, specify "start" to the argument for the Start script, specify "stop" to the argument for the Stop script. Refer to your cluster software manuals for creating procedure of Start/Stop script.

Access volume

This is a volume for issuing Advanced Copy from the CCM Server to ETERNUS Disk storage systems. It is required for issuing Advanced Copy to ETERNUS Disk storage systems that operate with Copy command via SAN.

From among the logical volumes in the ETERNUS Disk storage system to be backed up for AdvancedCopy Manager CCM, connect one logical volume as an access volume to all nodes making up a clustered system.

- For Windows

Make the environment settings for the connected logical volume so as to allow access from all nodes making up a clustered system to the same physical disk number (Disk # displayed on the disk management screen).

- For Solaris or Linux

Make the environment settings for the connected logical volume so as to allow access from all nodes making up a clustered system to the same physical device name.



When specify a device file of ETERNUS Multipath Driver to an access volume in Solaris or Linux, setup the device file name and system. Refer to the ETERNUS Multipath Driver manual for details.

Chapter 11 Customization for CCM Server Transactions

This chapter explains how to customize CCM Server transactions.

In this document, the primary node is an active node in a cluster transaction performing CCM Server transactions, and the secondary node is the standby node in the cluster transaction.

The customization method is different depending on operating systems. Refer to "[11.1 Customization for Windows Clustered System](#)" for Windows. Refer to "[11.2 Customization for Solaris/Linux Clustered System](#)" for Solaris/Linux/HP-UX.



See

The following commands described in this chapter are AdvancedCopy Manager CCM commands. Refer to "Command References" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for information on the commands.

- acopc cancel command
- acsnap cancel command
- acec cancel command
- acservice stop command
- acarray remove command
- acutil devs command
- acarray add command

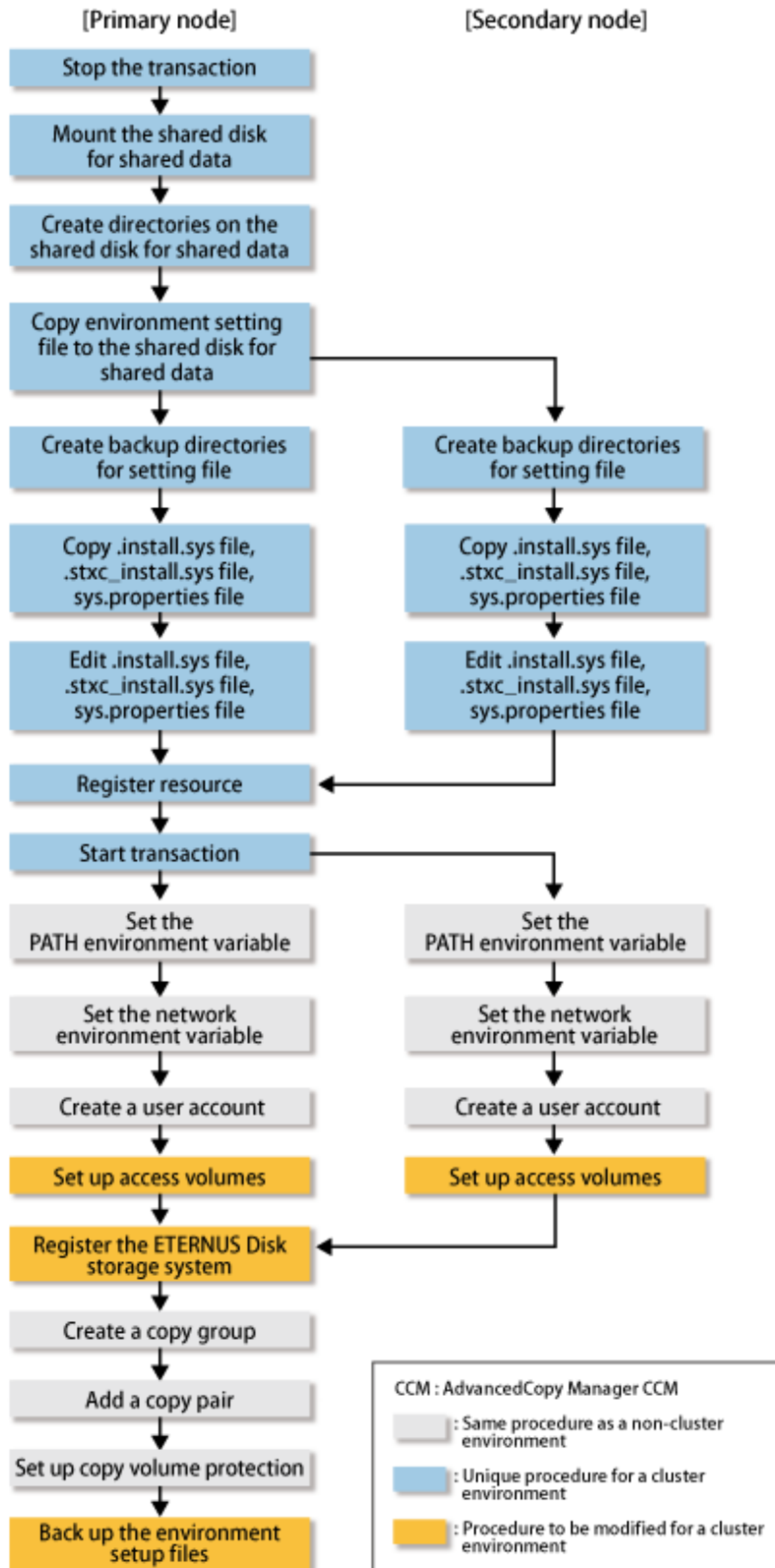
11.1 Customization for Windows Clustered System

This section explains how to customize the CCM Server transaction on the Windows clustered system.

11.1.1 Customization Flow

The following flow is the customization procedure for CCM Server transaction.

Figure 11.1 Customization Flow for Windows Clustered System



Note

- Unless instructed otherwise, do not execute any commands of AdvancedCopy Manager CCM.

- After setting up access volumes on all nodes, register the ETERNUS Disk storage system on the primary node.

11.1.2 Customization Procedure

Follow the procedure below to set up a CCM Server transaction.

1. On the primary and secondary nodes, log in as a user with Administrator privileges.

Note

- If AdvancedCopy Manager CCM is currently operating on any node in the clustered system, execute the following commands to stop all Advanced Copy processes that are being executed.
 - `acopc cancel` command
 - `acsnap cancel` command
 - `acec cancel` command
- If a management service is being executed, execute the `acservice stop` command with the `-lan` option to stop the management service.

2. Stop the CCM Server transactions.

If you are setting up CCM Server transactions within already existing cluster transactions, stop the relevant cluster transactions. Refer to your cluster software manuals for the procedure for stopping cluster transactions.

3. Mount the shared disk for shared data.

Make settings to allow access from the primary node to the file system of the shared disk for shared data.

4. Customize the primary node.

Point

The characters that can be used for the path name of `storeDirForCcmData` described in the following steps are alphanumeric characters excluding space character. The specifiable length of the path name is 76 characters or less including the drive name.

The `storeDirForCcmData` is a stored directory for the AdvancedCopy Manager CCM "Environment Directory" and "Working Directory" that exists in the shared disk for shared data.

- a. In the AdvancedCopy Manager program directory on the primary node, store the generic script file that you created in "[Chapter 10 Preparations for Customizing CCM Server Transactions](#)".

- b. Set the access privilege for the stored generic script file.

Execute the following command by specifying the stored generic script file in `fileName`.

```
>cacls fileName /P "NT AUTHORITY\SYSTEM:F" "BUILTIN\Administrators:F"
```

- c. Create directories on the shared disk.

On the primary node, create the following directories on the shared disk:

- `storeDirForCcmData\etc`
- `storeDirForCcmData\var`

- d. Copy AdvancedCopy Manager CCM environment setup files to the shared disk for shared data.

On the primary node, copy files in the following copy source directory to the copy destination directory.

The `envDir` is "Environment Directory" specified at the AdvancedCopy Manager CCM installation, and the `workDir` is "Working Directory".

Copy Source Directory	Copy Destination Directory
<i>envDir</i> \ACCM\etc	<i>storeDirForCcmData</i> \etc
<i>workDir</i> \ACCM\var	<i>storeDirForCcmData</i> \var

- e. Create backup directories for AdvancedCopy Manager CCM environment setup files.

On the primary node, create the following directories:

The *programDir* is "Program Directory" specified at the AdvancedCopy Manager CCM installation.

- *programDir*\ACCM\noncluster\bin
- *programDir*\ACCM\noncluster\micc\sys
- *programDir*\ACCM\noncluster\sys

- f. Back up AdvancedCopy Manager CCM environment setup files.

On the primary node, copy the following files to the copy destination.

Copy Source File	Copy Destination File
<i>programDir</i> \ACCM\micc\sys\install.sys	<i>programDir</i> \ACCM\noncluster\micc\sys\install.sys
<i>programDir</i> \ACCM\bin\stxc_install.sys	<i>programDir</i> \ACCM\noncluster\bin\stxc_install.sys
<i>programDir</i> \ACCM\sys\sys.properties	<i>programDir</i> \ACCM\noncluster\sys\sys.properties

Note

The copied files are required for "[Chapter 15 Deletion of Cluster Environment for CCM Server Transactions](#)".

- g. Edit AdvancedCopy Manager CCM environment setup files.

On the primary node, edit the path name from *1 to *4 of files below:

[*programDir*\ACCM\micc\sys\install.sys file]

```
stxs_optdir= (Do not modify these settings!)
stxs_etcdir= (Do not modify these settings!)
stxs_var*1dir=*1
stxs_jredir= (Do not modify these settings!)
```

[*programDir*\ACCM\bin\stxc_install.sys file]

```
stxc_optdir= (Do not modify these settings!)
stxc_etcdir=*2
stxc_jredir= (Do not modify these settings!)
```

[*programDir*\ACCM\sys\sys.properties file]

```
com.fujitsu.eternussf.acm.ccm.optpath= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.etcpath=*3
com.fujitsu.eternussf.acm.ccm.var*4path=*4
com.fujitsu.eternussf.acm.ccm.micc.path= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.grapi.path= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.language= (Do not modify these settings!)
```

Note

- In *3 and *4, use "\:" as a drive separate character.
- In *3 and *4, use "\\\" as a path separate character of *storeDirForCcmData*.

The setting values from *1 to *4 are as follows.
 The sample setting values use "G:\ccmdata" for *storeDirForCcmData*.

Setting Item	Setting Value	Sample Setting
*1	<i>storeDirForCcmData\var\micc</i>	G:\ccmdata\var\micc
*2	<i>storeDirForCcmData\etc</i>	G:\ccmdata\etc
*3	<i>storeDirForCcmData\etc\</i>	G:\ccmdata\etc\
*4	<i>storeDirForCcmData\var\</i>	G:\ccmdata\var\

5. Customize the secondary node.

a. In the AdvancedCopy Manager program directory on the secondary node, store the generic script file that you created in "[Chapter 10 Preparations for Customizing CCM Server Transactions](#)".

b. Set the access privilege for the stored generic script file.

Execute the following command by specifying the stored generic script file in *fileName*.

```
>cacls fileName /P "NT AUTHORITY\SYSTEM:F" "BUILTIN\Administrators:F"
```

c. Create backup directories for AdvancedCopy Manager CCM environment setup files.

On the secondary node, create the following directories:

The *programDir* is "Program Directory" specified at the AdvancedCopy Manager CCM installation.

- *programDir\ACCM\noncluster\bin*
- *programDir\ACCM\noncluster\micc\sys*
- *programDir\ACCM\noncluster\sys*

d. Back up AdvancedCopy Manager CCM environment setup files.

On the secondary node, copy the following files to the copy destination.

Copy Source File	Copy Destination File
<i>programDir\ACCM\micc\sys\install.sys</i>	<i>programDir\ACCM\noncluster\micc\sys\install.sys</i>
<i>programDir\ACCM\bin\stxc_install.sys</i>	<i>programDir\ACCM\noncluster\bin\stxc_install.sys</i>
<i>programDir\ACCM\sys\sys.properties</i>	<i>programDir\ACCM\noncluster\sys\sys.properties</i>



Note

The copied files are required for "[Chapter 15 Deletion of Cluster Environment for CCM Server Transactions](#)".

e. Edit AdvancedCopy Manager CCM environment setup files.

On the secondary node, edit the path name from *1 to *4 of files below:

[*programDir\ACCM\micc\sys\install.sys* file]

```
stxs_optdir= (Do not modify these settings!)
stxs_etcdir= (Do not modify these settings!)
stxs_varDir=*1
stxs_jredir= (Do not modify these settings!)
```

[*programDir\ACCM\bin\stxc_install.sys* file]

```
stxc_optdir= (Do not modify these settings!)
stxc_etcdir=*2
stxc_jredir= (Do not modify these settings!)
```

[*programDir\CCM\sys\sys.properties* file]

```
com.fujitsu.eternussf.acm.ccm.optpath= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.etcpath=*3
com.fujitsu.eternussf.acm.ccm.varpath=*4
com.fujitsu.eternussf.acm.ccm.micc.path= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.grapi.path= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.language= (Do not modify these settings!)
```

Note

- In *3 and *4, use "\" as a drive separate character.
- In *3 and *4, use "\\\" as a path separate character of *storeDirForCcmData*.

The setting values from *1 to *4 are as follows.

The sample setting values use "G:\ccmdata" for *storeDirForCcmData*.

Setting Item	Setting Value	Sample Setting
*1	<i>storeDirForCcmData\var\micc</i>	G:\ccmdata\var\micc
*2	<i>storeDirForCcmData\etc</i>	G:\ccmdata\etc
*3	<i>storeDirForCcmData\etc\</i>	G:\ccmdata\etc\
*4	<i>storeDirForCcmData\var\</i>	G:\ccmdata\var\

6. On the primary node, register the resources in the CCM Server transactions.

The resources required for CCM Server transactions are as follows:

Refer to "[Chapter 10 Preparations for Customizing CCM Server Transactions](#)" for details.

- Shared disk for shared data
- Generic script for AdvancedCopy Manager CCM

Refer to your cluster software manuals for the procedure for registering resources in CCM Server transactions.

Note

Set the dependencies of the shared disk for shared data in such a way that the generic script for AdvancedCopy Manager CCM is executed after the shared disk for shared data has been mounted.

7. On the primary node, start the CCM Server transactions.

8. Set the environment variable PATH.

Add the bin directory of AdvancedCopy Manager CCM to the environment variable PATH.

Refer to "Setting Environment Variable PATH" in "Setup of AdvancedCopy Manager CCM" in the *ETERNUS SF Installation and Setup Guide* for details.

9. Set up the network environment.

Refer to "Configuring Network Environment" in "Setup of AdvancedCopy Manager CCM" in the *ETERNUS SF Installation and Setup Guide* for details.

10. Create a user account.

Create a user account for using AdvancedCopy Manager CCM.

Refer to "Creating User Account for Using AdvancedCopy Manager CCM" in the *ETERNUS SF Installation and Setup Guide* for details.

11. Set up access volumes on all nodes that are constructing the clustered system.

Refer to "Chapter 10 Preparations for Customizing CCM Server Transactions" and to "Access Volume Settings" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

12. Register the ETERNUS Disk storage system.

Follow below procedure to register the ETERNUS Disk storage system.

If an ETERNUS Disk storage system is already registered, after deleting the existing registration by executing the `acarray remove` command, register it again according to the following procedure:

- a. Execute the `acutil devs` command and check the output results. From the Box ID (BOX-ID) and the logical volume number (LV No) of the ETERNUS Disk storage system, identify the access volume to be used and check the Device value.

```
> acutil devs
Device          BOX-ID          LV No Size
-----
PHYSICALDRIVE4 00E8000M9#####E890S20A####KO4070639003## 0x61 1048576
PHYSICALDRIVE5 00E8000M9#####E890S20A####KO4070639003## 0x62 1048576
PHYSICALDRIVE6 00E8000M9#####E890S20A####KO4070639003## 0x63 1048576
```

- b. Specify the Device value you checked in the a) above to `deviceValue`, and execute the `acarray add` command to register the ETERNUS Disk storage system.

```
>acarray add -a diskArrayName -ip ipAddress -user userName -password password -path
deviceValue
```

Example

If, for the access volume to be used, the BOX-ID is "00E8000M9#####E890S20A####KO4070639003##" and the LV No is "0x61", specify it as follows.

```
> acarray add -a E8000 -ip 192.0.2.10 -user **** -password **** -path PHYSICALDRIVE4
Successful completion.
```

Note

- Use the same access volume for all nodes in the clustered system.
- If you use an access volume, when you register the ETERNUS Disk storage system, execute the `acarray add` command with the `-path` option specified.

13. Create a copy group.

Refer to "Creating Copy Groups" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

14. Add a copy pair.

Add a copy pair to the newly created copy group.

Refer to "Adding Copy Pairs" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

15. Set up copy volume protection.

In order to prevent destruction of the volume by any mistakes in operation, you can set the volume protection function on the transaction volume.

Refer to "Setting Copy Volume Protection" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

16. Back up the environment setup files for the CCM Server transactions.

To be prepared for unexpected situations, back up the environment setup files. Refer to "Backing Up Environment Settings Files" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for the files to be backed up.

The customization is completed.

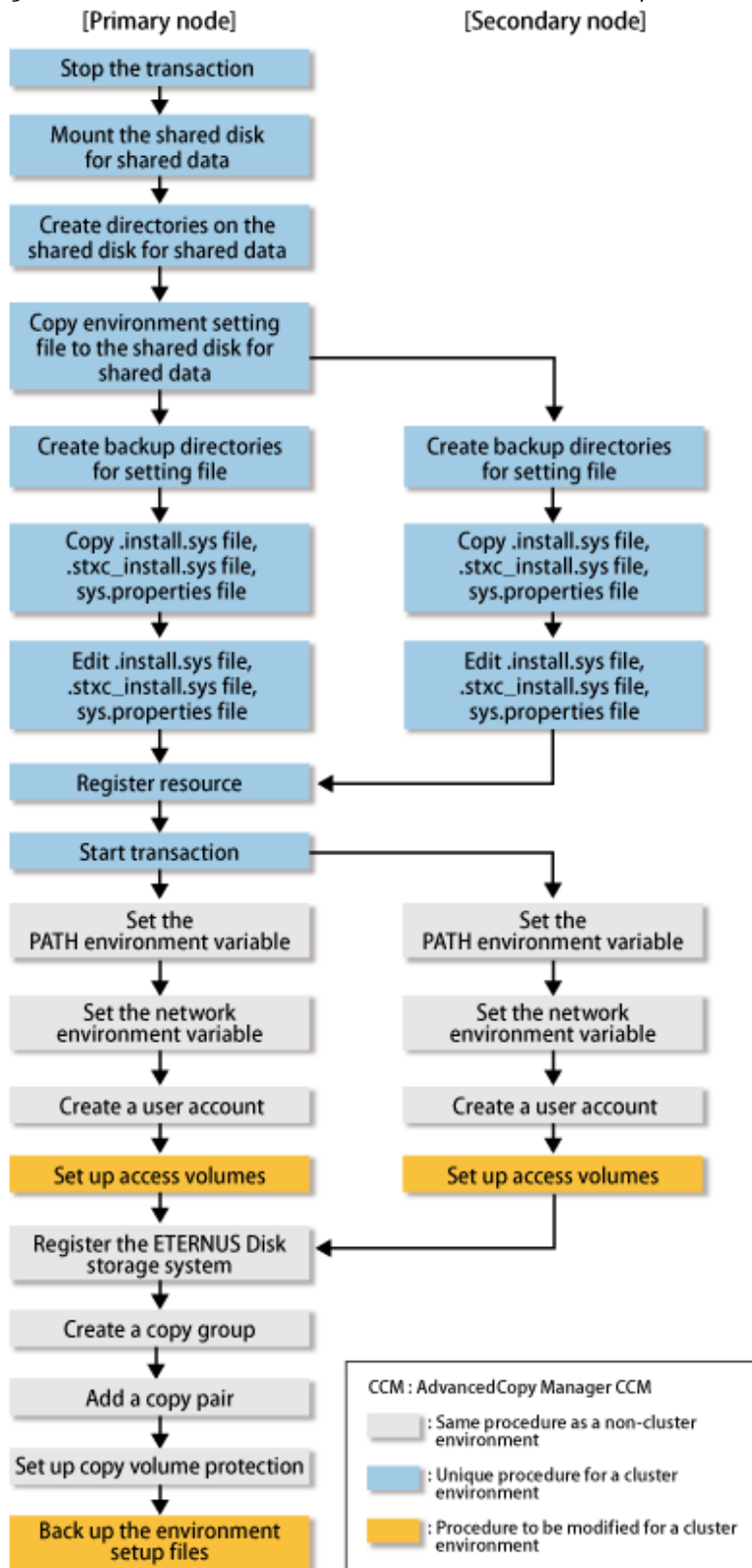
11.2 Customization for Solaris/Linux Clustered System

This section explains how to customize the CCM Server transaction on the Solaris/Linux clustered system.

11.2.1 Customization Flow

The following flow is the customization procedure for CCM Server transaction.

Figure 11.2 Customization Flow for Solaris/Linux Clustered System



Note

- Unless instructed otherwise, do not execute any commands of AdvancedCopy Manager CCM.

- After setting up access volumes on all nodes, register the ETERNUS Disk storage system on the primary node.

11.2.2 Customization Procedure

Follow the procedure below to set up a CCM Server transaction.

1. Log in to the primary and secondary nodes. Perform the operation after logging in as a root user.

Note

- If AdvancedCopy Manager CCM is currently operating on any node in the clustered system, execute the following commands to stop all Advanced Copy processes that are being executed.
 - `acopc cancel` command
 - `acsnap cancel` command
 - `acec cancel` command
- If a management service is being executed, execute the `acservice stop` command with the `-lan` option to stop the management service.

2. Stop the CCM Server transactions.

If you are setting up CCM Server transactions within already existing cluster transactions, stop the relevant cluster transactions. Refer to your cluster software manuals for the procedure for stopping cluster transactions.

3. Mount the shared disk for shared data.

Make settings to allow access from the primary node to the file system of the shared disk for shared data.

4. Customize the primary node.

Point

The characters that are used for the path name of *<Mountpoint-of-shared-disk-for-shared-data>* described in the following steps are alphanumeric characters excluding space character. The specifiable length of the path name is 70 characters or less.

- a. In the AdvancedCopy Manager program directory on the primary node, store the generic script file that you created in "[Chapter 10 Preparations for Customizing CCM Server Transactions](#)".
- b. Set the access privilege for the stored generic script file.
Specify the authority that the root (super user) can access.
- c. Create directories on the shared disk.

On the primary node, create the following directories on the shared disk:

- `<Mountpoint-of-shared-disk-for-shared-data>/etc/opt/FJSVccm`
- `<Mountpoint-of-shared-disk-for-shared-data>/var/opt/FJSVccm`

Point

- Set "root (super user)" to the directory owner.
- Set "755" to the directory permissions.

Example

The example of creating directories when *<Mountpoint-of-shared-disk-for-shared-data>* is "Iesfmnt" is as follows.

```
# mkdir -p /esfmnt/etc/opt/FJSVccm
# chmod -R 755 /esfmnt/etc/opt/FJSVccm
# chown -R root:root /esfmnt/etc/opt/FJSVccm
# mkdir -p /esfmnt/var/opt/FJSVccm
# chmod -R 755 /esfmnt/var/opt/FJSVccm
# chown -R root:root /esfmnt/var/opt/FJSVccm
```

d. Copy AdvancedCopy Manager CCM environment setup files to the shared disk for shared data.

On the primary node, copy files in the following copy source directory to the copy destination directory.

Copy Source Directory	Copy Destination Directory
/etc/opt/FJSVccm	<Mountpoint-of-shared-disk-for-shared-data>/etc/opt/FJSVccm
/var/opt/FJSVccm	<Mountpoint-of-shared-disk-for-shared-data>/var/opt/FJSVccm

Point

Specify the owner, the access privilege of the copy destination files and directories the same as the copy source.

Example

The example of copying files when <Mountpoint-of-shared-disk-for-shared-data> is "/esfmnt" is as follows.

```
# cp -Rp /etc/opt/FJSVccm/* /esfmnt/etc/opt/FJSVccm
# cp -Rp /var/opt/FJSVccm/* /esfmnt/var/opt/FJSVccm
```

e. Create backup directories for AdvancedCopy Manager CCM environment setup files.

On the primary node, create the following directories:

- /opt/FJSVccm/noncluster/bin
- /opt/FJSVccm/noncluster/micc/sys
- /opt/FJSVccm/noncluster/sys

Point

- Set "root (super user)" to the directory owner.
- Set "755" to the directory permissions.

Example

The example of creating directories is as follows.

```
# mkdir -p /opt/FJSVccm/noncluster/bin
# chmod -R 755 /opt/FJSVccm/noncluster/bin
# chown -R root:root /opt/FJSVccm/noncluster/bin
# mkdir -p /opt/FJSVccm/noncluster/micc/sys
# chmod -R 755 /opt/FJSVccm/noncluster/micc/sys
# chown -R root:root /opt/FJSVccm/noncluster/micc/sys
# mkdir -p /opt/FJSVccm/noncluster/sys
# chmod -R 755 /opt/FJSVccm/noncluster/sys
# chown -R root:root /opt/FJSVccm/noncluster/sys
```


- f. Back up AdvancedCopy Manager CCM environment setup files.

On the primary node, copy the following files to the copy destination.

Copy Source File	Copy Destination File
/opt/FJSVccm/micc/sys/.install.sys	/opt/FJSVccm/noncluster/micc/sys/.install.sys
/opt/FJSVccm/bin/.stxc_install.sys	/opt/FJSVccm/noncluster/bin/.stxc_install.sys
/opt/FJSVccm/sys/sys.properties	/opt/FJSVccm/noncluster/sys/sys.properties

Example

The copy execution example is as follows.

```
# cp -p /opt/FJSVccm/micc/sys/.install.sys /opt/FJSVccm/noncluster/micc/sys/.install.sys
# cp -p /opt/FJSVccm/bin/.stxc_install.sys /opt/FJSVccm/noncluster/bin/.stxc_install.sys
# cp -p /opt/FJSVccm/sys/sys.properties /opt/FJSVccm/noncluster/sys/sys.properties
```

Note

The copied files are required for "[Chapter 15 Deletion of Cluster Environment for CCM Server Transactions](#)".

- g. Edit AdvancedCopy Manager CCM environment setup files.

On the primary node, edit the path name from *1 to *4 of files below:

[/opt/FJSVccm/micc/sys/.install.sys file]

```
stxs_optdir= (Do not modify these settings!)
stxs_etcdir= (Do not modify these settings!)
stxs_varpath=*1
stxs_jredir= (Do not modify these settings!)
```

[/opt/FJSVccm/bin/.stxc_install.sys file]

```
stxc_optdir= (Do not modify these settings!)
stxc_etcdir=*2
stxc_jredir= (Do not modify these settings!)
```

[/opt/FJSVccm/sys/sys.properties file]

```
com.fujitsu.eternussf.acm.ccm.optpath= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.etcpath=*3
com.fujitsu.eternussf.acm.ccm.varpath=*4
com.fujitsu.eternussf.acm.ccm.micc.path= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.grapi.path= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.language= (Do not modify these settings!)
```

The setting values from *1 to *4 are as follows.

The sample setting values use "/esfmnt" for <Mountpoint-of-shared-disk-for-shared-data>.

Setting Item	Setting Value	Sample Setting
*1	<Mountpoint-of-shared-disk-for-shared-data>/var/opt/FJSVccm/micc	/esfmnt/var/opt/FJSVccm/micc
*2	<Mountpoint-of-shared-disk-for-shared-data>/etc/opt/FJSVccm/acc/etc	/esfmnt/etc/opt/FJSVccm/acc/etc

Setting Item	Setting Value	Sample Setting
*3	<Mountpoint-of-shared-disk-for-shared-data>/etc/opt/FJSVccm/	/esfmnt/etc/opt/FJSVccm/
*4	<Mountpoint-of-shared-disk-for-shared-data>/var/opt/FJSVccm/	/esfmnt/var/opt/FJSVccm/

5. Customize the secondary node.

- In the AdvancedCopy Manager program directory on the secondary node, store the generic script file that you created in "[Chapter 10 Preparations for Customizing CCM Server Transactions](#)".
- Set the access privilege for the stored generic script file.
Specify the authority that the root (super user) can access.
- Create backup directories for AdvancedCopy Manager CCM environment setup files.

On the secondary node, create the following directories:

- /opt/FJSVccm/noncluster/bin
- /opt/FJSVccm/noncluster/micc/sys
- /opt/FJSVccm/noncluster/sys

 **Point**

- Set "root (super user)" to the directory owner.
- Set "755" to the directory permissions.

 **Example**

The example of creating directories is as follows.

```
# mkdir -p /opt/FJSVccm/noncluster/bin
# chmod -R 755 /opt/FJSVccm/noncluster/bin
# chown -R root:root /opt/FJSVccm/noncluster/bin
# mkdir -p /opt/FJSVccm/noncluster/micc/sys
# chmod -R 755 /opt/FJSVccm/noncluster/micc/sys
# chown -R root:root /opt/FJSVccm/noncluster/micc/sys
# mkdir -p /opt/FJSVccm/noncluster/sys
# chmod -R 755 /opt/FJSVccm/noncluster/sys
# chown -R root:root /opt/FJSVccm/noncluster/sys
```

- Back up AdvancedCopy Manager CCM environment setup files.

On the secondary node, copy the following files to the copy destination.

Copy Source File	Copy Destination File
/opt/FJSVccm/micc/sys/install.sys	/opt/FJSVccm/noncluster/micc/sys/install.sys
/opt/FJSVccm/bin/stxc_install.sys	/opt/FJSVccm/noncluster/bin/stxc_install.sys
/opt/FJSVccm/sys/sys.properties	/opt/FJSVccm/noncluster/sys/sys.properties

 **Example**

The copy execution example is as follows.

```
# cp -p /opt/FJSVccm/micc/sys/.install.sys /opt/FJSVccm/noncluster/micc/sys/.install.sys
# cp -p /opt/FJSVccm/bin/.stxc_install.sys /opt/FJSVccm/noncluster/bin/.stxc_install.sys
# cp -p /opt/FJSVccm/sys/sys.properties /opt/FJSVccm/noncluster/sys/sys.properties
```

 **Note**

The copied files are required for "[Chapter 15 Deletion of Cluster Environment for CCM Server Transactions](#)".

- e. Edit AdvancedCopy Manager CCM environment setup files.

On the secondary node, edit the path name from *1 to *4 of files below:

[/opt/FJSVccm/micc/sys/.install.sys file]

```
stxs_optdir= (Do not modify these settings!)
stxs_etcdir= (Do not modify these settings!)
stxs_varidir=*1
stxs_jredir= (Do not modify these settings!)
```

[/opt/FJSVccm/bin/.stxc_install.sys file]

```
stxc_optdir= (Do not modify these settings!)
stxc_etcdir=*2
stxc_jredir= (Do not modify these settings!)
```

[/opt/FJSVccm/sys/sys.properties file]

```
com.fujitsu.eternussf.acm.ccm.optpath= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.etcpath=*3
com.fujitsu.eternussf.acm.ccm.varpath=*4
com.fujitsu.eternussf.acm.ccm.micc.path= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.grapi.path= (Do not modify these settings!)
com.fujitsu.eternussf.acm.ccm.language= (Do not modify these settings!)
```

The setting values from *1 to *4 are as follows.

The sample setting values use "esfmnt" for <Mountpoint-of-shared-disk-for-shared-data>.

Setting Item	Setting Value	Sample Setting
*1	<Mountpoint-of-shared-disk-for-shared-data>/var/opt/FJSVccm/micc	/esfmnt/var/opt/FJSVccm/micc
*2	<Mountpoint-of-shared-disk-for-shared-data>/etc/opt/FJSVccm/accd/etc	/esfmnt/etc/opt/FJSVccm/accd/etc
*3	<Mountpoint-of-shared-disk-for-shared-data>/etc/opt/FJSVccm/	/esfmnt/etc/opt/FJSVccm/
*4	<Mountpoint-of-shared-disk-for-shared-data>/var/opt/FJSVccm/	/esfmnt/var/opt/FJSVccm/

- 6. On the primary node, register the resources in the CCM Server transactions.

The resources required for CCM Server transactions are as follows:

Refer to "[Chapter 10 Preparations for Customizing CCM Server Transactions](#)" for details.

- Shared disk for shared data
- Generic script for AdvancedCopy Manager CCM

Refer to your cluster software manuals for the procedure for registering resources in CCM Server transactions.

Note

Set the dependencies of the shared disk for shared data in such a way that the generic script for AdvancedCopy Manager CCM is executed after the shared disk for shared data has been mounted.

7. On the primary node, start the CCM Server transactions.

8. Set the environment variable PATH.

Add the bin directory of AdvancedCopy Manager CCM to the environment variable PATH.

Refer to "Setting Environment Variable PATH" in "Setup of AdvancedCopy Manager CCM" in the *ETERNUS SF Installation and Setup Guide* for details.

9. Set up the network environment.

Refer to "Configuring Network Environment" in "Setup of AdvancedCopy Manager CCM" in the *ETERNUS SF Installation and Setup Guide* for details.

10. Create a user account.

Create a user account for using AdvancedCopy Manager CCM.

Refer to "Creating User Account for Using AdvancedCopy Manager CCM" in the *ETERNUS SF Installation and Setup Guide* for details.

11. Set up access volumes on all nodes that are constructing the clustered system.

Refer to "[Chapter 10 Preparations for Customizing CCM Server Transactions](#)" and to "Access Volume Settings" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

12. Register the ETERNUS Disk storage system.

Refer to "Registering ETERNUS Disk Storage System" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

Point

- Use the same access volume for all nodes in the clustered system.
- If you use an access volume, when you register the ETERNUS Disk storage system, execute the `acarray add` command with the `-path` option specified.

13. Create a copy group.

Refer to "Creating Copy Groups" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

14. Add a copy pair.

Add a copy pair to the newly created copy group.

Refer to "Adding Copy Pairs" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

15. Set up copy volume protection.

In order to prevent destruction of the volume by any mistakes in operation, you can set the volume protection function on the transaction volume.

Refer to "Setting Copy Volume Protection" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

16. Back up the environment setup files for the CCM Server transactions.

To be prepared for unexpected situations, back up the environment setup files. Refer to "Backing Up Environment Settings Files" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for the files to be backed up.

The customization is completed.

Chapter 12 Changing Operational Environment

This chapter explains how to change the environment for ETERNUS SF Manager when it is being operated in a clustered system.

12.1 Changing Operational Environment for Windows Clustered System

12.1.1 Changing IP Address for Management Server Transactions

Follow the procedure below to change (including addition and deletion) the IP address for Management Server transactions.

1. Stop the Management Server transaction.
Refer to your cluster software manuals for information on how to stop the transaction.
2. Change the IP address resource.
Refer to your cluster software manuals for information on how to change the IP address resource.
3. Check the operational status of the Management Server transaction. If the transaction is stopped, start up the Management Server transaction.
Refer to your cluster software manuals for information on how to start up the transaction.
4. Create the server information change instruction file in a node in which the Management Server transaction is operating.
Execute the `stgxfwcmmodsrv` command with the `-f` option specified to change the IP address.
When using the replication management function, execute the `swsrprecoverres` command with the `-r` option and the `-h` option on the Management Server. Specify the server name of the Managed Server running the replication operation with the `-h` option. Refer to "Command References" in the *ETERNUS SF Advanced Copy Manager Operation Guide (for Windows)* for information on the commands.
5. Edit the detailed setting file of the storage management.
Refer to step 4 in "5.1.1.4 Configuring of Environment Setup Files and Registry" for information on how to edit the detailed setting file.
6. Refer to "Change Server Information" in the *ETERNUS SF Web Console Guide* to change the IP address information.
7. Set the SNMP Trap transmission place for each managed device again.
Execute the `sanadm chtraprcvip` command to set the SNMP Trap transmission place for each managed device again. Refer to "Command References" in the *ETERNUS SF Storage Cruiser Operation Guide* for information on the command.



Note

When you change/delete the IP version of the Management Server, perform the following procedures to the Managed Server registered by the IP version before it changes/deletes.

- For changing IP version (from IPv4 to IPv6, or from IPv6 to IPv4)
 1. Delete the target Managed Server.
 2. Change the Management Server IP address with the above procedures.
 3. Re-register the target Managed Server with the changed IP version.
- For deleting IP version (from IPv4/IPv6 to IPv6 only, or from IPv4/IPv6 to IPv4 only)
 1. Change the target Managed Server IP address to the changed IP version.
 2. Change the Management Server IP address with the above procedures.

12.1.2 Changing Port Number for Management Server Transactions

Follow the procedure below to change the port number for Management Server transactions.

1. Stop the Management Server transaction.
Refer to your cluster software manuals for how to stop the transaction.
2. Change the port number.
 - For changing the port number of AdvancedCopy Manager transaction communication service:
In the primary and secondary nodes for Management Server transactions, change the following port number which was set to the %SystemRoot%\system32\drivers\etc\services file.
 - AdvancedCopy Manager transaction communication service (stgxfws_logicalNodeName)
 - For changing the port number used by the ETERNUS SF Manager:
Perform the steps 1 to 4 in "Changing Port Numbers Used in Express" in "Changing Port Numbers (Windows)" in the *ETERNUS SF Express Operation Guide*.
The httpd.conf file described in step 4 exists in the shared disk. Therefore, edit the httpd.conf file either the primary or secondary node.
 - For changing the port number used by the Web Console:
Perform the steps 2 to 4 in "Changing Port Numbers Used in Web Console" in "Changing Port Numbers (Windows)" in the *ETERNUS SF Express Operation Guide*.
The server.xml, httpd.conf, and postgresql.conf files exist in the shared disk. Therefore, edit their files either the primary or secondary node.
3. Start up the Management Server transaction.
Refer to your cluster software manuals for information on how to start up the transaction.
4. If you have changed the port number of AdvancedCopy Manager transaction communication service in step 2, create the change instruction file for the server information in a node in which the Management Server transaction is running.
Execute the stgxfwcmmodsrv command with the -f option specified to change the port number.
When using the replication management function, execute the swsrprecoveres command with the -r option and the -h option on the Management Server. Specify the server name of the Managed Server running the replication operation with the -h option. Refer to "Command References" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Windows)* for information on the commands.
5. Perform the following procedures using the Web Console to reload the server configuration information.
 - a. On the global navigation tab, click **Server**.
The registered server list is displayed on the Main pane.
 - b. On the Main pane, check the target server checkbox.
 - c. On the Action pane, click **Reload Conf.** under **Server**.

12.1.3 Changing Server Name for AdvancedCopy Manager for Management Server Transactions

Follow the procedure below to change the server name for the AdvancedCopy Manager for the Management Server.

1. Create the server information change instruction file in a node in which the Management Server transactions is operating.
Execute the stgxfwcmmodsrv command with the -f option specified to change the server name.
When using the replication management function, execute the swsrprecoveres command with the -r option and the -h option on the Management Server. Specify the server name of the Managed Server running the replication operation with the -h option. Refer to "Command References" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Windows)* for information on the commands.
2. Perform the following procedures using the Web Console to reload the server configuration information.
 - a. On the global navigation tab, click **Server**.
The registered server list is displayed on the Main pane.
 - b. On the Main pane, check the target server checkbox.
 - c. On the Action pane, click **Reload Conf.** under **Server**.

12.1.4 Changing Logical Node Name

Follow the procedure below to change the logical node name for a Management Server transaction.

1. Check the operational status of the Management Server transaction for which you wish to change the logical node name. If the transaction is stopped, start up the Management Server transaction.
Refer to your cluster software manuals for information on how to start up the transaction.
2. Check to see if the Management Server transaction for which you wish to change the logical node name is also serving as a Managed Server transaction for AdvancedCopy Manager. If it also serves as a Managed Server transaction, go to step 3. If it does not, go to step 4.

3. Delete the environment for the Managed Server transaction.

If using the AdvancedCopy Manager backup management function, delete the transaction volumes and backup volumes.
Refer to "Deleting Device" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Windows)* for information on how to delete the environment.

If you have defined a copy source or copy destination volume with the AdvancedCopy Manager replication management function, delete the copy source/destination volume settings.

Refer to "Deleting Source Volume or Replica Volume" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Windows)* for information on how to delete the settings.

4. Back up the data for AdvancedCopy Manager.

Back up the following data.

- Repository Data

Refer to "Backup of Common Control and AdvancedCopy Manager Repository" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Windows)* for information on how to back up the data.

If the Management Server transaction also serves as a Managed Server transaction, back up the following data as well.

- Backup/Restore Pre- and Post-Processing Scripts
- Replication Pre- and Post-Processing Scripts
- Locking Specification Files

Back up the following locking specification files if they are being used.

- Transaction Volume Locking Specification File for Backup - Backup Volume Locking Specification File for Backup
- Restore Destination Volume Locking Specification File
- Copy Source Volume Locking Specification File
- Copy Destination Volume Locking Specification File

If the server is a management information package backup server for AdvancedCopy Manager, back up the following data as well.

- Policy file for package backup of management information

Refer to "Preliminaries" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Windows)* for the file path of the policy file.

5. Back up the environment setting data for the AdvancedCopy Manager CCM.

Refer to "Backing Up Environment Settings Files" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

6. Delete the cluster environment for the Management Server transaction for which you wish to change the logical node name.
Refer to "[Chapter 13 Deletion of Cluster Environment for Management Server Transactions](#)" for information on how to delete the environment.

7. Specify the new logical node name and create the cluster environment for the Management Server transaction.

Refer to "[Chapter 5 Customization for Management Server Transaction](#)" for information on how to create the environment.



Note

Input the new logical volume name for the input item for the logical node name in the AdvancedCopy Manager's cluster setup command.

8. Start up the created Management Server transaction.
Refer to your cluster software manuals for information on how to start up the transaction.
9. Restore the AdvancedCopy Manager data.
Restore the following data.
 - Repository Data
Refer to "Restore of Common Control and AdvancedCopy Manager Repository" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Windows)* for information on how to restore the data.If, in the Management Server transaction, it also serves as a Managed Server transaction for AdvancedCopy Manager, restore the following data as well.
 - Pre- and Post-Processing Scripts for Backup Management and Replication Management
 - Locking Specification Files
If you backed up the locking specification files in step 4, restore those backed up files.If the server is a management information package backup server for AdvancedCopy Manager, restore the following data as well.
 - Policy File for Package Backup of Management Information
Refer to "Preliminaries" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Windows)* for the file path of the policy file.
10. Restore the environment setting data for AdvancedCopy Manager CCM.
Refer to "Restoring Environment Settings Files" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for information on how to restore the data.
11. Change the server name.
Refer to "Changing Server Name of Management Server Transaction or Managed Server Transaction" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Windows)* for information on how to change the server name.
12. If using the AdvancedCopy Manager backup management function or replication management function, rebuild the environment for the various functions.

If using the backup management function, perform the procedures from the section "Configuring Environment for Backup Operation Server" and onwards in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Windows)*.
If using the replication management function, perform the procedures from the section "Configuring Source Volume and Replica Volume" and onwards in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Windows)*.
13. To execute a package backup of management information for the AdvancedCopy Manager, register it as a management information package backup server.
Refer to "stgmgrinfo set (Management Information Package Backup Server Registration/Deletion Command)" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Windows)* for information on how to perform the registration.

12.2 Changing Operational Environment for Solaris/Linux Clustered System

12.2.1 Changing IP Address for Management Server Transactions

Follow the procedure below to change (including addition and deletion) the IP address for the Management Server transactions.

1. Stop the Management Server transaction.
Refer to your cluster software manuals for information on how to stop the transaction.

2. Change the IP address resource.
Refer to your cluster software manuals for information on how to change the IP address resource.
3. Check the operational status for the Management Server transaction. If the transaction is stopped, start up the Management Server transaction.
Refer to your cluster software manuals for information on how to start up the transaction.
4. Create the server information change instruction file in a node in which the Management Server transaction is operating.
Execute the `stgxfwcmmodsrv` command with the `-f` option specified to change the IP address.
When using the replication management function, execute the `swsrprecoverres` command with the `-r` option and the `-h` option on the Management Server. Specify the server name of the Managed Server running the replication operation with the `-h` option.
Refer to "Command References" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Solaris or Linux)* for information on the commands.
5. Edit the detailed setting file of the storage management.
Refer to step 5 in "5.2.1.6 Execution of Cluster Setup Command" for information on how to edit the detailed setting file.
6. Refer to "Change Server Information" in the *ETERNUS SF Web Console Guide* to change the IP address information.
7. Set the SNMP Trap transmission place for each managed device again.
Execute the `sanadm chtraprcvip` command to set the SNMP Trap transmission place for each managed device again. Refer to "Command References" in the *ETERNUS SF Storage Cruiser Operation Guide* for information on the command.



Note

When you change/delete the IP version of the Management Server, perform the following procedures to the Managed Server registered by the IP version before it changes/deletes.

- For changing IP version (from IPv4 to IPv6, or from IPv6 to IPv4)
 1. Delete the target Managed Server.
 2. Change the Management Server IP address with the above procedures.
 3. Re-register the target Managed Server with the changed IP version.
- For deleting IP version (from IPv4/IPv6 to IPv6 only, or from IPv4/IPv6 to IPv4 only)
 1. Change the target Managed Server IP address to the changed IP version.
 2. Change the Management Server IP address with the above procedures.

12.2.2 Changing Port Number for Management Server Transactions

Follow the procedure below to change the port number for the Management Server transactions.

1. Stop the Management Server transaction.
Refer to your cluster software manuals for information on how to stop the transaction.
2. Change the port number.
 - For changing the port number of AdvancedCopy Manager transaction communication daemon:
In the primary and secondary nodes for the Management Server transactions, change the following port number which is set to `/etc/services`.
 - AdvancedCopy Manager transaction communication daemon (`stgxfws_logicalNodeName`)
 - For changing the port number used by the ETERNUS SF Manager:
Perform the steps 1 to 4 in "Changing Port Numbers Used in Express" in "Changing Port Numbers (Linux)" in the *ETERNUS SF Express Operation Guide*.
The `httpd.conf` file described in step 4 exists in the shared disk. Therefore, edit the `httpd.conf` file either the primary or secondary node.

- For changing the port number used by the Web Console:
Perform the steps 2 to 4 in "Changing Port Numbers Used in Web Console" in "Changing Port Numbers (Linux)" in the *ETERNUS SF Express Operation Guide*.
The server.xml, httpd.conf, and postgresql.conf files exist in the shared disk. Therefore, edit their files either the primary or secondary node.
- 3. Start up the Management Server transaction.
Refer to your cluster software manuals for information on how to start up the transaction.
- 4. If you have changed the port number of AdvancedCopy Manager transaction communication daemon in step 2, create the change instruction file for the server information in a node in which the Management Server transaction is operating.
Execute the stgxfwcmmodsrv command with the -f option specified to change the port number.
When using the replication management function, execute the swsrprecoveres command with the -r option and the -h option on the Management Server. Specify the server name of the Managed Server running the replication operation with the -h option. Refer to "Command References" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Solaris or Linux)* for information on the commands.
- 5. Perform the following procedures using the Web Console to reload the server configuration information.
 - a. On the global navigation tab, click **Server**.
The registered server list is displayed on the Main pane.
 - b. On the Main pane, check the target server checkbox.
 - c. On the Action pane, click **Reload Conf.** under **Server**.

12.2.3 Changing Server Name for AdvancedCopy Manager for Management Server Transactions

Follow the procedure below to change the server name for the AdvancedCopy Manager for Management Server transactions.

1. Create the server information change instruction file in a node in which the Management Server transaction is operating.
Execute the stgxfwcmmodsrv command with the -f option specified to change the server name.
When using the replication management function, execute the swsrprecoveres command with the -r option and the -h option on the Management Server. Specify the server name of the Managed Server running the replication operation with the -h option. Refer to "Command References" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Solaris or Linux)* for information on the commands.
2. Perform the following procedures using the Web Console to reload the server configuration information.
 - a. On the global navigation tab, click **Server**.
The registered server list is displayed on the Main pane.
 - b. On the Main pane, check the target server checkbox.
 - c. On the Action pane, click **Reload Conf.** under **Server**.

12.2.4 Changing Logical Node Name

Follow the procedure below to change the logical node name for a Management Server transaction.

1. Check the operational status of the Management Server transaction for which you wish to change the logical node name. If the transaction is stopped, start up the Management Server transaction.
Refer to your cluster software manuals for information on how to start up the transaction.
2. Check to see if the Management Server transaction for which you wish to change the logical node name also serves as a Managed Server transaction for AdvancedCopy Manager. If it also serves as Managed Server transactions, go to step 3. If it does not, go to step 4.

3. Delete the environment for the Managed Server transaction.

If the AdvancedCopy Manager backup management function is being used, delete the transaction volumes and backup volumes. Refer to "Deleting Device" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Solaris or Linux)* for information on how to delete the environment.

If you have defined a copy source or copy destination volume with the AdvancedCopy Manager replication management function, delete the copy source/destination volume settings.

Refer to "Deleting Source Volume or Replica Volume" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Solaris or Linux)* for information on how to delete the settings.

4. Back up the AdvancedCopy Manager data.

Back up the following data.

- Repository Data

Refer to "Backup of Common Control and AdvancedCopy Manager Repository" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Solaris or Linux)* for information on how to back up the data.

If the Management Server transaction also serves as Managed Server transaction, back up the following data as well.

- Backup/Restore Pre- and Post-Processing Scripts

- Replication Pre- and Post-Processing Scripts

If the server is a management information package backup server for AdvancedCopy Manager, back up the following data as well.

- Policy File for Package Backup of Management Information

Refer to "Preliminaries" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Solaris or Linux)* for the file path of the policy file.

5. Back up the environment setting data for the AdvancedCopy Manager CCM.

Refer to "Backing Up Environment Settings Files" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

6. Delete the cluster environment for the Management Server transaction for which you wish to change the logical node name.

Refer to "[Chapter 13 Deletion of Cluster Environment for Management Server Transactions](#)" for information on how to delete the environment.

7. Specify the new logical node name and create the cluster environment for the Management Server transaction.

Refer to "[Chapter 5 Customization for Management Server Transaction](#)" for information on how to create the cluster environment.

 Note

Input the new logical volume name for the input item for the logical node name in the AdvancedCopy Manager's cluster setup command.

8. Start up the created Management Server transaction.

Refer to your cluster software manuals for information on how to start up the transaction.

9. Restore the AdvancedCopy Manager data.

Restore the following data.

- Restore the repository data.

Refer to "Restore of Common Control and AdvancedCopy Manager Repository" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Solaris or Linux)* for information on how to restore the data.

If, in the Management Server transaction, it also serves as a Managed Server transaction for AdvancedCopy Manager, restore the following data as well.

- Pre- and Post-Processing Scripts for Backup Management and Replication Management

If the server is a management information package backup server for AdvancedCopy Manager, restore the following data as well.

- Policy File for Package Backup of Management Information
Refer to "Preliminaries" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Solaris or Linux)* for the file path of the policy file.
10. Restore the environment setting data for the AdvancedCopy Manager CCM.
Refer to "Restoring Environment Settings Files" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for information on how to restore the data.
 11. Change the server name.
Refer to "Changing Server Name of Management Server Transaction or Managed Server Transaction" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Solaris or Linux)* for information on how to change the server name.
 12. If using the backup management function or replication management function, rebuild the environments for the various management functions.

If using the AdvancedCopy Manager backup management function, perform the procedures starting from the section "Configuring Environment for Backup Operation Server" and onwards in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Solaris or Linux)*.
If using the AdvancedCopy Manager replication management function, perform the procedures starting from the section "Configuring Source Volume and Replica Volume" and onwards in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Solaris or Linux)*.
 13. To execute the package backup of management information for AdvancedCopy Manager, register it as a management information package backup server.
Refer to "stgmgrinfo set (Management Information Package Backup Server Registration/Deletion Command)" in the *ETERNUS SF AdvancedCopy Manager Operation Guide (for Solaris or Linux)* for information on how to perform registration.

Chapter 13 Deletion of Cluster Environment for Management Server Transactions

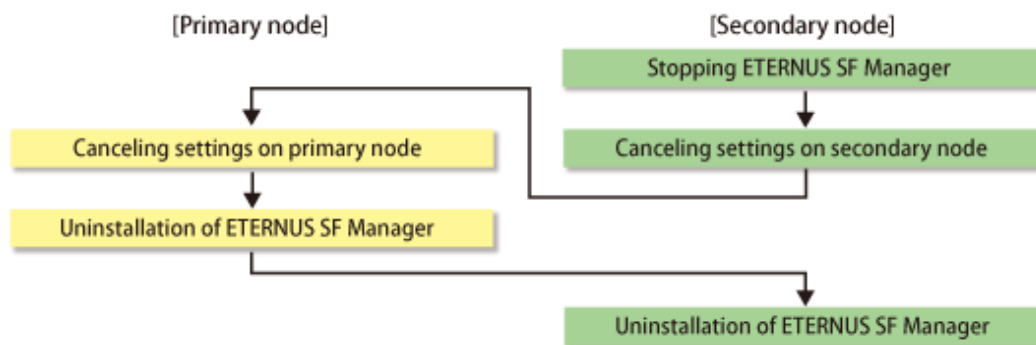
This chapter explains how to delete cluster environments for Management Server transactions.

In this document, the primary node is a node in a cluster transaction that was set up as a primary node in "Chapter 5 Customization for Management Server Transaction", and the secondary node is a node in the cluster transaction that was set up as a secondary node.

The deletion method is different depending on operating systems. Refer to "13.1 Deletion of Cluster Environment for Windows Clustered System" for Windows. Refer to "13.2 Deletion of Cluster Environment for Solaris/Linux Clustered System" for Solaris/Linux.

13.1 Deletion of Cluster Environment for Windows Clustered System

The following flow is the deletion procedure of the cluster environment for Managed Server transaction.



13.1.1 Stopping ETERNUS SF Manager

On the secondary node, use the Failover Cluster Manager to stop the transactions to which ETERNUS SF Manager belongs. However, the shared disk that was used by ETERNUS SF Manager must be online.

13.1.2 Canceling Settings on Secondary Node

On the secondary node, cancel each settings in the following procedures.



Note

Perform the procedures using Administrator privileges.

1. Use the Failover Cluster Manager to take ownership of the transactions to which ETERNUS SF Manager belongs on the secondary node.

2. Stop Advanced Copy processes.

Stop all Advanced Copy processes that are executed by AdvancedCopy Manager CCM. Refer to the copy stop commands that are described in "Command References" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for information on how to stop an Advanced Copy process.

3. Execute the `acservicestop` command with the `-lan` option to stop the management service.

```
>acservicestop -lan
```

4. Copy the AdvancedCopy Manager environment setting file.

Copy the following copy source file to copy destination.

The `envDir` is "Environment Directory" specified at the ETERNUS SF Manager installation.

Copy Source File	Copy Destination File
<i>envDir</i> \ACM\etc\swstg.ini	<i>envDir</i> \ACM\etc\swstg.ini.cluster.bk

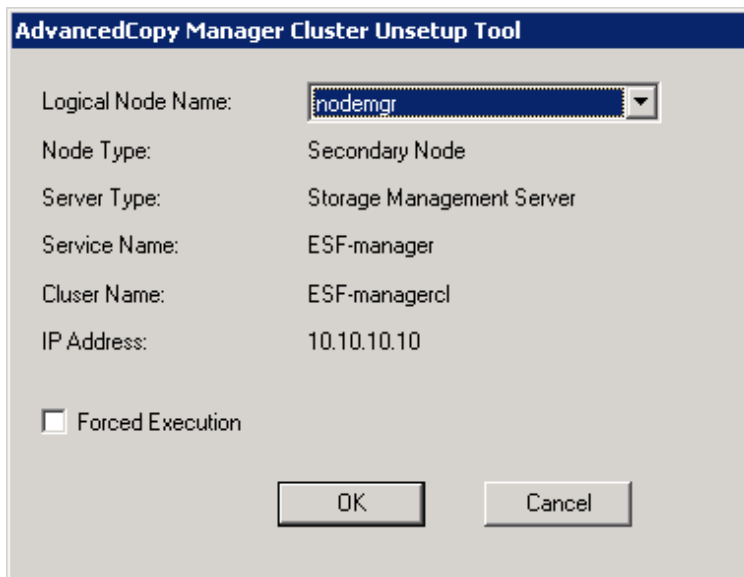
- Restore AdvancedCopy Manager CCM environment setting files that was backed up in "[Chapter 5 Customization for Management Server Transaction](#)".

Overwrite the following files to the copy destination.

The *programDir* is "Program Directory" specified at the AdvancedCopy Manager CCM installation.

Copy Source File	Copy Destination File
<i>programDir</i> \CCM\noncluster\micc\sys\install.sys	<i>programDir</i> \CCM\micc\sys\install.sys
<i>programDir</i> \CCM\noncluster\bin\stxc_install.sys	<i>programDir</i> \CCM\bin\stxc_install.sys
<i>programDir</i> \CCM\noncluster\sys\sys.properties	<i>programDir</i> \CCM\sys\sys.properties

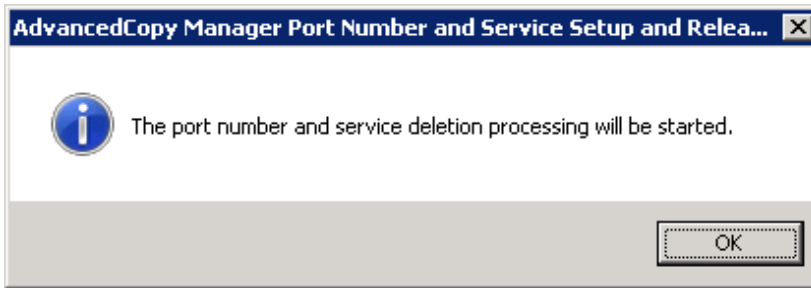
- Edit the *envDir*\ACM\etc\swstg.ini.cluster.bk file.
Change the value of type in [Common] tag to "1".
- On the secondary node, execute the cluster unsetup command.
 - On the secondary node, execute the following command:
- *programDir*\ACM\bin\stgclunset_mscs
 - The cluster unsetup command window is displayed.



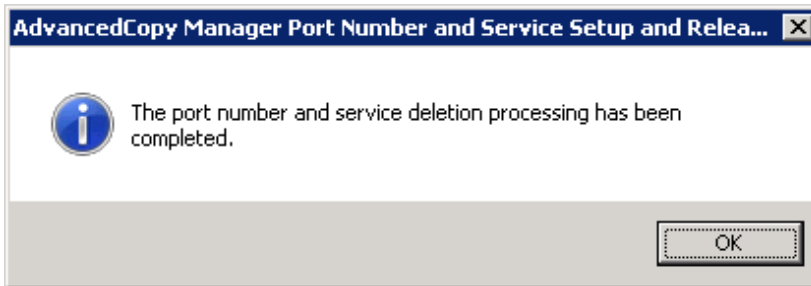
Select the logical node name of the Management Server transaction to be deleted. For unsetup after node failure by the hardware error etc., select the **Forced Execution** checkbox.

After confirming each field, click **OK**.

c. The following page is displayed. Click **OK**.

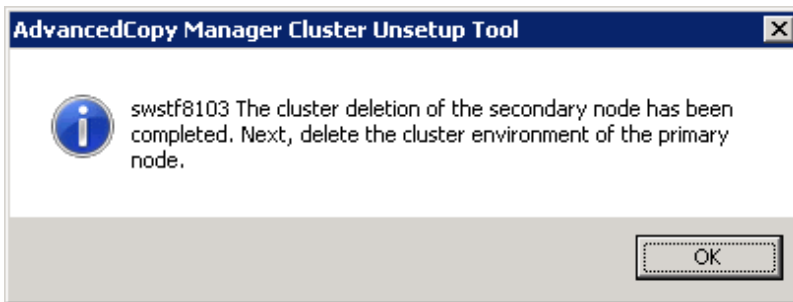


d. The following page is displayed. Click **OK**.



e. Complete the cluster unsetup of the secondary node.

When the completion window of cluster unsetup is displayed, click **OK**.



8. Delete the port number of AdvancedCopy Manager that was set for transaction use.

Delete the port number set for the Management Server transaction from the %SystemRoot%\system32\drivers\etc\services file. The service name is as follows:

- stgxfws_logicalNodeName

9. Delete AdvancedCopy Manager CCM environment setting files that was backed up.

Delete the *programDir\CCM\noncluster* directory and contents.

13.1.3 Canceling Settings on Primary Node

On the primary node, cancel each settings in the following procedures.



Note

Perform the procedures using Administrator privileges.

1. Use the Failover Cluster Manager to take ownership of the transactions to which ETERNUS SF Manager belongs on the primary node.

2. Use the Failover Cluster Manager to confirm the transactions to which ETERNUS SF Manager belongs is offline.
However, the shared disk that was used by ETERNUS SF Manager must be online.

3. Copy the AdvancedCopy Manager environment setting file.

Copy the following copy source file to copy destination.

The *envDir* is "Environment Directory" specified at the ETERNUS SF Manager installation.

Copy Source File	Copy Destination File
<i>envDir</i> \ACM\etc\swstg.ini	<i>envDir</i> \ACM\etc\swstg.ini.cluster.bk

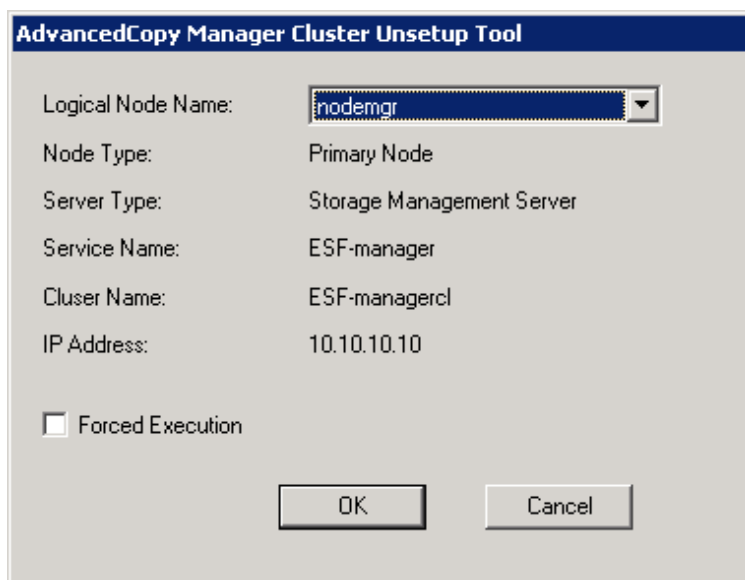
4. Restore AdvancedCopy Manager CCM environment setting files that was backed up in "[Chapter 5 Customization for Management Server Transaction](#)".

Overwrite the following files to the copy destination.

The *programDir* is "Program Directory" specified at the AdvancedCopy Manager CCM installation.

Copy Source File	Copy Destination File
<i>programDir</i> \ACM\noncluster\micc\sys\install.sys	<i>programDir</i> \ACM\micc\sys\install.sys
<i>programDir</i> \ACM\noncluster\bin\stxc_install.sys	<i>programDir</i> \ACM\bin\stxc_install.sys
<i>programDir</i> \ACM\noncluster\sys\sys.properties	<i>programDir</i> \ACM\sys\sys.properties

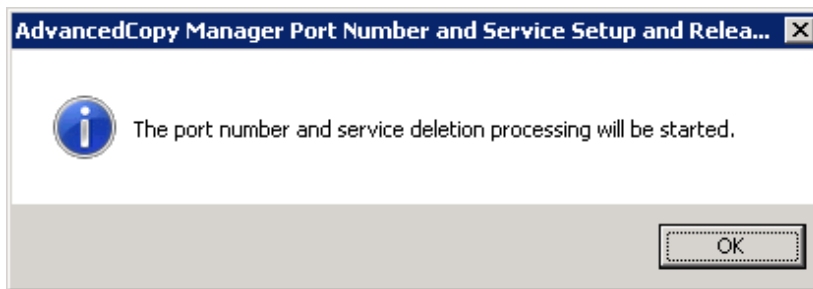
5. Edit the *envDir*\ACM\etc\swstg.ini.cluster.bk file.
Change the value of type in **Common** tag to "1".
6. On the primary node, execute the cluster unsetup command.
 - a. On the primary node, execute the following command:
- *programDir*\ACM\bin\stgclunset_mscs
 - b. The cluster unsetup command window is displayed.



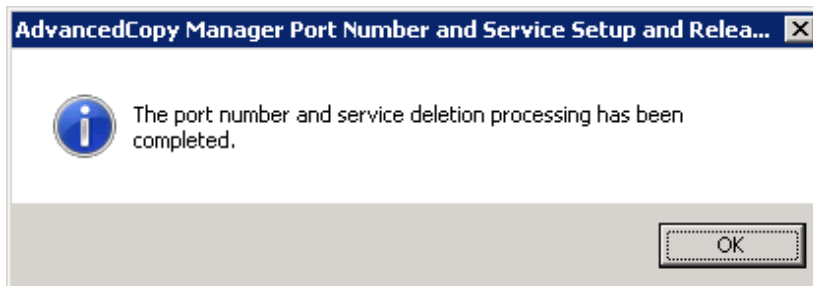
Select the logical node name selected of the Management Server transaction in the cluster unsetup window. For unsetup after node failure by the hardware error etc., check the **Forced Execution** checkbox.

After confirming each field, click **OK**.

- c. The following page is displayed. Click **OK**.

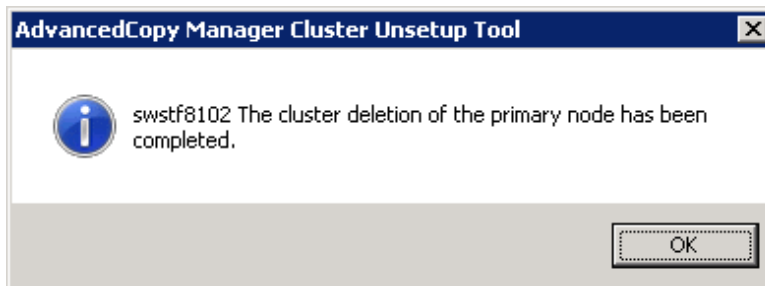


- d. The following page is displayed. Click **OK**.



- e. Complete cluster unsetup of the primary node.

When the completion window of cluster unsetup is displayed, click **OK**.



7. Delete the port number of AdvancedCopy Manager that was set for transaction use.

Delete the port number set for the Management Server transaction from the %SystemRoot%\system32\drivers\etc\services file. The service name is as follows:

- stgxfws_logicalNodeName

8. Delete AdvancedCopy Manager CCM environment setting files that was backed up.

Delete the *programDir\CCM\noncluster* directory and contents.

13.1.4 Uninstallation of ETERNUS SF Manager

Uninstall the ETERNUS SF Manager.

The procedures for Windows Server 2008 and Windows Server 2012 are as follows:

[For Windows Server 2008]

This explanation for uninstalling the ETERNUS SF Manager uses "ESF-manager" as the name of the cluster service to be deleted.

1. Uninstall the ETERNUS SF Manager from the primary node.

- a. Use the Failover Cluster Manager to take ownership of the transactions to which ETERNUS SF Manager belongs on the primary node.

- b. Refer to "Uninstallation of ETERNUS SF Manager" in the *ETERNUS SF Installation and Setup Guide* to uninstall the ETERNUS SF Manager.
2. Uninstall the ETERNUS SF Manager from the secondary node.
 - a. Use the Failover Cluster Manager to take ownership of the transactions to which ETERNUS SF Manager belongs on the secondary node.
 - b. Refer to "Uninstallation of ETERNUS SF Manager" in the *ETERNUS SF Installation and Setup Guide* to uninstall the ETERNUS SF Manager.
3. Delete the service resources from the primary and secondary nodes.

Use the **Failover Cluster Manager** screen to delete below resources from the transactions to which ETERNUS SF Manager belongs. If you are going to use them in any other services, the shared disks and IP addresses do not have to be deleted.

- Shared disks

Right-click the resources for the shared disks that were used by ETERNUS SF Manager and select **Delete from ESF-manager** to delete the shared disk resources.
 - IP addresses

Right-click the resources for the IP addresses that were used by ETERNUS SF Manager and select **Delete** to delete the IP address resources. The **Confirm Operation** is displayed. Click **Yes**.
 - Scripts

Right-click the scripts that were used by ETERNUS SF Manager and select **Delete** to delete the script resources. The **Confirm Operation** is displayed. Click **Yes**.
 - Services

Right-click the following services and select **Delete** to delete the service resources. The **Confirm Operation** is displayed Click **Yes**.

 - ETERNUS SF Manager Postgres Service
 - ETERNUS SF Storage Cruiser Optimization Option
 - AdvancedCopy Manager COM Service for *logicalNodeName* (when "AdvancedCopy COM Service_*logicalNodeName*" is remained)
4. Delete the cluster resources from the primary and secondary nodes.

If only ETERNUS SF Manager belonged to the transaction, perform the following procedure to delete the cluster service (transaction).

In the **Failover Cluster Manager** tree, right-click **Services and Applications > ESF-manager** and then select **Delete**. The **Confirm Operation** is displayed. Click **Yes**.
 5. Delete unnecessary resources.

Delete the directories and the files that remain in the following locations.

 - Under ETERNUS SF Manager install directory on the primary node
 - Under ETERNUS SF Manager install directory on the secondary node
 - Under the shared disk folder that copied dynamic disk
 - Under the shared disk folder that copied files under ETERNUS_SFVESC
 - Under the shared disk folder that copied files under ETERNUS_SFAST
 - Storage destination of generic script for AdvancedCopy Manager CCM, Apache, and Tomcat
 6. Use the Failover Cluster Manager to resume the suspended transactions.

Refer to your cluster software manuals for information on how to start the cluster transaction.

[For Windows Server 2012]

This explanation for uninstalling the ETERNUS SF Manager uses "ESF-manager" as the name of the cluster service to be deleted.

1. Uninstall the ETERNUS SF Manager from the primary node.
 - a. Use the Failover Cluster Manager to take ownership of the transactions to which ETERNUS SF Manager belongs on the primary node.
 - b. Refer to "Uninstallation of ETERNUS SF Manager" in the *ETERNUS SF Installation and Setup Guide* to uninstall the ETERNUS SF Manager.
2. Uninstall the ETERNUS SF Manager from the secondary node.
 - a. Use the Failover Cluster Manager to take ownership of the transactions to which ETERNUS SF Manager belongs on the secondary node.
 - b. Refer to "Uninstallation of ETERNUS SF Manager" in the *ETERNUS SF Installation and Setup Guide* to uninstall the ETERNUS SF Manager.

3. Delete the service resources from the primary and secondary nodes.

Use the **Failover Cluster Manager** screen to delete below resources from the transactions to which ETERNUS SF Manager belongs. If you are going to use them in any other services, the shared disks and IP addresses do not have to be deleted.

- Shared disks

Right-click the resources for the shared disks that were used by ETERNUS SF Manager and select **Remove from ESF-manager** to delete the shared disk resources.

- IP addresses

Right-click the resources for the IP addresses that were used by ETERNUS SF Manager and select **Remove** to delete the IP address resources. The **Remove Client Access Point** is displayed. Click **Yes**.

- Scripts

Right-click the scripts that were used by ETERNUS SF Manager and select **Remove** to delete the script resources. The **Remove Generic Script** is displayed. Click **Yes**.

- Services

Right-click the following services and select **Remove** to delete the service resources. The **Remove Generic Service** is displayed. Click **Yes**.

- ETERNUS SF Manager Postgres Service
- ETERNUS SF Storage Cruiser Optimization Option
- AdvancedCopy Manager COM Service for *logicalNodeName* (when "AdvancedCopy COM Service_*logicalNodeName*" is remained)

4. Delete the cluster resources from the primary and secondary nodes.

If only ETERNUS SF Manager belonged to the transaction, perform the following procedure to delete the cluster service (transaction).

In the **Failover Cluster Manager** tree, right-click **Roles > ESF-manager** and then select **Remove**. The **Remove Other** is displayed. Click **Yes**.

5. Delete unnecessary resources.

Delete the directories and the files that remain in the following locations.

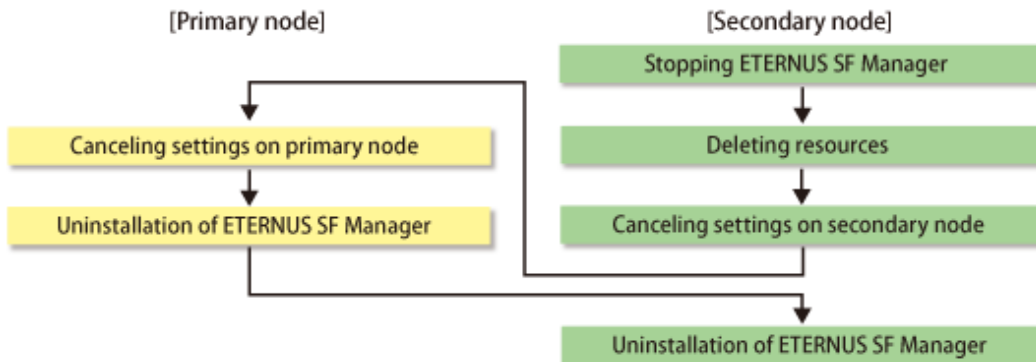
- Under ETERNUS SF Manager install directory on the primary node
- Under ETERNUS SF Manager install directory on the secondary node
- Under the shared disk folder that copied dynamic disk
- Under the shared disk folder that copied files under ETERNUS_SF\ESC
- Under the shared disk folder that copied files under ETERNUS_SF\AST
- Storage destination of generic script for AdvancedCopy Manager CCM, Apache, and Tomcat

- Use the Failover Cluster Manager to resume the suspended transactions.

Refer to your cluster software manuals for information on how to start the cluster transaction.

13.2 Deletion of Cluster Environment for Solaris/Linux Clustered System

The following flow is the deletion procedure of the cluster environment for Managed Server transaction.



13.2.1 Stopping ETERNUS SF Manager

Stop the cluster application (transaction) to which ETERNUS SF Manager belongs.

Refer to your cluster software manuals for stopping the cluster application (transaction).

13.2.2 Deleting Resources

Delete the resources for ETERNUS SF Manager.

- Delete the resources.

Delete the resources only for ETERNUS SF Manager from cluster application (transaction). The resources for existing transaction are not required to delete.

- Delete the cluster application (transaction).

Delete the cluster application (transaction) when the transaction is only for ETERNUS SF Manager.



See

Refer to your cluster software manuals for deleting the resources or cluster application (transaction).

13.2.3 Canceling Settings on Secondary Node

On the secondary node, cancel each settings in the following procedures.

- Mount the shared disk for shared data that was used by ETERNUS SF Manager.
- Stop Advanced Copy.

Stop all Advanced Copy processes that are executed by AdvancedCopy Manager CCM. Refer to the copy stop commands described in "Command References" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for information on how to stop an Advanced Copy process.

- Execute the `acservicestop` command with the `-lan` option to stop the management service.

```
# acservicestop -lan
```

- Execute the cluster `unsetup` command of the AdvancedCopy Manager's manager.

Execute the following commands in the given sequence.

Sequence of Execution	Command Name
1	StgDbSetup command
2	clset_FJSVswsrp command
3	clset_FJSVswsts command
4	clset_FJSVswstf command

Point

Execute each command with the -u option specified.

Example

The command execution example is as follows.

```
# /opt/FJSVswstf/bin/StgDbSetup -u -f /esfmnt/etc/opt/swstorage/clsetup.ini -t Secondary
# /opt/FJSVswsrp/bin/clset_FJSVswsrp -u -f /esfmnt/etc/opt/swstorage/clsetup.ini -t Secondary
clset_FJSVswsrp completed
# /opt/FJSVswsts/bin/clset_FJSVswsts -u -f /esfmnt/etc/opt/swstorage/clsetup.ini -t Secondary
clset_FJSVswsts completed
# /opt/FJSVswstf/bin/clset_FJSVswstf -u -f /esfmnt/etc/opt/swstorage/clsetup.ini -t Secondary
clset_FJSVswstf completed
```

- Execute the cluster unsetup command of the Storage Cruiser's manager.

Execute the following command after blocking other users from accessing the shared disk for shared data.

```
# /opt/FJSVsmgr/cluster/esc_clunsetup
```

Information

If free space in the local disk on the secondary node is insufficient for the data capacity on the shared disk for shared data, execute the command by specifying the -l option as shown below.

```
# /opt/FJSVsmgr/cluster/esc_clunsetup -l
```

In this case, since the data on the shared disk for shared data is not copied onto the local disk, the operation cannot be continued.

- Check the configurations.

```
ETERNUS SF Storage Cruiser settings were as follows.
Cluster system : PRIMECLUSTER
Node type      : Secondary
Mount point    : /esfmnt
IP Address     : 192.0.2.10
Mode           : Normal
(restore from Shared Disk)Manager cluster deletion : Are you sure? [y,n,?]
```

To continue the cluster environment deletion work, input "y". To interrupt the work, input "n".

- Confirm that the displayed message is as follows.

```
FJSVrcx:INFO:27703:esc_clunsetup:secondary node deletion completed
```

- Delete the following symbolic link files that you created in "[Chapter 5 Customization for Management Server Transaction](#)".

The *logicalNodeName* is the logical node name that was prepared in "[4.1 Confirmation of Customization Items](#)".

- /etc/opt/FJSVesfcm
- /etc/opt/swstorage/logicalNodeName
- /var/opt/FJSVesfcm
- /var/opt/FJSVesflm
- /var/opt/swstorage/logicalNodeName

Example

The command execution example is as follows.

```
# rm /etc/opt/FJSVesfcm
# rm /etc/opt/swstorage/acmnode1
# rm /var/opt/FJSVesfcm
# rm /var/opt/FJSVesflm
# rm /var/opt/swstorage/acmnode1
```

9. Restore AdvancedCopy Manager CCM environment setting files that was backed up in "Chapter 5 Customization for Management Server Transaction".

Overwrite the following files to the copy destination.

Copy Source File	Copy Destination File
/opt/FJSVccm/noncluster/micc/sys/.install.sys	/opt/FJSVccm/micc/sys/.install.sys
/opt/FJSVccm/noncluster/bin/.stxc_install.sys	/opt/FJSVccm/bin/.stxc_install.sys
/opt/FJSVccm/noncluster/sys/sys.properties	/opt/FJSVccm/sys/sys.properties

Example

The copy execution example is as follows.

```
# cp -p /opt/FJSVccm/noncluster/micc/sys/.install.sys /opt/FJSVccm/micc/sys/.install.sys
# cp -p /opt/FJSVccm/noncluster/bin/.stxc_install.sys /opt/FJSVccm/bin/.stxc_install.sys
# cp -p /opt/FJSVccm/noncluster/sys/sys.properties /opt/FJSVccm/sys/sys.properties
```

10. Delete AdvancedCopy Manager CCM environment setting files that was backed up.

Delete the /opt/FJSVccm/noncluster directory and contents.

Example

The deletion execution example is as follows.

```
# rm -r /opt/FJSVccm/noncluster
```

11. Rename the following directories that was changed in "Chapter 5 Customization for Management Server Transaction" as original.

- /etc/opt/FJSVesfcm
- /var/opt/FJSVesfcm
- /var/opt/FJSVesflm

Example

The following is an example of the case that a directory name was changed by putting "_bak" at the end of a file name.

```
# mv /etc/opt/FJSVesfcm_bak /etc/opt/FJSVesfcm
# mv /var/opt/FJSVesfcm_bak /var/opt/FJSVesfcm
# mv /var/opt/FJSVesflm_bak /var/opt/FJSVesflm
```

12. Set up the starting and stopping process of ETERNUS SF Manager to be controlled by the operating system.

- For Solaris

Execute the following command.

```
# ls /etc/rc*.d/*SFmanager*
```

Rename all of the files that were output by executing the above command. Delete "X" at the start of the file names.



The command execution example is as follows.

```
# mv /etc/rc2.d/XS99startSFmanager /etc/rc2.d/S99startSFmanager
```

- For RHEL5/RHEL6

Execute the following commands.

```
# mv /etc/rc0.d/XK00startSFmanager /etc/rc0.d/K00startSFmanager
# mv /etc/rc1.d/XK00startSFmanager /etc/rc1.d/K00startSFmanager
# mv /etc/rc2.d/XK00startSFmanager /etc/rc2.d/K00startSFmanager
# mv /etc/rc3.d/XS99startSFmanager /etc/rc3.d/S99startSFmanager
# mv /etc/rc4.d/XS99startSFmanager /etc/rc4.d/S99startSFmanager
# mv /etc/rc5.d/XS99startSFmanager /etc/rc5.d/S99startSFmanager
# mv /etc/rc6.d/XK00startSFmanager /etc/rc6.d/K00startSFmanager
```

- For RHEL7

Execute the following commands.

```
# /usr/bin/systemctl enable fjsvesfcm-internalDB.service
# /usr/bin/systemctl enable fjsvesfcm-webserver.service
# /usr/bin/systemctl enable fjsvesfcm-system.service
# /usr/bin/systemctl enable fjsvswstf.service
```

13. Edit the /opt/FJSVswstf/cluster/swcluster.ini file.

Modify or delete the portions in italics according to your system environment.

```
[ClusterCommon]
Cluster=ON (*1)
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN (*2)
Env_N=<Logical node name>
[<Logical node name>]
Type=Secondary
BusiType=<AdvancedCopy Manager server type>
Business=<Name of cluster transaction>
ShareEtc=<Mountpoint-of-shared-disk-for-shared-data>/etc/opt
ShareVar=<Mountpoint-of-shared-disk-for-shared-data>/var/opt
MountPoint=<Mountpoint-of-shared-disk-for-shared-data>
IPVersion=<IP version of IP address>
IPAddr=<Takeover IPv4 address for AdvancedCopy Manager>
IPv6Addr=<Takeover IPv6 address for AdvancedCopy Manager>
IPUseType=0
IPRscName=
```

```
Hostname=  
NodeName=<Name of primary node (Host name of primary node)>  
ClusterName=  
DiskName=  
GroupName=  
SubNetMask=  
MSCSNetName=  
Date=00/00/00 00:00:00  
Setup=YES  
ResourceType=Procedure
```

*1: This line needs to be modified when deleting the last cluster transactions on this server.

*2: This line needs to be deleted when deleting the last cluster transactions on this server.

Example

When deleting the last cluster transactions on the same server, the example for editing the swcluster.ini file is as follows.

[Before editing]

The italicized portions are the changes and deletions.

```
[ClusterCommon]  
Cluster=ON  
Max=20  
StartTimeOut=300  
StopTimeOut=300  
System=GEN  
Env_1=acmnode1  
[acmnode1]  
Type=Secondary  
BusiType=1  
Business=acmbiz01  
ShareEtc=/esfmnt/etc/opt  
ShareVar=/esfmnt/var/opt  
MountPoint=/esfmnt  
IPVersion=IPv4  
IPAddr=192.0.2.10  
IPv6Addr=  
IPUseType=0  
IPRscName=  
Hostname=  
NodeName=m40001  
ClusterName=  
DiskName=  
GroupName=  
SubNetMask=  
MSCSNetName=  
Date=00/00/00 00:00:00  
Setup=YES  
ResourceType=Procedure
```

[After editing]

```
[ClusterCommon]  
Cluster=OFF  
Max=20  
StartTimeOut=300  
StopTimeOut=300
```




Example

When cluster transactions have already been created on the same server, the example for editing the swcluster.ini file is as follows.

[Before editing]

The italicized portions are the deletions.

```
[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_2=acmnode2
Env_1=acmnode1
[acmnode2]
Type=Secondary
BusiType=2
Business=acmbiz02
ShareEtc=/esfmnt02/etc/opt
ShareVar=/esfmnt02/var/opt
MountPoint=/esfmnt02
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure
[acmnode1]
Type=Secondary
BusiType=1
Business=acmbiz01
ShareEtc=/esfmnt/etc/opt
ShareVar=/esfmnt/var/opt
MountPoint=/esfmnt
IPVersion=IPv4
IPAddr=192.0.2.10
IPv6Addr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure
```

[After editing]

```

[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_2=acmnode2
[acmnode2]
Type=Secondary
BusiType=2
Business=acmbiz02
ShareEtc=/esfmnt02/etc/opt
ShareVar=/esfmnt02/var/opt
MountPoint=/esfmnt02
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure

```

14. Edit the /etc/opt/swstorage/swstg.ini file.

Table 13.1 Setting Items of swstg.ini File

Item Name	Explanation
Type	AdvancedCopy Manager local transaction server type. Specify "1".



Note

Do not add/modify/delete parameters other than those of "Table 13.1 Setting Items of swstg.ini File".

Modify the portions in italics according to your system environment.

```

[Common]
Edition=EE
Version=V16.4
Type=<AdvancedCopy Manager local transaction server type>
AFSType=1
Language=ENGLISH
BaseDir_Opt=/opt
BaseDir_Var=/var/opt
BaseDir_Etc=/etc/opt
[Install]
FJSVswstf=20101116
FJSVswtrc=20101116
FJSVgrapi=20101116
FJSVswsts=20101116
FJSVswsrp=20101116

```

Example

The example for editing the swstg.ini file is as follows. The italicized portions are the changes to the original file.

```
[Common]
Edition=EE
Version=V16.4
Type=1
AFSType=1
Language=ENGLISH
BaseDir_Opt=/opt
BaseDir_Var=/var/opt
BaseDir_Etc=/etc/opt
[Install]
FJSVswstf=20101116
FJSVswtrc=20101116
FJSVgrapi=20101116
FJSVswsts=20101116
FJSVswsrp=20101116
```

15. Delete the port number.

Use the vi command etc. of OS, and delete the line of the following service from the /etc/services file.

- Transaction communication daemon: *stgxfws_logicalNodeName*

16. Unmount the shared disk for shared data that was used by ETERNUS SF Manager.

13.2.4 Canceling Settings on Primary Node

On the primary node, cancel each settings in the following procedures.

1. Mount the shared disk for shared data that was used by ETERNUS SF Manager.
2. Execute the cluster unsetup command of the AdvancedCopy Manager's manager.

Execute the following commands in the given sequence.

Sequence of Execution	Command Name
1	StgDbSetup command
2	clset_FJSVswsrp command
3	clset_FJSVswsts command
4	clset_FJSVswstf command

Point

Execute each command with the -u option specified.

Example

The command execution example is as follows.

```
# /opt/FJSVswstf/bin/StgDbSetup -u -f /esfmnt/etc/opt/swstorage/clsetup.ini -t Primary
# /opt/FJSVswsrp/bin/clset_FJSVswsrp -u -f /esfmnt/etc/opt/swstorage/clsetup.ini -t Primary
clset_FJSVswsrp completed
# /opt/FJSVswsts/bin/clset_FJSVswsts -u -f /esfmnt/etc/opt/swstorage/clsetup.ini -t Primary
clset_FJSVswsts completed
```

```
# /opt/FJSVswstf/bin/clset_FJSVswstf -u -f /esfmnt/etc/opt/swstorage/clsetup.ini -t Primary
clset_FJSVswstf completed
```

- Execute the cluster unsetup command of the Storage Cruiser's manager.

Execute the following command after blocking other users from accessing the shared disk for shared data.

```
# /opt/FJSVsmgr/cluster/esc_clunsetup
```

Information

If free space in the local disk on the secondary node is insufficient for the data capacity on the shared disk for shared data, execute the command by specifying the `-l` option as shown below.

Specify the `-l` option if local free disk space on the primary node is insufficient.

```
# /opt/FJSVsmgr/cluster/esc_clunsetup -l
```

In this case, since the data on the shared disk for shared data is not copied onto the local disk, the operation cannot be continued.

- Check the configurations.

```
ETERNUS SF Storage Cruiser settings were as follows.
  Cluster system : PRIMECLUSTER
  Node type      : Primary
  Mount point    : /esfmnt
  IP Address     : 192.0.2.10
  Mode           : Normal
(restore from Shared Disk)Manager cluster deletion : Are you sure? [y,n,?]
```

To continue the cluster environment deletion work, input "y". To interrupt the work, input "n".

- Confirm that the displayed message is as follows.

```
FJSVrcx:INFO:27702:esc_clunsetup:primary node deletion completed
```

- Delete the following symbolic link files that you created in "[Chapter 5 Customization for Management Server Transaction](#)".

The *logicalNodeName* is the logical node name that was prepared in "[4.1 Confirmation of Customization Items](#)".

- `/etc/opt/FJSVesfcm`
- `/etc/opt/swstorage/logicalNodeName`
- `/var/opt/FJSVesfcm`
- `/var/opt/FJSVesflm`
- `/var/opt/swstorage/logicalNodeName`

Example

The command execution example is as follows.

```
# rm /etc/opt/FJSVesfcm
# rm /etc/opt/swstorage/acmnode1
# rm /var/opt/FJSVesfcm
# rm /var/opt/FJSVesflm
# rm /var/opt/swstorage/acmnode1
```

- Restore AdvancedCopy Manager CCM environment setting files that was backed up in "[Chapter 5 Customization for Management Server Transaction](#)".

Overwrite the following files to the copy destination.

Copy Source File	Copy Destination File
/opt/FJSVccm/noncluster/micc/sys/.install.sys	/opt/FJSVccm/micc/sys/.install.sys
/opt/FJSVccm/noncluster/bin/.stxc_install.sys	/opt/FJSVccm/bin/.stxc_install.sys
/opt/FJSVccm/noncluster/sys/sys.properties	/opt/FJSVccm/sys/sys.properties

Example

The copy execution example is as follows.

```
# cp -p /opt/FJSVccm/noncluster/micc/sys/.install.sys /opt/FJSVccm/micc/sys/.install.sys
# cp -p /opt/FJSVccm/noncluster/bin/.stxc_install.sys /opt/FJSVccm/bin/.stxc_install.sys
# cp -p /opt/FJSVccm/noncluster/sys/sys.properties /opt/FJSVccm/sys/sys.properties
```

8. Delete AdvancedCopy Manager CCM environment setting files that was backed up.

Delete the /opt/FJSVccm/noncluster directory and contents.

Example

The deletion execution example is as follows.

```
# rm -r /opt/FJSVccm/noncluster
```

9. Rename the following directories that was changed in "[Chapter 5 Customization for Management Server Transaction](#)" as original.

- /etc/opt/FJSVesfcm
- /var/opt/FJSVesfcm
- /var/opt/FJSVesflm

Example

The following is an example of the case that a directory name was changed by putting "_bak" at the end of a file name.

```
# mv /etc/opt/FJSVesfcm_bak /etc/opt/FJSVesfcm
# mv /var/opt/FJSVesfcm_bak /var/opt/FJSVesfcm
# mv /var/opt/FJSVesflm_bak /var/opt/FJSVesflm
```

10. Set up the starting and stopping process of ETERNUS SF Manager to be controlled by operating system.

- For Solaris

Execute the following command.

```
# ls /etc/rc*.d/*SFmanager*
```

Rename all of the files that were output by executing the command above. Delete "X" at the start of the file names.

Example

The command execution example is as follows.

```
# mv /etc/rc2.d/XS99startSFmanager /etc/rc2.d/S99startSFmanager
```

- For RHEL5/RHEL6

Execute the following commands.

```
# mv /etc/rc0.d/XK00startSFmanager /etc/rc0.d/K00startSFmanager
# mv /etc/rc1.d/XK00startSFmanager /etc/rc1.d/K00startSFmanager
# mv /etc/rc2.d/XK00startSFmanager /etc/rc2.d/K00startSFmanager
# mv /etc/rc3.d/XS99startSFmanager /etc/rc3.d/S99startSFmanager
# mv /etc/rc4.d/XS99startSFmanager /etc/rc4.d/S99startSFmanager
# mv /etc/rc5.d/XS99startSFmanager /etc/rc5.d/S99startSFmanager
# mv /etc/rc6.d/XK00startSFmanager /etc/rc6.d/K00startSFmanager
```

- For RHEL7

Execute the following commands.

```
# /usr/bin/systemctl enable fjsvesfcm-internalDB.service
# /usr/bin/systemctl enable fjsvesfcm-webserver.service
# /usr/bin/systemctl enable fjsvesfcm-system.service
# /usr/bin/systemctl enable fjsvswstf.service
```

11. Edit the /opt/FJSVswstf/cluster/swcluster.ini file.

Modify or delete the portions in italics according to your system environment.

```
[ClusterCommon]
Cluster=ON (*1)
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN (*2)
Env_N=<Logical node name>
[<Logical node name>]
Type=Primary
BusiType=<AdvancedCopy Manager server type>
Business=<Name of cluster transaction>
ShareEtc=<Mountpoint-of-shared-disk-for-shared-data>/etc/opt
ShareVar=<Mountpoint-of-shared-disk-for-shared-data>/var/opt
MountPoint=<Mountpoint-of-shared-disk-for-shared-data>
IPVersion=<IP version of IP address>
IPAddr=<Takeover IPv4 address for AdvancedCopy Manager>
IPv6Addr=<Takeover IPv6 address for AdvancedCopy Manager>
IPUseType=0
IPRscName=
Hostname=
NodeName=<Name of primary node (Host name of primary node)>
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure
```

*1: This line needs to be modified when deleting the last cluster transactions on this server.

*2: This line needs to be deleted when deleting the last cluster transactions on this server.

Example

When deleting the last cluster transactions on the same server, the example for editing the swcluster.ini file is as follows.

[Before editing]

The italicized portions are the changes and deletions.

```
[ClusterCommon]
Cluster=ON
```

```

Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_1=acmnode1
[acmnode1]
Type=Primary
BusiType=1
Business=acmbiz01
ShareEtc=/esfmnt/etc/opt
ShareVar=/esfmnt/var/opt
MountPoint=/esfmnt
IPVersion=IPv4
IPAddr=192.0.2.10
IPv6Addr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m4001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure

```

[After editing]

```

[ClusterCommon]
Cluster=OFF
Max=20
StartTimeOut=300
StopTimeOut=300

```

Example

When cluster transactions have already been created on the same server, the example for editing the swcluster.ini file is as follows.

[Before editing]

The italicized portions are the deletions.

```

[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_2=acmnode2
Env_1=acmnode1
[acmnode2]
Type=Primary
BusiType=2
Business=acmbiz02
ShareEtc=/esfmnt02/etc/opt
ShareVar=/esfmnt02/var/opt
MountPoint=/esfmnt02
IPAddr=
IPUseType=0

```

```
IPRscName=  
Hostname=  
NodeName=m40001  
ClusterName=  
DiskName=  
GroupName=  
SubNetMask=  
MSCSNetName=  
Date=00/00/00 00:00:00  
Setup=YES  
ResourceType=Procedure  
[acmnode1]  
Type=Primary  
BusiType=1  
Business=acmbiz01  
ShareEtc=/esfmnt/etc/opt  
ShareVar=/esfmnt/var/opt  
MountPoint=/esfmnt  
IPVersion=IPv4  
IPAddr=192.0.2.10  
IPv6Addr=  
IPUseType=0  
IPRscName=  
Hostname=  
NodeName=m40001  
ClusterName=  
DiskName=  
GroupName=  
SubNetMask=  
MSCSNetName=  
Date=00/00/00 00:00:00  
Setup=YES  
ResourceType=Procedure
```

[After editing]

```
[ClusterCommon]  
Cluster=ON  
Max=20  
StartTimeOut=300  
StopTimeOut=300  
System=GEN  
Env_2=acmnode2  
[acmnode2]  
Type=Primary  
BusiType=2  
Business=acmbiz02  
ShareEtc=/esfmnt02/etc/opt  
ShareVar=/esfmnt02/var/opt  
MountPoint=/esfmnt02  
IPAddr=  
IPUseType=0  
IPRscName=  
Hostname=  
NodeName=m40001  
ClusterName=  
DiskName=  
GroupName=  
SubNetMask=  
MSCSNetName=  
Date=00/00/00 00:00:00
```



```
Setup=YES
ResourceType=Procedure
```

12. Edit the /etc/opt/swstorage/swstg.ini file.

Table 13.2 Setting Items of swstg.ini File

Item Name	Explanation
Type	AdvancedCopy Manager local transaction server type. Specify "1".



Do not add/modify/delete parameters other than those of "Table 13.2 Setting Items of swstg.ini File".

Modify the portions in italics according to your system environment.

```
[Common]
Edition=EE
Version=V16.4
Type=<AdvancedCopy Manager local transaction server type>
AFSType=1
Language=ENGLISH
BaseDir_Opt=/opt
BaseDir_Var=/var/opt
BaseDir_Etc=/etc/opt
[Install]
FJSVswstf=20101116
FJSVswtrc=20101116
FJSVgrapi=20101116
FJSVswsts=20101116
FJSVswsrp=20101116
```



The example for editing the swstg.ini file is as follows. The italicized portions are the changes.

```
[Common]
Edition=EE
Version=V16.4
Type=1
AFSType=1
Language=ENGLISH
BaseDir_Opt=/opt
BaseDir_Var=/var/opt
BaseDir_Etc=/etc/opt
[Install]
FJSVswstf=20101116
FJSVswtrc=20101116
FJSVgrapi=20101116
FJSVswsts=20101116
FJSVswsrp=20101116
```

13. Delete the port number.

Use the vi command etc. of OS, and delete the line of the following service from the /etc/services file.

- Transaction communication daemon: stgxfws_logicalNodeName

14. Unmount the shared disk for shared data that was used by ETERNUS SF Manager.

13.2.5 Uninstallation of ETERNUS SF Manager

Uninstall the ETERNUS SF Manager.

1. Perform the uninstallation first on the primary node and then on the secondary node.

Refer to "Uninstallation of ETERNUS SF Manager" in the *ETERNUS SF Installation and Setup Guide* for information on how to uninstall the ETERNUS SF Manager.

2. Delete unnecessary resources.

Delete the directories and the files that remain in the following locations.

- The following directories of the shared disk for shared data and the files under them
 - <Mountpoint-of-shared-disk-for-shared-data>/etc/opt/FJSVesfcm
 - <Mountpoint-of-shared-disk-for-shared-data>/etc/opt/FJSVccm
 - <Mountpoint-of-shared-disk-for-shared-data>/etc/opt/swstorage
 - <Mountpoint-of-shared-disk-for-shared-data>/var/opt/FJSVesfcm
 - <Mountpoint-of-shared-disk-for-shared-data>/var/opt/FJSVccm
 - <Mountpoint-of-shared-disk-for-shared-data>/var/opt/FJSVesflm
 - <Mountpoint-of-shared-disk-for-shared-data>/var/opt/swstorage
- The following storage destination of generic scripts (both primary node and secondary node)
 - ETERNUS SF Manager Apache daemon
 - ETERNUS SF Manager Tomcat daemon
 - ETERNUS SF Manager Postgres daemon
 - AdvancedCopy Manager daemon
 - AdvancedCopy Manager CCM

Chapter 14 Deletion of Cluster Environment for Managed Server Transactions

This chapter explains how to delete cluster environments for Managed Server transactions.

In this document, the primary node is a node in a cluster transaction that was set up as a primary node in "Chapter 8 Customization for Managed Server Transactions", and the secondary node is a node in the cluster transaction that was set up as a secondary node. The secondary node A shows the node which deletes the environment of Managed Server transactions last in the secondary nodes in this cluster transaction. The secondary node B shows the remaining secondary nodes in this cluster transaction.

If you used a 1:1 Standby system, a Mutual Standby system, or a n:1 Standby system, perform the deletion work of a primary node and a secondary node A. If you used a Cascade system or a Priority Transfer system, perform the deletion work of a primary node, a secondary node A, and a secondary node B.

The deletion method is different depending on operating systems. Refer to "14.1 Deletion of Cluster Environment for Windows Clustered System" for Windows. Refer to "14.2 Deletion of Cluster Environment for Solaris/Linux/HP-UX Clustered System" for Solaris/Linux/HP-UX.

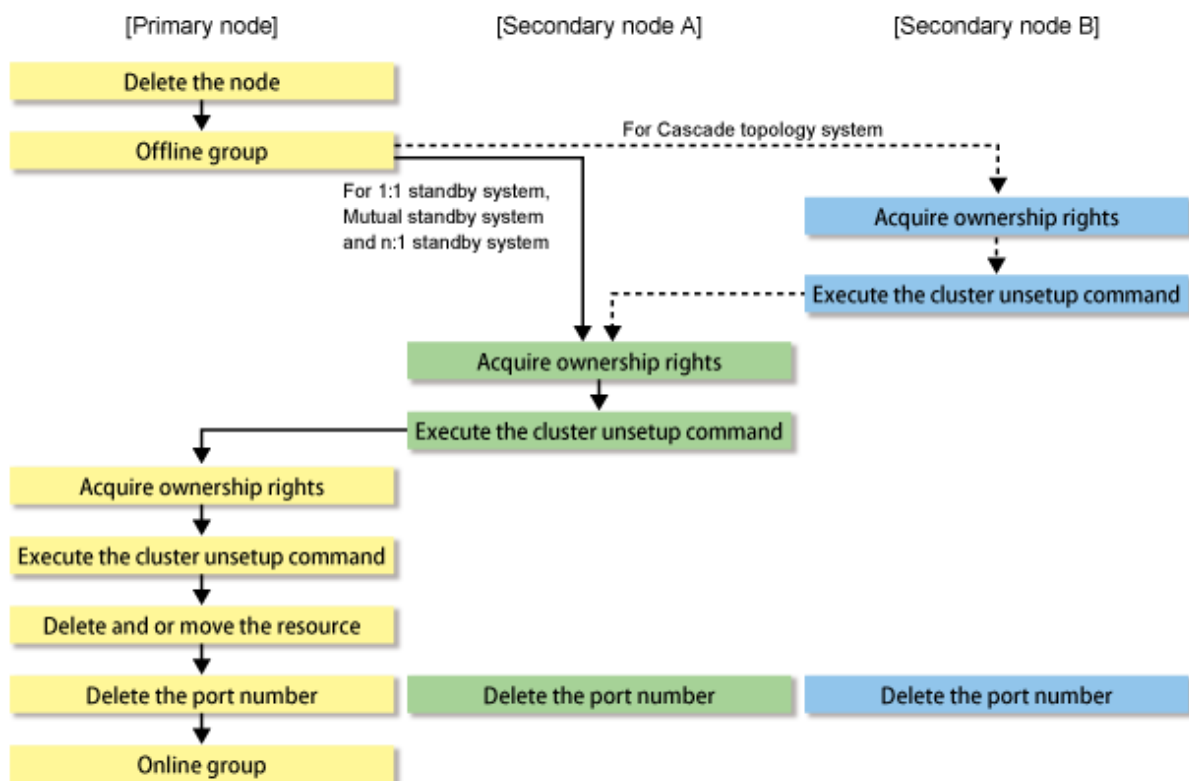
14.1 Deletion of Cluster Environment for Windows Clustered System

This section explains how to delete the cluster environment on the Windows clustered system.

14.1.1 Deletion Flow

The following flow is the deletion procedure of the cluster environment for Managed Server transaction.

Figure 14.1 Deletion Flow for Windows Clustered System



14.1.2 Deletion Procedure

Follow the procedure below to delete the cluster environment for a Managed Server transaction.

Note

- Perform the procedures using Administrator privileges. The Windows "Computer Browser service" must be activated if a user belonging to the Administrators of the domain wants to perform deletion.
- Do not use the Telnet Server service.

1. Delete the node.

Use the AdvancedCopy Manager command to delete the node.

2. Stop the cluster transaction.

Stop the cluster transaction to which the applicable AdvancedCopy Manager belongs, using the Failover Cluster Manager. Leave the shared disk for shared data of AdvancedCopy Manager online. Refer to your cluster software manuals for information on how to stop the cluster transaction and how to vary the shared disk online.

If the clustered system is the 1:1 Standby system, the Mutual Standby system, or the n:1 Standby system, go to step 5.
If the system is the Cascade system, go to step 3.

3. On the secondary node B, take the ownership of the transaction.

Take the ownership of the transaction to which the applicable AdvancedCopy Manager belongs, using the Failover Cluster Manager.

Refer to your cluster software manuals for taking ownership.

Note

When the secondary node B consists of two or more nodes, perform step 3 and step 4 on all of the secondary nodes B.

4. On the secondary node B, execute the cluster unsetup command.

a. Execute the following command.

The *programDir* is "Program Directory" specified at the AdvancedCopy Manager's agent installation.

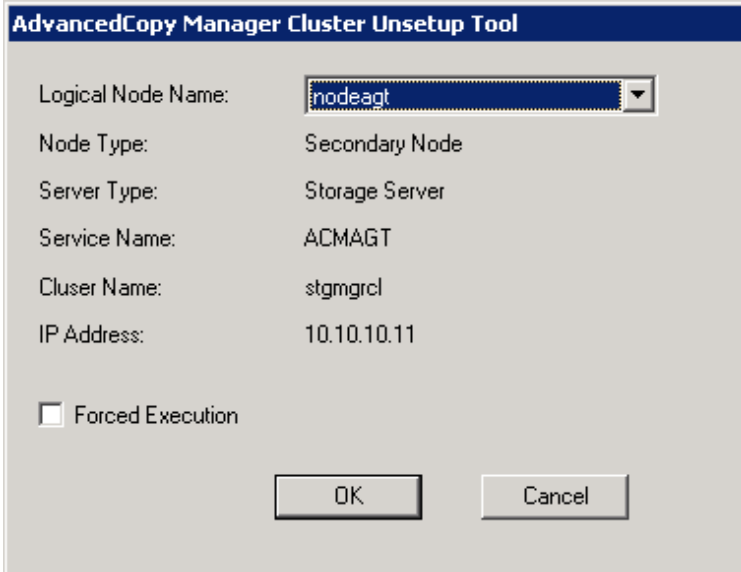
- When executing in Management Server

```
programDir\ACM\bin\stgclunset_mscs
```

- When executing in Managed Server

```
programDir\bin\stgclunset_mscs
```

- b. The cluster unsetup command window is displayed.



The dialog box titled "AdvancedCopy Manager Cluster Unsetup Tool" contains the following fields and options:

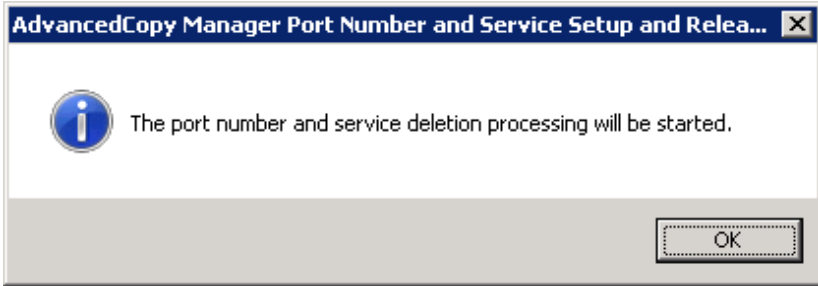
Logical Node Name:	nodeagt
Node Type:	Secondary Node
Server Type:	Storage Server
Service Name:	ACMAGT
Cluster Name:	stgmgrcl
IP Address:	10.10.10.11

Forced Execution

Buttons: OK, Cancel

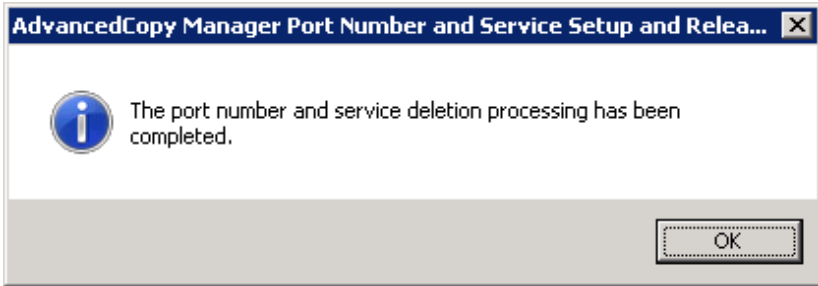
Select the logical node name of the AdvancedCopy Manager transaction to be deleted. For unsetup after node failure, select the **Forced Execution** checkbox. After confirming each field, click **OK**.

- c. The following page is displayed. Click **OK**.



The dialog box titled "AdvancedCopy Manager Port Number and Service Setup and Release..." displays an information icon and the message: "The port number and service deletion processing will be started." An OK button is located at the bottom right.

- d. The following page is displayed. Click **OK**.



The dialog box titled "AdvancedCopy Manager Port Number and Service Setup and Release..." displays an information icon and the message: "The port number and service deletion processing has been completed." An OK button is located at the bottom right.

- e. Complete the cluster unsetup of the secondary node B.

When the completion window of cluster unsetup is displayed, click **OK**.

Note

For the secondary node B, the swstf8143 message is displayed.

 **Note**

If there are remaining secondary nodes B for which step 3 and step 4 have not been performed, perform from step 3 on the nodes. When step 3 and step 4 is completed on all secondary nodes B, go to step 5.

5. On the secondary node A, take the ownership of the transaction.

Take the ownership of the transaction to which the applicable AdvancedCopy Manager belongs, using the Failover Cluster Manager.

Refer to your cluster software manuals for taking ownership.

6. On the secondary node A, execute the cluster unsetup command.

- a. Execute the following command.

The *programDir* is "Program Directory" specified at the AdvancedCopy Manager's agent installation.

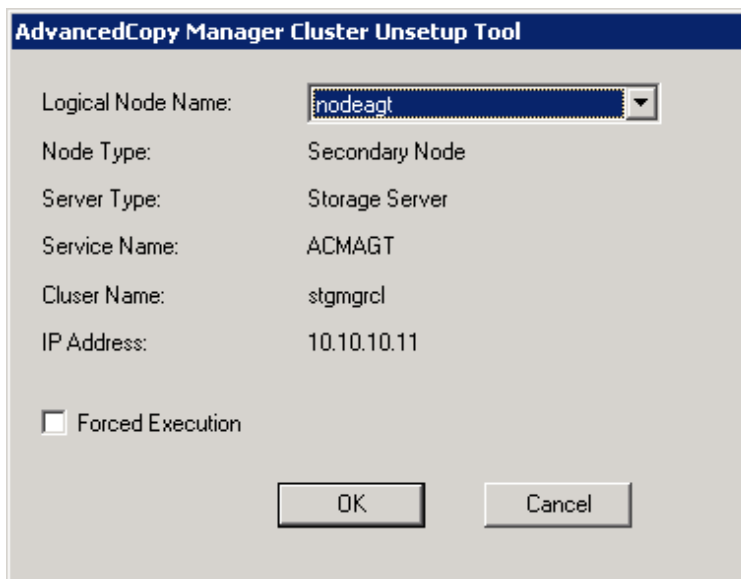
- When executing in Management Server

```
programDir\ACM\bin\stgclunset_mscs
```

- When executing in Managed Server

```
programDir\bin\stgclunset_mscs
```

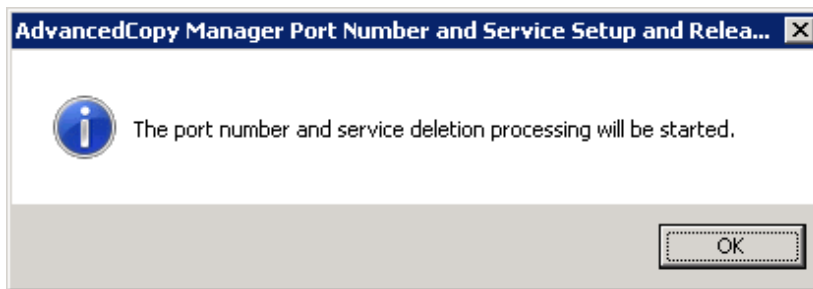
- b. The cluster unsetup command window is displayed.



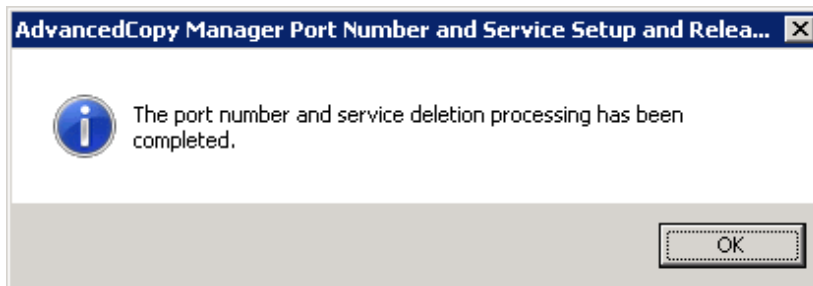
Select the logical node name of the transaction to be deleted. For unsetup after node failure, select the **Forced Execution** checkbox.

After confirming each field, click **OK**.

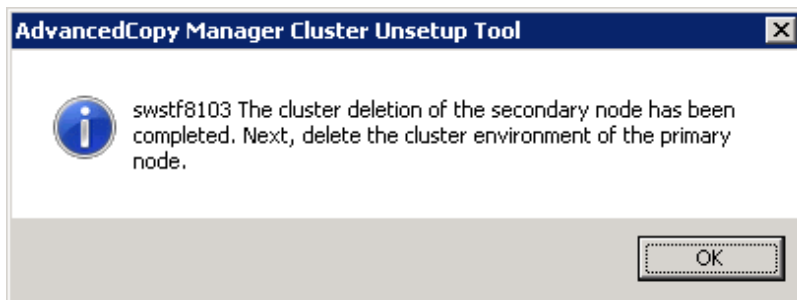
- c. The following page is displayed. Click **OK**.



- d. The following page is displayed. Click **OK**.



- e. Complete the cluster unsetup of the secondary node A.



When the completion window of cluster unsetup is displayed, click **OK**. Next, execute unsetup for the primary node.

7. On the primary node, take the ownership of the transaction.

Take the ownership of the transaction to which the applicable AdvancedCopy Manager belongs, using the Failover Cluster Manager.

Refer to your cluster software manuals for taking ownership.

8. On the primary node, execute the cluster unsetup command.

- a. Execute the following cluster unsetup command.

The *programDir* is "Program Directory" specified at the AdvancedCopy Manager's agent installation.

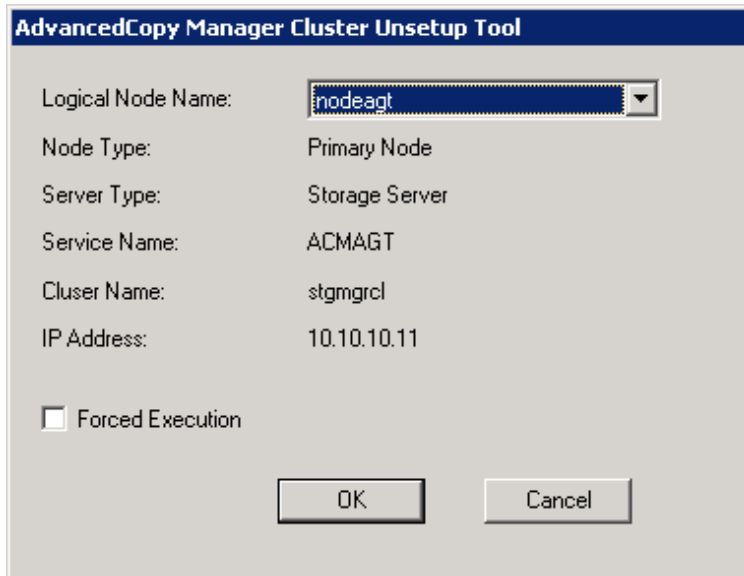
- When executing in Management Server

```
programDir\ACM\bin\stgclunset_mscs
```

- When executing in Managed Server

```
programDir\bin\stgclunset_mscs
```

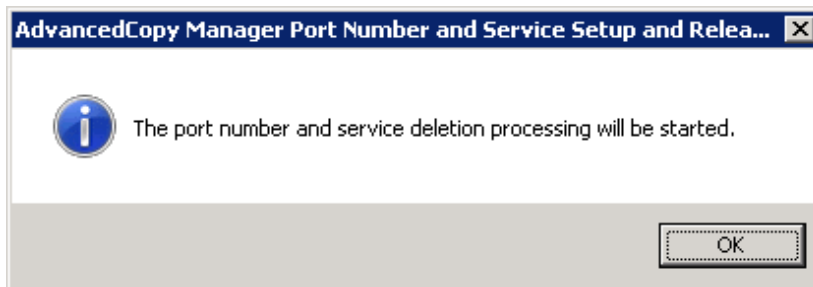
b. The cluster unsetup command window is displayed.



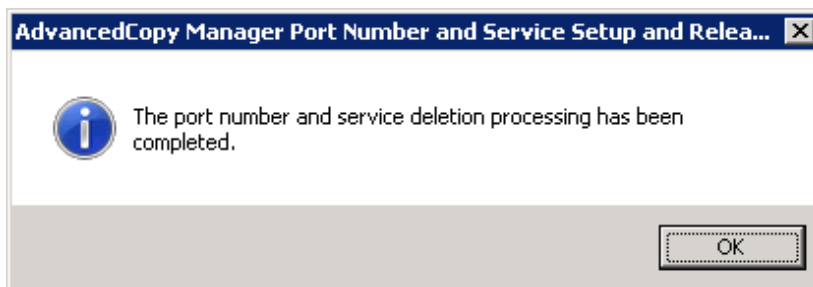
Select the logical node name selected in the cluster unsetup window on the secondary node. For unsetup after node failure, select the **Forced Execution** checkbox.

After confirming each field, click **OK**.

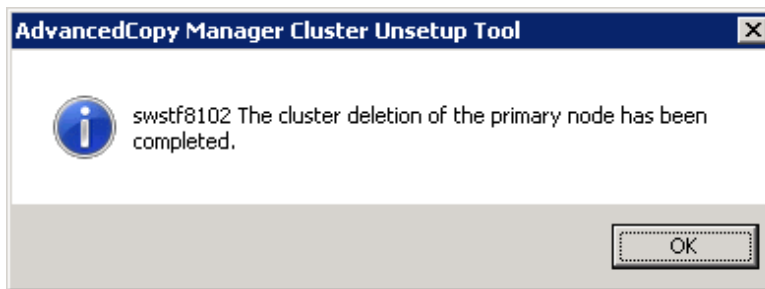
c. The following page is displayed. Click **OK**.



d. The following page is displayed. Click **OK**.



- e. Complete cluster unsetup of the primary node.



When the completion window of cluster unsetup is displayed, click **OK**.

9. Delete and/or move the resources that were used by AdvancedCopy Manager.
 - If the shared disk for shared data of AdvancedCopy Manager is not used for the transaction Use the Failover Cluster Manager to move them to another transaction.
 - If "New" is selected in the **IP Address Resource** when the AdvancedCopy Manager cluster setup If the following resources are not being used, use the Failover Cluster Manager to delete them.
 - AdvancedCopy IP Address_ *logicalNodeName*
 - AdvancedCopy Network_ *logicalNodeName*

For information about moving disk resource, refer to your cluster software manuals.

10. Delete the port number of AdvancedCopy Manager that was set for transaction use.

Delete the port number set for the Managed Server transaction from the %SystemRoot%\system32\drivers\etc\services file. Delete the port numbers on the primary node and secondary nodes. The service name is as follows:

- stgxfws_ *logicalNodeName*

11. Restart the cluster transaction.

Use the Failover Cluster Manager to switch the cluster transaction that was stopped in step 2 online. For information about switching the cluster group online, refer to your cluster software manuals.

The deletion the cluster environment for a Managed Server transaction in Windows clustered system is completed.

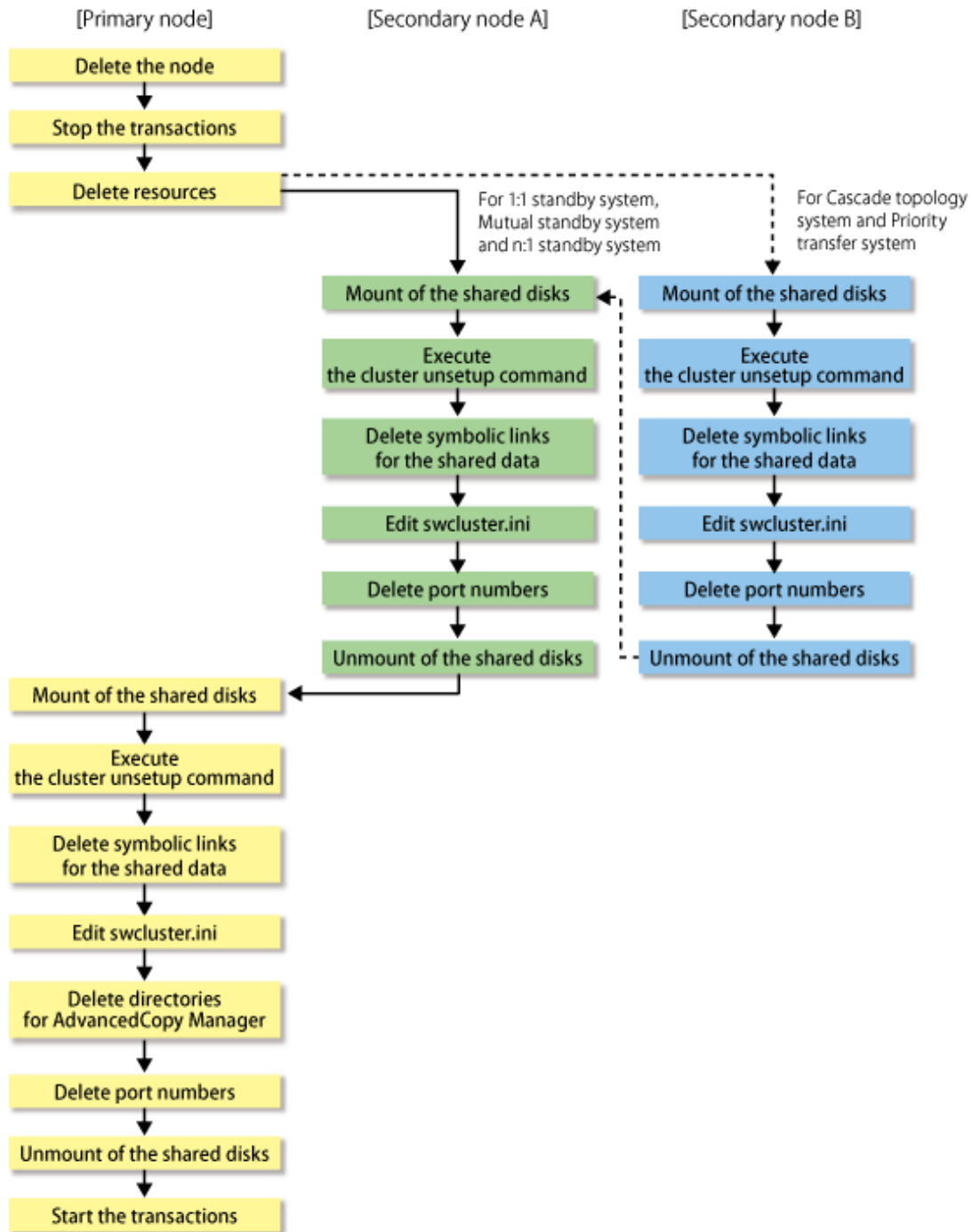
14.2 Deletion of Cluster Environment for Solaris/Linux/HP-UX Clustered System

This section explains how to delete the cluster environment on the Solaris/Linux/HP-UX clustered system.

14.2.1 Deletion Flow

The following flow is the deletion procedure of the cluster environment for Managed Server transaction.

Figure 14.2 Deletion Flow for Solaris/Linux/HP-UX Clustered System



14.2.2 Deletion Procedure

Follow the procedure below to delete the cluster environment for a Managed Server transaction.

Point

For explanatory purposes, the command execution examples in this section use the following settings:

- <Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>: /acmdata01
- Logical node name: acmnode1

Note

Perform the procedures by root (super user).

1. Delete the node.

Use the AdvancedCopy Manager command to delete the node.

2. Use the function of a cluster software to stop the cluster transaction on the primary node.

Refer to your cluster software manuals for information on how to stop a cluster transaction.

3. Delete resources.

Delete the AdvancedCopy Manager resources that are registered for the target cluster transaction.

Refer to your cluster software manuals for information on how to delete a resource.

4. On the secondary node, perform the following procedures.

If you used a Cascade system or a Priority Transfer system, after performing from step a to step f on all of the secondary node B, perform from step a to step f on the secondary node A.

If you used a 1:1 Standby system, a Mutual Standby system, or a n:1 Standby system, perform from step a to step f on the secondary node A.

- a. Mount the shared disk.

Mount the shared disk for shared data of AdvancedCopy Manager.

- b. Execute the following commands in the given sequence.

Sequence of Execution	Command Name
1	<code>clset_FJSVswsrp</code> command
2	<code>clset_FJSVswsts</code> command
3	<code>clset_FJSVswstf</code> command

Point

Execute each command with the `-u` option specified.

Example

The command execution example is as follows.

```
# /opt/FJSVswsrp/bin/clset_FJSVswsrp -u -f /acmdata01/etc/opt/swstorage/clsetup.ini -t
Secondary
clset_FJSVswsrp completed
# /opt/FJSVswsts/bin/clset_FJSVswsts -u -f /acmdata01/etc/opt/swstorage/clsetup.ini -t
Secondary
clset_FJSVswsts completed
# /opt/FJSVswstf/bin/clset_FJSVswstf -u -f /acmdata01/etc/opt/swstorage/clsetup.ini -t
Secondary
clset_FJSVswstf completed
```

- c. Delete the symbolic link files to the shared disk for shared data of AdvancedCopy Manager.

Delete the following symbolic link files. The *logicalNodeName* is the logical node name.

- `/etc/opt/swstorage/logicalNodeName`
- `/var/opt/swstorage/logicalNodeName`

Example

The command execution example is as follows.

```
# rm /etc/opt/swstorage/acmnode1
# rm /var/opt/swstorage/acmnode1
```

- d. Edit the /opt/FJSVswstf/cluster/swcluster.ini file.

Modify or delete the portions in italics according to your system environment.

```
[ClusterCommon]
Cluster=ON (*1)
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN (*2)
Env_N=<Logical node name>
[<Logical node name>]
Type=Secondary
BusiType=<AdvancedCopy Manager server type>
Business=<Name of cluster transaction>
ShareEtc=<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/etc/opt
ShareVar=<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/var/opt
MountPoint=<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=<Name of primary node (Host name of primary node)>
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure
```

*1: This line needs to be modified when deleting the last cluster transactions on this server.

*2: This line needs to be deleted when deleting the last cluster transactions on this server.

Example

When deleting the last cluster transactions on the same server, the example for editing the swcluster.ini file is as follows.

[Before editing]

The italicized portions are the changes and deletions.

```
[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_1=acmnode1
[acmnode1]
Type=Secondary
BusiType=2
Business=acmbiz01
ShareEtc=/acmdata01/etc/opt
```

```
ShareVar=/acmdata01/var/opt
MountPoint=/acmdata01
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure
```

[After editing]

```
[ClusterCommon]
Cluster=OFF
Max=20
StartTimeOut=300
StopTimeOut=300
```

Example

When cluster transactions have already been created on the same server, the example for editing the swcluster.ini file is as follows.

[Before editing]

The italicized portions are the deletions.

```
[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_2=acmnode2
Env_1=acmnode1
[acmnode2]
Type=Secondary
BusiType=2
Business=acmbiz02
ShareEtc=/acmdata02/etc/opt
ShareVar=/acmdata02/var/opt
MountPoint=/acmdata02
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure
[acmnode1]
```

```

Type=Secondary
BusiType=2
Business=acmbiz01
ShareEtc=/acmdata01/etc/opt
ShareVar=/acmdata01/var/opt
MountPoint=/acmdata01
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure

```

[After editing]

```

[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_2=acmnode2
[acmnode2]
Type=Secondary
BusiType=2
Business=acmbiz02
ShareEtc=/acmdata02/etc/opt
ShareVar=/acmdata02/var/opt
MountPoint=/acmdata02
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure

```

- e. Delete the port number.

Use the vi command etc. of OS, and delete the line of the following service from the /etc/services file.

- Transaction communication daemon: stgxfws_logicalNodeName

- f. Unmount the shared disk.

Unmount the shared disk for shared data of AdvancedCopy Manager.

5. On the primary node, perform the following procedures.

- a. Mount the shared disk.

Mount the shared disk for shared data of AdvancedCopy Manager.

b. Execute the following commands in the given sequence.

Sequence of Execution	Command Name
1	<code>clset_FJsvswsrp</code> command
2	<code>clset_FJsvswsts</code> command
3	<code>clset_FJsvswstf</code> command

Point

Execute each command with the `-u` option specified.

Example

The command execution example is as follows.

```
# /opt/FJsvswsrp/bin/clset_FJsvswsrp -u -f /acmdata01/etc/opt/swstorage/clsetup.ini -t
Primary
clset_FJsvswsrp completed
# /opt/FJsvswsts/bin/clset_FJsvswsts -u -f /acmdata01/etc/opt/swstorage/clsetup.ini -t
Primary
clset_FJsvswsts completed
# /opt/FJsvswstf/bin/clset_FJsvswstf -u -f /acmdata01/etc/opt/swstorage/clsetup.ini -t
Primary
clset_FJsvswstf completed
```

c. Delete the symbolic link files to the shared disk for shared data of AdvancedCopy Manager.

Delete the following symbolic link files. The *logicalNodeName* is the logical node name.

- `/etc/opt/swstorage/logicalNodeName`
- `/var/opt/swstorage/logicalNodeName`

Example

The command execution example is as follows.

```
# rm /etc/opt/swstorage/acmnode1
# rm /var/opt/swstorage/acmnode1
```

d. Edit the `/opt/FJsvswstf/cluster/swcluster.ini` file.

Modify or delete the portions in italics according to your system environment.

```
[ClusterCommon]
Cluster=ON (*1)
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN (*2)
Env_N=<Logical node name>
[<Logical node name>]
Type=Primary
BusiType=<AdvancedCopy Manager server type>
Business=<Name of cluster transaction>
ShareEtc=<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/etc/opt
ShareVar=<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/var/opt
MountPoint=<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>
```

```

IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=<Name of primary node (Host name of primary node)>
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure

```

*1: This line needs to be modified when deleting the last cluster transactions on this server.

*2: This line needs to be deleted when deleting the last cluster transactions on this server.

Example

When deleting the last cluster transactions on the same server, the example for editing the swcluster.ini file is as follows.

[Before editing]

The italicized portions are the changes and deletions.

```

[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_1=acmnode1
[acmnode1]
Type=Primary
BusiType=2
Business=acmbiz01
ShareEtc=/acmdata01/etc/opt
ShareVar=/acmdata01/var/opt
MountPoint=/acmdata01
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure

```

[After editing]

```

[ClusterCommon]
Cluster=OFF
Max=20
StartTimeOut=300
StopTimeOut=300

```


Example

When cluster transactions have already been created on the same server, the example for editing the swcluster.ini file is as follows.

[Before editing]

The italicized portions are the deletions.

```
[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_2=acmnode2
Env_1=acmnode1
[acmnode2]
Type=Primary
BusiType=2
Business=acmbiz02
ShareEtc=/acmdata02/etc/opt
ShareVar=/acmdata02/var/opt
MountPoint=/acmdata02
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure
[acmnode1]
Type=Primary
BusiType=2
Business=acmbiz01
ShareEtc=/acmdata01/etc/opt
ShareVar=/acmdata01/var/opt
MountPoint=/acmdata01
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure
```

[After editing]

```
[ClusterCommon]
Cluster=ON
Max=20
```

```
StartTimeOut=300
StopTimeOut=300
System=GEN
Env_2=acmnode2
[acmnode2]
Type=Primary
BusiType=2
Business=acmbiz02
ShareEtc=/acmdata02/etc/opt
ShareVar=/acmdata02/var/opt
MountPoint=/acmdata02
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=m40001
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure
```

- e. Delete the directories that were created on the shared disk for shared data of AdvancedCopy Manager when setting up the cluster environment.

Delete the following directories:

- *<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/etc/opt/swstorage*
- *<Mountpoint-of-shared-disk-for-shared-data-of-AdvancedCopy-Manager>/var/opt/swstorage*

- f. Delete the port number.

Use the vi command etc. of OS, and delete the line of the following service from the /etc/services file.

- Transaction communication daemon: *stgxfws_logicalNodeName*

- g. Unmount the shared disk.

Unmount the shared disk for shared data of AdvancedCopy Manager.

- h. If you use the stopped cluster transactions in any application other than AdvancedCopy Manager CCM, restart these cluster transactions.

Refer to your cluster software manuals for information on how to start a cluster transaction.

The deletion the cluster environment for a Managed Server transaction in Solaris/Linux/HP-UX clustered system is completed.

Chapter 15 Deletion of Cluster Environment for CCM Server Transactions

This chapter explains how to delete cluster environments for CCM Server transactions.

In this document, the primary node is a node in a cluster transaction that was set up as a primary node in "Chapter 11 Customization for CCM Server Transactions", and the secondary node is a node in the cluster transaction that was set up as a secondary node.

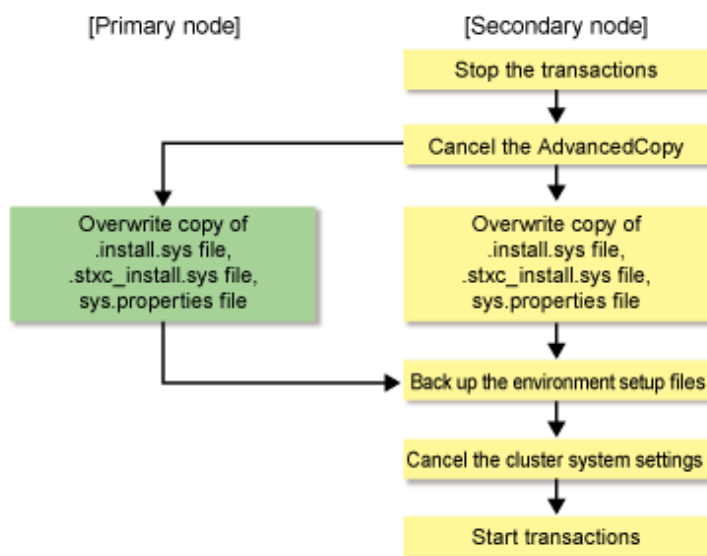


The following commands described in this chapter are AdvancedCopy Manager CCM commands. Refer to "Command References" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for information on the commands.

- acservice stop command
- acarrray remove command
- acarrray add command

15.1 Deletion Flow

The following flow is the deletion procedure of the cluster environment for CCM Server transaction.



Unless instructed otherwise, do not execute any commands of AdvancedCopy Manager CCM.

15.2 Deletion Procedure of Cluster Environment (for Windows)

The deletion procedure of cluster environment for CCM Server transactions (for Windows) is performed as follows:

1. On the primary and secondary nodes, log in as a user with Administrator privileges.
2. Stop the CCM Server transactions.
Refer to your cluster software manuals for information on the stopping methods.
After stopping the CCM Server transactions, mount the shared disk for shared data.

3. On the secondary node, cancel the AdvancedCopy Manager CCM settings.

a. Stop Advanced Copy processes.

Stop all Advanced Copy processes that are executed by AdvancedCopy Manager CCM. Refer to the copy stop commands that are described in "Command References" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for information on how to stop an Advanced Copy process.

b. Execute the acservice stop command with the -lan option to stop the management service.

```
>acservice stop -lan
```

c. Restore AdvancedCopy Manager CCM environment setting files that was backed up in "[Chapter 11 Customization for CCM Server Transactions](#)".

Overwrite the following files to the copy destination.

The *programDir* is "Program Directory" specified at the AdvancedCopy Manager CCM installation.

Copy Source File	Copy Destination File
<i>programDir</i> \ACCM\noncluster\micc\sys\install.sys	<i>programDir</i> \ACCM\micc\sys\install.sys
<i>programDir</i> \ACCM\noncluster\bin\stxc_install.sys	<i>programDir</i> \ACCM\bin\stxc_install.sys
<i>programDir</i> \ACCM\noncluster\sys\sys.properties	<i>programDir</i> \ACCM\sys\sys.properties

d. Delete AdvancedCopy Manager CCM environment setting files that was backed up.

Delete the *programDir*\ACCM\noncluster directory and contents.

4. On the primary node, cancel the AdvancedCopy Manager CCM settings.

a. Restore AdvancedCopy Manager CCM environment setting files that was backed up in "[Chapter 11 Customization for CCM Server Transactions](#)".

Overwrite the following files to the copy destination.

The *programDir* is "Program Directory" specified at the AdvancedCopy Manager CCM installation.

Copy Source File	Copy Destination File
<i>programDir</i> \ACCM\noncluster\micc\sys\install.sys	<i>programDir</i> \ACCM\micc\sys\install.sys
<i>programDir</i> \ACCM\noncluster\bin\stxc_install.sys	<i>programDir</i> \ACCM\bin\stxc_install.sys
<i>programDir</i> \ACCM\noncluster\sys\sys.properties	<i>programDir</i> \ACCM\sys\sys.properties

b. Delete AdvancedCopy Manager CCM environment setting files that was backed up.

Delete the *programDir*\ACCM\noncluster directory and contents.

5. Cancel the clustered system settings.

Cancel the settings that you made when setting up the clustered system.

Refer to your cluster software manuals for information on the setting cancellation methods.

6. Migrate the environment settings.

For migrating the environment setup files that you defined in the cluster environment to a non-cluster environment, follow below procedure for restoring the environment setup files.

a. In the cluster environment, back up the environment setup files.

Refer to "Backing Up Environment Settings Files" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

b. Restore the backed-up environment setup files in a non-cluster environment.

Refer to "For Non-cluster Operation" in "Restoring Environment Settings Files" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

However, do not restore the following files:

- *programDi\ACCM\micc\sys\install.sys*
- *programDi\ACCM\bin\stxc_install.sys*
- *programDi\ACCM\sys\sys.properties*
- *programDi\ACCM\noncluster\micc\sys\install.sys*
- *programDi\ACCM\noncluster\bin\stxc_install.sys*
- *programDi\ACCM\noncluster\sys\sys.properties*

c. If any access volume information has been modified, execute the `acarray remove` command to remove the device information. After that, execute the `acarray add` command to register it again.

7. Delete the directories and files from the shared disk for shared data.

Delete all directories and their contents on the shared disk for shared data that you created in step 4-c of "[11.1.2 Customization Procedure](#)".

8. If you use the stopped cluster transactions in any application other than AdvancedCopy Manager CCM, restart these cluster transactions.

Refer to your cluster software manuals for information on how to start a cluster transaction.

The deletion the cluster environment for CCM Server transactions in Windows clustered system is completed.

15.3 Deletion Procedure of Cluster Environment (for Solaris/Linux)

The deletion procedure of cluster environment for CCM Server transactions (for Solaris/Linux) is performed as follows:

1. Log in to the primary and secondary nodes. Perform the operation after logging in as a root user.
2. Stop the CCM Server transactions.

Refer to your cluster software manuals for information on the stopping methods.

After stopping the CCM Server transactions, mount the shared disk for shared data.

3. On the secondary node, cancel the AdvancedCopy Manager CCM settings.

a. Stop Advanced Copy processes.

Stop all Advanced Copy processes that are executed by AdvancedCopy Manager CCM. Refer to the copy stop commands that are described in "Command References" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for information on how to stop an Advanced Copy process.

b. Execute the `acservicestop` command with the `-lan` option to stop the management service.

```
# acservicestop -lan
```

c. Restore AdvancedCopy Manager CCM environment setting files that was backed up in "[Chapter 11 Customization for CCM Server Transactions](#)".

Overwrite the following files to the copy destination.

Copy Source File	Copy Destination File
<code>/opt/FJsvccm/noncluster/micc/sys/install.sys</code>	<code>/opt/FJsvccm/micc/sys/install.sys</code>
<code>/opt/FJsvccm/noncluster/bin/stxc_install.sys</code>	<code>/opt/FJsvccm/bin/stxc_install.sys</code>
<code>/opt/FJsvccm/noncluster/sys/sys.properties</code>	<code>/opt/FJsvccm/sys/sys.properties</code>

Example

The copy execution example is as follows.

```
# cp -p /opt/FJSVccm/noncluster/micc/sys/.install.sys /opt/FJSVccm/micc/sys/.install.sys
# cp -p /opt/FJSVccm/noncluster/bin/.stxc_install.sys /opt/FJSVccm/bin/.stxc_install.sys
# cp -p /opt/FJSVccm/noncluster/sys/sys.properties /opt/FJSVccm/sys/sys.properties
```

- d. Delete AdvancedCopy Manager CCM environment setting files that was backed up.

Delete the /opt/FJSVccm/noncluster directory and contents.

Example

The deletion execution example is as follows.

```
# rm -r /opt/FJSVccm/noncluster
```

- 4. On the primary node, cancel the AdvancedCopy Manager CCM settings.

- a. Restore AdvancedCopy Manager CCM environment setting files that was backed up in "Chapter 11 Customization for CCM Server Transactions".

Overwrite the following files to the copy destination.

Copy Source File	Copy Destination File
/opt/FJSVccm/noncluster/micc/sys/.install.sys	/opt/FJSVccm/micc/sys/.install.sys
/opt/FJSVccm/noncluster/bin/.stxc_install.sys	/opt/FJSVccm/bin/.stxc_install.sys
/opt/FJSVccm/noncluster/sys/sys.properties	/opt/FJSVccm/sys/sys.properties

Example

The copy execution example is as follows.

```
# cp -p /opt/FJSVccm/noncluster/micc/sys/.install.sys /opt/FJSVccm/micc/sys/.install.sys
# cp -p /opt/FJSVccm/noncluster/bin/.stxc_install.sys /opt/FJSVccm/bin/.stxc_install.sys
# cp -p /opt/FJSVccm/noncluster/sys/sys.properties /opt/FJSVccm/sys/sys.properties
```

- b. Delete AdvancedCopy Manager CCM environment setting files that was backed up.

Delete the /opt/FJSVccm/noncluster directory and contents.

Example

The deletion execution example is as follows.

```
# rm -r /opt/FJSVccm/noncluster
```

- 5. Cancel the clustered system settings.

Cancel the settings that you made when setting up the clustered system. Refer to your cluster software manuals for information on the setting cancellation methods.

- 6. Migrate the environment settings.

For migrating the environment setup files that you defined in the cluster environment to a non-cluster environment, follow below procedure for restoring the environment setup files.

- a. In the cluster environment, back up the environment setup files.

Refer to "Backing Up Environment Settings Files" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

- b. Restore the backed-up environment setup files in a non-cluster environment.

Refer to "For Non-cluster Operation" in "Restoring Environment Settings Files" in the *ETERNUS SF AdvancedCopy Manager Operation Guide for Copy Control Module* for details.

However, do not restore the following files:

- /opt/FJSVccm/micc/sys/.install.sys
- /opt/FJSVccm/bin/.stxc_install.sys
- /opt/FJSVccm/sys/sys.properties
- /opt/FJSVccm/noncluster/micc/sys/.install.sys
- /opt/FJSVccm/noncluster/bin/.stxc_install.sys
- /opt/FJSVccm/noncluster/sys/sys.properties

- c. If any access volume information has been modified, execute the `acarray remove` command to remove the device information. After that, execute the `acarray add` command to register it again.

7. Delete the directories and files from the shared disk for shared data.

Delete all directories and their contents on the shared disk for shared data that you created in step 4-c of "[11.2.2 Customization Procedure](#)".

8. If you use the stopped cluster transactions in any application other than AdvancedCopy Manager CCM, restart these cluster transactions.

Refer to your cluster software manuals for information on how to start a cluster transaction.

The deletion the cluster environment for CCM Server transactions in Solaris/Linux clustered system is completed.

Chapter 16 Command References

16.1 Environment Setup/Cancel Commands for Windows Clustered System

This section describes the commands, used in Windows clustered system, for setting up and cancelling environments.



Execute commands using Administrator privileges.

16.1.1 stgclset_mscs (Environment Setup Command for Windows Clustered System)

NAME

stgclset_mscs - Setup of AdvancedCopy Manager in Windows clustered system

SYNOPSIS

To Execute on Management Server:

```
<Program-directory>\ACM\bin\stgclset_mscs
```

To Execute on Managed Server:

```
<Program-directory>\bin\stgclset_mscs
```

DESCRIPTION

In Windows clustered system, AdvancedCopy Manager is set up.

16.1.2 stgclunset_mscs (Environment Cancel Command for Windows Clustered System)

NAME

stgclunset_mscs - Cancellation of AdvancedCopy Manager in Windows clustered system

SYNOPSIS

To Execute on Management Server:

```
<Program-directory>\ACM\bin\stgclunset_mscs
```

To Execute on Managed Server:

```
<Program-directory>\bin\stgclunset_mscs
```

DESCRIPTION

In Windows clustered system, AdvancedCopy Manager is cancelled.

NOTES

The IP address information displayed when you run the cluster unsetup command is the information that you specified in the cluster setup command. This is not the IP address that you modified according to "Changing IP Address of Management Server" or "Changing IP Address of Managed Server" in the *ETERNUS SF AdvancedCopy Manager Operation Guide*.

16.2 Environment Setup/Cancel Commands for Solaris/Linux/HP-UX Clustered System

This section explains the commands, used in Solaris/Linux/HP-UX clustered system, for setting up and cancelling environments.



Execute commands by root (superuser).

16.2.1 clset_FJSVswstf (Framework Environment Setup/Cancel Command)

NAME

clset_FJSVswstf - Setup or cancellation of framework environment in a clustered system

SYNOPSIS

```
/opt/FJSVswstf/bin/clset_FJSVswstf [-u] -f <Mountpoint-of-shared-disk-for-AdvancedCopy-Manager-shared-data>/etc/opt/swstorage/clsetup.ini -t {Primary | Secondary}
```

DESCRIPTION

Sets or cancels the framework environment in Solaris/Linux/HP-UX clustered system.

OPTIONS

-u

Cancels the environment.

If this option is omitted, the command sets up the environment.

-f

Specifies to use the clsetup.ini file (AdvancedCopy Manager setting up file).

Refer to the following sections for information on how to edit the clsetup.ini file:

- ["5.2 Customization for Solaris/Linux Clustered System"](#) in ["Chapter 5 Customization for Management Server Transaction"](#)
- ["8.2 Customization for Solaris/Linux/HP-UX Clustered System"](#) in ["Chapter 8 Customization for Managed Server Transactions"](#)

-t {Primary | Secondary}

Specify the node type.

- For setting or cancelling the primary node: Primary
- For setting or cancelling the secondary node: Secondary

EXIT STATUS

=0: Completed successfully

>0: Terminated abnormally

16.2.2 clset_FJSVswsts (Backup Environment Setup/Cancel Command)

NAME

clset_FJSVswsts - Setup or cancellation of environment for backup function in a clustered system

SYNOPSIS

```
/opt/FJSVswsts/bin/clset_FJSVswsts [-u] -f <Mountpoint-of-shared-disk-for-AdvancedCopy-Manager-shared-data>/etc/opt/swstorage/clsetup.ini -t {Primary | Secondary}
```

DESCRIPTION

Sets or cancels the environment for the backup function in Solaris/Linux/HP-UX clustered system.

OPTIONS

-u

Cancels the environment.

If this option is omitted, the command sets up the environment.

-f

Specifies to use the clsetup.ini file (AdvancedCopy Manager setting up file).

Refer to the following sections for information on how to edit the clsetup.ini file:

- ["5.2 Customization for Solaris/Linux Clustered System"](#) in ["Chapter 5 Customization for Management Server Transaction"](#)
- ["8.2 Customization for Solaris/Linux/HP-UX Clustered System"](#) in ["Chapter 8 Customization for Managed Server Transactions"](#)

-t {Primary | Secondary}

Specify the node type.

- For setting or cancelling the primary node: Primary
- For setting or cancelling the secondary node: Secondary

EXIT STATUS

=0: Completed successfully

>0: Terminated abnormally

16.2.3 clset_FJSVswsrp (Replication Environment Setup/Cancel Command)

NAME

clset_FJSVswsrp - Setup or cancellation of environment for replication function in a clustered system

SYNOPSIS

```
/opt/FJSVswsrp/bin/clset_FJSVswsrp [-u] -f <Mountpoint-of-shared-disk-for-AdvancedCopy-Manager-shared-data>/etc/opt/swstorage/clsetup.ini -t {Primary | Secondary}
```

DESCRIPTION

Sets or cancels the environment for the replication function in Solaris/Linux/HP-UX clustered system.

OPTIONS

-u

Cancels the environment.

If this option is omitted, the command sets up the environment.

-f

Specifies to use the clsetup.ini file (AdvancedCopy Manager setting up file).

Refer to the following sections for information on how to edit the clsetup.ini file:

- ["5.2 Customization for Solaris/Linux Clustered System"](#) in ["Chapter 5 Customization for Management Server Transaction"](#)
- ["8.2 Customization for Solaris/Linux/HP-UX Clustered System"](#) in ["Chapter 8 Customization for Managed Server Transactions"](#)

-t {Primary | Secondary}

Specify the node type.

- For setting or cancelling the primary node: Primary
- For setting or cancelling the secondary node: Secondary

EXIT STATUS

=0: Completed successfully
>0: Terminated abnormally

16.2.4 StgDbSetup (Repository Environment Setup/Cancel Command)

NAME

StgDbSetup - Setup or cancellation of environment for repository function in a clustered system

SYNOPSIS

```
/opt/FJSVswstf/bin/StgDbSetup [-u] -f <Mountpoint-of-shared-disk>/etc/opt/swstorage/clsetup.ini -t  
{Primary | Secondary}
```

DESCRIPTION

Sets or cancels the environment for the repository function in Solaris/Linux clustered system.
This command can be used in the Management Server transactions only.

OPTIONS

-u

Cancels the environment.

If this option is omitted, the command sets up the environment.

-f

Specifies to use the clsetup.ini file (AdvancedCopy Manager setting up file).

Refer to "[5.2 Customization for Solaris/Linux Clustered System](#)" in "[Chapter 5 Customization for Management Server Transaction](#)" for information on how to edit the clsetup.ini file.

-t {Primary | Secondary}

Specify the node type.

- For setting or cancelling the primary node: Primary
- For setting or cancelling the secondary node: Secondary

EXIT STATUS

=0: Completed successfully
>0: Terminated abnormally

NOTES

- For Solaris or Linux, if the value of the environment variable PATH is more than 800 characters, change it to 800 characters or less to execute this command.