



# **PRIMECLUSTER™**

Global File Services

Configuration and Administration Guide 4.2

(Linux)

October 2006



# Preface

The Global File Services File System and its optional products are generically called "GFS product" or "GFS" in the document.

This manual explains the functions, settings, and operations of the entire GFS products.

## Target Readers

This manual is intended for all the users operating the products with GFS Shared File System (e.g. PRIMECLUSTER.)

To read this manual, readers will require a general knowledge of UNIX and Linux(R) operating systems.

Because GFS Shared File System uses the functions of PRIMECLUSTER, readers will also need knowledge of cluster control as used in a PRIMECLUSTER system.

Because GFS Shared File System uses the functions of PRIMECLUSTER Global Disk Services, readers will also need knowledge of shard volume as used in a PRIMECLUSTER Global Disk Services.

## Organization

This manual organized as below.

### Chapter 1 File System Functions

This chapter describes the functions and features of the GFS Shared File System.

### Chapter 2 File System Structure

This chapter describes the structure of the GFS Shared File System.

### Chapter 3 Failure Recovery

This chapter describes the following failure recovery functions of the GFS Shared File System.

### Chapter 4 File System Design

This chapter describes the main features of the operational design of the GFS Shared File System.

### Chapter 5 Management Partition

This chapter describes the management partition.

### Chapter 6 Starting and Exiting the Management View

This chapter describes how to start and exit the GFS Management View.

### Chapter 7 Operation Management View Screen Elements

This chapter describes the screen elements of the GFS Management View.

### Chapter 8 Management Partition Operations (GUI)

This chapter describes how to operate the management partition by the GFS Management View.

### Chapter 9 Management Partition Operations (Command)

This chapter describes how to operate the management partition by commands.

### Chapter 10 File System Operations (GUI)

This chapter describes how to operate the GFS Shared File System by the GFS

Management View.

#### Chapter 11 File System Operations (Command)

This chapter describes how to operate the GFS Shared File System by commands.

#### Chapter 12 File System Management

This chapter describes the procedures for managing the GFS Shared File System using basic commands.

#### Chapter 13 File System Backing-up and Restoring

This chapter describes how to backing up and restoring data in the GFS Shared File System.

#### Chapter 14 Tuning

This chapter describes how to use a variety of utilities to optimize and make effective use of the GFS Shared File System.

#### Chapter 15 Migration to the GFS Shared File System

This chapter describes how to migrate from existing file systems to the GFS Shared File Systems.

#### Appendix A List of Messages

This appendix describes GFS Shared File System messages.

#### Appendix B Reference Manual

This appendix is intended for use as a reference manual for the GFS Shared File System.

#### Appendix C Troubleshooting

This appendix describes messages for which emergency action is required.

#### Appendix D Incompatibility from Each Version

This appendix describes an incompatibility from each version of the GFS Shared File System.

#### Glossary

The glossary defines the terms related to the GFS Shared File System.

## Related documentation

The documents listed in this section contain information relevant to GFS Shared File System. Before beginning to work with GFS Shared File System, read the following document:

- *PRIMECLUSTER Concepts Guide (Solaris, Linux)*
- *PRIMECLUSTER Installation and Administration Guide (Linux)*
- *PRIMECLUSTER Web-Based Admin View Operation Guide*
- *PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide*
- *PRIMECLUSTER Reliant Monitor Services (RMS) with Wizard Tools (Solaris, Linux) Configuration and Administration Guide*
- *PRIMECLUSTER Reliant Monitor Services (RMS) (Solaris, Linux) Troubleshooting Guide*
- *PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)*
- *PRIMECLUSTER Global Link Services Configuration and Administration Guide : Redundant Line Control Function (Linux)*
- *PRIMEQUEST 480/440 Reference Manual GUI/Command*
- *PRIMEQUEST 480/440 Installation Manual*
- *PRIMEQUEST 480/440 Operation Manual*



Note

A related document of PRIMECLUSTER includes the following documents besides the above-mentioned manual.

— *PRIMECLUSTER Installation Guide*

Installation instructions on the paper appended to each product of PRIMECLUSTER.

The data is stored on “CD3” of the product. For information about the file name, see “Product introduction”, which is enclosed in the product.

## Manual Printing

Use the PDF file to print this manual.



Note

Adobe Acrobat Reader Version 4.0 or higher is required to read and print this PDF file.

## Online Manuals

To reference the online manual, use the Cluster management server to register the user name in user group wvroot, clroot, cladmin, or clmon.



See

To enter a user group and meaning thereof, see "PRIMECLUSTER Web-Based Admin View Operation Guide".

## Notational Conventions

### Notation

#### - Prompts

Command line examples that require system administrator (or root) rights to execute are preceded by the system administrator prompt, the hash sign (#). Command line examples that do not require system administrator rights are preceded by a dollar sign (\$).

#### - Manual page section numbers

Section No. of manual page






Section numbers of the manual page appear in brackets after the commands of Linux® operating system and PRIMECLUSTER. Example: cp(1)

#### - The keyboard

Keystrokes that represent nonprintable characters are displayed as key icons such as [Enter] or [F1]. For example, [Enter] means press the key labeled *Enter*, [Cntl]+[B] means hold down the key labeled *Cntl* or *Control* and then press the [B] key.

## - Symbol

Material of particular interest is preceded by the following symbols in this manual:

- [Linux2.4] Describes the topics when Linux kernel version is 2.4.  

- **Point** Describes the contents of an important point.  

- **Note** Describes the points the users should pay close attention to.  

- **Information** Provides useful information related to the topic.  

- **See** Provides manuals for users' reference.  


## - Abbreviated name

- Microsoft(R) Windows(R) 98 operating system and Microsoft(R) Windows(R) 98 Second Edition operating system are abbreviated as Windows(R) 98.
- Microsoft(R) Windows NT(R) Server operating System Version4.0 and Microsoft(R) Windows NT(R) Server workstation System Version4.0 are abbreviated as Windows NT(R).
- Microsoft(R) Windows(R) 2000 operating system is abbreviated as Windows(R) 2000.
- Microsoft(R) Windows(R) Millennium Edition is abbreviated as Windows(R) Me.
- Microsoft(R) Windows(R) XP operating system is abbreviated as Windows(R) XP.
- Windows(R) 98, Windows NT(R), Windows(R) 2000, Windows(R) Me, and Windows(R) XP are abbreviated as Microsoft(R) Windows.

October 2006
--------------

## Trademarks

- UNIX is a registered trademark of Open Group in the United States and other countries.
- Linux is a trademark or registered trademark of Mr. Linus Torvalds in the United States and other countries.
- NFS and NFS Client are trademarks of Sun Microsystems, Inc.
- Java and all Java-related products and logos are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries.
- Netscape and Netscape Navigator are trademarks or registered trademarks of Netscape Communications Corporation in the United States and other countries.
- Microsoft Internet Explorer is a registered trademark of Microsoft Corporation in the United States and other countries.
- Microsoft, Windows, MS are registered trademarks of Microsoft Corporation in the United States and other countries.
- PRIMECLUSTER is a trademark of Fujitsu Limited.
- Other product names are product names, trademarks, or registered trademarks of these companies.

Copyright (c) 1986-1997 Sun Microsystems Inc.

Copyright (c) 1983-1989 Portions may be derived from Berkeley BSD system, licensed from the U. of CA.

## **Requests**

- No part of this document may be reproduced or copied without permission of FUJITSU LIMITED.
- The contents of this document may be revised without prior notice.

All Rights Reserved, Copyright (C) FUJITSU LIMITED 2006.

All Rights Reserved, Copyright (C) Fujitsu Siemens Computers GmbH. 2006.





---

# Contents

<b>Chapter 1 File System Functions.....</b>	<b>1</b>
1.1 File System Overview .....	2
1.1.1 Basic hardware configuration for use of file system .....	2
1.1.2 File system sharing with PRIMEQUEST .....	3
1.2 Simultaneous Shared Access Maintaining Coherency .....	5
1.3 High Availability .....	6
1.3.1 Uninterrupted operation in case of node failure .....	6
1.3.2 High-speed file system recovery .....	6
1.3.3 Area reassignment in case of disk block failure .....	7
1.4 Performance.....	8
1.4.1 Data access performance .....	8
1.4.2 Contiguous block assignment .....	8
1.4.3 Multi-partition configuration .....	9
1.4.4 Individualized meta-cache management .....	9
1.5 Extensibility.....	10
1.5.1 File system extension .....	10
1.6 Operability.....	11
1.6.1 GUI .....	11
1.7 Upper Limits of the File System .....	12
1.8 Notes.....	13
1.8.1 Relationships with Other Components of PRIMECLUSTER .....	13
1.8.2 Unavailable functions .....	13
1.8.3 Service ports used by the GFS Shared File System .....	15
1.8.4 Notes on use of logical volumes of GDS .....	15
1.8.5 Notes on unmounting .....	16
1.8.6 Notes of updatedb(1L) .....	16
1.8.7 Notes on system time change .....	17
1.8.8 Notes on operation stop .....	18
1.8.9 Deleting a file being created from the other node .....	18
1.8.10 Notes on file owner change .....	18
1.8.11 Notes on ioctl(2) with FIONREAD .....	19
1.8.12 Notes on fcntl(2) with F_SETFL .....	19
1.8.13 Notes on fcntl(2) with F_SETLEASE .....	19
1.8.14 Notes on rename(2) .....	20
1.8.15 Notes on file lock function .....	20
1.8.16 Open processing from other nodes to a file mapped by mmap(2) [Linux2.4] ..	21
1.8.17 Creating a regular file by mknod(2) [Linux2.4] .....	21
1.8.18 Notes on opening a file on the GFS Shared File System .....	22

---

<b>Chapter 2 File System Structure</b> .....	<b>23</b>
2.1 Disk Structure of File System .....	24
2.1.1 Super block .....	24
2.1.2 Partition configuration data .....	25
2.1.3 Meta-data area .....	25
2.1.4 Update log area .....	25
2.1.5 File data area .....	26
2.1.6 Partition configuration .....	26
2.2 Component configuration .....	28
2.2.1 MDS (Meta Data Server) .....	29
2.2.2 AC (Access Client) .....	29
2.2.3 Monitoring daemon .....	29
2.3 File Access and Token Management.....	31
<b>Chapter 3 Failure Recovery</b> .....	<b>33</b>
3.1 MDS Failure Recovery .....	34
3.1.1 Automatic recovery for primary MDS failures .....	34
3.1.2 Automatic recovery for secondary MDS failures .....	35
3.1.3 Automatic recovery in case primary MDS goes down during primary MDS operation only .....	35
3.2 AC degeneration .....	37
<b>Chapter 4 File System Design</b> .....	<b>39</b>
4.1 Mount and unmount opportunity of the file system at the time of system starting and ending40	
4.2 System Design .....	41
4.2.1 Effects of file system operation and system load .....	41
4.2.2 Node layout .....	41
4.2.3 Disk layout .....	42
4.2.4 LAN selection .....	42
4.2.5 For future expansion .....	43
4.3 Backup Design .....	44
<b>Chapter 5 Management Partition</b> .....	<b>45</b>
5.1 Management Partition .....	46
5.2 Resources Required for the Management Partition .....	48
5.3 Notes on Management.....	49
<b>Chapter 6 Starting and Exiting the Management View</b> .....	<b>51</b>
6.1 Starting Web-Based Admin View.....	52

---

---

6.2	Web-Based Admin View Top Menu .....	53
6.2.1	Web-Based Admin View Operation Menu Functions .....	53
6.2.2	Web-Based Admin View Tool Menu Functions .....	53
6.3	Starting GFS Management View .....	54
6.4	Exiting GFS Management View .....	56
6.5	Exiting Web-Based Admin View .....	57
 <b>Chapter 7 Operation Management View Screen Elements .....</b>		<b>59</b>
7.1	Screen Configuration .....	60
7.2	Menu Configurations and Functions.....	63
7.2.1	General .....	63
7.2.2	Operation .....	64
7.2.3	View .....	71
7.2.4	Help .....	71
7.3	Icon Types and Object Status.....	72
 <b>Chapter 8 Management Partition Operations (GUI) .....</b>		<b>75</b>
8.1	Flow of Operations.....	76
8.1.1	Creating the management partition .....	76
8.1.2	Adding node configuration information to the management partition .....	76
8.2	Creating the management partition.....	78
8.2.1	Setting shared disks .....	78
8.2.2	Creating the management partition, registering node configuration information and starting sfcfrmd daemon .....	79
8.3	Adding node configuration information to the management partition .....	84
8.3.1	Setting shared disks .....	84
8.3.2	Stopping sfcfrmd daemon .....	84
8.3.3	Adding node configuration information to the management partition .....	87
8.3.4	Starting sfcfrmd daemon .....	90
 <b>Chapter 9 Management Partition Operations (Command) .....</b>		<b>95</b>
9.1	Flow of Operations.....	96
9.1.1	Creating the management partition .....	96
9.1.2	Adding node configuration information to the management partition .....	96
9.1.3	Deleting node configuration information from the management partition .....	97
9.1.4	Changing the sfcfrmd daemon's startup mode registered in the management partition .....	98
9.1.5	Backup of the management partition information .....	99
9.1.6	Restoring of the management partition information .....	99
9.2	Creating of the management partition.....	101
9.2.1	Setting Shared disks .....	101

---

---

9.2.2	Initializing of the management partition .....	101
9.2.3	Registering node configuration information to the management partition ...	102
9.2.4	Starting sfcfrmd daemon .....	103
9.3	Adding node configuration information to the management partition .....	104
9.3.1	Setting Shared disks .....	104
9.3.2	Stopping sfcfrmd daemon .....	104
9.3.3	Adding node configuration information to the management partition .....	105
9.3.4	Starting sfcfrmd daemon .....	105
9.4	Deleting node configuration information from the management partition .....	106
9.4.1	Stopping sfcfrmd daemon .....	106
9.4.2	Deleting node configuration information from the management partition ...	106
9.4.3	Starting sfcfrmd daemon .....	106
9.5	Changing the sfcfrmd daemon's startup mode registered in the management partition 108	
9.5.1	Choosing the sfcfrmd daemon's startup mode .....	108
9.5.2	Stopping sfcfrmd daemon .....	109
9.5.3	Changing the sfcfrmd daemon's startup mode .....	109
9.5.4	Starting sfcfrmd daemon .....	109
9.6	Backup of the management partition information .....	110
9.6.1	Backup of the management partition information .....	110
9.7	Restoring of the management partition information.....	111
9.7.1	Re-initializing the management partition .....	111
9.7.2	Re-registering node configuration information to the management partition .	111
9.7.3	Re-configuring the sfcfrmd daemon's startup mode in the management partition 111	
9.7.4	Starting sfcfrmd daemon .....	112
9.7.5	Restoring of the management partition information .....	112

**Chapter 10 File System Operations (GUI)..... 113**

10.1	Flow of Operations .....	114
10.1.1	Creation .....	114
10.1.2	Change (in file system attributes) .....	114
10.1.3	Change (partition addition) .....	115
10.1.4	Change (shared node information) .....	116
10.1.5	Deletion .....	117
10.2	Creation .....	119
10.2.1	Creating a file system .....	119
10.3	Change .....	128
10.3.1	Changing in file system attributes .....	128
10.3.2	Changing the file system configuration (partition addition) .....	130
10.3.3	Changing the shared node information .....	133
10.4	Deletion.....	136
10.4.1	Deleting the file system .....	136

---

**Chapter 11 File System Operations (Command) ..... 139**

11.1	Flow of Operations .....	140
11.1.1	Creation .....	140
11.1.2	Change (in file system attributes) .....	140
11.1.3	Change (partition addition) .....	141
11.1.4	Change (shared node information) .....	142
11.1.5	Change (re-creating a file system) .....	143
11.1.6	Change (MDS operational information) .....	144
11.1.7	Deletion .....	145
11.2	Creation .....	146
11.2.1	Setting shared disks .....	146
11.2.2	Creating a file systems .....	146
11.2.3	Setting fstab .....	151
11.2.4	Mount .....	153
11.2.5	Checking file system status .....	154
11.2.6	Notes applying when the partitions of a created file system are used .....	155
11.3	Change (file system attributes).....	156
11.3.1	Unmount .....	156
11.3.2	Change the file system attributes .....	157
11.3.3	Mount .....	158
11.4	Change (partition addition).....	159
11.4.1	Unmount .....	159
11.4.2	Setting shared disk .....	159
11.4.3	Partition addition .....	160
11.4.4	Mount .....	161
11.5	Change (shared node information).....	162
11.5.1	Unmount .....	162
11.5.2	Shared disk setting (addition) .....	162
11.5.3	Shared node information change .....	163
11.5.4	Setting fstab .....	165
11.5.5	Mount .....	165
11.6	Change (re-creating a file system) .....	166
11.6.1	Unmount .....	166
11.6.2	Re-creating the file system .....	166
11.6.3	Mount .....	167
11.7	Change (MDS operational information).....	168
11.7.1	Unmount .....	168
11.7.2	Changing the MDS operational information .....	168
11.7.3	Mount .....	169
11.8	Deleting.....	170
11.8.1	Unmount .....	170
11.8.2	Removing the entry in /etc/fstab .....	170
11.8.3	Deleting the file system .....	170

---

<b>Chapter 12 File System Management</b> .....	<b>173</b>
12.1 File System Management Commands .....	174
12.2 Checking a File System for Consistency and Repairing It.....	176
12.2.1 Action to be taken when fsck terminates abnormally . . . . .	176
12.3 Extending a File System .....	180
12.4 Displaying File System Information .....	181
12.4.1 Acquiring file system information . . . . .	181
12.4.2 Displaying partition/node information . . . . .	181
12.4.3 Displaying file system management state . . . . .	182
12.5 How to set GFS Shared File System applications as cluster applications.....	184
12.5.1 To set GFS Shared File System applications as cluster application . . . . .	184
12.5.2 Notes on cluster application settings . . . . .	184
12.5.3 Procedure flow chart for setting GFS Shared File System applications as cluster applications . . . . .	185
12.5.4 Procedure for setting GFS Shared File System applications as cluster applications . . . . .	185
12.5.5 Setup flow chart of adding file data partitions to GFS Shared File Systems of cluster applications . . . . .	189
12.5.6 Setup procedure of adding file data partitions to GFS Shared File Systems of cluster applications . . . . .	189
12.6 How to start up CF from GUI when a GFS Shared File System is used .....	191
<b>Chapter 13 File System Backing-up and Restoring</b> .....	<b>195</b>
13.1 Type of Backing-up and Restoring .....	196
13.2 Backing-up by Standard Linux commands .....	197
13.2.1 Backing-up file by file . . . . .	197
13.2.2 Backing-up entire file system . . . . .	197
13.3 Restoring by Standard Linux commands.....	200
13.3.1 File-by-file restoring . . . . .	200
13.3.2 Entire-file-system restoring . . . . .	200
13.3.3 Set up after Restoration . . . . .	201
<b>Chapter 14 Tuning</b> .....	<b>205</b>
14.1 Tuning Parameters.....	206
14.1.1 Amount of Cache . . . . .	206
14.1.2 Communication timeout value . . . . .	206
<b>Chapter 15 Migration to the GFS Shared File System</b> .....	<b>209</b>
15.1 Moving the existing files .....	210
<b>Appendix A List of Messages</b> .....	<b>213</b>

---

---

A.1	AC Messages of the GFS Shared File System .....	214
A.1.1	Panic messages .....	214
A.1.2	Warning messages .....	215
A.1.3	Information messages .....	221
A.2	GFS Shared File System Daemon messages.....	223
A.2.1	Panic messages (MDS(sfcfsmg daemon)) .....	223
A.2.2	Panic messages (sfcprmd daemon) .....	223
A.2.3	Error messages (sfcfrmd daemon) .....	224
A.2.4	Error messages (MDS (sfcfsmg daemon)) .....	227
A.2.5	Error messages (sfcfsd daemon) .....	230
A.2.6	Error messages (sfcfs_mount command) .....	232
A.2.7	Error messages (sfcpcnd daemon).....	235
A.2.8	Error messages (sfcprmd daemon) .....	236
A.2.9	Warning messages (MDS (sfcfsmg daemon)) .....	237
A.2.10	Warning messages (sfcfsd daemon) .....	245
A.2.11	Information messages (sfcfrmd daemon) .....	246
A.2.12	Information messages (MDS (sfcfsmg daemon)).....	246
A.2.13	Information messages (sfcprmd daemon) .....	251
A.3	GFS Shared File System Script Messages .....	252
A.3.1	sfcfsrm script .....	252
A.4	GFS Shared File System Implementations of Standard File System Management Commands' Messages.....	256
A.4.1	sfcdf command.....	256
A.4.2	sfcfsck command .....	259
A.4.3	sfcmkfs command .....	259
A.4.4	sfcmount command .....	273
A.4.5	sfcumount command .....	278
A.5	GFS Shared File System Specific Management Commands' Messages .....	284
A.5.1	libsfcfs library .....	284
A.5.2	sfcadd command .....	284
A.5.3	sfcadm and sfcnode commands .....	292
A.5.4	sfcfrmstart command .....	302
A.5.5	sfcfrmstop command .....	306
A.5.6	sfcgetconf command .....	308
A.5.7	sfcinfo command .....	311
A.5.8	sfcmntgl command .....	314
A.5.9	sfcsetup command .....	319
A.5.10	sfcstat command .....	328
A.5.11	sfcumntgl command .....	329
A.5.12	sfcrcsinfo command .....	333
A.6	GFS Management View Messages.....	336
A.6.1	Error messages .....	336
A.6.2	Warning messages .....	337

---

---

A.6.3	Information messages .....	339
A.7	Web-Based Admin View Messages.....	343
A.8	Messages Of Functions For GFS To Use.....	344
A.9	Installation Error Messages.....	345
<b>Appendix B Reference Manual.....</b>		<b>347</b>
B.1	GFS Shared File System Exclusive Management Commands .....	348
B.1.1	sfcdf(8) Display the GFS Shared File System use status and configuration information .....	348
B.1.2	sfcfsck(8) Verify and restore GFS Shared File System consistency .....	350
B.1.3	sfcmkfs(8) Construct the GFS Shared File System .....	352
B.1.4	sfcmount(8) Mount the GFS Shared File System on the local node .....	355
B.1.5	sfcumount(8) Unmount the GFS Shared File System from the local node ..	357
B.2	GFS Shared File System Specific Management Commands .....	359
B.2.1	sfcadd (8) Adds file data partitions .....	359
B.2.2	sfcadm(8) Change partition information setting .....	360
B.2.3	sfcfrmstart(8) Start sfcfrmd daemon on the local node .....	364
B.2.4	sfcfrmstop(8) Stop sfcfrmd daemon on the local node .....	365
B.2.5	sfcgetconf(8) Make a backup of the management partition .....	365
B.2.6	sfcinfo(8) Display partition information .....	367
B.2.7	sfcmntgl(8) Mount the GFS Shared File System on all nodes .....	370
B.2.8	sfcnode(8) Add, delete, and change node configuration information .....	371
B.2.9	sfcrcsinfo(8) Display file system information .....	373
B.2.10	sfcsetup(8) Initialize the management partition, add, delete and display node information, display path of management partition, and register and display the startup mode of the sfcfrmd daemon .....	374
B.2.11	sfcstat(8) Report statistics on GFS Shared File Systems .....	376
B.2.12	sfcumntgl(8) Unmount the GFS Shared File System from all nodes .....	380
<b>Appendix C Trouble shooting .....</b>		<b>383</b>
C.1	Corrective actions of messages .....	384
C.2	Collecting information for troubleshooting .....	385
C.2.1	Collecting a crash dump file .....	385
C.2.2	Collecting a core image of the daemon .....	386
C.3	Common corrective actions against failures.....	387
C.3.1	Action for I/O errors .....	387
C.3.2	Corrective action in the event of data inconsistency .....	388
C.3.3	Action to Be Taken When Unmounted by umount(8) .....	390
C.3.4	Corrective action when the sfcfrmd daemon is not started .....	390
<b>Appendix D Incompatibility from Each Version.....</b>		<b>393</b>

---



---

D.1	Incompatibilities from 4.1A30 .....	394
D.1.1	Does not support sendfile(2) .....	394
D.1.2	Changes operation of truncate(2), ftruncate(2), creat(2), and open(2) specified with O_TRUNC from the other node to the file where mmap(2) is being executed .....	396
D.1.3	Changes port numbers reserved by GFS .....	397
D.1.4	Changes the type of a special file specified for the GFS command argument .....	397
D.1.5	Change in error message of sfcdf(8) .....	397
D.1.6	Change in error message of sfcfsck(8) .....	398
D.1.7	Check strengthening of parameter specified for -o <i>specific_options</i> option of sfcmkfs(8) .....	398
D.1.8	Changes allocated reserved area size by writing operations .....	399
D.1.9	Add the upper limit of concurrently open files .....	399
D.1.10	Addition of the i-node's cache memory release function at the time of accessing many files .....	400
D.2	Incompatibilities from 4.1A20 .....	401
D.2.1	Communication timeout value between nodes .....	401
D.2.2	Information message of sfcfrmd demon .....	402

**Glossary 403**

**Index 411**



# Chapter 1 File System Functions

---

This chapter describes the functions and features of the GFS Shared File System.

## 1.1 File System Overview

The GFS Shared File System is a shared file system that allows simultaneous access from multiple Linux systems to which a shared disk device is connected. (A file system of this type is referred to as a shared file system. A file system such as ext3 that will be used only within a node is referred to as a local file system.)

The GFS Shared File System is an optimum shared file system for business uses that are API-compatible with ext2/ext3, and provides high reliability and high performance.

The GFS Shared File System maintains consistency of data even with updating from multiple nodes, enabling data transfer by a distributed application with a conventional API when the application is executed on multiple nodes.

Also, contiguous file operation on other nodes is assured even though one node fails, making the GFS Shared File System especially suitable for an environment that requires high availability of the file system.

The GFS Shared File System has the following functions:

- Simultaneous shared access from multiple nodes to files or file systems
- Maintaining consistency for file data reference and updating from multiple nodes
- File access using a file cache on each node
- Continuous file operation on other nodes if one node fails while maintaining file system consistency
- High-speed file system recovery function
- High-speed I/O processing by contiguous block assignment to areas in a file
- Support of multi-partition to implement I/O processing load distribution
- Support of multi-partition to implement the extension of file system size without rebuilding file system
- GUI-based file system operation using a Web browser

Like the ext2/ext3 file system, the following application interface is commonly available:

- 64-bit file system interface



See

For the functions that are unavailable with the GFS Shared File System, see “1.8.2 [Unavailable functions.](#)”

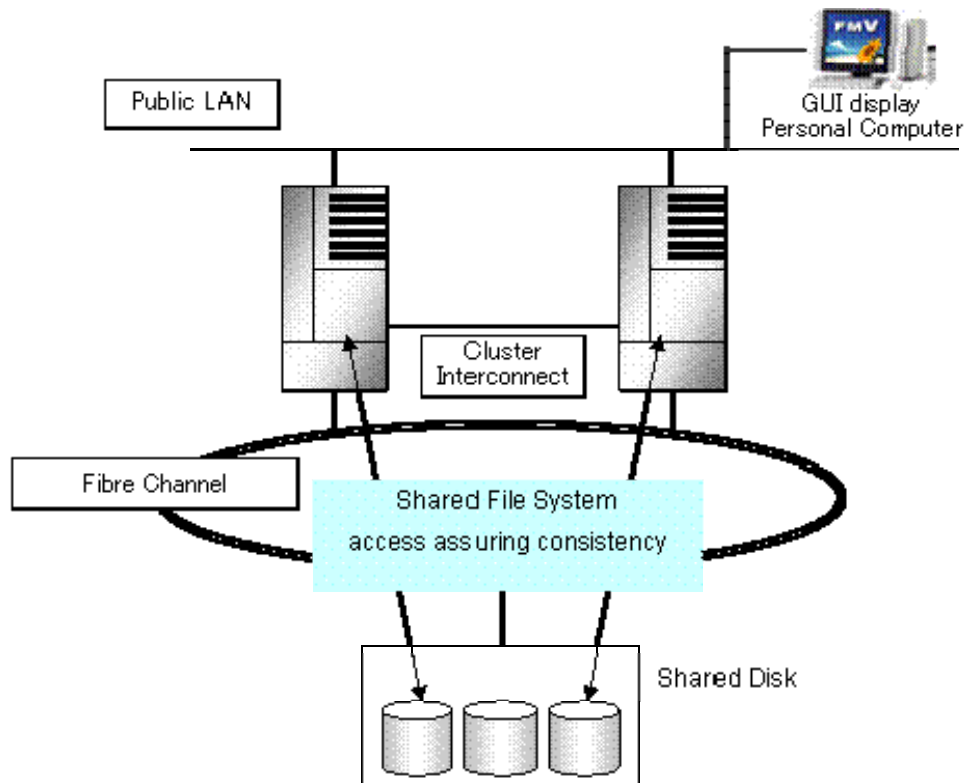
### 1.1.1 Basic hardware configuration for use of file system

The following basic configuration is required to build the GFS Shared File System:

- Shared disk device, which provides simultaneous access between nodes sharing the file system
- One or more NICs for the cluster interconnect to monitor internodes communication failures.
- Management Board (for PRIMEQUEST)
- Remote Service Board (for PRIMERGY)
- GUI display personal computer

- NIC for public LAN

**Figure Basic hardware configuration**



## 1.1.2 File system sharing with PRIMEQUEST

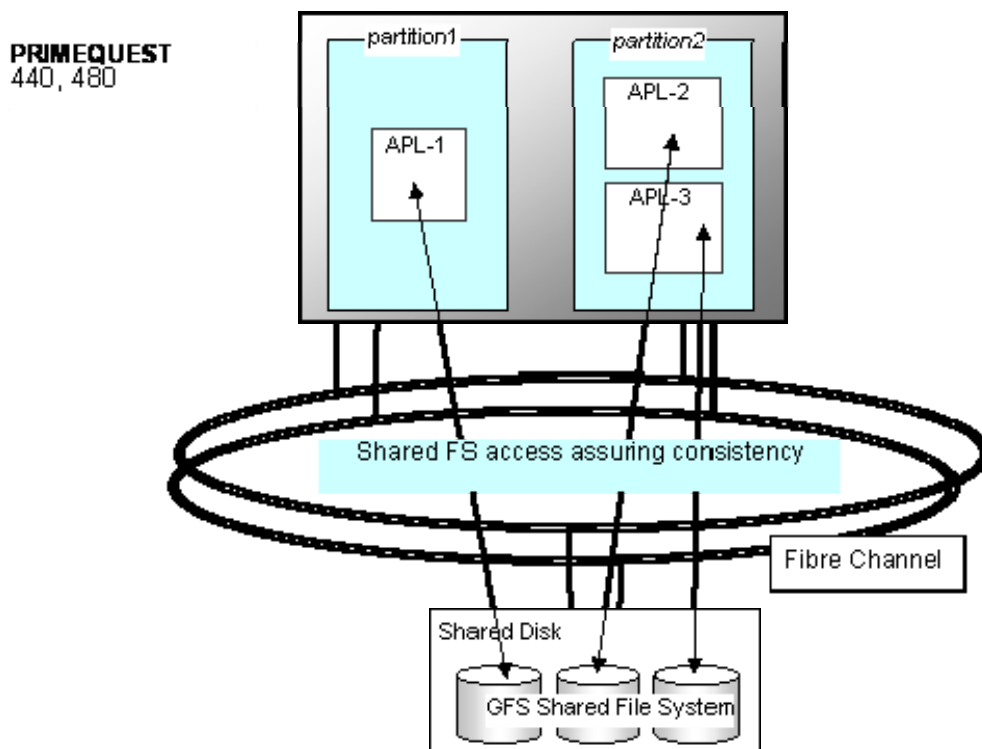
The PRIMEQUEST can be used for multiple nodes by splitting one frame into multiple partitions. Using the GFS Shared File System in this configuration allows a file system to be shared between nodes.



Note

Partitions as used here refer to nodes split into multiple nodes through logical partitioning of the system.

Figure File system sharing with PRIMEQUEST

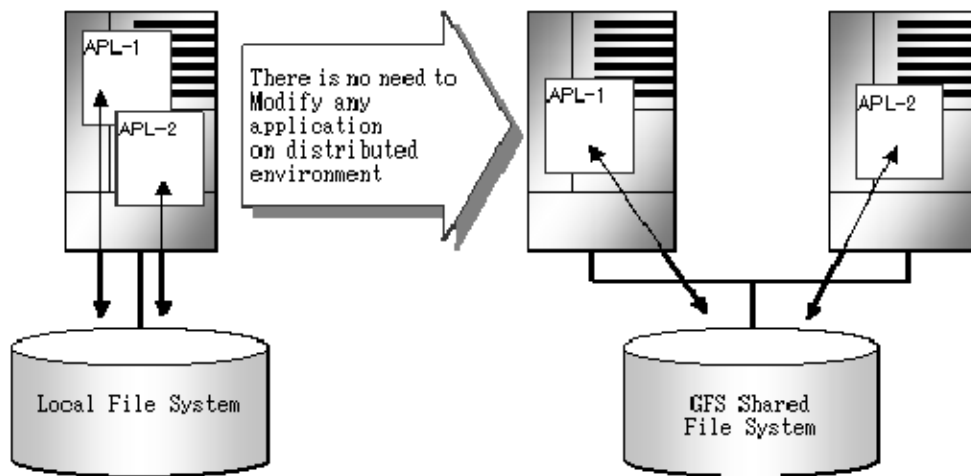


## 1.2 Simultaneous Shared Access Maintaining Coherency

The GFS Shared File System realizes simultaneous accessing and updating from multiple nodes to a file system on a shared disk device. The GFS Shared File System maintains consistency in updating from multiple nodes to files or file systems.

In this way, applications on multiple nodes can modify data mutually and read the latest data. A conventional UNIX file system API makes such operations available.

**Figure Distributed execution of file related application**



## 1.3 High Availability

The GFS Shared File System allows contiguous access to file systems if a node failure or disk block failure occurs.

### 1.3.1 Uninterrupted operation in case of node failure

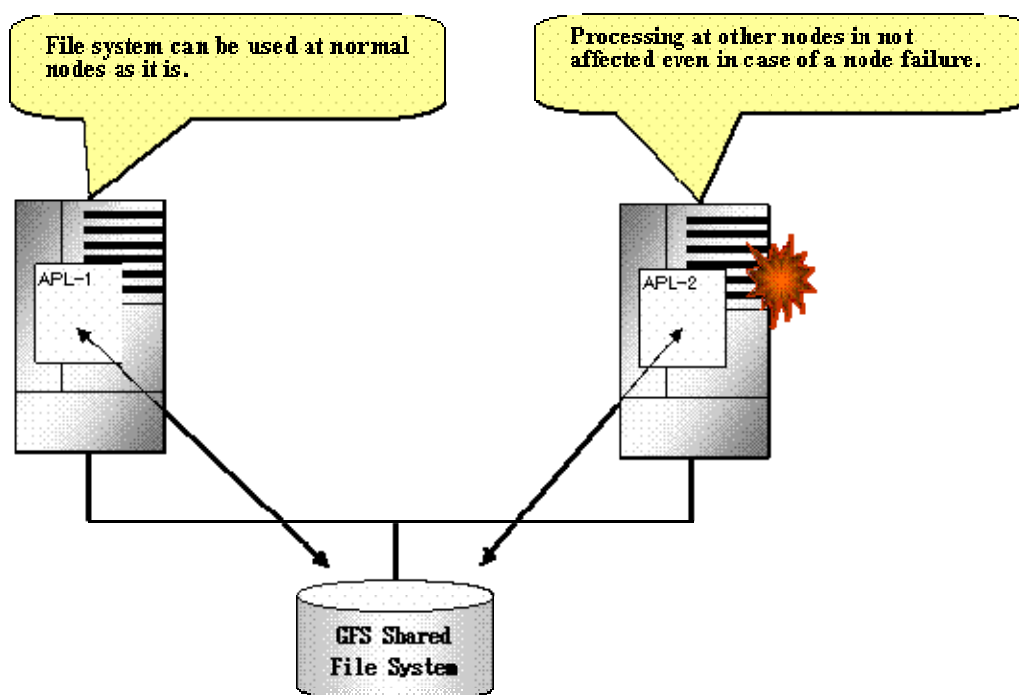
If one node fails when the GFS Shared File System is being used from multiple nodes, file access from the other nodes can be continued. The file system data retained by the failing node is automatically recovered in consistency within the GFS Shared File System from the other nodes. In other words, the processing of the application programs operating on the other nodes can be continued without causing a file system operation error.



See

For more information on the uninterrupted operation function, see “Chapter3 [Failure Recovery.](#)”

Figure Uninterrupted operation in case of node failure



### 1.3.2 High-speed file system recovery

In case of a node failure, fsck(8) must be executed for an ordinary file system to recover consistency. In most file systems, it is necessary to inspect all of the meta-data for the systems in order to recover consistency. If a node failure occurs, considerable time may be required before



the file system actually becomes available.

The GFS Shared File System records operations that have changed the file system structure in an area called updated log. These operations include file creation and deletion. Using the data in the update log area allows the file system to recover from a system failure in less than a minute. When recovering from a system failure, the GFS Shared File System retrieves the update log in the recovery process. The file system then decides whether to invalidate or complete the file system operation that was done, and reflects the result. The file system structure can then be mounted and used without fully checking it.

As mentioned in “1.3.1 [Uninterrupted operation in case of node failure](#)”, the GFS Shared File System operating on multiple nodes does not require execution of `sfcfsck(8)` because consistency recovery processing is performed automatically in case of a node failure.



Note

The `sfcfsck(8)` full check mode is also provided. To recover the file system from a hardware failure on the disk, execution of `sfcfsck(8)` in the full check mode may be required.

### 1.3.3 Area reassignment in case of disk block failure

The GFS Shared File System automatically assigns another disk block to a new meta-data area if a disk block hardware failure occurs. Assignment allows continuous file system processing if a disk failure occurs only on a specific block.



Note

This function only suppresses use of a block where an I/O error has occurred. If a request to use the same block is issued, however, an I/O error may occur again. In the case of an I/O error, the error must be corrected because the response time for that request increases. If block reassignment by such an I/O error occurs, back up the file system first. Then correct the hardware failure by replacing the failed disk with a new one, and restore the backed-up data to recover the file system.

# 1.4 Performance

The GFS Shared File System has the following functions for implementing file system access at high speed:

## 1.4.1 Data access performance

The GFS Shared File System allows access to the file system on the shared disk device from multiple nodes. Conventional distributed file systems have transferred file system data from management servers to clients that have actually issued an access request via a LAN in the network. However, the GFS Shared File System accesses the disk directly from a request node, reducing network load and speeding up response time for a read or write request in comparison with NFS.

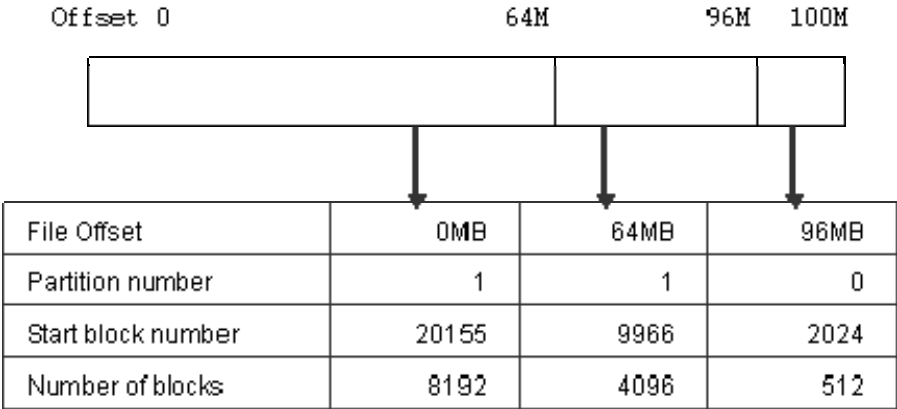
## 1.4.2 Contiguous block assignment

The GFS Shared File System assigns contiguous blocks to file data to take better advantage of batch I/O processing to improve the file system performance. The GFS Shared File System manages area on the extent-base for assigning contiguous blocks. For the range of blocks that can be acquired contiguously, the file system manages area assignment using a file offset, a start block number, and the number of blocks used.

The file system also takes into consideration the possibility of contiguous block assignment when extending the file.

Following picture shows a block assignment example that a file has three extents which locate 0, 64 megabytes, 96 megabytes file offset and 64 megabytes, 32 megabytes, 4 megabytes extent length respectively.

Figure Contiguous block assignment



Empty file data areas are also managed in the extent base to implement high-speed assignment of optimum empty areas.

### **1.4.3 Multi-partition configuration**

The GFS Shared File System provides a function that unifies partitions into one file system. With the GFS Shared File System, you can easily solve the problem of there being insufficient area by adding partitions.

In multi-partition configuration, a round robin allocation system enables the use of the file data area in different partitions, thus improving file system performance by sharing the I/O load between different disks.

### **1.4.4 Individualized meta-cache management**

The GFS Shared File System constructs its cache management of meta-data in an individualized manner. Many conventional file systems have managed meta-data in a uniform manner. However, the GFS Shared File System provides individualized management of i-node, directory block, and indirect block areas on disks, taking into consideration the characteristics of the access. As a result, it improves the cache-hit ratio and reducing resources used.

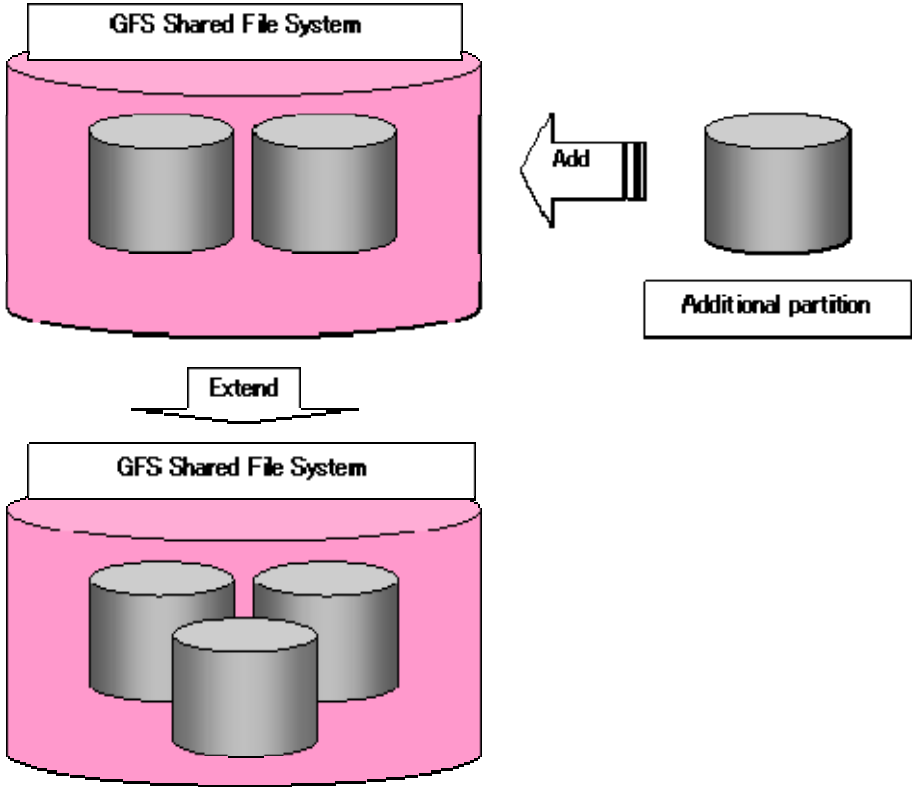
# 1.5 Extensibility

The GFS Shared File System is capable of easily extending its data partitions by specifying free disk partitions, providing a quick solution if the file system has too few free areas.

## 1.5.1 File system extension

The GFS Shared File System adds partitions to a conventional system file, thus solving the problems of there being an area shortfall without taking additional time for the backup and/or re-creation of the file system.

Figure File system extension



## **1.6 Operability**

### **1.6.1 GUI**

The GFS Shared File System uses a GUI that allows a Web browser to be used to create, delete, operate, and modify its data and monitor its status.

## 1.7 Upper Limits of the File System

The following table lists the upper limits of the GFS Shared File System on a file system basis:  
The maximum number of GFS Shared File Systems in a cluster system is 10.

**Table Upper limits of file system**

Item	Upper limit
Maximum file system capacity	1 terabyte – 1 kilobyte
Maximum file size	1 terabyte – 512 byte
Maximum number of sharable nodes	2 nodes
Maximum directory size	2 gigabytes – 1 kilobyte
Maximum number of partitions consisting of a file system	32 partitions
Maximum number of i-nodes per file system	16 mega
Maximum number of directories per file system	1 mega
Maximum number of concurrently open files	5000 files (*1)
Maximum number of file locks setting	100000 file locks

\*1 Maximum number of files can be concurrently open on one node.



Note

We recommend you to lessen the number of the GFS Shared File Systems simultaneously used in one cluster system as much as possible. When you use many GFS Shared File Systems, please carry a sufficient number for a node of CPUs, and carry out system verification in advance.

## 1.8 Notes

Below are notes on using the GFS Shared File System.

### 1.8.1 Relationships with Other Components of PRIMECLUSTER

CIP must have been set up, as it is used for the `sfcrmd` daemon of the GFS Shared File System.



[See](#)

For details to set up CIP, see the “*PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide.*”

GDS is used to create logical volumes for use by the GFS Shared File System.



[See](#)

For notes, see “1.8.4 [Notes on use of logical volumes of GDS.](#)”

For details to set up GDS, see the “*PRIMECLUSTER Global Disk Services (Linux) Configuration and Administration Guide.*”

The GFS Shared File System must work with the other nodes in the same cluster and must recognize that each node works correctly. When a node downs, it turns to be the state called LEFTCLUSTER. If there is a node with this state, it is impossible to change the management state of the GFS Shared File System. To keep the GFS Shared File System operational whenever a node downs, set up the Shutdown Facility so that the LEFTCLUSTER state will turn into the DOWN state automatically.



[See](#)

For details of the Shutdown Facility and the Monitoring Agents, refer to the following manuals.

“Configuring the Shutdown Facility” of the “*PRIMECLUSTER Installation and Administration Guide (Linux)*”

“PRIMECLUSTER SF” of the “*PRIMECLUSTER Concepts Guide (Solaris, Linux)*”

“Shutdown Facility (SF)” of the “*PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide*”

## 1.8.2 Unavailable functions

### 1.8.2.1 Functions not provided by the GFS Shared File System

The GFS Shared File System explained in this guide does not provide the following functions:

- Use as a root file system, /usr, /var, /opt
- To use as a mount point
- quota function
- ACL function
- Asynchronous I/O function
- File sharing with other nodes by an NFS
- Use of IPv6
- Setting of hard link for a directory
- Direct I/O function
- Mandatory file lock
- Creation of block or character special files
- Access of block or character special files
- The strict file terminal management in the case of write(2) for open(2) file for which specified O\_APPEND compete with write(2) from other nodes
- Assuring consistency of file data, which is written by write(2) (The I/O size is specified over the data block size), when the file is modified by the following operation.  
write(2), writev(2), pwrite(2), truncate(2), ftruncate(2), creat(2), open(2) (with O\_TRUNC)
- Changing PROT\_READ and PROT\_WRITE using mprotect(2)
- Enabling lease between nodes using fcntl(2) with F\_SETLEASE or F\_GETLEASE.
- Using remap\_file\_pages(2) or mmap(2) with MAP\_POPULATE
- mmap(2) from another node to a writeable file opened by open(2)
- Writable open(2) from another node to a file mapped by mmap(2)
- open(2) from another node to a mmap(2) file for which MAP\_SHARED and PROT\_WRITE are specified
- mmap(2) which specifies MAP\_SHARED and PROT\_WRITE from another node to a open(2) file
- Assurance of data consistency when mmap(2) is executed for open(2) files from other nodes
- Assurance of data consistency when open(2) is executed for mmap(2) files from other nodes

### 1.8.2.2 Unavailable functions on Linux kernel version 2.4

---

When the Linux kernel version is 2.4, the following functions in addition to the function described to "1.8.2.1 [Functions not provided by the GFS Shared File System](#) " are unavailable.

- Multi partition configuration  
The specific options of the GFS Shared File System of **sfcmkfs(8)** command: **data**, **dataopt**, **maxdsz**, **maxvol**  
**sfcadd(8)** command
- Advisory file lock
- File access by another node to input file of **sendfile(2)** or **sendfile64(2)**

The following tables show the main description part of the article concerning multi partition configuration and advisory file lock.



Function	Main description part of the article
Multi partition configuration	<p>"1.4.3 <a href="#">Multi-partition configuration</a>"</p> <p>"1.5 <a href="#">Extendibility</a>"</p> <p>"2.1.6 <a href="#">Partition configuration</a>"</p> <p>"4.2.5 <a href="#">For future expansion</a>"</p> <p>"10.1.3 <a href="#">Change (partition addition)</a>"</p> <p>"10.2.1 <a href="#">Creating a file system</a>"</p> <p>"10.3.2 <a href="#">Changing the file system configuration (partition addition)</a>"</p> <p>"11.1.3 <a href="#">Change (partition addition)</a>"</p> <p>"11.2.2.2 <a href="#">Examples of creating a representative file system</a>"</p> <p>"11.2.2.3 <a href="#">Customizing a GFS Shared File System</a>"</p> <p>"11.4 <a href="#">Change (partition addition)</a>"</p> <p>"12.3 <a href="#">Extending a File System</a>"</p> <p>"12.5.6 <a href="#">Setup procedure of adding file data partitions to GFS Shared File Systems of cluster applications</a>"</p> <p>"A.5.2 <a href="#">sfcadd command</a>"</p> <p>"B.1.3 <a href="#">sfcmkfs(8) Construct the GFS Shared File System</a>"</p> <p>"B.2.1 <a href="#">sfcadd (8) Adds file data partitions</a>"</p>
Advisory file lock	"1.8.15 <a href="#">Notes on file lock function</a> "

### 1.8.3 Service ports used by the GFS Shared File System

In GFS Shared File Systems, TCP service ports within the range of 9200 to 9263, and 9300 are reserved.

If these port numbers conflict with those for other applications, change the entry port number beginning with `sfcs-` in the `/etc/services` file. If you need to change the port numbers, be aware that the port numbers beginning with `sfcs-` and `sfcsr` must be the same on all the nodes.

### 1.8.4 Notes on use of logical volumes of GDS

GDS is volume management software designed to improve the availability and operation manageability of information stored on disk units of the Storage Area Network (SAN). Various kinds of access controls can be performed on the logical volumes of GDS to protect data against damage due to unauthorized access.

To use a logical volume of GDS in the GFS Shared File System, make the following settings:

- The type of disk class to which the logical volume belongs is shared.
- All nodes sharing the GFS Shared File System are specified in the scope of the disk cluster to which the logical volume belongs.
- When the attribute lock mode of the logical volume is `lock=off`, the volume is started automatically.
- The attribute access mode of the logical volume is set as read-write.

To use GFS Shared File Systems, logical volumes of GDS must be ACTIVE. If they are STOP, all accesses to the shared file systems will be prohibited.



Note

If you create GFS Shared File System on GDS-striped logical volumes, set the width of the stripe group to 256 blocks or more.



Note

Don't use online volume expansion for the logical volume of GDS that is including GFS Shared File System. If the size of the logical volumes of GDS is changed along with online volume expansion, the super block of the GFS Shared File System cannot be copied. Also, the replication partition configuration information cannot be read then the GFS Shared File System cannot be mounted.

If you want to expand the GFS Shared File System, add an unoccupied logical volume partition, or create a new logical volume and add it.



Note

[Linux2.4]

Partitions cannot be added.



See

For the operations of disk classes to which logical volumes of GDS belong, refer to the description of class operations under "Operation using Global Disk Services Management View" in the "*PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)*".

For the operations of logical volumes of GDS, refer to the description of volume operations under "Operation using Global Disk Services Management View" in the "*PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)*".

## 1.8.5 Notes on unmounting

You must use `sfcumount(8)` to unmount a GFS Shared File System.

If the GFS Shared File System is unmounted with `umount(8)` by mistake, the file system cannot be mounted or unmounted. Restoration of such a file system can be performed in the manner described in "C.3.3 [Action to Be Taken When Unmounted by `umount\(8\)`](#)."

## 1.8.6 Notes of updatedb(1L)

Function to retrieve the location of the file at high speed is provided in Linux as `locate(1L)`. This function updates the file name database, by executing `updatedb(1L)` periodically. `Updatedb(1L)` retrieves the file on each file system, and updates the file name data base.



See

For details about updatedb(1L) and locate(1L), see the online manual page.

While updatedb(1L) is executed to look for GFS Shared File System, file access performance can deteriorate considerably. To evade it, it is recommended to set up not to register the files on GFS Shared File System to the file name data base.



Note

The file on the GFS Shared File System can not be retrieved by locate(1L) when setting up it.

So as not to register the files on the GFS Shared File System to the file name data base, add "sfcfs" to PRUNEFS parameter (specifies the file system excluded from the retrieval object by updatedb(1L)) defined in /etc/updatedb.conf. It must be set up on all nodes which share the GFS Shared File System. The following shows an example of setting.

```
# cat /etc/updatedb.conf <Enter>
PRUNEFS="devpts NFS nfs afs proc smbfs autofs auto iso9660 sfcfs"
PRUNEPATHS="/tmp /usr/tmp /var/tmp /afs /net"
export PRUNEFS
export PRUNEPATHS
```

When the files on the GFS Shared File System is registered to the file name data base, deterioration in the file access performance can be reduced while updatedb(1L) operates by setting as follows.

- Set the execution time of updatedb(1L) to when GFS Shared File System is accessed fewer according to the user operation.
- Adjust the execution time of updatedb(1L) to avoid executing updatedb(1L) simultaneously by the nodes which shared GFS Shared File System.

Usually, updatedb(1L) is executed by the file that exists on the /etc/cron.daily directory. So the execution time of updatedb(1L) can be changed by changing the execution time of /etc/cron.daily that is specified in /etc/crontab.



See

For details of the contents of /etc/crontab, see crontab(5).

## 1.8.7 Notes on system time change

Do not perform the following operation while a GFS Shared File System is working.

- Change the system time by the date(1) command etc.

If the system time is changed by the date(1) command, the file system will be blockaded. The monitoring mechanism on a GFS Shared File System might not be operated normally due to a sudden change of the system time.

To resume the system operation, mount again after unmounting the file system.

## 1.8.8 Notes on operation stop

Be sure to unmount all the GFS Shared File System in a node, before stopping the operation of a GFS Shared File System using the following command.

```
# /etc/init.d/sfcfsrm stop <Enter>
```

When the command mentioned above is executed with GFS Shared File System mounted, the mount information of GFS Shared File System remains, so mounting or unmounting the file system becomes impossible. In this case, reboot the node to restarting the operation of GFS Shared File System.

## 1.8.9 Deleting a file being created from the other node

When you are handling GFS Shared File Systems, do not execute `unlink(2)` or `rename(2)` for a file being created by `open(2)` with `O_CREAT` or by `creat(2)`, from the other node.

If you execute `unlink(2)` or `rename(2)` for a file being created by `open(2)` with `O_CREAT` or by `creat(2)` from the other node, `unlink(2)` or `rename(2)` will return an exit code, but `open(2)` or `creat(2)` might encounter an `ESTALE` error.

Accordingly, commands (\*1) that are using the `open(2)` or `creat(2)` might also return an error code.

\*1 The “touch” command returns an error code of 1.



Note

[Linux2.4]

Only when the Linux kernel version is 2.6, it is necessary to note the above-mentioned.

## 1.8.10 Notes on file owner change

If you need to change the file owner (\*1) after changing the file mode (\*2) to the same file, perform both operations on the same node.

\*1 File owner change using a command such as `chown(1)`, `chown(2)`, or `fchown(2)`

\*2 File mode change using a command such as `chmod (1)`, `chmod(2)`, or `fchmod(2)`

If you perform file owner change after file mode change for the same file from the other node, the file might go back to the previous mode. You can prevent this problem by acquiring (\*3) updated file information before changing file owner.

\*3 File information acquisition using a command such as `stat(1)`, `stat(2)`, or `fstat(2)`

### 1.8.11 Notes on ioctl(2) with FIONREAD

If you need to execute `ioctl(2)` with `FIONREAD` after changing the file size (\*1) to the same file, perform both operations on the same node.

\*1 File size change using a command such as `write(2)`, `truncate(2)`, or `ftruncate(2)`

If you execute the `ioctl(2)` after changing the file size for the same file from the other node, the file might calculate the prefetch quantity based on the old file size. You can prevent this problem by acquiring (\*2) updated file size before executing the command.

\*2 File information acquisition using a command such as `stat(1)`, `stat(2)`, or `fstat(2)`

### 1.8.12 Notes on fcntl(2) with F\_SETFL

If you need to execute `fcntl(2)` with `F_SETFL` and change the file owner (\*1), perform both operations on the same node.

\*1 File owner change using a command such as `chown(1)`, `chown(2)`, or `fchown(2)`

If you execute `fcntl(2)` with `F_SETFL` and change the file owner on each of nodes, `fcntl(2)` might check permission and change the open flag, with the old file owner information.

If you need to execute `fcntl(2)` with `F_SETFL` and change the file owner on each of nodes, please update the file information (\*2) before executing `fcntl(2)`.

\*2 File information acquisition using a command such as `stat(1)`, `stat(2)`, or `fstat(2)`

### 1.8.13 Notes on fcntl(2) with F\_SETLEASE

If you need to execute `fcntl(2)` with `F_SETLEASE` and change the file owner (\*1), perform both operations on the same node.

\*1 File owner change using a command such as `chown(1)`, `chown(2)`, or `fchown(2)`

If you execute `fcntl(2)` with `F_SETLEASE` and change the file owner on each of nodes, `fcntl(2)` might check permission and set a file lease, with the old file owner information.

If you need to execute `fcntl(2)` with `F_SETLEASE` and change the file owner on each of nodes, please update the file information (\*2) before executing `fcntl(2)`.

\*2 File information acquisition using a command such as `stat(1)`, `stat(2)`, or `fstat(2)`

## 1.8.14 Notes on rename(2)

If a directory is specified for the place from which a file is moved, rename(2) must not be used for the directory's parent directory.

If rename(2) is executed by mistake, file operation may hang. If this occurs, reboot a node where the file hangs and recover the failed file.

## 1.8.15 Notes on file lock function

This section describes notes on file lock function that is used in the GFS Shared File System.



Note

[Linux2.4]

File lock function cannot be used.

### 1.8.15.1 Unavailable functions

---

The GFS Shared File System does not support the following functions:

- File lock between nodes to files other than regular file
- Deadlock check function between nodes with another file system

### 1.8.15.2 Notes caused by Linux kernel specification

---

The following functions might not operate normally because of the Linux kernel specification.

- Setting and getting of file lock when SEEK\_END is specified  
When you execute the operation that sets or gets a file lock with SEEK\_END to the same file after the operation that changes the size of the file by write(2), truncate(2) or the ftruncate(2), etc, execute the operation on the same node.  
When operations to the same file are executed on a different node, the file lock operation might be done with the old file size.  
When it wants to execute above-mentioned two operation on a different node, the issue can be evaded by getting the latest size of the file by stat(1), stat(2), and the fstat(2), etc. before file lock operation with SEEK\_END.
- The setting of file lock between the process, its child processes and the threads that it generated  
File operation might hang up when the following operation competes for the same file.
  - 1) The setting operation of file lock by thread that process(A) generated
  - 2) The setting operation of file lock by process(A)
  - 3) The terminating operation of process(B) that process(A) generated or  
The close(2) operation in process(B) for the file that is target of file lock setting in 1 or 2

Or

- 1) The setting operation of file lock by thread that process(A) generated
- 2) The setting operation of file lock by the child process(C) that process (A) generated
- 3) The terminating operation of process(C) or  
The close(2) operation in process(A) for the file that is target of file lock setting in 1 or 2

When the file operation hangs up, it is possible to recover from the state which has hung up by terminating by kill(1) the process which has hung up.

### 1.8.15.3 Effect of file lock on system performance

If many file locks are set on a GFS Shared File System, the system performance can be affected as follows:

- Loads on the memory will be increased by increase in amount of memory used by MDS.
- Loads on CPU will be intensive by the file lock processing.
- If there are many processes that wait for the file lock, and the following operations are executed, loads in the network might be temporarily increased.
  - 1) The file lock is released. or
  - 2) The node where the process setting file lock exists goes down.
- If the recovery procedure is executed when many file locks are set, it will take time and fail.

### 1.8.16 Open processing from other nodes to a file mapped by mmap(2) [Linux2.4]

Do not perform the following operation in the GFS Shared File System.

- open(2) and creat(2) from other nodes to a file mapped by mmap(2)

If open(2) and creat(2) is executed as follows from other nodes to a file mapped by mmap(2), the system call will fail.

- open(2) and creat(2) from other nodes to a mmap(2) file for which PROT\_WRITE and MAP\_SHARED are specified.
- open(2) and creat(2) with the write mode from other nodes to a mmap(2) file for which PROT\_READ and MAP\_SHARED are specified.

If creat(2) and open(2) with O\_TRUNC is executed in the above-mentioned operation, the system call will fail and the target file will be truncated to length zero.

### 1.8.17 Creating a regular file by mknod(2) [Linux2.4]

Do not perform the following operation in the GFS Shared File System.

- Create a regular file by mknod(2)

If a regular file is created by mknod(2), the file open information cannot be managed normally. As a result, mmap(2) from other nodes to the file will fail, or the unused inode of the file will not be

released when the file is deleted.

If the operation mentioned above is executed, mount again after unmounting the file system. It will resume the system operation.

### **1.8.18 Notes on opening a file on the GFS Shared File System**

The number of files that can be concurrently open on one node at one time is limited in the GFS Shared File System. The maximum number is 5000 files per file system. When `open(2)` is attempted for the file on the GFS Shared File System exceeding the maximum number, `open(2)` will fail and `ENFILE` will be returned as an error number.



## **Chapter 2      File System Structure**

---

This chapter describes the structure of the GFS Shared File System.

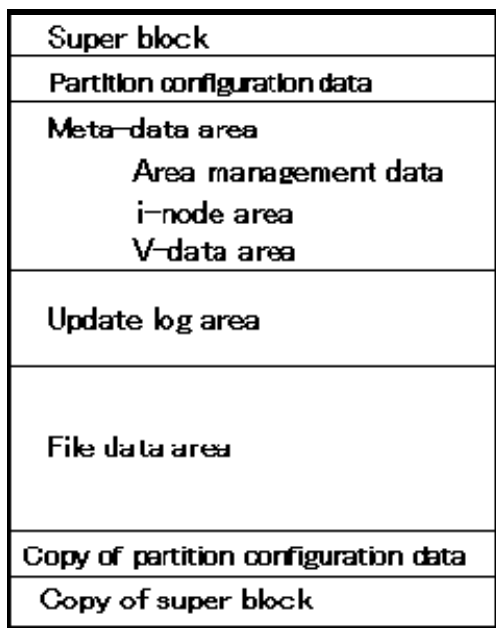
## 2.1 Disk Structure of File System

This section describes the disk structure of the GFS Shared File System.

As illustrated below, the disk structure of the GFS Shared File System consists of the following elements:

- Super block
- Partition configuration data
- Meta-data area (area management data, i-node area, V-data area)
- Update log area
- File data area

**Figure Disk structure of the GFS Shared File System**



The GFS Shared File System manages the V-data area in units of 1,024 bytes and the file data area in unit of 8,192 bytes.

Conventional file systems have decentralized meta-data areas on their disks. However, the GFS Shared File System centralizes meta-data to improve meta-data access performance. Besides, localizing updated portions upon recovery of the file system allows the update log area to shorten the recovery time.

### 2.1.1 Super block

Super block contains a file system type, creation and update dates, label data, size and layout of the file system, and a data history of empty areas.

The copy of super block at the end of the file system exists to allow continuous processing if a disk device block failure occurs in the area where the super block is stored.

## 2.1.2 Partition configuration data

The partition configuration information contains the following information:

- What partitions are used to configure a file system. A GFS Shared File System can consist of multiple partitions.
- Area allocation in the partition

In order to expand the file system configuration and change the shared device information, the partition area will be changed.

Similar to the super block, the partition configuration data is important for operation of the file system and is designed to have a partition copy at the end of the file system and to be resistant to disk device block failures.

## 2.1.3 Meta-data area

This section describes the area of meta-data management. The meta-data area is an area for storing meta-data, which exists only in a representative partition.

### 2.1.3.1 Area management data

Area management data includes the allocation information of i-node, V-data and file data.

File data allocation information is managed in extent-base while combining a part to include extent information with a list managed with a degree of continuity.

When a file system is created with `sfcmkfs(8)`, an area of the fixed size is allocated for management information, i-nodes and V-data.

### 2.1.3.2 i-node area

The i-node area is a data structure containing file data. The pointer to extent information including the file data and the file type, length, owner, group IDs, and access right are stored in each i-node. There is one i-node for each file.

### 2.1.3.3 V-data area

The V-data area includes a directory block, a symbolic link path name, and an indirect block. An area is obtained from this area if necessary. The V-data area is managed in units of 1,024 bytes for efficient use of directory blocks.

## 2.1.4 Update log area

The update log area stores a history of file system structure changes for high-speed file system recovery. This area is maintained as a cyclic log.

The update log area contains data about the following processes:

- Acquiring or releasing an i-node
- Updating i-node data

- Allocating or releasing an extent, which is a group of contiguous file system data blocks handled as a single unit
- Acquiring or releasing V-data
- Updating V-data

The GFS Shared File System assures that data is written in the V-data area before the file system structure is updated. If a system failure occurs, file system consistency is restored by using `sfcsck(8)` to either invalidate or re-execute unprocessed changes on the file system. Also, system failure recovery processing is conducted. Only changes to the file system structure are recorded in the update logs; file-data is not recorded.

### 2.1.5 File data area

The file data area is an area for storing file data. In these areas, 8192 bytes areas defined as the minimum block, and blocks are managed for contiguous allocation in a file area.

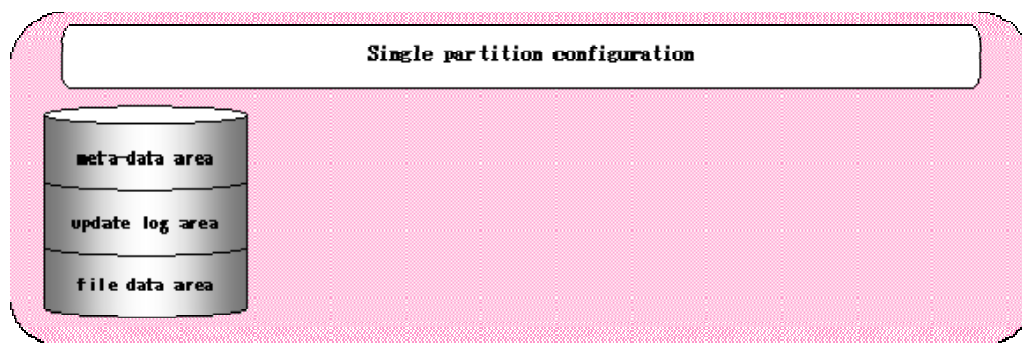
### 2.1.6 Partition configuration

A GFS Shared File System can consist of single partition or multiple partitions. In the multi-partition configuration, multiple partitions are allocated to single file system.

Meta-data area and update log area are gathered by one partition and posted. The partition posted meta-data area is called the representative partition.

In a single partition configuration, a meta-data area, an update log area, and a file data area are allocated to one partition.

**Figure Single partition configuration**

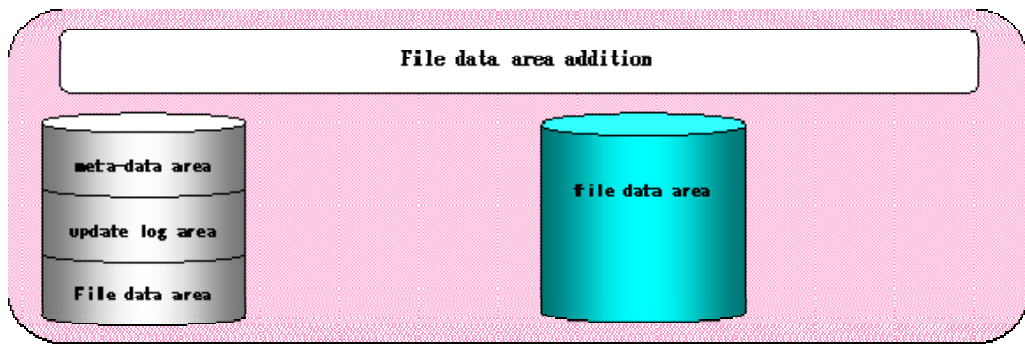


In the multi-partition configuration, the file data area can hold multiple partitions. Also, the file system can be created by detaching the file data area from the meta data area.

Typical examples of multi-partition configurations are shown on the following.

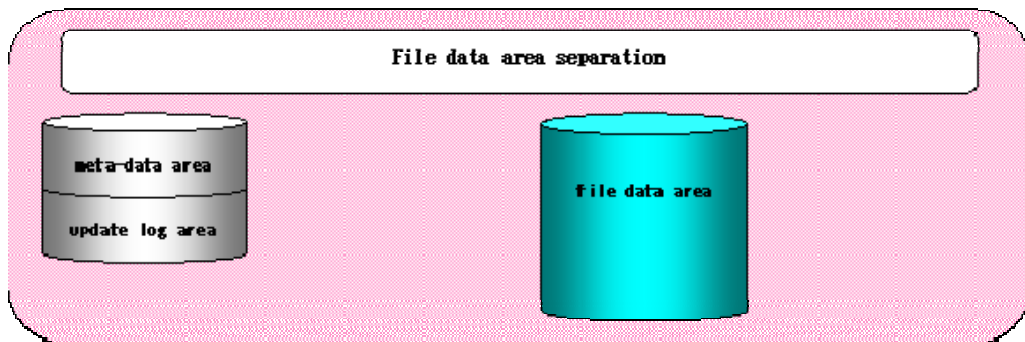
1. Adding a file data area to another partition. (file data area addition)

**Figure File data area addition**



2. Partition configuration in which the file data area is separated from the representative partition.

**Figure File data area separation**



In a multi-partition configuration, super block and partition configuration data are maintained in all partitions.

## 2.2 Component configuration

The component configuration of the GFS Shared File System is illustrated below.

The GFS Shared File System consists mainly of three components:

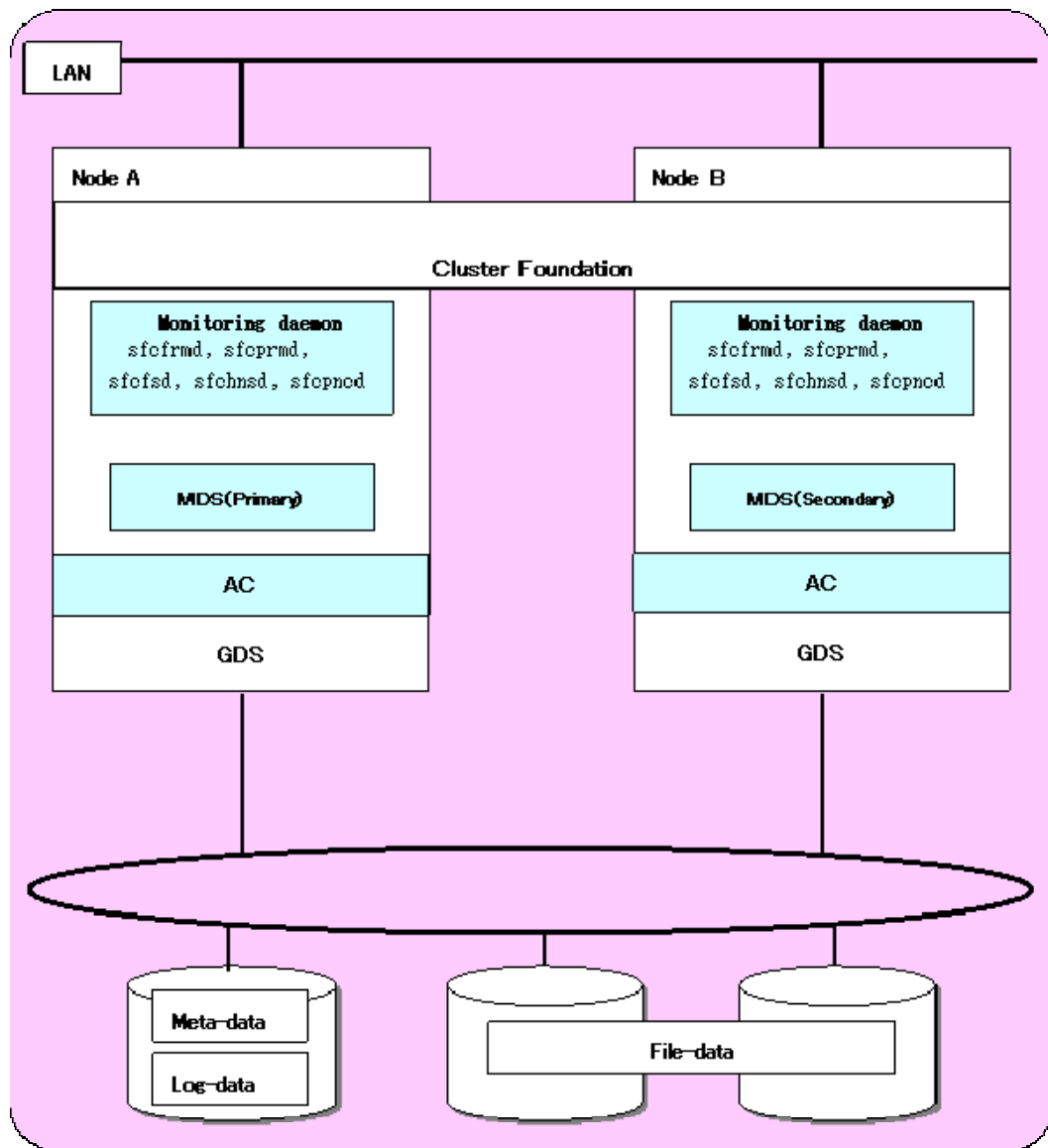
1. MDS (Meta-data server)
 

The file system server function component (sfcsmsg) of the GFS Shared File System
2. AC (Access client)
 

The file system client function component (kernel component AC) of the GFS Shared File System
3. Monitoring daemons (sfcfcmd, sfcpnmd, sfcsd, sfchnsd, sfcpncd)
 

The control function component of MDS, AC and composition component of GFS Shared File System.

Figure Component composition



### 2.2.1 MDS (Meta Data Server)

The MDS is a server daemon that manages the meta-data of the GFS Shared File System and operates as a user process. There are two processes of primary MDS and secondary MDS for each file system. Two or more nodes of those that constitute a file system are predefined as MDS nodes and MDS operates on one of these nodes. If not set specifically, the MDS nodes are only the two nodes of the primary and secondary MDS node.

The secondary MDS is used for standby and runs on a different node from the primary MDS. However, when only one of MDS nodes is active, the secondary MDS does not run. The MDS uses multithreading in order to execute processing requests from AC in parallel.

The MDS has the following major functions:

- Token management
- Meta-data area management
- Update log area management
- File data area management
- File system free area management
- AC node management

### 2.2.2 AC (Access Client)

This client processes requests from an application that accesses the GFS Shared File System. It operates within the kernel. Access clients exist on all the nodes of the scalable class where the GFS Shared File System is mounted. The AC allows cache management of meta-data and file data within the client.

### 2.2.3 Monitoring daemon

- `sfcrmd`  
Receives a request from the `sfcsd` or the commands and provides the communication paths of `commands-sfcsd`, `commands-sfcrmd` and `inter-node`. Configuration database management and the management partition I/O functions are also provided.
- `sfcrmd`  
Used to monitor the startup, stop, or failure of the processes that constitute the GFS Shared File System. When the configuration process starts or executes another daemon or command, a request is transmitted to `sfcrmd`, and then `sfcrmd` executes a daemon or a command as required.  
The process from which a request is transmitted is referred to as the client process, while the process to be started from `sfcrmd` as required is referred to as the target process.  
The target process is monitored by `sfcrmd` and, when the process terminates normally or abnormally, the status is posted to the client process.
- `sfcsd`  
Provides MDS/AC control functions such as the GFS Shared File System operation start/stop, failover of MDS.
- `sfchnsd`  
Used to provide functions such as node down event reception, domain-wide lock, membership information acquisition, and node state acquisition.
- `sfcpncd`

Performs live monitoring of sfcprmd or sfcfrmd that is to be monitored. When the process to be monitored abnormally end (process down), this daemon makes system go down in order to maintain consistency of file systems.



## 2.3 File Access and Token Management

Each AC caches file data to improve file system performance. Since it is necessary to manage discard operation of cache to ensure consistency in each file system, the GFS Shared File System uses file-exclusive tokens (referred to hereafter as tokens) for management.

A token guarantees that the AC can access files. The token contains information that indicates how it accesses a particular file. An AC must have a token of a file when the AC accesses the file. Two types of tokens are provided: one that ensures meta-data access and another that ensures file data access.

- Meta-data access and token management  
The meta-data token required to access i-node and V-data.
- File data access and token management  
Tokens are used to access file data in ordinary files. The two types of available tokens (write authority and read authority) are managed in units of logical blocks. Such operations as simultaneously reading from the same block and simultaneously reading from/writing to different blocks in the same file can be performed simultaneously by multiple shared nodes without degrading performance. The file data token is required to access ordinary files.



## Chapter 3 Failure Recovery

---

This chapter describes the following failure recovery functions of the GFS Shared File System:

- MDS failure recovery
- AC degeneration

## 3.1 MDS Failure Recovery

If an MDS fails by node down, the GFS Shared File System automatically performs failure recovery to continue operation of the file system.

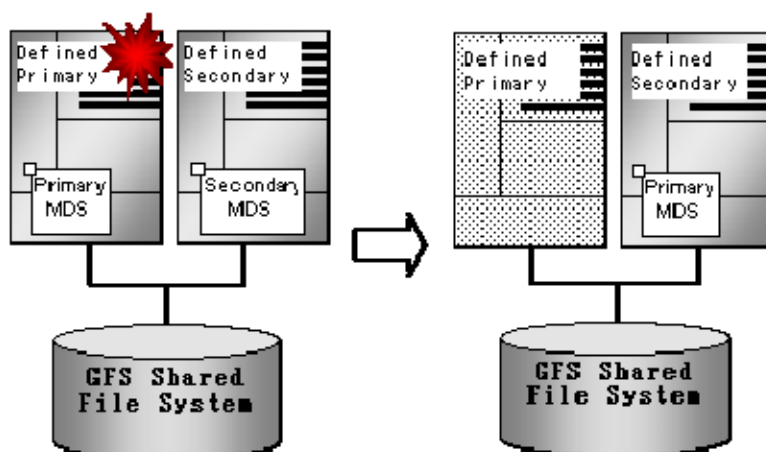
The following provides an overview of the operations performed if either the primary MDS or secondary MDS fails.

### 3.1.1 Automatic recovery for primary MDS failures

There is one case in which the standby secondary MDS becomes the primary MDS to continue operation. This case occurs if both the primary and secondary MDSs are set up as operable and the primary MDS fails by node down. In this case, the following process is performed:

#### 1. Switching the secondary MDS to the primary MDS

The secondary MDS operates as the primary MDS in place of the primary MDS that has failed.



#### 2. Replaying the update log

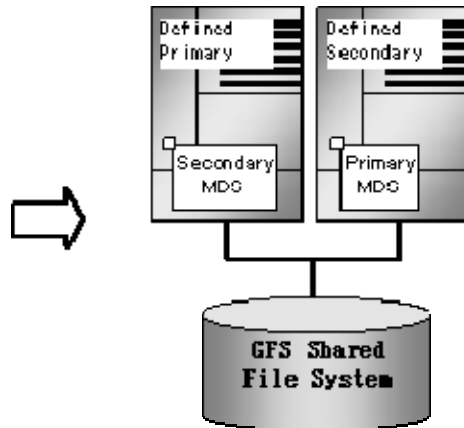
The new primary MDS replays the update log to ensure consistency of the file system.

#### 3. Resuming processing after MDS switching

The AC sends a processing request to the new primary MDS. Until that request is accepted, all access to the file system is blocked.

#### 4. Restarting the failed MDS

Usually, the MDS is restarted as the secondary MDS.

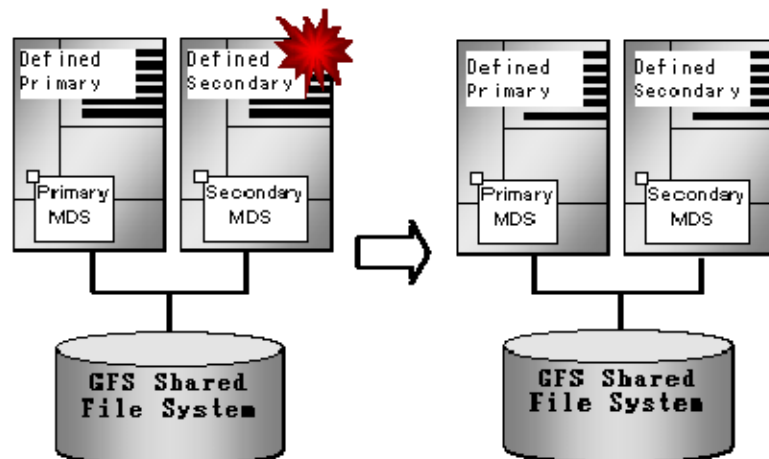


### 3.1.2 Automatic recovery for secondary MDS failures

If the secondary MDS fails because of a node failure, the primary MDS will not be affected. It will continue operation without the secondary MDS. In this case, the following process is performed:

#### 1. Restarting the failed MDS

The MDS is restarted as a secondary MDS.



#### 2. Making the restarted secondary MDS effective

The AC performs the processing necessary for recognizing the restarted secondary MDS.

### 3.1.3 Automatic recovery in case primary MDS goes down during primary MDS operation only

If the primary MDS goes down in a state in which the MDS nodes are degraded only during primary MDS operation, the following processing is performed automatically.

#### 1. Restarting the failed MDS

The MDS is started as the primary MDS again.

**2. Replaying the update log**

The new primary MDS replays the update log to ensure the consistency of the file system.

**3. Resuming processing after MDS switching**

The AC makes a processing request to the new primary MDS.

## **3.2 AC degeneration**

If the GFS Shared File System is mounted, MDS will hold the information on the AC. When the node to which AC operates is downed, MDS cancels the information on the AC automatically, and continuation of management of the file system in a normal node is performed automatically.





## **Chapter 4      File System Design**

---

This chapter describes the main features of the operational design of the GFS Shared File System.

## 4.1 Mount and unmount opportunity of the file system at the time of system starting and ending

In the GFS Shared File System, a setup for mounting and unmounting automatically at the time of system starting and ending differs from ext2/ext3 settings.

The mount options field of `/etc/fstab` must contain `noauto` in the GFS Shared File System. A setup of the automatic mount at system startup is specified by describing or omitting `noatrc` in the mount options field of `/etc/fstab`.

When `noatrc` is not described in the mount options field of `/etc/fstab`, the automatic mounting is performed on startup. The mounting takes place at the moment of running `S76sfcsrm start`, the startup script in run levels 2, 3 and 5.

When `noatrc` is described in the mount options field of `/etc/fstab`, the automatic mounting is not performed on system startup.

GFS Shared File Systems are automatically unmounted when the system is shut down. They are unmounted through the stop script `K36sfcsrm`.



Note

It is necessary to set the management partition and the GDS volumes where partitions of the GFS Shared File System that will automatically be mounted are allocated to automatically become ACTIVE during system startup.



See

For more information about GDS, see "*PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)*."

## 4.2 System Design

This section describes the following items that must be considered in creating or using the GFS Shared File System:

- Effects of file system operation and system load
- Node layout
- Disk layout
- LAN selection
- For future expansion

### 4.2.1 Effects of file system operation and system load

To maintain strict file system consistency, the GFS Shared File System processing sometimes significantly slows down during the following operations:

- When frequently creating or deleting a file or directory in the same directory from multiple nodes, and repeatedly monitoring directory updating with `readdir(3C)` or `stat(2)`.
- When frequently updating the same block in the same file from two or more nodes.
- When frequently referencing from other nodes a file that is frequently updated from one or more nodes.
- When an `ls(1)` command with the `-l` option and a command requiring attributes of files under the directory such as `cp(1)`, `du(1)`, and `tar(1)` are both issued to a directory contains at least 10,000 files.

If one or more of the above situations occur, you can improve file system performance by changing the monitoring frequency or access frequency, or dividing files or directories.

CPU load or I/O load may be concentrated on the node where the MDS that manages the file system meta-data operates. A heavy load here indicates that operations accompanying updating of the file system meta-data, such as file creation, deletion, or extension are frequently being done. In such cases, file system throughput may improve by optimizing the layout of the meta-data area and update log area. An alternative is to increase CPU throughput of the node where the MDS operates.

### 4.2.2 Node layout

In the GFS Shared File System, up to two nodes can share one file system simultaneously. Therefore, file system processing can continue even if the node (on which MDS manages file system meta-data) fails. For such operation, you must select two nodes on which MDS can operate and set these nodes as MDS nodes. From the MDS nodes, select the primary MDS node (on which the primary MDS usually operates), the secondary MDS node (on which the secondary MDS usually operates).



For details on the effects of MDS node settings, see “3.1 [MDS Failure Recovery](#).”

As previously described in “4.2.1 [Effects of file system operation and system load](#),” the following should be taken into consideration:

- CPU and I/O loads accompanying updating of the meta-data of the file system that occur on the node where MDS operates
- CPU throughput, I/O throughput, memory capacity, and swap area



Note

When activating the secondary MDS, activation of the primary MDS may take the time for a while.

### 4.2.3 Disk layout

In the GFS Shared File Systems, area of a disk configuring the file system consists of the following area:

- meta-data area
- update log area
- data area

The primary MDS references or updates two areas: the meta-data area and the update log area. The AC references or updates the data area.

A GFS Shared File System can consist of a single partition or multiple partitions. The file system with multiple partitions can improve I/O performance.

For example, in an environment where bottlenecks of intensive file data access will reduce the I/O performance of the file system, load balancing with access control will be enabled by configuring the file data area with multiple partitions. Also, the file data area is detached from the representative partition, and the meta data area and update log area can be detached from the file data area. This will increase the performance and throughput of file data I/O.



See

For more information about available partition configurations, see “2.1.6 [Partition configuration.](#)”

### 4.2.4 LAN selection

In the GFS Shared File System, the MDS communications needed to obtain meta-data and to maintain consistency are processed through the LAN.

Set up the LAN path while keeping the following in mind.

- LAN traffic volume and LAN load
- Redundant Configuration Definition for a LAN fault

The GFS Shared File System has been designed in order not to increase the LAN load. But, the load intensity can be high under certain operation conditions. When a higher load is imposed on the LAN due to another processing, the more response time may be consumed in accessing the

GFS Shared File System. The LAN load status can be checked with `netstat(8)`.

The use of the following is recommended when the load on a file system is large or when the response time is more important than other factors.

- High-speed LAN
- Private LAN

In the GFS Shared File System, specific nodes block the file systems if an error occurs in the communications between MDS and node AC. This is done because AC determines file system processing cannot be continued. The followings are suggestions for avoiding problems in the communication paths.

- To establish a multiplex communication path by integrating several LAN paths into one local path using fast switching mode of GLS (Redundant Line Control Function).



See

For more information about GLS, see "*PRIMECLUSTER Global Link Services (Linux) Configuration and Administration Guide : Redundant Line Control Function.*"

## 4.2.5 For future expansion

When a GFS Shared File System is created with `sfcmkfs(8)`, the file system is configured, considered for future expansion by default. Check the parameter values in the following table and see if they are sufficient for the future expansion. For example, the partition addition function cannot add partitions exceeding the `-o maxvol` parameter of `sfcmkfs(8)`. In this case, to expand the file system, the current data must be backed up and then deleted, a new file system must be created, and the data must be restored.

In preparation for file system capacity expansion for future needs, create a file system, estimating the maximum size for expansion.

**Table Parameter that you should confirm for future expansion**

<b>sfcmkfs(8) parameter</b>	<b>Default</b>	<b>Meaning</b>
<code>maxdsz</code>	File data area size at specification	Maximum file data area size
<code>maxnode</code>	16	Maximum number of sharing nodes
<code>maxvol</code>	16	Maximum number of partitions



Note

[Linux2.4]

`maxdsz` and `maxvol` parameter of `sfcmkfs(8)` cannot be specified.

## 4.3 Backup Design

This section describes the hardware required to restore backed up file systems and the methods used to perform backups.

- Required hardware  
A tape unit or hard disk unit is used to backup the GFS Shared File System.
- Backup restoration procedure  
The GFS Shared File System restores backed up file systems with the following methods:  
Restoring the entire file system: `dd (1)`  
Restoring the file system on a file basis: `cpio(1L)` or `tar(1)`

If the GFS Shared File System consists of multiple partitions, backups should be restored on a partition basis. If tape devices and hard disk devices are configured, considered for a load distribution control of assigning I/O transactions, backup and restore tasks can be distributed on all the nodes, and this will reduce the time required to backup and restore each partition.



See

For more information about restoring backups in the GFS Shared File System, see “Chapter13 [File System Backing-up and Restoring.](#)”

# Chapter 5 Management Partition

---

This chapter describes purposes and functions of management partitions.

For information on how to operate management partitions, see the following;

“Chapter8 [Management Partition Operations \(GUI\)](#)”

“Chapter9 [Management Partition Operations \(Command\)](#)”

## 5.1 Management Partition

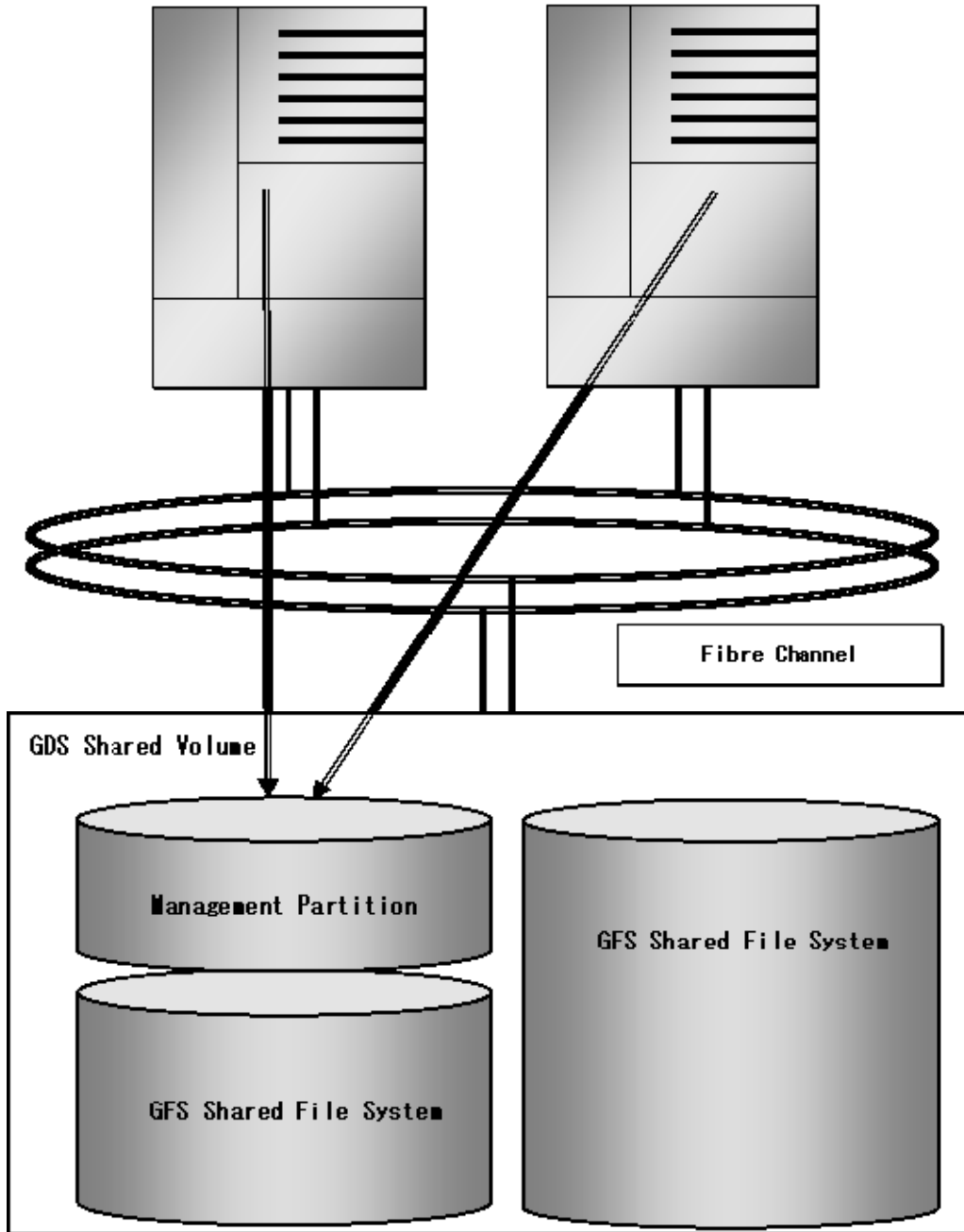
Management partitions provide the important information for GFS Shared File System operation. Also, it is used for the “sfcfrmd” daemon to maintain data integrity. The management partition contains the following information:

1. Information of each node constituting the GFS Shared File System.
2. Information linking to a shared node and a shared device in each GFS Shared File System.
3. MDS and AC allocation information for each GFS Shared File System.

The node information of 1 must be set up using `sfcsetup(8)`. The information of 2 and 3 can be set up, modified and added with `sfcmkfs(8)`, `sfcadm(8)`, `sfcnode(8)` and `sfcadd(8)`. The `sfcgetconf(8)` command is available for backing-up the information within the management partition.



Figure Configuration of the connection between nodes and the management partition



## 5.2 Resources Required for the Management Partition

The GFS Shared File System requires, in addition to the volumes that constitute the file system, one GDS Shared volume that is exclusively for the management partition for each cluster system. Even when using two or more file systems, the number of required management partitions is one. Specify a volume size of at least 40 megabytes for the management partition.



See

For details on how to set up the GDS Shared disk system, see the "*PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)*."



Note

A setup of the volume which creates the management partition should set to "shared" the type of a disk class with which volume belongs. Also, all the nodes that share the GFS Shared File System must be specified as the scope of the disk class to which the volume belongs. Moreover, the settings must be such that the volume is automatically activated when the node is started.

Set "no" to [ Exclusive use ] of the disk class use including the volume where the management partition exists in.

If a disk class that includes volumes with management partitions is set in a GDS resource of a cluster application by mistake, the volume will not enter ACTIVE automatically during node startup. Therefore, the GFS Shared File Systems does not work.

## 5.3 Notes on Management

If a failure occurs in the management partition, the GFS Shared File System within a cluster system stops. To overcome this, it is recommended to mirror the volumes within the management partition.

Also, prior to changing the configuration of the file system, make a backup of the management partition information with `sfcgetconf(8)`.



See

For details on backup of the management partition, see “9.6 [Backup of the management partition information](#)” and “9.7 [Restoring of the management partition information](#)”.



# Chapter 6 Starting and Exiting the Management View

---

---

GFS Management View operates under a Web environment.

As long as you have a web environment, you will have access via a browser from any location. This chapter describes how to start and exit the GFS Management View.

For information about the following items, all of which are necessary for using the GFS Management View, see the "*PRIMECLUSTER Web-Based Admin View Operation Guide*":

- Topology
- Preparation
- Operating Screen

Note that, because the GFS Shared File System is subject to the following functions, they must be installed in advance and be usable before attempting file system operation:

- PRIMECLUSTER Global Disk Services
- PRIMECLUSTER Cluster Foundation

For details on each function, see the following:

- "*PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)*"
- "*PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide*"

When startup of the GFS Management View is enabled, you can operate the management partition with the GUI. For details, see the following:

- "Chapter8 [Management Partition Operations \(GUI\)](#)"

If the management partition has already been created, the file system can be operated with the GUI. For details, see the following:

- "Chapter10 [File System Operations \(GUI\)](#)"

If the management partition or the file system is to be operated from the command line, you do not have to make any Management View settings.

## 6.1 Starting Web-Based Admin View

If all preparations are complete, start Web-Based Admin View using the following procedures.

1. Start the browser.



For information about a client that starts the browser, see the “*PRIMECLUSTER Web-Based Admin View Operation Guide*”.

2. Specify the URL in the following format.

`http://host-name:port-number/Plugin.cgi`

**host-name:**

Specify “IP address or host name (**httpip**) for client” of the primary or secondary management server.

The default **httpip** value will be an IP address that is allocated to the node name output with “`uname -n`”.

**port-number:**

Specify “8081”. If the port number is changed, specify the changed port.



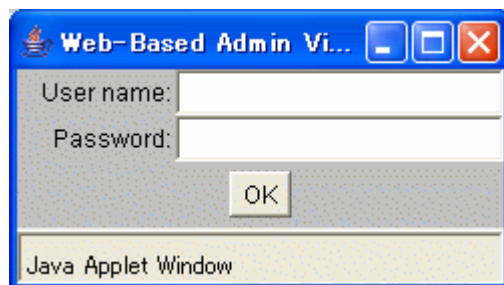
For information on how to change the http port number, see “Change http port number” of the “*PRIMECLUSTER Web-Based Admin View Operation Guide*”.



If Web-Based Admin View is not started regardless of a host name of the management server being specified for “host name”, specify an IP address of the public LAN directly.

3. If the Web-Based Admin View is started, the user login screen will appear as follows.

**Figure: Login screen**



Enter user name and password for the management server then click the “OK” button.

4. When the user authentication processing is completed, the top menu of the Web-Based Admin View will appear.

## 6.2 Web-Based Admin View Top Menu

After starting Web-Based Admin View has started, the “Web-Based Admin View operation Screen” appears.

Web-Based Admin View allows you to operate and manage GFS, set environment from the WWW screen.

Top menu refers to the Web-Based Admin View operation menu.

### 6.2.1 Web-Based Admin View Operation Menu Functions

The Web-Based Admin View operation menu supports the following functions related with the GFS Shared File System.

**Table Web-Based Admin View Operation Menu Description**

Menu	Description
Global File Services	Set and operates GFS Shared File System.



Note

- Note that the contents of the Web-Based Admin View operation menu vary depending on the installed product.
- When a dialog is displayed because of an error in Web-Based Admin View, the picture on the right side of the Web-Based Admin View top menu also turns red. If other screens hide the dialog, clicking the red picture brings the dialog box to the front. To find some errors occurred surely, the picture on the right side of the Web-Based Admin View top menu must be always displayed.

### 6.2.2 Web-Based Admin View Tool Menu Functions

For information about the Web-Based Admin View Tool Menu, see “*PRIMECLUSTER Web-Based Admin View Operation Guide*”.



Note

In the “*PRIMECLUSTER Web-Based Admin View Operation Guide*”, replace the term “Cluster Management view” with “GFS Management View”.

## 6.3 Starting GFS Management View

Select the <Global File Services> Menu on the Web-Based Admin View operation menu, the GFS Management screen (hereafter referred to as the main screen) opens.

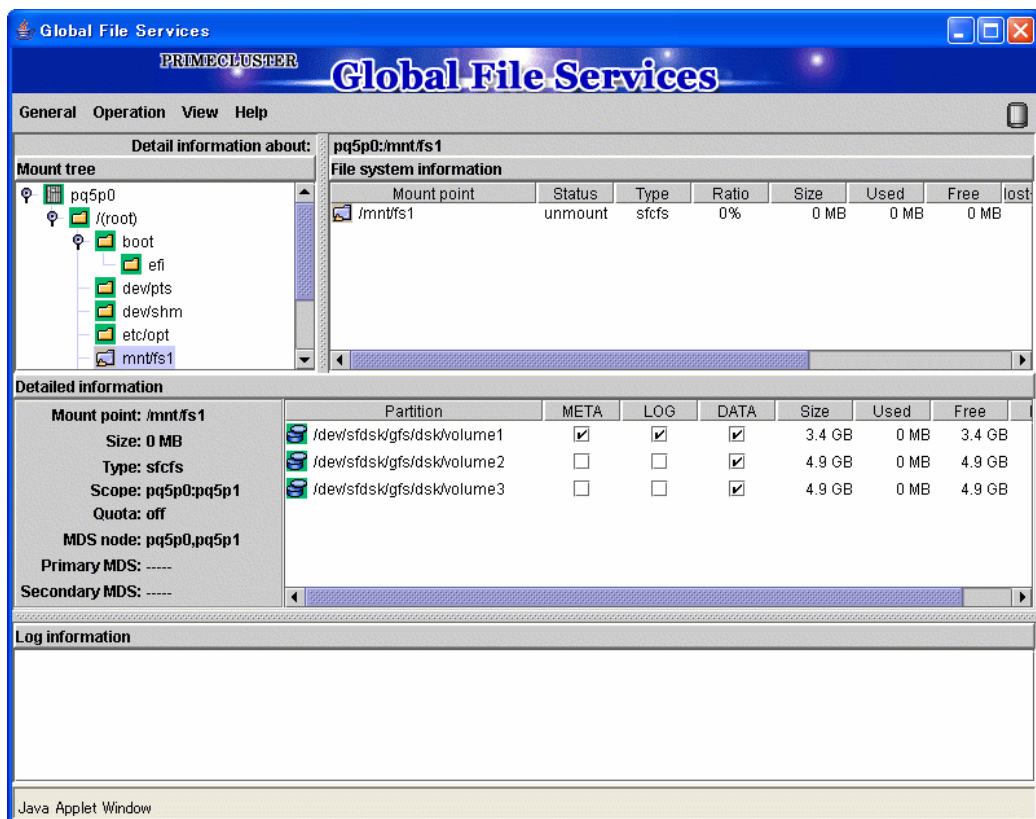
From the main screen, you can create the management partition, create a file system, change a file system's configuration, and delete a file system.



See

For more information, see “Chapter8 [Management Partition Operations \(GUI\)](#)” and “Chapter10 [File System Operations \(GUI\)](#).”

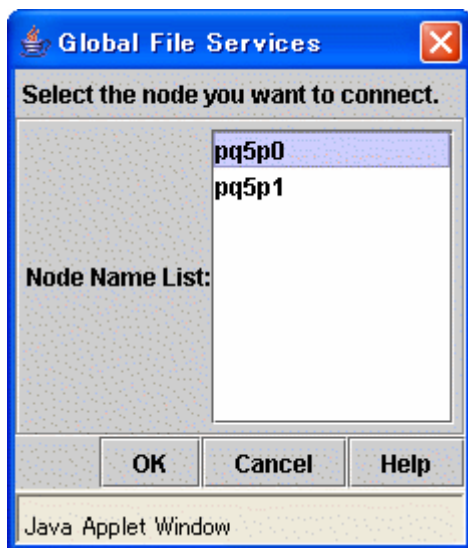
Figure GFS Management Main Screen



If there is more than one node, [Select Node] Screen appears on top of the main screen. Select the desired node. The selected node can be changed from the main screen.



Figure Select Node Screen



## 6.4 Exiting GFS Management View

To exit the GFS Management View, click [Exit] on the [General] menu. The following message will appear.

Figure Exit Screen



If you press <Yes>, the Web-Based Admin View Screen (top menu) is displayed.  
If you press <No>, the main screen is displayed again.

## 6.5 Exiting Web-Based Admin View

Exit Web-Based Admin View, as follows:

1. Select the [Logout] button on the top menu.
2. When the login screen appears, exit the browser or use the [Back] feature of the browser to exit Web-Based Admin View.



Note

**If the login screen continues to be displayed**

The login screen will remain displayed briefly after the browser exits. No additional action is required to close the login screen.



# **Chapter 7    Operation    Management    View**

## **Screen Elements**

---

---

This chapter describes the screen elements of the GFS Management View.

## 7.1 Screen Configuration

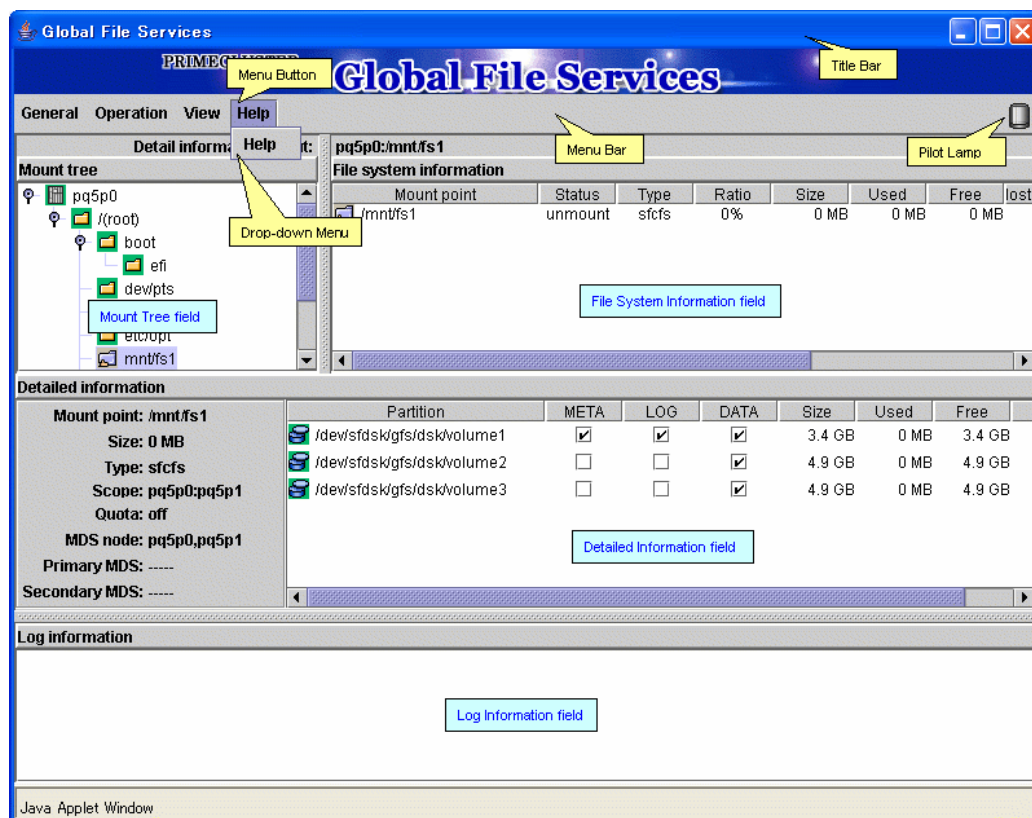
### Main screen

Select Global File Services from Web-Based Admin View, and the screen below appears.

From this main screen, you can create a file system, change a file system's configuration and delete a file system.

Screen configuration of main screen is shown below.

Figure GFS Management Screen (main screen)



### Mount tree field

File systems accessible from the node selected with [Select Node] in the [General] menu on the main screen can be displayed in the tree structure. The tree displays only file systems listed in /etc/fstab.

When the GFS Management screen appears, the [Select Node] screen appears first to select target node.

### File System Information field

Displays the file systems for the node/directory selected from the Mount tree field. If the file system is unmounted state, 0 is displayed in the size.

Each object has an icon representing the object type. If the file system type is sfdfs, icons are color-coded so that the status of the objects can be determined at a glance.



See

For an explanation of icon types and object status, see “7.3 [Icon Types and Object Status](#)” in this manual.

### Detailed Information field

When the file system type is `sfcs`, detailed information such as the placement of the MDS selected in the Mount tree field or the File system information field is displayed.

If the file system is unmounted state, 0 is displayed in the size in a left column.

The size of the data area is displayed in the size in the column of each right partition. Therefore, the size column is not displayed as for the partition without the data area.

### Log Information field

Displays messages concerning the GFS Shared File System daemon program. The node name that the message was displayed is added at the head of each message.

### Title Bar

Displays screen title (Global File Services).

### Menu Bar

Display the menu buttons.

### Menu Button

Allow you to control the objects selected on screen.

There are <General>, <Operation>, <View> and <Help>.

### Drop-down Menu

When a menu button from the Menu Bar is selected, a Drop-down Menu will be appears.



See






For details on the drop-down menu, see “7.2 [Menu Configurations and Functions](#).”

### Pilot Lamp

Shows the status of monitored objects.

The lamp can indicate the following status.

Table Types of Pilot Lamp

Pilot Lamp	Status	Meaning
 (Gray, lit up)	Normal	-
 (Red, blinking)	Abnormal	The file system is abnormal. (Unavailable)
 (Red, lit up)	Abnormal	When red blinking warning lamp is single-clicked
 (Yellow, blinking)	Alarm	The utilization rate of the file system exceeds the threshold or the file system is abnormal at other node.
 (Yellow, lit up)	Alarm	When yellow blinking warning lamp is single-clicked

When a field cannot be fully displayed, move a mouse cursor to that part that is not being displayed clearly. A popup display will appear.

In a pop-up list of the scope, information on the nodes sharing the file system is displayed in the node (host) name format. When several host names are specified, they are displayed in parentheses.



## 7.2 Menu Configurations and Functions

Each menu button has a Drop-down Menu; you can operate the selected object on screen. This section explains the menu configuration and functions.

### 7.2.1 General

Figure General menu

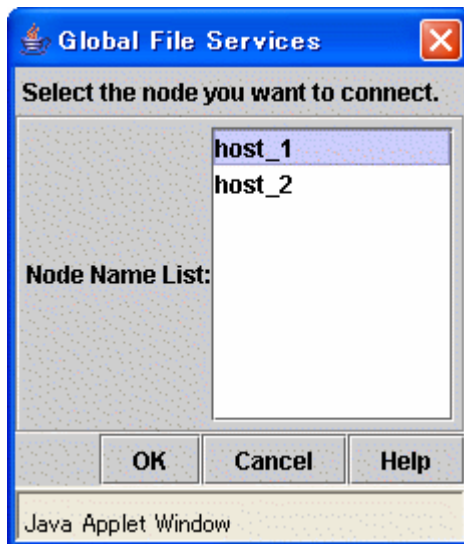


#### Select Node

Select the node you want to operate, and press <OK> button. Only one node can be selected at a time.

If you don't need selecting node, press <Cancel> button.

Figure [General]: [Select Node] Screen



#### Exit

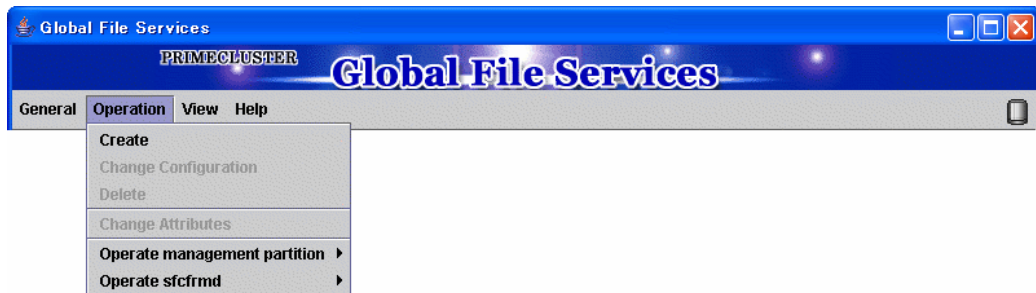
Exits Global File Services.

Figure [General]: [Exit] Screen



## 7.2.2 Operation

Figure Operation menu



### Create

Creates a file system.



[See](#)

For details, see "10.2.1 [Creating a file system.](#)"

Figure [Operation]: [Create] Screen

**Global File Services**

**Create File System Wizard (1)**  
Set the node name and the priority that will share the file system, and mount point.

	Node name	Host name	Primary MDS	Secondary MDS	MDS r
<input checked="" type="checkbox"/>	pq5p0	pq5p0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	pq5p1	pq5p1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

MDS node:  all nodes  2 nodes

Mount point:

Make directory:  yes  no

Cancel Reset Next Help

Java Applet Window

### Change Configuration

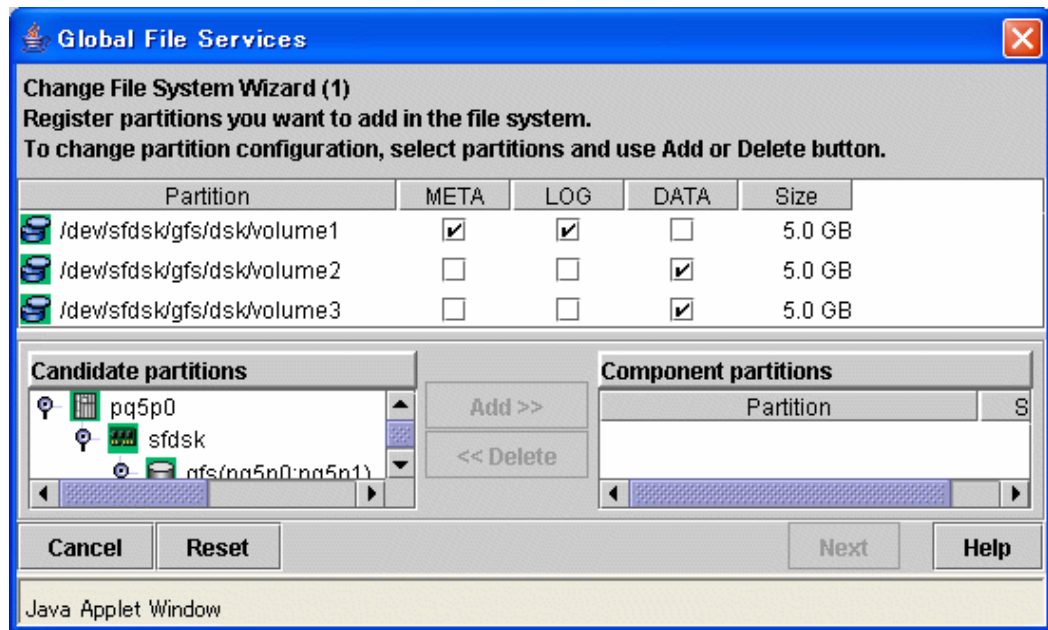
Changes the partition configuration of a file system.



[See](#)

For details, see “10.3.2 [Changing the file system configuration \(partition addition\)](#).”

Figure [Operation]: [Change Configuration] Screen



## Delete

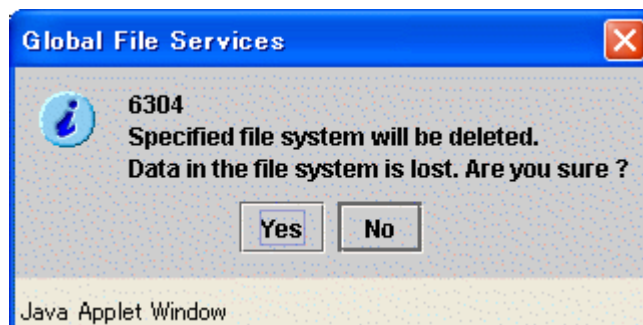
Deletes a file system.



See

For details, see “10.4.1 [Deleting the file system.](#)”

Figure [Operation]: [Delete] Screen



## Change Attributes

Changes the mount information, share information, and detailed information for a file system.



See

For details, see “10.3.1 [Changing in file system attributes](#)” and “10.3.3 [Changing the shared node information.](#)”

Figure [Operation]: [Change Attributes] Screen

Global File Services

Share information Detailed information **Mount information**

Set mount point and various mount options.

Representative partition: volume1  
Total file system size: 15.0 GB

Mount point: /mnt/fs1

Make directory:  yes  no

Direct I/O:  forcedirectio  noforcedirectio

setuid execution disabled

RO mount

noatime

auto mount disabled

Apply Reset

Exit Help

Java Applet Window

### Operate management partition

You can create the management partition, register and add node information.



See

For details, see “8.2 [Creating the management partition](#)” and “8.3 [Adding node configuration information to the management partition.](#)”

Figure [Operation]:[Operate management partition]:[Create] Screen 1

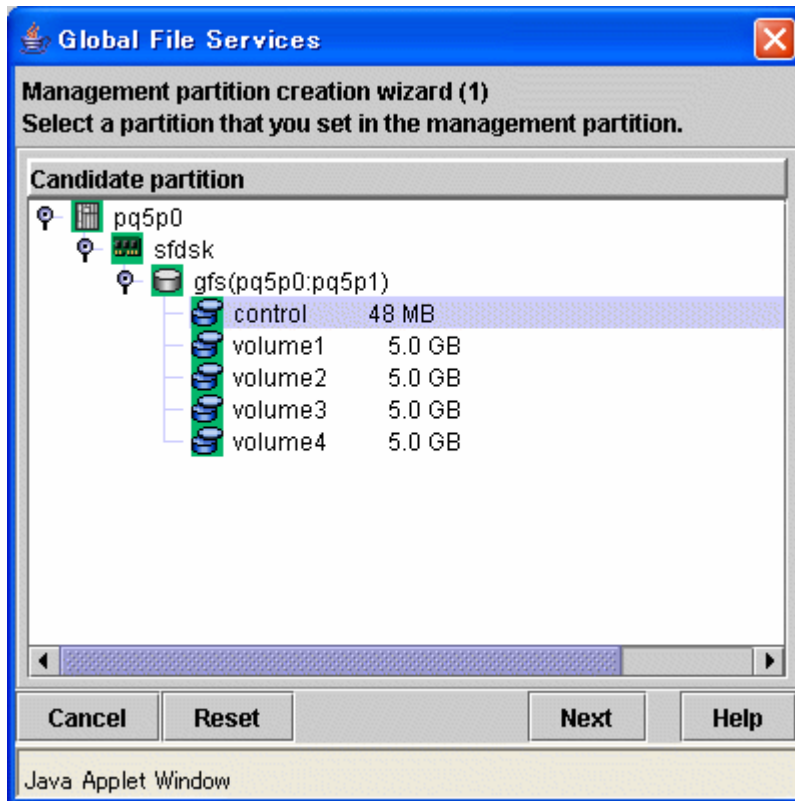


Figure [Operation]:[Operate management partition]:[Create] Screen 2

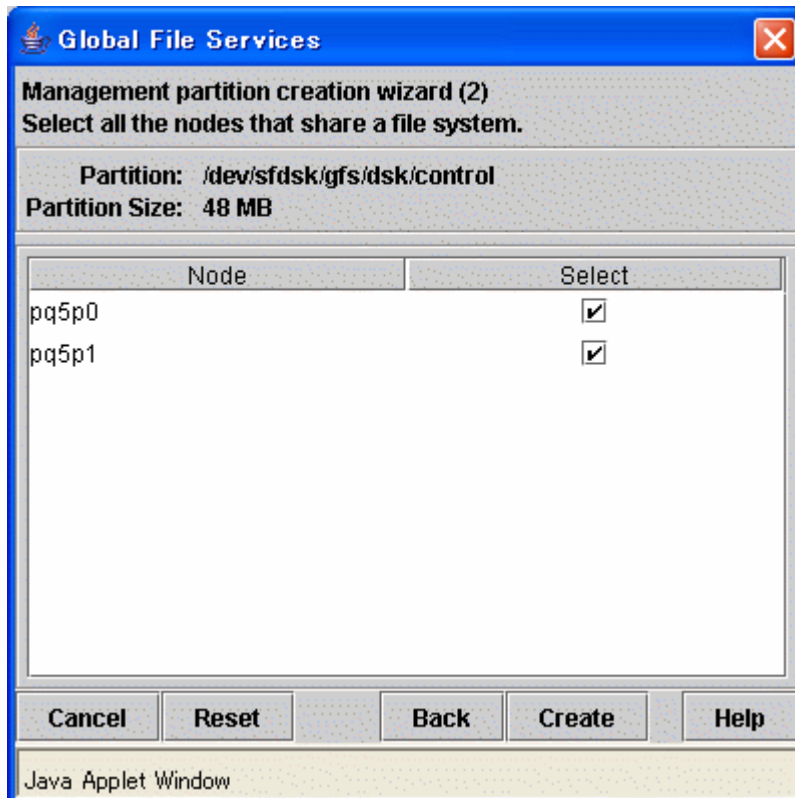
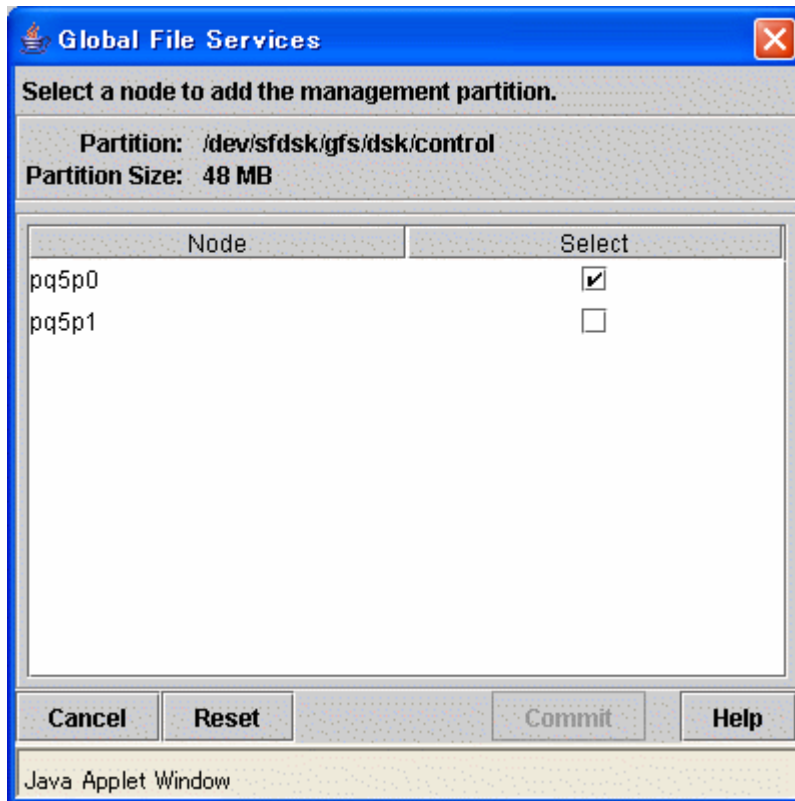


Figure [Operation]:[Operate management partition]:[Add node] Screen



## Operate sfcfrmd

sfcfrmd daemon can be started or stopped.



See

For details on the operation, see “8.3.4 [Starting sfcfrmd daemon](#)”, “8.3.2 [Stopping sfcfrmd daemon](#).”

Figure [Operation]: [Operate sfcfrmd]:[Start] Screen

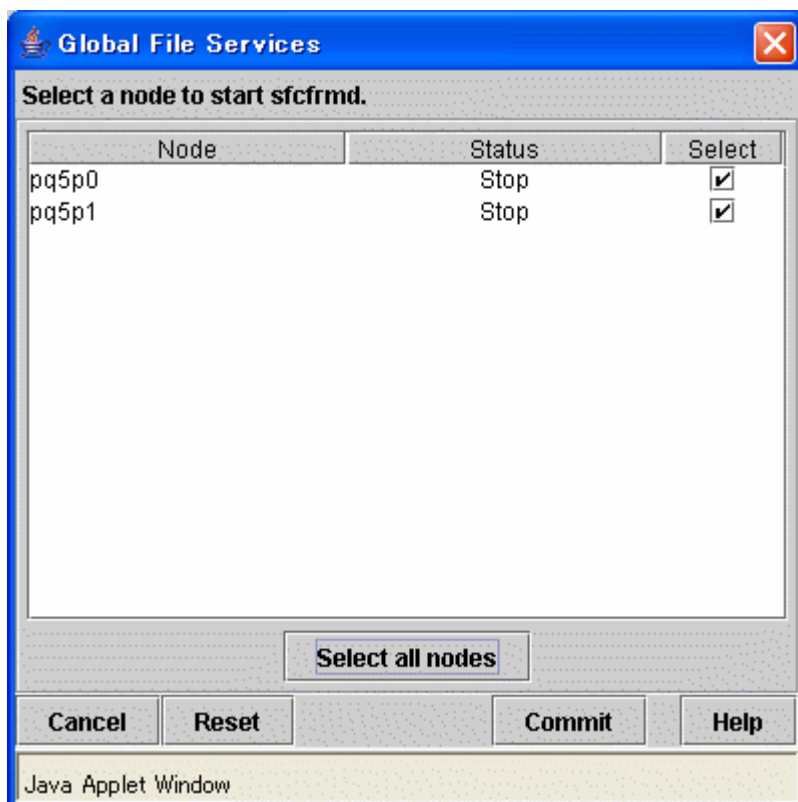
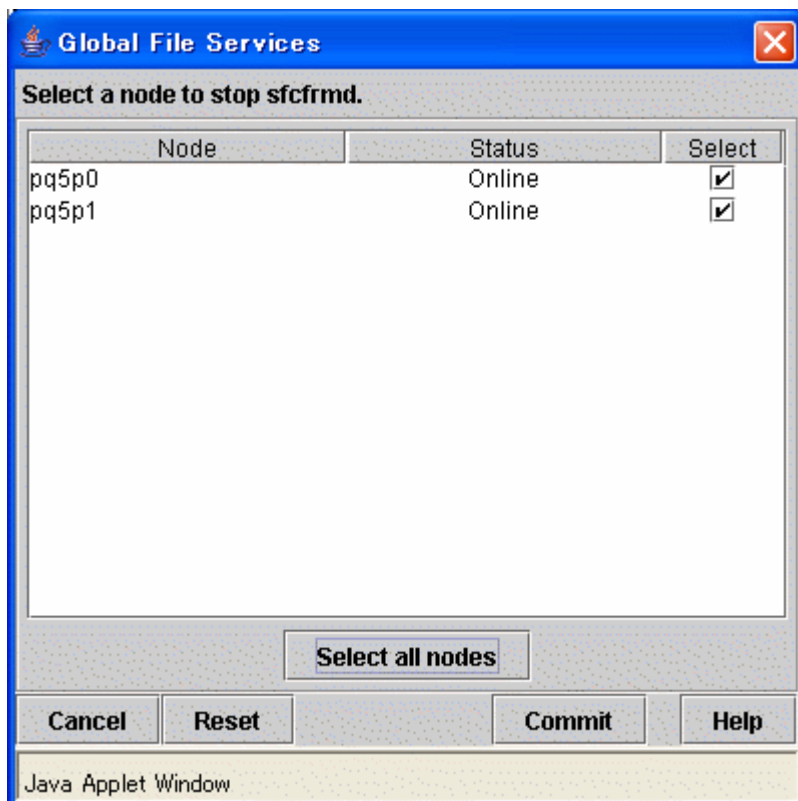


Figure [Operation]: [Operate sfcfrmd]:[Stop] Screen





## 7.2.3 View

Figure View menu



### Abnormal Only

Only displays file systems with abnormalities.

### Update Now

Display the latest file system information.

## 7.2.4 Help

Figure Help menu



### Help


Displays help information.

## 7.3 Icon Types and Object Status


GFS Management View uses icons to show object types and status.

The status and icons are shown below.






### 1. Node

Icon	Status	Meaning
	-	-



### 2. Adapter

Icon	Status	Meaning
	-	-


### 3. File system (sfcs)

Icon	Status	Meaning
 (Green)	Normal	The file system is working normally on all nodes.
 (Yellow)	Alarm	The usage rate of the file system exceeds the threshold or an error occurred at another node.
 (Red)	Abnormal	An error occurred in the local node.
 (Blue)	In transition	The file system is in mounted or unmounted.
 (Light brown)	Inactive	The file system is in unmounted.


### 4. File system (ext2/ext3)

Icon	Status	Meaning
 (Green)	Normal	-
 (Red)	Abnormal	-

### 5. Physical Disk

Icon	Status	Meaning
	-	-

### 6. Partition

Icon	Status	Meaning
	-	-



Note

**File system status**

The GFS Shared (file system type: sfcfs) File System is displayed as normal until it is accessed, and then the abnormality is detected. Even if the file system is unmounted, the icon shows the status.

When the file system type is ext2/ext3, the status is not shown under an unmounted status.



# Chapter 8 Management Partition Operations (GUI)

---

This chapter describes how to operate the management partition by the GFS Management View.

Note that, because the GFS Shared File System is subject to the following functions, they must be installed in advance and be usable prior to starting file system operation:

- PRIMECLUSTER Global Disk Services
- PRIMECLUSTER Cluster Foundation



See

For details on each function, see the following:

- "*PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)*"
- "*PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide*"

To execute the management partition operation, the GFS Management View settings must have been made in advance. For details, see the following:

- "Chapter6 [Starting and Exiting the Management View](#)"

When you want to create a file system immediately after you create a management partition, see the following:

- "Chapter10 [File System Operations \(GUI\)](#)"
- "Chapter11 [File System Operations \(Command\)](#)"

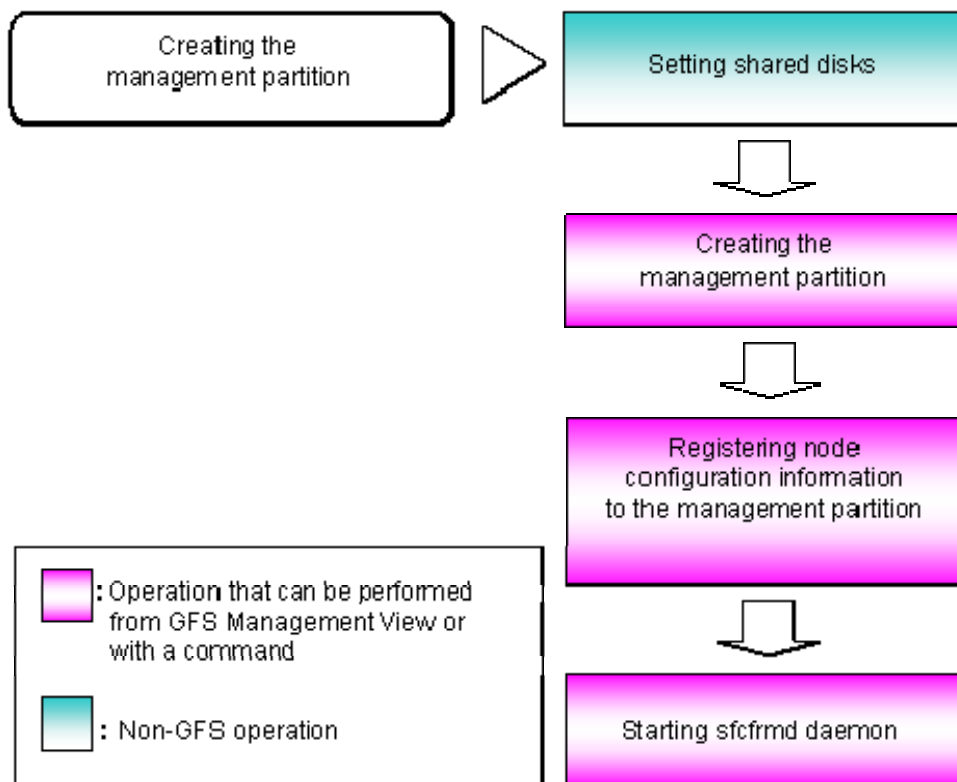
## 8.1 Flow of Operations

This section describes the flow of Management Partition operations of the GFS Management View.

### 8.1.1 Creating the management partition

The following figure describes the flow of operations for creating a file system. For details on operations in the following figure, see “8.2 [Creating the management partition](#)”.

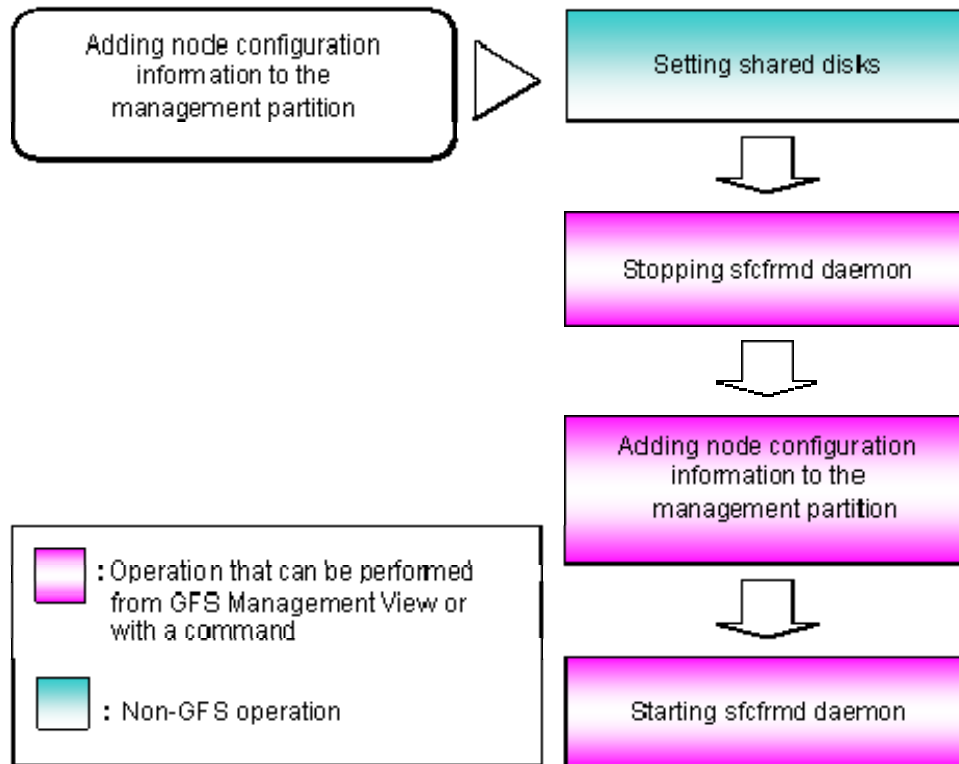
**Figure Operation flow for creating the management partition**



### 8.1.2 Adding node configuration information to the management partition

The following figure describes the flow of operations for adding node configuration information to the management partition. For details on operations in the following figure, see “8.3 [Adding node configuration information to the management partition](#).”

**Figure Operation flow for adding node configuration information to the management partition**



## 8.2 Creating the management partition

This section describes how to create the management partition.



Note

Before creating the management partition, confirm that a cluster partition error has not occurred. If a cluster partition error has occurred, fix the cluster partition error first.



See

For information on how to check whether a cluster partition error has occurred and, how to fix a cluster partition error, see "C.3.4 [Corrective action when the sfcfrmd daemon is not started](#)".

### 8.2.1 Setting shared disks

The device used as a management partition of a GFS Shared File System needs to fulfill the following conditions.

- Size should be 40 megabytes or more. (At least 40 megabytes will be required for the management partition.)
- It is the GDS logical volume and a status should be "ACTIVE." (Check with the **sdxinfo(8)**)
- It is shared from all the nodes that use a file system. (Check with the **sdxinfo(8)**)



See

For details on the **sdxinfo(8)**, see "*PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)*."

GDS logical volume used as management partition should be set up as follows.

- Set up the type of a disk class with which GDS logical volume belongs as shared.(Change GDS class attributes)
- Set all the nodes that share GFS Shared File System as the scope of the disk class to which logical volume belongs.(Change GDS class attributes)



See

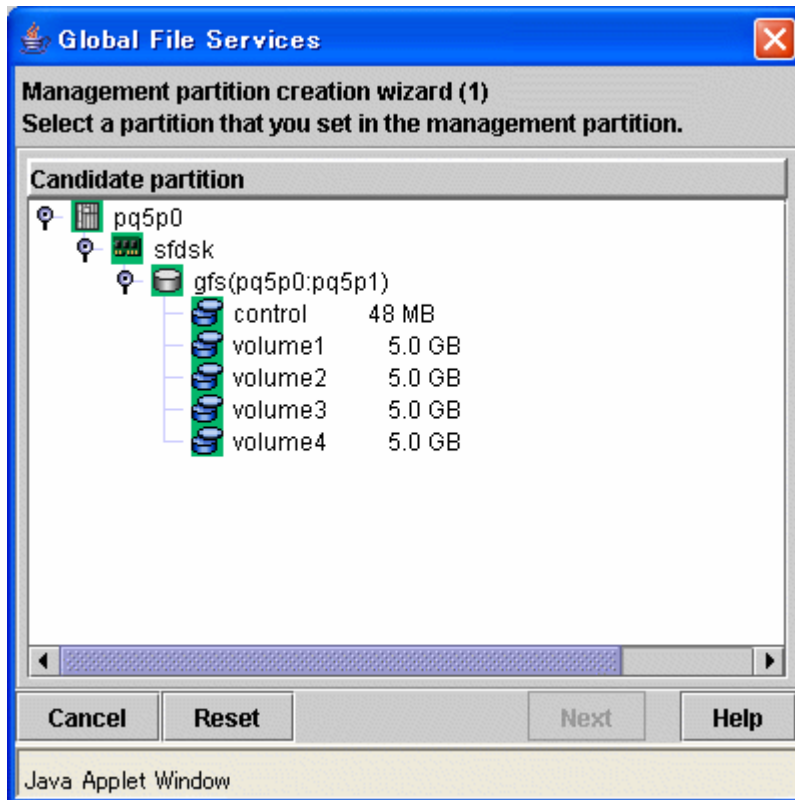
For information on logical volume operation, see the relevant item in "Operating on the management view" in the "*PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)*."



## 8.2.2 Creating the management partition, registering node configuration information and starting sfcfrmd daemon

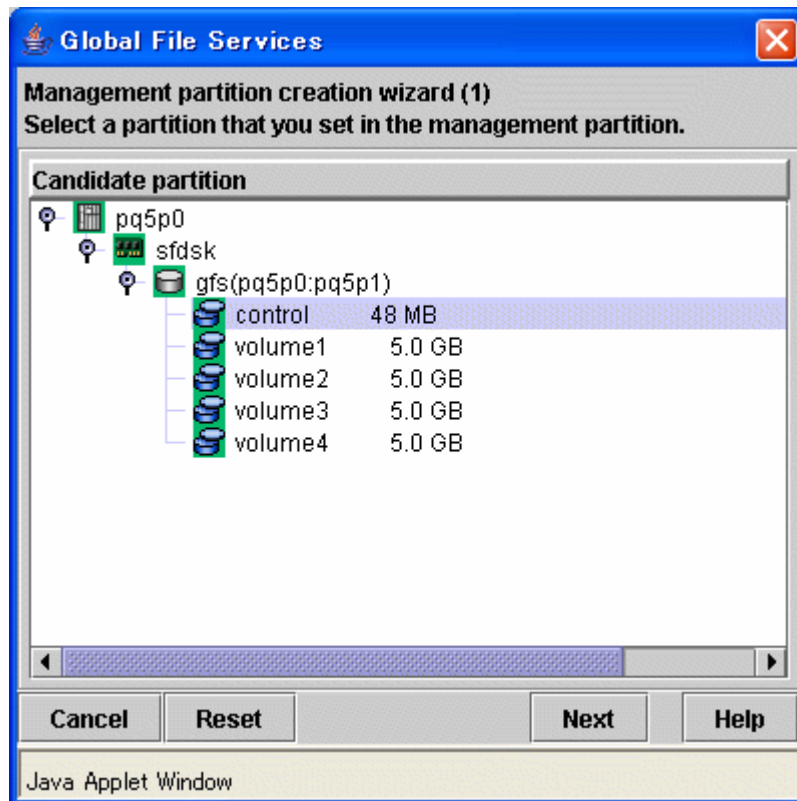
Creating the management partition and registering node configuration information can be done after selecting [Operation]:[Operate management partition]:[Create] on the GFS Management View.

Figure management partition creation wizard (1) - partition selection



In the management partition creation wizard (1) - partition selection screen, select partition used as management partition.

In [Candidate partition], partitions that can use as management partition at the node executing management partition creation are displayed. If the partition used as management partition is selected with the check mark, it becomes possible to click the <Next> button.



After selecting the partition use as management partition from [Candidate partition], it will go to management partition creation wizard (2) - node selection screen if you click <Next> button. To stop the creation of the management partition, click the <Cancel> button. To restore the selection state to the default value, click the <Reset> button.



Note

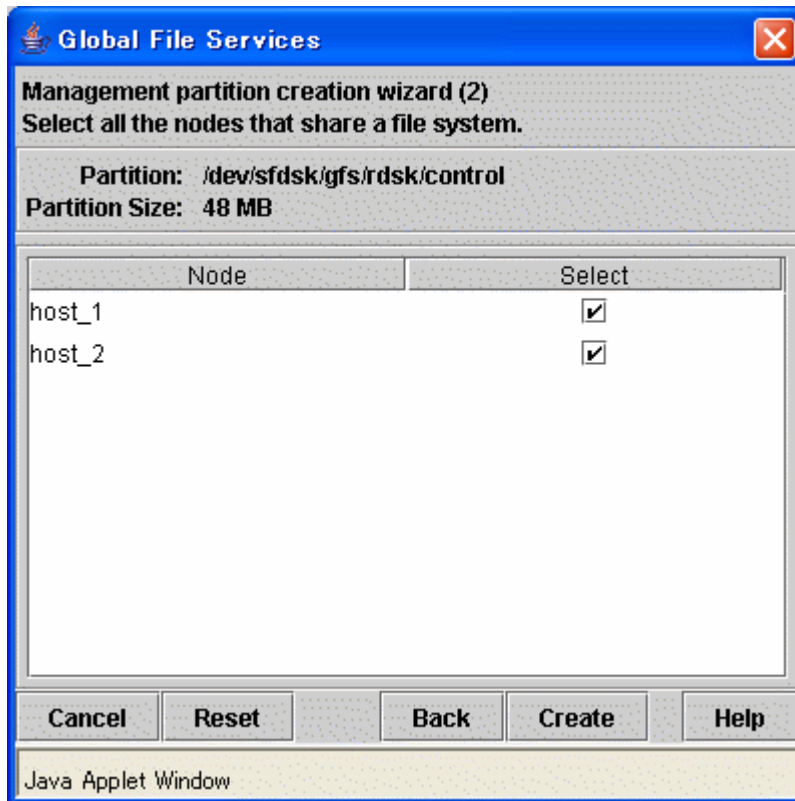
Before attempting to create the management partition, first stop sfcfrmd daemon.



Note

Partitions that are used as management partitions cannot be initialized from the GFS Management View. Please do with **sfcsetup(8)**. For details, see “9.2.2 [Initializing of the management partition.](#)”

Figure management partition creation wizard (2) - node selection



In the management partition creation wizard(2) - node selection screen, select (with the check mark) nodes to register into management partition selected in the management partition creation wizard(1) - partition selection screen.

In [Node], the node included in the scope of the disk class to which the GDS logical volume selected as a management partition at the management partition creation wizard(1) - partition selection screen belongs is displayed. By the default, [Select] of all nodes are checked.



#### Note

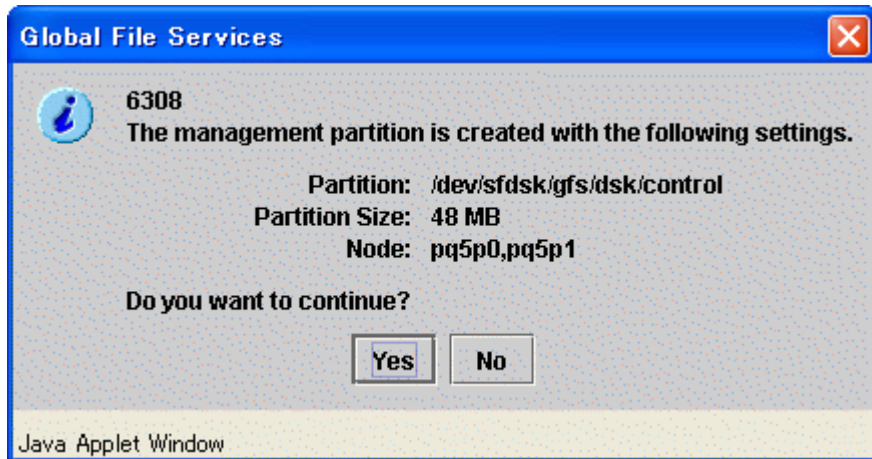
The node selected as a connecting node in [Select Node] screen appearing at the time of starting the GFS Management View needs to surely register as management partition. Therefore, the check mark of [Select] cannot be deselected.

To stop creation processing of the management partition, click the <Cancel> button.

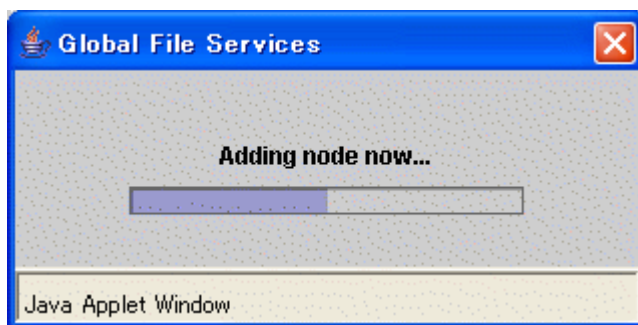
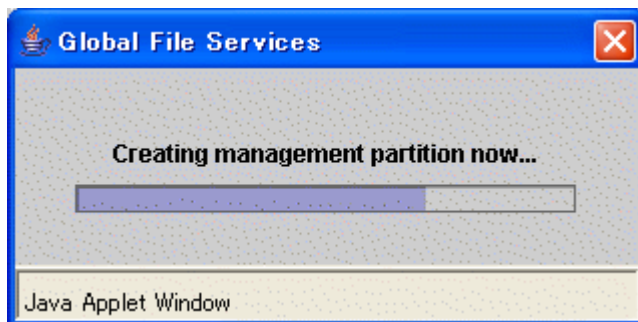
To restore the selection state to the default value after change [Select] value, click the <Reset> button.

Click <Back> button when returning to the screen that selects the partition creating as a management partition.

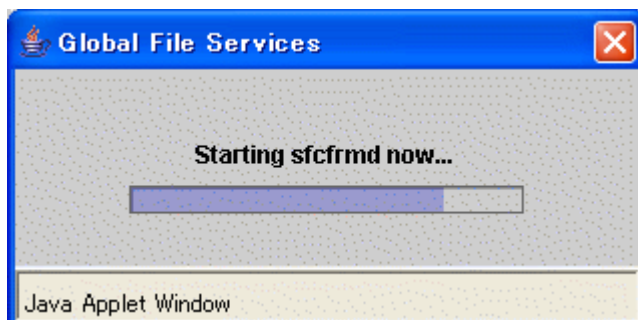
When the check state of [Select] button of a node registering with a management partition is checked and the <Create> button is clicked, the following messages will be displayed.

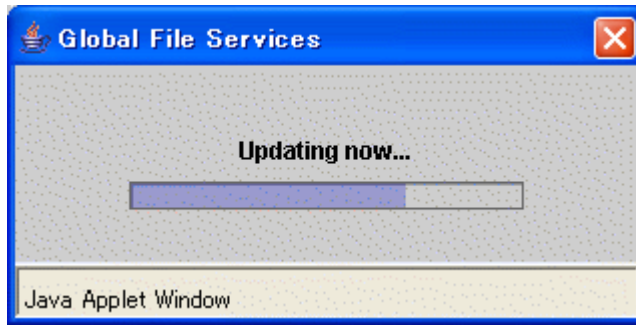


Processing will be interrupted, if you click the <No> button of the displayed message. Creating management partition is started, if you click <Yes> button. It cannot be interrupted after creating management partition is started.

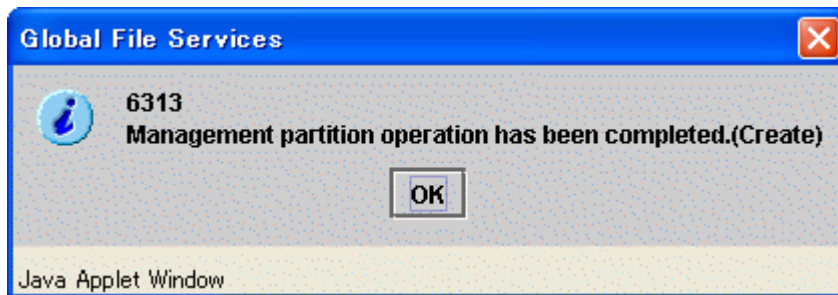


Start sfcfrmd daemon on the node registered with management partition.





The following message appears and management partition creation is completed.



## 8.3 Adding node configuration information to the management partition

This section describes how to add node configuration information to the management partition.



Note

You cannot add a configuration node while the `sfcrmd` daemon is started.



Note

Before adding node configuration information to the management partition, confirm that a cluster partition error has not occurred. If a cluster partition error has occurred, fix the cluster partition error first.



See

For information on how to check whether a cluster partition error has occurred and, how to fix a cluster partition error, see "C.3.4 [Corrective action when the `sfcrmd` daemon is not started](#)".

### 8.3.1 Setting shared disks

The node added as configuration node needs to be included in the scope of disk class to which GDS logical volume shared by all nodes registered to management partition belongs.



See

For details, see "8.2.1 [Setting shared disks](#)."

### 8.3.2 Stopping `sfcrmd` daemon

You can stop `sfcrmd` daemon by selecting [Operation]: [Operate `sfcrmd`]:[Stop] on the GFS Management View.

You must be stop `sfcrmd` daemon in all nodes when node configuration information is added to management partition.



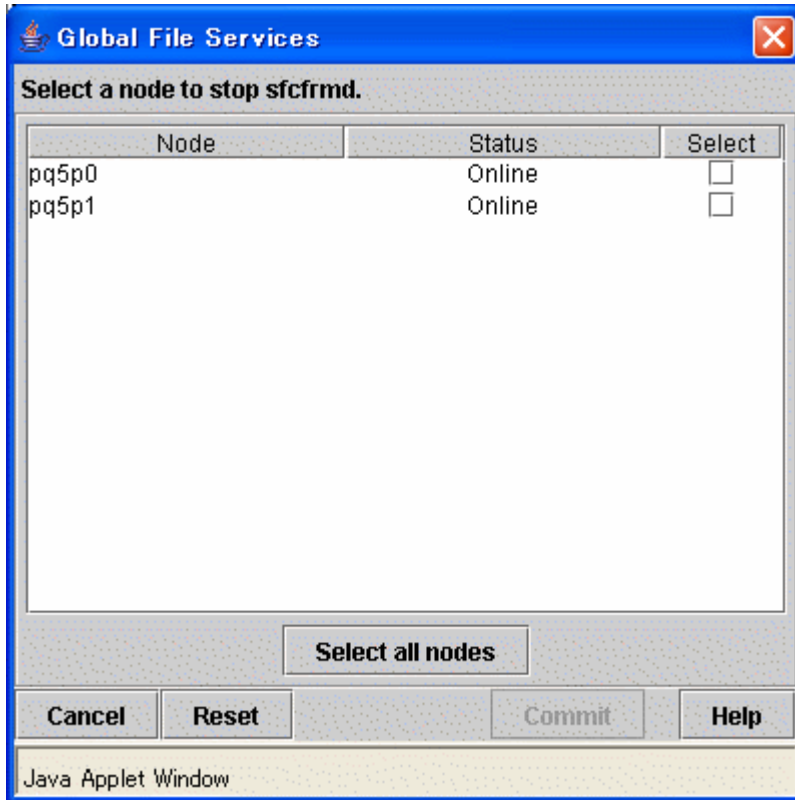
Note

Unmount all GFS Shared File Systems before stopping `sfcrmd` daemon.



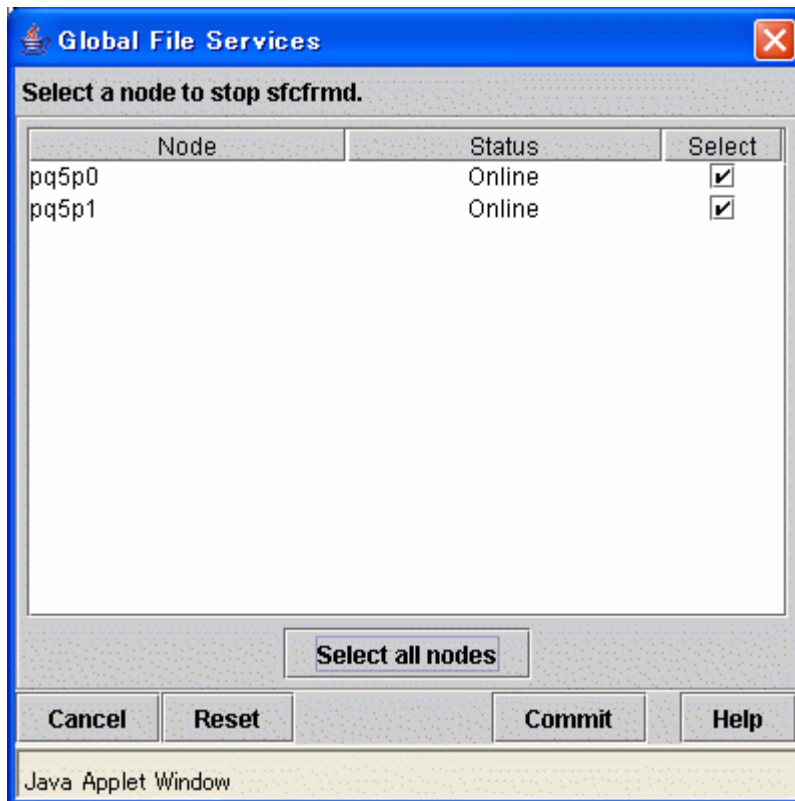
If node configuration information is added to management partition without stopping sfcfrmd daemon, sfcfrmd daemon under running is stopped automatically under processing of adding node configuration information to management partition.

**Figure sfcfrmd daemon stop node selecting dialog box**

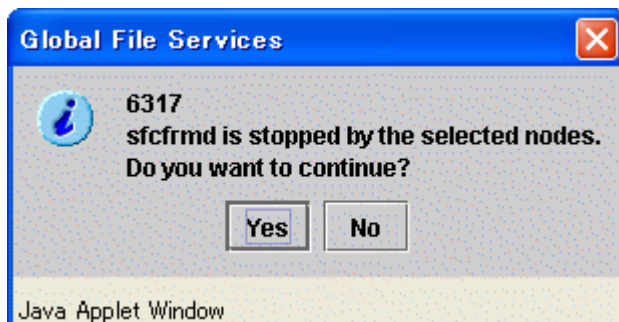


In the sfcfrmd daemon stop node selecting dialog box, select the check mark of node stopping sfcfrmd daemon.

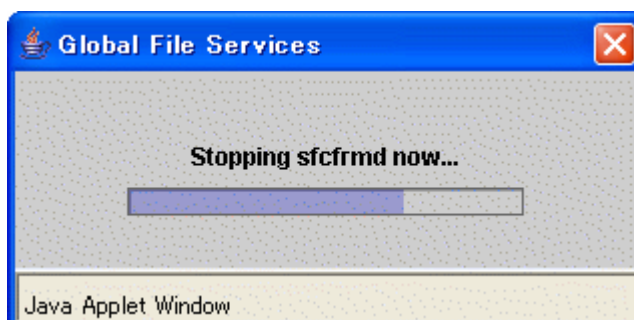
In [Node], all nodes registered to management partition are displayed. If you select [Select] of node stopping sfcfrmd daemon, <Commit> button can be clicked.



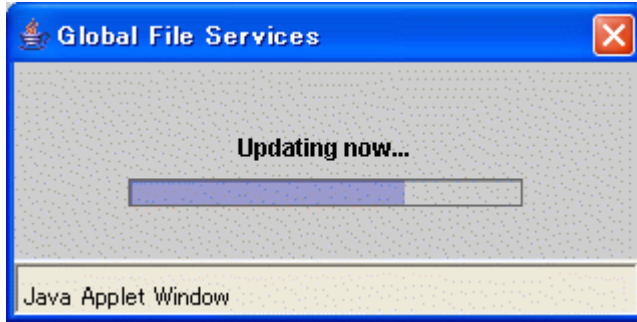
If you click the <Select all nodes> button, all the nodes will be checked. To restore the selection state to the default value, click the <Reset> button. To cancel stopping sfcfrmd daemon, click the <Cancel> button. When you click <Commit> button, the following messages will be displayed.



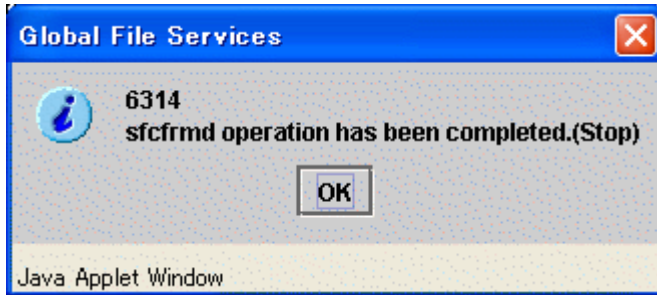
Processing will be interrupted, if you click the <No> button of the displayed message. Stopping sfcfrmd daemon is started, if you click <Yes> button. It cannot be interrupted after stopping sfcfrmd daemon is started.







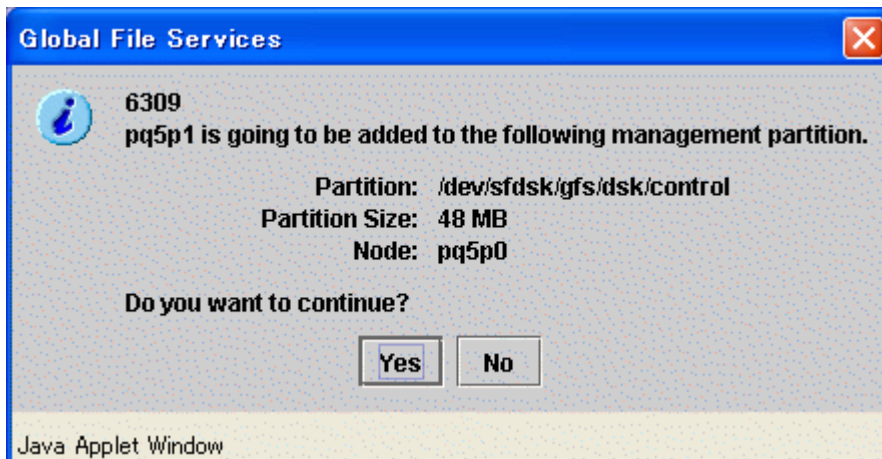
The following message appears and stopping sfcfrmd daemon is completed.



### 8.3.3 Adding node configuration information to the management partition

Node configuration information can be added to the management partition by selecting [Operation]:[Operate management partition]:[Add node] on the GFS Management View.

If the node which newly added to management partition is selected as a connecting node in [Select Node] screen appearing at the time of starting the GFS Management View, following message will appear when [Operation]:[Operate management partition]:[Add node] menu is selected.

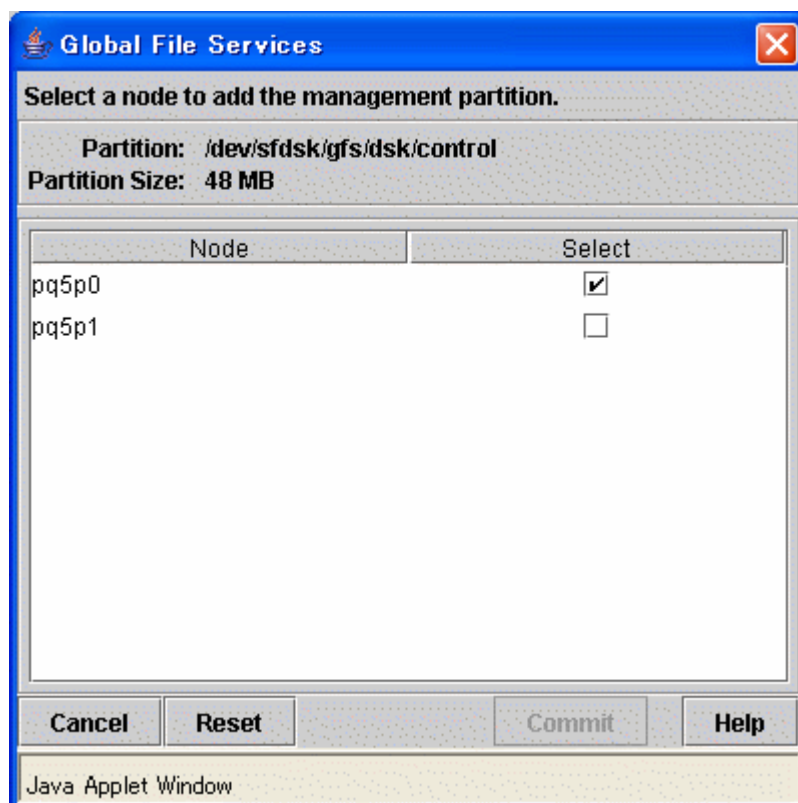


Processing will be interrupted, if you click the <No> button of the displayed message.

It will go to the screen that selects the node added to a management partition if a <Yes> button is clicked.

If the node which is already registered into the management partition is selected as a connecting node in [Select Node] screen appearing at the time of starting the GFS Management View, message does not appear and it will go to the screen that selects the node added to a management partition.

**Figure Management partition, node selection dialog box**

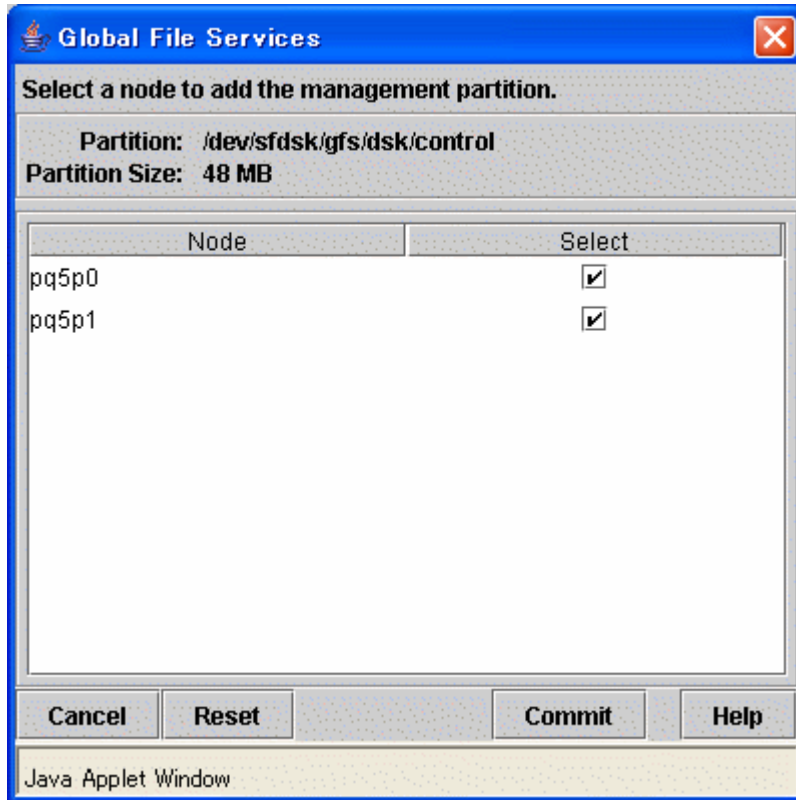


In the management partition, node selection dialog box, select the node that adds the node configuration information to management partition.

In [Node], all nodes included in the scope of the disk class to which the GDS logical volume used as a management partition belong are displayed. By the default, it checks as follows.

- When the node which is already registered into the management partition is selected as a connecting node in [Select Node] screen appearing at the time of starting the GFS Management View.  
[Select] of the node registered into management partition is checked.
- When the node which newly added to management partition is selected as a connecting node in [Select Node] screen appearing at the time of starting the GFS Management View.  
[Select] of the node registered into management partition and the node connected in [Select Node] screen is checked.

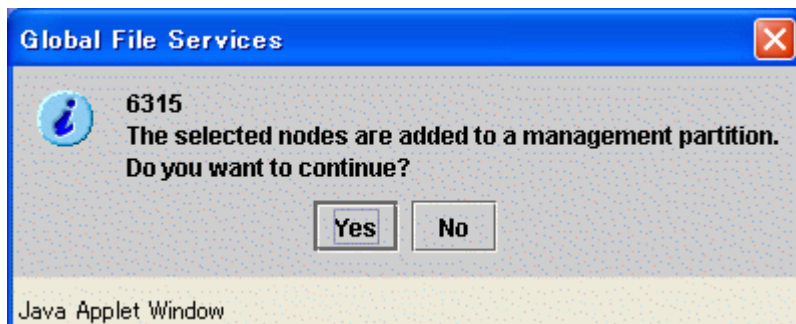
If [Select] of node added to management partition is selected with the check mark, it becomes possible to click the <Commit> button.



To stop the processing node addition processing for the management partition, click the <Cancel> button.

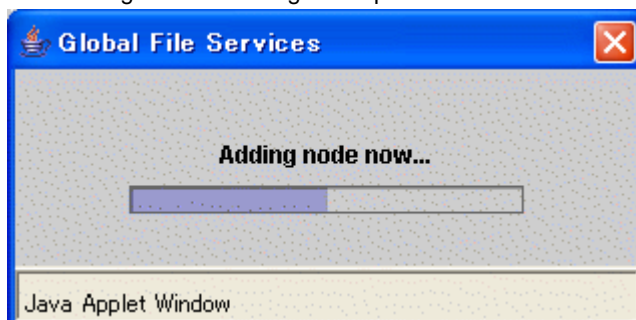
To restore the selection state to the default value, click the <Reset> button.

After selecting (with the check mark) [Select] of added node and the <Commit> button is clicked, the following messages will be displayed.

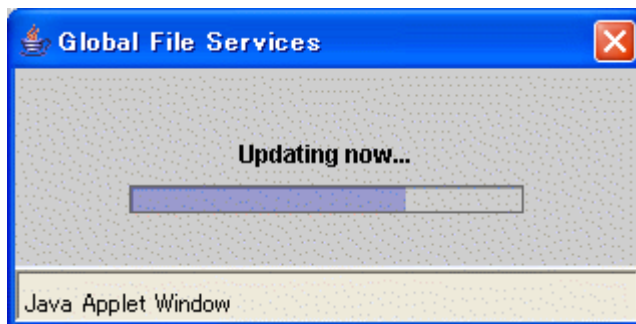
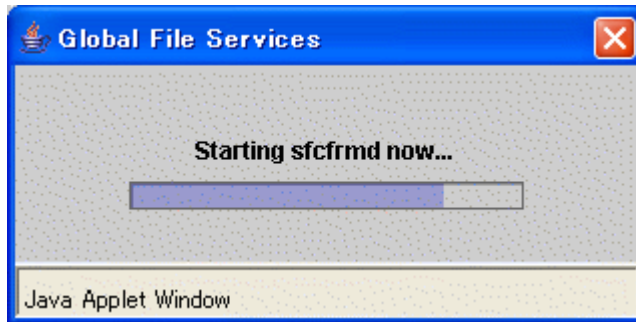


Processing will be interrupted, if you click the <No> button of the displayed message.

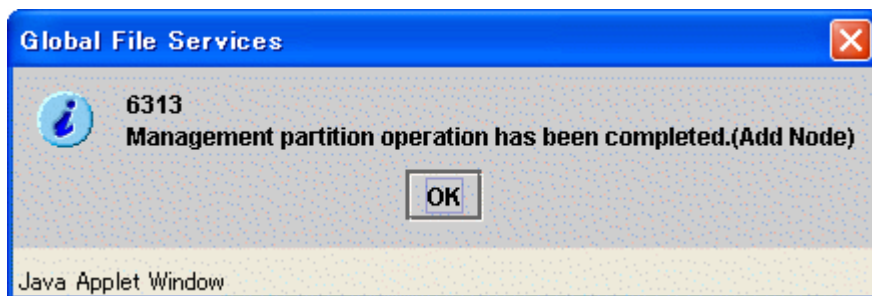
Adding node to management partition is started, if you click <Yes> button. It cannot be interrupted after adding node to management partition is started.



sfcrmd daemon of the node newly added to management partition is started.



The following message appears and addition of the node to management partition is completed.



Note

Since the GFS Management View does not support the deletion of node configuration information from the management partition, you cannot clear the check mark corresponding to a node that is already registered.

### 8.3.4 Starting sfcrmd daemon

You can start sfcrmd daemon by selecting [Operation]: [Operate sfcrmd]:[Start] on the GFS Management View.

You must be start sfcrmd daemon in all nodes after node configuration information is added to management partition.



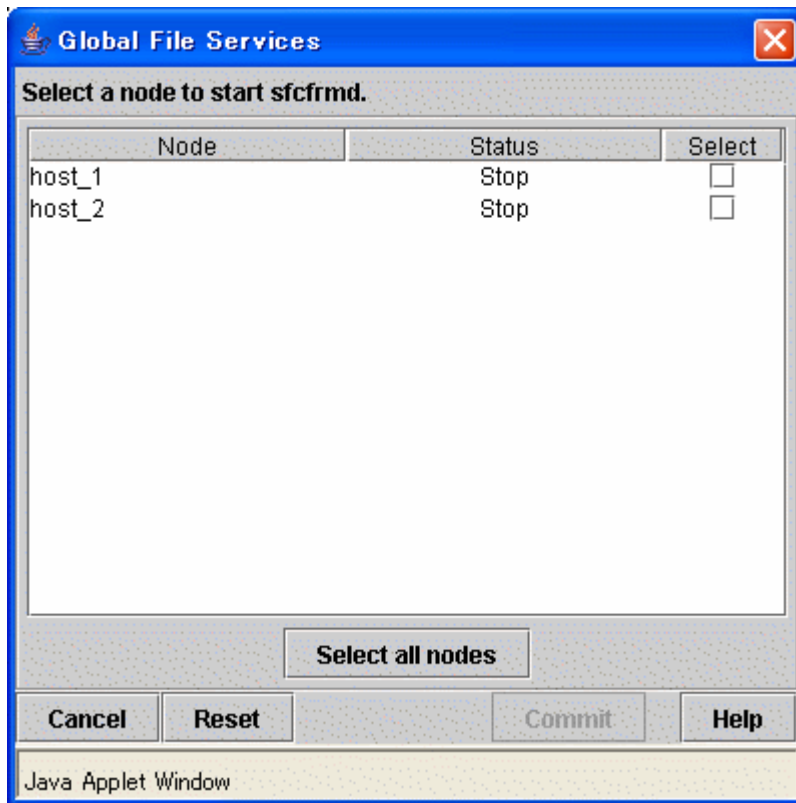
Note

To start sfcfrmd daemon, you must register the node configuration information to the management partition in advance.

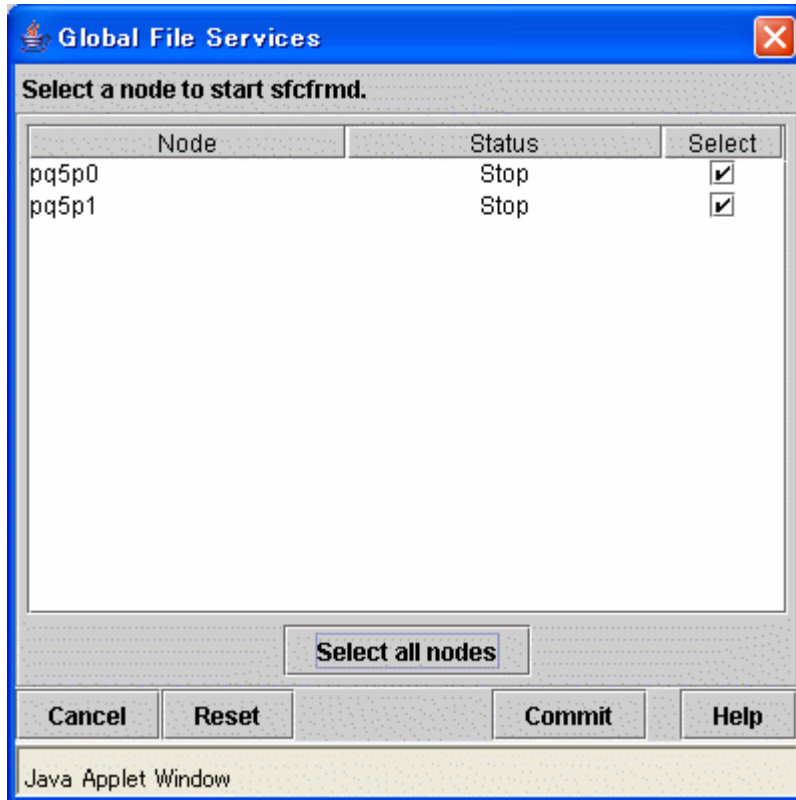
Only when you stop sfcfrmd daemon manually before adding the node configuration information to management partition, start sfcfrmd daemon.

In the sfcfrmd daemon start node selection dialog box, select node starting sfcfrmd daemon.

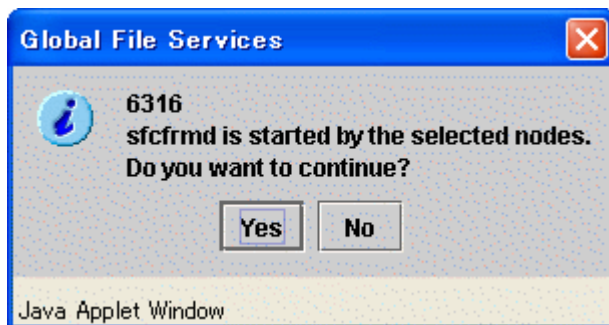
**Figure sfcfrmd daemon start node selection dialog box**



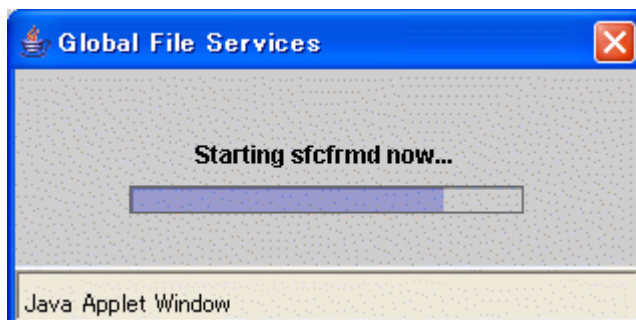
In [Node], all nodes registered to management partition are displayed. If you mark [Select] of node starting sfcfrmd daemon, <Commit> button can be clicked.

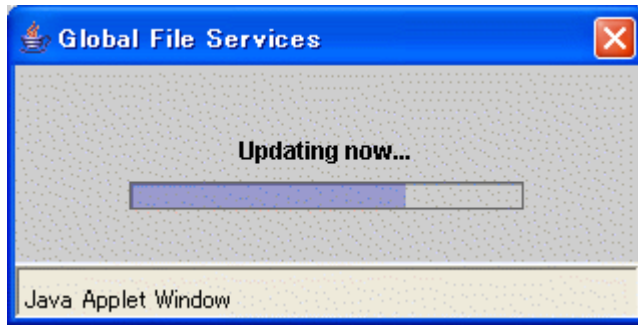


If you click the <Select all nodes> button, all the nodes will be checked.  
 To cancel starting sfcfrmd daemon, click the <Cancel> button.  
 To restore the selection state to the default value, click the <Reset> button.  
 When you click <Commit> button, the following messages will be displayed.

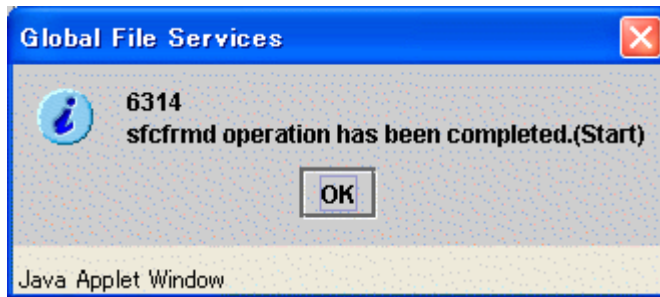


Processing will be interrupted, if you click the <No> button of the displayed message.  
 Starting sfcfrmd daemon is started, if you click <Yes> button. It cannot be interrupted after starting sfcfrmd daemon is started.





The following message appears and starting sfcfrmd daemon is completed.







# Chapter 9 Management Partition Operations (Command)

---

This chapter describes how to operate the management partition by commands.

Note that, because the GFS Shared File System is subject to the following functions, they must be installed in advance and be usable before attempting to operate the file system:

- PRIMECLUSTER Global Disk Services
- PRIMECLUSTER Cluster Foundation



See

For details on each function, see the following:

- "*PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)*"
- "*PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide*"

If you want to create a file system immediately after creating a management partition, see either of the following:

- "Chapter11 [File System Operations \(Command\)](#)"
- "Chapter10 [File System Operations \(GUI\)](#)"

## 9.1 Flow of Operations

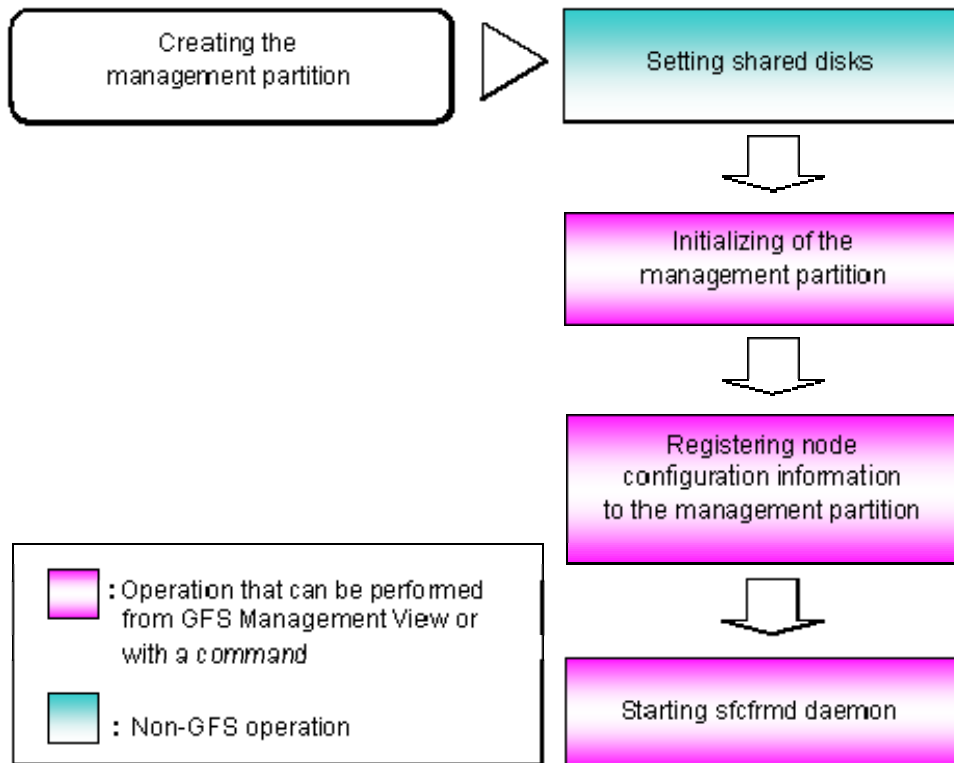
This section describes the flow of operations in management partition.

### 9.1.1 Creating the management partition

The following figure describes the flow of creating the management partition.

For details on operations in the following figure, see “9.2 [Creating of the management partition](#)”.

**Figure Operation flow for creating the management partition**

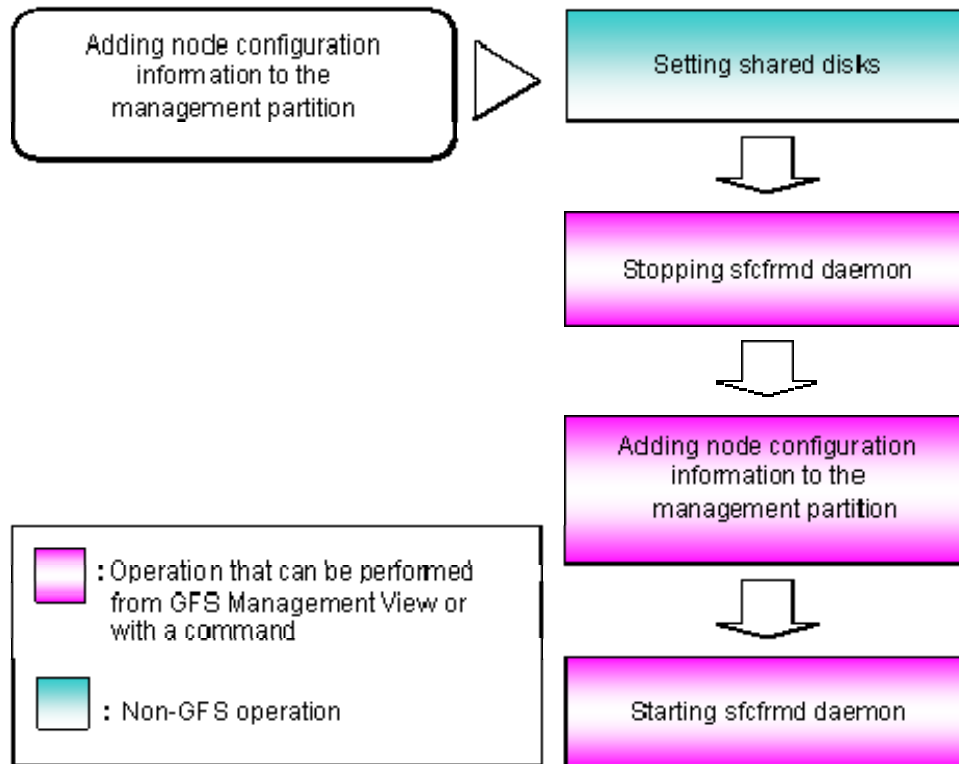


### 9.1.2 Adding node configuration information to the management partition

The following figure describes the flow of operations for addition of node configuration information to the management partition.

For details on operations in the following figure, see “9.3 [Adding node configuration information to the management partition](#)”.

**Figure Operation flow for addition of node configuration information to the management partition**

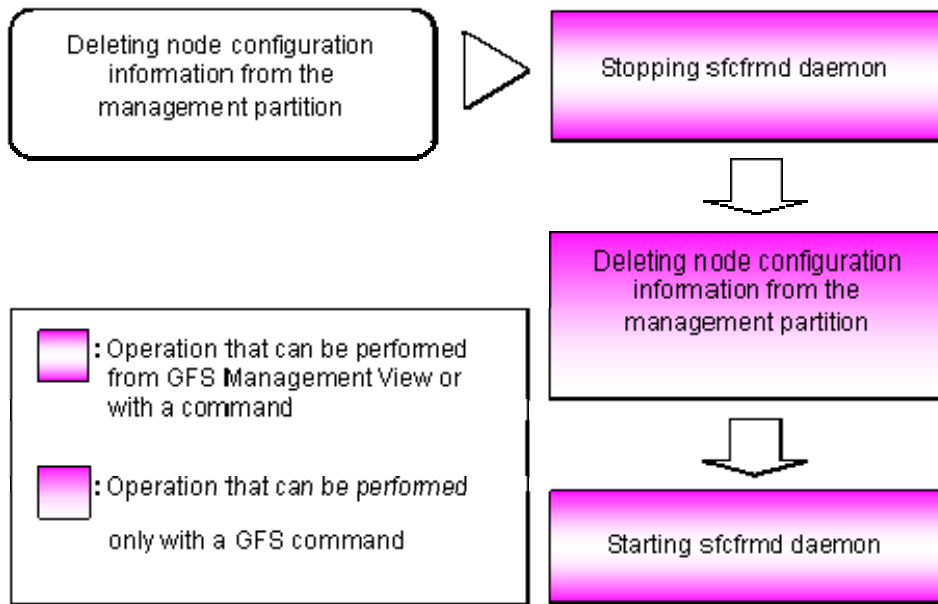


### 9.1.3 Deleting node configuration information from the management partition

The following figure describes the flow of operations for deleting node configuration information from the management partition.

For details on operations in the following figure, see “9.4 [Deleting node configuration information from the management partition](#)”.

**Figure Operation flow for deleting node configuration information from the management partition**

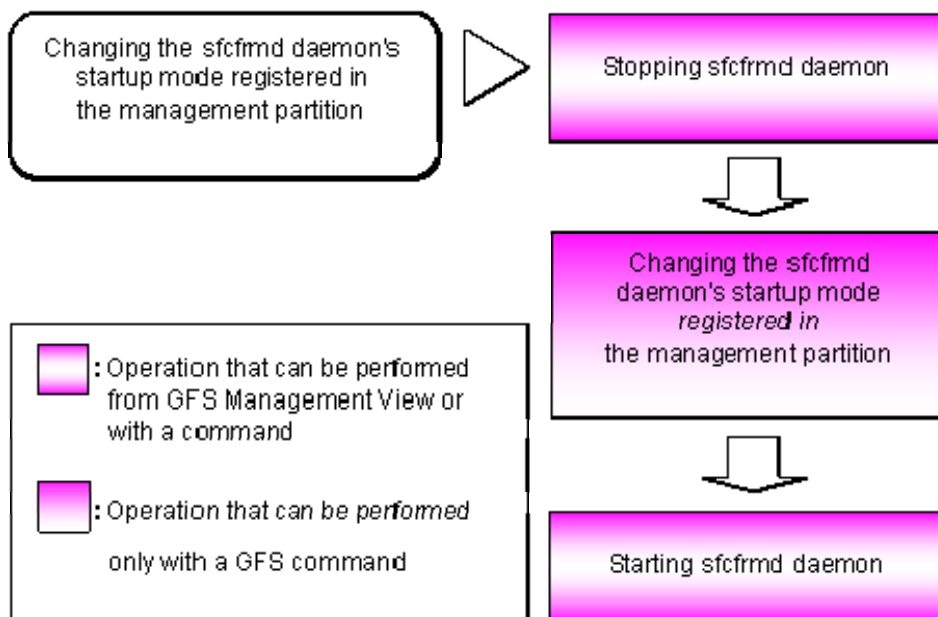


### 9.1.4 Changing the sfcfrmd daemon's startup mode registered in the management partition

The following figure describes the flow of operations for changing the sfcfrmd daemon's startup mode registered in the management partition.

For details on operations in the following figure, see "9.5 [Changing the sfcfrmd daemon's startup mode registered in the management partition](#)".

**Figure Operation flow for changing the sfcfrmd daemon's startup mode registered in the management partition**

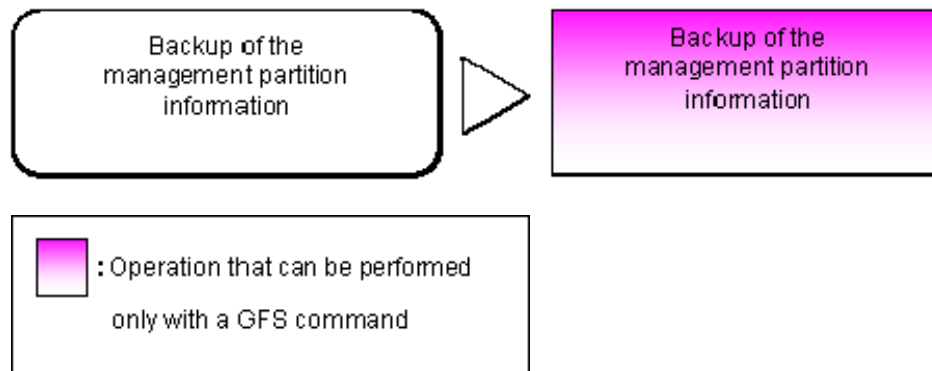


### 9.1.5 Backup of the management partition information

The following figure describes the flow of operations for backup of the management partition information.

For details on operations in the following figure, see “9.6 [Backup of the management partition information](#)”.

**Figure Operation flow for backup of the management partition information**

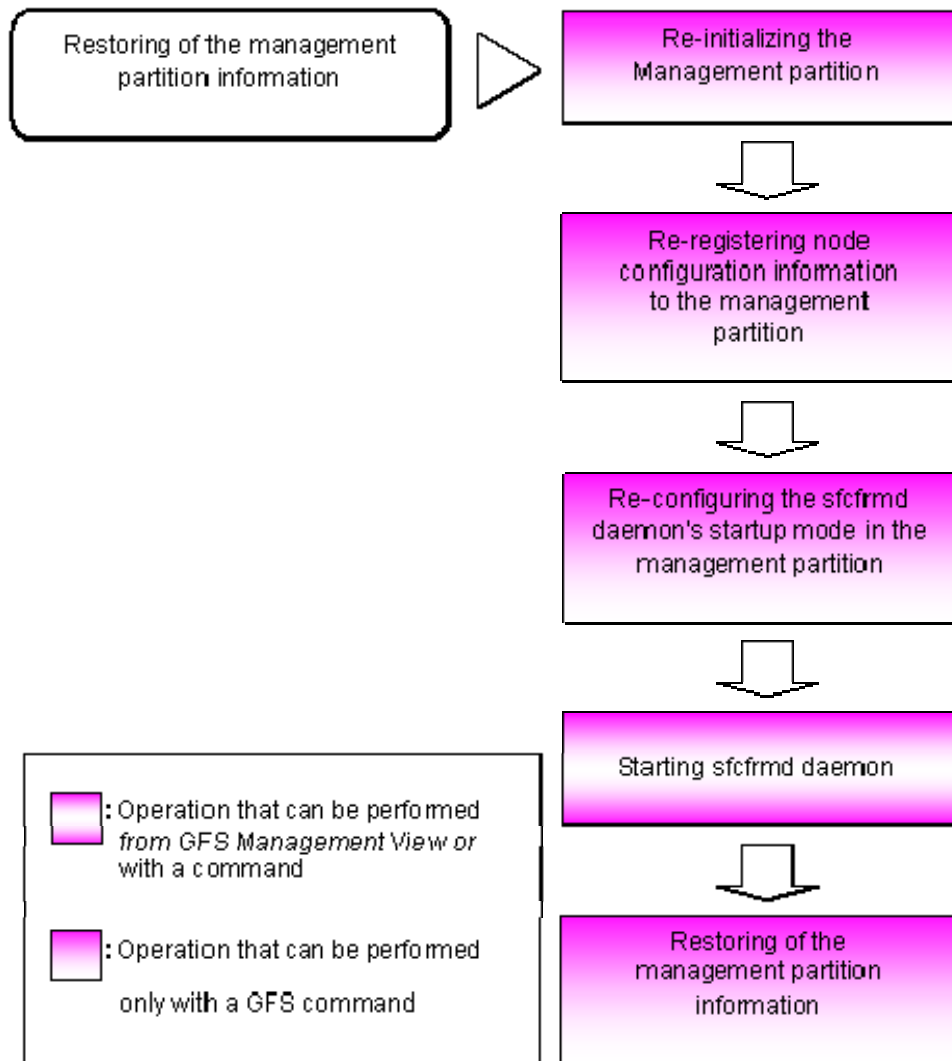


### 9.1.6 Restoring of the management partition information

The following figure describes the flow of operations for restoring of the management partition information.

For details on operations in the following figure, see “9.7 [Restoring of the management partition information](#)”.

**Figure Operation flow for restoring of the management partition information**



## 9.2 Creating of the management partition

This section describes how to create the management partition information.



Note

Before creating of the management partition, confirm that a cluster partition error has not occurred. If a cluster partition error has occurred, fix the cluster partition error first.



See

For information on how to check whether a cluster partition error has occurred and, how to fix a cluster partition error, see "C.3.4 [Corrective action when the sfcfrmd daemon is not started](#)".

### 9.2.1 Setting Shared disks

The management partition of the GFS Shared File System is created on the GDS logical volume of the shared device.



See

For information about the shared device, see "8.2.1 [Setting shared disks](#)".

### 9.2.2 Initializing of the management partition

Use the **sfcsetup(8)** command with the **-c** option to initializing the management partition.



See

For details on **sfcsetup(8)**, see [sfcsetup\(8\)](#).



Note

To initialize the management partition, sfcfrmd daemon must have already been stopped on the cluster system.

The example of initializing `/dev/sfdsk/gfs/dsk/control` as a management partition is shown as follows.

```
# sfcsetup -c /dev/sfdsk/gfs/dsk/control <Enter>
```



Note

Please confirm whether to meet the following requirements beforehand in the case re-initialized the management partition.

- All the GFS Shared File Systems must be deleted.
- All the node information must not be registered in the management partition.

When a partition that is already initialized as the management partition is to be initialized again, execute the command with the **-f** option specified, as shown below:

```
# sfcsetup -c -f /dev/sfdsk/gfs/dsk/control <Enter>
```



Note

Initialization of a management partition sets the `sfcfrmd` daemon's startup mode to **wait**. Use the **sfcsetup(8)** command with the **-m** option to change the `sfcfrmd` daemon's startup mode.



See

For details of the `sfcfrmd` daemon's startup mode, see "9.5.1 [Choosing the sfcfrmd daemon's startup mode](#)".

For details of changing the `sfcfrmd` daemon's startup mode, see "9.5.3 [Changing the sfcfrmd daemon's startup mode](#)".

## 9.2.3 Registering node configuration information to the management partition

**sfcsetup(8)** command with the **-a** option registers node configuration information to the management partition.

An example of registering node configuration information to the management information is shown below.



Note

Register node configuration information on all the nodes on which will be shared GFS Shared File Systems.

1. Registering a node in the management partition

```
# sfcsetup -a /dev/sfdsk/gfs/dsk/control <Enter>
```

2. The path name of the management partition that has been set up can be confirmed by executing the **sfcsetup(8)** command with the **-p** option specified.



```
# sfcsetup -p <Enter>
/dev/sfdsk/gfs/dsk/control
```

3. Registered node configuration information can be confirmed by executing **sfcsetup(8)** with no option specified.

```
# sfcsetup <Enter>
HOSTID      CIPNAME      MP_PATH
8038xxxx    sunnyRMS     yes
8038yyyy    moonyRMS     yes
```

## 9.2.4 Starting sfcfrmd daemon

The sfcfrmd daemon is started by all nodes so that operation may begin. Use the **sfcfrmstart(8)** command to start sfcfrmd daemon.



See

For details on **sfcfrmstart(8)**, see [sfcfrmstart\(8\)](#).



Note

To start sfcfrmd daemon, node configuration information must have been registered in the management partition.

Execute the command as follows on the node on which sfcfrmd daemon is to be started.

```
# sfcfrmstart <Enter>
```

## 9.3 Adding node configuration information to the management partition

This section describes how to add node configuration information to the management partition.



Note

Before adding node configuration information to the management partition, confirm that a cluster partition error has not occurred. If a cluster partition error has occurred, fix the cluster partition error first.



See

For information on how to check whether a cluster partition error has occurred and, how to fix a cluster partition error, see "C.3.4 [Corrective action when the sfcfrmd daemon is not started](#)".

### 9.3.1 Setting Shared disks

It is necessary to set nodes that will be added as configuration nodes in the scope of the disk class to which the GDS logical volume belongs. This GDS logical volume is shared among the nodes that are registered in the management partition.



See

For information about the shared device, see "8.2.1 [Setting shared disks](#)".

### 9.3.2 Stopping sfcfrmd daemon

The sfcfrmd daemon should be stopped on all nodes in the clustered system to add node configuration information to the management partition. Use **sfcfrmdstop(8)** to stop sfcfrmd daemon.



See

For details on **sfcfrmdstop(8)**, see [sfcfrmdstop\(8\)](#).



Note

Please unmount all GFS Shared File Systems before stopping a sfcfrmd daemon.

Execute the command as follows on the all nodes in the cluster system.

```
# sfcfrmstop <Enter>
```

### 9.3.3 Adding node configuration information to the management partition

**sfcsetup(8)** command with the **-a** option adds node configuration information to the management partition.

An example of adding node configuration information to the management information is shown below.

Perform the following operations at the adding node.

1. Add node configuration information to the management partition.

```
# sfcsetup -a /dev/sfdsk/gfs/dsk/control <Enter>
```

2. The path name of the management partition that has been set up can be confirmed by executing the **sfcsetup(8)** command with the **-p** option specified.

```
# sfcsetup p <Enter>
/dev/sfdsk/gfs/dsk/control
```

3. Added node configuration information can be confirmed by executing **sfcsetup(8)** with no option specified.

```
# sfcsetup <Enter>
HOSTID      CIPNAME      MP_PATH
8038xxxx    sunnyRMS     yes
8038yyyy    moonyRMS     yes
```

### 9.3.4 Starting sfcfrmd daemon

The sfcfrmd daemon is started by all nodes so that operation may begin.



For details of starting sfcfrmd daemon, see "9.2.4 [Starting sfcfrmd daemon](#)".

## 9.4 Deleting node configuration information from the management partition

This section describes how to delete node configuration information from the management partition.

### 9.4.1 Stopping sfcfrmd daemon

The sfcfrmd daemon should be stopped on all nodes in the clustered system to deleting node information from the management partition.



See

For details of stopping sfcfrmd daemon, see “9.3.2 [Stopping sfcfrmd daemon](#)”.

### 9.4.2 Deleting node configuration information from the management partition

**sfcsetup(8)** command deletes node configuration information from the management partition. **sfcsetup(8)** command deletes information of node which executing its command from management partition, and delete the information of management partition saving on its node. The procedure for deleting node configuration information from the management partition is explained below.



Note

Please confirm whether to meet the following requirements beforehand when you delete composition node information from the management partition.

- The GFS Shared File System which makes the deleted node the range of a share node is a nonexistence.

On the node that is to be deleted, execute the command as shown below:

```
# sfcsetup -d <Enter>
```

### 9.4.3 Starting sfcfrmd daemon

The sfcfrmd daemon is started by all nodes so that operation may begin.



See

For details of starting sfcfrmd daemon, see “9.2.4 [Starting sfcfrmd daemon](#)”.

## 9.5 Changing the sfcfrmd daemon's startup mode registered in the management partition

This section describes how to change the sfcfrmd daemon's startup mode.

### 9.5.1 Choosing the sfcfrmd daemon's startup mode

In the GFS Shared File System, monitoring daemons such as sfcfrmd, sfcprmd, sfcfsd, sfchnsd, and sfcpcnd monitor the cluster state. The monitoring daemons also ensure that only a single primary MDS is running on a given cluster at one time, so file system access is consistent on all nodes.

If the state of some of the nodes in the cluster cannot be confirmed due to a cluster partition error, the node that is operating the primary MDS cannot be determined because a quorum does not exist. In this case, the GFS Shared File System services suspended startup of the sfcfrmd daemon, in order to ensure data consistency.

There are two available sfcfrmd daemon's startup modes following:

#### **wait**

When a node is started up, the startup of the sfcfrmd daemon will be suspended until a cluster quorum exists, and also startup of nodes will be suspended at the same time.

And, when the CF is started up from the GUI, the startup of the sfcfrmd daemon is given up if a quorum does not exist.

#### **wait\_bg**

When a node is started up or the CF is started up from the GUI, the startup of the sfcfrmd daemon will be suspended in the background until it can confirm that a cluster quorum exists. Node startup or CF startup will continue.

When the value is omitted (When initializing management partition), defaults to **wait**.

If the GFS Shared File System is used for cluster applications, please choose **wait**.

If the GFS Shared File System is not used for cluster applications, you can choose **wait\_bg**. In this case, the cluster applications will be started without waiting for the GFS Shared File System become usable. Also, the time required for system startup can be reduced.



Note

- If you start some of the nodes after stopping all the nodes in the cluster, the state of nodes that are not operated in a cluster system cannot be confirmed. So, the startup of the sfcfrmd daemon is suspended until all nodes are operated in a cluster system.
- If **wait** is set and you want to start up CF from GUI after stopping CF on all the nodes, see "12.6 [How to start up CF from the GUI when a GFS Shared File System is used](#)".



When a node's startup is suspended, you can login to system using the network.

## 9.5.2 Stopping sfcfrmd daemon

To change the sfcfrmd daemon's start mode registered in the management partition, the sfcfrmd daemon must be stopped on all the cluster nodes.



For details of stopping sfcfrmd daemon, see "9.3.2 [Stopping sfcfrmd daemon](#)".

## 9.5.3 Changing the sfcfrmd daemon's startup mode

To change the sfcfrmd daemon's startup mode, use the **-m** option of **sfcsetup(8)**.

How to change the sfcfrmd daemon's startup mode to **wait\_bg** is explained below.

1. Confirm the current the sfcfrmd daemon's startup mode.

```
# sfcsetup -m <Enter>
wait
```

2. Change the sfcfrmd daemon's startup mode.

```
# sfcsetup -m wait_bg <Enter>
```

3. Confirm the sfcfrmd daemon's startup mode after change.

```
# sfcsetup -m <Enter>
wait_bg
```

## 9.5.4 Starting sfcfrmd daemon

Start the sfcfrmd daemon on all the nodes.



For details of starting sfcfrmd daemon, see "9.2.4 [Starting sfcfrmd daemon](#)".

## 9.6 Backup of the management partition information

This section describes how to backup of the management partition information.

### 9.6.1 Backup of the management partition information

Use the **sfcgetconf(8)** command to make a backup of the management partition information.

The method of backup of the management partition information is explained below.

```
# sfcgetconf _backup_file_ <Enter>
```



See

For details on **sfcgetconf(8)**, see [sfcgetconf\(8\)](#).



Note

To back up management partition information with **sfcgetconf(8)**, the **sfcrmd** demon should be operating by the execution node. If **sfcrmd** daemon is not operating, start it by using **sfcrmdstart(8)**. For details, see “9.2.4 [Starting sfcrmd daemon](#)”.

Make a backup of the management partition information, after changing the configuration of the file system by **sfcmkfs(8)**, **sfcadd(8)**, **sfcadm(8)**, **sfcnode(8)**.

**sfcgetconf(8)** generate a shell script `_backup_file_`:

The contents of the shell script are explained below.

```
# cat _backup_file_ <Enter>
#!/bin/sh
# This file is made by:
#   sfcgetconf _backup_file_
# Tue Jun 18 09:08:06 2005
#
#---- fsid : 1 ----
# MDS primary (port) : host1 (sfcfs-1)
# MDS secondary (port) : host2 (sfcfs-1)
# MDS other      :
# AC           : host1,host2
# options      :
# device       : /dev/sfdsk/gfs01/dsk/volume01
sfcadm -m host1,host2 -g host1,host2 -p sfcfs-1,sfcfs-1 /dev/sfdsk/gfs01/dsk/volume01
...
```



## 9.7 Restoring of the management partition information

This section describes how to restore of the management partition information.

### 9.7.1 Re-initializing the management partition

If a disk failure occurs in the GDS volume that was being used as the management partition, initialize the management partition in the GDS volume in which the disk unit was replaced, after you replace the disk unit.



See

For details of initializing of the management partition, see “9.2.2 [Initializing of the management partition](#)”.

### 9.7.2 Re-registering node configuration information to the management partition

Re-register node configuration information to the re-initialized management partition.



See

For details of registering node configuration information to the management partition, see “9.2.3 [Registering node configuration information to the management partition](#)”.

### 9.7.3 Re-configuring the sfcfrmd daemon's startup mode in the management partition

Re-configure the sfcfrmd daemon's startup mode in the management partition.



Note

The registered sfcfrmd daemon's startup mode is **wait** when the management partition is initialized. If another sfcfrmd daemon's startup mode is selected, this operation is required.



See

For details of changing the sfcfrmd daemon's startup mode, see "9.5.3 [Changing the sfcfrmd daemon's startup mode](#)".

## 9.7.4 Starting sfcfrmd daemon

The sfcfrmd daemon is started by all nodes so that operation may begin.



See

For details of starting sfcfrmd daemon, see "9.2.4 [Starting sfcfrmd daemon](#)".

## 9.7.5 Restoring of the management partition information

The shell script generated by **sfcgetconf(8)** in "9.6.1 [Backup of the management partition information](#)" is executed by the restoring of management partition information.

The method of restoring of the management partition information is explained below.

```
# sh _backup_file_ <Enter>
get other node information start ... end
```

# Chapter 10 File System Operations (GUI)

---

This chapter describes how to operate the GFS Shared File System by the GFS Management View.

The structure of this chapter is the same as that of “Chapter11 [File System Operations \(Command\)](#)“. For details about command operation, see “Chapter11 [File System Operations \(Command\)](#)“.

The management partition settings must have been made before you create a file system.

For information on the outline of the management partition, see the following:

- “Chapter5 [Management Partition](#)”

For details on how to set up the management partition, see the following:

- “Chapter8 [Management Partition Operations \(GUI\)](#)”
- “Chapter9 [Management Partition Operations \(Command\)](#)”

Start file system operation after you have created a file system. For details on file system operation, see the following:

- “Chapter12 [File System Management](#)”

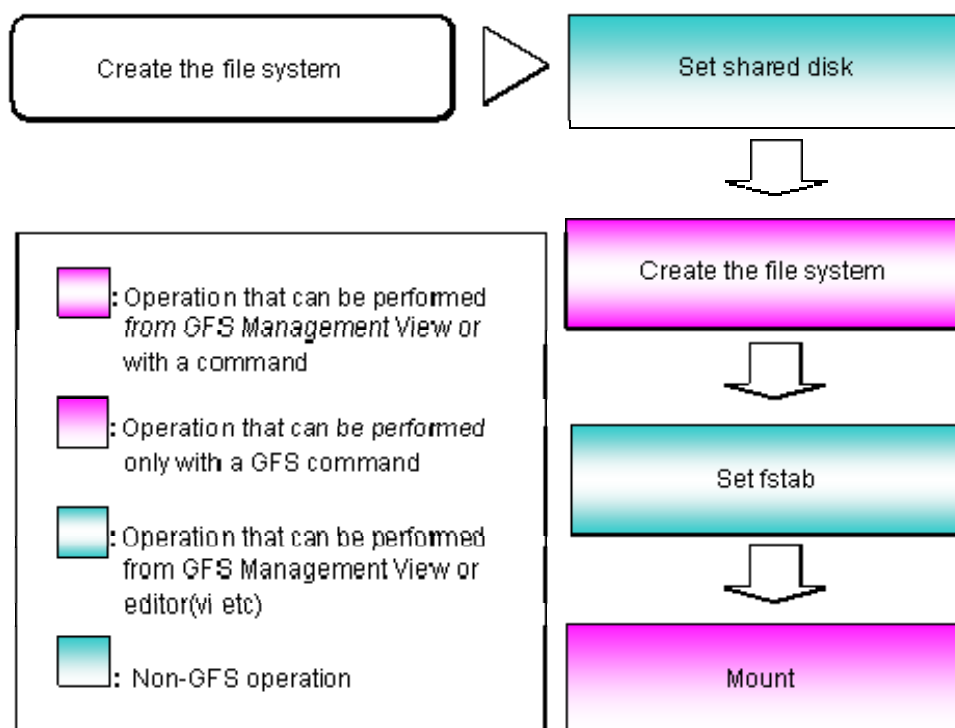
## 10.1 Flow of Operations

This section explains the flow of file system operations of the GFS Management View.

### 10.1.1 Creation

The following figure shows the basic design flow for creating a file system in the GFS Shared File System.

**Figure Operation flow for creating file system**



See

For details about GUI operation in the above figure, see “10.2 [Creation](#)”.

For details about command operation in the above figure, see “11.2 [Creation](#)”.

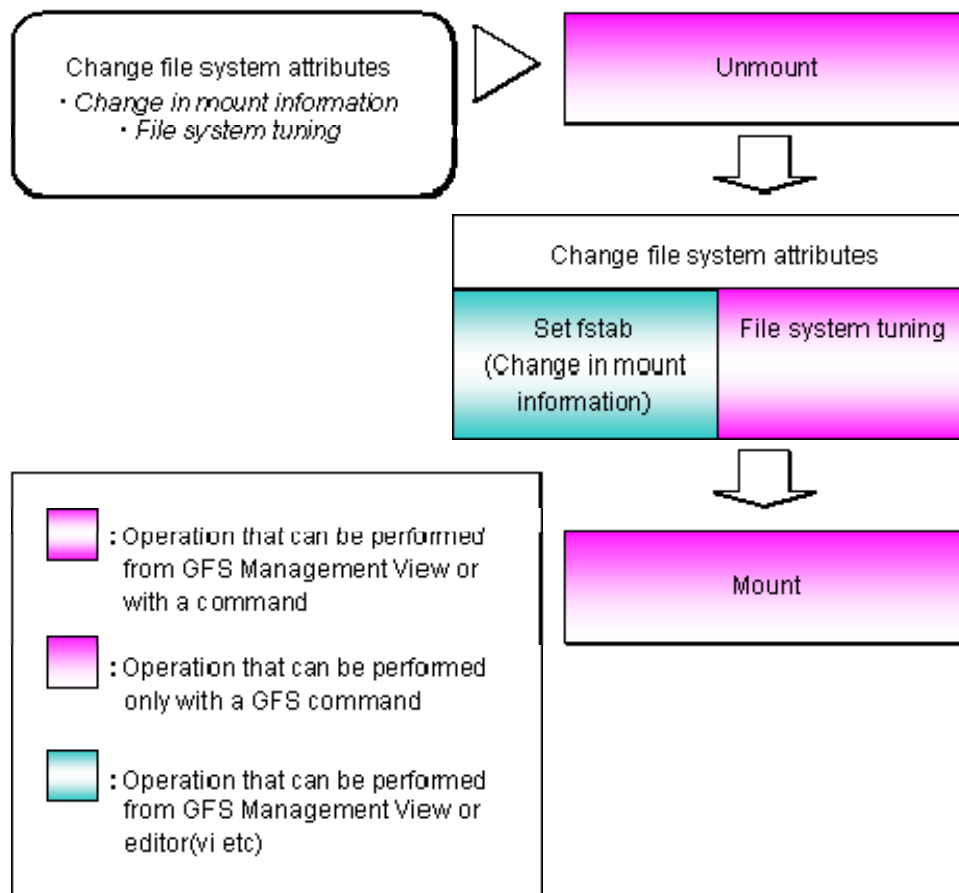
### 10.1.2 Change (in file system attributes)

Using the GFS Management View, the following file system attributes can be changed:

- Mount information
- File system tuning

The following figure shows the basic design flow for changing the file system attributes in the GFS Shared File System.

Figure Operation flow for change in file system attributes



See

For details about GUI operation in the above figure, see “10.3.1 [Changing in file system attributes](#)”.

For details about command operation in the above figure, see “11.3 [Change \(file system attributes\)](#)”.

### 10.1.3 Change (partition addition)

Using the GFS Management View, the following configuration changes can be made:

- Addition of a file data partition



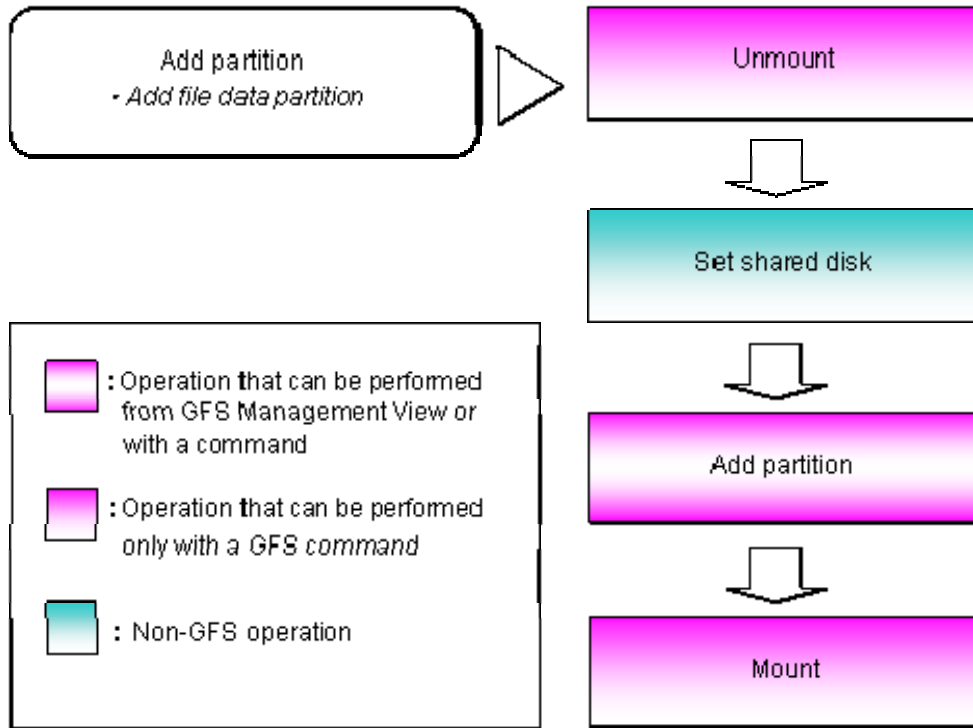
Note

[Linux2.4]

File data partitions cannot be added.

The following figure shows the basic design flow for changing the file system configuration in the GFS Shared File System.

**Figure Operation flow for partition addition**



See

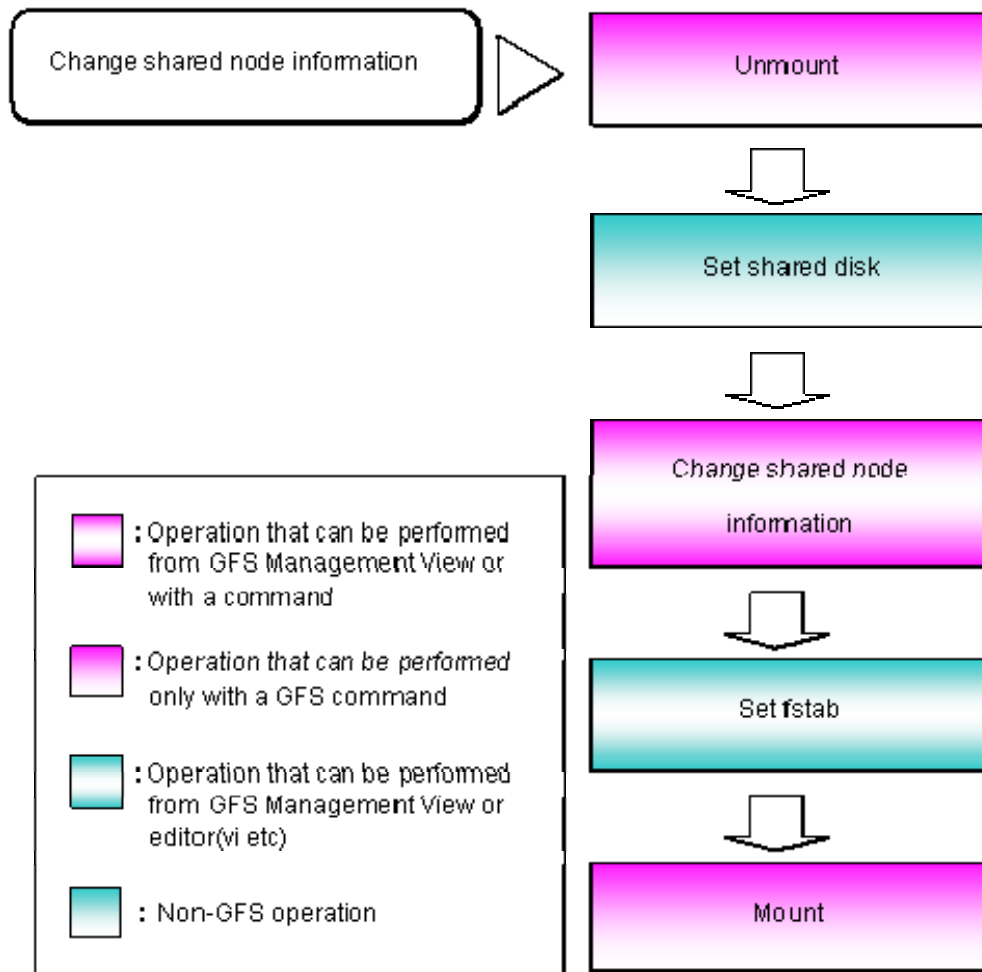
For details about GUI operation in the above figure, see “10.3.2 [Changing the file system configuration \(partition addition\)](#)”.

For details about command operation in the above figure, see “11.4 [Change \(partition addition\)](#)”.

### 10.1.4 Change (shared node information)

The following describes the flow of operations to change information about nodes sharing a file system. Information about nodes sharing a file system can be changed only when the file system is unmounted on all nodes.

**Figure Operation flow for changing shared node information**



See

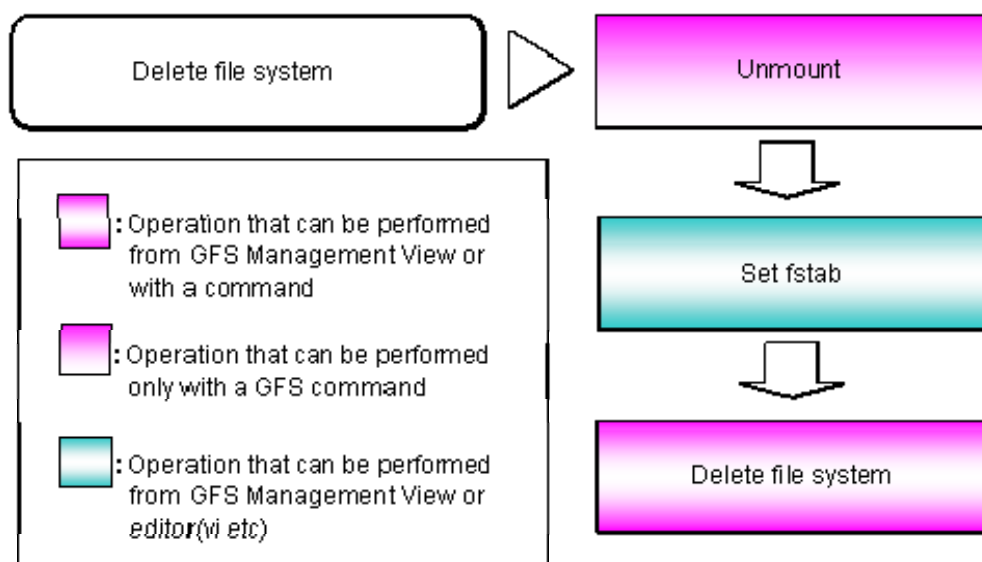
For details about GUI operation in the above figure, see “10.3.3 [Changing the shared node information](#)”.

For details about command operation in the above figure, see “11.5 [Change \(shared node information\)](#)”.

## 10.1.5 Deletion

The following describes the flow of operations to delete a file system. A file system can be deleted only when the file system is unmounted on all nodes.

**Figure Operation flow for deleting a file system**



See

For details about GUI operation in the above figure, see "10.4 [Deletion](#)".

For details about command operation in the above figure, see "11.8 [Deleting](#)".



## 10.2 Creation

This section explains how to create a file system.

It is easy to create a file system because the file system creation operation uses a wizard.

To start the file system creation wizard, Click [Create] on the [Operation] drop-down menu.



Note

### Note of Operation

- Information that has already been input becomes invalid and the default value corresponding to information newly set on the previous screen is set when <Next> button is selected after <Back> button is selected on the wizard screen and the operation that exerts the influence on the following screens is done.
- The information for the Management View must be updated before the changes are reflected. To immediately update the information, on the main screen click [Update Now] on the [View] drop-down menu.

### 10.2.1 Creating a file system

The following describes the procedure for creating a file system.

#### (1) Setting a shared disk device

The GFS Shared File System uses logical volumes of GDS as shared devices. The status of the logical volumes of GDS must be ACTIVE on each node.



Note

GDS logical volume should be set up as follows.

- Set up the type of a disk class with which GDS logical volume belongs as shared.(Change GDS class attributes)
- Set all the nodes that share GFS Shared File System as the scope of the disk class to which logical volume belongs.(Change GDS class attributes)



See

For GDS disk class operations, see the applicable items under "Operation using Global Disk Services Management View" in the "*PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)*".

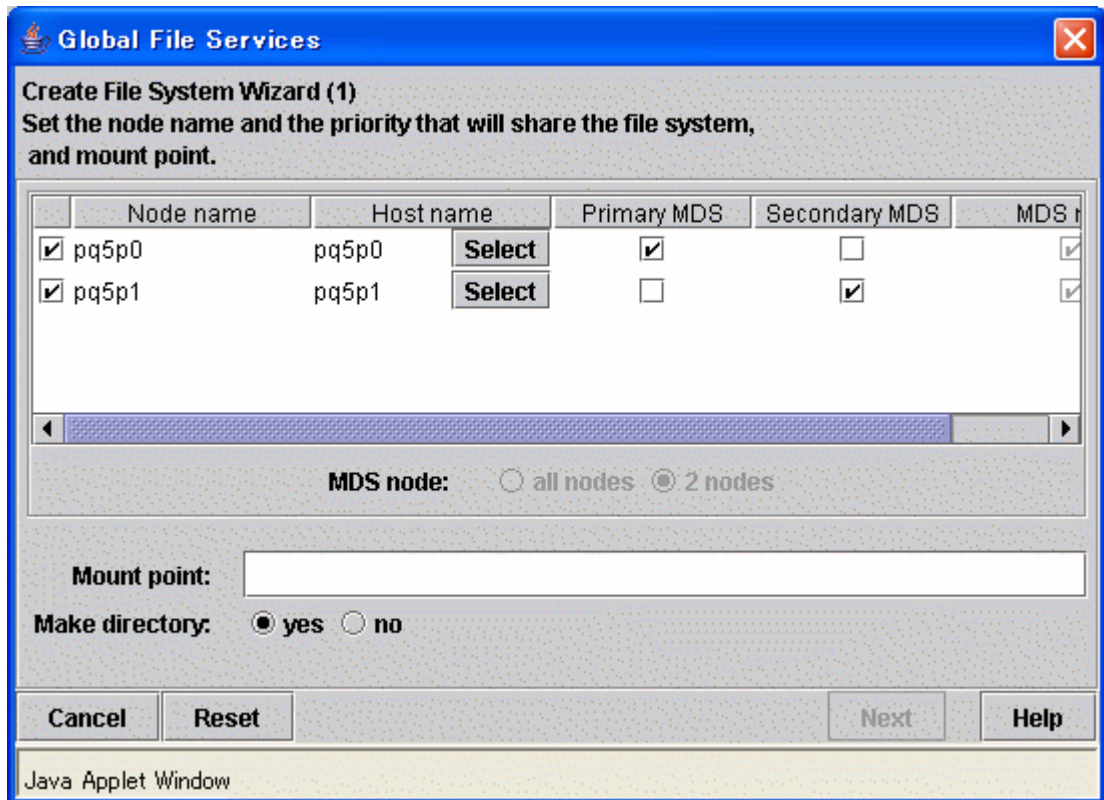
For the logical volume operations of GDS, see the applicable items under "Operation using Global Disk Services Management View" in the "*PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)*".

#### (2) Setting share information

Click [Create] on the [Operation] menu and the Create File System Wizard screen appears. It is shown in the following Figure Create File System Wizard (1).

In the Create File System Wizard (1) screen, set the node information and enter the mount point.

Figure Create File System Wizard (1)



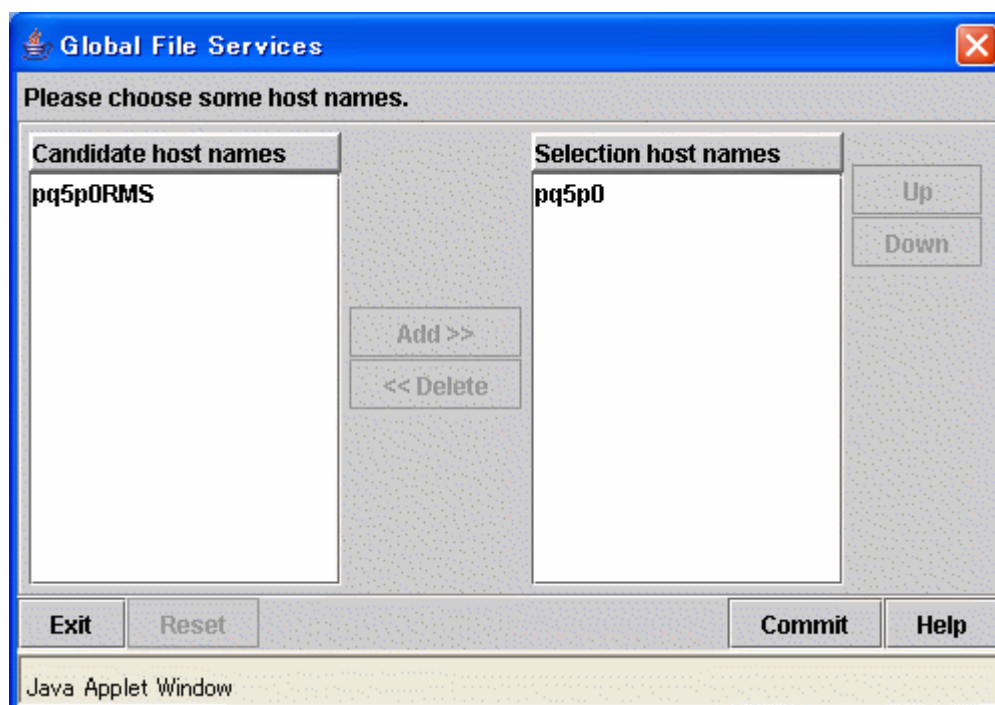
### Selecting node names

In the "Node name", select the names of the sharing nodes. Be sure to select two nodes. It is not possible to deselect the local node.

### Selecting host names

In order to select host names other than the host names displayed, click the <Select> button then select the LAN host that will be used for each node in the following "Host name selection wizard" screen. If you don't click the <Select> button, the displayed host name will be used.

Figure Host Name Selection Wizard



Please choose the host name of LAN used from the left-hand side "Candidate host names". Then please click the <Add> button in order to add to the right-hand side "Selection host names". Note that only one host name can be selected at a time in "Selection host names". If you want to change "Selection host names", delete the host name being selected in "Selection host names".

### Selecting the primary MDS and secondary MDS

Specify the nodes on which the Primary MDS and Secondary MDS will be started. A single, unique node must be selected for each MDS.

### Setting mount point and creating a directory

Specify the full path name of a mount point in the "Mount point" field. If "yes" is selected for "Make directory", a directory is created with the following attributes:

Owner: root  
 Group: sys  
 Access right: 775

After setting the area information items, click the <Next> button to proceed to the next screen which is shown in the following Figure Create File System Wizard (2).

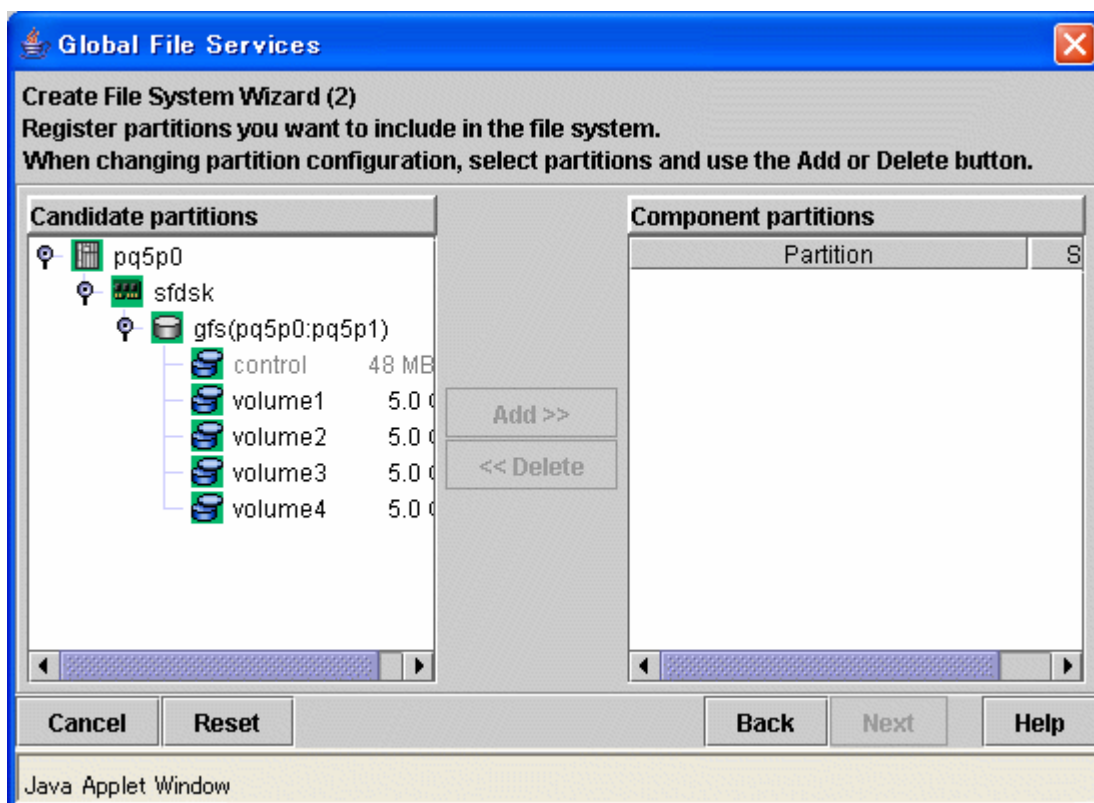
To restore the settings to their default values, click the <Reset> button.

To cancel the file system creates operation, click the <Cancel> button.

### (3) Selecting a partition

After completing the MDS configuration, the register partition screen will be displayed. It is shown in the following Figure Create File System Wizard (2).

**Figure Create File System Wizard (2)**



Select the partition from [Candidate partitions] field, and click the <Add> button. More than one partition can be selected at a time. However, cannot select a partition that is a part of existing file system or a management partition.

After selecting a partition, click the <Next> button to continue. The next screen is shown in Figure Create File System Wizard (3).

To return to the Create File System Wizard (1) screen, click the <Back> button.

To cancel the file system creates operation, click the <Cancel> button.



Note

[Linux2.4]

Only one partition can be selected.



Note

If the GDS logical volume is not ACTIVE, it cannot be selected as a configuration partition.

If it needs to be selected as a configuration partition, bring the logical volume into ACTIVE.

#### (4) Setting partition information

In the Create File System Wizard (3) screen, select the area (META/LOG/DATA) to be assigned to each partition selected in the Create File System Wizard (2).

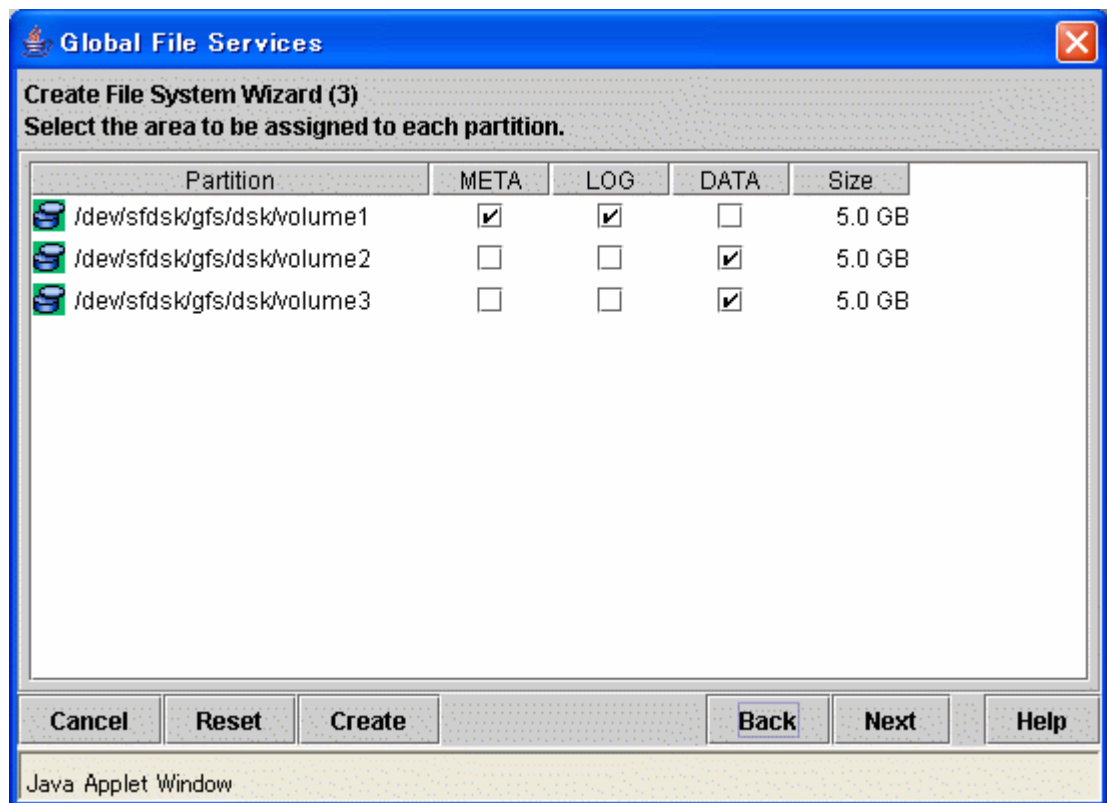
The partition to which META is assigned becomes a representative partition.



See

For an explanation of the combinations of areas (META/LOG/DATA) assigned to partitions, see “2.1.6 [Partition configuration](#)”.

**Figure Create File System Wizard (3)**



After setting the area information items, click the <Next> button to proceed to the next screen which is shown in the following Figure Create File System Wizard (4).

To restore the settings to their default values, click the <Reset> button.

To return to the Create File System Wizard (2) screen, click the <Back> button.

To cancel the file system creation operation, click the <Cancel> button.

If you do not need to change extended information, detailed information and mount information, click the <Create> button to create the file system.

### (5) Setting extended information

In the Create File System Wizard (4) screen, the extended information values should be set such that they allow for future expansion of the file system and configuration changes.

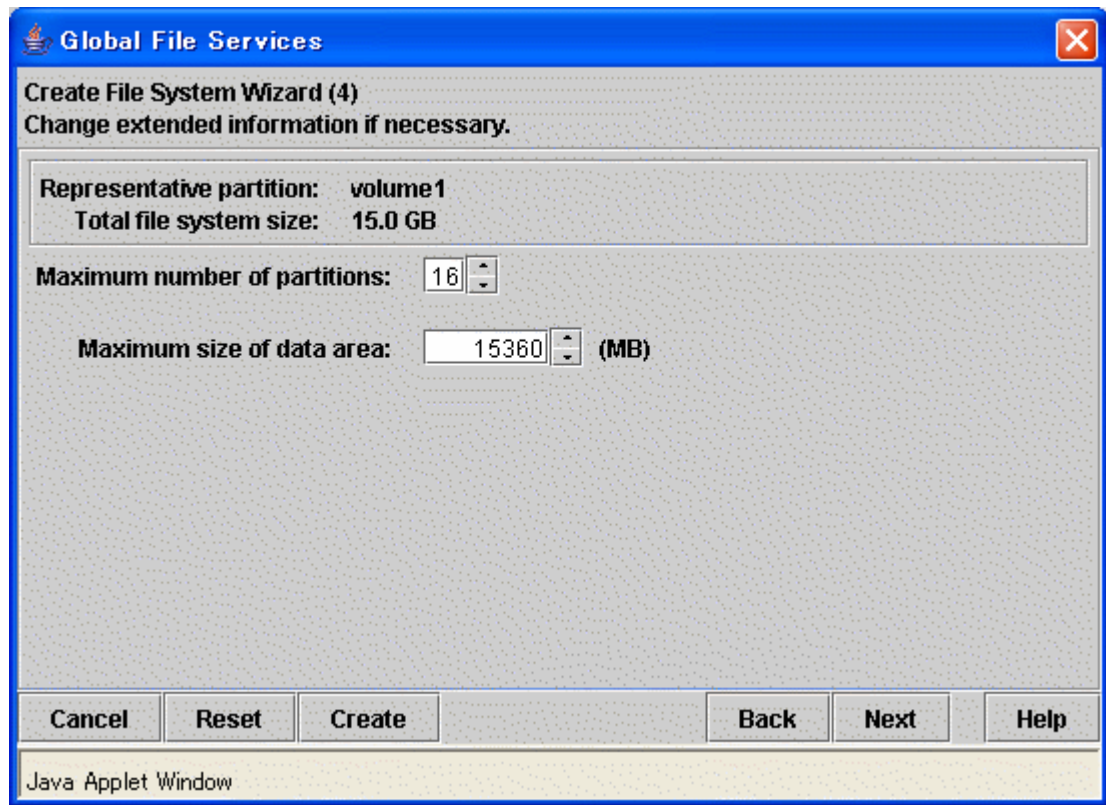


Note

[Linux2.4]

In the Create File System Wizard (4) screen, the extended information values cannot be set. Click the <Next> button and advance to the Create File System Wizard (5).

Figure Create File System Wizard (4)



## Note

Set the maximum number of partitions and the maximum size of data area after adequately considering future data area expansion for the file system to be created. For details, see “4.2.5 [For future expansion](#)”.



## See

The above parameter for expansion setup corresponds to specific **sfcmkfs(8)** options of the GFS Shared File System as follows:

- Maximum number of partitions consisting of a file system: **maxvol=*n***
- Maximum data area size: **maxdsz=*n***

For details about the parameters, see [sfcmkfs\(8\)](#).

When the extended information items are correct, click the <Next> button to proceed. The next screen is shown in the following Figure Create File System Wizard (5).

To restore the settings to their default values, click the <Reset> button.

To return to the Create File System Wizard (3) screen, click the <Back> button.

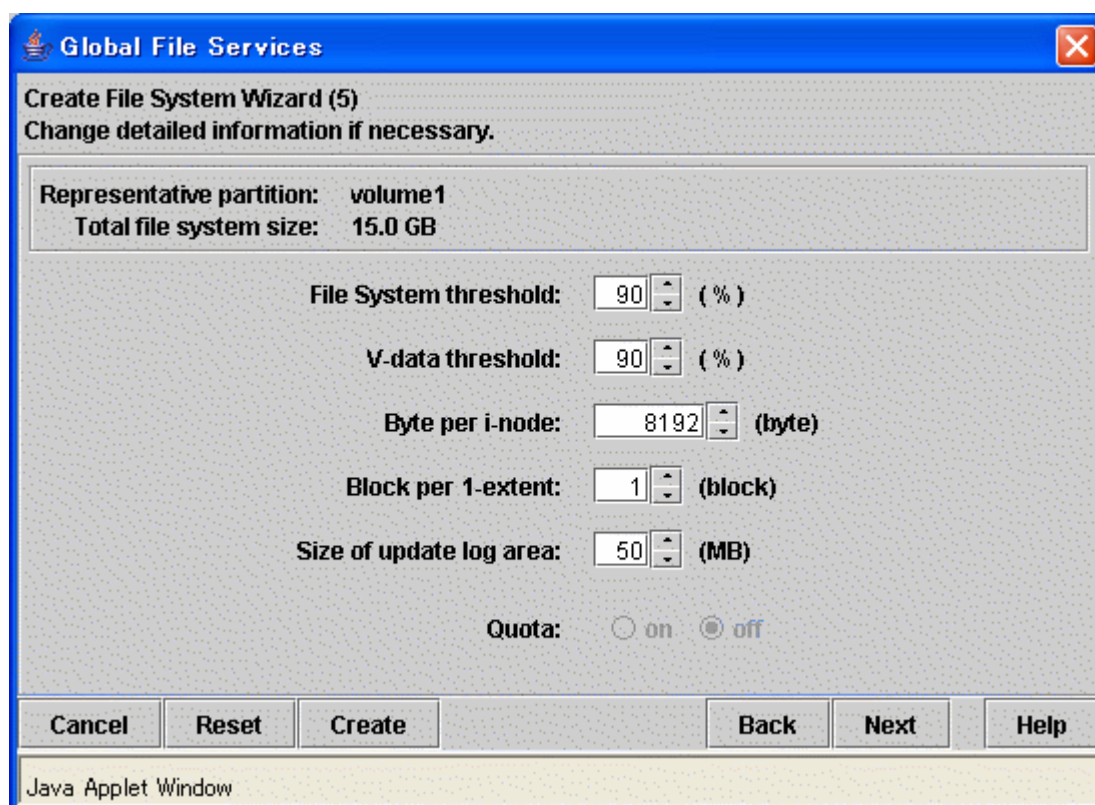
To cancel the file system creation operation, click the <Cancel> button.

If you do not need to change the detailed information and mount information, click the <Create> button to create the file system.

**(6) Setting detailed information**

In the Create File System Wizard (5), set the detailed information.

Figure Create File System Wizard (5)



See

The above parameter for expansion setup corresponds to specific **sfcmkfs(8)** options of the GFS Shared File System as follows:

- File System threshold: **free**=*n*
- V-data threshold: **mfree**=*n*
- Byte per i-node: **nbpi**=*n*
- Block per 1-extent: **nblkpext**=*n*
- Size of update log area: **logsz**=*n*

For details about the parameters, see [sfcmkfs\(8\)](#).



Note

The file system usage limit is the value obtained by subtracting from 100 the minimum percentage of free area in the file system specified by the **-o free** option of **sfcmkfs(8)**.

The V-data area usage limit is the value obtained by subtracting from 100 the minimum percentage of free area in the V-data area specified by the **-o mfree** option of **sfcmkfs(8)**.

When the detailed information items are correct, click the <Next> button to continue. The next

screen is shown in the following Figure Create File System Wizard (6).

To restore the settings to their default values, click the <Reset> button.

To return to the Create File System Wizard (4) screen, click the <Back> button.

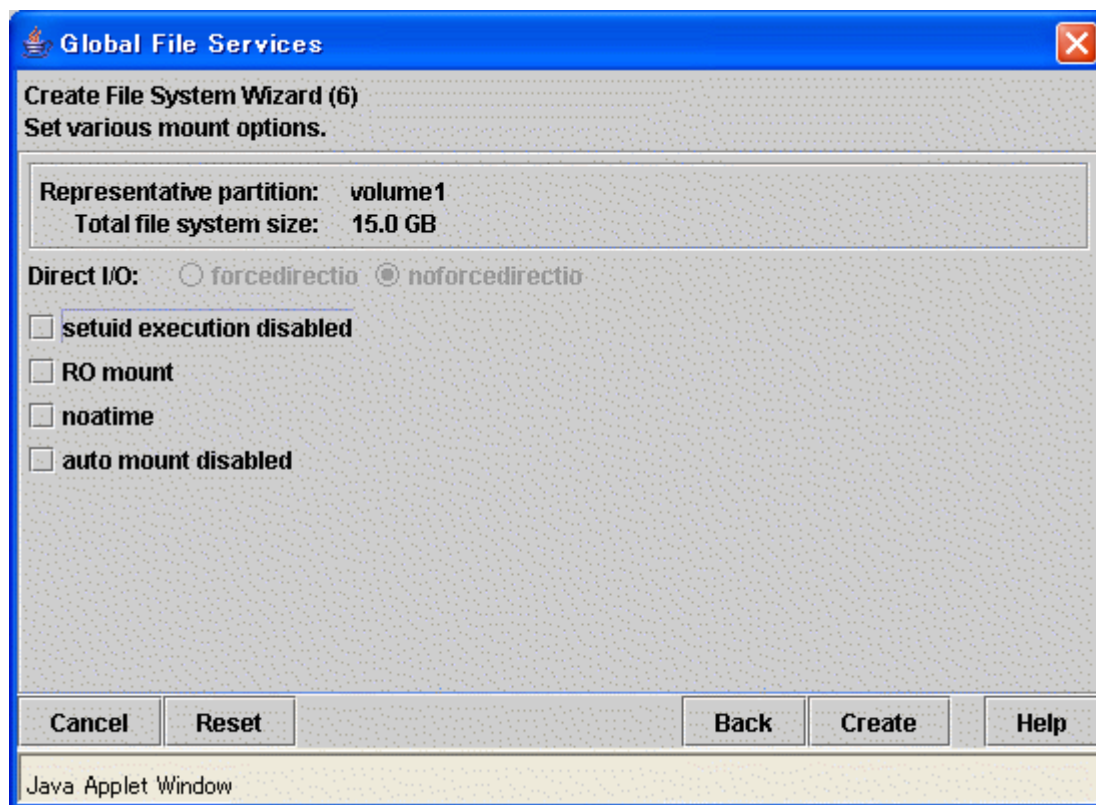
To cancel the file system creation operation, click the <Cancel> button.

If you do not need to change the mount information, click the <Create> button to create the file system.

### (7) Setting mount information

In the Create File System Wizard (6) screen, set the mount information.

Figure Create File System Wizard (6)



After setting the mount information, click the <Create> button to create the file system.

To restore the settings to their default values, click the <Reset> button.

To return to the Create File System Wizard (5) screen, click the <Back> button.

To cancel the file system creation operation, click the <Cancel> button.



If you create a file system by clicking the <Create> button, the GFS Management View will automatically add an entry to /etc/fstab.

### (8) Mounting the file system

Mount the file system.





For information on how to mount the file system using a command, see “11.2.4 [Mount](#)”.

## 10.3 Change

The GFS Management View provides three change operations:

- Changing the file system attributes (changing the mount information)
- Changing file system configuration (file data partition addition)
- Changing shared node information



Note

### Note of Operation

- The information for the Management View must be updated before the changes are reflected in the display of the Main Screen. To immediately update the information, on the Main Screen click [Update Now] on the [View] drop-down menu.
- If the `sfcs` information is not available, the file system cannot be changed. Take action according to the output error message.

### 10.3.1 Changing in file system attributes

The following describes the procedure for changing file system attributes using the GFS Management View.

Changing the file system attributes includes changing the mount information.

#### (1) Unmounting a file system

Before changing the file system attribute, unmount the file system on all the nodes.



See

For information on how to unmount the file system using a command, see “11.3.1 [Unmount](#)”.

#### (2) Selecting a file system

From the [Mount tree] or [FileSystem Information] field in the main screen, select the file system you want to change. Only file systems of the `sfcs` type can be selected.

Click [Change Attributes] on the [Operation] menu, and the [File System Attributes] screen appears.

From the [File system Attribute] screen, the mount information, share information, and detailed information can be selected using the screen switching tabs.

#### (3) Changing the mount information

In the [Mount information] screen, the mount information can be changed.

To change the settings, change the corresponding parameters.

To restore the settings to their previous values, click the <Reset> button.

To execute the mount information change operation, click the <Apply> button.

Specify the full path name of a mount point in the "Mount point" field. If "yes" is selected for "Make directory", a directory is created with the following attributes:

Owner: root

Group: sys  
Access permissions: 775

Figure Mount information for file system attributes

**Global File Services**

Share information | Detailed information | **Mount information**

Set mount point and various mount options.

Representative partition: volume1  
Total file system size: 15.0 GB

Mount point: /mnt/fs1

Make directory:  yes  no

Direct I/O:  forcedirectio  noforcedirectio

setuid execution disabled  
 RO mount  
 noatime  
 auto mount disabled

Apply Reset

Exit Help

Java Applet Window



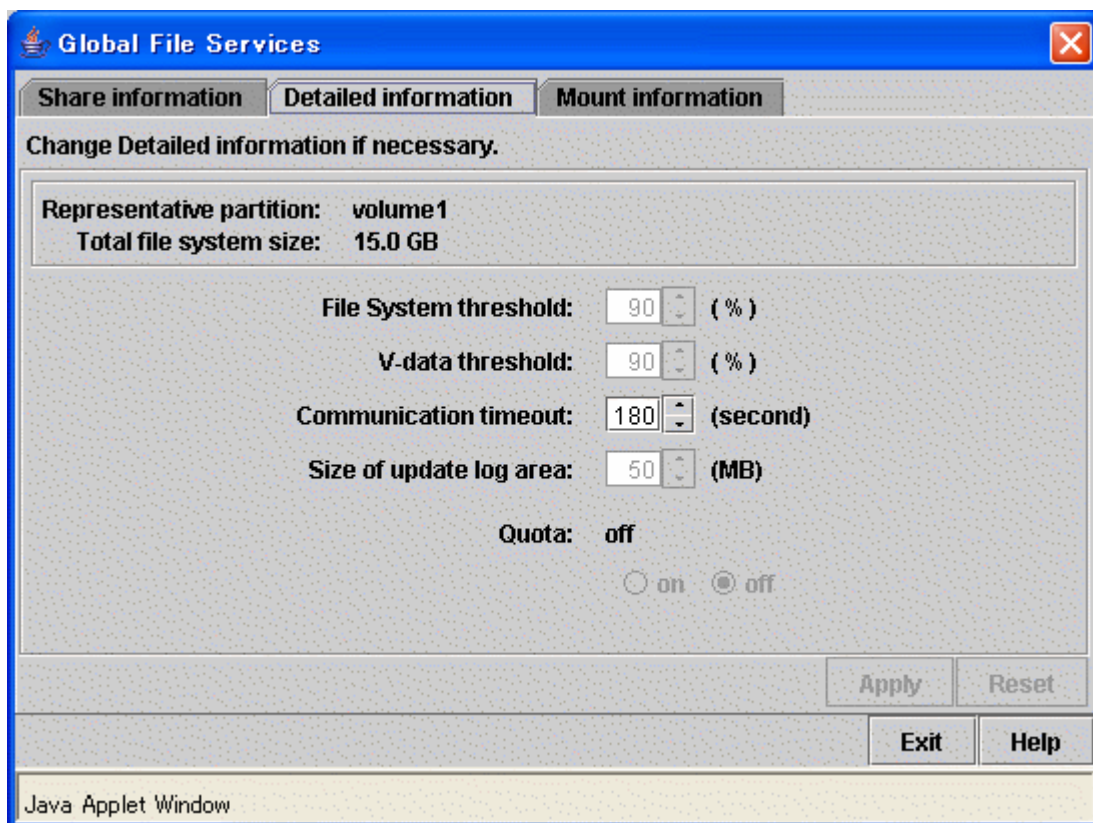
Note

If you change the mounting information by clicking the <Apply> button, the GFS Management View will automatically add the information in /etc/fstab.

#### (4) Changing detailed information

- In the [Detailed information] screen, tune the file system
- To change the settings, change the corresponding parameters.
- To restore the settings to their previous values, click the <Reset> button.
- To execute the detailed information change operation, click the <Apply> button.

Figure Detailed information for file system attributes



See

For an explanation of each parameter, see [sfcadm\(8\)](#).

### (5) Mounting a file system

After the completion of the file system attribute change operation, a file system is in mounted.



See

For information on how to mount the file system using a command, see “11.2.4 [Mount](#)”.

## 10.3.2 Changing the file system configuration (partition addition)

This section explains the procedure for adding file data partitions .

It is easy to change a file system's configuration because the file system configuration change operation uses a wizard.

To start the Change File System Configuration Wizard, click [Change Configuration] on the [Operation] drop-down menu.



Note

[Linux2.4]

[Change Configuration] on the [Operation] drop-down menu cannot be selected.



Note

#### Note of Operation

Information that has already been input becomes invalid and the default value corresponding to information newly set on the previous screen is set when <Next> button is selected after <Back> button is selected on the wizard screen and the operation that exerts the influence on the following screens is done.

### (1) Unmounting a file system

Before changing the file system configuration, unmount the file system on all the nodes.



See

For details about command, see “11.3.1 [Unmount](#)”.

### (2) Setting shared disk device

A partition that will be added to the GFS Shared File System must be a logical volume of a GDS shared class. Also, the GDS logical volume must be ACTIVE.



Note

GDS logical volume should set up as follows.

- Set up the type of a disk class with which GDS logical volume belongs as shared.(Change GDS class attributes)
- Set all the nodes that share GFS Shared File System as the scope of the disk class to which logical volume belongs.(Change GDS class attributes)



See

For GDS disk class operations, see the applicable items under "Operation using Global Disk Services Management View" in the “*PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)*”.

For GDS logical volume operations, see the applicable items under "Operation using Global Disk Services Management View" in the “*PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)*”.

### (3) Selecting a file system

From the [Mount tree] or [FileSystem Information] field in the main screen, select the file system to be changed. Only file systems of the `sfcs` type can be selected.

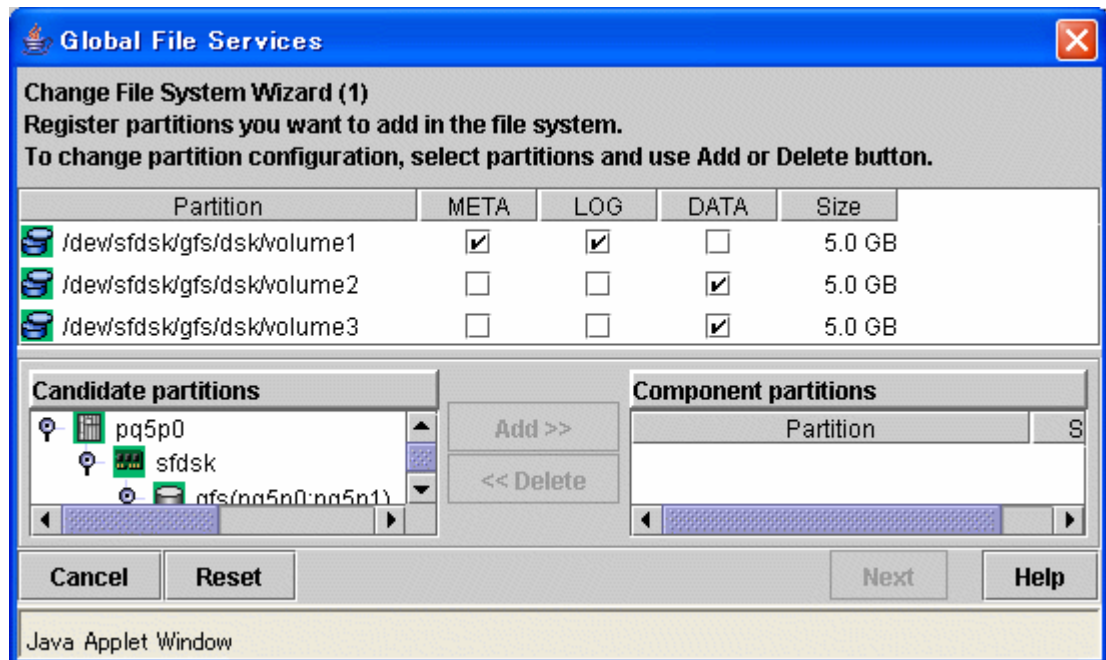
Click [Change Configuration] on the [Operation] menu, the Change File System Configuration Wizard (1) screen appears.

### (4) Selecting a partition

From the [Candidate partitions] field, select the partition to be added and click the <Add> button.

More than one partition can be selected at a time. Note that those partitions that are already in use for file systems cannot be selected.

**Figure Change File System Configuration Wizard (1)**



After selecting the partitions, click the <Next> button to continue. The next screen is shown in the following Figure Change File System Configuration Wizard (2).

To cancel the file system configuration change operation, click the <Cancel> button.

### (5) Checking partition information

In the Change File System Configuration Wizard (2) screen, confirm the file system configuration including adding partition.



See

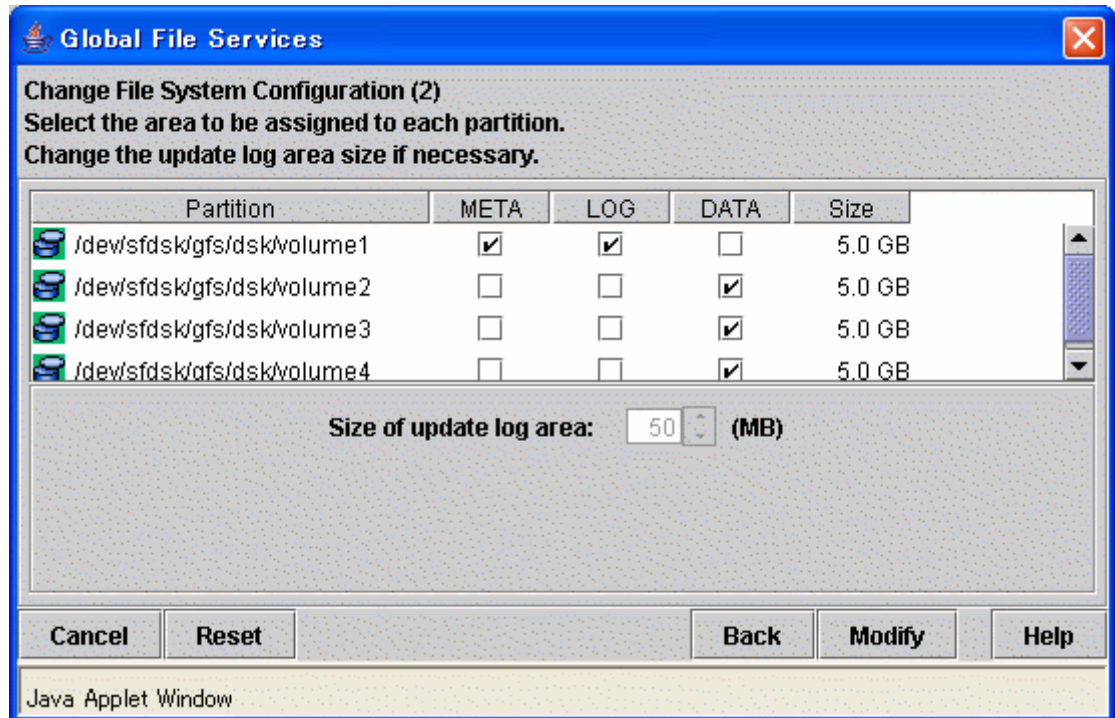
For an explanation of the combinations of areas (META/DATA) assigned to partitions, see “2.1.6 [Partition configuration](#)”.



Note

The added partition is automatically allocated to the file data area.

**Figure Change File System Configuration Wizard (2)**



After confirming the information items, click the <Modify> to execute the file system configuration change operation.

To return to the Change File System Configuration Wizard (1), click the <Back> button.

To cancel the file system configuration change operation, click the <Cancel> button.

### (6) Mounting a file system

After completion of the file system attribute change operation, mount the file system if the file system is unmounted.



See

For details about command, see “11.2.4 [Mount](#)”.

## 10.3.3 Changing the shared node information

The following describes the procedure for changing sharing-node information using the GFS Management View.

### (1) Unmounting a file system

Before changing the shared node information, unmount the file system on all the nodes.



See

For details about command, see “11.3.1 [Unmount](#)”.

**(2) Selecting a file system**

From the [Mount tree] or [Filesystem Information] field in the main screen, select the file system you want to change. Only file systems of the sfvfs type can be selected.

Click [Change Attributes] on the [Operation] menu and go to [Share information] screen using the screen-switching tab.

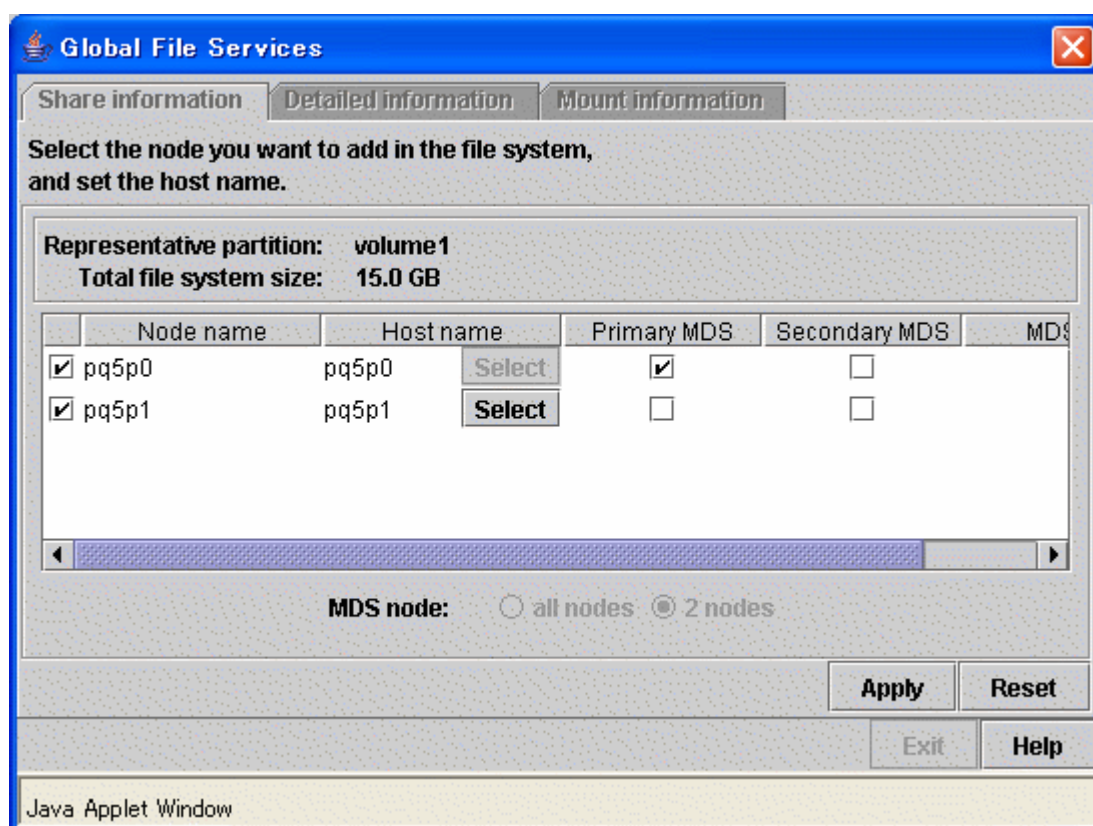
**(3) Changing share information**

In the [Share information] screen, the information on the nodes sharing the file system can be changed.

To change the settings, change the corresponding parameters.

To restore the settings to their previous values, click the <Reset> button.

**Figure Share information for file system attributes**

**Selecting node names**

In the "Node name" column, select the names of the sharing nodes. Be sure to select two nodes. It is not possible to deselect the local node, the primary MDS or the secondary MDS.

**Selecting a host name**

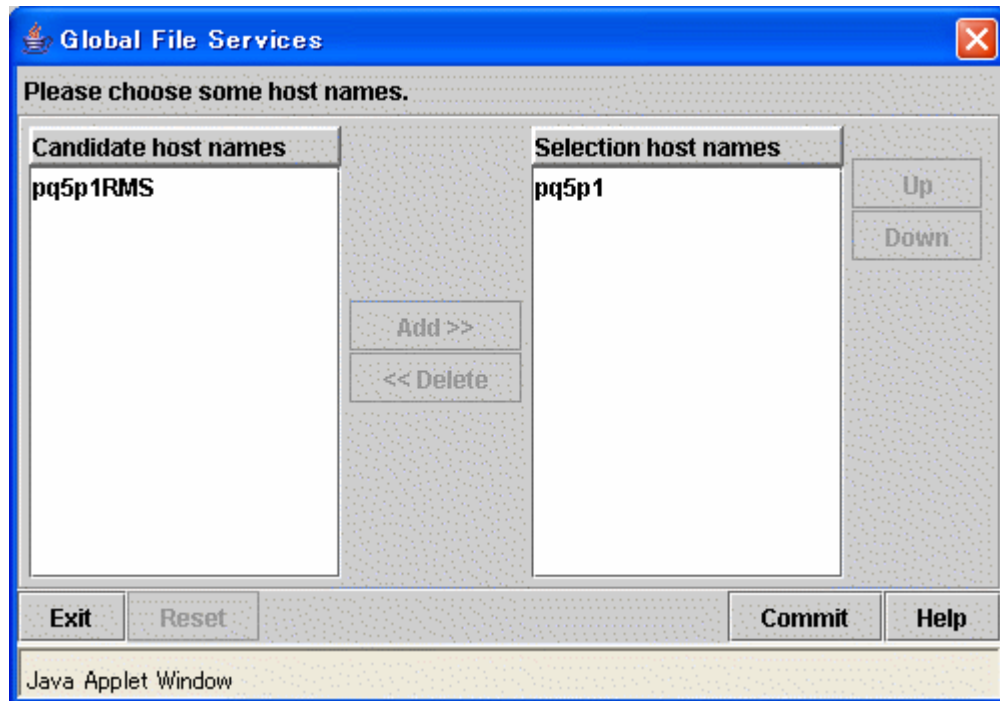
In order to select host names other than the host names displayed, click the <Select> button. Then select the LAN host that will be used for each node in the following "Host name selection wizard" screen.

If you don't click the <Select> button, the displayed host name will be used.

The host name for each node already selected cannot be changed. Delete the host name being selected, and select the LAN host from the candidate hosts then add it to the hosts for selection.



Figure Host Name Selection Wizard



Note

#### Primary MDS and secondary MDS

The primary MDS and secondary MDS cannot be changed. If a change is necessary, the file system must be deleted and re-created.



See

For an explanation of each parameter, see the explanation of `sfcadm(8)` in [sfcadm\(8\)](#).

#### (4) Confirming the sharing-node information change operation

To execute the sharing-node information change operation, click the <Apply> button.

To close the [File System Attributes] screen, click the <Commit> button.



Note

If you change sharing-node information by clicking the <Apply> button, the GFS Management View will automatically add and change the entry in `/etc/fstab`.

#### (5) Mounting a file system

After completion of the file system attributes change operation, mount the file system.



See

For details about command, see “11.2.4 [Mount](#)”.

## 10.4 Deletion

### 10.4.1 Deleting the file system

The following describes the procedure for deleting a file system using the GFS Management View.



Note

#### Note of Operation

- The information for the Management View must be updated before the changes are reflected in the display of the Main Screen. To immediately update the information, on the Main Screen click [Update Now] on the [View] drop-down menu.
- If the sfcs information is not available, the file system cannot be changed. Take action according to the output error message.

#### (1) Unmount the file system

Unmount the file system on all nodes before deletion.



See

For detail on the unmount procedure, see “11.3.1 [Unmount](#)”.

#### (2) Selecting the file system

From the [Mount tree] or [File system Information] field in the main screen, select the file system to be deleted. Only file systems of the sfcs type can be selected.

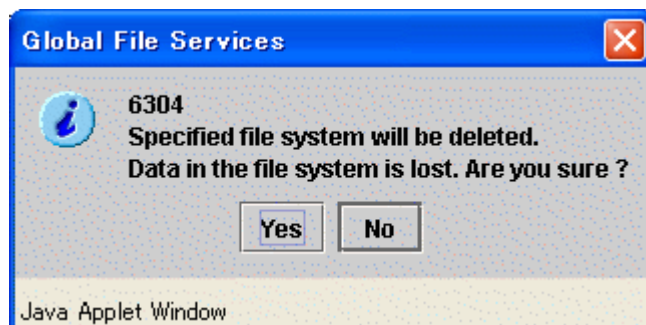
#### (3) Deleting the file system

Click [Delete] on the [Operation] menu and the following warning message appears.

To delete the file system, click the <Yes> button.

To cancel the deletion of the file system, click the <No> button.

Figure File system deletion warning message



**Note**

If you delete the file system by clicking the <Yes> button, the GFS Management View will automatically delete the entry from /etc/fstab.



# Chapter 11 File System Operations (Command)

---

This chapter describes how to operate the GFS Shared File System by commands.

The structure of this chapter is the same as that of “Chapter10 [File System Operations \(GUI\)](#).” For details about GUI operation, see “Chapter10 [File System Operations \(GUI\)](#).”

The management partition settings must have been made before you create a file system.

For information on the outline of the management partition, see the following:

- “Chapter5 [Management Partition](#)”

For details on how to set up the management partition, see the following:

- “Chapter8 [Management Partition Operations \(GUI\)](#)”
- “Chapter9 [Management Partition Operations \(Command\)](#)”

Start file system operation after you have created a file system. For details on file system operation, see the following:

- “Chapter12 [File System Management](#)”

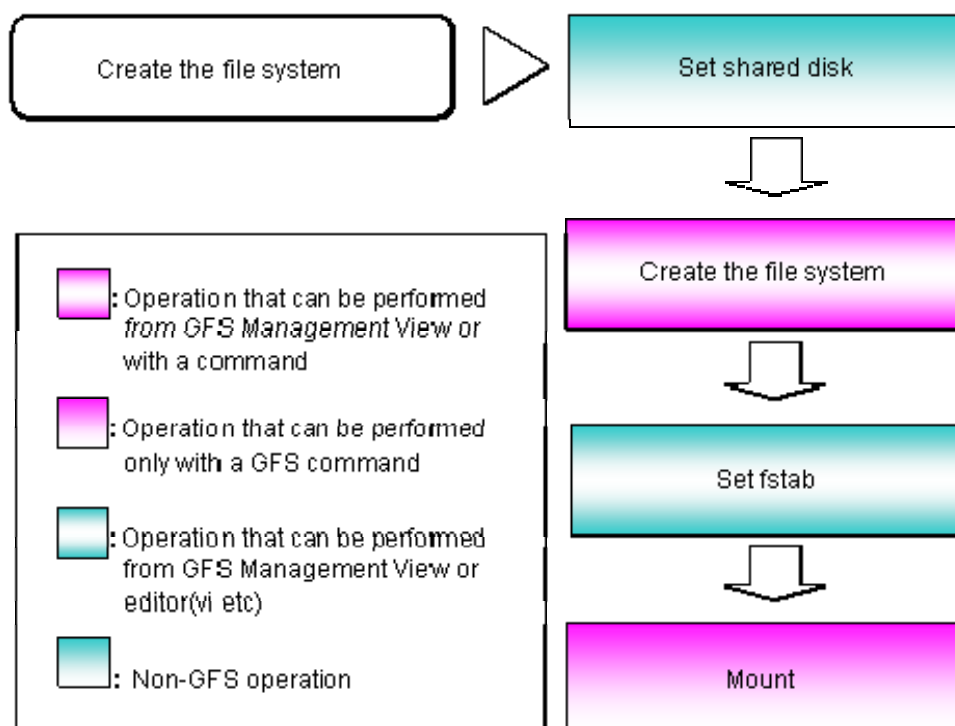
## 11.1 Flow of Operations

This section describes the flow of operations in the GFS Shared File System.

### 11.1.1 Creation

The following figure shows the basic design flow for creating a file system in the GFS Shared File System.

**Figure Operation flow for creating file system**



See

For details about command operation in the above figure, see “11.2 [Creation.](#)”

For details about GUI operation in the above figure, see “10.2 [Creation.](#)”

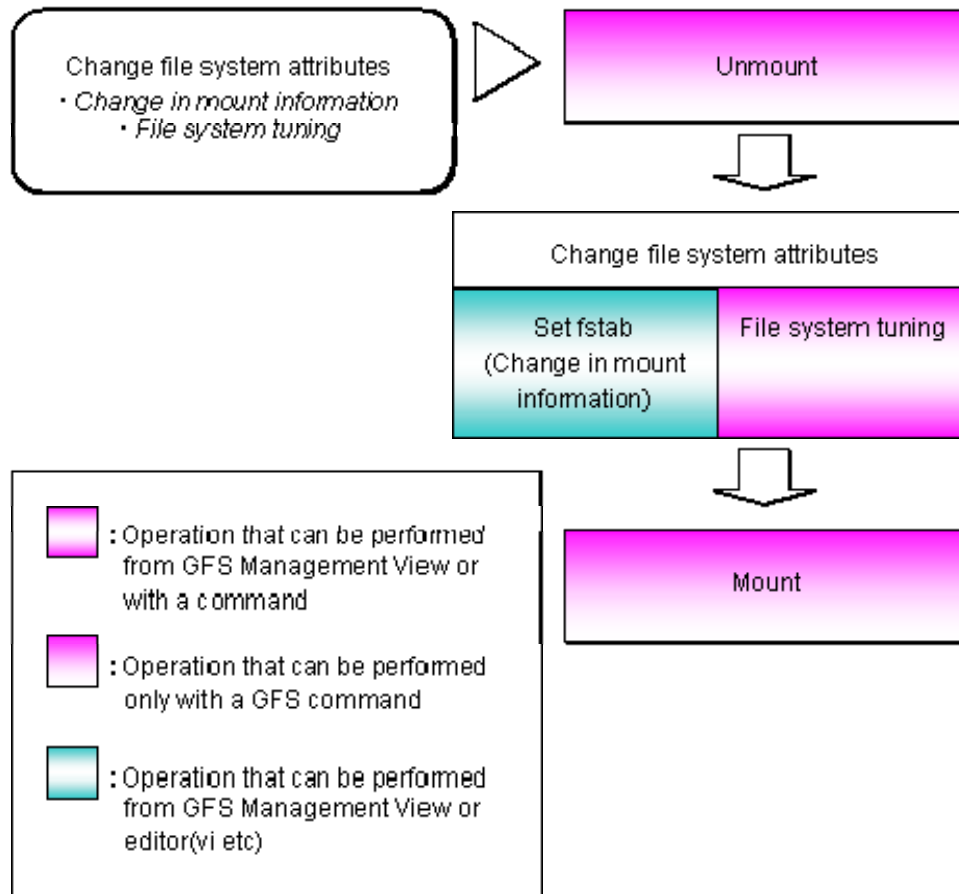
### 11.1.2 Change (in file system attributes)

In the GFS Shared File System, the following file system attributes can be changed:

- Mount information
- File system tuning

The following figure shows the basic design flow for changing the file system attributes in the GFS Shared File System.

Figure Operation flow for change in file system attributes



See

For details about command operation in the above figure, see "11.3 Change (file system attributes)."

For details about GUI operation in the above figure, see "10.3.1 Changing in file system attributes."

### 11.1.3 Change (partition addition)

In the GFS Shared File System, the following information can be changed:

- Addition of file data partitions



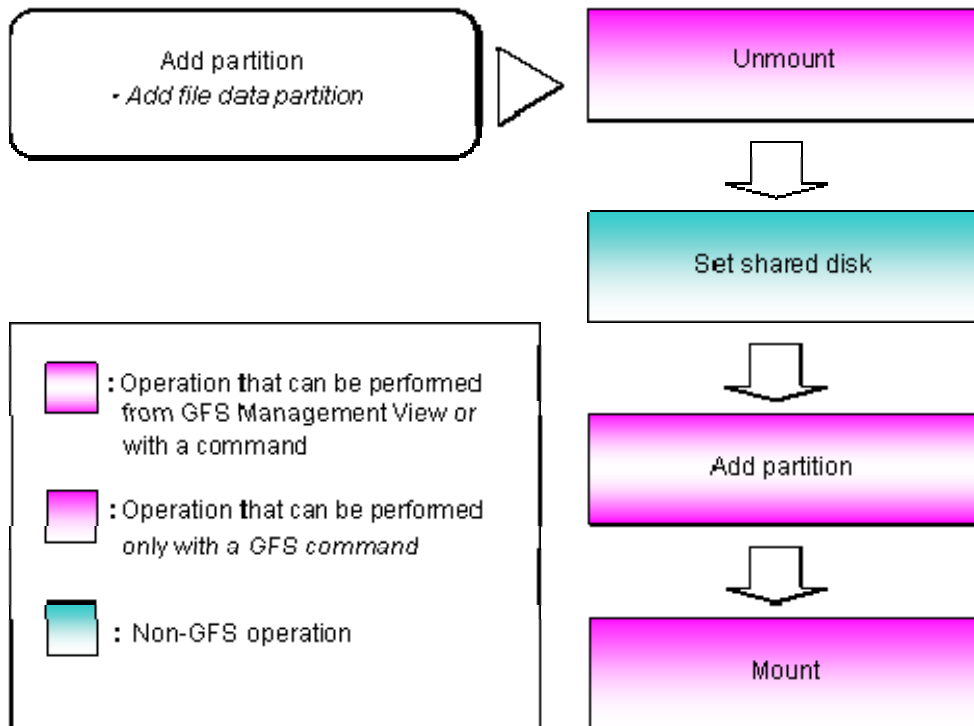
Note

[Linux2.4]

File data partitions cannot be added.

The following figure shows the basic design flow for changing the file system configuration in the GFS Shared File System.

**Figure Operation flow for partition addition**



 See

For details about command operation in the above figure, see “11.4 Change (partition addition).”

For details about GUI operation in the above figure, see “10.3.2 Changing the file system configuration (partition addition).”

### 11.1.4 Change (shared node information)

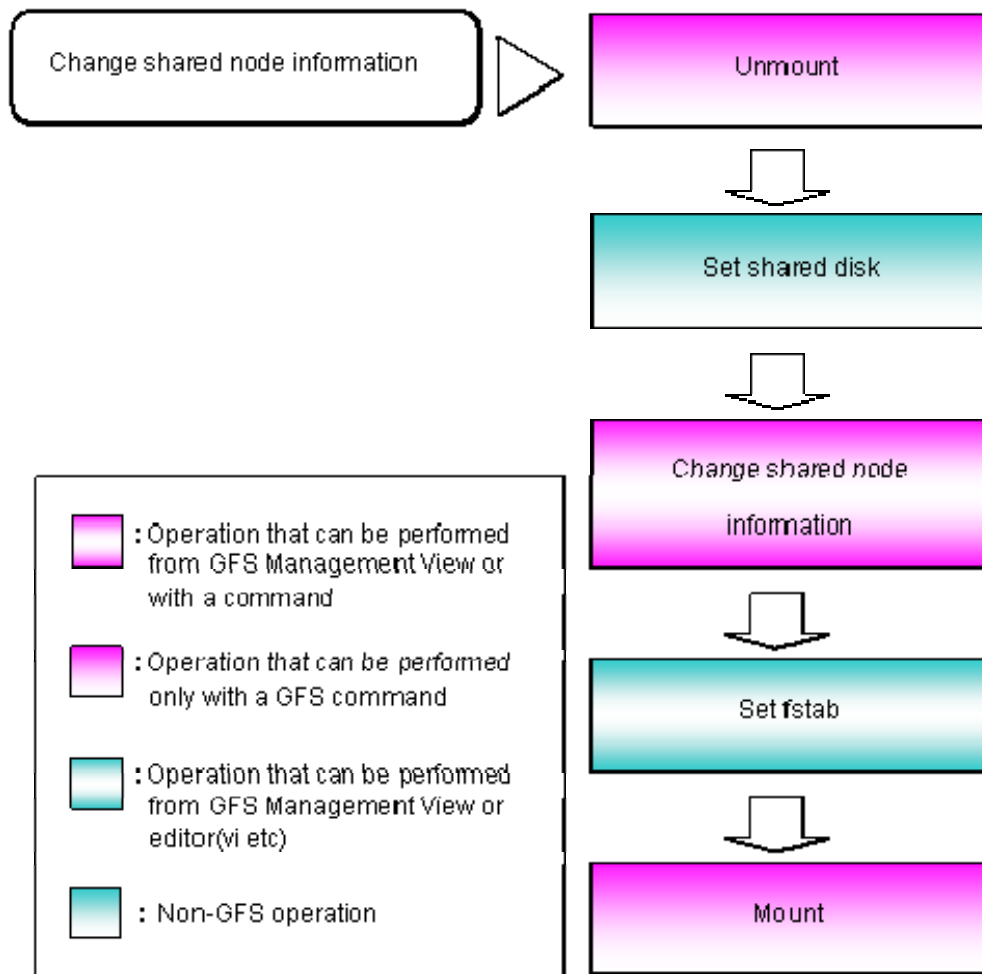
In the GFS Shared File System, the following change of shared node information can be operated:

- Adding shared node information
- Deleting shared node information
- Updating shared node information

The following figure shows the basic design flow for changing the file system shared node information in the GFS Shared File System.



Figure Operation flow for changing the shared node information



See

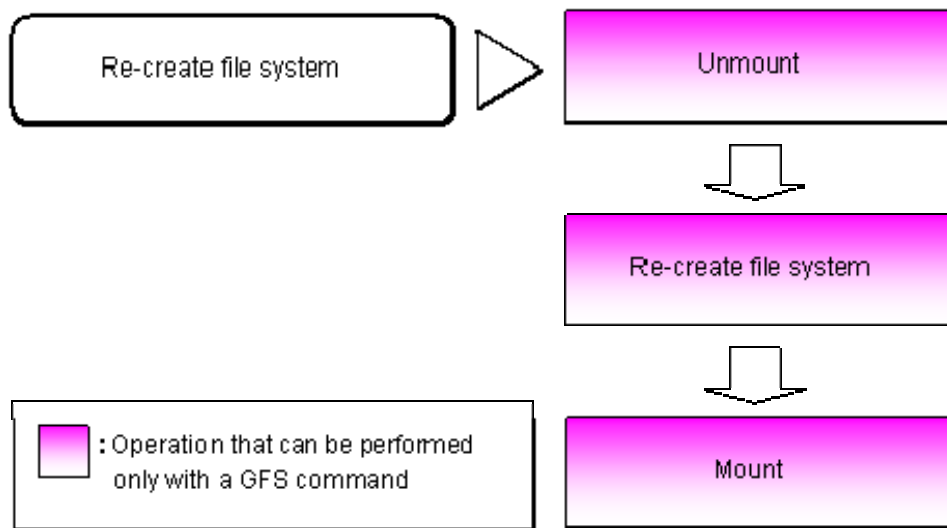
For details about command operation in the above figure, see “11.5 Change (shared node information).”

For details about GUI operation in the above figure, see “10.3.3 Changing the shared node information.”

### 11.1.5 Change (re-creating a file system)

The following figure shows the basic design flow for re-creating the file system in the GFS Shared File System.

**Figure Operation flow for re-creating a file system**



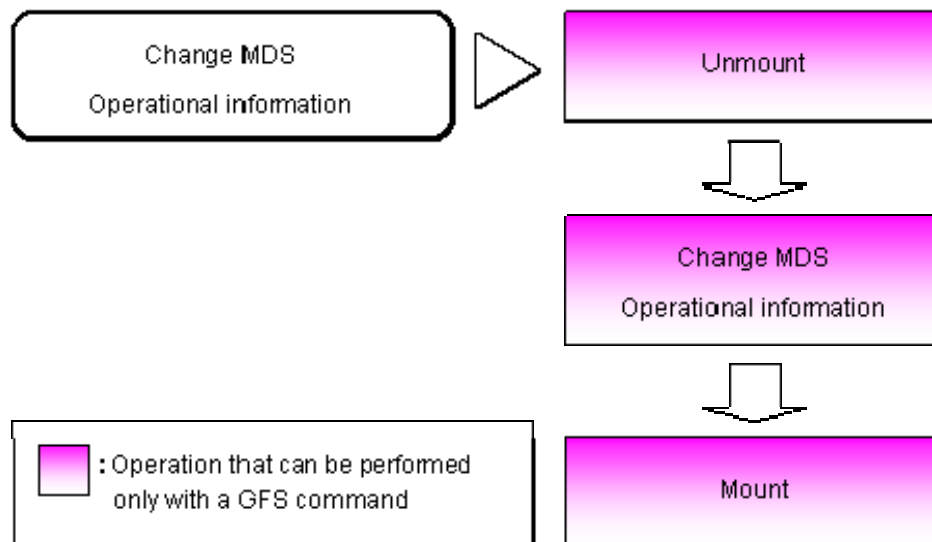
 See

For details about command operation in the above figure, see “11.6 Change (re-creating a file system).”

### 11.1.6 Change (MDS operational information)

The following figure shows the basic design flow for changing the MDS operational information in the GFS Shared File System.

**Figure Operation flow for changing the MDS operational information**



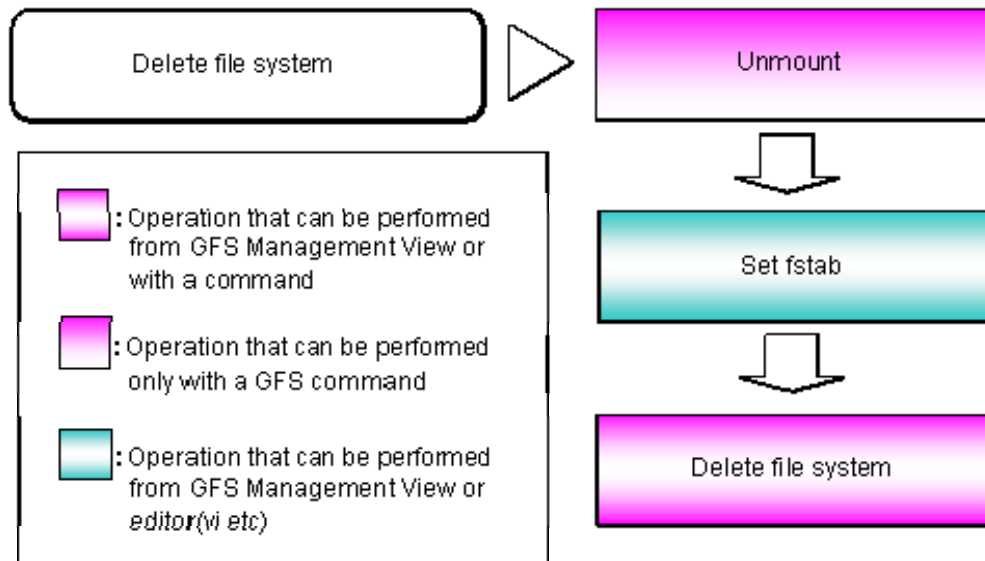
 See

For details about command operation in the above figure, see “11.7 Change (MDS operational information).”

### 11.1.7 Deletion

The following figure shows the basic design flow for deleting the file system in the GFS Shared File System.

**Figure Operation flow for deleting a file system**



See

For details about command operation in the above figure, see “11.8 Deleting.”

For details about GUI operation in the above figure, see “10.4 Deletion.”

## 11.2 Creation

This section describes the operations from GFS Shared File System creation to operation.

1. Setting up a shared disk
2. File system creation
3. Setting up /etc/fstab
4. Mount
5. File system status check

Also, the notes are provided when the GFS Shared File System is created by using the partition that already used File System.

### 11.2.1 Setting shared disks

The GFS Shared File System uses logical volumes of GDS as shared devices. The status of the logical volumes of GDS must be ACTIVE on each node.



Note

GDS logical volume should set up as follows.

- Set up the type of a disk class with which GDS logical volume belongs as shared.(Change GDS class attributes)
- Set all the nodes that share GFS Shared File System as the scope of the disk class to which logical volume belongs.(Change GDS class attributes)



See

For GDS disk class operations, see the applicable items under "Operation using Global Disk Services Management View" in the "*PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)*."

For GDS logical volume operations, see the applicable items under "Operation using Global Disk Services Management View" in the "*PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)*."

### 11.2.2 Creating a file systems

To create a GFS Shared File System, use `sfcmkfs(8)`. Create the GFS Shared File System on any one of the file system shared nodes.



See

For details on `sfcmkfs(8)`, see [sfcmkfs\(8\)](#).

### 11.2.2.1 Defaults of parameters used by sfcmkfs(8)

Specifies a value of parameter along use of the file system that decided beforehand as had described in “Chapter4 [File System Design.](#)”

The defaults of parameters used by sfcmkfs(8) are as follows:

**Table Defaults of parameters used by sfcmkfs(8)**

Parameter	Default
Data block size	Always 8192 bytes
Minimum free space (-o free= <i>n</i> )	10% of the file data area
Number of i-nodes (-o nbpi= <i>n</i> )	One in an 8192-byte disk area Up to 16 mega.
Update log area size (-o logsz= <i>n</i> )	1% of the file system size The available range is from 5 megabytes to 50 megabytes.
Meta-data area size (-o metasz= <i>n</i> )	About 10% of the file system size



Note

The use ratio of the meta-data area decreases by growing of the file system size when the meta-data area size is not specified.

### 11.2.2.2 Examples of creating a representative file system

Examples of creating a typical GFS Shared File System are given below.



Note

[Linux2.4]

Multi partition configuration cannot be used.

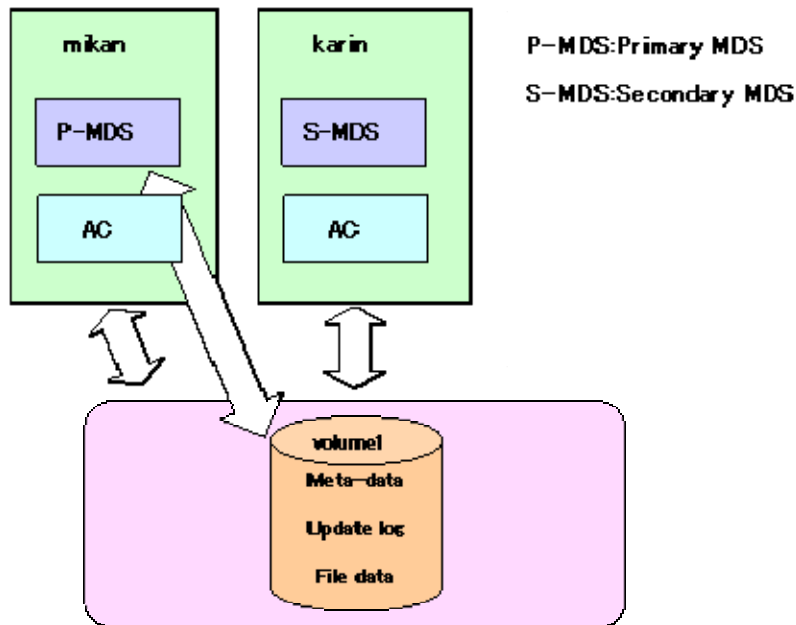
#### Single partition configuration

To create a GFS Shared File System with a single partition, specify the partition configuring the file system. In this case, areas for all types of data (meta-data area, update log area, and file data area) are created in the representative partition.

The following is an example of using sfcmkfs (8) to create a file system with a single partition.

```
# sfcmkfs -o node=mikan,karin /dev/sfdsk/gfs01/dsk/volume01 <Enter>
Representative partition (meta-data, log, and data): /dev/sfdsk/gfs01/dsk/volume01
Shared hosts      : mikan, karin
Primary MDS      : mikan
Secondary MDS    : karin
```

Figure Single partition configuration



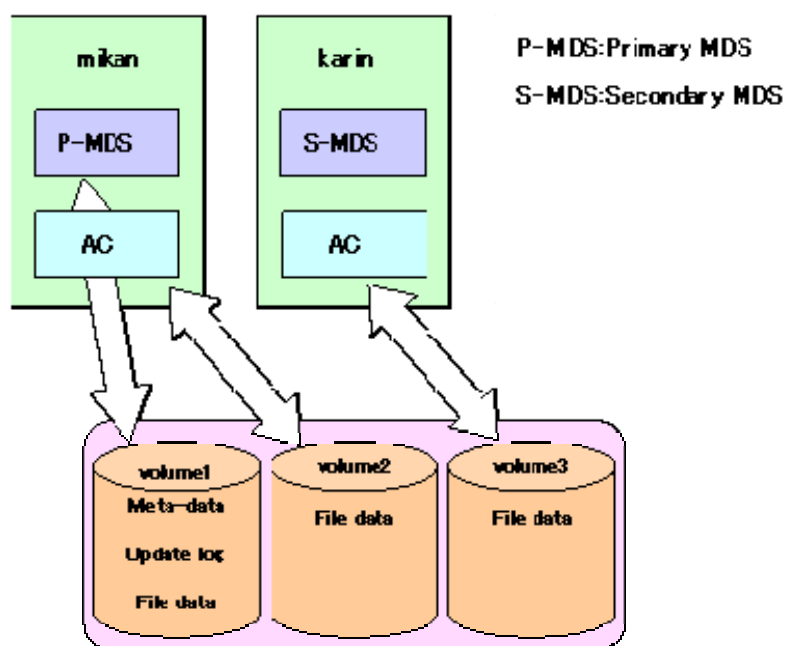
### Multiple partitions configuration (Multiple file data partitions configuration)

To specify multiple partitions in the data area, specify a representative partition and file data partitions. In this case, a meta-data area, update log area, and data area are created in the representative partition.

The following is an example of using `sfcmkfs(8)` to create a file system with multiple file data partitions.

```
# sfcmkfs -o
data=/dev/sfdsk/gfs01/dsk/volume02,data=/dev/sfdsk/gfs01/dsk/volume03,node=mikan,karin
/dev/sfdsk/gfs01/dsk/volume01 <Enter>
  Representative partition (meta-data, log, and data): /dev/sfdsk/gfs01/dsk/volume01
  Data partition: /dev/sfdsk/gfs01/dsk/volume02, /dev/sfdsk/gfs01/dsk/volume03
  Shared hosts: mikan,karin
  Primary MDS: mikan
  Secondary MDS: karin
```

Figure Multiple data partitions configurations



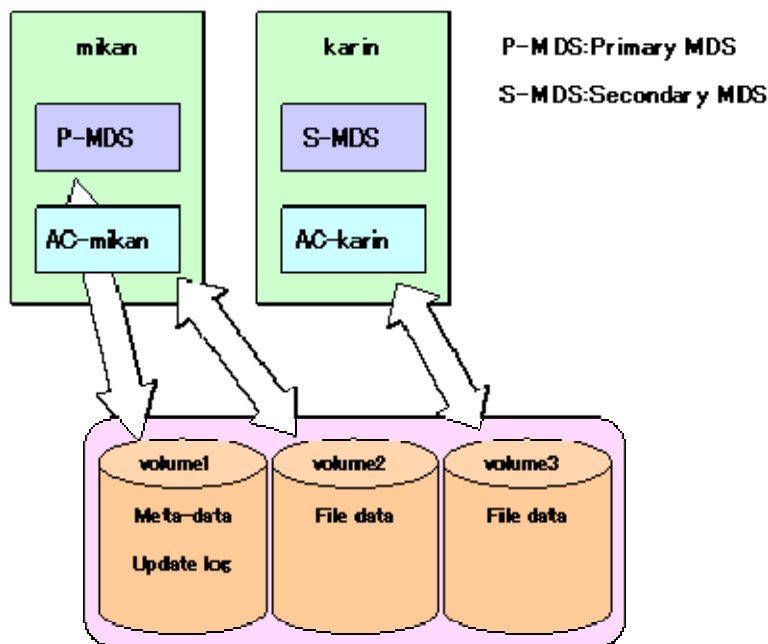
### Multiple partitions configuration (Separating the data area)

If multi-partition of the file data area is specified with the “-o dataopt=y” option, representative partitions will not contain the file data area.

The following example shows how to create a file system where the file data area is not included in multiple file data partitions or representative partitions with `sfcmkfs(8)`.

```
# sfcmkfs -o dataopt=y, data=/dev/sfdsk/gfs01/dsk/volume02, data=/dev/sfdsk/gfs01/dsk/volume03, node=mikan, karin /dev/sfdsk/gfs01/dsk/volume01 <Enter>
Representative partition (meta-data and log): /dev/sfdsk/gfs01/dsk/volume01
Data partition: /dev/sfdsk/gfs01/dsk/volume02, /dev/sfdsk/gfs01/dsk/volume03
Shared hosts: mikan, karin
Primary MDS: mikan
Secondary MDS: karin
```

Figure Separating the data area



### 11.2.2.3 Customizing a GFS Shared File System

Parameters for customizing a file system are provided by `sfcmkfs(8)`, which is used to create a GFS Shared File Systems. Typical parameters are described below.

#### Update log area size (-o logsz=*n*)

Specify the size of the update log area with a value from 5 to 100 megabytes. The default size of an update log area is of 1% of the file system size. If, however, 1% of the file system is less than 5 megabytes, 5 megabytes is set. Also, if the value is greater than 50 megabytes, 50 megabytes is set.

#### Meta-data area size (-o metasz=*n*)

Specifies the size of the meta-data area. The unit is megabytes. The default is about 10% of the file system size. However, when the file system size is larger, the ratio of the meta-data area becomes smaller.

The minimum value that can be specified is same as default. The maximum value is minimum requirement size for managing 1-mega V-data. (The total number of V-data of the file system can be confirmed by executing `sfcdf(8)`.) However, larger value than the size of the representative partition cannot be specified.

#### Maximum data area size (-o maxdsz=*n*)

Specify the maximum total size of the file data area when adding a file data partition as an expansion to a GFS Shared File System. If a file data partition that exceeds the maximum data space, area management information might be insufficient. If this occurs, part of free file data space might not be used. You can add a file data partition using `sfcadd(8)`. The maximum size is less than 1048576 megabytes (1 terabyte).

#### Maximum number of partitions (-o maxvol=*n*)

Specify the maximum number of partitions that may ever comprise this GFS Shared File System. The types of partitions configuring the GFS Shared File System are the representative partition, update log partition, and file data partition. The value specified here is the total of the partitions of



all types. The default value is 16. Specifiable values are 1 to 32.



Note

[Linux2.4]

The maximum data area size and the maximum number of partitions cannot be customized.

### 11.2.2.4 Setting MDS operational information

The following shows an example of creating a typical GFS Shared File System with MDS operational information specified to improve availability:

#### Priority settings for MDS placement

Specify the priority of placing the primary MDS and secondary MDS using the shared host name in the `-o node` option of the `sfcmkfs(8)` command. The primary MDS and secondary MDS candidates are selected in the order the shared host names are specified. The primary MDS is ultimately determined based on the MDS placement range (described below) and operation status of actual shared nodes when starting the file system operation.

The following shows an example of creating a file system using `sfcmkfs(8)` specifying `mikan` as the primary MDS candidate and `karin` as the secondary MDS candidate.

```
# sfcmkfs -o node=mikan,karin /dev/sfdsk/gfs01/dsk/volume01 <Enter>
Representative partition (meta-data,log and data): /dev/sfdsk/gfs01/dsk/volume01
Shared hosts: mikan, karin
Primary MDS: mikan
Secondary MDS: karin
```

### 11.2.3 Setting fstab

In the GFS Shared File System, it is necessary to code an entry that is to be mounted on `/etc/fstab` of all the nodes that share a file system. Also, the information that is specified for the mount options of `/etc/fstab` is used as the mount option when the mount command is executed. Specify a directory for the mount point field of `/etc/fstab`. It will become mount point when the argument of the mount point of `sfcmount(8)` is omitted. Specify a directory of each node. The mount options described in `/etc/fstab` for the same file system must be consistent on any nodes configuring the file system. Other than the mount option, `noatrc` can be specified in the mount options field. Specify the `noatrc` option when mounting is not to be performed when the node is started.

Examples of `/etc/fstab` entries are shown below:

Table When mounting in rw mode at startup of the node:

Parameter	Value
device to mount	/dev/sfdsk/gfs01/dsk/volume01
mount point	/mnt/fs1
filesystem type	sfdfs
mount options	rw,noauto
dump frequency	0
fsck pass	0

Table When mounting is not performed at startup of the node

Parameter	Value
device to mount	/dev/sfdsk/gfs01/dsk/volume01
mount point	/mnt/fs1
filesystem type	sfdfs
mount options	rw,noauto,noatrc
dump frequency	0
fsck pass	0

Table Mount options

Option	Description
<b>atime   noatime</b>	Mount in the manner of updating ( <b>atime</b> ) or not updating ( <b>noatime</b> ) the last access time of files. The default is <b>atime</b> .
<b>atrc   noatrc</b>	Specifies whether to mount ( <b>atrc</b> ) or not to mount ( <b>noatrc</b> ) at the node startup. The default is <b>atrc</b> .
<b>async</b>	Mounts in the manner of processing any I/O for the file system asynchronously. The default is <b>async</b> .
<b>defaults</b>	Synonymous with <b>rw,suid,dev,exec, and async</b> .
<b>dev   nodev</b>	Mounts making character special file and block special files available( <b>dev</b> ) or unavailable ( <b>nodev</b> ). The default is <b>dev</b> .
<b>exec   noexec</b>	Mounts giving permission( <b>exec</b> ) or no permission( <b>noexec</b> ) to execute binary files on the file system. The default is <b>exec</b> .
<b>rw   ro</b>	Mounts the file system as read/write enabled( <b>rw</b> ) or read only( <b>ro</b> ). The default is <b>rw</b> .
<b>suid   nosuid</b>	Mounts giving permission( <b>suid</b> ) or no permission( <b>nosuid</b> ) to execute setuid. The default is <b>suid</b> .



Note

Be sure to specify noauto in the mount options field and 0(zero) in the dump frequency

field and the fsck pass field.

## 11.2.4 Mount

If a GFS Shared File System is used, mount it on all the nodes. In such a case, execute the “sfcmtgl(8)” command on any one of the nodes where the GFS Shared File System will be used. If it is only used on one node, mount the file system using sfcmount(8). If this command is executed, sfcfsd and MDS will be started on a node where the MDS is configured. Then, the file system will be mounted on all the nodes.



Note

If the file system is not added in /etc/fstab, mounting of the file system will fail. Also, sfcmtgl(8) and sfcmount(8) are not used for the mount option. If either of them is executed, the current mount option that is specified for the mount option filed of /etc/fstab will be used.

### 11.2.4.1 Mount of all nodes

If the file system is mounted on all the nodes, execute sfcmtgl(8) on any one of the nodes.



See

For details on sfcmtgl(8), see [sfcmtgl\(8\)](#).

You can mount the file system on all the nodes as follows:

- When the mount point is specified:

```
# sfcmtgl /mnt/fs1 <Enter>
Mount point: /mnt/fs1
```

- When a representative partition is specified:

```
# sfcmtgl /dev/sfdsk/gfs01/dsk/volume01 <Enter>
Representative partition: /dev/sfdsk/gfs01/dsk/volume01
```

- When both the mount point and a representative partition are specified:

```
# sfcmtgl /dev/sfdsk/gfs01/dsk/volume01 /mnt/fs1 <Enter>
Representative partition: /dev/sfdsk/gfs01/dsk/volume01
Mount point: /mnt/fs1
```

If mounting fails for a node, the name of the node on which the failure occurred is reported.

### 11.2.4.2 Mount

---

If you want to mount a file system on specific nodes, use `sfcmount(8)`. Then, the file system will only be mounted on the nodes where the file system will be shared.



For details on `sfcmount(8)`, see [sfcmount\(8\)](#).

Mount the GFS Shared File System on the node as shown below:

- When the mount point is specified:

```
# sfcmount /mnt/fs1 <Enter>
Mount point: /mnt/fs1
```

- When a representative partition is specified:

```
# sfcmount /dev/sfdsk/gfs01/dsk/volume01 <Enter>
Representative partition: /dev/sfdsk/gfs01/dsk/volume01
```

- When both the mount point and a representative partition are specified:

```
# sfcmount /dev/sfdsk/gfs01/dsk/volume01 /mnt/fs1 <Enter>
Representative partition: /dev/sfdsk/gfs01/dsk/volume01
Mount point: /mnt/fs1
```

### 11.2.5 Checking file system status

`sfcrcinfo(8)` can check if a GFS Shared File System can be mounted. Execute the command on any one of the nodes where the file system will be shared:



For details on `sfcrcinfo(8)`, see [sfcrcinfo\(8\)](#).

The following example shows how to check the mount status of the GFS Shared File System whose representative partition is `/dev/sfdsk/gfs/dsk/volume01` with `sfcrcinfo(8)`.

```
# sfcrcsinfo -m /dev/sfdsk/gfs01/dsk/volume01 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID  MDS/AC  STATE  S-STATE  RID-1  RID-2  RID-N  hostname
  2  MDS(P)  run    -         0       0       0  mikan
  2  AC      run    -         0       0       0  mikan
  2  MDS(S)  wait   -         0       0       0  karin
  2  AC      run    -         0       0       0  karin
```

Check if either of MDS(P) or MDS (S) is “run –” and the access client (AC) of the nodes where the file system will be shared is also “run -“. If both are "run -", the file system is running properly. If the status indicates, "stop -", they are stopped properly.

## 11.2.6 Notes applying when the partitions of a created file system are used

When creating a GFS Shared File System using a partition of an existing file system, be aware of the following important information.

### 11.2.6.1 The GFS Shared File System

To use a partition that is already in use by an existing GFS Shared File System for a new GFS Shared File System, delete the existing file system and then create the new file system.



See

For information about deleting a file system, see “11.8 [Deleting.](#)”

### 11.2.6.2 File systems other than GFS Shared File System

To use a partition that is in use by a file system other than the GFS Shared File System, unmount the file system on all nodes and then delete in accordance with the procedure for that file system. Also, delete the definition in /etc/fstab and then create the GFS Shared File System.

## 11.3 Change (file system attributes)

To change mount information (GFS Shared File System attribute change) or tuning the file system, perform the following tasks:

1. Unmount
2. Change the file system attributes (mount information, Tuning file system)
3. Mount

### 11.3.1 Unmount

To change the GFS Shared File System, unmount it on all the nodes.

First, stop using the file system by stopping applications.

Then, unmount the file system.

Check if the file system is unmounted properly on all the nodes using `sfcrcinfo(8)`.



See

In order to use the process of the file system, execute `fuser(1)`. For details about the command, see the online manual page.

For information on how to check the file system status using `sfcrcinfo(8)`, see “11.2.5 [Checking file system status.](#)”

#### 11.3.1.1 Unmount of all nodes

---

To unmount the file system on all the nodes, use `sfcumntgl(8)`. Execute the command on any one of the nodes where the file system is shared.



See

For details on `sfcumntgl(8)`, see [sfcumntgl\(8\)](#).

- When the mount point is specified:

```
# sfcumntgl /mnt/fs1 <Enter>
Mount point: /mnt/fs1
```

- When a representative partition is specified:

```
# sfcumntgl /dev/sfdsk/gfs01/dsk/volume01 <Enter>
Representative partition: /dev/sfdsk/gfs01/dsk/volume01
```

If unmounting fails on a node, the name of the node on which the failure occurred is reported.

### 11.3.1.2 Unmount

To unmount the file system on specific nodes, use `sfcumount(8)`. Execute the command on any one of the nodes where the file system is shared.



For details on `sfcumount(8)`, see [sfcumount\(8\)](#).

Unmount the GFS Shared File System on the node as shown below:

- When the mount point is specified:

```
# sfcumount /mnt/fs1 <Enter>
Mount point: /mnt/fs1
```

- When a representative partition is specified:

```
# sfcumount /dev/sfdsk/gfs01/dsk/volume01 <Enter>
Representative partition: /dev/sfdsk/gfs01/dsk/volume01
```



To unmount the GFS Shared File System, be sure to use `sfcumount(8)`.

## 11.3.2 Change the file system attributes

### 11.3.2.1 Changing the mount information

To change the mount information of the GFS Shared File System, change `fstab` information. The parameters of mount point and mount options can be changed.



For details of setting `fstab`, see “11.2.3 [Setting fstab.](#)”

### 11.3.2.2 Tuning file system

The GFS Shared File System allows change of the communication timeout value. Execute `sfcadm(8)` to change the timeout value on any one of the nodes where the file system is shared.



For details of `sfcadm(8)`, see [sfcadm\(8\)](#).

The following example shows how to set the timeout value to 180 seconds for the existing file

system (/dev/sfdsk/gfs01/volume01) using sfcadm(8).

```
# sfcadm -o CON_TIMEOUT=180 /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

### 11.3.3 Mount

Mount the file system after completing the GFS Shared File System changes.



For details on how to mount the GFS Shared File System, see “11.2.4 [Mount](#).”



## 11.4 Change (partition addition)

To add a file data partition (GFS Shared File System configuration change), perform the following tasks:

1. Unmount
2. Setting shared disk
3. Adding a file data partition
4. Mount



Note

[Linux2.4]

File data partitions cannot be added.

### 11.4.1 Unmount

Unmount the GFS Shared File System on all the nodes.



See

For details on how to unmount the GFS Shared File System, see “11.3.1 [Unmount.](#)”

### 11.4.2 Setting shared disk

The partition that will be added to GFS Shared File System must be GDS logical volume. The volume must be ACTIVE on each node.



Note

GDS logical volume should set up as follows.

- Set up the type of a disk class with which GDS logical volume belongs as shared.(Change GDS class attributes)
- Set all the nodes that share GFS Shared File System as the scope of the disk class to which logical volume belongs.(Change GDS class attributes)



See

For GDS disk class operations, see the applicable items under "Operation using Global Disk Services Management View" in the “*PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)*.”

For GDS logical volume operations, see the applicable items under "Operation using

Global Disk Services Management View" in the "PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)."

### 11.4.3 Partition addition

To add a partition as file data area, use `sfcadd(8)`. Execute the command on any one of the nodes where the file system is shared.



See

For details on `sfcadd(8)`, see [sfcadd\(8\)](#).



Note

If you add a partition to the file system that is not stopped properly, recovery the file system by executing the [sfcfsck\(8\)](#) command in advance.

How to add a file data partition (`/dev/sfdsk/gfs01/dsk/volume02`) to an existing file system (`/dev/sfdsk/gfs01/dsk/volume01`) by `sfcadd(8)` is shown below.

1. Check the configuration of the current file system.

```
# sfcinfo /dev/sfdsk/gfs01/dsk/volume01 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID special                                size Type mount
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)    14422 META -----
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)     5116 LOG -----
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)    95112 DATA -----
```

2. Add a file data partition (`/dev/sfdsk/gfs01/dsk/volume02`) as file data area.

```
# sfcadd -D /dev/sfdsk/gfs01/dsk/volume02 /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

3. Confirm that the file data partition has been added.

```
# sfcinfo /dev/sfdsk/gfs01/dsk/volume01 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID special                                size Type mount
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)    14422 META -----
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)     5116 LOG -----
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)    95112 DATA -----
  1 /dev/sfdsk/gfs01/dsk/volume02(1e757)    65512 DATA -----
```



Note

To add a file data partition, be aware of the following:

- A file data partition addition is not possible if doing so would exceed the maximum number of partitions (-o maxvol= $n$ ) for the file system, as specified by sfcmkfs(8).
- When file system's file data area size after adding partition exceeds the maximum file data area size specified by sfcmkfs(8) (-o maxdsz= $n$ ), a part of free area in file data area might not be able to be used because of management region shortage.

#### 11.4.4 Mount

After the GFS Shared File System change is completed, mount the file system.



See

For details on how to mount the GFS Shared File System, see “11.2.4 [Mount](#).”

## 11.5 Change (shared node information)

To add or delete a node from the nodes where the GFS Shared File System is shared, perform the following:

1. Unmount
2. Shared disk setting (addition)
3. Shared node information change
4. Setting fstab
5. Mount



Note

Addition of a node is not allowed if it exceeds the maximum size of the GFS Shared File System. See “1.7 [Upper Limits of the File System](#).”

A node where a primary MDS and secondary MDS are configured cannot be deleted from a group of shared nodes.

### 11.5.1 Unmount

To change shared node information, unmount the GFS Shared File System on all the nodes.



See

For details on how to unmount the GFS Shared File System, see “11.3.1 [Unmount](#).”

### 11.5.2 Shared disk setting (addition)

When adding a node to a group of nodes that share the file system, be aware of the following important information.



Note

The node must be cluster-configured.

The node must provide the GFS Shared File System that is registered in the management partition.

It is necessary to include the adding node in the scope of the disk class of the GDS logical volumes that are used as management partition and GFS Shared File System.



See

For information on how to add a node to a cluster system, see the “*PRIMECLUSTER Installation and Administration Guide (Linux)*”.

For information on how to operate a disk class to which the GDS logical volume belongs, see "Operation" "Operation using GDS Management View" of the *"PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)"*.

For information on how to add a node to a group of nodes that provide the GFS Shared File System, see "8.1.2 [Adding node configuration information to the management partition](#)" or "9.1.2 [Adding node configuration information to the management partition](#)."

### 11.5.3 Shared node information change

The GFS Shared File System stores information about nodes that share the file system in each partition to restrict access from nodes other than the nodes that share the file system.

The node information mainly contains the following information:

- Host ID
- Host name

To add and delete node information for the file system, use `sfcnode(8)`.



See

For details on the `sfcnode(8)` options, see [sfcnode\(8\)](#).

#### 11.5.3.1 Adding node information

Described below is the procedure for using `sfcnode(8)` to add node information (moony) to an existing file system (`/dev/sfdsk/gfs01/dsk/volume01`). Execute the command on any one of the nodes where the file system is shared.

1. Check that the target file system is unmounted on all nodes sharing the file system. You can do this by checking that "STOP" is displayed in all status fields of the `sfcinfo(8)` outputs.

```
# sfcinfo -n /dev/sfdsk/gfs01/dsk/volume01 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID  hostID   status  hostname
  1   80a4f75b STOP    sunny
```

2. Add the node information.

```
# sfcnode -a moony /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

3. Confirm that the node information has been added. You can do this by checking that the moony field is newly displayed.

```
# sfcinfo -n /dev/sfdsk/gfs01/dsk/volume01 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID  hostID   status  hostname
  1   80a4f75b STOP    sunny
  1   80960096 STOP    moony
```

4. Set the added node as MDS node.

```
# sfcadm -g ,moony /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

5. Check if the node to the node where an MDS is configured has been added.

If moony is displayed as MDS(S), the node has been added.

```
# sfcrcsinfo -m /dev/sfdsk/gfs01/dsk/volume01 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID  MDS/AC  STATE  S-STATE  RID-1  RID-2  RID-N  hostname
  1  MDS(P)  stop   -         0      0      0      sunny
  1  AC      stop   -         0      0      0      sunny
  1  MDS(S)  stop   -         0      0      0      moony
  1  AC      stop   -         0      0      0      moony
```

### 11.5.3.2 Deleting node information

Described below is the procedure for using `sfcnode(8)` to delete node information (moony) from an existing file system (`/dev/sfdsk/gfs01/dsk/volume01`). If you are deleting node information while the file system is unmounted, execute `sfcnode(8)` on a node that shares the target file system.

1. Check that the file system is unmounted in all nodes configuring the current file system and all nodes sharing the file system.

You can do this by checking that "STOP" is displayed in all status fields of the `sfcinfo(8)` outputs.

```
# sfcinfo -n /dev/sfdsk/gfs01/dsk/volume01 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID  hostID   status  hostname
  1  80a4f75b  STOP    sunny
  1  80960096  STOP    moony
```

2. Delete the node from the node where an MDS is configured

```
# sfcadm -g sunny /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

3. Check if the node to the node where an MDS is configured has been deleted.

If moony is not displayed as MDS(P) or MDS(S), the node has been deleted.

```
# sfcrcsinfo -m /dev/sfdsk/gfs01/dsk/volume01 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID  MDS/AC  STATE  S-STATE  RID-1  RID-2  RID-N  hostname
  1  MDS(P)  stop   -         0      0      0      sunny
  1  AC      stop   -         0      0      0      sunny
  1  AC      stop   -         0      0      0      moony
```

4. Delete the node information.

```
# sfcnode -d -h moony /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

5. Confirm that the node information has been deleted.

You can do this by checking that the moony field is not displayed in the sfcinfo(8) outputs.

```
# sfcinfo -n /dev/sfdsk/gfs01/dsk/volume01 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID  hostID    status  hostname
  1   80a4f75b  STOP    sunny
```

## 11.5.4 Setting fstab

In the GFS Shared File System, it is necessary to add a mount entry to `/etc/fstab` on all of the nodes that are sharing a file system. In addition, if a mount entry is added to `/etc/fstab` on the node that is not sharing a file system, the special file is not used as other file systems even if mistaking.

Add the GFS Shared File System to `/etc/fstab` of nodes that have been added.

If nodes are deleted, change the `/fstab` settings so that the GFS Shared File System will not be mounted.



[See](#)

For details on setting `/etc/fstab`, see “11.2.3 [Setting fstab.](#)”

## 11.5.5 Mount

After change of the shared node information is completed, mount the file system.



[See](#)

For details on how to mount the GFS Shared File System, see “11.2.4 [Mount.](#)”

## 11.6 Change (re-creating a file system)

To recover the GFS Shared File System or restore all the files from the backup file to clear up the fragment, perform the following file system re-creating procedure.

1. Unmount
2. Re-creating the file system
3. Mount

### 11.6.1 Unmount

To recreate the GFS Shared File System, unmount the file system.



See

For details on how to unmount the GFS Shared File System, see “11.3.1 [Unmount](#).”

### 11.6.2 Re-creating the file system

To re-create the file system, use `sfcmkfs(8)`. You can recreate the file system in the same configuration as before without having to delete it, using `sfcmkfs(8)` with the “-o force” option. Execute the command on any one of the nodes where the file system is shared.



See

For details on the `sfcmkfs(8)` options, see [sfcmkfs\(8\)](#).

The following is an example of using `sfcmkfs(8)` to re-create a file system with a single partition.

```
# sfcmkfs -o force,node=mikan,karin /dev/sfdsk/gfs01/dsk/volume01 <Enter>
Representative partition (meta-data, log, and data): /dev/sfdsk/gfs01/dsk/volume01
Shared hosts: mikan, karin
Primary MDS: mikan
Secondary MDS: karin
```



Note

When the file system is re-created, data of the previous file system will be deleted. Back up your data if necessary.



### 11.6.3 Mount

After re-creating of the GFS Shared File System is completed, mount the file system.



See

For details on how to mount the GFS Shared File System, see “11.2.4 [Mount](#).”

## 11.7 Change (MDS operational information)

To change the MDS operational information of the GFS Shared File System, perform the following tasks:

1. Unmount
2. Changing the MDS operational information
3. Mount

### 11.7.1 Unmount

To change the MDS operational information of the GFS Shared File System, unmount the file system.



See

For details on how to unmount the GFS Shared File System, see “11.3.1 [Unmount](#).”

### 11.7.2 Changing the MDS operational information

In the GFS Shared File System, information about all nodes that operate MDS is retained.

- Priority of nodes on which to place MDS as primary or secondary MDS

Use `sfcadm (8)` to change information about nodes on which MDS is placed.



See

For details on `sfcadm(8)` options, see [sfcadm\(8\)](#).

The following example shows how to change the priority of nodes where an MDS is configured to `karin` and `mikan`, using `sfcadm(8)`.

1. Check the current file system configuration.

```
# sfcrcsinfo -m /dev/sfdsk/gfs01/dsk/volume01 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID  MDS/AC  STATE  S-STATE  RID-1  RID-2  RID-N  hostname
  1  MDS(P)  stop   -         0       0       0  mikan
  1  AC      stop   -         0       0       0  mikan
  1  MDS(S)  stop   -         0       0       0  karin
  1  AC      stop   -         0       0       0  karin
```

You can check the shared nodes are `mikan` and `karin` from the result of `sfcrcsinfo - m` executed.

2. Change the priority of nodes where an MDS is configured.

```
# sfcadm -g karin,mikan /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

3. Check if the priority of nodes where an MDS is configured has been changed.

```
# sfcrcsinfo -m /dev/sfdsk/gfs01/dsk/volume01 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID  MDS/AC  STATE  S-STATE  RID-1  RID-2  RID-N  hostname
  1  MDS(P)  stop   -         0      0      0  karin
  1  AC      stop   -         0      0      0  karin
  1  MDS(S)  stop   -         0      0      0  mikan
  1  AC      stop   -         0      0      0  mikan
```

### 11.7.3 Mount

After change of MDS operational information is completed, mount the file system.



See

For details on how to mount the GFS Shared File System, see “11.2.4 [Mount](#).”

## 11.8 Deleting

To delete the GFS Shared File System, perform the following tasks:

1. Unmount
2. Setting fstab
3. Deleting the file system

### 11.8.1 Unmount

To delete the GFS Shared File System, unmount the file system. If there are any applications that are used for the file system, delete them as well.



For details on how to unmount the GFS Shared File System, see “11.3.1 [Unmount.](#)”

### 11.8.2 Removing the entry in /etc/fstab

To delete the GFS Shared File System, delete the file system from `/etc/fstab` of all the nodes.



For details on setting `/etc/fstab`, see “11.2.3 [Setting fstab.](#)”

### 11.8.3 Deleting the file system

To delete a file system that is not being used in the GFS Shared File System, use `sfcadm(8)` with the `-D` option specified. Execute the command on any one of the nodes where the file system is shared.



For details on the `sfcadm(8)` options, see [sfcadm\(8\)](#).

How to delete a file system using `sfcadm(8)` is shown below.

1. Check the current file system information.

```
# sfcinfo -a <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID special                                size Type mount
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)  14422 META -----
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)   5116 LOG -----
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)  95112 DATA -----
/dev/sfdsk/gfs02/dsk/volume01:
FSID special                                size Type mount
  2 /dev/sfdsk/gfs02/dsk/volume01(1e757)  14422 META -----
  2 /dev/sfdsk/gfs02/dsk/volume01(1e757)   5116 LOG -----
  2 /dev/sfdsk/gfs02/dsk/volume01(1e757)  95112 DATA -----
```

2. Delete the file system whose representative partition is /dev/sfdsk/gfs/dsk/volume01.

```
# sfcadm -D /dev/sfdsk/gfs02/dsk/volume01 <Enter>
```

3. Confirm that the file system has been deleted.

```
# sfcinfo -a <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID special                                size Type mount
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)  14422 META -----
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)   5116 LOG -----
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)  95112 DATA -----
```



# Chapter 12 File System Management

---

This chapter describes the procedures for managing the GFS Shared File System using basic commands.

To execute the procedure explained in this Chapter, a file system must have been created in advance.

For details on how to create a file system, see the following:

- “Chapter10 [File System Operations \(GUI\)](#)”
- “Chapter11 [File System Operations \(Command\)](#)”

## 12.1 File System Management Commands

The GFS Shared File System provides exclusive management commands while file system management commands are multipurpose to support various types of file system.

The GFS Shared File System also provides specific management command for its unique features.

**Table GFS Shared File System exclusive management commands**

Command	Description
sfcdf	Displays configuration information and status of use of the GFS Shared File System.
sfcfsck	Checks a GFS Shared File System for consistency and repairs it.
sfcmkfs	Creates a GFS Shared File System.
sfcmount	Mounts the GFS Shared File System on a local node.
sfcumount	Unmounts the GFS Shared File System on a local node.

**Table GFS Shared File System specific management commands**

Command	Description
sfcadd	Adds file data partitions.
sfcadm	Changes partition information setting.
sfcfrmstart	Starts sfcfrmd daemon on a local node.
sfcfrmstop	Stops sfcfrmd daemon on a local node.
sfcgetconf	Makes a backup of the management partition.
sfcinfo	Displays partition information.
sfcmntgl	Mounts the GFS Shared File System on all nodes.
sfcnode	Adds, deletes, and changes node configuration information.
sfcrcinfo	Displays file system information.
sfcsetup	Initializes the management partition, adds, deletes, and displays node information, displays a path of the management partition, and registers and displays the startup mode of the sfcfrmd daemon.
sfcstat	Reports statistical information of a GFS Shared File System.
sfcumntgl	Unmounts the GFS Shared File System from all nodes.



Note

[Linux2.4]

The sfcadd command cannot be used.

Commands of GFS Shared File System are classified as follows:

[ used in mounted file system ]

sfcumount, sfcstat

[ used in unmounted file system ]

sfcfsck, sfcmkfs(except -m), sfcmount

sfcadd, sfcadm, sfcfrmstart, sfcfrmstop, sfcnode, sfcsetup



[ used in both mounted and unmounted file system ]

sfcdf, sfcmkfs -m

sfcgetconf, sfcinfo, sfcmntgl\*1, sfcrcinfo, sfcumntgl

(\*1: An error occurs if the file system is mounted in all shared nodes.)

## 12.2 Checking a File System for Consistency and Repairing It

If a file system is damaged and its consistency is lost, for example, due to an automatic recovery error after a primary MDS failure, the file system must be checked and restored using `sfcsck(8)`. The GFS Shared File System provides the update log function to ensure high-speed recovery if an error such as a system failure occurs. If the update log function has been enabled, the file system can be repaired quickly regardless of the size of the file system. This is possible because of update log replay, which updates the un-updated portion of the meta-data located in the update log area.

By default, or when `"-o log"` is specified, `sfcsck(8)` repairs the file system by replaying the update log.

If the update log data has been physically damaged, `sfcsck(8)` does not execute update log replay, but automatically performs a full check on the file system. To meet the need for immediate system operation resuming, an option `"-o elog"` that avoids file system restoration while it provides update log replay. If this option is specified, `sfcsck(8)` terminates immediately without performing check and recovery when the update log data has been physically damaged. In this event, the file system cannot be mounted unless check and recovery is performed using `sfcsck(8)`. The mounting on such a file system should be attempted after it is restored through full checking without update log replay by the `"-o nolog"` option.

The following example repairs a file system with log replay.

```
# sfcsck /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

The following example performs a full check on the file system and repairs it without log replay.

```
# sfcsck -o nolog /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```



See

For details about `sfcsck(8)` options, see [sfcsck\(8\)](#) in this manual.

### 12.2.1 Action to be taken when fsck terminates abnormally

The following describes available solutions for `sfcsck(8)` abnormal termination.

#### 12.2.1.1 Memory allocation request error

The following message is displayed if `sfcsck(8)` fails in requesting for memory allocation for the internal table.

```
Can't allocate memory
```

Add a swap area.

### 12.2.1.2 File system configuration information acquisition failure

The following message is output if acquisition of the file system configuration information fails.

```
Can not connect to FsRM
other node information get error
```



See

Start the file system monitoring facility on all the nodes that provide the GFS Shared File System. See “9.2.4 [Starting sfcfmd daemon.](#)”

### 12.2.1.3 File system partition configuration data error

This message indicates that the command terminated abnormally because a mismatch was found in the partition configuration data for the GFS Shared File System partitions.

```
Can't open <device-name> <errno>
setup: Volume information error
setup: fsck quit due to unrecoverable error!
```

Use `sfcadm(8)` to recover the partition information.

The following example shows how to restore partition information on the “/dev/sfdsk/gfs01/dsk/volume01” device.

For a single partition, perform the following operation:

```
# sfcadm -r -a /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

For a multi-partition configuration, use `sfcinfo(8)` to check the partitions and then use `sfcadm(8)` to perform recovery using the representative partition.

```
# sfcinfo /dev/sfdsk/gfs01/dsk/volume01 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID special                                size  Type  mount
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)    25418 META  -----
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)     5120  LOG   -----
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)   232256 DATA  -----
  1 /dev/sfdsk/gfs01/dsk/volume02(1e757)   341778 DATA  -----
  1 /dev/sfdsk/gfs01/dsk/volume03(1e758)   578704 DATA  -----

# sfcadm -r /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```



See

In the result of `sfcinfo(8)` executed, the partition displayed the first will be the representative partition of the file system. See [sfcinfo\(8\)](#).

#### 12.2.1.4 Node addition not performed

---

The following message is displayed if a node cannot be added.

```
No node volume entry for localhost, file system access forbidden!
```

Execute `sfcfsck(8)` at the shared node of the file system.

#### 12.2.1.5 Irreparable file system destruction

---

The following message indicates that the file system is irreparable because of the GFS Shared File System data has been destroyed.

```
BAD SUPER BLOCK
BAD VOLUME INFORMATION
No Meta volume information available!
No Log volume information available!
Only found <num> data volume(s), total <num> in superblock!
```

If a backup of the file system is available, recover the file system from the backup.

#### 12.2.1.6 Operation error

---

The following message is displayed if there are problems in the parameter or the execution environment of `sfcfsck(8)`.

```
not super user
duplicate option
filesystem lock failed. errno(<error-number>)
<device-name> is a mounted file system
<device-name> is not for sfcfs
Can't check <device-name>
Can't open /etc/fstab
setmntent failed. errno(<error-number>)
fs_clean is not FSLOG. cannot log replay!
```

Confirm whether the parameter and the execution user of the command are correct or `/etc/fstab` and `/etc/mstab` exist.

#### 12.2.1.7 Repairing of file system is non-completion

---

The following message is displayed if the file system was not repaired completely.

```
***** PLEASE RERUN FSCK *****  
duplicate option  
<device-name>: UNEXPECTED INCONSISTENCY; RUN sfcfsck MANUALLY.  
Log Replay is failed.
```

Execute a full file system check using sfcfsck(8).

The following example shows how to perform check the file system on the "/dev/sfdsk/gfs01/dsk/volume01" device.

```
# sfcfsck -o nolog /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

### 12.2.1.8 Other messages

---

When the message which shows other abnormalities is outputted and sfcfsck(8) terminates abnormally, please tell your local Customer Support the output message of sfcfsck after collecting the diagnostic data with fjsnap(8).

## 12.3 Extending a File System

The GFS Shared File System can increase the size of an existing file system without saving or restoring data.



Note

[Linux2.4]

A file system cannot be extended without saving and restoring data.

Use the `sfcadd(8)` command to enlarge the file system. To expand the file system by adding file data partitions, be sure that the file system is being unmounted.



See

For the execution procedure using Operation Management View, see “10.1.3 [Change \(partition addition\)](#)” For the execution procedure using line commands, see “11.4 [Change \(partition addition\)](#).”



Note

If you schedule an expansion of the file system, specify the expanding maximum file data area size (`-o maxdsz=n`) argument of `sfcmkfs(8)` when creating the file system. If the maximum data area size of the file system is not specified during file system creation, the resource that is able to manage the file data area's total size of all specified partition is automatically reserved. So, when the file system is expanded, managed resources might be insufficient. If the free file data area is not fragmented, the resources will not be insufficient. If there are too many fragments in the file, part of free area may not be used.



Information

If managed resources are insufficient, the following message will be output to the console:

```
NOTICE: sfcfs_mds:3004: fsid: too much fragment (extent)
```



See

For corrective action of the above message, see “A.2.12 [Information messages \(MDS \(sfcsmg daemon\)\)](#).”

## 12.4 Displaying File System Information

### 12.4.1 Acquiring file system information

Information about a file system, including the usage status of disk blocks, the state of free disk blocks, and the number of files, can be acquired using `df(1)` or `sfcdf(8)`.

- The following information items is displayed for a file data area:
  - Total number of blocks and number of free blocks

The following message specific to the GFS Shared File System is output with `sfcdf(8)`.

- The following information is displayed for a meta-data partition:
  - Use of i-nodes (number of i-nodes, number of free i-nodes)
  - Free extent status (maximum and unused leaves)
  - V-data usage status(maximum and unused V-data blocks)
- Only the number of assigned blocks is displayed for an update log area.

The following example shows how to display the status of the file system using `df(1)` and `sfcdf(8)`.

```
# df -k /mnt <Enter>
Filesystem          1K-blocks      Used Available Use% Mounted on
/dev/sfdsk/gfs/dsk/volume01
                        4684576  2543704  1672416  61% /mnt
# sfcdf v /dev/sfdsk/gfs01/dsk/volume01 <Enter>
Filesystem: /mnt
                inodes    free  vdata  free   leaf   free   Type
/dev/sfdsk/gfs01/dsk/volume01
                585524  580417  195174  187973  234208  227772  META
                kbytes
/dev/sfdsk/gfs01/dsk/volume01
                51197
                kbytes    used   free  %used
/dev/sfdsk/gfs01/dsk/volume01
                4684576  2543704  2140872   54%
                                DATA
```



See

For details about `df(1)`, see `df(1)` in the online manual.

For details about `sfcdf(8)` options, see [sfcdf\(8\)](#) in this manual.

### 12.4.2 Displaying partition/node information

The partition information about the partition set configuring the GFS Shared File System can be displayed using `sfcinfo(8)`. Node information can also be displayed.

The following example shows how to display the partition and node information for a file system using `sfcinfo(8)`.

```
# sfcinfo /dev/sfdsk/gfs01/dsk/volume01 <Enter>
FSID special                                size Type mount
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)  14422 META -----
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)   5116 LOG -----
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)  95112 DATA -----
# sfcinfo -n /dev/sfdsk/gfs01/dsk/volume01 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID hostID  status  hostname
  1  80804266  RUN    mikan
  1  807e7937  RUN    karin
```



See

For details about `sfcinfo(8)` options, see [sfcinfo\(8\)](#) in this manual.

### 12.4.3 Displaying file system management state

The management state of the GFS Shared File System can be checked using `sfcrcsinfo(8)`. Check the information displayed by this command before mounting file systems, unmounting file systems, or changing file system configuration.

The following example shows how to check the management state using `sfcrcsinfo(8)`.

```
# sfcrcsinfo -am <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID MDS/AC STATE S-STATE RID-1 RID-2 RID-N hostname
  2 MDS(P) run - 0 0 0 shoga
  2 AC run - 0 0 0 shoga
  2 MDS(S) wait - 0 0 0 ichou
  2 AC run - 0 0 0 ichou
```

The meaning of `sfcrcsinfo(8)` is as follows:

- MDS/AC
  - MDS(P): The primary MDS on a definition
  - MDS(S): The secondary MDS on a definition
  - AC : The node that shares a file system
- STATE/SUB-STATE (MDS)
  - run - : The primary MDS is running
  - wait - : The secondary MDS is waiting for failure recovery of the primary MDS
  - stop - : MDS stopped
  - none - : no relation with MDS
  - If SUB-STATE is other than "-", MDS is in state-transition.
- STATE/SUB-STATE (AC)
  - run - : file system is in mounted
  - stop - : file system is in unmounted
  - If SUB-STATE is other than "-", AC is in state-transition.





See

For details about `sfcscinfo(8)` options, see [sfcscinfo\(8\)](#) in this manual.

## 12.5 How to set GFS Shared File System applications as cluster applications

To set GFS Shared File System applications as cluster applications, switch only applications with the GFS Shared File System mounted on running nodes.

### 12.5.1 To set GFS Shared File System applications as cluster application

To set GFS Shared File System applications as cluster applications, it is necessary to set an RMS environment first.

- Registering an RMS host name in `/etc/hosts` on each node  
Define each node where RMS is configured in `/etc/hosts` so that RMS will be recognized the host name with RMS.

```
192.168.0.1 sunny sunnyRMS
192.168.0.2 moony moonyRMS
```

- Setting of `cluster.config` file or `.hosts` file with each node  
In order to distribute RMS composition definition information to each node, an RMS wizard uses CF remote services or `rcp` (1). For this reason, a setup of the RMS host name to a setup, `.rhost`, or `hosts.equiv` of a `cluster.config` file is needed.



See

For details, see “General configuration procedure” of the “*PRIMECLUSTER Reliant Monitor Services (RMS) with Wizard Tools (Solaris, Linux) Configuration and Administration Guide*”

### 12.5.2 Notes on cluster application settings

The GFS Shared File System cannot be defined as **Fsystem** resource of the cluster application. Moreover, the disk class to which the GDS volume that is used as management partition or GFS Shared File System belongs cannot be defined as **Gds** resource of the cluster application. If you want to use the application that use the GFS Shared File System as cluster applications, perform the procedure described in “12.5.3 [Procedure flow chart for setting GFS Shared File System applications as cluster applications.](#)”

Mount information of the GFS Shared File System must be registered in `/etc/fstab` and “noauto” must be specified in the “mount options field”.

Moreover, “noatrc” must not be specified in “mount options” of the file system registered in `/etc/fstab` to do automatic mount after processing revitalization of the GFS Shared File System.

### 12.5.3 Procedure flow chart for setting GFS Shared File System applications as cluster applications

You can set GFS Shared File System applications as cluster applications using the following setup flow chart:

**Table The flow chart for setting GFS Shared File System applications as cluster applications**

Shared operation (to be executed on node A)	Node A (active node)	Node B (standby node)
Execution of automatic resource registration (See "Procedure 1" in "12.5.4.")	-	-
-	GDS volume creation (See "Procedure 2" in "12.5.4.") Creating the GFS Shared File System management partition (See "Procedure 3" in "12.5.4.")	-
-	Node registration to the GFS Shared File System (See "Procedure 3" in "12.5.4.")	Node registration to the GFS Shared File System (See "Procedure 3" in "12.5.4.")
-	Creating the GFS Shared File System (See "Procedure 3" in "12.5.4.")	-
-	Adding the relevant GFS Shared File System to /etc/fstab (See "Procedure 4" in "12.5.4.")	Adding the relevant GFS Shared File System to /etc/fstab (See "Procedure 4" in "12.5.4.")
Setting cluster applications (See "Procedure 5" in "12.5.4."), (See the " <i>PRIMECLUSTER Installation and Administration Guide (Linux)</i> " and " <i>PRIMECLUSTER Reliant Monitor Services (RMS) with Wizard Tools (Solaris, Linux) Configuration and Administration Guide</i> ")	-	-
-	Start up RMS and check settings (See "Procedure 6" in "12.5.4.")	Start up RMS and check settings (See "Procedure 6" in "12.5.4.")

### 12.5.4 Procedure for setting GFS Shared File System applications as cluster applications

This section describes how to set GFS Shared File System applications as cluster applications

when CIP settings are completed.



See

For details on setting, see the “*PRIMECLUSTER Installation and Administration Guide (Linux)*”, “*PRIMECLUSTER Reliant Monitor Services (RMS) with Wizard Tools (Solaris, Linux) Configuration and Administration Guide*”, and the “*PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)*”.

### Procedure 1. Execution of automatic resource registration (common operation)

When automatic resource registration of disk equipment is not carried out yet, the following command is executed with a node, and a disk device is registered as a cluster resource.

```
# /etc/opt/FJSVcluster/bin/clautoconfig -r -n <Enter>
```

### Procedure 2. GDS volume creation (node A (active node), node B (standby node))

Create the GDS volume using the following method.

GFS Shared File Systems require GDS volumes for management partitions. A disk class to which the GDS volume belongs as the management partition is different than that of the GDS volume that is used as a GDS resource of a cluster application.

The following explanation assumes the node A (active node) host name to be sunny and the node B (standby node) host name to be moony.

#### [When a mirror volume is to be created]

- Register a disk in the disk class on sunny by using the `sdxdisk` command.  
In the cluster system, specify a node name as the scope of the `-a` option and then specify shared as the class type.

```
sunny# sdxdisk -M -c gfs -d sda=DISK1,sdb=DISK2 -a scope=sunny:moony, type=shared <Enter>
sunny# sdxdisk -M -c gfs01 -d sdc=DISK3,sdd=DISK4 -a scope=sunny:moony, type=shared
<Enter>
```

- On sunny, disk connection to the mirror disk group is performed with the `sdxdisk` command.

```
sunny# sdxdisk -C -c gfs g grp0001 -d DISK1,DISK2 <Enter>
sunny# sdxdisk -C -c gfs01 -g grp0002 -d DISK3,DISK4 <Enter>
```

- On sunny, GDS volume creation is performed with the `sdxvolume` command.  
Note that a volume of at least 40 megabytes is necessary for the management partition of the GFS Shared File System.

```
sunny# sdxvolume -M -c gfs -g grp0001 -v control -s 81920 <Enter>
sunny# sdxvolume -M -c gfs01 -g grp0002 -v volume01 -s 17563648 <Enter>
```

- On moony, activation of the GDS volume is performed with the `sdxvolume` command.

```
moony# sdxvolume -N -c gfs -v control <Enter>
moony# sdxvolume -N -c gfs01 -v volume01 <Enter>
```

**[When a single volume is to be created]**

- On sunny, disk registration in the disk class is performed with the `sdxdisk` command. In the cluster system, specify a node name as the scope of the `-a` option and then specify shared as the cluster type.

```
sunny# sdxdisk -M -c gfs -d sda=DISK1:single -a scope=sunny:moony,type=shared <Enter>
sunny# sdxdisk -M -c gfs01 -d sdb=DISK2:single -a scope=sunny:moony,type=shared <Enter>
```

- On sunny, GDS volume creation is performed with the `sdxvolume` command. Note that a volume of at least 40 megabytes is necessary for the management partition of the GFS Shared File System.

```
sunny# sdxvolume -M -c gfs -d DISK1 -v control -s 81920 <Enter>
sunny# sdxvolume -M -c gfs01 -d DISK2 -v volume01 -s 17563648 <Enter>
```

- On moony, activation of the GDS volume is performed with the `sdxvolume` command.

```
moony# sdxvolume -N -c gfs -v control <Enter>
moony# sdxvolume -N -c gfs01 -v volume01 <Enter>
```

**Procedure 3. GFS Shared File System creation (node A (active node), node B (standby node))**

Create the GFS Shared File System on either one of the nodes.

Use `sfcmkfs(8)` to create the GFS Shared File System.

When the GFS Shared File System is created for the first time after installation, activation of the GFS Shared File System is necessary before file system creation.

- Create a management partition for the GFS Shared File System on either one of the nodes.

```
# sfcsetup -c /dev/sfdsk/gfs/dsk/control <Enter>
```

- Register node information in the management partition of the GFS Shared File System on each node.

```
sunny# sfcsetup -a /dev/sfdsk/gfs/dsk/control <Enter>
moony# sfcsetup -a /dev/sfdsk/gfs/dsk/control <Enter>
```

- Activate the GFS Shared File System on each node.

```
sunny# sfcfrmstart <Enter>
moony# sfcfrmstart <Enter>
```

- Create the GFS Shared File System on either one of the nodes.

```
# sfcmkfs -o node=sunny,moony /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

#### **Procedure 4. Adding the relevant GFS Shared File System to /etc/fstab (node A (active node), node B (standby node))**

Add the mount information for the relevant GFS Shared File System to /etc/fstab on each node. Be sure to specify "noauto" in the "mount options" field as a parameter of the mount information to be added.

```
/dev/sfdsk/gfs01/dsk/volume01 /sfcfs sfcfs rw,noauto 0 0
```

#### **Procedure 5. Setting the definition of switchover of the RMS application as the RMS configuration (node A (active node), node B (standby node))**

Set up the RMS configuration by using the RMS wizard, as follows:

1. Start the RMS wizard by executing the hvw command.
2. Create the RMS application.
  - Select "Application-Create" on the main RMS management menu.
  - Select "GENERIC" on the application type selection menu.
  - Select "ApplicationName" on the GENERIC wizard menu and change the RMS application name.
  - Select "Machines+Basics" on the GENERIC wizard menu, add another node to operate the RMS application by using "AdditionalMachine" on the Machines+Basics menu, and then set the switchover attribute of the RMS application to "HostFailure|ResourceFailure|ShutDown" by executing "AutoSwitchOver".
  - And then add StartCommands and CheckCommands by using "CommandLines" on the GENERIC wizard menu.
3. Create the RMS configuration definition of the RMS application.

Select "Configuration-Generate" from the main RMS management menu.
4. Activate the RMS configuration definition of the RMS application.

Select "Configuration-Activate" on the main RMS management menu.
5. End the RMS wizard.



#### **Note**

In GFS Shared File System, the following measures are necessary in order to always use GDS volume by active state.

- For cluster application settings, a GDS resource "Gds:Global-Disk-Services" must not be registered in the GDS volume of the GFS Shared File System.
- For cluster application settings, an Fsystem resource "LocalFileSystems" must not be registered in the GFS Shared File System.
- For GDS volume, must not execute /usr/opt/reliant/bin/hvgsdsetup.

#### **Procedure 6. Confirming settings (node A (active node), node B (standby node))**

After mounting the GFS Shared File System on each node, start RMS and then confirm whether the settings of the /etc/fstab file and the RMS application are proper, paying attention to the following points:

- Whether the GFS Shared File System can be mounted on both nodes according to the /etc/fstab file descriptions.
- Whether the RMS application switches over to a standby node at failover of the active node.



Note

If mounting of the GFS Shared File System fails, the following may be the cause of the failure (apply the indicated solution):

- The type of the file system specified in the "/etc/fstab" file is incorrect  
Solution: Correct the /etc/fstab file.
- The GDS volume is not ACTIVE  
Solution: Activate the GDS volume.

## 12.5.5 Setup flow chart of adding file data partitions to GFS Shared File Systems of cluster applications

The following setup flow chart shows how to add file data partitions to GFS Shared File Systems of cluster applications.

**Table The flow chart of adding file data partitions to GFS Shared File Systems of cluster applications**

Common operation (to be executed on node A)	Node A (active node)	Node B (standby node)
-	Stop RMS. (See "Procedure 1" in "12.5.6.")	Stop RMS. (See "Procedure 1" in "12.5.6.")
-	Add a shared disk device as the GDS volume. (See "Procedure 2" in "12.5.6.") Add a file data partition to the GFS Shared File System. (See "Procedure 3" in "12.5.6.")	-
-	Start RMS. (See "Procedure 4" in "12.5.6.")	Start RMS. (See "Procedure 4" in "12.5.6.")

## 12.5.6 Setup procedure of adding file data partitions to GFS Shared File Systems of cluster applications

The following setup flow chart shows how to add file data partitions to GFS Shared File Systems of cluster applications.



Note

[Linux2.4]

File data partitions cannot be added.



See

For details on setting, see the “*PRIMECLUSTER Installation and Administration Guide (Linux)*”, “*PRIMECLUSTER Reliant Monitor Services (RMS) with Wizard Tools (Solaris, Linux) Configuration and Administration Guide*”, and the “*PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)*”.

### **Procedure 1. Stopping RMS (node A (active node), node B (standby node))**

If RMS is activated, stop RMS on each node.

### **Procedure 2. GDS volume creation (node A (active node), node B (standby node))**

See “12.5.4 [Procedure 2. GDS volume creation \(node A \(active node\), node B \(standby node\)\)](#).”

### **Procedure 3. Adding a file data partition to a GFS Shared File System (node A (active node))**

Add a file data partition to the relevant GFS Shared File System from an active node with the `sfcadd(8)` command.

```
sunny# sfcadd -D /dev/sfdsk/gfs01/dsk/volume02 /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

### **Procedure 4. Starting up RMS (node A (active node), node B (standby node))**

Activate RMS on each node.



## 12.6 How to start up CF from GUI when a GFS Shared File System is used

This section describes how to start up CF from GUI after stopping it on all the nodes where a GFS Shared File System is used.

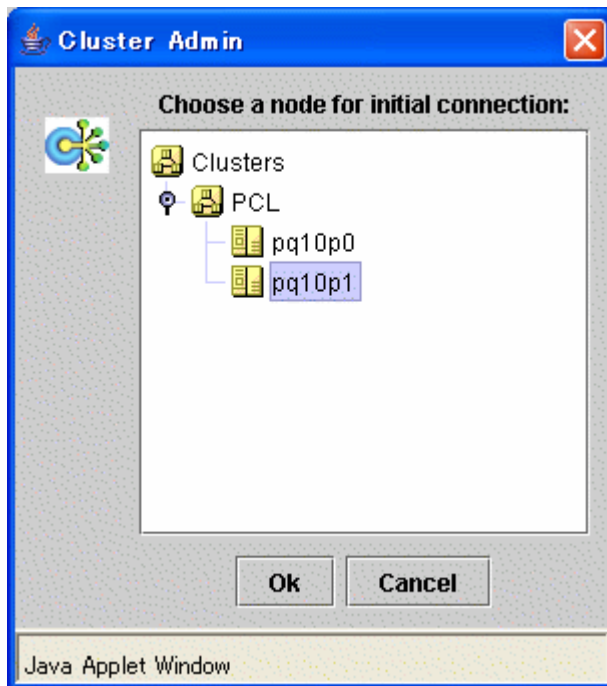
The two start modes of the `sfcfrmd` daemon of the GFS Shared File System are **wait** (default) and **wait\_bg**.

If **wait** is selected, starting the GFS Shared File System will fail because a quorum does not exist until CF is activated on all the nodes. If you need to start CF from GUI when the CF is stopped on all the nodes, follow the steps below.

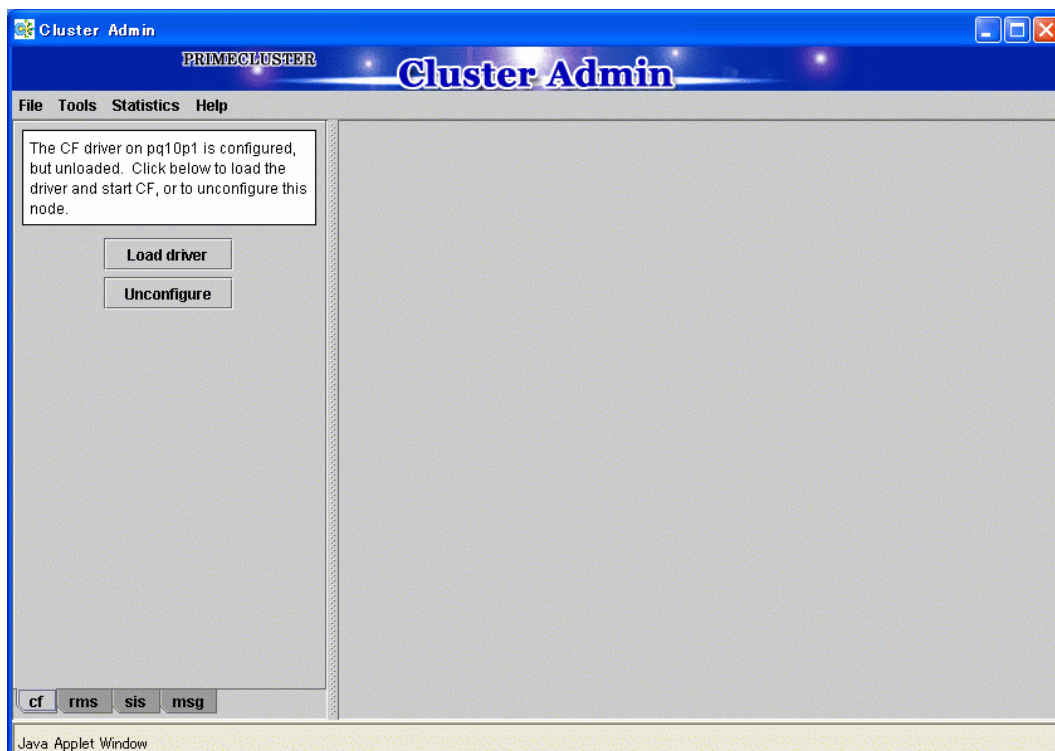


For information on how to start up CF, see "Starting CF" of the *"PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide"*.

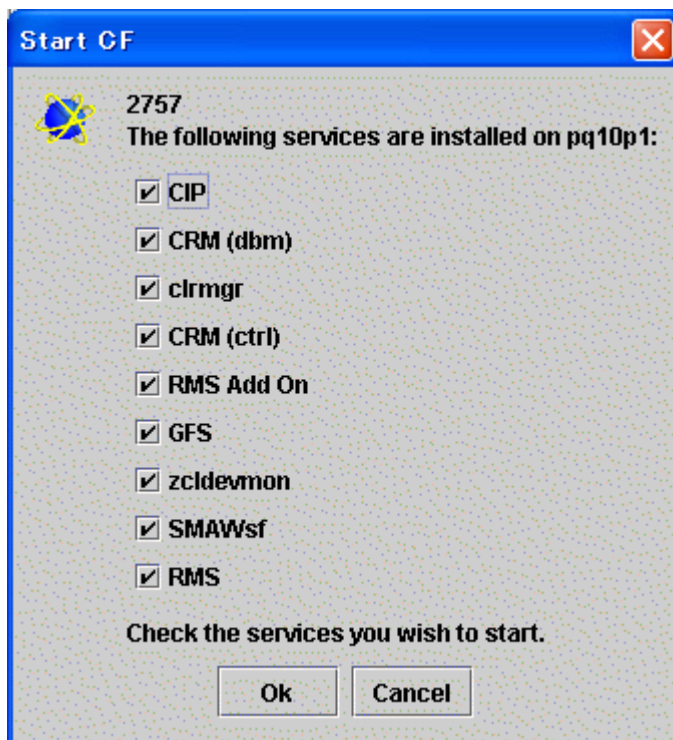
1. Select the "Cluster Admin" menu on the Web-Based Admin View operation menu. Select the node where CF will be started, and click <OK>.



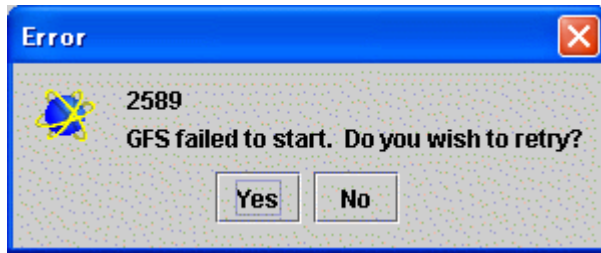
2. Click <Load driver> then activate the CF driver.



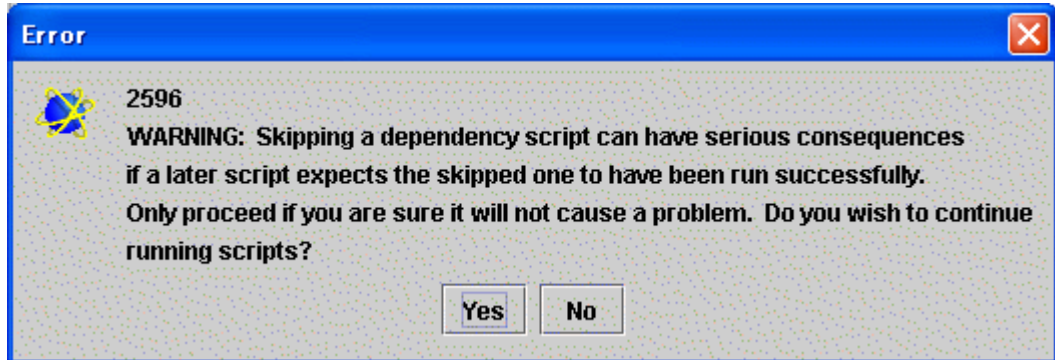
3. The "Start CF" window will pop up. Click <OK> to start up CF.



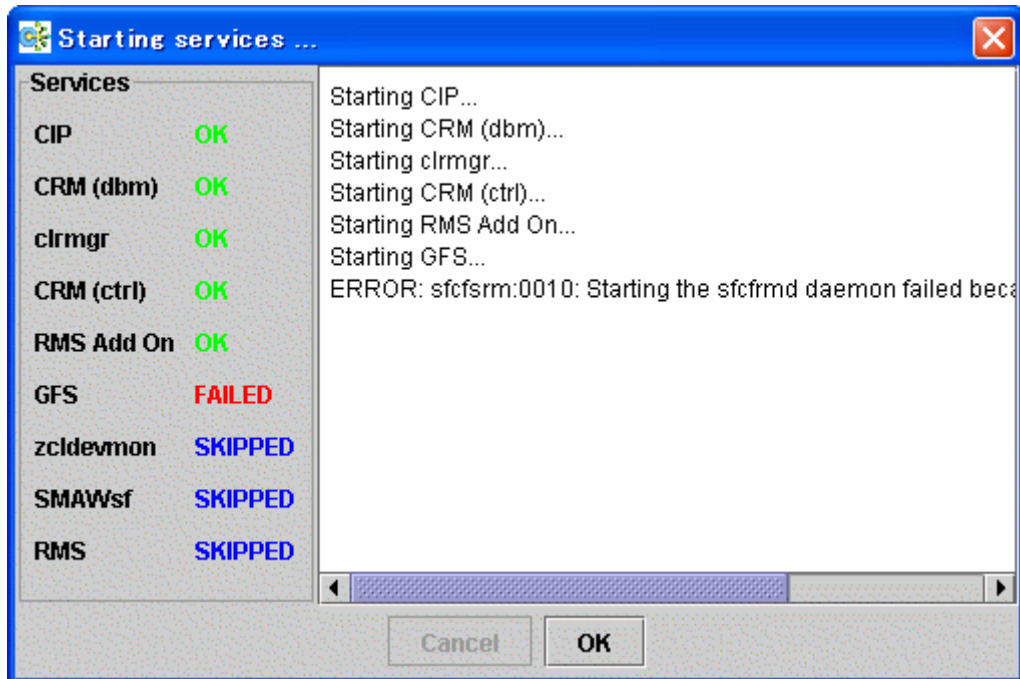
4. Since CF is not activated on all the nodes, GFS startup fails then the "Error" window will pop up. Click <No> then cancel the GFS startup processing.



5. If the GFS startup is cancelled, the "Error" window will pop up again. Click <No> then cancel the script processing.



6. Check if all the services before GFS have been activated then click <OK>.



7. Repeat operations from step 1 to 6 on each cluster node then activate all the services before GFS.



Note

On the node where CF is activated lastly, GFS startup will succeed because CF has been activated on all the nodes.

8. On any node that cancelled the GFS startup processing, stop CF and restart up CF.



See

For information on how to stop CF, see "Stopping CF" of the *"PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide"*.

9. Execute Step 8 then activate all the services after GFS on all the nodes where GFS startup is cancelled.

# Chapter 13 File System Backing-up and Restoring

---

---

This chapter describes how to backing-up and restoring data in the GFS Shared File System.

## 13.1 Type of Backing-up and Restoring

The following describes the backing-up and restoring of the GFS Shared File System using.

- Backing-up and restoring file by file
  - General-purpose backing-up tools not dependent on the file system structure (ArcServe/OPEN, etc.)
  - Standard Linux commands `cpio(1L)` and `tar(1)`
- Backing-up and restoring entire file system
  - Standard Linux commands `dd (1)`



Note

`dump(8)` etc. of `ext2` cannot be used to backup the GFS Shared File System since it depends on the file system configuration.

The following describes the backing-up and restoring data of the GFS Shared File System in this Chapter.

- Backing-up and restoring data using Standard Linux commands : `cpio(1L)`, `tar(1)` and `dd(1)`.

## 13.2 Backing-up by Standard Linux commands

### 13.2.1 Backing-up file by file

To backup a single file or all files under the directory while it is mounted, use `cpio(1L)` or `tar(1)`.



See

For details about `cpio(1L)` and `tar(1)`, see the online manual.

The following are examples of backing-up on tape using `cpio(1L)` and `tar(1)`.

- Backing-up method with `cpio(1L)`

```
# cd /userdata <Enter>
# find . -depth -print | cpio -oc > /dev/st0 <Enter>
```

- Backing-up method with `tar(1)`

```
# cd /userdata <Enter>
# tar cvf /dev/st0 . <Enter>
```



Note

Tapes used for data backup should be labeled for identifying the backing-up method. `cron(8)` can schedule backing-up startup.

### 13.2.2 Backing-up entire file system

To backup the GFS Shared File System in file system unit, use `dd(1)`. The following describes the backing-up procedure using `dd(1)`.



See

For details about `dd(1)`, see the online manual.

Entire-file-system backing-up allows backing-up of the entire file system more quickly than file-by-file backing-up. However, a file system backed up with this method cannot be restored on a file-by-file basis during restoring.

Before executing backing-up, use the following procedure to check the partition information for the desired GFS Shared File System. Estimate the backing-up media capacity required for backing-up and the number of required media and then unmount of the GFS Shared File System.

- For a single partition configuration

Use `sfcinfo(8)` to display partition information and check that the file system has only a single

partition (same special file names) and that the capacity of the tape is sufficient. The size of the partition can be estimated by adding 1 megabyte to the sum of the values displayed in the size field (in kilobytes).

Example: In the following example, a file system with a single partition configuration is backed up.

```
# sfcinfo /dev/sfdsk/gfs01/dsk/volume01 <Enter>
FSID special                                size Type mount
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)    14422 META -----
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)     5116 LOG -----
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)    95112 DATA -----
# dd if=/dev/sfdsk/gfs01/dsk/volume01 of=/dev/st0 bs=1024k <Enter>
```

- For a multi-partition configuration

dd(1) can handle one partition at a time. For a multi-partition configuration, therefore, the partitions must be backed up one at a time. Use sfcinfo(8) to check the partition configuration then backup each partition with the same procedure as used for a single partition configuration.

Example: In the following example, a file system with two partitions (file data area addition) is backed up.

```
# sfcinfo /dev/sfdsk/gfs01/dsk/volume01 <Enter>
FSID special                                size Type mount
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)    14422 META -----
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)     5116 LOG -----
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)    95112 DATA -----
  1 /dev/sfdsk/gfs01/dsk/volume02(1e757)    95112 DATA -----
# dd if=/dev/sfdsk/gfs01/dsk/volume01 of=/dev/st0 bs=1024k <Enter> -> Tape 1
Tape change
# dd if=/dev/sfdsk/gfs01/dsk/volume02 of=/dev/st0 bs=1024k <Enter> -> Tape 2
```



Note

- All the partitions making up the desired GFS Shared File System must be backed up. Avoid backing-up and storing only some of the partitions.
- The tapes used for backups must be labeled so that the backed up partitions can be identified. They must then be stored as a set.



Note

dd(1) does not support multi-tape volumes. If the file system is too large to fit on a single tape, data needs to be divided and backed up. In such cases, set bs (block length) and count (number of blocks) and increase skip (input-side offset (number of blocks) ) by the value of count.



Example: In the following example, a partition is backed up in 1 gigabyte units.

```
# dd if=/dev/sfdsk/gfs01/dsk/volume01 of=/dev/st0 bs=1024k count=1024 <Enter> -> Tape
1
  Tape change
# dd if=/dev/sfdsk/gfs01/dsk/volume01 of=/dev/st0 bs=1024k count=1024 skip=1024 <Enter>
-> Tape 2
  Tape change
# dd if=/dev/sfdsk/gfs01/dsk/volume01 of=/dev/st0 bs=1024k count=1024 skip=2048 <Enter>
-> Tape 3
  Tape change
# dd if=/dev/sfdsk/gfs01/dsk/volume01 of=/dev/st0 bs=1024k count=1024 skip=3072 <Enter>
-> Tape 4
...

```

## 13.3 Restoring by Standard Linux commands

The following describes the procedure for restoring a file system from the backup tapes prepared as described earlier.

Two restoring methods are available:

- Restoring file by file using the appropriate Standard Linux commands
- Restoring by file system using dd (1)

### 13.3.1 File-by-file restoring

Use cpio (1L) or tar (1) to restore files from the backup tape to the disk.



[See](#)

For details about cpio(1L) and tar(1), see the online manual.

The following describes an example of restoring from a tape.

- Method for restoring using cpio(1L)

```
# cd /userdata <Enter>
# cpio -icdm < /dev/st0 <Enter>
```

- Method for restoring using tar(1)

```
# cd /userdata <Enter>
# tar xvf /dev/st0 <Enter>
```

Restoring from a backup tape must be performed using the same command that was used for backing-up.

### 13.3.2 Entire-file-system restoring

Restore each partition saved on a backup tape onto the disk using dd(1).

Before executing restoring, unmount the desired GFS Shared File System from all the nodes using the file system, and unmounted of the file system.

- For a single partition configuration  
Example: In the following example, a file system with a single partition configuration is restored.

```
# dd if=/dev/st0 of=/dev/sfdsk/gfs01/dsk/volume01 bs=1024k <Enter>
```

- For a multi-partition configuration  
Example: In the following example, a file system with two partitions (file data area addition) is restored.

```
# dd if=/dev/st0 of=/dev/sfdsk/gfs01/dsk/volume01 bs=1024k <Enter> <- Tape 1
Tape change
# dd if=/dev/st0 of=/dev/sfdsk/gfs01/dsk/volume02 bs=1024k <Enter> <- Tape 2
```

dd(1) does not support multi-tape volumes. To restore a file system backed up as separate blocks, specify the same values for the bs and count parameters as for where specified for the backup. For seek, specify the same value that was specified for skip.

Example: In the following example, a file system that was backed up in 1 gigabyte units is restored.

```
# dd if=/dev/st0 of=/dev/sfdsk/gfs01/dsk/volume01 bs=1024k count=1024 <Enter> <- Tape
1
Tape change
# dd if=/dev/st0 of=/dev/sfdsk/gfs01/dsk/volume01 bs=1024k count=1024 seek=1024 <Enter>
<- Tape 2
Tape change
# dd if=/dev/st0 of=/dev/sfdsk/gfs01/dsk/volume01 bs=1024k count=1024 seek=2048 <Enter>
<- Tape 3
Tape change
# dd if=/dev/st0 of=/dev/sfdsk/gfs01/dsk/volume01 bs=1024k count=1024 seek=3072 <Enter>
<- Tape 4
...
...
```

## 13.3.3 Set up after Restoration

### 13.3.3.1 Resetting the partition information

It is necessary to change management information only when restoring it to a partition different from the backup because it enters the state with different partition information in the medium by the following procedures. It is not necessary to work because there is no change in partition information in the medium when restoring it to quite the same partition as the backup.

By the following ways, if the GFS Shared File System is restored to a partition that is different from a backup, it is necessary to change management information because partition information is not corresponding to an actual partition composition.

- Restoring to a partition that differs from the backup source with the dd(1) command

Use the sfcadm(8) command to reset the partition information.

If the GFS Shared File System is restored to a partition that is different from a backup, it differs according to the procedure of restoration is whether the partition at the restoration destination is GFS Shared File System. Each procedure is shown as follows.

1) When restoring the GFS Shared File System to an unused partition

The following shows how to reset the partition information with sfcadm(8) after you have restored the file system that consists of the three partitions to another partition (/dev/sfdsk/gfs99/dsk/volume01, /dev/sfdsk/gfs99/dsk/volume02, /dev/sfdsk/gfs99/dsk/volume03) that is different from the creation source. Note that the representative partition is /dev/sfdsk/gfs99/dsk/volume01, the port name is sfcfs-1 and

that the shared nodes are host01, host02.

```
# sfcadm -m host01,host02 -g host01,host02 p sfcfs-1,sfcfs-1
/dev/sfdsk/gfs99/dsk/volume01,/dev/sfdsk/gfs99/dsk/volume02,/dev/sfdsk/gfs99/dsk/volum
e03 <Enter>
```

2) When restoring the GFS Shared File System to a partition in use

You can set the partition information by executing `sfcadm(8)` after restoring the file system that consists of three partitions to the partitions; `/dev/sfdsk/gfs99/dsk/volume01`, `/dev/sfdsk/gfs99/dsk/volume02`, and `/dev/sfdsk/gfs99/dsk/volume03`. In these partitions, the file system in the same configuration exists. The representative partition is `/dev/sfdsk/gfs99/dsk/volume01`, and the port name and shared node are the same.

```
# sfcadm
/dev/sfdsk/gfs99/dsk/volume01,/dev/sfdsk/gfs99/dsk/volume02,/dev/sfdsk/gfs99/dsk/volum
e03 <Enter>
```

Note that the state of the file system creation for the restoration destination can be confirmed with `sfcinfo(8)`.



For details on `sfcinfo(8)`, see [sfcinfo\(8\)](#).

For details on `sfcadm(8)`, see [sfcadm\(8\)](#).



If nodes where the file system is shared are different before and after backup or restore, change the sharing node settings.

### 13.3.3.2 Repairing the file system

---

If you attempt to backup file systems that are mounted in units of file systems, a file access may occur while backup is being performed, such that an inconsistency occurs in the backup content.

To repair this state, the administrator must execute a file system consistency check and perform a repair with `sfcfsck(8)`. If no inconsistency occurs, `sfcfsck(8)` will be completed in several seconds to one minute.

An example of file system repair is shown below. The representative partition is `/dev/sfdsk/gfs99/dsk/volume01`. Before executing the command, be sure to check that the file system is not mounted on all the nodes.

```
# sfcfsck -y /dev/sfdsk/gfs99/dsk/volume01 <Enter>
```



For details on `sfcfsck(8)`, see [sfcfsck\(8\)](#).



## Chapter 14 Tuning

---

This chapter describes how to use a variety of utilities to optimize and make effective use of the GFS Shared File System.

## 14.1 Tuning Parameters

This section describes the tuning parameter of the MDS(Meta Data Server) of the GFS Shared File System.

### 14.1.1 Amount of Cache

It is possible to tune the following items:

- Amount of extent-based management information to be cached in memory (SFCFS\_NCACHE\_EXTENT)
- Amount of directory information to be cached in memory (SFCFS\_NCACHE\_DIRECTORY)
- Amount of i-nodes on the disk to be cached in memory (SFCFS\_NCACHE\_INODE)

These values can be specified using `sfcadm (8)`.

For each file system, an area with a size equal to the specified value multiplied by 1 kilobyte is reserved for the extent-based management information and for the directory information, and an area with a size equal to the specified value multiplied by 4 kilobytes is reserved for i-nodes. All of these areas are in the MDS process space.

By default, 2 megabytes (2048) of memory is used for caching extent management information, 10 megabytes (10240) of memory is used for caching directory information, and 8 megabytes (8192) of memory is used for caching i-node information.

If the size of a directory exceeds the directory cache's size, performance of file creation in the directory or reference will fall. When a large directory is created, we recommend strongly that users increase the size of the directory information cache significantly.

Use `sfcstat(8)`, the statistics command specific to the GFS Shared File System, to determine the cache hit ratios for the items above and perform tuning if necessary.

(Example)

```
# sfcadm -o SFCFS_NCACHE_EXTENT=4096 /dev/sfdsk/gfs01/dsk/volume01 <Enter>
# sfcadm -o SFCFS_NCACHE_DIRECTORY=20480 /dev/sfdsk/gfs01/dsk/volume01 <Enter>
# sfcadm -o SFCFS_NCACHE_INODE=5120 /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

### 14.1.2 Communication timeout value

It is possible to tune the following items:

- Communication timeout value of GFS Shared File System(CON\_TIMEOUT)

CON\_TIMEOUT set up time in seconds after a communicative response is lost until it estimates a partner node to be an abnormal state in the monitoring of the node by communication. This value



can be set for every file system.

It is possible to specify a value with `sfcadm(8)`.

The default of a communication timeout value is 180 seconds.

It is not usually necessary to change communication timeout value.

When it is expected that the loading of system becomes high, please set the value of `CON_TIMEOUT` greatly. Please set up the value of `CON_TIMEOUT` small, when there are few file systems to be used and improve the response of the error return from a system call to the time of the blockade accompanying the abnormalities in communication etc. When the number of file system use are 10 or less and set a value of `CON_TIMEOUT` small, its value should be 60 seconds or more.

(Example)

```
# sfcadm -o CON_TIMEOUT=180 /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```



# Chapter 15 Migration to the GFS Shared File System

---

---

This chapter describes how to move the existing files such as ext2 and ext3 that are created on the file system to the GFS Shared File System.

## 15.1 Moving the existing files

When moving existing files that were created on a file system such as ext2/ext3 to the GFS Shared File System, be aware of the following important information.



Note

- The limit value of the quota function in the file system cannot be moved to the GFS Shared File System.
- The ACL settings of the file system cannot be moved to the GFS Shared File System. For archive created with tar(1) or cpio(1L) and including the ACL settings, ACL related errors will be displayed, but file data can be restored.
- When files with holes are transferred to the GFS Shared File System, some area is reserved on the storage device and such files no longer have holes.

File system migration first requires that files and directories be backed up on another location (for example, on a storage device or another file system). Then, a new GFS Shared File System should be configured, and the files and directories can be expanded. Take the following procedures:

1. Check that the file system is not being used.
2. Save all of the files on the ext2/ext3 file system on a backup device or another file system using a command such as tar(1) and cpio(1L).
3. Create the GFS Shared File System, as described in “10.2 [Creation](#)”, “11.2 [Creation](#).”
4. Expand the saved files on the created GFS Shared File System.

The following example shows how to move the file of the ext3 file system that is mounted on /mnt to the GFS Shared File System on the same device after saving it in /data temporarily.

1. Back up files

```
# cd /mnt <Enter>
# tar cvpf - . > /data/backup.tar <Enter>
# cd / <Enter>
# umount /mnt <Enter>
```

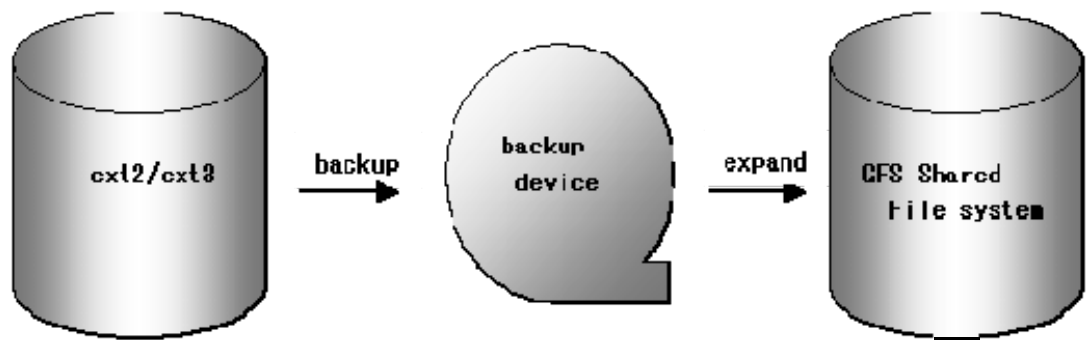
2. Configure GFS Shared File System

Create a GFS Shared File System and mount it according to “10.2 [Creation](#)” or “11.2 [Creation](#).” In this example, the mount point is /sfdfs.

3. Restore the file.

```
# cd /sfdfs <Enter>
# tar xvf /data/backup.tar <Enter>
```

Figure Migration from ext2/ext3





## **Appendix A List of Messages**

This appendix explains GFS Shared File System messages.

If a message has an explanation and Response identical to another message, the description is omitted. In this case, see the explanation and Response for the last message.

## A.1 AC Messages of the GFS Shared File System

This section explains AC messages of the GFS Shared File System that appears during operation. Messages are output to the console at each node and stored in `/var/log/messages`.

### A.1.1 Panic messages

---

This sub-section describes the AC panic messages of the GFS Shared File System.

**PANIC: sfcfs: 0001: *mountpoint*: procedure\_num is invalid value: procedure\_num = *procedure\_num***

#### Explanation

An invalid request for a process was sent from MDS.

#### Response

Collect a crash dump and file output with **fjsnap** for troubleshooting information on all the nodes then contact your customer support engineers.

**PANIC: sfcfs: 0002: *mountpoint*: it cannot found extent that should be found**

#### Explanation

A failure occurred in extent information.

#### Response

Collect a crash dump and file output with **fjsnap** for troubleshooting information on all the nodes then contact your customer support engineers.

**PANIC: sfcfs: 0003: *mountpoint*: It failed update META data. so happened PANIC for fear that the data be destroyed**

#### Explanation

Updating meta-data failed. It resulted in a panic for fear of destroying the meta-data.

#### Response

Collect a crash dump and file output with **fjsnap** for troubleshooting information on all the nodes then contact your customer support engineers.

**PANIC: sfcfs: 0004: *mountpoint*: failed to update extent**

#### Explanation

Updating extent information failed. Updating extent information failed.

#### Response

Collect a crash dump and file output with **fjsnap** for troubleshooting information on all the nodes then contact your customer support engineers.



**PANIC: sfcfs: 0005: *mountpoint* dirty buffer remaine in inode****Explanation**

A panic occurred because the i-node in the writing process onto a physical device was found when blockading was attempted.

**Response**

Collect a crash dump and file output with **fjsnap** for troubleshooting information on all the nodes then contact your customer support engineers.

**PANIC: sfcfs: 0006: *mountpoint* failed to unmount****Explanation**

Unmounting failed.

**Response**

Collect a crash dump and file output with **fjsnap** for troubleshooting information on all the nodes then contact your customer support engineers.

**PANIC: sfcfs: 0007: Failed to XDR encode. xdrmbuf\_clearbase: len = *len*: base = *base*: next = *next***

**PANIC: sfcfs: 0008: Failed to XDR encode. xdrmbuf\_putbytes: has next prev = *has next prev*: prev next = *prev next***

**PANIC: sfcfs: 0009: Failed to XDR encode. xdrmbuf\_putbytes**

**PANIC: sfcfs: 0010: Failed to XDR encode. xdrmbuf\_getpos: base = *base*: private = *private*: mlen = *mlen*: handy = *handy***

**Explanation**

XDR encoding failed.

**Response**

Collect a crash dump and file output with **fjsnap** for troubleshooting information on all the nodes then contact your customer support engineers.

**PANIC: sfcfs: 0011: assertion failed****Explanation**

An internal error is detected.

**Response**

Collect a crash dump and file output with **fjsnap** for troubleshooting information on all the nodes then contact your customer support engineers.

---

**A.1.2 Warning messages**

---

This sub-section describes the AC Warning messages of the GFS Shared File System.

---

**WARNING: sfcfs: 1001: argument address of mount(2) is invalid value. error occurred in copy\_from\_user() for mountpoint: error = error**

**WARNING: sfcfs: 1002: argument address of mount(2) is invalid value. error occurred in copy\_from\_user() for volumuinfo: error = error**

**WARNING: sfcfs: 1003: argument address of mount(2) is invalid value. error occurred in copy\_from\_user() for primaryMDS\_saddr: error = error**

**WARNING: sfcfs: 1004: argument address of mount(2) is invalid value. error occurred in copy\_from\_user() for secondaryMDS\_saddr: error = error**

**Explanation**

The address from mount(2) is invalid.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**WARNING: sfcfs: 1005: *mountpoint* volume id from MDS is invalid value: volid = *volid***

**Explanation**

Volume information is inconsistent.

**Response**

Unmount the relevant file system from all of the nodes, and check the file system configuration and the network, node, and IP address settings.

**WARNING: sfcfs: 1006: *mountpoint* volume id from MDS is invalid value. so volume is busy: volid = *volid***

**Explanation**

The specified volume has been used by another FS or mounted in a different mode.

**Response**

Unmount the relevant file system from all of the nodes, and check the file system configuration and the network, node, and IP address settings.

**WARNING: sfcfs: 1007: *mountpoint* failed to open volumes requested from MDS, no volume to open**

**Explanation**

The partition that configures the file system cannot be opened.

**Response**

Check the state of the GDS volume.

**WARNING: sfcfs: 1008: failed to read superblock information from disk associated device**

**WARNING: sfcfs: 1009: failed to read volume information from disk associated device**

**Explanation**

Reading the volume failed.

**Response**

Check the volume status.

**WARNING: sfcfs: 1010: failed to get volume information, when try to get extents: volume id = *valid***

**Explanation**

An inconsistency occurred in the data volume information management.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**WARNING: sfcfs: 1011: failed to access to volume information, when try to get extents: volume id = *valid***

**Explanation**

The data volume is not accessible.

**Response**

Check the volume status, and contact your local Customer Support if it is in the accessible condition.

**WARNING: sfcfs: 1012: filesystem is in blockade**

**Explanation**

The file system was blockaded.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**WARNING: sfcfs: 1013: *mountpoint*: invalid MOUNT response, so failed to recover: sfi\_file = *sfi\_file*: mt\_file = *mt\_file***

**WARNING: sfcfs: 1014: *mountpoint*: invalid MOUNT response, so failed to recover:**

**sfi\_blksize = 8: mt\_blksize = *mt\_blksize***

**WARNING: sfcfs: 1015: *mountpoint*: invalid MOUNT response, so failed to recover:**

**sfi\_volinfo\_len = *sfi\_volinfo\_len*: mt\_volinfo\_len = *mt\_volinfo\_len***

**WARNING: sfcfs: 1016: *mountpoint*: invalid MOUNT response, so failed to recover:**

**sfi\_vli\_blocks = *sfi\_vli\_blocks*: mt\_volinfo.mt\_volinfo\_val[num].vli\_blocks=*mt\_volinfo.***

***mt\_volinfo\_val[num].vli\_blocks***

**Explanation**

The call for MDS failure recovery of the file system (*mountpoint*) resulted in an error. The file system (*mountpoint*) becomes no longer available from the node.

**Response**

Unmount the relevant file system, and check the file system configuration and the network, node, and IP address settings.

**WARNING: sfcfs: 1017: *mountpoint*: received header message is short: received siz**

**e = *received size*: required size = *required size***

**WARNING: sfcfs: 1018: *mountpoint*: received header message is bigger than Reque**

**st-reply message came from MDS: received size = *received size*: Request-reply mes**

**sage = *Request-reply message***

**WARNING: sfcfs: 1019: *mountpoint*: received body message is short: received size**

**= *received size*: required size = *required size***

**Explanation**

An illegal message was received in communication with MDS of the file system (*mountpoint*). The file system becomes no operational.

**Response**

Unmount the relevant file system from the node on which the message was output, and check the network, node, and IP address settings.

**WARNING: sfcfs: 1020: *mountpoint*: failed to send request to MDS: error = *error*: p**

**rocedure\_num = *procedure\_num***

**Explanation**

An error occurred in communication with MDS of the file system (*mountpoint*).

**Response**

The operation can be continued when no other error message is output.

**WARNING: sfcfs: 1021: *mountpoint* failed to connect to PrimaryMDS: error = error**

**Explanation**

Connecting to primary MDS failed. Mounting the file system (*mountpoint*) fails.

**Response**

Check the network, node, and IP address settings.

**WARNING: sfcfs: 1022: *mountpoint* failed to connect to SecondaryMDS: error = err**

**or**

**Explanation**

Connecting to secondary MDS failed. Mounting the file system (*mountpoint*) fails.

**Response**

Check the network, node, and IP address settings.

**WARNING: sfcfs: 1023: *mountpoint* no response of heartbeat from Server MDS, so  
blockade**

**Explanation**

The file system (*mountpoint*) is blockaded because heartbeat monitoring to the primary MDS is disconnected.

**Response**

Check the file system whether it is in continuous use. If it is no longer in continuous use, check and restore the network connection and the MDS, and then mount the file system again.

**WARNING: sfcfs: 1024: *mountpoint* cannot allocate memory space. so failed to crea  
te node for mountpoint**

**Explanation**

Memory allocation failed.

**Response**

Increase the memory or the swap space.

**WARNING: sfcfs: 1025: *mountpoint* cannot allocate memory space. so failed to Spa  
wn Xagent to receive Request from MDS**

**Explanation**

Generating Xagent failed on mounting the file system (*mountpoint*).

**Response**

Increase the memory or the swap space.

**WARNING: sfcfs: 1026: *mountpoint* cannot allocate memory space. so failed to run**

### **Xagent**

#### **Explanation**

Activation of the daemon to control multiple hosts to the file system (*mountpoint*) failed. The mounting fails.

#### **Response**

Check the memory and the swap space whether they are sufficient by looking up the console message and so on. If insufficient, increase the size, and then mount the file system again.

**WARNING: sfcfs: 1027: *mountpoint* cannot allocate memory space. so failed to run**

### **Clients**

#### **Explanation**

Activation of the daemon to control multiple hosts to the file system (*mountpoint*) failed. The mounting fails.

#### **Response**

Check the memory and the swap space whether they are sufficient by looking up the console message and so on. If insufficient, increase the size, and then mount the file system again.

**WARNING: sfcfs: 1028: *mountpoint* cannot allocate memory space for pagecache**

**WARNING: sfcfs: 1029: *mountpoint* cannot allocate memory space for Node**

**WARNING: sfcfs: 1030: *mountpoint* cannot allocate memory space. so failed to allocate Call**

**WARNING: sfcfs: 1031: cannot allocate memory space for xdr**

#### **Explanation**

Memory allocation failed.

#### **Response**

Increase the memory or the swap space.

**WARNING: sfcfs: 1032: *mountpoint* mount for fsid=*fsid* was failed, because MDS was releasing the node information which was previously mounted.**

#### **Explanation**

Mount processing of the file system (*mountpoint*) fails, because MDS was releasing the node information that was previously mounted.

#### **Response**

Mount the file system (*mountpoint*) again after some interval.

### A.1.3 Information messages

---

This sub-section describes the AC information messages of the GFS Shared File System.

#### **NOTICE: sfcfs: 2001: *mountpoint*: end of blockade mode**

##### **Explanation**

The blockade of the file system was lifted.

##### **Response**

None.

#### **NOTICE: sfcfs: 2002: *mountpoint*: end of recovery-in-progress mode**

##### **Explanation**

The recovery process for the file system is complete.

##### **Response**

None.

#### **NOTICE: sfcfs: 2003: *mountpoint*: disconnected from MDS**

##### **Explanation**

MDS was disconnected and interruption of communication was detected.

##### **Response**

Check the communication path whether it has no defect and make it sure that MDS processes exist.

#### **NOTICE: sfcfs: 2004: detect lan down.**

##### **Explanation**

Network disconnection was detected.

##### **Response**

None.

#### **NOTICE: sfcfs: 2005: try to disconnect, but XagentSender is now sending, so wait for 30 sec**

##### **Explanation**

Disconnecting from primary MDS has been queued for thirty seconds because XagentSender is now processing communications.

##### **Response**

None.

**NOTICE: sfcfs: 2006: try to reconnect, but XagentSender is now sending, so wait for 30 sec**

**Explanation**

Re-connecting to primary MDS has been queued for thirty seconds because XagentSender is now processing communications.

**Response**

None.

**NOTICE: sfcfs: 2007: *mountpoint*: The host node tried to reconnect to MDS with modified information, which is not supported. So the mount point was blockaded.**

**Explanation**

The host node tried to reconnect to MDS with modified information in file system (*mountpoint*), which is not supported.

**Response**

Mount the file system again after lifting the blockade.



## A.2 GFS Shared File System Daemon messages

This section explains the GFS Shared File System daemon messages. Messages are output to the console at each node and stored in `/var/log/messages`.

### A.2.1 Panic messages (MDS(sfcsmsg daemon))

This section explains the MDS (sfcsmsg daemon) panic messages of the GFS Shared File System.

The messages do not cause a node panic.

**PANIC: sfcs\_mds:0002: fsid: hold count is invalid. type = *number* ino = *ino\_num***

#### Explanation

An error was detected in the reference count of file system data.

#### Response

Collect a file output with `fjsnap` for troubleshooting information then contact your customer support engineers.

**PANIC: sfcs\_mds:0003: fsid: Internal Error [ *details* ]**

#### Explanation

An internal error occurred in the file system (*fsid*). *Details* provide the detailed information.

#### Response

Collect a file output with `fjsnap` for troubleshooting information then contact your customer support engineers.

### A.2.2 Panic messages (sfcprmd daemon)

This section explains the sfcprmd daemon panic messages of the GFS Shared File System.

**sfcoptdrv: PANIC: Semaphore(semid=*id*) access error, panic for keep data integrity of GFS and continue cluster operation.**

#### Explanation

Operation of a semaphore (*id*) went wrong and it changed into the state where the management continuation of the GFS Shared File System on this node cannot be carried out. Although the panic of this node is carried out for data protection, GFS Shared File System management is continued by other nodes.

#### Response

Collect a file output with `fjsnap` for troubleshooting information then contact your customer support engineers.

**sfcoptdrv: PANIC: sfcprmd(pid=*num*) was down, panic for keep data integrity of GFS**

**and continue cluster operation.**

**Explanation**

sfcrmd was downed and it changed into the state where the management continuation of the GFS Shared File System on this node cannot be carried out. Although the panic of this node is carried out for data protection, GFS Shared File System management is continued by other nodes.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**sfcoptdrv:PANIC:daemon(pid=num) was down, panic for keep data integrity of GFS and continue cluster operation.**

**Explanation**

The daemon shown by *daemon* was downed and it changed into the state where the management continuation of the GFS Shared File System on this node cannot be carried out. Although the panic of this node is carried out for data protection, GFS Shared File System management is continued by other nodes.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**sfcoptdrv:PANIC:Panic for keep data integrity of GFS and continue cluster operation.**

**Explanation**

Abnormalities occurred and it changed into the state where the management continuation of the GFS Shared File System on this node cannot be carried out. Although the panic of this node is carried out for data protection, GFS Shared File System management is continued by other nodes.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

### **A.2.3 Error messages (sfcrmd daemon)**

---

This section explains the sfcrmd daemon error messages of the GFS Shared File System.

**ERROR: sfcrmd:0001: not superuser**

**Explanation**

sfcrmd is not performed by superuser

**Response**

Please start sfcrmd by **sfcrmdstart(8)** command as a superuser.

**ERROR: sfcfrmd:0002: associated with a terminal device****Explanation**

The direct module is performed.

**Response**

Start the sfcfrmd daemon by executing **sfcfrmstart(8)** with super user access privileges.

**ERROR: sfcfrmd:0003: cannot read *pathname*, or something wrong****Explanation**

Since there was injustice or file reading of *pathname* went wrong, sfcfrmd starting went wrong.

**Response**

Please check whether the file of *pathname* is set up correctly.

**ERROR: sfcfrmd:0004: cannot get node version *sfile*****Explanation**

The sfcfrmd daemon failed to start, because a working file *sfile* in **/var/opt/FJSVsfcs** was broken.

**Response**

Make sure that /var/opt directory has a space by df(1) command and re-start the node.

**ERROR: sfcfrmd:0005: something wrong in *pathname*****Explanation**

The sfcfrmd daemon failed to start, because **/etc/services** has no entry of **sfcsrm** or *pathname* is broken.

**Response**

Check if **sfcsrm9300/tcp** is added to the **"/etc/services"** file on all the cluster nodes. If it is not, add it to the file. For details about the file definition, see **services (5)** of the online manual page. If the setting above is right, *pathname* seems broken. Collect the diagnostic data with **fjsnap** and contact local Customer Support.

**ERROR: sfcfrmd:0006: cannot allocate memory space****Explanation**

Since acquisition of a memory went wrong, sfcfrmd starting went wrong.

**Response**

Please check the state of a system, and wait for the end of other processes, or increase and reboot a swap domain.

**ERROR: sfcfrmd:0007: cannot start service****Explanation**

sfcfrmd starting went wrong.

**Response**

Collect the diagnostic data with **"/etc/opt/FJSVsfcs/bin/sfcsnap.sh -c output\_dir"** and **fjsnap** in all the nodes, and contact your local Customer Support.

**ERROR: sfcfrmd:0008: I/O error or data corruption of management partition: *pathname***

**Explanation**

sfcfrmd failed in reading and writing of *pathname*.

**Response**

Please check whether a setup as a management partition domain of the GFS Shared File System is right, or a disk operates normally.

**ERROR: sfcfrmd:0009: something wrong in cluster settings**

**Explanation**

Since a cluster was not started, sfcfrmd starting went wrong.

**Response**

Please start a cluster.

**ERROR: sfcfrmd:0010: cannot get host name**

**Explanation**

The CIP address registered in the management partition changed.

**Response**

By remaking and restoring the management partition, back the configuration of the partition to a previous one before a value of the CIP address changed. For details to remake and restore, see "9.6 [Backup of the management partition information](#)" and "9.7 [Restoring of the management partition information](#)".

**ERROR: sfcfrmd:0011: cannot connect to sfcprmd**

**Explanation**

Connection with sfcprmd went wrong.

**Response**

Make sure that the sfcprmd daemon is running by **ps(1)** command (for example, "**/bin/ps -e | grep sfcprmd**".) If the sfcprmd daemon was stopped by the unload dependency script, restart sfcprmd by the load script ("**/opt/SMAW/SMAWcf/dep/start.d/S81sfcfs load**".) Otherwise, re-start the node.

If this message is output while the sfcprmd daemon is running, collect a core image of the daemon, and a file output with **fjsnap** for troubleshooting information then contact your customer support engineers. Restart the node where this problem occurred.

**ERROR: sfcfrmd:0012: cannot connect to sfchnsd**

**Explanation**

Connection with sfchnsd went wrong.

**Response**

Make sure that the sfchnsd daemon is running by **ps(1)** command (for example, "**/bin/ps -e | grep sfchnsd**".) If the sfchnsd daemon was stopped by the unload dependency script, restart sfchnsd by the load script ("**/opt/SMAW/SMAWcf/dep/start.d/S81sfcfs load**".) Otherwise, re-start the node.

If this message is output while the `sfchnsd` daemon is running, collect a core image of the daemon, and a file output with `fjsnap` for troubleshooting information then contact your customer support engineers. Restart the node where this problem occurred.

**ERROR: sfcrmd:0013: cannot activate sfchnsd****Explanation**

`sfchnsd` is not activated.

**Response**

Collect the diagnostic data with `"/etc/opt/FJVS/sfcs/bin/sfcsnap.sh -c output_dir"` and `fjsnap`, and contact your local Customer Support.

**ERROR: sfcrmd:0014: cannot get service port****Explanation**

A service port is not able to be acquired.

**Response**

Check if `sfcsrm9300/tcp` is added to the `"/etc/services"` file on all the cluster nodes. If it is not, add it to the file. For details about the file definition, see `services(5)` of the online manual page.

**ERROR: sfcrmd:0015: cannot get limit of newly created descriptor****Explanation**

The maximum value of file descriptor generation was not able to be acquired.

**Response**

Please check the maximum value of a file descriptor.

**ERROR: sfcrmd:0019: no node information on *special*****Explanation**

The node information for this node is not registered into the management partition *special*.

**Response**

Register the node information using `sfcssetup(8)` command.

## A.2.4 Error messages (MDS (sfcsmsg daemon))

---

This section explains the MDS (`sfcsmsg` daemon) error messages of the GFS Shared File System.

**ERROR: sfcs\_mds:0001: v\_count != 0 inode = *ino\_pointer* ino = *ino\_num*****Explanation**

An error was detected in releasing the i-node (*ino\_num*) in the file system.

**Response**

Collect a file output with `fjsnap` for troubleshooting information then contact your customer support engineers.

**ERROR: sfdfs\_mds:1001: MDS is failed.**

**Explanation**

MDS failed in recovery mounting.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**ERROR: sfdfs\_mds:1002: primary MDS is terminated.**

**Explanation**

Primary MDS was terminated abnormally.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**ERROR: sfdfs\_mds:1003: secondary MDS is terminated.**

**Explanation**

Secondary MDS was terminated abnormally.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**ERROR: sfdfs\_mds:1004: can't execute primary MDS**

**ERROR: sfdfs\_mds:1005: can't execute secondary MDS**

**Explanation**

Startup of the primary MDS or secondary MDS failed.

**Response**

Check following points.

- Quantity of memory is enough.
  - Check MemFree and SwapFree of `/proc/meminfo`.
- State of a network is normal.
  - Check whether DNS server is operating normally.
  - Check whether connection of LAN is normal.
  - Check whether network interface card is normal by **ifconfig(8)** command.
- Setting of network is normal.
  - Check whether nodes sharing filesystem are described in `/etc/hosts`.
  - Check whether IP address of a DNS server is described in `/etc/resolv.conf`.
  - Check whether `/etc/host.conf` is described correctly.
  - Check whether fire wall is set up correctly so that access of port used by GFS may not be refused.
- State of volume of GDS is normal.
  - Check state of volume of GDS by **sdxinfo** command. For details on **sdxinfo**, see "Appendix D.6 sdxinfo" of the *"PRIMECLUSTER Global Disk Services (Linux) Configuration and Administration Guide"*
- Isn't the disk breakdown?
  - Confirm whether the error message of GDS or a disk driver is outputted to

/var/log/messages. When the error message is outputted, please perform disposal corresponding to the message. For details, see "PRIMECLUSTER Global Disk Services (Linux) Configuration and Administration Guide" or the manual of disk units.

- Is the file system configuration information normal?
  - Please execute the following commands and check that the host name of the share node which the **sfcinfo(8)** command and the **sfcsrcinfo(8)** command display and the host name specified to be **-m** option of the **sfcadm(8)** command execution line obtained by the **sfcgetconf(8)** command are the same.
    - **sfcinfo -n** <representative partition of the file system>
    - **sfcsrcinfo -m** <representative partition of the file system>
    - **sfcgetconf -d** <representative partition of the file system> <output destination file name>
  - When not the same, please perform the command line which changed into **-u** option **-m** option of the **sfcadm(8)** command execution line obtained by the **sfcgetconf(8)** command.

When unsolvable by the above methods, collect the diagnostic data with **fjsnap**, and contact your local Customer Support.

For details on above commands, see [sfcinfo\(8\)](#), [sfcsrcinfo\(8\)](#), [sfcgetconf\(8\)](#) in this manual. Moreover for the details of the **sfcadm(8)** command execution line obtained by **sfcgetconf(8)**, see "9.6 [Backup of the management partition information](#)" and "9.7 [Restoring of the management partition information](#)" in this manual.

## **ERROR: sfdfs\_mds:1006: can't execute MDS**

### **Explanation**

Starting up MDS failed.

### **Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

## **ERROR: sfdfs\_mds:1007: fsid: MDS terminated because logreplay failed. errcode=err**

### **code**

### **Explanation**

The log replay by MDS of the file system failed.

### **Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

## **ERROR: sfdfs\_mds:1008: fsid: Filesystem status is FSBAD, so MDS can not run. fs**

### **\_clean = fs\_clean**

### **Explanation**

Starting up MDS failed, because MDS detected a error in file system.

### **Response**

Unmount the relevant file system from all of the nodes, and execute **sfdfsck(8)** specifying **-o nolog**.

**ERROR: sfdfs\_mds:1009: fsid: MDS terminated abnormally because I/O error occurred continuously on meta-data area of the disk.**

**Explanation**

MDS terminated abnormally because I/O error occurred continuously on meta-data area of the disk.

**Response**

To resume the system operation, execute **sfdfsck(8)** in the full check mode first. Then back up the file system and correct the hardware failure by replacing the failed disk with a new one, and restore the backed-up data to recover the file system.

## **A.2.5 Error messages (sfdfs daemon)**

---

This section explains the sfdfs daemon error messages of the GFS Shared File System.

**ERROR: sfdfs: 0001: gfs monitor daemon for mountpoint(*mountpoint*) abort: *detail***

**ERROR: sfdfs: 0002: gfs monitor daemon for fsid(*fsid*) abort: *detail***

**ERROR: sfdfs: 0003: gfs monitor daemon abort: *detail***

**Explanation**

The GFS Shared File System monitoring daemon ended abnormally. The error explained in *detail* occurred.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**ERROR: sfdfs: 0004: can't execute primary MDS: mountpoint(*mountpoint*)**

**Explanation**

Starting up the primary MDS has failed.

**Response**

Please confirm whether the message of sfdfs\_mds is output at the same time as this message. When the message of sfdfs\_mds is output, please cope with it according to the message. Otherwise, collect the diagnostic data with **fjsnap**, and contact your local Customer Support.

**ERROR: sfdfs: 0005: can't execute secondary MDS: mountpoint(*mountpoint*)**

**Explanation**

Start up of the secondary MDS has failed.

**Response**

Please confirm whether the message of sfdfs\_mds is output at the same time as this message. When the message of sfdfs\_mds is output, please cope with it according to the message. Otherwise, collect the diagnostic data with **fjsnap**, and contact your local Customer Support.



**ERROR: sfcfsd: 0006: can't take over MDS: mountpoint(*mountpoint*)****Explanation**

Switchover of the MDS failed.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**ERROR: sfcfsd: 0007: primary MDS down: mountpoint(*mountpoint*)****Explanation**

The primary MDS has failed.

**Response**

Please confirm whether the message of `sfcfs_mds` is output at the same time as this message. When the message of `sfcfs_mds` is output, please cope with it according to the message. Otherwise, collect the diagnostic data with **fjsnap**, and contact your local Customer Support.

**ERROR: sfcfsd: 0008: secondary MDS down: mountpoint(*mountpoint*)****Explanation**

The secondary MDS has failed.

**Response**

Please confirm whether the message of `sfcfs_mds` is output at the same time as this message. When the message of `sfcfs_mds` is output, please cope with it according to the message. Otherwise, collect the diagnostic data with **fjsnap**, and contact your local Customer Support.

**ERROR: sfcfsd: 0009: can't mount to primary MDS. gfs monitor daemon stop:mountpoint(*mountpoint*)****Explanation**

Mounting on the primary MDS failed. The GFS Shared File System monitoring daemon terminates.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**ERROR: sfcfsd: 0010: can't mount to secondary MDS: mountpoint(*mountpoint*)****Explanation**

Mounting on the secondary MDS failed. There is no problem with the file system operation.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**ERROR: sfcfsd: 0011: blockade : mountpoint(*mountpoint*)****Explanation**

The file system (*mountpoint*) has been blockaded. The target mount point is unavailable and only

---

unmounting can be performed.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

---

## **A.2.6 Error messages (sfdfs\_mount command)**

---

This section explains the sfdfs\_mount command messages that is called sfdfs daemon of GFS Shared File System.

### **ERROR: sfdfs\_mount:0001:special : cannot allocate memory**

**Explanation**

The mounting failed due to a memory allocation failure.

**Response**

Check the system status and wait for the termination of another process or increase the swap space, and re-execute the command.

### **ERROR: sfdfs\_mount:0002:special : signal(2) is error: ermmsg**

**Explanation**

The mounting failed due to an internal error.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

### **ERROR: sfdfs\_mount:0003:special : cannot connect to FsRM**

**Explanation**

The file system monitoring mechanism is not operating.

**Response**

Check whether the file system monitoring mechanism is running.

### **ERROR: sfdfs\_mount:0004:special is not found in file system configuration information**

**Explanation**

The specified partition (*special*) does not exist in the file system configuration information.

**Response**

Check whether the specified partition is correct.

**ERROR: sfdfs\_mount:0005:special : cannot read file system configuration informatio**

**n**

**Explanation**

Reading the file system configuration information failed.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**ERROR: sfdfs\_mount:0006:special : cannot get port number of sfdfs-n for [P-MDS | S-MDS], not found in /etc/services**

**Explanation**

The port number definition used in AC-to-MDS communication is not found.

**Response**

Review the port number definition in /etc/services.

**ERROR: sfdfs\_mount:0007:special : cannot get host address of hostname for [P-MDS | S-MDS], not found in /etc/hosts**

**Explanation**

The host name information for AC-to-MDS communication cannot be obtained.

**Response**

Review the host name definition in /etc/hosts, or change the host name with **sfcdm(8)**.

**ERROR: sfdfs\_mount:0009:special : can not make directory path: *errmsg***

**Explanation**

Creating a directory failed.

**Response**

Take action according to *errmsg*.

**ERROR: sfdfs\_mount:0010: special is already mounted, *mount\_point* is busy**

**Explanation**

The mounting fails because it has already been mounted.

**Response**

Check whether the mounting has not been done with **mount(8)**, and take action.

**ERROR: sfdfs\_mount:0011:special : recovery mount is in progress**

**Explanation**

The mounting cannot be performed because recovery processing is in progress.

**Response**

None.

**ERROR: sfdfs\_mount:0012:special : cannot connect to Primary-MDS**

**ERROR: sfdfs\_mount:0013:special : cannot connect to Secondary-MDS**

**Explanation**

AC cannot connect to MDS. Therefore, mount the file system will be failed.

**Response**

Check MDS down. In this case, try mount again.

**ERROR: sfdfs\_mount:0014:special : sfdfs is not supported by kernel**

**Explanation**

The sfdfs module has not been loaded.

**Response**

Check whether the sfdfs module has been loaded.

**ERROR: sfdfs\_mount:0015:special,mountpoint mount(2) is error: errmsg**

**Explanation**

An unexpected error was detected on the mounting.

**Response**

Check whether *special* and *mountpoint* actually exist. When it does not exist, it is possible that the specification of a directory or a file is error, or the directory of *mountpoint* is not created.

When an error is in specification, please specify the correct file and directory.

Please create a directory, when the directory of *mountpoint* is not created.

When each of the file and the directory exists, the host name of the sharing node of the relevant file system may not be a thing on the same network. Please confirm host name of the node information with the **sfcinfo(8)** command with **-an** option.

Please re-execute **sfcmount(8)** after changing into the host name on the same network by the **sfcadm(8)** command with **-u** option, when the specification host name is wrong.

In addition, this message may be output when sharing node has failed. In that case re-execute **sfcmount(8)**.

When unsolvable by the above methods, collect the diagnostic data with **fjsnap**, and contact your local Customer Support.

For details on **sfcinfo(8)**,**sfcadm(8)**, see [sfcinfo\(8\)](#), [sfcadm\(8\)](#) in this manual.

**ERROR: sfdfs\_mount:0016:special : cannot add mount information to /etc/mstab**

**Explanation**

The mounting succeeded, but adding the mount information to /etc/mstab failed.

**Response**

Check the /etc/mstab settings and add the relevant mount information to /etc/mstab.

**ERROR: sfdfs\_mount:0017:special : cannot delete mount information in /etc/mstab**

**Explanation**

Deleting the mount information from /etc/mstab failed.

**Response**

Check the `/etc/mtab` settings and delete the relevant mount information from `/etc/mtab`.

**ERROR: `sfdfs_mount:0018:special : unknown error(errno)`****Explanation**

An unknown error was detected.

**Response**

Collect a file output with `fjsnap` for troubleshooting information then contact your customer support engineers.

**ERROR: `sfdfs_mount:0019: special: cannot open device: errmsg`****Explanation**

Opening of the partition (`special`) failed.

**Response**

Take corrective action according the detailed information `errmsg`.

**ERROR: `sfdfs_mount:0020: cannot read the {superblock | volume information} of special`****Explanation**

Reading of the super block information or partition configuration information on the partition (`special`) failed.

**Response**

Collect a file output with `fjsnap` for troubleshooting information then contact your customer support engineers.

**ERROR: `sfdfs_mount:0021: special is not sfdfs file system`****Explanation**

The specified partition (`special`) is not of the GFS Shared File System.

**Response**

Specify a special file that is being used for the GFS Shared File System.

---

**A.2.7 Error messages (sfcpncd daemon)**

---

This section explains the `sfcpncd` daemon error messages of the GFS Shared File System.

**ERROR: `sfcpncd:0001: Permission denied. Abort.`****Explanation**

Execution was attempted with other than super-user permission.

**Response**

Do not execute the module directly.

**ERROR: sfcpcnd:0002: Initialize fail. Abort.**

**Explanation**

sfcpcnd failed booting.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**ERROR: sfcpcnd:0003: Cannot create the semaphore. Abort.**

**Explanation**

Creation of the semaphore failed.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**ERROR: sfcpcnd:0004: Fatal error. Abort.**

**Explanation**

sfcpcnd terminated abnormally.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

## **A.2.8 Error messages (sfcprmd daemon)**

---

This section explains the sfcprmd daemon error messages of the GFS Shared File System.

**ERROR: sfcprmd:0001: Permission denied. Abort.**

**Explanation**

Execution was attempted with other than super-user permission.

**Response**

Do not execute the module directly.

**ERROR: sfcprmd:0002: Initialize failed. Abort.**

**Explanation**

sfcprmd failed booting.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**ERROR: sfcprmd:0003: Cannot open /dev/null. Abort.**

**Explanation**

Opening **/dev/null** failed.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**ERROR: sfcprmd:0004: Cannot access to the /var/opt/FJSVsfcs/.sfcprmd\_uds. Abort**

**t**

**Explanation**

Accessing /var/opt/FJSVsfcs/.sfcprmd\_uds failed.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**ERROR: sfcprmd:0005: Memory not enough. Abort.**

**Explanation**

There is insufficient memory to allow sfcprmd to boot.

**Response**

Increase the amount of memory or the size of the swap area.

**ERROR: sfcprmd:0007: Cannot access to the semaphore of sfcpcnd. Abort.**

**Explanation**

The semaphore created by sfcpcnd cannot be accessed.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

## A.2.9 Warning messages (MDS (sfcfsmg daemon))

---

This section explains the MDS (sfcfsmg daemon) warning messages of the GFS Shared File System.

**WARNING: sfcfs\_mds:2001: *fsid*: daemon create failed(lock\_init failed). errcode = *err***

***code***

**Explanation**

Generating the daemon failed at mounting the file system (*fsid*) due to a failure in the lock object initialization.

**Response**

Increase memory or the size of the swap area.

**WARNING: sfcfs\_mds:2002: daemon create failed(can't create thread).**

**Explanation**

A daemon could not be created when mount file system.

**Response**

Increase memory or the size of the swap area.

**WARNING: sfcfs\_mds:2003: fsid: daemon create failed(can't create thread).**

**Explanation**

A daemon could not be created when mount file system (*fsid*).

**Response**

Increase memory or the size of the swap area.

**WARNING: sfcfs\_mds:2004: fsid: bad dir: invalid offset. ino = *ino-num* offset = *offs*  
*et***

**WARNING: sfcfs\_mds:2005: fsid: bad dir: ino = *ino-num***

**WARNING: sfcfs\_mds:2006: fsid: bad dir: invalid flags. ino = *ino-num* flags= *flags***

**WARNING: sfcfs\_mds:2007: fsid: bad dir: size error. ino = *ino-num* size= *size***

**Explanation**

An error was detected in a directory entry of *fsid*

**Response**

Unmount the relevant file system from all of the nodes, and execute **sfcfsck(8)** specifying **-o nolog**.

**WARNING: sfcfs\_mds:2008: fsid: meta data read error. type = *number* dev = *dev\_num*  
*m* block = *block\_num* size = *size* errcode = *errcode***

**WARNING: sfcfs\_mds:2009: fsid: meta data read error. type = *number* dev = *dev\_num*  
*m* block = *block\_num* size = *size* errcode = *errcode***

**Explanation**

An error occurred during an attempt to read the meta-data area from a device *dev\_num* of the file system (*fsid*).

**Response**

Take action according to the instructions in "C.3.1 [Action for I/O errors](#)".

**WARNING: sfcfs\_mds:2010: fsid: bitmap read error. type = *number* dev = *dev\_num*  
block = *block\_num* size = *size* errcode = *errcode***

**WARNING: sfcfs\_mds:2011: fsid: bitmap read error. type = *number* dev = *dev\_num***



**block = *block\_num* size = *size* errcode = *errcode***

**Explanation**

An error occurred during an attempt to read the bitmap area from a device *dev\_num* of the file system (*fsid*).

**Response**

Take action according to the instructions in “C.3.1 [Action for I/O errors](#)”.

**WARNING: *sfdfs\_mds:2012: bitmap read error. type = *number* dev = *dev\_num* block = *block\_num* size = *size* errcode = *errcode****

**Explanation**

An error occurred during an attempt to read the bitmap area from a device *dev\_num* of the file system.

**Response**

Take action according to the instructions in “C.3.1 [Action for I/O errors](#)”.

**WARNING: *sfdfs\_mds:2013: *fsid*: bitmap write error. type = *number* dev = *dev\_num****

**block = *block\_num* size = *size***

**Explanation**

An error occurred during an attempt to write to the bitmap area on a device *dev\_num* of the file system (*fsid*).

**Response**

Unless message *sfdfs\_mds:2014* or *sfdfs\_mds:2015* is issued, recovery by retry processing was successful. So no response is required.

**WARNING: *sfdfs\_mds:2014: *fsid*: bitmap write error information was lost. type = *number* dev = *dev\_num* block = *block\_num* size = *size* errcode = *errcode****

**Explanation**

An error occurred during an attempt to write to the bitmap area on a device *dev\_num* of the file system (*fsid*). Part of the file system information was lost.

**Response**

Take action according to the instructions in “C.3.1 [Action for I/O errors](#)”.

**WARNING: *sfdfs\_mds:2015: bitmap write error information was lost. type = *number* dev = *dev\_num* block = *block\_num* size = *size* errcode = *errcode****

**Explanation**

An error occurred during an attempt to write to the bitmap area on a device *dev\_num* of the file system. Part of the file system information was lost.

**Response**

Take action according to the instructions in “C.3.1 [Action for I/O errors](#)”.

**WARNING: sfcfs\_mds:2016: *fsid*: meta data write error. type = *number* dev = *dev\_num*  
*m* block = *block\_num* size = *size* errcode = *errcode***

**Explanation**

An error occurred during an attempt to write to the meta-data area on a device *dev\_num* of the file system (*fsid*).

**Response**

Unless message sfcfs\_mds:2017 is issued, recovery by retry processing was successful. So no response is required.

**WARNING: sfcfs\_mds:2017: *fsid*: meta data write error. information was lost. type =  
*number* dev = *dev\_num* block = *block\_num* size = *size* errcode = *errcode***

**Explanation**

An error occurred during an attempt to write to the meta-data area on a device *dev\_num* of the file system (*fsid*). Part of the file system information was lost.

**Response**

Take action according to the instructions in “C.3.1 [Action for I/O errors](#)”.

**WARNING: sfcfs\_mds:2018: *fsid*: super block write error. dev = *dev\_num* block = *block\_num* size = *size* errcode = *errcode***

**Explanation**

An error occurred during an attempt to write a super block to a device *dev\_num* of the file system (*fsid*).

**Response**

Unless message sfcfs\_mds:2019 is issued, recovery was performed by retry processing. So no response is required.

**WARNING: sfcfs\_mds:2019: *fsid*: super block write error. information was lost. dev=  
*dev\_num* block= *block\_num* size= *size* errcode= *errcode***

**Explanation**

An error occurred during an attempt to write a super block to a device *dev\_num* of the file system (*fsid*).

**Response**

Take action according to the instructions in “C.3.1 [Action for I/O errors](#)”.

**WARNING: sfcfs\_mds:2020: *fsid*: LOG daemon is dead.**

**Explanation**

The log daemon stopped processing because it could not recover from a failure to write to the update log area on the file system (*fsid*).

**Response**

Because of an I/O error, the update log daemon was not able to operate and terminated. The file

system access performance is degraded because operation is continued without the update log available. Take action according to the instructions in “C.3.1 [Action for I/O errors](#)”.

**WARNING: sfcfs\_mds:2021: *fsid*: cannot access: too many I/O errors. dev= *dev\_num*  
*m***

**Explanation**

The file system (*fsid*) was blocked due to a writing error to the super block on the device number *dev\_num* in the file system. In the future, access to this file system will be an error return.

**Response**

Take action according to the instructions in “C.3.1 [Action for I/O errors](#)”.

**WARNING: sfcfs\_mds:2022: *fsid*: volume information write error. dev= *dev\_num* block= *block\_num* size= *size* errcode= *errcode***

**WARNING: sfcfs\_mds:2023: *fsid*: volume information write error. dev= *dev\_num* block= *block\_num* size= *size* errcode= *errcode***

**Explanation**

An error occurred during an attempt to write a partition configuration data to a device *dev\_num* in the file system (*fsid*).

**Response**

Take action according to the instructions in “C.3.1 [Action for I/O errors](#)”.

**WARNING: sfcfs\_mds:2024: *fsid*: cannot delete extent. ino= *number* offset= *offset* block= *block* errcode= *errcode***

**Explanation**

An error in extent-based management of a file system (*fsid*) was detected.

**Response**

Unmount the relevant file system from all of the nodes, and execute **sfcfsck(8)** specifying **-o nolog**.

**WARNING: sfcfs\_mds:2025: *fsid*: no extent exists. ino= *number* subnode= *subnode* errcode= *errcode***

**Explanation**

An error in extent-based management of a file system (*fsid*) was detected.

**Response**

Unmount the relevant file system, and execute **sfcfsck(8)** specifying **-o nolog**.

**WARNING: sfcfs\_mds:2026: *fsid*: super block read error. dev= *dev\_num* errcode= *errcode***

**Explanation**

The super block on the device of device number (*dev\_num*) cannot be read, when mounting the file system (*fsid*).

**Response**

Unmount the relevant file system, and execute **sfcfsck(8)** specifying **-o nolog**.

**WARNING: sfcfs\_mds:2027: super block read error. errcode= *errcode***

**Explanation**

In mounting the file system, reading from a super block on the device failed.

**Response**

Unmount the relevant file system, and execute **sfcfsck(8)** specifying **-o nolog**.

**WARNING: sfcfs\_mds:2028: *fsid*: partition configuration read error. dev= *dev\_num* errcode= *errcode***

**Explanation**

Partition configuration data could not be read when mount the file system (*fsid*) started.

**Response**

Take action according to the instructions in “C.3.1 [Action for I/O errors](#)”.

**WARNING: sfcfs\_mds:2029: partition configuration read error. errcode= *errcode***

**Explanation**

Partition configuration data could not be read when mount the file system started.

**Response**

Take action according to the instructions in “C.3.1 [Action for I/O errors](#)”.

**WARNING: sfcfs\_mds:2030: *fsid*: node information not found for node**

**Explanation**

Information for *node* was not found in the file system (*fsid*).

**Response**

Register correct node information using **sfcsetup(8)**.

**WARNING: sfcfs\_mds:2031: *fsid*: primary and secondary super blocks are different.**  
**dev=*dev\_num***

**Explanation**

An inconsistency was detected between the contents of the primary super block and the contents of the secondary super block on the indicated device.

**Response**

Specify the partition of device number *dev\_num* using **sfcinfo(8)**, and perform the procedure of

“C.3.2 [Corrective action in the event of data inconsistency](#)”.

```
# sfcinfo -d dev_num <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID special                                size Type mount
  1 /dev/sfdsk/gfs01/dsk/volume01 (dev_num) 14422 META /mnt
  1 /dev/sfdsk/gfs01/dsk/volume01 (dev_num)  5116 LOG  /mnt
  1 /dev/sfdsk/gfs01/dsk/volume01 (dev_num) 95112 DATA /mnt
```

**WARNING: sfcfs\_mds:2032: fsid: primary and secondary volume informations are different. dev=dev\_num**

#### Explanation

An inconsistency was detected between the contents of the primary partition configuration data and the contents of the secondary partition configuration data on the device.

#### Response

Specify the partition of device number *dev\_num* using **sfcinfo(8)**, and perform the procedure of “C.3.2 [Corrective action in the event of data inconsistency](#)”.

```
# sfcinfo -d dev_num <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID special                                size Type mount
  1 /dev/sfdsk/gfs01/dsk/volume01 (dev_num) 14422 META /mnt
  1 /dev/sfdsk/gfs01/dsk/volume01 (dev_num)  5116 LOG  /mnt
  1 /dev/sfdsk/gfs01/dsk/volume01 (dev_num) 95112 DATA /mnt
```

**WARNING: sfcfs\_mds:2033: fsid: super blocks differ. dev dev\_num1 to dev\_num2**

#### Explanation

An inconsistency was found in the super block information in the indicated file system (*fsid*) in a multiple partition configuration.

#### Response

Specify the partition of device number *dev\_num2* using **sfcinfo(8)**, and perform the procedure of “C.3.2 [Corrective action in the event of data inconsistency](#)”.

```
# sfcinfo -d dev_num2 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID special                                size Type mount
  1 /dev/sfdsk/gfs01/dsk/volume01 (dev_num2) 14422 META /mnt
  1 /dev/sfdsk/gfs01/dsk/volume01 (dev_num2)  5116 LOG  /mnt
  1 /dev/sfdsk/gfs01/dsk/volume01 (dev_num2) 95112 DATA /mnt
```

**WARNING: sfcfs\_mds:2034: mmap can't access between other nodes. mnt= mount\_point, ino= i-number, nodename(node1, node2), mode(mode1,mode2)**

#### Explanation

**open(2)** and **mmap(2)** that cannot be maintain the consistency of the data were issued to the same file.

**Response**

Please wait for the termination of the process running on the "*node1*" indicated this message, and execute again.

To determine the process using the *i-number*, act according to the following sequence:

- 1) determine the filename of the *i-number*, using **find(1)** with **-inum** option.
- 2) determine the process ID that uses the filename, using **fuser(1)**.
- 3) determine the command name of the process ID, using **ps(1)**.

**WARNING: sfcfs\_mds:2035: MDS(recover) is timed out.**

**Explanation**

MDS detected a timeout at recovery mounting.

**Response**

Reboot the system and perform the mounting again.

**WARNING: sfcfs\_mds:2036: can't allocate memory in primary**

**Explanation**

Memory could not be allocated on the file system.

**Response**

Increase memory or the size of the swap area.

**WARNING: sfcfs\_mds:2037: read error on log partition (errno= *errno* errcode= *errco*  
*de*): *mount\_point***

**Explanation**

An error occurred, in reading from the update log area in the file system (*mount\_point*).

**Response**

Take action according to the instructions in "C.3.1 [Action for I/O errors](#)".

**WARNING: sfcfs\_mds:2038: read error on meta partition (errno= *errno* errcode= *erro*  
*r\_code*): *mount\_point***

**Explanation**

An error occurred, in reading from the meta-data area in the file system (*mount\_point*).

**Response**

Take action according to the instructions in "C.3.1 [Action for I/O errors](#)".

**WARNING: sfcfs\_mds:2039: write error on log partition (errno= *errno* errcode= *error\_*  
*code*): *mount\_point***

**Explanation**

An error occurred, in writing to the update log area in the file system (*mount\_point*).

**Response**

Take action according to the instructions in "C.3.1 [Action for I/O errors](#)".

**WARNING: sfcfs\_mds:2040: write error on meta partition (errno= *errno* errcode= *erro*  
*r\_code*): *mount\_point***

**Explanation**

An error occurred during an attempt to write the meta partition.

**Response**

Take action according to the instructions in “C.3.1 [Action for I/O errors](#)”.

**WARNING: sfcfs\_mds:2041: can't receive heartbeat procedure. status= *status***

**Explanation**

Communication with the AC was lost. The file system cannot be used from the node.

**Response**

Unmount the indicated file system. Check the network, node, and IP address settings.

**WARNING: sfcfs\_mds:2042: *fsid*: The size of the partition might have been changed  
after the file system was made.**

**Explanation**

The size of the partition which constitutes the file system (*fsid*) might have been changed.

**Response**

Please perform the procedure(from step 6 on) described on “C.3.2 [Corrective action in the event of data inconsistency](#)”.

The file system can keep on using. But GFS Shared File System can not be expanded by size expansion of the partition which constitutes the GFS Shared File System. Please perform the procedure above promptly.

**WARNING: sfcfs\_mds:2043: *fsid*: volume informations differ. dev *dev\_num1* to *dev\_*  
*num2***

**Explanation**

Partition configuration information is inconsistent in the multipartition file system (*fsid*).

**Response**

Specify the partition of device number *dev\_num2* using **sfcinfo(8)**, and perform the procedure of “C.3.2 [Corrective action in the event of data inconsistency](#)”.

```
# sfcinfo -d dev_num2 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID special                                size Type mount
  1 /dev/sfdsk/gfs01/dsk/volume01 (dev_num2) 14422 META /mnt
  1 /dev/sfdsk/gfs01/dsk/volume01 (dev_num2)  5116 LOG  /mnt
  1 /dev/sfdsk/gfs01/dsk/volume01 (dev_num2) 95112 DATA /mnt
```

## A.2.10 Warning messages (sfcfsd daemon)

This section explains the sfcfsd daemon warning messages of the GFS Shared File System.

**WARNING: sfcfsd: 0001: invalid parameter(*param*), so it is ignored**

**Explanation**

An invalid value was detected in tunable parameters for the file system, and it is ignored.

**Response**

Review the file system's tunable parameters.

---

### **A.2.11 Information messages (sfcfrmd daemon)**

---

This section explains the sfcfrmd daemon information messages of the GFS Shared File System.

**NOTICE: sfcfrmd:0001: serve as master**

**Explanation**

sfcfrmd was started as a master.

**Response**

None.

**NOTICE: sfcfrmd:0002: serve as slave**

**Explanation**

sfcfrmd was started as a slave.

**Response**

None.

**NOTICE: sfcfrmd:0003: service start**

**Explanation**

Service of sfcfrmd was started.

**Response**

None.

**NOTICE: sfcfrmd:0004: service stop**

**Explanation**

Service of sfcfrmd was completed.

**Response**

None.

---

### **A.2.12 Information messages (MDS (sfcfsmg daemon))**

---

This section explains the MDS (sfcfsmg daemon) information messages of the GFS Shared File System.



**NOTICE: sfcfs\_mds:3001: *fsid*: file system full****Explanation**

There is no more space in file data area of the file system (*fsid*).  
(For an ordinary user, this message is also output when space drops below the **minfree** limit.)

**Response**

Expand the file system, delete unnecessary files, or move files to a file system that has enough space. To expand the file system, use **sfcadd(8)**.

**NOTICE: sfcfs\_mds:3002: *fsid*: out of inodes****Explanation**

There is no more space in i-node area of the file system (*fsid*).

**Response**

Delete unnecessary files or move files to a file system that has enough space.

**NOTICE: sfcfs\_mds:3003: *fsid*: file system meta data full (Vdata) type = *number*****Explanation**

There is no more space in V-data area of the file system (*fsid*).

**Response**

Delete unnecessary files or move files to a file system that has enough space.

**NOTICE: sfcfs\_mds:3004: *fsid*: too much fragment (extent)****Explanation**

There is no more area for managing unused space in the file system (*fsid*) because of area fragmentation. An area released by subsequent area release processing may become an invalid area.

**Response**

To sort out fragmented area in the file system, back up each file in the file system, and recreate the file system then restore the backed up data.

**NOTICE: sfcfs\_mds:3005: *fsid*: bad namelen == 0 parent ino = *number*****Explanation**

An illegal path name request was made in a directory operation of the file system (*fsid*).

**Response**

No response is required because the system rejected the illegal request and continues processing. If this error occurs frequently, identify the target directory using parent ino and the operation making the illegal request, and take appropriate action.

**NOTICE: sfcfs\_mds:3006: *fsid*: I/O error on log: dev = *dev\_num* block = *block\_num*  
size = *size* errcode = *errcode*****Explanation**

The system could not write an update log on device *dev\_num* of the file system (*fsid*).

**Response**

Unless message `sfdfs_mds:2020` is issued, recovery by retry processing was successful. So no response is required.

**NOTICE: `sfdfs_mds:3007: fsid: primary super block read failed, but secondary read.`**

**`dev = dev_num block = block_num size = size errcode = errcode`**

**Explanation**

The primary super block on the device `dev_num` of the file system (`fsid`) could not be read. Processing was continued because the secondary super block was read correctly.

**Response**

File system operation can be continued. However, because a block error occurred, promptly take action according to the instructions in “C.3.1 [Action for I/O errors](#)”.

**NOTICE: `sfdfs_mds:3008: primary super block read failed, but secondary read.errco`**

**`de = errcode`**

**Explanation**

The primary super block on the device of the file system could not be read. Processing was continued because the secondary super block was read correctly.

**Response**

File system operation can be continued. However, because a block error occurred, promptly take action according to the instructions in “C.3.1 [Action for I/O errors](#)”.

**NOTICE: `sfdfs_mds:3009: fsid: secondary super block read failed, but primary read.`**

**`dev = dev_num block = block_num size = size`**

**Explanation**

The secondary super block on the device `dev_num` of the file system (`fsid`) could not be read. Processing was continued because the primary super block was read correctly.

**Response**

File system operation can be continued. However, because a block error occurred, promptly take action according to the instructions in “C.3.1 [Action for I/O errors](#)”.

**NOTICE: `sfdfs_mds:3010: secondary super block read failed, but primary read.errco`**

**`de = errcode`**

**Explanation**

The secondary super block on the device of the file system could not be read. Processing was continued because the primary super block was read correctly.

**Response**

File system operation can be continued. However, because a block error occurred, promptly take action according to the instructions in “C.3.1 [Action for I/O errors](#)”.

**NOTICE: `sfdfs_mds:3011: fsid: primary partition configuration read failed, but second`**

**ary read. dev = *dev\_num* block = *block\_num* size = *size* errcode = *errcode***

**Explanation**

Primary partition configuration data on the device *dev\_num* of the file system (*fsid*) could not be read. Processing was continued because the secondary partition configuration data was read correctly.

**Response**

File system operation can be continued. However, because a block error occurred, promptly take action according to the instructions in "C.3.1 [Action for I/O errors](#)".

**NOTICE: sfcfs\_mds:3012: primary partition configuration read failed, but secondary r**

**ead.errcode = *errcode***

**Explanation**

Primary partition configuration data on the device of the file system could not be read. Processing was continued because the secondary partition configuration data was read correctly.

**Response**

File system operation can be continued. However, because a block error occurred, promptly take action according to the instructions in "C.3.1 [Action for I/O errors](#)".

**NOTICE: sfcfs\_mds:3013: *fsid*: secondary partition configuration read failed, but pri**

**mary read. dev = *dev\_num* block = *block\_num* size = *size* errcode =*errcode***

**Explanation**

Secondary partition configuration data on the device *dev\_num* of the file system (*fsid*) could not be read. Processing was continued because the primary partition configuration data was read correctly.

**Response**

File system operation can be continued. However, because a block error occurred, promptly take action according to the instructions in "C.3.1 [Action for I/O errors](#)".

**NOTICE: sfcfs\_mds:3014: secondary partition configuration read failed, but primary r**

**ead. errcode =*errcode***

**Explanation**

Secondary partition configuration data on the device of the file system could not be read. Processing was continued because the primary partition configuration data was read correctly.

**Response**

File system operation can be continued. However, because a block error occurred, promptly take action according to the instructions in "C.3.1 [Action for I/O errors](#)".

**NOTICE: sfcfs\_mds:3015: *fsid*: can't get partition size.dev = *dev\_num*. errcode = *errc***

***ode***

**Explanation**

The size of the specified partition on the device *dev* of the file system (*fsid*) could not be obtained. Processing was continued because the primary super block was read correctly.

**Response**

Unmount the file system, and make the super blocks consistent using **sfcadm(8)**.

**NOTICE: sfcfs\_mds:3016: can't get partition size**

**Explanation**

The size of the specified partition on the device of the file system could not be obtained. Processing was continued because the primary super block was read correctly.

**Response**

Unmount the file system, and make the super blocks consistent using **sfcadm(8)**.

**NOTICE: sfcfs\_mds:3017: nodename mismatch. *node* <-> *node***

**Explanation**

A node with an existing hostid and nonexistent node name was registered in the file system.

**Response**

Unless sfcfs\_mds:2030 is issued, no response is required.

**NOTICE: sfcfs\_mds:3020: *mountpoint*: The total number of vnodes used reached the upper bound. vnodes used=*total\_num*: upper bound=*high\_num*: lower bound=*low\_num***

**Explanation**

i-node's cache memory (vnode) is released until *total\_num* falls below the *low\_num* because *total\_num* of i-node's cache memory amounted to *high\_num*.

**Response**

The file system operation can be continued. But limit operations to the bare minimum until message (sfcfs\_mds:3021) is output, because i-node's cache memory is being released.

**NOTICE: sfcfs\_mds:3021: *mountpoint*: The total number of vnodes used(=*total\_num*) is the lower bound(=*low\_num*).**

**Explanation**

Releasing i-node's cache memory (vnode) is stopped because i-node's cache memory reached the *low\_num*.

**Response**

None.

### A.2.13 Information messages (sfcprmd daemon)

---

This section explains the sfcprmd daemon information messages of the GFS Shared File System.

**NOTICE: sfcprmd:0006: *daemon* was respawn fail.**

**Explanation**

The daemon indicated by *daemon* failed to reboot.

**Response**

None.

## A.3 GFS Shared File System Script Messages

This section describes the script messages of the GFS Shared File System. Messages are output to the console at each node and stored in `/var/log/messages`.

### A.3.1 `sfcsrm` script

#### **ERROR: sfcsrm:0001: can not execute `file_name`**

##### **Explanation**

`file_name` is not executable.

##### **Response**

See "*Installation Guide*" of PRIMECLUSTER and reinstall the package.

#### **ERROR: sfcsrm:0002: `management_partition` is not available**

##### **Explanation**

The status of the GDS volume that was specified as the management partition is not ACTIVE. Or, there is a possibility that the GDS volume is deleted without deleting node configuration information from the management partition by `sfcssetup -d` on the target node when the use of GFS is stopped.

##### **Response**

Check whether the volume exists by executing the following procedures:

```
# ls -l management_partition <Enter>
```

- If GFS is used
  - If the volume does not exist
    - Create a volume according to the instructions in "Operation" of the "*PRIMECLUSTER Global Disk Services (Linux) Configuration and Administration Guide*".
    - If there is a backup of the management partition information
      - Restore the management partition according to the instructions in "9.7 [Restoring of the management partition information](#)" in this manual.
    - If there is no backup of the management partition information
      - See "9.2 [Creating of the management partition](#)" and set up the management partition.
  - If the volume exists
    - If the volume status is not ACTIVE, change the status to ACTIVE. For instructions on how to change the volume status, see the "Operation" of the "*PRIMECLUSTER Global Disk Services (Linux) Configuration and Administration Guide*".
- If GFS is not used
  - If the volume does not exist
    - Delete information on the deleted GDS volume by executing the following procedures:
      1. Create a temporary GDS volume of 40 megabytes or more. (GDS volume name is arbitrary)
      2. `sfcssetup -c temporary_GDS_volume` (GDS volume name made at 1.)

3. `sfcsetup -a temporary_GDS_volume` (GDS volume name made at 1.)
  4. `sfcsetup -d`
- If the volume exists
- Delete the node configuration information from the management partition by executing the following procedures:
1. Set the volume status to ACTIVE. For instructions on how to change the volume status, see "Operations" of the "*PRIMECLUSTER Global Disk Services (Linux) Configuration and Administration Guide*".
  2. See "9.4 [Deleting node configuration information from the management partition](#)" and delete the node configuration information from the management partition.

**ERROR: sfcsrm:0003: sfcfrmstart failed****Explanation**

sfcfmrd daemon failed booting.

**Response**

Check the error message of **sfcfmstart(8)** displayed previously to this message, and take corrective action about that message according to "A.5.4 [sfcfmstart command](#)".

**ERROR: sfcsrm:0004: can not terminate *daemon*****Explanation**

The *daemon* could not be stopped.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**ERROR: sfcsrm:0005: can not load *module*****Explanation**

Loading of *module* failed.

**Response**

Check if *module* exists by executing the "ls(1)" command. If it does not, install the package again according to the installation guide. If it does, collect a crash dump and file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**ERROR: sfcsrm:0006: can not unload *module*****Explanation**

Unloading of *module* failed.

**Response**

Collect a crash dump and file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**ERROR: sfcsrm:0007: cluster is not available****Explanation**

Cluster resource management has not been activated.

**Response**

Please follow the procedure in an error message of the Cluster resource management outputted to `/var/log/messages`. For details, see the "Resource Database Messages" of "*PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide*".

**ERROR: sfcfsrm:0008: An error occurred while accessing a file *path* : *errmsg*****Explanation**

File access to cancel the suspension of the `sfcfrmd` daemon's startup failed.

**Response**

Check that the `/var/opt/FJSVsfcs` directory exists. If it does, restart the system. If it doesn't, install the package according to the installation guide.

**ERROR: sfcfsrm:0009: Querying the state of quorum failed****Explanation**

Checking a quorum exists failed.

**Response**

Check the message of `rcquery(1M)` displayed previously to this message, and after taking corrective action about that message according to "rcquery messages" of the "*PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide*", restart the system.

**ERROR: sfcfsrm:0010: Starting the sfcfrmd daemon failed because quorum does no****t exist****Explanation**

Activation of the GFS service is disrupted because a quorum does not exist when CF is started from GUI. If the `sfcfrmd` daemon's start mode is set to `wait`, and a quorum does not exist, the GFS service will be discontinued during CF startup.

A quorum does not exist, and the GFS service is discontinued under the following conditions:

- CF is activated from GUI after CF is stopped on all the nodes, then GFS is operated.
- A cluster partition error exists.

**Response**

If you activate CF from GUI after stopping it on all the nodes, see the procedure described in "12.6 [How to start up CF from GUI when a GFS Shared File System is used](#)".

If you did not stop CF on all the nodes, or the GFS service activation fails after performing the procedure detailed above, a cluster partition error might have occurred. Take corrective action according to "C.3.4 [Corrective action when the sfcfrmd daemon is not started](#)".

**WARNING: sfcfsrm:5001: Starting the sfcfrmd daemon was suspended because quo****rum does not exist****Explanation**

Activation of the `sfcfrmd` daemon is suspended because a quorum does not exist when the node is started up, the node enters multi-user mode, or CF is started from GUI. Normally, a quorum be not existing is not maintained until all the nodes are activated. As soon as it is exist, the `sfcfrmd` daemon will be activated.

Accordingly, it is necessary to take corrective actions under the following conditions otherwise



data remains inconsistent.

- A cluster partition error exists.
- When all the nodes are stopped, or CF is stopped on all the nodes, part of nodes or only CF is activated and then GFS is operated.

**Response**

Take corrective action according to “C.3.4 [Corrective action when the sfcfrmd daemon is not started](#)”.

**WARNING: sfcfsrm:5002: Considering the start mode of the sfcfrmd daemon to be wait because getting the start mode failed**

**Explanation**

Since acquisition of the startup mode of the sfcfrmd daemon fails, the daemon is activated with the **wait** setting.

**Response**

If GFS is activated properly, no corrective action needs to be taken. If an error message of the sfcfsrm script is output, it is necessary to take corrective action according to the message.

**NOTICE: sfcfsrm:2001: The suspended sfcfrmd daemon is resumed because quorum exist**

**Explanation**

Since a quorum exists, the suspended sfcfrmd daemon was started.

**Response**

None.

**NOTICE: sfcfsrm:2002: The suspended sfcfrmd daemon is resumed by ordering of sfcfrmstart**

**Explanation**

Since **sfcfrmstart -f** was executed, the suspended sfcfrmd daemon was started.

**Response**

None.

## **A.4 GFS Shared File System Implementations of Standard File System Management Commands' Messages**

This section describes messages that can be output when GFS Shared File System implementations of standard File System management commands are used.

### **A.4.1 sfcdf command**

---

#### **sfcdf: ERROR: cannot open *special*: *errmsg***

##### **Explanation**

Opening the partition (*special*) failed.

##### **Response**

Take action according to *errmsg*.

#### **sfcdf: ERROR: cannot allocate memory**

##### **Explanation**

Memory allocation failed.

##### **Response**

Wait for the termination of another process or increase the swap space, and re-execute the command.

#### **sfcdf: ERROR: cannot connect to FsRM**

##### **Explanation**

The file system monitoring mechanism is not operating.

##### **Response**

Check whether the file system monitoring mechanism is running.

#### **sfcdf: ERROR: cannot read file system configuration information**

##### **Explanation**

Reading the file system configuration information failed.

##### **Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

#### **sfcdf: ERROR: *special* file system configuration information is full of entry**

##### **Explanation**

The file system configuration information has reached the limit.

##### **Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer

support engineers.

**sfcdf: ERROR: *special* is not a sfdfs file system**

**Explanation**

The specified partition (*special*) is not a sfdfs file system partition.

**Response**

Check whether the specified partition is a sfdfs file system partition.

**sfcdf: ERROR: unknown error= *errid***

**Explanation**

An unexpected error was detected.

**Response**

Collect the diagnostic data with **fjsnap**, and contact your local Customer Support submitting it along with text of the error message displayed.

**sfcdf: ERROR: filesystem(*special*) is already locked**

**Explanation**

The partition (*special*) is unavailable because another command is using it.

**Response**

Upon termination of the other command, re-execute the command.

**sfcdf: ERROR: cannot read the {superblock | volume information} of *special***

**Explanation**

Reading the superblock or volume information on the partition (*special*) failed.

**Response**

Delete the target file system where it is unnecessary. For details, see "11.8 [Deleting](#)" in this manual. When it is a necessary file system, restore it running a full scan with **sfdfsck(8)**. For details, see "C.3.1 [Action for I/O errors](#)" in this manual.

**sfcdf: ERROR: cannot stat *special: errmsg***

**Explanation**

Obtaining the attribute of the specified partition (*special*) failed.

**Response**

Take action according to *errmsg*.

**sfcdf: ERROR: filesystem(*special*) is not shared for this node**

**Explanation**

The command was executed on a node other than the nodes sharing the file system.

**Response**

Execute the command on a file system sharing node.

**sfcdf: ERROR: meta volume is not found**

**Explanation**

An error was detected in volume information.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**sfcdf: ERROR: invalid magic word 0xmagic**

**Explanation**

The partition configuration data of the specified partition is invalid.

**Response**

Check whether the specified partition is a sfdfs file system partition.

**sfcdf: ERROR: invalid device: special**

**Explanation**

The specified partition (*special*) is invalid.

**Response**

Check whether the specified partition is correct.

**sfcdf: ERROR: cannot ioctl(BLKGETSIZE) special: errmsg**

**Explanation**

Obtaining the size of the device (*special*) failed.

**Response**

Take action according to **errmsg**.

**sfcdf: ERROR: lseek64 error retval: errmsg**

**Explanation**

An error occurred in the special file (*special*) I/O operation.

**Response**

Take action according to **errmsg**.

**sfcdf: ERROR: {primary | secondary} {superblock | volinfo} read error: errno**

**Explanation**

A read error occurred with the {primary | secondary} superblock.

**Response**

Check the disk status.

**sfcdf: ERROR: fs structure is wrong**

**Explanation**

The specified file system is not a sfdfs file system.

**Response**

Check whether the specified file system is a `sfvfs` file system.

**sfvfs: ERROR: volume information for this node is not found**

**Explanation**

The command was executed on a node other than the nodes sharing the file system.

**Response**

Execute this command on a file system sharing node.

**sfvfs: ERROR: *special* is not a block device**

**Explanation**

*special* is not a block special file.

**Response**

Check whether the specified partition is correct.

**sfvfs: ERROR: *special* is not representative partition**

**Explanation**

The specified partition *special* is not a representative partition.

**Response**

Specify a representative partition then execute the command.

## A.4.2 `sfvfsck` command

---

For details about `sfvfsck(8)` error messages, see “12.2.1 [Action to be taken when fsck terminates abnormally](#)”.

## A.4.3 `sfvsmkfs` command

---

**sfvsmkfs:ERROR: {Node | Partition} is not same**

**Explanation**

The specified configuration is not the same as the configuration of the previously created file system.

**Response**

When specifying the `-o force` option, specify the same configuration as that of the previously created file system and re-execute the command.

**sfvsmkfs:ERROR: Argument out of range: *value***

**Explanation**

An overflow occurred because the value *value* specified for an option was too large.

**Response**

Specify a correct value within the range allowed for each option, and re-execute the command.

**sfcmkfs:ERROR: Bad numeric arg: *string***

**Explanation**

The nonnumeric character string *string* was specified for an option parameter for which a numeric value must be specified.

**Response**

Specify a correct parameter value.

**sfcmkfs:ERROR: Cannot find {any | free} port of sfcfs in file**

**Explanation**

A failure occurred because all communication port numbers have been used.

**Response**

Add a new communication port number for sfcfs to /etc/services.

**sfcmkfs:ERROR: Cannot connect to cluster**

**sfcmkfs:ERROR: can not connect to CLUSTER SYSTEM**

**Explanation**

Connecting to the cluster control mechanism failed.

**Response**

Make sure that the cluster control mechanism is operating using the ps command, and re-execute the command.

**sfcmkfs:ERROR: Cannot look up *device\_file***

**Explanation**

Specified *device\_file* was not found.

**Response**

Check whether the specified special file name is correct, and re-execute the command.

**sfcmkfs:ERROR: Cannot look up *device\_file* in *node***

**Explanation**

The specified block special file *device\_file* could not be found.

**Response**

Specify the name of a special file that can be shared by the specified hosts, and re-execute the command.

**sfcmkfs:ERROR: Cannot open file : *filename***

**Explanation**

Opening the file *filename* failed.

**Response**

Check whether the file *filename* exists, and re-execute the command.

**sfcmkfs:ERROR: Data area is too small, can't mkfs**

**Explanation**

The file data area is not sufficient in size, and therefore, a file system cannot be created.

**Response**

Review parameters so that a sufficiently large file data area can be reserved.

**sfcmkfs:ERROR: can not open special: *filename(errmsg)***

**Explanation**

Opening the special file *filename* failed.

**Response**

Take action according to the detailed information *errmsg*.

**sfcmkfs:ERROR: sfcs\_synctab : Can not write to file system configuration information : *errmsg***

**Explanation**

Updating the file system configuration information failed.

**Response**

Collect the diagnostic data with **fjsnap**, and contact your local Customer Support submitting it along with text of *errmsg*.

**sfcmkfs:ERROR: Illegal option: *option***

**Explanation**

An illegal option was specified.

**Response**

Specify a correct option and argument.

**sfcmkfs:ERROR: Invalid magic word *0xmagic***

**Explanation**

Part of the management data of the specified GFS Shared File System was destroyed.

**Response**

Restore it with **sfcsck(8)** or delete it properly with **sfcdm(8)**.

**sfcmkfs:ERROR: *device\_name* is not full path name**

**Explanation**

Specified *device\_name* is not the absolute path name.

**Response**

Specify the absolute path name for *device\_name*, and re-execute the command.

**sfcmkfs:ERROR: Master partition is small, log area space not enough**

**Explanation**

The update log area cannot be created because the representative partition is too small.

**Response**

Check the specified parameter, allocate enough space for the representative partition, and re-execute the command.

**sfcmkfs:ERROR: Master partition is small, meta area not enough**

**Explanation**

The meta-data area cannot be created because the representative partition is too small.

**Response**

Review the specified parameter, secure sufficient space on the representative partition, and re-execute the command.

**sfcmkfs:ERROR: Metasz small, can't mkfs**

**Explanation**

Creation of a file system stops because the meta-data area is too small for managing the specified data area and file.

**Response**

Specify a larger value for a **metasz** parameter in order to increase the size of the meta-data area, or review such a parameter as **nbpi** for less meta-data space.

**sfcmkfs:ERROR: No response from *node***

**Explanation**

Communication for the host specified for **node** has not been enabled.

**Response**

When communication for the host has been enabled, re-execute the command.

**sfcmkfs:ERROR: Not super user**

**Explanation**

The user executing this command is not a super-user.

**Response**

Re-execute the command as a super-user.

**sfcmkfs:ERROR: Number of file system is over *count***

**Explanation**

The new GFS Shared File System could not be added because the maximum number of file systems in the same domain indicated by **count** was exceeded.

**Response**

Delete an unnecessary GFS Shared File System where it is possible and re-execute the command. For details about deleting a file system, see [sfcadm\(8\)](#) and [sfcinfo\(8\)](#).



**sfcmkfs:ERROR: Number of hostname is over *num***

**Explanation**

The number of specified sharing hosts exceeds the maximum *num* for GFS Shared File System.

**Response**

Specify no more than *num* hosts that will share the file system.

**sfcmkfs:ERROR: not entry file system**

**Explanation**

No corresponding file system exists while the **-o force** option was specified.

**Response**

Specify the same configuration as the file system configuration previously created the **-o force** option should be set, and re-execute the command.

**sfcmkfs:ERROR: No more add filesystem**

**Explanation**

The number limit of registrable GFS Shared File Systems was exceeded, and any more file system cannot be added.

**Response**

Delete an unnecessary GFS Shared File System where it is possible and re-execute the command. For details about deleting a file system, see [sfcadm\(8\)](#) and [sfcinfo\(8\)](#).

**sfcmkfs:ERROR: Same hostname *string* is specified more than once**

**Explanation**

The specified host name indicated by *string* has already been specified.

**Response**

Specify a unique host name for the **-o node** option.

**sfcmkfs:ERROR: failed to check service is stopped : *errmsg***

**Explanation**

Mount state acquisition of a special file went wrong.

**Response**

Please perform management according to the detailed information *errmsg*.

**sfcmkfs:ERROR: fstat(2) failed *device\_file*: *errmsg***

**Explanation**

Obtaining the status of the special file *device\_file* failed.

**Response**

Take action according to detailed information indicated by *errmsg*. For details, see the description of **fstat(2)**.

**sfcmkfs:ERROR: ioctl(2) {BLKGETSIZE } error: *errmsg***

**Explanation**

Obtaining the device size failed.

**Response**

Take action according to the detailed information *errmsg*.

**sfcmkfs:ERROR: lseek(2) failed *device\_file*: *errmsg***

**Explanation**

*lseek(2)* could not be executed for *device\_file*.

**Response**

Take action according to detailed information indicated by *errmsg*. For details, see the description of *lseek(2)*.

**sfcmkfs:ERROR: malloc(3C) failed: *errmsg***

**Explanation**

Memory could not be allocated.

**Response**

Wait for the termination of another process or increase the swap space according to the detailed information *errmsg*.

**sfcmkfs:ERROR: *device\_file* is already used**

**Explanation**

The specified special device *device\_file* has been used in another GFS Shared File System.

**Response**

Re-execute the command after taking one of the following actions:

Use an unused special device.

Delete the file system if it is not being used.

Specify **-o force** to re-create a file system with exactly the same configuration.

**sfcmkfs:ERROR: Cannot add data, file *filetable***

**Explanation**

The number limit of registrable GFS Shared File Systems was exceeded, and any other file system cannot be added in *filetable*.

**Response**

Delete an unnecessary GFS Shared File System where it is possible and re-execute the command. For details about deleting a file system, see [sfcadm\(8\)](#) and [sfcinfo\(8\)](#).

**sfcmkfs:ERROR: *device\_file* is mounted, can't mkfs**

**Explanation**

The specified partition indicated by *device\_file* cannot be changed because the file system is mounted.

**Response**

Unmount the file system and re-execute the command specifying **-o force**, or delete the file

system with **sfcadm(8)** and re-execute the command.

**sfcmkfs:ERROR: *special* is not a sfcfs file system**

**Explanation**

The special device *special* is not a GFS Shared File System device while the **-m** option was specified.

**Response**

Specify a special file created already as a GFS Shared File System, and re-execute the command.

**sfcmkfs:ERROR: *device\_file* is not special device, can't mkfs**

**Explanation**

Specified *device\_file* is not a special device file.

**Response**

Specify a special file.

**sfcmkfs:ERROR: read(2) error at *device\_file*: *errmsg***

**Explanation**

**read(2)** for *device\_file* failed.

**Response**

Take action according to detailed information indicated by *errmsg*. For details, see the description of **read(2)**.

**sfcmkfs:ERROR: write(2) error at *device\_file*: *errmsg***

**Explanation**

The **write(2)** operation for *device\_file* failed.

**Response**

Take action according to detailed information indicated by *errmsg*. For details, see the description of **write(2)**.

**sfcmkfs:ERROR: Fsid out of range**

**Explanation**

An error was detected in the internal processing.

**Response**

Collect the diagnostic data with **fjsnap**, and contact your local Customer Support submitting it along with text of the error message displayed.

**sfcmkfs:ERROR: *device\_name* partition size is over 1TB**

**Explanation**

The size of the partition of *device\_name* has exceeded 1 terabytes.

**Response**

Reduce the size of *device\_name* or specify another partition when it is exceeding the maximum

partition size, and re-execute the command.

### **sfcmkfs:ERROR: fsid bad entry**

#### **Explanation**

An internal error was detected in the process of newly adding a file system.

#### **Response**

Collect the diagnostic data with **fjsnap**, and contact your local Customer Support submitting it along with text of the error message displayed.

### **sfcmkfs:ERROR: Not enough memory**

#### **Explanation**

Memory allocation failed.

#### **Response**

Wait for the termination of another process or increase the swap space.

### **sfcmkfs:ERROR: Not read file system configuration information**

#### **Explanation**

Obtaining the file system configuration information failed.

#### **Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

### **sfcmkfs:ERROR: Fsid already in use**

#### **Explanation**

An internal error was detected in the process of newly adding a file system.

#### **Response**

Collect the diagnostic data with **fjsnap**, and contact your local Customer Support submitting it along with text of the error message displayed.

### **sfcmkfs:ERROR: can not sfdfs\_lock**

#### **Explanation**

Obtaining the lock in the file system failed.

#### **Response**

Re-execute the command after some interval because another process may currently retain the lock.

### **sfcmkfs:ERROR: can not unlock**

#### **Explanation**

Releasing the lock in the file system failed.

#### **Response**

Re-execute the command after the **sfcmkfs** termination releases the lock.

### **sfcmkfs:ERROR: can not get fsid**

#### **Explanation**

Obtaining Fsid for newly adding a file system failed.

#### **Response**

Collect the diagnostic data with **fjsnap**, and contact your local Customer Support submitting it along with text of the error message displayed.

### **sfcmkfs:ERROR: can not configlock**

#### **Explanation**

Obtaining the lock in the domain failed.

#### **Response**

Re-execute the command after some interval because another process may currently retain the lock.

### **sfcmkfs:ERROR: *device\_name* is already used for the management partition.**

#### **Explanation**

Specified *device\_name* has been used for the file system management.

#### **Response**

Specified *device\_name* is not available because it is in use for the file system management. Specify another special file to execute the command.

### **sfcmkfs:ERROR: can not acquire fsid**

#### **Explanation**

An internal error was detected in the process of newly adding a file system.

#### **Response**

Collect the diagnostic data with **fjsnap**, and contact your local Customer Support submitting it along with text of the error message displayed.

### **sfcmkfs:ERROR: no entry fsid= *fsidnumber***

#### **Explanation**

Obtaining the file system configuration information of *fsidnumber* failed.

#### **Response**

Specify the same configuration as the file system configuration previously created where the **-o force** option is set, or specify the representative partition of the file system configured already where the **-m** option is set.

### **sfcmkfs:ERROR: *device\_name* is not Master Partition**

#### **Explanation**

*device\_name* is not the representative partition.

#### **Response**

Specify the representative partition of the file system created already.

### **sfcmkfs:ERROR: Global Memory Broken**

#### **Explanation**

An error was detected in the internal processing.

#### **Response**

Collect the diagnostic data with **fjsnap**, and contact your local Customer Support submitting it along with text of the error message displayed.

### **sfcmkfs:ERROR: cluster error**

#### **Explanation**

An error was detected in the internal processing with the cluster control mechanism.

#### **Response**

Collect the diagnostic data with **fjsnap**, and contact your local Customer Support submitting it along with text of the error message displayed.

### **sfcmkfs:ERROR: The specified device does not exist.**

#### **Explanation**

The specified special file is not found.

#### **Response**

Check whether the special file exists on any node of the file system.

### **sfcmkfs:ERROR: partition [*device\_name*] is small, can't acquire data area**

#### **Explanation**

Securing the file data area failed because the size of the partition *device\_name* is small.

#### **Response**

Specify the bigger partition for *device\_name* or adjust such parameters as **metasz** and **logsz** for smaller size in order to secure the file data area, and re-execute the command.

### **sfcmkfs:ERROR: cannot read the FsRM configuration file: errno= *value***

#### **Explanation**

Obtaining the FsRM management information failed.

#### **Response**

Collect the diagnostic data with **fjsnap**, and contact your local Customer Support submitting it along with text of the error message displayed.

### **sfcmkfs:ERROR: Can not get host informations**

#### **Explanation**

Acquisition of host information of the specified node failed.

Possible causes:

- The node specified is invalid.
- The specified node is stopped.
- sfcfrmd daemon is not running on the specified nodes.
- A cluster partition error exists.

**Response**

Execute **sfcmkfs(8)** again after correcting the cause of the failure according to the following procedures.

1. Check whether the node specified is correct. If a mistake is found, specify the correct host name.
2. Confirm that the specified node is not stopped. If the node was stopped, start it.
3. Execute the following operations on all the specified nodes.

- a) Check if the sfcfrmd daemon is operating by **ps(1)** command.

An example is shown below.

```
# /bin/ps -e | /bin/grep sfcfrmd <Enter>
27198 ?      00:00:00 sfcfrmd
# echo $? <Enter>
0
```

If **grep(1)**'s return code is 0, sfcfrmd daemon is running.



[See](#)

For details of **ps(1)** and **grep(1)**, see the online manual page.

- b) If the sfcfrmd daemon is not running, confirm that the following message is not output to **/var/log/messages**.

```
WARNING: sfcfsrm:5001: Starting the sfcfrmd daemon was suspended because
quorum does not exist
```

If the message is not output, execute **sfcfrmstart(8)** command.

4. When a problem can not be resolved using operations from 1 to 3, a cluster partition error may have occurred. Correct the cluster partition error according to "C.3.4 [Corrective action when the sfcfrmd daemon is not started](#)".

**sfcmkfs:ERROR: cannot update the management partition: errno= value**

**Explanation**

Registration to the file system management information failed.

**Response**

Collect the diagnostic data with **fjsnap**, and contact your local Customer Support submitting it along with text of the error message displayed.

**sfcmkfs:ERROR: Unknown error : *value***

**Explanation**

An unexpected error was detected in the internal processing.

**Response**

Collect the diagnostic data with **fjsnap**, and contact your local Customer Support submitting it along with text of the error message displayed.

**sfcmkfs:ERROR: Number of partition is over *count* in maxvol : *device\_file***

**Explanation**

The number of partitions specified exceeds the upper limit **count** specified with the maxvol option.

**Response**

Increase the value of the **maxvol** option or decrease the number of partitions configuring the file system by grouping the partitions.

**sfcmkfs:ERROR: Same device is specified more than once**

**Explanation**

A partition same as the file data partition specified with **-o data** or same as a representative partition specified with an operand is being used.

**Response**

Specify a file data partition with **-o data** only once, or specify a representative partition with an operand different than that specified with **-o data**.

**sfcmkfs:ERROR: total file system size is too large**

**Explanation**

The total partition size exceeds the maximum file system size of 1 terabyte, so a file system cannot be created.

**Response**

The total partition size (file data partition with **-o data** and representative partition with operand) must be less than 1 terabyte.

**sfcmkfs:ERROR: fsid no match. *device\_file1* fsid *value1*, *device\_file2* fsid *value2***

**Explanation**

The configuration of the specified partition is different than that of the current partition, so a file system cannot be recreated.

**Response**

Check the configuration of the current partition using the "**sfcmkfs -m**" command. To make the configuration of the specified partition same as that of the displayed current partition by executing **sfcmkfs(8)** with the "**-o data**" option and correct operand.

**sfcmkfs:WARNING: *value* : bogus logsz reset to system set value**

**Explanation**

The parameter value, **value**, specified by the **logsz** option lies outside the valid range, and the value is automatically calculated to create the file system.



**Response**

If there is a problem, specify a correct parameter value, and re-execute the command.

**sfcmkfs:WARNING: *value* : bogus maxnode reset to 16**

**Explanation**

The **value** of the **maxnode** option is out of the valid range, so the default value 16 will be used to create a file system.

**Response**

If there is a problem, specify a correct parameter value, and re-execute the command.

**sfcmkfs:WARNING: *value* : bogus metasz reset**

**Explanation**

The value **value** specified for the **metasz** option is outside the valid range. The file system is created using a calculated size.

**Response**

If there is a problem, specify a correct parameter value, and re-execute the command.

**sfcmkfs:WARNING: *value* : bogus mminfree reset to 10%**

**Explanation**

The value **value** specified for the **mfree** option is outside the valid range. The file system is created using the default value (10%).

**Response**

If there is a problem, specify a correct parameter value, and re-execute the command.

**sfcmkfs:WARNING: *value* : bogus nblkpext reset to 1**

**Explanation**

The value **value** specified for the **nblkpext** option is outside the valid range. The file system is created using the default value (1).

**Response**

If there is a problem, specify a correct parameter value, and re-execute the command.

**sfcmkfs:WARNING: *value* : bogus nbpi reset to 8192**

**Explanation**

The value **value** specified for the **nbpi** option is outside the valid range. The file system is created using the default value (8192).

**Response**

If there is a problem, specify a correct parameter value, and re-execute the command.

**sfcmkfs:WARNING: *value* : logsize of partition is over : Retry Auto size**

**Explanation**

The log area of the size (**value**) specified by the **logsz** option cannot be secured because the capacity of the partition is insufficient. The log area size is automatically calculated to create the file system.

### Response

When this action comes to an issue, specify a proper parameter value and re-execute the command.

### **sfcmkfs:WARNING: *value* : metasize of partition is over : Retry Auto size**

#### Explanation

The meta-data area of the size (*value*) specified by the **metasz** option cannot be secured because the capacity of the partition is insufficient. The meta-data area size is automatically calculated to create the file system.

#### Response

When this action comes to an issue, specify a proper parameter value and re-execute the command.

### **sfcmkfs:WARNING: *value* : bogus free reset to 10%**

#### Explanation

The parameter value, *value*, specified by the **free** option lies outside the range, and the default value 10% is applied to create the file system.

#### Response

When this action comes to an issue, specify a proper parameter value and re-execute the command.

### **sfcmkfs:WARNING: *value* : bogus dataopt reset to n**

#### Explanation

An invalid *value* was specified for dataopt, so the default value n will be specified.

#### Response

File data area is included in the representative partition of the file system. No corrective action should be taken if this configuration is used. If you want to detach the file data area from the representative partition, delete the file system using **sfcadm(8)**. Then, specify **dataopt=y** for **sfcmkfs(8)** and execute the command again.

### **sfcmkfs:WARNING: *value* : bogus maxdsz reset**

#### Explanation

An invalid *value* was specified for the **maxdsz** option, so the default value will be specified.

#### Response

The meta-data area size and update log area size of the file system is calculated from the file system size of the specified partition. No corrective action should be taken if this configuration is used. If additional file data partitions are added to the file system in the future, delete the file system using **sfcadm(8)**. Then, calculate and specify the maximum total size (**-o maxdsz**) of the file data area and execute the command again.

### **sfcmkfs:WARNING: *value* : bogus maxvol reset to 16**

#### Explanation

The *value* of the **maxvol** option is out of the valid range, so the default value 16 will be used to create a file system.

**Response**

The maximum number of partitions of the file system is 16. No corrective action should be taken if this configuration is used. If the number of partitions is more than 16, delete the file system using **sfcadm(8)**. Then, specify the maximum total number of the partitions for **-o maxivol** of **sfcmkfs(8)** and execute the command again.

**A.4.4 sfcmount command**

---

**ERROR: sfcmount: 0001: Permission denied**

**Explanation**

Execution was attempted with other than super-user permission.

**Response**

Retry execution with super-user permission.

**ERROR: sfcmount: 0002: Cannot open fstab file**

**Explanation**

/etc/fstab could not be opened.

**Response**

Check if /etc/fstab exists. If it does not, restore the file from backed up data, or define the file again according to "11.2.3 [Setting fstab](#)".

**ERROR: sfcmount: 0003: Both *special* and *mount\_point* need to be specified in fsta**

**b**

**Explanation**

Special file *special*, or mount point *mount\_point* is not described in /etc/fstab.

**Response**

Check the status of /etc/fstab.

**ERROR: sfcmount: 0004: { *special* | *mount\_point* }: Cannot connect to cluster four**

**ation**

**Explanation**

Connection to the cluster control facility failed.

**Response**

Confirm that the cluster control facility has started.

**ERROR: sfcmount: 0005: { *special* | *mount\_point* }: Cannot allocate memory**

**Explanation**

Memory acquisition failed. System memory is insufficient.

**Response**

Check the system status then wait for the other process to be completed or expand the swap area or actual memory.

**ERROR: sfcmount: 0006: { *special* | *mount\_point* }: signal(2) is error: errmsg**

**Explanation**

Signal handling failed.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**ERROR: sfcmount: 0007: { *special* | *mount\_point* }: Cannot get lock: config**

**Explanation**

The lock to change the file system (*mount\_point*) configuration information cannot be obtained. In an optional process within the cluster configuration, the lock to change the file system configuration information is being obtained.

**Response**

Execution must be performed after waiting for the lock to change the domain configuration information to be released.

**ERROR: sfcmount: 0008: { *special* | *mount\_point* }: Read error on management partition to get fsid**

**Explanation**

Reading of the management partition to obtain the file system (*mount\_point*) id has failed.

**Response**

After confirming the state of sfcfrmd by using the like of the ps(1) command (for example, **/bin/ps -e | grep sfcfrmd**.), contact local Customer Support.

**ERROR: sfcmount: 0009: { *special* | *mount\_point* }: Cannot get lock: fsid**

**Explanation**

Exclusive lock for fsid within the domain cannot be acquired. The exclusive lock for fsid has been acquired by another process running on a node in the cluster.

**Response**

Wait for the exclusive lock for fsid to be released, and then retry.

**ERROR: sfcmount: 0010: { *special* | *mount\_point* }: Read error on management partition to get node information**

**Explanation**

Reading of the management partition to obtain the cluster configuration node information has failed.

**Response**

After confirming the state of sfcfrmd by using the like of the ps(1) command (for example, **/bin/ps -e | grep sfcfrmd**.), contact local Customer Support.

**ERROR: sfcmount: 0011: { *special* | *mount\_point* }: Node information for this node was not found**

**Explanation**

The node is not set as a member of sharing the GFS Shared File System.

**Response**

Check node information by executing the **sfcinfo(8)** with the **"-an"** option. If the host name is missing, add it by executing **sfcnode(8)**. If the host name is incorrect, correct it by executing **sfcadm(8)**.

**ERROR: sfcmount: 0012: Cannot mount *special***

**Explanation**

Mount processing for *special* failed.

**Response**

Check the status of the specified special file and mount point, and check whether the mount option described by */etc/fstab* is correct. Then retry mount processing.

**ERROR: sfcmount: 0013: { *special* | *mount\_point* }: sfcfrmd may not exist**

**Explanation**

A communications channel with sfcfrmd could not be established.

**Response**

After confirming the state of sfcfrmd by using the like of the ps(1) command (for example, ***/bin/ps -e | grep sfcfrmd***), contact local Customer Support.

**ERROR: sfcmount: 0015: { *special* | *mount\_point* }: No such file or directory**

**Explanation**

Special file *special*, or mount point *mount\_point* does not exist.

**Response**

Check whether specified *special* file and *mount\_point* exists on any node.

**ERROR: sfcmount: 0016: { *special* | *mount\_point* }: stat(2) is error: *errmsg***

**Explanation**

Obtaining the status of the special file *special*, or mount point *mount\_point* failed.

**Response**

Take action according to detailed information indicated by *errmsg*. For details, see the description of stat(2).

**ERROR: sfcmount: 0017: *special*: Character device can not be specified as mount point. Please specify block device**

**Explanation**

The character special file was specified.

**Response**

Specify the block special file.

**ERROR: sfcmount: 0018: *special* is already mounted, *mount\_point* is busy, or the allowable number of mount points has been exceeded**

**Explanation**

Special file *special* may have already been mounted, or the mount point *mount\_point* may be in use.

**Response**

Check if some process is using *mount\_point* by executing `fuser(1)`, and if it is, stop the process to use the mount point. If the special file is already mounted, unmount it.

**ERROR: sfcmount: 0019: { *special* | *mount\_point* }: Mount demand processing to `sfcfrmd` went wrong**

**Explanation**

Mount processing request to `sfcfrmd` has failed.

**Response**

After confirming the state of `sfcfrmd` by using the like of the `ps(1)` command (for example, `/bin/ps -e | grep sfcfrmd`.), contact local Customer Support.

**ERROR: sfcmount: 0020: { *special* | *mount\_point* }: Time out occurred in mount demand processing to `sfcfrmd`**

**Explanation**

Timeout occurred for a mount processing request to `sfcfrmd`.

**Response**

After confirming the state of `sfcfrmd` by using the like of the `ps(1)` command (for example, `/bin/ps -e | grep sfcfrmd`.), contact local Customer Support.

**ERROR: sfcmount: 0021: *special* is not block device**

**Explanation**

The specified *special* is not a block special file.

**Response**

Check whether specified special file and described special file in `/etc/fstab` is a block special file.

**ERROR: sfcmount: 0022: *mount\_point* is not directory**

**Explanation**

The specified *mount\_point* is not a directory.

**Response**

Check whether specified mount point and described mount point in `/etc/fstab` is a directory.

**ERROR: sfcmount: 0023: fstype is described as an invalid value in fstab**

**Explanation**

An unexpected error was detected in the fstype field in /etc/fstab.

**Response**

Check the contents of /etc/fstab.

**ERROR: sfcmount: 0024: fstype is described not as sfcfs but as fstype in fstab**

**Explanation**

The specified file system is not the GFS Shared File System.

**Response**

Check the contents of /etc/fstab and specify the GFS Shared File System.

**ERROR: sfcmount: 0025: The description form of fstab is wrong**

**Explanation**

The description format of /etc/fstab is incorrect.

**Response**

Confirm the contents of /etc/fstab.

**ERROR: sfcmount: 0026: { *special* | *mount\_point* }: filesystem may not be created**

**Explanation**

The specified file system was not registered in the management partition.

**Response**

After confirming that the file system has already been created, re-execute the mount command.

**ERROR: sfcmount: 0029: { *special* | *mount\_point* }: self-node is already processing  
mount or umount**

**Explanation**

In the self-node, mount or umount processing has already been performed.

**Response**

When mounting or unmounting of the file system is completed, execute the command again.

**ERROR: sfcmount: 0030: { *special* | *mount\_point* }: mount\_point need to be repre  
ntative partition**

**Explanation**

The block special file specified as a mount point was not a representation partition.

**Response**

Please specify a representation partition name and execute a command again.

**ERROR: sfcmount: 0031: *special* not in fstab**

**Explanation**

Special file *special* is not described in */etc/fstab*.

**Response**

Define */etc/fstab* or specify a correct argument.

**WARNING: sfcmount: 0027: mount\_option *mntopts* is ignored, used *vfs\_mntopts* in  
fstab**

**Explanation**

Although mount option *mntopts* has been specified as the mount command parameter, mount processing was performed with mount option *vfs\_mntopts*, described by */etc/fstab*.

**Response**

If you want to mount the file system using a mount option, set the mount point in the file system definition of */etc/fstab*.

**WARNING: sfcmount: 0028: mount\_option *mntopts* is ignored**

**Explanation**

Although mount option *mntopts* has been adopted as the mount command parameter, it was ignored and mount processing was performed with no parameters.

**Response**

To specify the mount option and perform mount processing, describe the mount option for the mount point in question in */etc/fstab*.

## **A.4.5 sfcumount command**

---

**ERROR: sfcumount: 0001: Permission denied**

**Explanation**

Execution was attempted with other than super-user permission.

**Response**

Retry execution with super-user permission.

**ERROR: sfcumount: 0002: Cannot open mtab file**

**Explanation**

Opening of the */etc/mtab* file failed. The file may be lost.

**Response**

Recover */etc/mtab* then execute the command again.



**ERROR: sfcumount: 0003: Both *special* and *mount\_point* need to be specified in mtab**

**ab**

**Explanation**

A special file *special* and mount point *mount\_point* were not registered in */etc/mtab*.

**Response**

Check if the values specified are correct.

**ERROR: sfcumount: 0004: { *special* | *mount\_point* } not in mtab**

**Explanation**

A special file *special* and mount point *mount\_point* were not registered in */etc/mtab*.

**Response**

Check the status of */etc/mtab*.

**ERROR: sfcumount: 0005: { *special* | *mount\_point* }: Cannot allocate memory**

**Explanation**

Memory acquisition failed. System memory is insufficient.

**Response**

Check the system status then wait for the other process to be completed or expand the swap area or actual memory.

**ERROR: sfcumount: 0006: { *special* | *mount\_point* }: Cannot connect to cluster foun**

**dation**

**Explanation**

Connection to the cluster control facility failed.

**Response**

Confirm that the cluster control facility has already been started.

**ERROR: sfcumount: 0007: { *special* | *mount\_point* }: Read error on management pa**

**rtition to get fsid**

**Explanation**

Reading of the management partition to obtain the file system ID failed.

**Response**

After confirming the state of *sfcfrmd* by using the like of the *ps(1)* command (for example, "*/bin/ps -e | grep sfcfrmd*".), contact local Customer Support.

**ERROR: sfcumount: 0008: { *special* | *mount\_point* }: Cannot get lock: fsid**

**Explanation**

Exclusive lock for the file system ID within the domain cannot be obtained. Exclusive lock for the file system ID within the domain is being obtained with an optional process within the cluster configuration.

**Response**

Try to re-execute after the release of exclusive lock of fsid within the domain.

**ERROR: sfcumount: 0009: { *special* | *mount\_point* }: Read error on management partition to get node information**

**Explanation**

Reading of the management partition to obtain the cluster configuration node information has failed.

**Response**

After confirming the state of sfcfrmd by using the like of the ps(1) command (for example, `/bin/ps -e | grep sfcfrmd`.), contact local Customer Support.

**ERROR: sfcumount: 0010: { *special* | *mount\_point* }: Node information for this node was not found**

**Explanation**

Although the management partition containing the cluster node information was read successfully, no self-node information was found to exist.

**Response**

Check the cluster configuration, and then contact local Customer Support.

**ERROR: sfcumount: 0011: { *special* | *mount\_point* }: sfcfrmd may not exist**

**Explanation**

A communication path to sfcfrmd could not be established.

**Response**

After confirming the state of sfcfrmd by using the like of the ps(1) command (for example, `/bin/ps -e | grep sfcfrmd`.), contact local Customer Support.

**ERROR: sfcumount: 0012: *special* not mounted**

**Explanation**

*Special* had already been unmounted.

**Response**

Specify a file system that is being mounted.

**ERROR: sfcumount: 0013: *special*: mount is in progress**

**Explanation**

Mount processing had already been performed to *special*.

**Response**

When the mount process is completed, unmount the file system again.

**ERROR: sfcumount: 0014: *special*: fail over is in progress**

**Explanation**

The special file *special* is being recovered, so the unmount processing failed.

**Response**

Unmount the file again after completing the down recovery processing.

**ERROR: sfcumount: 0015: *special*: umount is in progress**

**Explanation**

Umount processing had already been performed to *special*.

**Response**

After the **sfcumount(8)** is completed, check if the file system is unmounted.

**ERROR: sfcumount: 0016: { *special* | *mount\_point* } busy**

**Explanation**

Unmount processing for special file *special* or mountpoint *mount\_point* failed.

**Response**

In the command execution node, try to find a process that is using the file system by `fuser(1)` command (for example, "`fuser -m mount_point`"). If such a process exists, kill the process and unmount the file system again. Otherwise, collect the diagnostic data with **fjsnap**, and collect the kernel dump by push the NMI button and contact your local Customer Support.

**ERROR: sfcumount: 0017: *device* : Umount demand processing to sfcfrmd went wrong**

**Explanation**

The unmount processing request for `sfcfrmd` failed.

**Response**

After confirming the state of `sfcfrmd` by using the like of the `ps(1)` command (for example, "`/bin/ps -e | grep sfcfrmd`".), contact local Customer Support.

**ERROR: sfcumount: 0018: *device* : Time out occurred in umount demand processing to sfcfrmd**

**Explanation**

A timeout occurred for the `sfcfrmd` unmount processing request.

**Response**

After confirming the state of `sfcfrmd` by using the like of the `ps(1)` command (for example, "`/bin/ps -e | grep sfcfrmd`".), contact local Customer Support.

**ERROR: sfcumount: 0019: { *special* | *mount\_point* }: No such file or directory**

**Explanation**

Special file *special*, or mount point *mount\_point* does not exist.

**Response**

Check whether specified *special* file and *mount\_point* exists on any node.

**ERROR: sfcumount: 0020: { *special* | *mount\_point* }: stat(2) is error: *errmsg***

**Explanation**

Obtaining the status of the special file *special*, or mount point *mount\_point* failed.

**Response**

Take action according to detailed information indicated by *errmsg*. For details, see the description of stat(2).

**ERROR: sfcumount: 0021: *special*: Character device can not be specified as mount point. Please specify block device**

**Explanation**

The character special file was specified.

**Response**

Specify the block special file.

**ERROR: sfcumount: 0022: *special* is not block device**

**Explanation**

As the argument of the umount command, a block special file was not specified.

**Response**

Specify a block special file.

**ERROR: sfcumount: 0023: *mount\_point* is not directory**

**Explanation**

The specified *mount\_point* is not a directory.

**Response**

Change the mount point that is defined in /etc/fstab to the directory path name.

**ERROR: sfcumount: 0024: *fstype* is described as an invalid value in { *fstab* | *mtab* }**

**Explanation**

An unexpected error was detected in the *fstype* field in /etc/fstab or /etc/mtab.

**Response**

Recover /etc/fstab or /etc/mtab then execute the command again.

**ERROR: sfcumount: 0025: *fstype* is described not as *sfcs* but as *fstype* in { *fstab* | *mtab* }**

**Explanation**

The specified file system is not the GFS Shared File System.

**Response**

Check /etc/fstab and /etc/mtab then specify the correct mount point or block special file of the GFS Shared File System for the argument then execute the command again.

**ERROR: sfcumount: 0027: { *special* | *mount\_point* }: self-node is already processing  
mount or umount**

**Explanation**

In the self-node, mount or umount processing has already been performed.

**Response**

Please set time a little and execute a command again.

**ERROR: sfcumount: 0028: { *special* | *mount\_point* }: mount\_point need to be repres  
entative partition**

**Explanation**

The block special file specified as a mount point was not a representation partition.

**Response**

Please specify a representation partition name and execute a command again.

## **A.5 GFS Shared File System Specific Management Commands' Messages**

This section describes messages that can be output when GFS Shared File System specific management commands are used.

### **A.5.1 libsfdfs library**

---

#### **libsfdfs: ERROR: can not get nodeid by the clgetnode command**

##### **Explanation**

The node ID cannot be obtained.

##### **Response**

Check whether the node ID can be displayed with **clgetnode(8)**.

### **A.5.2 sfcadd command**

---

#### **sfcadd: ERROR: 0001: not super user**

##### **Explanation**

Execution was attempted with other than super-user permission.

##### **Response**

Retry execution with super-user permission.

#### **sfcadd: ERROR: 0002: cannot allocate memory**

##### **Explanation**

Memory acquisition failed. System memory is insufficient.

##### **Response**

Check the system status then wait for the other process to be completed or expand the swap area or actual memory.

#### **sfcadd: ERROR: 0003: the number of partitions exceeded the maximum number**

##### **Explanation**

Adding a partition failed because the number of partitions specified exceeds the upper limit. The upper limit of the number of partitions that can configure the file system is the value specified with the **maxvol** parameter of **sfcmkfs(8)**. The upper limit cannot be changed.

##### **Response**

Specify the upper limit or less and execute the command again.

#### **sfcadd: ERROR: 0004: same device is specified more than once**

##### **Explanation**

The same partitions exists in the partition specified.

**Response**

Check if the specified partition is correct.

**sfcadd: ERROR: 0005: cannot connect to FsRM****Explanation**

The file system monitoring mechanism is not operating.

**Response**

Confirming the state of sfcfrmd by using the likes of the ps(1) command. If it does not, activate the file system monitoring facility by executing the **sfcfrmstart(8)**.

**sfcadd: ERROR: 0006: unknown error(*errnum*)****Explanation**

An error is detected.

**Response**

Check if the DNS settings are correct. If they are, collect troubleshooting information with **fjsnap** the contact your local customer support engineers.

**sfcadd: ERROR: 0007: cannot acquire lock: *name*(*errnum*)****Explanation**

Acquisition of the file system lock failed. The other command has acquired the lock.

**Response**

Wait until the management command of the GFS Shared File System to be completed on all the cluster nodes then execute the command again.

**sfcadd: ERROR: 0008: cannot read management partition****Explanation**

Reading of the management partition failed.

**Response**

Check if the management partition is set using the **sfcsetup(8)** command.  
If it is not, set the management partition using **sfcsetup(8)**. If it is, collect troubleshooting information with **fjsnap** the contact your local customer support engineers.

**sfcadd: ERROR: 0009: *special* is already used for the management partition****Explanation**

The special file *special* cannot be used because it is being used as a management partition.

**Response**

Specify the other partition and execute the command again.

**sfcadd: ERROR: 0010: file system configuration information not found****Explanation**

Acquisition of the file configuration failed.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**sfcadd: ERROR: 0011: *special* is not found in file system configuration table**

**Explanation**

The *special* file special does not exist in the management partition.

**Response**

Check whether the specified partition is correct.

**sfcadd: ERROR: 0012: *fsid(num)* is invalid**

**Explanation**

The identifier number *num* of the specified file system is not registered.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**sfcadd: ERROR: 0013: *special* is illegal device**

**Explanation**

The special file *special* specified is nonexistent.

**Response**

Check if the special file *special* exists.

**sfcadd: ERROR: 0014: *special* is not block special device**

**Explanation**

The specified *special* is not a block special file.

**Response**

Specify the block special file.

**sfcadd: ERROR: 0015: *special* already used as sfcfs file system**

**Explanation**

The partition *special* is already being used for the GFS Shared File System.

**Response**

Specify a partition that is not used for the GFS Shared File System.

**sfcadd: ERROR: 0016: shared nodes of *special* is inconsistent**

**Explanation**

The special file *special* is different is shared by a different representative partition and node.

**Response**

Specify a correct representative partition and node that are consistent.



**sfcadd: ERROR: 0017: *special* is mounted, can't sfcadd**

**Explanation**

The special file *special* is being mounted, so the **sfcadd(8)** cannot be executed.

**Response**

Unmount the special file *special* then execute the command again.

**sfcadd: ERROR: 0018: *special* is mounted from other node**

**Explanation**

The special file *special* is being mounted on the other node, so the **sfcadd(8)** cannot be executed.

**Response**

Unmount the special file *special* then execute the command again.

**sfcadd: ERROR: 0019: *special* cannot open**

**Explanation**

Opening of the special file *special* failed.

**Response**

Check if the special file *special* is correct.

**sfcadd: ERROR: 0020: *special* fstat64 error**

**Explanation**

Acquisition of the special file *special* failed.

**Response**

Check if the special file *special* is correct.

**sfcadd: ERROR: 0022: *special* is already used for other file system**

**Explanation**

The additional partition *special* is described in */etc/fstab*.

**Response**

Check the "*/etc/fstab*" file. If the partition *special* is added, delete *special* from */etc/fstab*.

**sfcadd: ERROR: 0023: */etc/mstab* cannot open**

**Explanation**

Opening of */etc/mstab* failed.

**Response**

Recover */etc/mstab* then execute the command again.

**sfcadd: ERROR: 0024: */etc/fstab* cannot open**

**Explanation**

Opening of */etc/mstab* failed.

**Response**

Check if `/etc/fstab` exists. If it does not, restore the file from backed up data, or define the file again according to “11.2.3 [Setting fstab](#)”.

**sfcadd: ERROR: 0025: cannot read /etc/fstab**

**Explanation**

There is an invalid line in `/etc/fstab`.

**Response**

Modify the “`/etc/fstab`” file.

**sfcadd: ERROR: 0026: *special* partition size is over the maximum file system capacity**

**Explanation**

The size of the partition *special* exceeds the maximum file system size.

**Response**

Set the size of the partition *special* not to exceed the maximum file system size, or specify the other partition.

**sfcadd: ERROR: 0027: *special* ioctl{(BLKGETSIZE)}{(DKIOCGVTOC)}{(DKIOCINFO)} error**

**Explanation**

Acquisition of the device *special* failed.

**Response**

Check if a disk I/O error is output then take corrective action according to the error message.

**sfcadd: ERROR: 0028: *special* is not representative partition**

**Explanation**

*Special* is not a representative partition.

**Response**

Specify a representative partition for operand.

**sfcadd: ERROR: 0029: *special* cannot read super block**

**Explanation**

Reading of the *special* super block failed.

**Response**

Recover the file system using **sfcfsck(8)**. If the message “*special* is clean” is output, recover the file system by executing **sfcfsck(8)** with the options `-o, f,` and `nolog`. If the file system cannot be recovered due to a disk device failure, recover the failed part then recreate the file system and restore the backed up data.

**sfcadd: ERROR: 0030: *special* is not sfcfs file system****Explanation**

*special* is not of the GFS Shared File System.

**Response**

Recreate the file system then restore the backed up data.

**sfcadd: ERROR: 0031: *special* cannot write super block****Explanation**

Writing of the *special* super block failed.

**Response**

If *special* is the specified additional partition, recover failed parts, or prepare the other partition then specify it to execute the command.

If *special* is a partition that configures the file system, recover the file system by executing **sfcfsck(8)** with the options `-o, f,` and `nolog`. If the file system cannot be recovered due to a disk device failure, recover the failed part then recreate the file system and restore the backed up data.

**sfcadd: ERROR: 0032: *special* is invalid disk device****Explanation**

*special* is not of the GFS Shared File System.

**Response**

Specify a GDS volume.

**sfcadd: ERROR: 0033: total file system size is too large****Explanation**

If the specified partition is added, the file system size will exceed the maximum file system size, so the partition cannot be added.

**Response**

Specify a partition where the file system size will not exceed the maximum file system size.

**sfcadd: ERROR: 0034: *special* cannot write volume information****Explanation**

Writing of the *special* partition configuration failed.

**Response**

If *special* is the specified additional partition, recover failed parts, or prepare the other partition then specify it to execute the command.

If *special* is a partition that configures the file system, recover the file system by executing **sfcfsck(8)** with the options `-o, f,` and `nolog`. If the file system cannot be recovered due to a disk device failure, recover the failed part then recreate the file system and restore the backed up data.

**sfcadd: ERROR: 0035: *special* super block restore failed**

**Explanation**

Recovering of the *special* super block failed.

**Response**

Copy the super block of the representative partition to the partition that configures the file system by executing **sfcadm(8)**. Then, recover the file system by executing **sfcfsck(8)** with the options **-o, f,** and **nolog**. If the file system cannot be recovered due to a disk device failure, recover the failed part then recreate the file system and restore the backed up data.

**sfcadd: ERROR: 0036: device number of *special* and *special* is the same**

**Explanation**

*special* and the device number of *special* are the same.

**Response**

Check if the specified partition is correct.

**sfcadd: ERROR: 0037: cannot update meta area**

**Explanation**

Updating the meta-data area failed.

**Response**

Recover the file system using **sfcfsck(8)**. If the message "*special is clean*" is output, recover the file system by executing **sfcfsck(8)** with the options **-o, f,** and **nolog**. If the file system cannot be recovered due to a disk device failure, recover the failed part then recreate the file system and restore the backed up data.

**sfcadd: ERROR: 0038: meta area restore failed**

**Explanation**

Recovering the meta-data area failed.

**Response**

Recreate the file system then restore the backed up data.

**sfcadd: ERROR: 0039: file system (*special*) is corrupted. To Fix: sfcfsck *special***

**Explanation**

**sfcadd(8)** cannot be executed because the state of the file system of the partition *special* was not stopped properly.

**Response**

Recover the file system using **sfcfsck(8)**. If the file system cannot be recovered due to a disk device failure, recover the failed part then recreate the file system and restore the backed up data.

**sfcadd: ERROR: 0040: *special* volume information restore failed**

**Explanation**

Recovering of the *special* partition configuration failed.

**Response**

Copy configuration information of the representative partition to the partition that configures the file system by executing **sfcadm(8)**. Then, recover the file system by executing **sfcfsck(8)** with the options `-o, f,` and `nolog`. If the file system cannot be recovered due to a disk device failure, recover the failed part then recreate the file system and restore the backed up data.

**sfcadd: ERROR: 0041: special cannot read volume information****Explanation**

Reading of *special* partition configuration information failed.

**Response**

Recover the file system by executing **sfcfsck(8)** with the options `-o, f,` and `nolog`. If the file system cannot be recovered due to a disk device failure, recover the failed part then recreate the file system and restore the backed up data.

**sfcadd: ERROR: 0042: cannot read /etc/mtab****Explanation**

Reading of the `/etc/mtab` file failed.

**Response**

Recover the `/etc/mtab` file then execute the command again.

**sfcadd: ERROR: 0043: cannot get host informations****Explanation**

The `sfcfrmd` daemon of the node that shares the representative partition has not been activated.

**Response**

Check if the `sfcfrmd` daemon exists by executing the `ps(1)` command on all the nodes that share the representative partition. The nodes can be checked with **sfcinfo(8)**.

If the nodes are stopped, start them. If the `sfcfrmd` daemon does not exist, activate the daemon using **sfcfrmstart(8)** on the node. If it does, collect troubleshooting information using **fjsnap** then contact your customer support engineers.

**sfcadd: ERROR: 0044: cannot read sfcfrm.conf****Explanation**

Reading of the setup file `/var/opt/FJSVsfcs/sfcfrm.conf` failed.

**Response**

Recover the system in the event of a disk failure. If a disk failure does not occur, collect troubleshooting information using **fjsnap** then contact your customer support engineers.

**sfcadd: ERROR: 0045: file system(special) is not shared for this node****Explanation**

The command is executed on the node that does not share the file system.

**Response**

Execute the command on the node that shares the file system.

### A.5.3 sfcadm and sfcnode commands

---

#### **{sfcadm | sfcnode}: all node entry delete, can't sfcnode**

##### **Explanation**

The command cannot be executed because information about all nodes sharing the file system will be deleted.

##### **Response**

Reduce the specified host information, and re-execute the command.

#### **{sfcadm | sfcnode}: too many host count**

##### **Explanation**

Too many host names were specified.

##### **Response**

Check whether the number of specified host names is correct, and re-execute the command.

#### **{sfcadm | sfcnode}: too many partition count**

##### **Explanation**

Too many special files were specified.

##### **Response**

Check whether the number of specified partitions is correct, and re-execute the command.

#### **{sfcadm | sfcnode}: argument error**

##### **Explanation**

The specified command format is wrong.

##### **Response**

Check the command specification format, and re-execute the command.

#### **{sfcadm | sfcnode}: cannot allocate memory**

##### **Explanation**

Memory could not be allocated.

##### **Response**

Wait for the termination of another process or increase the size of the swap area, and re-execute the command.

#### **{sfcadm | sfcnode}: cannot get host information**

##### **Explanation**

Acquisition of the target node's host information failed.

Possible causes:

- The target node is stopped.
- sfcfrmd daemon is not running on the target node.

- A cluster partition error exists.

**Response**

Execute **sfcadm(8)** or **sfcnode(8)** again after correcting the cause of the failure according to the following procedures.

1. Confirm that the target node is not stopped. If the target node was stopped, start it.
2. Execute the following operations on the target node.
  - a) Check if the sfcfrmd daemon is operating by **ps(1)** command.  
An example is shown below.

```
# /bin/ps -e | /bin/grep sfcfrmd <Enter>
27198 ?          00:00:00 sfcfrmd
# echo $? <Enter>
0
```

If **grep(1)**'s return code is 0, sfcfrmd daemon is running.



For details of **ps(1)** and **grep(1)**, see the online manual page.

- b) If the sfcfrmd daemon is not running, confirm that the following message is not output to **/var/log/messages**.

```
WARNING: sfcfrm:5001: Starting the sfcfrmd daemon was suspended because
quorum does not exist
```

If the message is not output, execute **sfcfrmstart(8)** command.

3. When a problem can not be resolved using operations 1 and 2, a cluster partition error may have occurred. Correct the cluster partition error according to “C.3.4 [Corrective action when the sfcfrmd daemon is not started](#)”.

**{sfcadm | sfcnode}: Cannot connect to FsRM****Explanation**

FsRM is not running.

**Response**

Confirm that FsRM is running.

**{sfcadm | sfcnode}: *filename* cannot open****Explanation**

Relevant file (*filename*) does not exist.

**Response**

Confirm if *filename* is available.

Note that, if the management cannot be found, restore it from a backup or create a new one.

**{sfcadm | sfcnode}: FSID(*fsid\_num*) is invalid**

**Explanation**

File system identification numbers (*fsid\_num*) are not registered in the management partition.

**Response**

Check whether the relevant FSID number has been registered with **sfcinfo(8)**.

**{sfcadm | sfcnode}: hostid(*hostid*) not found in volume information**

**Explanation**

The specified host ID (*hostid*) is not a host ID of the node which constitutes the GFS Shared File System. Otherwise, the node which executed command is not a node which constitutes the GFS Shared File System.

**Response**

Specify the host ID of the node which constitutes the GFS Shared File System. Otherwise, execute the command again in the node which constitutes the GFS Shared File System.

**{sfcadm | sfcnode}: invalid hostname**

**Explanation**

An invalid host name was specified.

**Response**

Check the specified host name.

**{sfcadm | sfcnode}: hostname(*hostname*) is not found**

**Explanation**

The specified host name (*hostname*) was not found in the node information.

**Response**

Check whether the specified host name exists in the node information.

**{sfcadm | sfcnode}: *hostname* is not shared**

**Explanation**

The specified node (*hostname*) does not share the device.

Possible causes:

- The *hostname* specified is invalid.
- The node (*hostname*) is stopped.
- sfcfrmd daemon is not running on the node (*hostname*).
- A cluster partition error exists.

**Response**

Execute **sfcadm(8)** or **sfcnode(8)** again after correcting the cause of the failure according to the following procedures.

1. Check whether the *hostname* specified is correct. If a mistake is found, specify the correct



host name.

2. Confirm that the node (*hostname*) is not stopped. If the node was stopped, start it.
3. Execute the following operations on the node (*hostname*).

- c) Check if the `sfcrmd` daemon is operating by **ps(1)** command.  
An example is shown below.

```
# /bin/ps -e | /bin/grep sfcrmd <Enter>
27198 ?          00:00:00 sfcrmd
# echo $? <Enter>
0
```

If **grep(1)**'s return code is 0, `sfcrmd` daemon is running.



[See](#)

For details of **ps(1)** and **grep(1)**, see the online manual page.

- d) If the `sfcrmd` daemon is not running, confirm that the following message is not output to `/var/log/messages`.

```
WARNING: sfcsrmd:5001: Starting the sfcrmd daemon was suspended because
quorum does not exist
```

If the message is not output, execute **sfcrmstart(8)** command.

4. When a problem can not be resolved using operations from 1 to 3, a cluster partition error may have occurred. Correct the cluster partition error according to “C.3.4 [Corrective action when the sfcrmd daemon is not started](#)”.

**{sfcdadm | sfcnnode}: *hostname* registered as MDS, can't sfcnnode -d**

#### Explanation

The specified host (*hostname*) could not delete, because it is registered as the MDS.

#### Response

Change the MDS host , and re-execute the command.

**{sfcdadm | sfcnnode}: invalid devicename**

#### Explanation

An invalid partition name was specified.

#### Response

Check whether the specified partition name is correct.

**{sfcdadm | sfcnnode}: invalid magic word *magic\_no***

#### Explanation

The partition configuration data of the specified partition is invalid.

**Response**

Check whether the specified partition belongs to an sfcfs file system.

**{sfcadm | sfcnode}: ioctl(BLKGETSIZE) error**

**Explanation**

Device information could not be obtained.

**Response**

Check the system environment to see whether device information is correct.

**{sfcadm | sfcnode}: I/O error**

**{sfcadm | sfcnode}: read error (*block\_no*)**

**{sfcadm | sfcnode}: seek error (*block\_no*)**

**{sfcadm | sfcnode}: write error (*block\_no*)**

**Explanation**

Special file I/O processing failed.

**Response**

Check whether the specified special file is correct.

**{sfcadm | sfcnode}: log partition size too small**

**Explanation**

The specified log size exceeds the size of the entire log partition.

**Response**

Check the size of the log partition.

**{sfcadm | sfcnode}: log partition is not separated**

**Explanation**

The size could not be changed because the log partition is not separated.

**Response**

Check whether the specified partition is correct.

**{sfcadm | sfcnode}: logsize is illegal size**

**Explanation**

An illegal log size was specified.

**Response**

Check whether the specified log size is correct.

**{sfcadm | sfcnode}: major number get error**

**Explanation**

The major number could not be obtained.

**Response**

Check whether the system environment is correct.

**{sfcadm | sfcnode}: invalid MDS hostname****Explanation**

The specification of MDS contains an error.

**Response**

Confirm the management partition and specified MDS information.

**{sfcadm | sfcnode}: node full, can't {sfcadm | sfcnode}****Explanation**

The number of nodes sharing the file system exceeded the upper limit.

**Response**

The value specified for the **maxnode** parameter of **sfcmkfs(8)** determines the number of nodes sharing a file system. Re-configure the file system when the number exceeds the upper limit.

**{sfcadm | sfcnode}: node name length is too long****Explanation**

The specified node name is too long.

**Response**

Check whether the specified node name is correct. To specify multiple node names, delimit each name by a comma.

**{sfcadm | sfcnode}: file system configuration information is full of entry****Explanation**

No more file system information could be added.

**Response**

Delete unnecessary data with **sfcadm(8)** and re-execute the command.

**{sfcadm | sfcnode}: not enough element of sfcfs partition****Explanation**

Not all the partitions belonging to the file system were specified.

**Response**

Specify all partitions belonging to the file system.

**{sfcadm | sfcnode}: this node entry not found****Explanation**

Self-node information was not found in the information for nodes sharing the file system.

**Response**

Check whether self-node information exists.

**{sfcadm | sfcnode}: not super user**

**Explanation**

The command cannot be executed without super-user authority.

**Response**

Execute the command with super-user authority.

**{sfcadm | sfcnode}: not support command**

**Explanation**

The specified command is not supported.

**Response**

Check the specified command name.

**{sfcadm | sfcnode}: now locked, can't {sfcadm | sfcnode}**

**Explanation**

The command could not be executed because another command is being executed.

**Response**

Upon termination of the other command, re-execute the command.

**{sfcadm | sfcnode}: please specify MDS setting**

**Explanation**

An MDS name must be specified.

**Response**

Specify an MDS name, and re-execute the command.

**{sfcadm | sfcnode}: please specify PORTNAME setting**

**Explanation**

A service port name must be specified.

**Response**

Specify a service port name, and re-execute the command.

**{sfcadm | sfcnode}: same device is specified more than once**

**Explanation**

A partition that is the same as the one specified was found.

**Response**

Check whether the specified partition name is correct.

**{sfcadm | sfcnode}: invalid service portname**

**Explanation**

An invalid service port name was specified.

**Response**

Check the specified service port name.

**{sfcadm | sfcnode}: file system configuration information sync error**

**Explanation**

Distribution to another node sharing the file system failed.

**Response**

Check that a file system watch mechanism works normally, and re-execute the command.

**{sfcadm | sfcnode}: *special* cannot open**

**Explanation**

A special file (*special*) could not be opened.

**Response**

Check whether the specified special file is correct.

**{sfcadm | sfcnode}: *special* fstat64 error**

**Explanation**

The status of a special file (*special*) could not be obtained.

**Response**

Check whether the specified special file is correct.

**{sfcadm | sfcnode}: *special* is illegal device**

**Explanation**

An invalid partition (*special*) that is not part of the file system configuration was specified.

**Response**

Specify all partitions configuring the file system.

**{sfcadm | sfcnode}: *special* is mounted, can't {sfcadm | sfcnode}**

**Explanation**

The command could not be executed because the specified partition (*special*) has already been mounted.

**Response**

Unmount the file system, and re-execute the command.

**{sfcadm | sfcnode}: *special* is not block special device**

**Explanation**

The specified file (*special*) is not a character special file.

**Response**

Specify a block special file.

**{sfcadm | sfcnode}: *special* is not found in file system configuration information**

**Explanation**

The specified partition (*special*) is not included in the file system configuration information.

**Response**

Reexamine whether the specified partition is correct.

**{sfcadm | sfcnode}: *special* is not shared device**

**Explanation**

The specified partition (*special*) is not shared by nodes.

**Response**

Check whether the system environment is correct.

**{sfcadm | sfcnode}: system error(*function\_name*)**

**Explanation**

A system error occurred.

**Response**

Contact local Customer Support.

**{sfcadm | sfcnode}: unknown error(*error\_code*)**

**Explanation**

An invalid error was detected.

**Response**

Contact local Customer Support.

**{sfcadm | sfcnode}: FSID(*fsid\_num*) is already exist**

**Explanation**

The file system with the file system ID *fsid\_num* has already been created.

**Response**

Check whether the relevant FSID number has been registered with **sfcinfo(8)**, and re-execute the command.

**{sfcadm | sfcnode}: too many option**

**Explanation**

Overfull options were specified.

**Response**

Make sure that the number of specified options is proper, and re-execute the command.

**{sfcadm | sfcnode}: *hostid* is illegal hostid**

**Explanation**

The specified host ID is illegal.

**Response**

Check whether the specified host ID is correct executing **sfcsetup(8)**.

**{sfcadm | sfcnode}: *option* is illegal option****Explanation**

The specified tunable parameter for the file system cannot be registered to the file system configuration information.

**Response**

Check whether the specified file system's tunable parameter is correct.

**{sfcadm | sfcnode}: *filename: stat(2)* is error: *errmsg*****Explanation**

The stat(2) operation for filename failed.

**Response**

Take action according to **errmsg**.

**{sfcadm | sfcnode}: *devicename* is already used in file system configuration information****Explanation**

The specified partition already exists in the file system configuration information.

**Response**

Check whether the specified partition is proper.

**{sfcadm | sfcnode}: file system configuration information not found****Explanation**

The file system configuration information cannot be obtained.

**Response**

See "Chapter5 [Management Partition](#)" in this manual and restore the file system configuration information.

**{sfcadm | sfcnode}: *special* is not sfcfs file system****Explanation**

The specified partition (*special*) is not the GFS Shared File System.

**Response**

Specify a partition of the GFS Shared File System.

**{sfcadm | sfcnode}: ERROR: *devicename* is not representative partition****Explanation**

The partition *devicename* is not a representative partition.

**Response**

Specify a representative partition then execute the command.

**sfcadm: ERROR: number of mdsnode is over *num***

**Explanation**

The MDS operational information specified exceeds the number of shared nodes.

**Response**

Specify a value equal to or less than the number of shared nodes or **all**.

**sfcadm: The size of the partition(*devicename*) might have been changed after the file system was made.**

**Explanation**

The size of the partition (*devicename*) which constitutes the GFS Shared File System might have been changed.

**Response**

Please perform the procedure (from step 2 on) described on "C.3.2 [Corrective action in the event of data inconsistency](#)".

The file system can keep on using. But GFS Shared File System can not be expanded by size expansion of the partition which constitutes the GFS Shared File System.

Please perform the procedure above promptly.

**sfcadm: The size of the partition(*devicename*) might have been reduced**

**Explanation**

The size of the partition (*devicename*) currently used for a GFS Shared File System may have been reduced.

**Response**

The file system cannot be repaired. If a backup of the file system is available, recover the file system from the backup.

## **A.5.4 sfcfrmstart command**

---

**ERROR: sfcfrmstart: 0001: Permission denied**

**Explanation**

Execution was attempted with other than super-user permission.

**Response**

Retry execution with super-user permission.

**ERROR: sfcfrmstart: 0002: Cannot open *file path*: *errmsg***

**Explanation**

File open processing for command lock failed.

**Response**

Apply countermeasures as described in *errmsg*.



**ERROR: sfcfrmstart: 0003: sfcfrmstart or sfcfrmstop is already running**

**Explanation**

Execution of this command failed as another **sfcfrmstart(8)** or **sfcfrmstop(8)** command was being executed.

**Response**

Once execution of the other command has terminated, re-execute this command.

**ERROR: sfcfrmstart: 0004: Cannot connect to cluster foundation**

**Explanation**

Connection with the cluster control facility failed.

**Response**

Confirm that the cluster control facility has already been started.

**ERROR: sfcfrmstart: 0005: Operation of management partition may be performed**

**Explanation**

The management partition may be being used on either the self-node or another node.

**Response**

Wait for the operation of the management partition to end, and then retry.

**ERROR: sfcfrmstart: 0006: Cannot allocate memory**

**Explanation**

Memory acquisition failed.

**Response**

Either wait for another process to end, or increase the size of the swap area.

**ERROR: sfcfrmstart: 0007: Read error on sfcfsrm.conf: *errmsg***

**Explanation**

Setting file sfcfsrm.conf could not be read.

**Response**

Perform management according to *errmsg*.

**ERROR: sfcfrmstart: 0008: Read error on management partition**

**Explanation**

Reading of the management partition failed.

**Response**

If a disk of the management partition fails, restore the management partition by referring to "9.6 [Backup of the management partition information](#)" and "9.7 [Restoring of the management partition information](#)".

If a disk failure does not occur, contact your local customer engineers.

**ERROR: sfcfrmstart: 0009: Self-node does not belong to host group**

**Explanation**

The self-node does not belong to a host group.

**Response**

Using the **sfcsetup(8)** command, add the self-node to a host group.

**ERROR: sfcfrmstart: 0010: Starting processing of sfcfrmd went wrong**

**Explanation**

Start processing for sfcfrmd failed.

**Response**

After confirming the state of the self-node and that sfcprmd is available, contact local Customer Support.

**ERROR: sfcfrmstart: 0011: sfcfrmd has already existed**

**Explanation**

The sfcfrmd has already been started.

**Response**

None.

**ERROR: sfcfrmstart: 0012: sfcsetup may not be performed**

**Explanation**

As no setting is made to the management partition, the management partition cannot be accessed.

**Response**

Use the **sfcsetup(8)** command to set up the management partition. For details, see "9.2 [Creating of the management partition](#)".

**ERROR: sfcfrmstart: 0013: sfcprmd may not exist**

**Explanation**

The communication path to sfcprmd cannot be established.

**Response**

After confirming the state of the self-node and that sfcprmd is available, contact local Customer Support.

**ERROR: sfcfrmstart: 0014: State check processing to sfcprmd went wrong**

**Explanation**

State confirmation processing for sfcprmd using several different daemons failed.

**Response**

After confirming the state of self-node and that sfcprmd is available, contact local Customer Support.

**ERROR: sfcfrmstart: 0015: Write error on management partition****Explanation**

Write processing for the management partition failed.

**Response**

After confirming that no disk error occurred, contact local Customer Supports.

**ERROR: sfcfrmstart: 0016: filename: open(2) error: *errmsg*****Explanation**

File open processing for editing the sfcfrm.vers file failed.

**Response**

Apply countermeasures as described in *errmsg*.

**ERROR: sfcfrmstart: 0017: filename: write(2) error: *errmsg*****Explanation**

File write processing for editing the sfcfrm.vers file failed.

**Response**

Apply countermeasures as described in *errmsg*.

**ERROR: sfcfrmstart: 0018: filename: rename(2) error: *errmsg*****Explanation**

File rename processing for editing the sfcfrm.vers file failed.

**Response**

Apply countermeasures as described in *errmsg*.

**ERROR: sfcfrmstart: 0020: An error occurred while accessing a file *path* : *errmsg*****Explanation**

File access to cancel the suspension of the sfcfrmd daemon's startup failed.

**Response**

Check if the sfcfrmd daemon is running by **ps(1)** command.

An example is shown below.

```
# /bin/ps -e | /bin/grep sfcfrmd <Enter>
27198 ?          00:00:00 sfcfrmd
# echo $? <Enter>
0
```

If **grep(1)**'s return code is 0, sfcfrmd daemon is running.



[See](#)

For details of **ps(1)** and **grep(1)**, see the online manual page.

If the sfcfrmd daemon is not running, take corrective action according to *errmsg*. If the error

message indicates "broken file", the file to cancel the suspension of the sfcfrmd daemon's startup might be broken. Reboot the system because this file is remade by booting the system. If sfcfrmd daemon is running, no corrective action needs to be taken because it is thought the sfcfrmd daemon had been started before this file is broken.

### **ERROR: sfcfrmstart: 0021: The suspended sfcfrmd daemon does not exist**

#### **Explanation**

Startup of the sfcfrmd daemon has not been suspended.

#### **Response**

If the sfcfrmd daemon that is not being suspended is activated, execute the **sfcfrmstart(8)** command without the **-f** option.

## **A.5.5 sfcfrmstop command**

---

### **ERROR: sfcfrmstop: 0001: Permission denied**

#### **Explanation**

Execution was attempted with other than super-user permission.

#### **Response**

Retry execution with super-user permission.

### **ERROR: sfcfrmstop: 0002: Cannot open file path: *errmsg***

#### **Explanation**

File open processing for command lock failed.

#### **Response**

Apply countermeasures as described in *errmsg*.

### **ERROR: sfcfrmstop: 0003: sfcfrmstart or sfcfrmstop is already running**

#### **Explanation**

Execution of this command failed as another **sfcfrmstart(8)** or **sfcfrmstop(8)** command was being executed.

#### **Response**

Once execution of the other command has terminated, re-execute this command.

### **ERROR: sfcfrmstop: 0004: Cannot allocate memory**

#### **Explanation**

Memory acquisition failed.

#### **Response**

Either wait for another process to end, or increase the size of the swap area.

**ERROR: sfcfrmstop: 0005: sfcprmd may not exist**

**Explanation**

The communication path to the process monitoring daemon sfcprmd cannot be established.

**Response**

After confirming the state of the self-node and that sfcprmd is available, contact local Customer Support.

**ERROR: sfcfrmstop: 0006: stop processing of sfcfrmd went wrong**

**Explanation**

Stop processing for sfcfrmd failed.

**Response**

The GFS may be mounted on the self-mode. Perform umount processing, and then re-execute the sfcfrmstop command.

**ERROR: sfcfrmstop: 0007: Self-node is still mounted**

**Explanation**

The GFS Shared File System is mounted by the self-node.

**Response**

Please execute a command again after unmounting all the GFS Shared File Systems of a self-node.

**ERROR: sfcfrmstop: 0011: Cannot open sfcfsrm.conf**

**Explanation**

File open processing for the sfcfsrm.conf file failed.

**Response**

Check the status for the /var/opt/FJSVsfcs/sfcfsrm.conf file.

**ERROR: sfcfrmstop: 0012: No entry of management partition path in sfcfsrm.conf**

**Explanation**

The sfcfsrm.conf file contains no entry that indicates the path to the management partition.

**Response**

Confirm the contents of the setup file /var/opt/FJSVsfcs/sfcfsrm.conf.

**ERROR: sfcfrmstop: 0013: Read error occurred on sfcfsrm.conf**

**Explanation**

Error occurred when reading of the sfcfsrm.conf file.

**Response**

Check the status of the /var/opt/FJSVsfcs/sfcfsrm.conf file.

**INFO: sfcfrmstop: 0004: wait for other node to stop**

**Explanation**

The completion of the stop of sfcfrmd in another node is waited.

**Response**

None.

**INFO: sfcfrmstop: 0005: wait for LEFTCLUSTER elimination**

**Explanation**

A recovery from a LEFTCLUSTER state is waited because there is a node that is in a LEFTCLUSTER state in the cluster system.

**Response**

None.

---

### **A.5.6 sfcgetconf command**

---

**ERROR: sfcgetconf: 0001: Permission denied.**

**Explanation**

Execution was attempted with other than super-user permission.

**Response**

Perform execution with super-user permission.

**ERROR: sfcgetconf: 0002: Cannot allocate memory**

**Explanation**

Memory allocation failed to execute the command.

**Response**

Wait for another application to end, and then retry.

**ERROR: sfcgetconf: 0003: Invalid '-i' parameter: "*iparam*"**

**Explanation**

The parameter specified for the "-i" option is invalid.

**Response**

Re-execute the command with a valid (numerical) parameter in the "-i" option.

**ERROR: sfcgetconf: 0004: Invalid parameter**

**Explanation**

The format of the command parameter is invalid.

**Response**

Re-execute the command with a valid parameter according to the format.

**ERROR: sfcgetconf: 0005: *backupfile* is already exist****Explanation**

The specified file as a backup (backupfile) has already existed.

**Response**

Re-execute the command with a file that does not exist.

**ERROR: sfcgetconf: 0006: Can not open *backupfile*: open(2) returned errcode=*errno*****Explanation**

The open(2) processing for the backup file (backupfile) failed.

**Response**

Re-execute the command with the correct name of the backup file after checking the location where the backup file will be created.

**ERROR: sfcgetconf: 0007: Can not fdopen *backupfile*: fdopen(3C) returned errcode=*errno*****Explanation**

The fdopen(3) processing for the backup file (backupfile) failed.

**Response**

Re-execute the command with the correct name of the backup file after checking the location where the backup file will be created.

**ERROR: sfcgetconf: 0008: Cannot access to cluster foundation: frm\_cl\_open() returned errcode=*errno*****Explanation**

Communication with the cluster control could not be established.

**Response**

Check whether the cluster control is operating normally.

**ERROR: sfcgetconf: 0009: Cannot get domain wide lock: config****Explanation**

Execution of this command failed as another command is currently being executed.

**Response**

Re-execute this command after the execution of the other command.

**ERROR: sfcgetconf: 0010: Can not open *path\_to\_sfcsrm.conf*: fopen(3C) returned errcode=*errno*****Explanation**

The attempt to get a backup of the sfcsrm.conf file according to the **-a** option setting, but sfcsrm.conf failed in but fopen(3).

**Response**

Check whether the path indicated by a message is destined for `sfcsrm.conf`. If the file does not exist, initialize the management partition.

**ERROR: sfcgetconf: 0011: file system configuration information parse error: frm\_tabent() returned errcode=*errno***

**Explanation**

There is invalid data in file system configuration information of the management partition.

**Response**

Recover the file system configuration by referring to “9.7 [Restoring of the management partition information](#)”.

**NOTICE: sfcgetconf: 0012: fsid=*fsid* is not found**

**Explanation**

The file system configuration information that corresponds to *fsid*, which was specified as the target of the search with the `-i` option, could not be found.

Backup processing of the file system configuration information, that corresponds to the specified *fsid*, was ignored by the command.

**Response**

By eliminating the target of the *fsid* specification from the command argument specification, message output can be disabled.

**NOTICE: sfcgetconf: 0013: dev=*device\_file* is not found**

**Explanation**

The file system configuration information that corresponds to *device\_file*, which was specified as the target of the search with the `-d` option, could not be found.

Backup processing of the file system configuration information that corresponds to the specified *device\_file* was ignored by the command.

**Response**

By eliminating the target of the *device\_file* specification from the command argument specification, message output can be disabled.

**ERROR: sfcgetconf: 0014: Cannot open sfcsrm.conf**

**Explanation**

File open processing for the `sfcsrm.conf` file failed.

**Response**

Check the status for the `/var/opt/FJSVsfcs/sfcsrm.conf` file.

**ERROR: sfcgetconf: 0015: No entry of management partition path in sfcsrm.conf**

**Explanation**

The `sfcsrm.conf` file contains no entry that indicates the path to the management partition.

**Response**

Confirm the contents of the setup file `/var/opt/FJSVsfcs/sfcsrm.conf`.



**ERROR: sfcgetconf: 0016: Read error occurred on sfcfsrm.conf****Explanation**

Error occurred when reading of the sfcfsrm.conf file.

**Response**

Check the status of the /var/opt/FJVSfdfs/sfcfsrm.conf file.

---

**A.5.7 sfcinfo command**

---

**sfcinfo: ERROR: Cannot allocate memory****Explanation**

Failed to allocate memory. Processing cannot be continued.

**Response**

Wait until other processes are finished, or increase a swap area, then re-execute the command.

**sfcinfo: ERROR: Cannot get major number of *drivename*****Explanation**

Failed to get major number of *drivename*. Processing cannot be continued.

**Response**

Check the system environment of device driver.

**sfcinfo: ERROR: Cannot open *{/etc/mstab/etc/fstab}*: *errmsg*****Explanation**

Failed to open /etc/mstab or /etc/fstab file because of *errmsg*. Processing cannot be continued.

**Response**

Check the system environment file.

**sfcinfo: ERROR: file system configuration information not found: *special*****Explanation**

Failed to get the file system configuration information in the management partition.

**Response**

Restore the file system configuration information. For detail, see "Chapter5 [Management Partition](#)".

**sfcinfo: ERROR: Invalid device number *device\_no*****Explanation**

User specified a invalid device number.

**Response**

Correct device number and re-execute this command.

**sfcinfo: ERROR: Unknown error(*error\_code*)**

**Explanation**

Failed work with unknown error.

**Response**

Contact local Customer Support.

**sfcinfo: ERROR: Cannot connect to FsRM**

**Explanation**

The file system monitoring mechanism is not operating.

**Response**

Make sure that the file system monitoring mechanism is running.

**sfcinfo: ERROR: cannot read file system configuration information: *special***

**Explanation**

A read error occurred with the management partition.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**sfcinfo: ERROR: system error(*gethostid*)**

**Explanation**

The obtained host ID is illegal.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**sfcinfo: WARNING: Cannot open {*special* | *mntpoint*}: *errmsg***

**Explanation**

Failed to open *special* or *mntpoint* because of *errmsg*. Other file systems are processed continuously.

**Response**

Check the arguments of command or the system environment file.

If a GDS logical volume is being used and is ACTIVE, the volume information will be displayed.

Bring the volume into ACTIVE then execute the command again.

If you are operating the GFS Management View, bring the volume into ACTIVE then execute the command again.

**sfcinfo: WARNING: Invalid magic word *0xmagic* in *special***

**Explanation**

Configuration data of the specified partition is invalid. Other file systems are processed continuously.

**Response**

Check the specified partition to determine if it is an sfdfs file system.

**sfcinfo: WARNING: ioctl(BLKGETSIZE) failed in *special: errmsg*****Explanation**

Failed to obtain the device data of partition *special*. Other file systems are processed continuously.

**Response**

Check the system environment to determine if partition *special* is correct.

**sfcinfo: WARNING: Not a block device(*special* )****Explanation**

The specified partition must be a block special file but it is a character special file. Other file systems are processed continuously.

**Response**

Specify a block special file as a partition.

**sfcinfo: WARNING: Not a directory(*file* )****Explanation**

The specified *file* must be a block special file or a directory. Other file systems are processed continuously.

**Response**

Specify a block special file or mount point directory.

**sfcinfo: WARNING: lseek error at *special: errmsg*****Explanation**

The I/O operation to the special file *special* failed

**Response**

Check if the special file is correct.

**sfcinfo: WARNING: read error in {super block | volume information} of *special: errmsg*****So try to read alternative block****Explanation**

Failed to read normal super block data. Therefore, redundant data is read out.

**Response**

Delete the target file system where it is unnecessary. For details, see "11.8 [Deleting](#)" in this manual. When it is a necessary file system, restore it running a full scan with **sfcsck(8)**. For details, see "C.3.1 [Action for I/O errors](#)" in this manual.

**sfcinfo: WARNING: read error in alternative {super block | volume information} of *special*: *errmsg***

**Explanation**

Reading the redundant volume information on *special* failed.

**Response**

Delete the target file system where it is unnecessary. For details, see "11.8 [Deleting](#)" in this manual. When it is a necessary file system, restore it running a full scan with **sfcfsck(8)**. For details, see "C.3.1 [Action for I/O errors](#)" in this manual.

---

## A.5.8 sfcmntgl command

---

**ERROR: sfcmntgl: 0001: Permission denied**

**Explanation**

Execution was attempted with other than super-user permission.

**Response**

Retry execution with super-user permission.

**ERROR: sfcmntgl: 0002: Cannot open fstab file**

**Explanation**

/etc/fstab could not be opened.

**Response**

Check if /etc/fstab exists. If it does not, restore the file from backed up data, or define the file again according to "11.2.3 [Setting fstab](#)".

**ERROR: sfcmntgl: 0003: Both *special* and *mount\_point* need to be specified in fstab**

**Explanation**

Special file *special*, or mount point *mount\_point* is not described in /etc/fstab.

**Response**

Check the status of /etc/fstab.

**ERROR: sfcmntgl: 0004: {*special* | *mount\_point*} not in fstab**

**Explanation**

The specified *special* or *mount\_point* cannot be found in fstab.

**Response**

Check the status of /etc/fstab.

**ERROR: sfcmntgl: 0005: { *special* | *mount\_point* }: Cannot allocate memory**

**Explanation**

Memory acquisition failed.

**Response**

Either wait for another process to end, or increase the size of the swap area.

**ERROR: sfcmntgl: 0006: { *special* | *mount\_point* }: signal(2) is error: *errmsg***

**Explanation**

Signal handling failed.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**ERROR: sfcmntgl: 0007: { *special* | *mount\_point* }: Cannot connect to cluster found  
ation**

**Explanation**

Connection to the cluster service failed.

**Response**

Confirm that the cluster control facility has already been started.

**ERROR: sfcmntgl: 0008: { *special* | *mount\_point* }: Cannot get lock: config**

**Explanation**

The lock to change the file system configuration information cannot be obtained. The lock to change the file system configuration information is now being obtained in an optional process of the node within the cluster configuration.

**Response**

Release the lock for changing the domain configuration information, and then re-execute.

**ERROR: sfcmntgl: 0009: { *special* | *mount\_point* }: Read error on management part  
ition to get fsid**

**Explanation**

Reading of the management partition to obtain the file system ID failed.

**Response**

Confirm, using the likes of the **ps** command, that **sfcfrmd** is available.

**ERROR: sfcmntgl: 0010: { *special* | *mount\_point* }: Cannot get lock: fsid**

**Explanation**

Exclusive lock for fsid within the domain cannot be acquired. The exclusive lock for fsid has been acquired by another process running on a node in the cluster.

**Response**

Wait for the exclusive lock for fsid to be released, and then retry.

**ERROR: sfcmntgl: 0011: { *special* | *mount\_point* }: Read error on management partition to get node information**

**Explanation**

Reading of the management partition to obtain the cluster configuration node information failed.

**Response**

Confirm, using the likes of the ps command, that sfcfrmd is available.

**ERROR: sfcmntgl: 0012: *special* was not able to mount. Other process performed u mount or some error occurred. Refer console information on each node for detailed error information.**

**Explanation**

The mount processing for special file *special* failed.

**Response**

Check the status of special file *special*, and then contact local Customer Support.

**ERROR: sfcmntgl: 0013: { *special* | *mount\_point* }: sfcfrmd may not exist**

**Explanation**

A communications channel with sfcfrmd could not be established.

**Response**

Check whether FsRM is operating, and then contact local Customer Support.

**ERROR: sfcmntgl: 0015: { *special* | *mount\_point* }: No such file or directory**

**Explanation**

Special file *special*, or mount point *mount\_point* does not exist.

**Response**

Check whether specified *special* file and *mount\_point* exists on any node.

**ERROR: sfcmntgl: 0016: { *special* | *mount\_point* }: stat(2) is error: *errmsg***

**Explanation**

Obtaining the status of the special file *special*, or mount point *mount\_point* failed.

**Response**

Take action according to detailed information indicated by *errmsg*. For details, see the description of stat(2).

**ERROR: sfcmntgl: 0017: *special*: Character device can not be specified as mount point. Please specify block device**

**Explanation**

The character device was specified.

**Response**

Specify the block special file.

**ERROR: sfcmntgl: 0018: The description form of fstab is wrong**

**Explanation**

The description format of /etc/fstab is incorrect.

**Response**

Confirm the contents of /etc/fstab.

**ERROR: sfcmntgl: 0019: { *special* | *mount\_point* }: filesystem may not be created**

**Explanation**

The specified file system {*special* | *mount\_point*} was not registered in the management partition.

**Response**

After confirming that the file system has been created, re-execute the **sfcmntgl(8)** command.

**ERROR: sfcmntgl: 0021: *special* is not block device**

**Explanation**

The specified *special* is not a block special file.

**Response**

Check whether specified special file and described special file in /etc/fstab is a block special file.

**ERROR: sfcmntgl: 0022: *mount\_point* is not directory**

**Explanation**

The specified *mount\_point* is not a directory.

**Response**

Check whether specified mount point and described mount point in /etc/fstab is a directory.

**ERROR: sfcmntgl: 0023: *fstype* is described as an invalid value in fstab**

**Explanation**

An unexpected error was detected in the *fstype* field in /etc/fstab.

**Response**

Check the contents of /etc/fstab.

**ERROR: sfcmntgl: 0024: *fstype* is described not as *sfcs* but as *fstype* in fstab**

**Explanation**

The specified file system is not the GFS Shared File System.

**Response**

Check the contents of /etc/fstab and specify the GFS Shared File System.

**ERROR: sfcmntgl: 0028: { *special* | *mount\_point* }: *hostname* is already processing  
*mount* or *umount***

**Explanation**

In the *hostname*, *mount* or *umount* processing has already been performed.

**Response**

Please set time a little and execute a command again.

**ERROR: sfcmntgl: 0029: { *special* | *mount\_point* }: *mount\_point* need to be represen  
*tative partition***

**Explanation**

The block *special* file specified as a *mount\_point* was not a representation partition.

**Response**

Please specify a representation partition name and execute a command again.

**WARNING: sfcmntgl: 0020: *hostname*: *special* is already mounted, *mount\_point* is b  
*usy*, or the allowable number or *mount points* has been exceeded**

**Explanation**

Either *special* file *special* has already been mounted in *hostname*, or *mount\_point* is already in use. Mount processing is not performed for *hostname*.

**Response**

None.

**WARNING: sfcmntgl: 0025: *hostname*:: { *special* | *mount\_point* }: Send *mount dem  
and processing to sfcfrmd* went wrong**

**Explanation**

Transmission processing for *sfcfrmd* of the *mount* processing request made to *hostname* failed.

**Response**

After confirming the state of *sfcfrmd* with the likes of the *ps(1)* command, contact local Customer Support.

**WARNING: sfcmntgl: 0026: { *special* | *mount\_point* }: *Waiting processing for a resp  
onse mount demand* went wrong**

**Explanation**

Reception processing of the *mount* processing request made to *sfcfrmd* failed.

**Response**

After confirming the state of *sfcfrmd* with the likes of the *ps* command, contact local Customer Support.



**WARNING: sfcmntgl: 0027: { *special* | *mount\_point* }: Time out occurred in mount demand processing to sfcfrmd****Explanation**

A timeout occurred in the reception processing of the mount processing request made to sfcfrmd.

**Response**

After confirming the state of sfcfrmd with the likes of the ps command, contact local Customer Support.

---

**A.5.9 sfcsetup command**

---

**ERROR: sfcsetup: 0001: Permission denied****Explanation**

Execution was attempted with other than super-user permission.

**Response**

Perform execution with super-user permission.

**ERROR: sfcsetup: 0002: Cannot connect to cluster foundation****Explanation**

Communication with the cluster control could not be established.

**Response**

Check whether the cluster control is operating normally.

**ERROR: sfcsetup: 0003: sfcfrmd is active within cluster foundation****Explanation**

FsRM is operating within a cluster.

**Response**

Stop FsRM and then re-execute the command.

**ERROR: sfcsetup: 0004: Cannot get lock: config****Explanation**

Execution of this command failed as another command was being executed.

**Response**

Once execution of the other command has terminated, re-execute this command.

**ERROR: sfcsetup: 0005: Too many arguments****Explanation**

Too many arguments have been specified.

**Response**

Check the command format, and then re-execute.

**ERROR: sfcsetup: 0006: A few option**

**Explanation**

Too few arguments have been specified.

**Response**

Check the command format, and then re-execute.

**ERROR: sfcsetup: 0007: Wrong command format**

**Explanation**

The command format is invalid.

**Response**

Check the command format, and then re-execute.

**ERROR: sfcsetup: 0008: Cannot get cipname**

**Explanation**

The CIP host name for the node executing the command could not be acquired.

**Response**

Check the cluster system settings.

**ERROR: sfcsetup: 0009: Bad data exists in management partition**

**Explanation**

The management partition contain invalid data.

**Response**

Contact local Customer Support.

**ERROR: sfcsetup: 0010: Cannot write to sfcsrm.conf**

**Explanation**

Writing to the sfcsrm.conf file failed.

**Response**

Check the status of the /var/opt/FJSVsfcs/sfcsrm.conf file.

**ERROR: sfcsetup: 0011: Cannot open management partition**

**Explanation**

The management partition could not be opened.

**Response**

Check whether the path to the management partition, specified in the /var/opt/FJSVsfcs/sfcsrm.conf file, is correct.

**ERROR: sfcsetup: 0012: Node information area is full**

**Explanation**

The maximum possible amount of node information has already been stored.

**Response**

Delete any node information that is no longer necessary, and then re-execute the command.

**ERROR: sfcsetup: 0013: Cannot write node information****Explanation**

An error occurred when trying to write new node information.

**Response**

Contact local Customer Support.

**ERROR: sfcsetup: 0014: Wrong argument format****Explanation**

The format of an argument specified with the command is invalid.

**Response**

Check the format of the argument, and then re-execute the command.

**ERROR: sfcsetup: 0015: Invalid argument****Explanation**

An argument specified with the command contains an invalid character string.

**Response**

Check the argument, and then re-execute the command.

**ERROR: sfcsetup: 0016: Cannot get lock: master.sfcfrmd may be working now****Explanation**

The command cannot be executed, either because another command is being executed, or because sfcfrmd is operating.

**Response**

Wait for execution of the other command to terminate or, after executing sfcfrmstop on all the nodes, re-execute the command.

**ERROR: sfcsetup: 0017: Node(hostid=0xhostid) is busy****Explanation**

Node (hostid=0xhostid) has still file system information in management partition. It is configured as sharing node of a GFS Shared File System. **sfcsetup -d** did not do anything.

**Response**

Delete node information by following procedures:

1. Execute **sfcfrmstart(8)**.
2. Check sharing node information of all GFS Shared File System by **sfcinfo -an**.
3. Reconfigure sharing node information of GFS Shared File System by **sfcadm -u**, or delete file system information by **sfcadm -D**.
4. Execute **sfcfrmstop(8)**.
5. Retry **sfcsetup -d**.

**ERROR: sfcsetup: 0018: Communication initialize error**

**Explanation**

Communication could not be initialized.

**Response**

Contact local Customer Support. Or, review your system environment.

**ERROR: sfcsetup: 0019: socket open error to *filename***

**Explanation**

A communication channel with the daemon could not be opened.

**Response**

Check that sfcfrmd or sfcprmd are operating normally.

**ERROR: sfcsetup: 0020: data(*data*) is not found**

**Explanation**

No information could be found for a node that was to be deleted.

**Response**

First check that the input data is correct, and then re-execute the command.

**ERROR: sfcsetup: 0021: Error occurred. errcode=*errcode***

**Explanation**

An internal error occurred.

**Response**

Contact local Customer Support.

**ERROR: sfcsetup: 0022: Cannot allocate memory**

**Explanation**

Memory acquisition failed due to a shortage of memory.

**Response**

Terminate any applications that are not required, and then re-execute the command.  
Alternatively, review the system environment.

**ERROR: sfcsetup: 0023: Read error of sfcfsrm.conf**

**Explanation**

Reading of sfcfsrm.conf failed.

**Response**

Check the status of the /var/opt/FJSV/sfcfs/sfcfsrm.conf file.

**ERROR: sfcsetup: 0024: Cannot get status of sfcfrmd on this node**

**Explanation**

The process monitor daemon could not acquire the status of the file system recovery manager daemon.

**Response**

Check whether the process monitor daemon is operating normally.

**ERROR: sfcsetup: 0025: sfcfrmd is active on this node**

**Explanation**

The file system recovery manager daemon is running on a node for which an attempt was made to execute a command.

**Response**

Execute **sfcfrmstop(8)**, and then re-execute the command.

**ERROR: sfcsetup: 0026: Cluster function may not be working**

**Explanation**

The cluster system may not be operating normally.

**Response**

Contact local Customer Support.

**ERROR: sfcsetup: 0027: Input error**

**Explanation**

An internal error occurred.

**Response**

Collect a file output with **fjsnap** for troubleshooting information then contact your customer support engineers.

**ERROR: sfcsetup: 0028: *device\_file* is already used as management partition**

**Explanation**

The block special file *device\_file* is already being used as a management partition.

**Response**

If you want to initialize the management partition again, execute the command again with the “-f” option.

**ERROR: sfcsetup: 0029: Management partition read error**

**Explanation**

Reading of the management partition failed.

**Response**

Check the status of the disk containing the management partition.

**ERROR: sfcsetup: 0030: Management partition write error**

**Explanation**

Writing to the management partition failed.

**Response**

Check the status of the disk containing the management partition.

**ERROR: sfcsetup: 0031: Cannot initialize management partition.errcode =*errno***

**Explanation**

Initialization of the management partition failed.

**Response**

Check the status of the disk containing the management partition.

**ERROR: sfcsetup: 0032: *device\_file* is invalid disk device**

**Explanation**

Either the specified device (*device\_file*) does not exist, or is not a GDS volume.

**Response**

Check that the specified device is a GDS volume and whether it does, in fact, exist.

**ERROR: sfcsetup: 0033: Cannot open fstab**

**Explanation**

The /etc/fstab file could not be opened.

**Response**

Check the status of /etc/fstab, and whether the file actually exists.

**ERROR: sfcsetup: 0034: *device\_file* is already exist in fstab**

**Explanation**

The device specified (*device\_file*) in the management partition may already be being used by the system.

**Response**

Either specify a different device in the management partition or, if an entry in /etc/fstab is not needed, delete it and then re-execute the command.

**WARNING: sfcsetup: 0035: Illegal line exists in fstab**

**Explanation**

An invalid row is included in /etc/fstab.

**Response**

Confirm the contents of /etc/fstab and correct it if necessary.

**ERROR: sfcsetup: 0036: Cannot open mtab**

**Explanation**

The /etc/mtab file could not be opened.

**Response**

Check the status of the /etc/mtab file and whether it does, in fact, exist.

**ERROR: sfcsetup: 0037: *device\_file* is already exist in mtab**

**Explanation**

The device specified (*device\_file*) in the management partition may already be being used by the

system.

**Response**

Specify the other special file, or unmount and delete the file then execute the command again.

**WARNING: sfcsetup: 0038: Illegal line exists in mtab**

**Explanation**

There is an illegal line in /etc/mtab.

**Response**

Recover the contents of /etc/mtab correctly then execute the command again.

**ERROR: sfcsetup: 0039: Cannot open *device\_file*.**

**Explanation**

The specified device file (*device\_file*) could not be opened.

**Response**

Check whether the physical connection to the disk is satisfactory.

**ERROR: sfcsetup: 0040: Cannot get the disk size for the management partition**

**Explanation**

The size of the disk on which the management partition resides could not be obtained.

**Response**

Check the status of the disk.

**ERROR: sfcsetup: 0041: Cannot get major number**

**Explanation**

The major number of disk containing the management partition could not be obtained.

**Response**

Check whether the system environment is satisfactory, and whether the specified special file is correct.

**ERROR: sfcsetup: 0042: Cannot get driver name**

**Explanation**

The driver name for the disk containing the management partition could not be obtained.

**Response**

Check whether the system environment is satisfactory, and whether the specified special file is correct.

**ERROR: sfcsetup: 0043: Cannot get node information**

**Explanation**

Node information could not be acquired from the management partition.

**Response**

Check the status and contents of /var/opt/FJSVsfcs/sfcfsrm.conf.

**ERROR: sfcsetup: 0044: Node information does not exist**

**Explanation**

The information for the node for which the command was executed has already been deleted.

**Response**

Execute the command on the node which node information will be deleted from config information.

**ERROR: sfcsetup: 0046: Illegal entry exists, or no entry of path to management partition in sfcsrm.conf**

**Explanation**

The sfcsrm.conf file contains no entry that indicates the path to the management partition. Either node information has not yet been added to the management partition, or it was on a node that has already been deleted.

**Response**

Check whether node information has not yet been added to the management partition, or whether the node containing the entry has already been deleted.

**ERROR: sfcsetup: 0047: *device\_file* does not exist**

**Explanation**

The specified special file (*device\_file*) does not exist in the system environment.

**Response**

Check whether the specified special file is correct.

**ERROR: sfcsetup: 0048: Too small disk size, need more than 40MB**

**Explanation**

The size of the device specified in the management partition is too small.

**Response**

Specify a shared disk with a volume size of 40 megabytes or more.

**ERROR: sfcsetup: 0049: Illegal entry exists, or no entry of path to management partition in sfcsrm.conf**

**Explanation**

An invalid row is included in setup file sfcsrm.conf.

**Response**

An invalid row is included in setup file /var/opt/FJSVsfcs/sfcsrm.conf.

**ERROR: sfcsetup: 0050: Cannot open sfcsrm.conf: *message***

**Explanation**

Due to the reason displayed in the *message*, opening of the FsRM setup file sfcsrm.conf failed.

**Response**

Apply the countermeasures described in the message.



**ERROR: sfcsetup: 0051: *device\_file* is not management partition**

**Explanation**

The volume of the specified shared disk (*device\_file*) is not initialized for the management partition.

**Response**

Initialize the volume of the shared disk and then re-execute.

**ERROR: sfcsetup: 0052: *sfcfsrm.conf* does not exist. sfcsetup may not be executed**

**Explanation**

The setup file *sfcfsrm.conf* cannot be found. Node information may not be registered in the node.

**Response**

Register node information in the management partition by using the **sfcsetup(8)** command.

**ERROR: sfcsetup: 0053: Volume(*device\_file*) may not be active. Please activate volume**

**Explanation**

The shared disk volume *device\_file* specified for a management partition may not be ACTIVE.

**Response**

Check if the shared disk volume is ACTIVE by executing the "**sdxinfo(8)**" command then execute the command again.

**ERROR: sfcsetup: 0054: *device\_file* is not block\_device\_file**

**Explanation**

The device *device\_file* is not a block special file.

**Response**

Check the device name then execute the command again.

**INFO: sfcsetup: 0002: waiting to be able to get lock: master**

**Explanation**

The acquisition of domain-wide lock is in progress.

**Response**

Wait for a short while.

**INFO: sfcsetup: 0003: waiting to be able to get lock: config**

**Explanation**

The acquisition of domain-wide lock is in progress.

**Response**

Wait for a short while.

## A.5.10 sfcstat command

---

### **sfcstat: *special* is not a sfcfs file system**

#### **Explanation**

The specified partition (*special*) is not an sfcfs file system partition.

#### **Response**

Check whether the specified partition is an sfcfs file system partition.

### **sfcstat: Can't get information about mounted file systems**

#### **Explanation**

Reading /etc/mstab failed.

#### **Response**

Check the /etc/mstab settings and the access right to the file.

### **sfcstat: can't open *mnt\_pnt***

#### **Explanation**

Opening the mount point *mnt\_pnt* failed.

#### **Response**

Check the access right to the mount point. When you have the access right or an I/O error occurs in accessing the mount point, collect the diagnostic data with **fjsnap** and contact your local Customer Support.

### **sfcstat: missing entry of sfcfs fstotal**

#### **Explanation**

Statistical information could not be obtained.

#### **Response**

Check whether the file system is normal.

### **sfcstat: no active sfcfs**

#### **Explanation**

The file system is not mounted.

#### **Response**

Mount the file system.

### **sfcstat: *special* not mounted**

#### **Explanation**

*special* is not mounted.

#### **Response**

After mount the file system, re-execute the command.

### A.5.11 sfcumntgl command

---

**ERROR: sfcumntgl: 0001: Permission denied****Explanation**

Execution was attempted with other than super-user permission.

**Response**

Retry execution with super-user permission.

**ERROR: sfcumntgl: 0002: Cannot open fstab file****Explanation**

/etc/fstab could not be opened.

**Response**

Check the status of /etc/fstab.

**ERROR: sfcumntgl: 0003: Both *special* and *mount\_point* need to be specified in fsta****b****Explanation**

It needs to be described by /etc/fstab when both the special file *special* and mount point *mount\_point* are specified as an operand.

**Response**

Correct the definition of the "etc/fstab" file system.

**ERROR: sfcumntgl: 0004: { *special* | *mount\_point* } not in fstab****Explanation**

It needs to be described by /etc/fstab when both the special file *special* and mount point *mount\_point* are specified as an operand.

**Response**

Check the status of /etc/fstab.

**ERROR: sfcumntgl: 0005: { *special* | *mount\_point* }: Cannot allocate memory****Explanation**

Memory acquisition failed.

**Response**

Either wait for another process to end, or increase the size of the swap area.

**ERROR: sfcumntgl: 0006: { *special* | *mount\_point* }: Cannot connect to cluster foun****dation****Explanation**

Connection with the cluster control facility failed.

**Response**

Confirm that the cluster control facility has already been started.

**ERROR: sfcumntgl: 0007: { *special* | *mount\_point* }: Cannot get lock: config**

**Explanation**

The lock to change the file system configuration information cannot be obtained. The lock to change the file system configuration information is now being obtained in an optional process of the node within the cluster configuration.

**Response**

Re-execute after releasing the lock for changing the domain configuration information.

**ERROR: sfcumntgl: 0008: { *special* | *mount\_point* }: Read error on management partition to get fsid**

**Explanation**

Reading of the management partition to obtain the file system ID failed.

**Response**

Confirm, using the likes of the ps(1) command, that sfcfrmd is available.

**ERROR: sfcumntgl: 0009: *device*: Cannot get lock: fsid**

**Explanation**

Exclusive lock for fsid within the domain cannot be acquired. The exclusive lock for fsid has been acquired by another process running on a node in the cluster.

**Response**

Wait for the exclusive lock for fsid to be released, and then retry.

**ERROR: sfcumntgl: 0010: { *special* | *mount\_point* }: Read error on management partition to get node information**

**Explanation**

Reading of the management partition to obtain the cluster configuration node information failed.

**Response**

Confirm, using the likes of the ps(1) command, that sfcfrmd is available.

**ERROR: sfcumntgl: 0011: { *special* | *mount\_point* }: sfcfrmd may not exist**

**Explanation**

A communication path to sfcfrmd could not be established.

**Response**

Confirm, using the likes of the ps(1) command, that sfcfrmd is available.

**ERROR: sfcumntgl: 0012: *hostname*: { *special* | *mount\_point* } busy**

**Explanation**

Unmount processing for special file *special* or mountpoint *mount\_point* failed.

**Response**

In the command execution node, try to find a process that is using the file system by `fuser(1)` command (for example, "`fuser -mu special`"). If such a process exists, kill the process and unmount the file system again. Otherwise, collect the diagnostic data with `fjsnap`, and collect the kernel dump by push the NMI button and contact your local Customer Support.

**ERROR: sfcumntgl: 0013: The description form of fstab is wrong****Explanation**

The description format of `/etc/fstab` is incorrect.

**Response**

Confirm the contents of `/etc/fstab`.

**ERROR: sfcumntgl: 0019: { *special* | *mount\_point* }: No such file or directory****Explanation**

Special file *special*, or mount point *mount\_point* does not exist.

**Response**

Check whether specified *special* file and *mount\_point* exists on any node.

**ERROR: sfcumntgl: 0020: { *special* | *mount\_point* }: stat(2) is error: *errmsg*****Explanation**

Obtaining the status of the special file *special*, or mount point *mount\_point* failed.

**Response**

Take action according to detailed information indicated by *errmsg*. For details, see the description of `stat(2)`.

**ERROR: sfcumntgl: 0021: *filename*: Character device can not be specified as mount point. Please specify block device****Explanation**

Character-type special device name *filename* was specified as the mount point.

**Response**

Specifying a block special file name and then re-execute.

**ERROR: sfcumntgl: 0022: *special* is not block device****Explanation**

A block special file was not specified as the argument of the `sfcumntgl(8)` command.

**Response**

Specify a block special file.

**ERROR: sfcumntgl: 0023: *mount\_point* is not directory****Explanation**

The specified *mount\_point* is not a directory.

**Response**

Check whether specified mount point and described mount point in /etc/fstab is a directory.

**ERROR: sfcumntgl: 0024: fstype is described as an invalid value in { fstab | mtab }**

**Explanation**

An unexpected error was detected in the fstype field in /etc/fstab or /etc/mtab.

**Response**

Check the contents of /etc/fstab or /etc/mtab.

**ERROR: sfcumntgl: 0029: { special | mount\_point }: self-node is already processing**

**mount or umount**

**Explanation**

In the self-node, mount or umount processing has already been performed.

**Response**

Please set time a little and execute a command again.

**ERROR: sfcumntgl: 0030: { special | mount\_point }: mount\_point need to be represe**

**ntative partition**

**Explanation**

The block special file specified as a mount point was not a representation partition.

**Response**

Please specify a representation partition name and execute a command again.

**WARNING: sfcumntgl: 0015: hostname: special not mounted**

**Explanation**

*special* had already been unmounted at *hostname*.

**Response**

None.

**WARNING: sfcumntgl: 0016: hostname: special: mount is in progress**

**Explanation**

Mount processing had already been performed to *special* at *hostname*.

**Response**

Either wait a short while and retry the unmount processing.

**WARNING: sfcumntgl: 0017: hostname: special: fail over is in progress**

**Explanation**

Failover processing had already been performed to *special* at *hostname*.

**Response**

Either wait a short while and retry the unmount processing.

**WARNING: sfcumntgl: 0018: *hostname: special*: umount is in progress**

**Explanation**

Umount processing had already been performed to *special* at *hostname*.

**Response**

None.

**WARNING: sfcumntgl: 0026: *hostname: { special | mount\_point }*: Send umount demand processing to sfcfrmd went wrong**

**Explanation**

Transmission of the unmount processing request to sfcfrmd failed with *hostname*.

**Response**

After confirming the state of sfcfrmd with the likes of the ps(1) command, contact local Customer Support.

**WARNING: sfcumntgl: 0027: { *special | mount\_point* }: Waiting processing for a response umount demand went wrong**

**Explanation**

Reception processing of the unmount processing request to sfcfrmd failed.

**Response**

After confirming the state of sfcfrmd with the likes of the ps(1) command, contact local Customer Support.

**WARNING: sfcumntgl: 0028: { *special | mount\_point* }: Time out occurred in umount demand processing to sfcfrmd**

**Explanation**

A timeout occurred in the reception processing of the unmount processing request made to sfcfrmd.

**Response**

After confirming the state of sfcfrmd with the likes of the ps command, contact local Customer Support.

### A.5.12 sfcrcinfo command

---

**sfcrcinfo: Cannot allocate communication buffer**

**Explanation**

The initialization processing of communication failed due to insufficient memory or swap space.

**Response**

Check the system environment whether memory or swap space insufficiency has not occurred.

**sfcrcinfo: Cannot connect to fsm**

**Explanation**

The file system monitoring mechanism is not operating.

**Response**

Check whether the sfcfrmd process exists using the ps(1) command.

When it does not exist, activate the file system monitoring mechanism using the **sfcfrmstart(8)** command.

**sfcrcinfo: Cannot get device name of fsid(FSID )**

**Explanation**

Illegal data exists in the file system configuration information for the file system whose fsid is FSID.

**Response**

Restore the management partition using its backup previously saved.

**sfcrcinfo: Cannot open /etc/mstab: errmsg**

**Explanation**

Opening /etc/mstab failed.

**Response**

Check the system environment using errmsg.

**sfcrcinfo: File system config data of fsid(FSID ) is broken**

**Explanation**

Illegal data exists in the file system configuration information for the file system whose fsid is FSID.

**Response**

Correct the file system configuration according to "9.7 [Restoring of the management partition information](#)".

**sfcrcinfo: Fs(FSID ) config db broken**

**Explanation**

Illegal data exists in the file system configuration information for the file system whose fsid is FSID.

**Response**

Recover the file system configuration by referring to "9.7 [Restoring of the management partition information](#)".

**sfcrcinfo: fsid(FSID ) is out of range**

**Explanation**

The specified fsid value lies outside the valid range.



**Response**

Specify a correct file system ID then execute the command again.

**sfcrcinfo: Fsm is not active**

**Explanation**

The file system monitoring mechanism is not operating.

**Response**

Check whether the file system monitoring mechanism is running.

**sfcrcinfo: *special* is not a representative partition of GFS shared file system**

**Explanation**

*special* is not the GFS Shared File System's representative partition.

**Response**

Specify the representative partition and re-execute the command.

**sfcrcinfo: There is not GFS shared file system with fsid(*FSID* )**

**Explanation**

A GFS Shared File System identified by the specified fsid does not exist.

**Response**

Check specified FSID is correct.

## **A.6 GFS Management View Messages**

This appendix provides information on message dialog associated with GFS Management View, and wherever possible, a recovery procedure is provided to locate and correct the problem.

### **A.6.1 Error messages**

---

#### **6000: Executing the command was unsuccessful.**

##### **Explanation**

Executing the command was unsuccessful.

##### **Response**

To proceed with operation, press <Yes> button. To cancel press <No> button.

#### **6001: Command line output: (detailed information)**

##### **Explanation**

The error given in (detailed information) occurred when executing the command.

##### **Response**

Identify the cause referring to the command line output. When you cannot identify the cause, contact local Customer Support.

#### **6002: Abnormality occurred in the log monitoring mechanism on node *node*. Monitoring will stop. Restart Global File Services.**

##### **Explanation**

Abnormality occurred in the log monitoring mechanism on node *node*.

##### **Response**

Restart GFS management View.

#### **6003: Specified meta partition is not found at server side.**

##### **Explanation**

The specified meta partition could not be found.

##### **Response**

Specify the name of a meta partition that can be shared by the specified hosts, and re-execute the command.

#### **6004: Specified data partition is not found at server side.**

##### **Explanation**

The specified data partition could not be found.

##### **Response**

Specify the name of a data partition that can be shared by the specified hosts, and re-execute the command.

**6005: Specified log partition is not found at server side.****Explanation**

The specified log partition could not be found.

**Response**

Specify the name of a log partition that can be shared by the specified hosts, and re-execute the command.

**6006: Specified File system is not found at server side.****Explanation**

The specified file system has been registered in `/etc/fstab`.

**Response**

Specify the name of a file system that can be shared by the specified hosts, and re-execute the command.

**6007: Specified file system still exists in `/etc/fstab`.****Explanation**

The specified file system was registered in the `/etc/fstab`.

**Response**

Check whether the specified file system is correct.

**6008: The path of the management partition is inconsistent. Redo the setting from the command line.****Explanation**

The management partition is inconsistent.

**Response**

Re-execute the operation after deleting the management partition with the `sfcsetup(8)` command and then re-creating the partition by selecting [Operation]:[Operate Management Partition]:[Create] on the Management View menu.

## A.6.2 Warning messages

---

---

**6200: The file system is active. Cannot change the status.****Explanation**

The active file system cannot delete or change.

**Response**

Unmount the file system, and do again.

**6201: Specified file system has error status, so can not modify status.**

**Explanation**

Specified file system has error status.

**Response**

Investigate the cause of abnormalities by reference of a Log.

**6202: There is no enough update log area in the specified configuration. Please do reconfiguration.**

**Explanation**

The update log area is too small.

**Response**

Change partition configuration to get enough update log area, and press <Next> or <Create> button.

**6203: The input mount point is not available. Change the mount point.**

**Explanation**

The input mount point is not available.

**Response**

Change the mount point, and press <Next> button.

**6204: There is no disk shared by the specified node. Please change the selection of the node.**

**Explanation**

There is no disk shared by the specified node.

**Response**

Please change the selection of the node.

**6205: There are no unused disks. so You can not create new file system.**

**Explanation**

There are no unused disks.

**Response**

None.

**6206: A management partition cannot be created because there is no unused volume.**

**Explanation**

You cannot create a management partition because all the disk volumes are being used.

**Response**

Re-execute the operation after you add a new shared disk and then set up the GDS logical volume. For information on making additions and performing setup, see the "*Global Disk Services*

*Configuration and Administration Guide(Linux)*".

**6207: Since *node* is out of the range of the scope, it cannot be added to the management partition.**

**Explanation**

A node cannot be added because it is out of the scope of the volumes that are set to the management partition.

**Response**

Register the node in the scope of the management partition volume then execute the command again. For information on how to register a node with the scope, see the "*Global Disk Services Configuration and Administration Guide(Linux)*".

**6209: There is a file system that is being started. You cannot add the management partition nodes.**

**Explanation**

If a GFS Shared File System is being started, you cannot change the configuration of the management partition.

**Response**

Unmount all GFS Shared File Systems that are being started.

### **A.6.3 Information messages**

---

---

**6300: Exit GFS management?**

**Explanation**

Exits GFS Management View.

**Response**

Press <Yes> to exit, <No> to continue operation.

**6301: A file system has been created.**

**Explanation**

A file system was created.

**Response**

Press the <OK> button to close the message.  
Start the cluster service to make available the file system.

**6302: Changing of attribute has been completed. (*detail | mount | scope*)**

**Explanation**

Changing a file system attribute of the details, mount, or scope is completed.

**Response**

Press the <OK> button to close the message.

**6303: Changing configuration was completed.**

**Explanation**

Changing configuration of the file system was completed.

**Response**

Press the <OK> button to close the message.

**6304: Specified file system will be deleted. Data in the file system is lost. Are you sure?**

**Explanation**

When the file system is deleted, data in the file system is lost.

**Response**

To delete the file system, press the <Yes> button. To cancel the deletion of the file system, press the <No> button.

**6305: A file system has been deleted.**

**Explanation**

A file system was deleted.

**Response**

Press the <OK> button to close the message.

**6306: The management partition is not set up. Set it up from the Operate management partition.**

**Explanation**

The management partition is not set up on this node.

**Response**

Click the <OK> button to close the message.

If necessary, execute either of the following countermeasures:

If the management partition has not been created:

Re-execute the operation after you create the management partition by selecting [Operation]:[Operate management partition]:[Create].

If the management partition has been created on another node:

Re-execute the operation after adding a node to the management partition by selecting [Operation]:[Operate management partition]:[Create].

**6307: sfcfrmd is not operating. Start up sfcfrmd.**

**Explanation**

sfcfrmd is not activated on this node.

**Response**

Click the <OK> button to close the message.

Re-execute the operation after starting up the sfcfrmd daemon by selecting [Operation]:[sfcfrmd: start/stop].

**6308: The management partition is created with the following settings. Do you want to continue?**

**Explanation**

The management partition is being created.

**Response**

To create the management partition, click the <Yes> button. To abort the creation, click the <No> button.

**6309: *node* is going to be added to the following management partition. Do you want to continue?**

**Explanation**

This node is going to be added to the management partition.

**Response**

To add the node, click the <Yes> button. To abandon the addition, click the <No> button.

**6310: The selected volume is offline on *node*. Switch it to online?**

**Explanation**

The selected volume is offline on that node.

**Response**

To place the node online, click the <Yes> button. To leave the node offline, click the <No> button.

**6311: The processing of *node* could not be completed. Continue with the processing?**

**Explanation**

The processing for the stated node could not be completed.

**Response**

To continue with the processing, click the <Yes> button. To abort the processing, click the <No> button.

**6312: The processing is suspended.**

**Explanation**

The processing has been suspended.

**Response**

Response is unnecessary.

Click the <OK> button to clear the message.

**6313: Management partition operation has been completed.{{(Create)}}{{(Add Node)}}**

**Explanation**

Management partition operation has been completed.

**Response**

Response is unnecessary.  
Click the <OK> button to clear the message.

**6314: sfcfrmd start or stop has been completed.{{(Start)}(Stop)}**

**Explanation**

sfcfrmd has been started or stopped.

**Response**

Response is unnecessary.  
Click the <OK> button to clear the message.

**6315: The selected nodes are added to a management partition. Do you want to continue?**

**Explanation**

The selected nodes are added to a management partition.

**Response**

Processing will be interrupted, if you click the <No> button. The selected nodes are added to a management partition, if a <Yes> button is clicked.

**6316: sfcfrmd is started by the selected nodes. Do you want to continue?**

**Explanation**

sfcfrmd is started by the selected nodes.

**Response**

Processing will be interrupted, if you click the <No> button. Starting sfcfrmd daemon is started, if you click <Yes> button.

**6317: sfcfrmd is stopped by the selected nodes. Do you want to continue?**

**Explanation**

sfcfrmd is stopped by the selected nodes.

**Response**

Processing will be interrupted, if you click the <No> button. Stopping sfcfrmd daemon is started, if you click <Yes> button.



## **A.7 Web-Based Admin View Messages**

For information about the Web-Based Admin View error messages displayed when GFS Shared File System is active, see "*PRIMECLUSTER Web-Based Admin View Operation Guide*".

## **A.8 Messages Of Functions For GFS To Use**

For information about the Messages of functions for GFS to use, see "*PRIMECLUSTER Installation and Administration Guide (Linux)*", "*PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide*", "*PRIMECLUSTER Global Disk Services (Linux) Configuration and Administration Guide*", and "*PRIMECLUSTER Web-Based Admin View Operation Guide*".

## **A.9 Installation Error Messages**

For information about the messages output during installation, see "*Installation Guide*" of PRIMECLUSTER.



## **Appendix B    Reference Manual**

This appendix is intended for use as a reference manual for the GFS Shared File System.

## B.1 GFS Shared File System Exclusive Management Commands

This section describes the commands which are same function as operation commands of Linux standard file system to operate the GFS shared file system.

### B.1.1 **sfcdf(8) Display the GFS Shared File System use status and configuration information**

---

#### <SYNOPSIS>

```
sfcdf -v [ device ... ]  
sfcdf -m device
```

#### <DESCRIPTION>

The **sfcdf** command displays detailed information about the use status and the configuration of a GFS Shared File System.

A block special file can be specified for a *device* to indicate the partition of a file system. When no value is specified for *device*, information on the mounted file system is displayed.

The following information can be displayed for file system use statuses.

For the meta-data area, the following information is displayed:

- inodes: Total number of i-nodes
- free: Total number of available i-nodes
- vdata: Total number of V-data blocks
- free: Total number of available V-data blocks
- leaf: Total number of leaf for empty extent management
- free: Total number of available leaf for empty extent management
- Type: META

For the update log area, the following information is displayed:

- kbytes: Size of the update log area (kilobyte)
- Type: LOG

For the file data area, the following information is displayed:

- kbytes: Size of the file data area (kilobyte)
- used: Size of the file data area in use (kilobyte)
- free: Size of the available file data area in use (kilobyte)
- %used: Utilization of the file data area (including the reserved area)
- Type: DATA

#### <OPTIONS>

The following options can be specified:

**-v**

Outputs if i-nodes, V-data, and file data area are used, how much the extent is empty, and what size the update log area is.

In case of multi-partitions, the configuration will be displayed by partition.

**-m**

Displays the superblock and the partition configuration data on the partition.

### <OPERANDS>

The following operands can be specified:

#### **device**

Specifies the path to a block special file on the partition of the GFS Shared File System. When **-v** option is specified and no value is specified for *device*, information on the mounted file system is displayed.

### <EXAMPLES>

Single-partition configuration

```
# sfcdf -v /dev/sfdsk/gfs01/dsk/volume01 <Enter>
Filesystem:/mnt
      inodes      free  vdata    free    leaf    free Type
/dev/sfdsk/gfs01/dsk/volume01
      45156    45151    15052    15034    22584    22582 META
      kbytes
/dev/sfdsk/gfs01/dsk/volume01
      5113
      kbytes      used    free    %used
/dev/sfdsk/gfs01/dsk/volume01
      361240      8    361232    0%
      DATA
```

Multi-partition configuration

```
# sfcdf -v /dev/sfdsk/gfs01/dsk/volume01 <Enter>
Filesystem:/mnt
      inodes      free  vdata    free    leaf    free Type
/dev/sfdsk/gfs01/dsk/volume01
      45156    45151    15052    15034    22584    22582 META
      kbytes
/dev/sfdsk/gfs01/dsk/volume01
      5113
      kbytes      used    free    %used
/dev/sfdsk/gfs01/dsk/volume01
      361240      8    361232    0%
      DATA
      kbytes      used    free    %used
/dev/sfdsk/gfs01/dsk/volume02
      65504      0    65504    0%
      DATA
```

### <FILE>

#### **/etc/mtab**

The table of a mounted system file

### <SEE ALSO>

[sfcmkfs\(8\)](#).

[df\(1\)](#), [getmntent\(3\)](#) and [mount\(8\)](#) in the online manual.

## B.1.2 **sfcsck(8) Verify and restore GFS Shared File System consistency**

---

### <SYNOPSIS>

**sfcsck** [ *generic\_options* ] [ *-o specific\_options* ] *device*

### <DESCRIPTION>

The **sfcsck** command checks the GFS Shared File System for consistency and restores the file system.

The GFS Shared File System can perform high-speed recovery by using the update log function. The command replays update logging during recovery of data integrity then determines if quick recovery is enabled. If an update log replay cannot be executed because of a damage or for some other reason, **sfcsck** executes a full file system check. Specify the file system using a block special file or a mount point of the file system defined in */etc/fstab*.

For *device*, specify a block special file where the file system has been configured, or specify the mount point. **sfcsck** is not executed when a block special file has been mounted.

If there is a serious inconsistency, the operator is prompted to reply yes or no to repair before **sfcsck** executes recovery. If the operator does not have write permission for the file system, **sfcsck** executes the operation with the **-n** option (no corrections are made).

**sfcsck** executes automatic recovery for minor inconsistencies such as:

- i-node not referenced
- Too many links in an i-node
- An incorrect block included in a free list
- A block appearing in both a free list and a file
- An invalid value detected in a super block

After the inconsistency is corrected, a message is displayed. When recovery of the file system is successful, **sfcsck** displays the number of files on the file system, the counts for used blocks and free blocks, and the fragmentation rate.

A full check is executed for the following inconsistencies:

- A block acquired by multiple i-nodes or free lists.
- A block requested by an i-node or free list outside the range of the file system.
- Invalid link count
- Invalid directory size
- i-node with invalid syntax
- A block not referenced from anywhere
- Directory check, a file pointing to an unallocated i-node, i-node number falling outside the range, the first two entries (*.* and *..*) in a directory
- Super block check: i-node blocks exceeding the number of blocks in the file system.
- A free block list with invalid syntax
- An invalid total for the free block count and free i-node count



Independent files and directories (allocated, but not referenced) are placed in a lost+found directory and reunited with the operator's consent. They are assigned i-node numbers as names. If a lost+found directory does not exist, create it. If area for the lost+found directory is not sufficient, expand the directory.

## <OPTIONS>

### *generic\_options*

The following options can be specified:

**-v**

Displays a command line, but does not execute the command.

**-m**

Executes a check, but does not make corrections.

One of the following messages is outputted at the time of execution.

**sfcsck: sanity check: device okay**

*device* is consistent.

**sfcsck: sanity check: device need log replay**

*device* needs to perform update log replay.

**sfcsck: sanity check: device needs checking**

*device* needs to perform full check of file system.

Update log replay is automatically performed if needed at the time of mount.

The performing method of the update log replay or full check by **sfcsck** is described in -o option.

**-n|N**

Automatically replies "no" to all inquiries. Does not open the file system for writing.

**-y|Y**

Automatically replies **yes** to all inquiries.

### **-o specific\_options**

Allows options specific to the GFS Shared File System to be specified. Insert a comma delimiter between options.

**f**

Executes a forcible check, regardless of the super block status flag.

**p**

Checks for non-conversational synopsis and makes corrections.

**w**

Checks only for write-enabled file systems.

**log|elog|nolog**

Specifies whether to perform an update log replay. The default is **log**.

**log**

Executes an update log replay. Executes a full file system check if the log data is physically destroyed.

**elog**

Executes an update log replay. The command terminates immediately if the log data is physically destroyed without a full file system check being executed.

**nolog**

Executes a full file system check without executing an update log replay.

**<OPERAND>**

The following operand can be specified:

**device**

Specifies the path to a block special file on the representative partition of the GFS Shared File System or the path to the mount point.

**<EXAMPLES>**

```
# sfcfsck /dev/sfdsk/gfs01/dsk/volume01 <Enter>
# sfcfsck -o nolog /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

**<EXIT STATUS>****0**

File system recovery has been completed normally, or no recovery was necessary.

**1**

File system recovery has been completed normally.

**2**

The system must be rebooted.

**4**

The file system error has left unrepaired.

**8**

The processing has terminated because of an abnormal event occurring during command execution.

**16**

An incorrect parameter was specified.

**<SEE ALSO>**

[sfcmkfs\(8\)](#).

[reboot\(8\)](#), [stat\(2\)](#), and [fstab\(5\)](#) in the online manual.

**<NOTE>**

- A file system can be checked only when all hosts that share the file system have started operation. The reason is that the information for these hosts is required.

### B.1.3 sfcmkfs(8) Construct the GFS Shared File System

---

**<SYNOPSIS>**

```
sfcmkfs [ -m ] [ -o specific_options ] device
```

**<DESCRIPTION>**

The **sfcmkfs** command builds the GFS Shared File System on specified disks.

Once the GFS Shared File System has been created, its entry is added to file system configure information in a management partition. Thereafter, file system configure information in a management partition is used to manage the GFS Shared File System.

**<OPTIONS>**

The following options can be specified.

**-m**

Outputs command lines of file system creation time. The file system needs to be present.

**-o *specific\_options***

Allows options specific to GFS Shared File System to be specified. Insert a comma delimiter between options.

**Note**

[Linux2.4]

The following specific options of the GFS Shared File System cannot be used.

- **data**
- **dataopt**
- **maxdsz**
- **maxvol**

**N**

Displays parameters used for creating a file system.

Does not actually create a file system.

**data=*device***

Specifies a block special file of a file data partition.

If you use multiple file data partitions, specify the parameter for each file data partition.

**dataopt=*y|n***

Determines whether or not the file data area is detached from a representative partition. If *y* is specified, the file data area will not be included in the representative partition. If *n* is specified, the file data area will be included in the representative partition.

If this parameter is omitted, *n* will be selected as default.

If a file data partition is not specified for the data option, *n* will be selected as default.

**free=*n***

Specifies the minimum percentage of free area in the file system.

The default is **10%**.

A value can be specified in the range from 0 to 99.

**force**

Specifies the **force** option to re-create a file system previously registered in file system configure information in a management partition when its configuration is unchanged. If, however, the target file system is being mounted, specifying this option results in an error.

**logsz=*n***

Specifies the size of the update log area. The unit is megabytes.

The default is about 1% of the file system size. If the specified value is smaller than 5 megabytes, 5 megabytes is set. If the specified value is greater than 50 megabytes, 50 megabytes is set.

A value can be specified in the range from 5 to 100.

**maxdsz=*n***

Specifies the maximum size of the file system's file data area including additional

partitions. The unit is megabytes. The size of the meta-data area and update log area will be calculated from the specified value.

If this value is omitted, the size of the meta-data area and update log area will be calculated from the file system size of the specified partition.

A minimum value is the same as default. A maximum value is 1048576 (1 terabyte).

**maxnode=*n***

Specifies the maximum number of nodes, including expanded nodes by [sfcnode\(8\)](#) in the future, that are shared in the file system configuration on disks.

The default is 16.

A value can be specified in the range from 1 to 32.

**maxvol=*n***

Specifies the maximum number of partitions that configure a file system on a disk including additional partitions that will be expanded with [sfcadd\(8\)](#).

When the value is omitted, the default value 16 will be selected.

The minimum value is 1, and the maximum value is 32.

**metasz=*n***

Specifies the size of the meta-data area. The unit is megabytes.

The default is about 10% of the file system size. However, when the file system size is larger, the ratio of the meta-data area becomes smaller.

The minimum value that can be specified is same as default. The maximum value is minimum requirement size for managing 1-mega V-data. (The total number of V-data of the file system can be confirmed by executing [sfcdf\(8\)](#).) However, larger value than the size of the representative partition cannot be specified.

**mfree=*n***

Specifies the minimum percentage of free V-data area.

The default is 10%.

A value can be specified in the range from 0 to 99.

**nblkpext=*n***

Specifies an average number of blocks to be managed by one extent.

This parameter is used as a fragmentation factor for the file data area.

The default is 1.

A value can be specified in the range from 1 to 100.

**nbpi=*n***

Specifies the byte count of data per i-node. Number of total i-nodes is decided by dividing the size of the file system's file data area by this parameter. Specify a large value for this parameter if the number of total i-nodes is to be reduced. And specify a larger value for this parameter if the meta-data area is to be saved, too.

The default is 8192 or a value adjusted as the number of total i-nodes should not exceed the maximum value (16 mega).

A value can be specified by the *N* power of 2. (*N* is a range from 9 to 20.)

**node=*host*,...**

Registers the name of a *host* that will share the file system. If multiple nodes should share the file system, specify multiple entries for this parameter using commas.

Hosts whose names are to be specified for *host* must be able to communicate with each other. MDS (meta-data server) placing nodes are selected in order of descriptions for this option.

Unless this option is specified, only the host name of the local node is registered.

**<OPERAND>**

The following operand can be specified:

***device***

Specifies a block special file on the representative partition of the GFS Shared File System.

### <EXAMPLES>

```
# sfcmkfs -o node=host1,host2 /dev/sfdsk/gfs01/dsk/volume01 <Enter>
#                                     sfcmkfs                               -o
dataopt=y,data=/dev/sfdsk/gfs01/dsk/volume02,data=/dev/sfdsk/gfs01/dsk/volume03,node=h
ost1,host2 /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

### <FILE>

**/etc/fstab**

Environment file for the file system.

### <SEE ALSO>

[sfcnode\(8\)](#), [sfcsetup\(8\)](#).

[fstab\(5\)](#) in the online manual.

### <NOTES>

- *host* must be the host name of the node configuring the GFS Shared File System registered on the management partition by [sfcsetup\(8\)](#) in advance.
- A file system can be created only when all hosts that share the file system have started operation and GFS Shared File System has been installed. The reason is that the information for these hosts is required.
- If another option is specified after a comma (,) that follows a **node** option, the option will have no effect because it will be interpreted as a host name.
- In the GFS Shared File System, the data block size is fixed at **8192** bytes and cannot be altered.
- To re-create a GFS Shared File System by modifying its configuration, first delete the file system with [sfcadm\(8\)](#).
- The parameter value of the **metasz** option that is included in the command line displayed by **-m** option is a value in which the size of an actual meta-data area was rounded up every a megabyte. Therefore, if the size of an actual meta-data area is same as upper limit, the following warning message might be displayed when the file system is built by using the command line displayed by **-m** option. However, the action is unnecessary.

```
sfcmkfs:WARNING: value : bogus metasz reset
```

## B.1.4 sfcmount(8) Mount the GFS Shared File System on the local node

### <SYNOPSIS>

```
sfcmount device | mount_point
sfcmount device mount_point
```

**<DESCRIPTION>**

The **sfcmount** command mounts the GFS Shared File System on the local node only. This command can be executed from any nodes that can access the GFS Shared File System.

During the mount processing, this command activates **sfcsd** and, if necessary, **MDS**. Pre-defining **/etc/fstab** is necessary.

Only a super user can perform mount processing.

When mount processing goes wrong, error information is outputted to a console. Please perform management according to the outputted error information.

**<OPTIONS>**

The following mount options can be specified for **/etc/fstab**. Multiple options must be delimited with commas.

**atime | noatime**

Mount in the manner of updating (**atime**) or not updating (**noatime**) the last access time of files.

The default is **atime**.

**atrc | noatrc**

Specifies whether to mount (**atrc**) or not to mount (**noatrc**) at the node startup.

The default is **atrc**.

**async**

Mounts in the manner of processing any I/O for the file system asynchronously.

The default is **async**.

**defaults**

Synonymous with **rw**, **suid**, **dev**, **exec** and **async**.

**dev | nodev**

Mounts making block special files available(**dev**) or unavailable(**nodev**).

The default is **dev**.

**exec | noexec**

Mounts giving permission(**exec**) or no permission(**noexec**) to execute binary files on the file system.

The default is **exec**.

**rw | ro**

Mounts the file system as read/write enabled(**rw**) or read only(**ro**).

The default is **rw**.

**suid | nosuid**

Mounts giving permission(**suid**) or no permission(**nosuid**) to execute **setuid**.

The default is **suid**.

**<OPERANDS>**

The following operands can be specified:

**device**

Specifies the block special file name of a representative partition of the file system to be mounted.

**mount\_point**

Specifies the name of the directory to be mounted.

**<EXAMPLES>**

```
# sfcmount /dev/sfdsk/gfs01/dsk/volume01 /mount_point <Enter>
# sfcmount /dev/sfdsk/gfs01/dsk/volume01 <Enter>
# sfcmount /mount_point <Enter>
```

**<FILES>****/etc/mtab**

Table for the currently mounted file system.

**/etc/fstab**

Environment file for the file system.

**<SEE ALSO>**

[sfcumount\(8\)](#), [sfcmntgl\(8\)](#), [sfcumntgl\(8\)](#).

**mount(8)** and **fstab(5)** in the online manual.

**<NOTES>**

- sfcfrmd daemon must be running to enable the execution of this command.
- Nodes outside the MDS positioning range alone cannot be mounted.
- The same set of the descriptions for *device* and *mount\_point* must be contained in */etc/fstab*.
- Mount processing is always performed using the mount options for the mount point described in */etc/fstab*. When no mount options are described in */etc/fstab*, mount processing without any options is performed.

## B.1.5 **sfcumount(8) Unmount the GFS Shared File System from the local node**

---

**<SYNOPSIS>**

**sfcumount** *device* | *mount\_point*

**<DESCRIPTION>**

The **sfcumount** command unmounts the GFS Shared File System from a local node.

Besides, it stops an MDS if the sfcfsd daemon and node are running.

Only a superuser can perform unmount processing.

When unmount processing goes wrong, error information is outputted to a console. Please perform management according to the outputted error information.

**<OPERANDS>**

The following operands can be specified:

***device***

Specifies the name of the block special file of a representative partition of the file system to be unmounted.

***mount\_point***

Specifies the directory of the mount point of the file system that will be unmounted.

### <EXAMPLES>

```
# sfcumount /dev/sfdsk/gfs01/dsk/volume01 <Enter>
# sfcumount /mount_point <Enter>
```

### <FILES>

**/etc/mtab**

Table for the currently mounted file system.

**/etc/fstab**

Environment file for the file system.

### <SEE ALSO>

[sfcumount\(8\)](#), [sfcmntgl\(8\)](#), [sfcumntgl\(8\)](#).

**umount(8)** and **fstab(5)** in the online manual.



## B.2 GFS Shared File System Specific Management Commands

### B.2.1 `sfcadd` (8) Adds file data partitions

#### <SYNOPSIS>

```
sfcadd -D device[,device,...] t_device
```

#### <DESCRIPTION>

The `sfcadd` command adds file data partitions to the GFS Shared File System that includes a representative partition using the `t_device` operand. The file data partition of the file system can be added only if the file system is unmounted status. No data has to be saved or restored.



Note

[Linux2.4]

`sfcadd`(8) command cannot be used.

#### <OPTIONS>

The following options can be specified:

**-D device[,device,...]**

Specifies a partition that will be added as the file data area using a block special file. If multiple partitions are added, separate block special files by a comma.

#### <EXAMPLES>

When a representative partition adds `/dev/sfdsk/gfs01/dsk/volume02` and `/dev/sfdsk/gfs01/dsk/volume03` to the existing GFS Shared File System (`/dev/sfdsk/gfs01/dsk/volume01`).

```
# sfcadd -D /dev/sfdsk/gfs01/dsk/volume02,/dev/sfdsk/gfs01/dsk/volume03
/dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

#### <OPERANDS>

The following operands can be specified:

**t\_device**

Specifies a path of a block special file of a representative partition of the GFS Shared File System.

#### <SEE ALSO>

[sfcfsck\(8\)](#), [sfcmkfs\(8\)](#), [sfcadm\(8\)](#), [sfcinfo\(8\)](#), [sfcnode\(8\)](#).

#### <NOTES>

- To expand a file system, all the nodes that share the file system must be active because information of each node is required.

- **sfcadd** cannot add a partition if the total number of partitions including the additional partition exceeds the maximum number of partitions (`maxvol`) defined with [sfcmkfs\(8\)](#). When file data region size after adding partition exceeds the maximum file data region size specified by [sfcmkfs\(8\)](#) (`-o maxdsz=n`), a part of free area in file data region might not be able to be used because of management region shortage.
- To execute **sfcadd**, the file system must be normal. If it is not, the message “file system (`partition_name`) is corrupted. To Fix: **sfcsck** `partition_name`” will be output. Execute **sfcadd** again after recover the file system using [sfcsck\(8\)](#).

## B.2.2 sfcadm(8) Change partition information setting

### <SYNOPSIS>

```

sfcadm -r [ -a ] device
sfcadm -N device,...
sfcadm -u host,... [ -g p_mds[,s_mds,mds,... ] ] [ -p p_port[,s_port] ] [ -o keyword=value,... ]
device,...
sfcadm -m host,... -g p_mds [,s_mds,mds,... ] -p p_port [,s_port] [ -o keyword=value,... ]
device,...
sfcadm -g p_mds [,s_mds,mds,... ] device
sfcadm -o keyword=value,... device
sfcadm -p p_port [,s_port] device
sfcadm -h ohost nhost
sfcadm -D device,...
sfcadm device,...

```

### <DESCRIPTION>

The **sfcadm** command changes the partition information settings for the GFS Shared File System.

In the GFS Shared File System, the information about the group of partitions that makes up the file system is retained in each partition.

Partition information settings must be changed in the following cases:

- Device information (path name, device number) for the file system is changed.
- Information of nodes that share the file system is changed.
- The node name is changed
- The file system is migrated to another system.

Use the command in the following cases:

- Recovery for a super block and partition configuration data.
- For the partition configuration data and copying of a super block
- Recovery if a copy of the partition configuration data no longer matches the original information
- Changing the information in the file system configure information in a management partition and deleting the file system that is specified
- Changing the number of placing MDS (meta-data server) nodes.
- Changing the priority of nodes that places MDS (meta-data server) as primary MDS or secondary MDS.

The **sfcadm** updates the entries in the file system configure information in a management partition, which changes the partition information for the GFS Shared File System and/or the file

system environment information. If changes are made to the partition information settings, the information retained in each of the partitions is updated.

This command can only be used if the file system is unmounted in all nodes beforehand.

### <OPTIONS>

The following options can be specified:

**-D *device*,...**

Deletes the GFS Shared File System in which the representative partition provided by file system configure information in a management partition has been registered. Use a comma delimiter to specify multiple files.

**-N** or no options specified

Updates the node and device information for all nodes in the partition configuration data. Use this option if the minor numbers of the specified devices on each nodes are different after the special file name of the file system in use has been changed or copying between partitions is performed. If all hosts have the same minor number, specify only the device information, without specifying the -N option. Then updates the file system configure information in a management partition.

**-a**

When the -r option is specified, performs the recovery using a copy of the super block in the partition of the recovery source and a copy of the partition configuration data.

**-g *p\_mds,s\_mds,mds*,...**

Specifies the node name that MDS can place delimited with a comma. Primary MDS and secondary MDS can be specified in order of the descriptions of node names. To change either primary MDS or secondary MDS, use the "*p\_mds*," or "*s\_mds*" and specify the new node name. In order to change node except primary and secondary, all nodes must be specified.

To change a configuration with only a primary MDS, specify only "***p\_mds***" (a comma delimiter is not required). The file system configure information in a management partition is also updated.

The node name to be specified needs to be a node which is sharing the file system. When specified with the option -u or -m at the same time, it can only specify the node name specified as either -u or -m option.

**-h *o\_host n\_host***

Changes a node name to be changed. Use the "*o\_host n\_host*" syntax and specify the node names. In the file system configure information in a management partition, then, all occurrences of *o\_host* are changed to *n\_host*. The node names registered in the partition configuration data also change. The node names registered in the partition configuration data also change.

**-m *host*,...**

Changes the node and device information in the partition configuration data to the information specified. Use a comma delimiter to specify multiple node names.

The MDS node name can be specified with the -g option.

This option also updates the file system configuration information on the management partition. Use this option to migrate from the current file system to another system.

**-o *keyword=value*,...**

Specifies a variable setting that can be tuned in the GFS Shared File System using the syntax "*variable-name=value*" syntax. Use a comma delimiter to specify multiple variables. When deleting a registered variable, use the specification "*variable-name*". You can specify the timeout of communication between nodes such as follow.

In the following example, the timeout of communication between nodes is set to 180

seconds.

```
-o CON_TIMEOUT=180
```

Changes the time after a communicative response is lost until it estimates a partner node to be an abnormal state in the monitoring of the node by communication.

Please set the large value in the above-mentioned timeout of communication when it is forecast that the load of the system rises.

**-p *p\_port,s\_port***

Specifies the primary port name and the secondary port name delimited with a comma. To change either port name, use the *p\_port*, or *,s\_port* syntax and specify the new port name. To change only the primary port name, specify only *p\_port* (a comma delimiter is not required).

And specifies the **-g** options for MDS node.

The file system configure information in a management partition is also updated.

**-r *device***

Specifies the block special file that will be the recovery source when a super block and partition configuration data are restored. When the **-a** option is specified, redundant blocks in the specified source partition are used for restoring the data into other partitions.

**-u *host,...***

Changes the node and device information in the partition configuration data to the information specified. Use a comma delimiter to specify multiple node names.

In addition, MDS node name and a port name need to be changed by the **-g** and **-p** options.

The file system configure information in a management partition is also updated. Use this option when the node and device information must be rewritten after the special device name of the file system in use has been changed or copying between partitions is performed.

### <OPERANDS>

The following operands can be specified:

***device,...***

Specify block special files of all partitions that configure the GFS Shared File System by separating by a comma.

***device***

Specifies a block special file on the representative partition of the GFS Shared File System. If the **-r** option is used, non-representative partitions can also be specified.

### <EXAMPLES>

Perform recovery of another partition using a partition information of the recovery source.

```
# sfcadm -r /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

Perform recovery of another partition using a copy of a partition information of the recovery source.

```
# sfcadm -r -a /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

Update the node and device information for all nodes in the partition information.

```
# sfcadm /dev/sfdsk/gfs01/dsk/volume01,/dev/sfdsk/gfs01/dsk/volume02 <Enter>
```

Rewrite the node and device information in the partition information

```
# sfcadm -u host1,host2 -g host1,host2 -p sfcfs-1,sfcfs-1 /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

Migrate a specific file system to another system.

```
# sfcadm -m host1,host2 -g host1,host2 -p sfcfs-1,sfcfs-1 /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

Change the priority ranking of nodes placing MDS.

Change primary MDS to host1.

```
# sfcadm -g host1, /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

Change secondary MDS to host2.

```
# sfcadm -g ,host2 /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

Change the priority ranking of nodes placing MDS.

```
# sfcadm -g host1,host2 /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

Assign the same port name to the primary and secondary ports.

```
# sfcadm -p sfcfs-1 /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

Register the variable XXX=60.

```
# sfcadm -o XXX=60 /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

Change the node name host1 to host2.

```
# sfcadm -h host1 host2 <Enter>
```

Delete a specific file system.

```
# sfcadm -D /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

### <SEE ALSO>

[sfcmkfs\(8\)](#), [sfcinfo\(8\)](#), [sfcmntgl\(8\)](#), [sfcnode\(8\)](#), [sfcsetup\(8\)](#).

### <NOTES>

- A file system can be changed only when all nodes that share the file system have started operation and GFS Shared File System has been installed. The reason is that the information for these nodes is required.
- *host* must be the node name of the node configuring the GFS Shared File System registered on the management partition by [sfcsetup\(8\)](#) in advance.

- Using **-u** option with specified new node name or device name, **-g** options must be specified.
- When the name of the representative partition of a GFS Shared File System is changed or migration from the file system to another file system is performed with **sfcdm**, `/etc/fstab` needs to be set.
- When only one node is specified as MDS node by the **-g** option, the file system can not be mounted on the other node individually. In this case, the file system must be mounted on all nodes by using [sfcmntgl\(8\)](#). And note, the file system will be blockaded on the node which is not MDS node, when unmount, shutting down or panic occurs on the MDS node.

### B.2.3 **sfcfmstart(8) Start sfcfrmd daemon on the local node**

---

#### <SYNOPSIS>

**sfcfmstart** [ -f ]

#### <DESCRIPTION>

The **sfcfmstart** command is used to perform sfcfrmd daemon start processing on the local node. Only a super user can perform sfcfrmd daemon start processing.

#### <OPTION>

The following option can be specified:

**-f**

An sfcfrmd daemon will be suspended until it can confirm that a cluster quorum exists. If the **sfcfmstart -f** command is executed, the sfcfrmd daemon will start without waiting for a quorum.

You can confirm if startup of the sfcfrmd daemon is suspended by checking if the message "WARNING: sfcsrm:5001: Starting the sfcfrmd daemon was suspended because quorum does not exist" is output.

#### <EXAMPLES>

Starting the sfcfrmd daemon when the sfcfrmd is stopped.

```
# sfcfrmdstart <Enter>
```

Starting the suspended sfcfrmd daemon without waiting for a quorum.

```
# sfcfrmdstart -f <Enter>
```

#### <FILE>

**/var/opt/FJSVsfcs/sfcsrm.conf**

Environment file of sfcfrmd daemon

#### <SEE ALSO>

[sfcfrmdstop\(8\)](#), [sfcsetup\(8\)](#).

**cftool(1M)** in the online manual of "PRIMECLUSTER Cluster Foundation".

**<NOTES>**

- To enable the use of this command, the local node must be multi user mode. This command cannot be used by single user mode.
- Within a given node, this command cannot be executed more than once.
- Within a given node, this command cannot be executed concurrently with [sfcfrmstop\(8\)](#).
- When you execute this command with the **-f** option specified, confirm that there is no cluster partition by execute **cftool -n** at all nodes. If a cluster partition occurred and this command with the **-f** option specified is executed, inconsistency of the GFS Shared File System might occur.

---

**B.2.4 sfcfrmstop(8) Stop sfcfrmd daemon on the local node**

---

**<SYNOPSIS>**

**sfcfrmstop**

**<DESCRIPTION>**

The **sfcfrmstop** command is used to stop sfcfrmd daemon on the local node.

The GFS Shared File System can perform only in the state where it is not mounted by the applicable node.

Only a super user can performs sfcfrmd daemon stop processing.

**<EXAMPLE>**

```
# sfcfrmstop <Enter>
```

**<SEE ALSO>**

[sfcfrmstart\(8\)](#).

**<NOTES>**

- To enable the use of this command, the local node must be multi user mode. This command cannot be used by single user mode.
- Within a given node, this command cannot be executed more than once.
- Within a given node, this command cannot be executed concurrently with [sfcfrmstart\(8\)](#).

---

**B.2.5 sfcgetconf(8) Make a backup of the management partition**

---

**<SYNOPSIS>**

**sfcgetconf backupfile**

**sfcgetconf -a backupfile**

**sfcgetconf -i fsid [-i fsid]... backupfile**

**sfcgetconf -d device [-d device]... backupfile**

**<DESCRIPTION>**

The **sfcgetconf** command outputs next items to **backupfile**:

- The file system configuration information in management partition.

- The procedure for using the [sfcadm\(8\)](#) command to reconfigure the file system.

The contents of the `sfcsrm.conf` file when the `-a` option is specified.

The output backup file contains the procedure for executing the [sfcadm\(8\)](#) command in the `sh(1)` shell script format.

Management partition recovery can be done using the script output by `sfcgetconf` after it is initialized with [sfcsetup\(8\)](#).

### <OPTIONS>

The following options can be specified:

**-a**

Outputs the contents of `sfcsrm.conf` to the first part of the backup file in the form of comments. (The output for no `-a` option will follow.)

**-i fsid**

Outputs only information about the file system corresponding to a specified `fsid` value and the procedure for executing the [sfcadm\(8\)](#) command that re-creates information on the management partition for that file system when this option is specified (not for all the file systems).

**-d device**

Specifies a block special file on the partition configuring the file system. When this option is specified (not for all the file systems), only information about the file system corresponding to a specified device, and the procedure for executing the [sfcadm\(8\)](#) command that re-creates information on the management partition for that file system, are output.

### <OPERANDS>

The following operands can be specified:

**backupfile**

Specifies the name of the output destination file. When the output destination file already exists, backup is not performed.

### <EXAMPLES>

When a backup of the entire file system is to be output to file `sfccfg.bkup.1`.

```
# sfcgetconf sfccfg.bkup.1 <Enter>
```

When the contents of the `sfcsrm.conf` file are to be recorded at the head of the backup file, and the backup for the entire file system is to be output to `sfccfg.bkup.2`.

```
# sfcgetconf -a sfccfg.bkup.2 <Enter>
```

When backups of the file systems corresponding to `fsid` values 1 and 2 are to be output to `sfccfg.bkup.3`

```
# sfcgetconf i 1 i 2 sfccfg.bkup.3 <Enter>
```

When backups of the file system corresponding to `/dev/sfdsk/gfs/dsk/volume1` are to be output to `sfccfg.bkup.4`.



```
# sfcgetconf -d /dev/sfdsk/gfs01/dsk/volume01 sfccfg.bkup.4 <Enter>
```

**<FILE>**

**/var/opt/FJSVsfdfs/sfcfsrm.conf**

Environment file of sfcfrmd daemon

**<SEE ALSO>**

[sfcadm\(8\)](#), [sfcsetup\(8\)](#).

**<NOTE>**

- To enable the use of this command, the local node must be multi user mode.

## B.2.6 sfcinfo(8) Display partition information

---

**<SYNOPSIS>**

**sfcinfo** [-V] [-n] { *device* | *mount\_point* } [{*device* | *mount\_point*}...]

**sfcinfo** [-V] [-n] -d *dev*[,*dev*,... ]

**sfcinfo** -a [-V] [-n]

**sfcinfo** -e { *device* | *mount\_point* }

**sfcinfo** -e [-a]

**<DESCRIPTION>**

**sfcinfo** displays the partition information of the GFS Shared File System specified by *device* or *mount\_point*.

*device* indicates the partition configuring the file system by a block special file name.

*mount\_point* indicates the path to the mount point of the file system. To use the path to the mount point, the file system must already be described in */etc/fstab*.

If neither *device* nor *mount\_point* is specified and the **-a** option is omitted, **sfcinfo** displays the information on all GFS Shared File Systems being mounted in the command execution node.

**sfcinfo** outputs the following detailed information:

- FSID
  - FS identification number
- special
  - Special device name (device number)
- size
  - Partition size (in kilobytes)
- Type
  - Usage of partitions
    - META: meta-data area
    - DATA: file data area
    - LOG: update log area
- mount
  - Mount point in a command execution node
  - "-----" when no file system is mounted
- hostID
  - Host ID

- status
  - Start status
    - RUN: The node is operating
    - STOP: The node is stopped
- hostname
  - Node name

### <OPTIONS>

The following options can be specified:

**-V**

Displays the version of the GFS Shared File System.

**-a**

Displays the information for all file systems described in the file system configure information in a management partition.

**-d *dev[,dev,...]***

Specifies a device number in hexadecimal for the partition to be displayed.  
Use a comma delimiter to specify multiple device numbers.

**-e**

Displays file system variables set by [sfcadm\(8\)](#).

**-n**

Displays node information.

If no parameters are specified, the information for all mounted file systems is displayed.

### <OPERAND>

The following operand can be specified:

***device | mount\_point***

Specifies a block special file on the partition configuring the file system or the path to the mount point of the file system.

Use a space delimiter to specify multiple block special files or paths.

### <EXAMPLES>

```

# sfcinfo /dev/sfdsk/gfs01/dsk/volume01 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID special                                size Type mount
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)  14422 META /mnt
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)   5116 LOG /mnt
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)  95112 DATA /mnt

# sfcinfo -V /dev/sfdsk/gfs01/dsk/volume01 <Enter>
sfcfs v1.0 file system
/dev/sfdsk/gfs01/dsk/volume01:
FSID special                                size Type mount
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)  14422 META /mnt
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)   5116 LOG /mnt
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)  95112 DATA /mnt

# sfcinfo /mnt <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID special                                size Type mount
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)  14422 META /mnt
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)   5116 LOG /mnt
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)  95112 DATA /mnt

# sfcinfo -d 1e756 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID special                                size Type mount
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)  14422 META /mnt
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)   5116 LOG /mnt
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)  95112 DATA /mnt

# sfcinfo -n /dev/sfdsk/gfs01/dsk/volume01 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID hostID  status  hostname
  1 80000000  RUN    prime01
  2 80000001  STOP   prime02

# sfcinfo -a <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID special                                size Type mount
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)  14422 META /mnt
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)   5116 LOG /mnt
  1 /dev/sfdsk/gfs01/dsk/volume01(1e756)  95112 DATA /mnt

/dev/sfdsk/gfs01/dsk/volume02:
FSID special                                size Type mount
  2 /dev/sfdsk/gfs01/dsk/volume02(1e757)  25418 META -----
  2 /dev/sfdsk/gfs01/dsk/volume02(1e757)   5120 LOG -----
  2 /dev/sfdsk/gfs01/dsk/volume02(1e757) 232256 DATA -----

```

**<FILES>****/etc/mtab**

Mounted file system table

**/etc/fstab**

List of default parameters for each file system

**<SEE ALSO>**

[sfcadm\(8\)](#).

[fstab\(5\)](#) in the online manual.

---

## B.2.7 **sfcmntgl(8) Mount the GFS Shared File System on all nodes**

---

**<SYNOPSIS>**

**sfcmntgl** *device* | *mount\_point*

**sfcmntgl** *device* *mount\_point*

**<DESCRIPTION>**

The **sfcmntgl** mounts all nodes sharing the same file system according to the specified operands.

**sfcmntgl** can be executed from any nodes as the GFS configuring nodes that are specified with [sfcsetup\(8\)](#). The pre-definitions in */etc/fstab* are necessary.

Only a super user can perform mount processing.

When mount processing goes wrong, error information is outputted to the console of each node. Please perform management according to the outputted error information.

**<OPERAND>**

The following operand can be specified:

***device***

Specifies the block special file name of a representative partition of the file system to be mounted.

***mount\_point***

Specifies the name of the directory to be mounted.

**<EXAMPLE>**

```
# sfcmntgl /dev/sfdsk/gfs01/dsk/volume01 /mount_point <Enter>
# sfcmntgl /dev/sfdsk/gfs01/dsk/volume01 <Enter>
# sfcmntgl /mount_point <Enter>
```

**<FILES>**

***/etc/mtab***

Table for the currently mounted file system.

***/etc/fstab***

Environment file for the file system.

**<SEE ALSO>**

[sfcmount\(8\)](#), [sfcsetup\(8\)](#), [sfcumntgl\(8\)](#), [sfcumount\(8\)](#).

**mount(8)** and **fstab(5)** in the online manual.

#### <NOTES>

- **sfcfrmd** daemon must be running to enable the execution of this command.
- When both *device* and *mount\_point* are specified, the same set of the descriptions must be contained in */etc/fstab* for all nodes sharing the file system.
- Mount processing is always performed using the mount options for the mount point described in */etc/fstab*. When no mount options are described in */etc/fstab*, mount processing without any options is performed.

## B.2.8 **sfcnode(8)** Add, delete, and change node configuration information

---

#### <SYNOPSIS>

```
sfcnode -a host,... device  
sfcnode -d [ -h host,... | -i hostid,... ] device
```

#### <DESCRIPTION>

The **sfcnode** command adds, deletes, and changes GFS Shared File System node information.

To add or update node information, specify the **-a** option. If a specified host name already exists, **sfcnode** updates node and device information for the host. If the host does not exist, **sfcnode** adds the node and device information. Use a comma delimiter to specify multiple host names.

To delete node information, specify the **-d** option. For the **-h** or **-i** option, specify the host name (*host*) or host ID (*hostid*) of the host to be deleted. **sfcnode** deletes the node information of the host. If neither the **-h** nor **-i** option is specified, **sfcnode** deletes the node information for the host on which the **sfcnode** is executed. Use a comma delimiter to specify multiple host names or IDs. The **-h** and **-i** options cannot be specified together.

After the **sfcnode** command changes the GFS Shared File System node information, the entries in the file system configure information in a management partition are updated. The information retained in the partitions is also changed.

#### <OPTIONS>

The following options can be specified:

**-a** *host,...*

Specifies the name of a host whose node information is to be added.

**-d**

Deletes node information.

**-h** *host,...*

Specifies the name of a host whose node information is to be deleted. The host must be one that can be used by the GFS Shared File System.

**-i** *hostid,...*

Specifies the ID in hexadecimal of a host to be deleted from node information. The host must be one that can be used by the GFS Shared File System. Note that a host ID specified for this option differs from a host ID obtained with **hostid(1)**.

**<OPERAND>**

The following operand can be specified:

***device***

Specify a block special file on the representative partition of the GFS Shared File System whose node information is to be updated.

**<EXAMPLES>**

Add new node that was added by [sfcsetup\(8\)](#) to the sharing nodes of GFS Shared File System.

```
# sfcnode -a host2 /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

Add or update node/device information for hosts by specifying host names.

```
# sfcnode -a host1,host2 /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

Delete node/device information for hosts by specifying host names.

```
# sfcnode -d -h host2 /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

Delete node/device information for a host by specifying its ID.

```
# sfcnode -d -i 80000000 /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

Delete node/device information for the local host.

```
# sfcnode -d /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

**<SEE ALSO>**

[sfcmkfs\(8\)](#), [sfcadm\(8\)](#), [sfcinfo\(8\)](#), [sfcsetup\(8\)](#).

[hostid\(1\)](#) in the online manual..

**<NOTES>**

- A file system can be changed only when all hosts that share the file system have started operation and GFS Shared File System has been installed. The reason is that the information for these hosts is required.
- *host* must be the host name of the node configuring the GFS Shared File System registered on the management partition by [sfcsetup\(8\)](#) in advance.
- If **sfcnode** fails outputting a message as "node full, can't sfcnode," the number of nodes has exceeded the maximum number of sharing nodes set when the GFS Shared File System was created with [sfcmkfs\(8\)](#). Check the registered node information with [sfcinfo\(8\)](#), and then add nodes after deleting node information no longer necessary using **sfcnode** with the **-d** option.
- Cannot delete node information of host that placing primary MDS, and secondary MDS.

## B.2.9 sfcrcsinfo(8) Display file system information

---

### <SYNOPSIS>

**sfcrcsinfo -m [ -a | -i *fsid* | *device* ]**

### <DESCRIPTION>

The **sfcrcsinfo** command outputs file system information for GFS Shared File Systems.

**sfcrcsinfo** outputs the following detailed information:

- FSID (File system ID)
- MDS/AC (File system ID)
  - MDS(P): The primary MDS on a definition
  - MDS(S): The secondary MDS on a definition
  - AC : The node that mount the file system
- STATE/SUB-STATE (MDS)
  - run - : The primary MDS is running
  - wait - : The secondary MDS is waiting for failure recovery of the primary MDS
  - stop - : MDS stopped
  - none - : no relation with MDS
  - If SUB-STATE is other than "-", MDS is in state-transition.
- STATE/SUB-STATE (AC)
  - run - : file system is in mounted
  - stop - : file system is in unmounted
  - If SUB-STATE is other than "-", AC is in state-transition.
- RID-1/ RID-2/ RID-N (Resource No.: Always 0)
- hostname (MDS/AC host name)

### <OPTIONS>

The following options can be specified:

**-a**

Outputs information for all GFS Shared File Systems that have been created.

**-m**

Outputs the MDS and AC information for GFS Shared File Systems.

If **-m** specified with **-a**, outputs information for all GFS Shared File Systems that have been created.

If only specified **-m**, outputs information for GFS Shared File System which status is mounted.

**-i *fsid***

Displays the information for the file system specified by *fsid*.

### <OPERAND>

The following operand can be specified:

***device***

Displays information for the file system specified by *device*.

Specifies the block special file name of a representative partition of the file system to be mounted.

### <EXAMPLES>

```
# sfcrcsinfo -m /dev/sfdsk/gfs01/dsk/volume01 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID  MDS/AC  STATE  S-STATE  RID-1  RID-2  RID-N  hostname
  1  MDS(P)  run    -         0      0      0      prime01
  1  AC      run    -         0      0      0      prime01
  1  MDS(S)  wait   -         0      0      0      prime02
  1  AC      run    -         0      0      0      prime02
```

## B.2.10 **sfcsetup(8) Initialize the management partition, add, delete and display node information, display path of management partition, and register and display the startup mode of the sfcfrmd daemon**

### <SYNOPSIS>

```
sfcsetup -c [ -f ] device
sfcsetup -a device
sfcsetup -d
sfcsetup -m [ startup_mode ]
sfcsetup -p
sfcsetup
```

### <DESCRIPTION>

The **sfcsetup** command initializes the management partition, adds node information to the management partition, deletes, displays the node information, displays a path of the management partition, and registers and displays the startup mode of sfcfrmd daemon.

To initialize the management partition, specify the **-c** option and the block special file. When the specified device has already been used for the management partition, the **sfcsetup** command returns the error in order to prevent incorrect operation. In this case, perform initialization with the **-f** option specified. The size of a management partition needs to be **40** megabytes or more.

To add node information, specify the **-a** option. When the specified block special file has already been initialized for the management partition, node information is added to the management partition for which the command was executed.

To delete node information, specify the **-d** option. Note, however, that sfcfrmd demon must be stopped in all node of the cluster foundation.

To register the startup mode of the sfcfrmd daemon, specify the **-m** option and the startup mode. When the command is executed specify the **-m** option without the startup mode, display the registered startup mode of the sfcfrmd daemon.

When the command is executed with **-p** options specified, display the path name of a management partition.

When the command is executed with no options specified, a listing of the node information



recorded in the management partition is displayed.

When addition of node information and deletion are performed by the **sfcsetup** command, add/delete entries of management partition to/from the `sfcsrm.conf` file.

### <OPTIONS>

The following options can be specified:

**-c *device***

Initializes the partition specified in *device* for use as a management partition.

**-f**

Initializes a block special file that has been used as a management partition.

**-a *device***

Adds node information.

**-d**

Deletes node information.

**-m [ *startup\_mode* ]**

Registers the startup mode of the `sfcrmd` daemon specified in *startup\_mode*. When the *startup\_mode* is not specified, displays the registered startup mode of the `sfcrmd` daemon.

The following startup mode can be specified in *startup\_mode*. When initializing as management partition, **wait** is registered as startup mode of `sfcrmd` daemon.

**wait**

When a node is started up, the startup of the `sfcrmd` daemon will be suspended until it can confirm that a cluster quorum exists. Node startup also will be suspended. You can confirm if startup of the `sfcrmd` daemon is suspended by checking if the message "WARNING: sfcsrm:5001: Starting the `sfcrmd` daemon was suspended because quorum does not exist" is output.

And, when the CF is started up from the GUI, startup of the `sfcrmd` daemon is given up if a quorum does not exist.

**wait\_bg**

When a node is started up or the CF is started up from the GUI, the startup of the `sfcrmd` daemon will be suspended until it can confirm that a cluster quorum exists.

This differs from **wait** in that node startup or CF startup will continue.

You can confirm if startup of the `sfcrmd` daemon is suspended by checking if the message "WARNING: sfcsrm:5001: Starting the `sfcrmd` daemon was suspended because quorum does not exist" is output.

**nowait**

When a node is started up or the CF is started up from the GUI, the `sfcrmd` daemon will be started even if it cannot confirm that a cluster quorum exists.

This startup mode exists for backward compatibility only.

**-p**

Displays the path name of a management partition.

### <OPERAND>

The following operand can be specified:

***device***

Specifies the block special file to be used for the management partition.

### <EXAMPLES>

Initializing a management partition

```
# sfcsetup -c /dev/sfdsk/gfs/dsk/control <Enter>
```

Initializing a partition that has previously been used as a management partition.

```
# sfcsetup -c -f /dev/sfdsk/gfs/dsk/control <Enter>
```

When `sfcfrmd` is not running in all nodes of the cluster and adding information for a node.

```
# sfcsetup -a /dev/sfdsk/gfs/dsk/control <Enter>
```

When `sfcfrmd` is not running in all nodes of the cluster and deleting information for a node.

```
# sfcsetup -d <Enter>
```

Registering the startup mode as **wait**. When a startup mode is **wait**, `sfcfrmd` daemon will be suspended until it can confirm that a cluster quorum exists, and node startup also will be suspended.

```
# sfcsetup m wait <Enter>
```

Displaying the startup mode of the `sfcfrmd` daemon registered.

```
# sfcsetup m <Enter>
wait
```

#### <FILE>

`/var/opt/FJSVsfcfs/sfcfrmd.conf`

Environment file of `sfcfrmd` daemon

#### <SEE ALSO>

[sfcadm\(8\)](#), [sfcfrmdstop\(8\)](#).

#### <NOTES>

- Initialization of a management partition, addition and deletion of node information, and registration the startup mode of the `sfcfrmd` daemon cannot be performed during the `sfcfrmd` daemon activation.
- Node information used by a file system cannot be deleted. Please delete the file system configuration information related the node in a management partition by [sfcadm\(8\)](#).
- If a cluster partition condition occurs during node startup or when the CF is started from the GUI, and **nowait** is set as the startup mode of the `sfcfrmd` daemon, a data inconsistent may be caused in the GFS Shared File System.

## B.2.11 `sfcstat(8)` Report statistics on GFS Shared File Systems

---

#### <SYNOPSIS>

```
sfcstat [ -abcdefghijklmnopqrstuvwxyzA ] [ interval [ count ] ] [ mount_point... ]
```

**<DESCRIPTION>**

The **sfcstat** command displays statistics about GFS Shared File Systems.

If **sfcstat** is used without parameters, it reports statistical information recorded after the file system is mounted. The next time, it reports the information recorded since the last report.

If *interval* is specified, the command reports statistical information each number of seconds defined by *interval*.

If *count* is specified, the command reports statistical information repeatedly for the value defined by *count*.

If *mount\_point* is specified, the command reports the information for the specified file system.

**<OPTIONS>**

The following options can be specified:

**-A**

Reports all information.

**-a**

Reports **AC** information about read/write operations. Reports the number of RPC messages for the following purposes:

- To change file atime or mtime
- To change file attributes
- To access file attributes
- To access file size
- To acquire tokens when changing file size
- To change file size
- To purge tokens when changing file size
- To access information about extent allocations
- To change information about extent allocations

**-b**

Reports AC information about meta-data management buffers. Reports the number of buffer allocations, the number of dynamic buffer allocations, and the number of sleep occurred during buffer requests.

**-c**

Reports MDS information about meta-data management buffers. Reports the number of buffer allocations, the number of dynamic buffer allocations, and the number of sleep occurred during buffer requests.

**-d**

Reports AC information about direct I/O. Reports the following information:

- Number of direct I/O read operations
- Number of direct I/O write operations
- Number of blocks read
- Number of blocks written
- Number of read requests changed to normal I/O
- Number of write requests changed to normal I/O
- Number of page flush after reading
- Number of page flush after writing

**-e**

Reports MDS information about purging tokens. Reports the following information:

- Number of purging tokens
- Number of AC that purged tokens
- Number of purging tokens (by token type)

- Number of AC that purged tokens (by token type)
- f**  
Reports AC information about VFS operations. Reports the number of RPC messages for the following purposes:
  - To access file handle
  - To access file attributes
  - To purge tokens
- g**  
Reports the number of times MDS was received requests for tokens (by token type).
- h**  
Reports MDS information about the meta-daemon. Reports the number of times the meta-daemon was activated, the number of buffers in the meta-daemon I/O queues, the number of times the meta-daemon was activated because the disk was full, and the number of times the meta-daemon was activated because the meta-cache was full.
- i**  
Reports AC information about actual I/O. Reports the number of actual I/O reading, the number of actual I/O writing, the number of I/O blocks actually read, and the number of I/O blocks actually written.
- j**  
Reports MDS information about the log daemon. Reports the following information:
  - Number of times log daemon was activated
  - Number of sync requests
  - Number of fsync requests
  - Number of times log buffer full
  - Number of requests issued from meta-write daemon
  - Number of times sleep occurs because transaction limit exceeded
  - Number of times sleep occurs because log disk full
  - Number of times sleep occurs because of a preceding large transaction
  - Number of times sleep occurs because a preceding transaction enlarged
  - Number of requests for I/O operation issued from log daemon
  - Time(msec) required for writing
  - Number of blocks written
  - Number of valid blocks
  - Number of requests to log transactions
  - Number of parallel operation transactions to be logged
  - Average number of parallel operation transactions
  - Number of times huge buffer was used
  - Number of sub-transactions generated
- k**  
Reports MDS information about operations for free extents. Reports the number of search requests, the number of times blocks acquired, the number of acquired blocks, the number of blocks acquisition failed, the number of times blocks released, the number of released blocks, the number of times released blocks successfully linked, the number of division of free extent management, and the number of joining free extent management.
- l**  
Reports AC information about file and record locks. Reports the number of RPC messages for the following purposes:
  - To open file
  - To close file
  - To map file to address space
  - To read file
  - To write file

- To set lock, clear lock, or get lock information
- To set mandatory lock, or clear mandatory lock

**-m**

Reports MDS information about meta cache (by meta type). Reports the number of accesses, the number of cache hits, the number of updates, the number of read operations, the number of write operations, writing time, and average time(msec).

**-n**

Reports AC information about RNODE operations. Reports the number of RPC messages for the following purposes:

- To be requested to purge tokens
- To be requested to purge tokens of freed RNODE
- To purge tokens to free RNODE

**-o**

Reports AC information about VNODE operations. Reports the following information:

- Number of RPC messages to open file
- Number of RPC messages to close file
- Number of access to file attributes
- Number of RPC messages to access file attributes
- Number of re-sent RPC messages to access file attributes
- Number of RPC messages to access the number of blocks of regular file
- Number of access to symbolic link
- Number of RPC messages to access symbolic link
- Number of RPC messages to move modified attributes to storage devices
- Number of access to directory
- Number of RPC messages to access directory
- Number of re-sent RPC messages to access directory

**-p**

Reports MDS information about file operation. Reports the following information:

- Number of requests to operate files (by operation type)
- Size of RPC messages to operate files (by operation type)
- Number of successful replies (by operation type)
- Size of successful replies (by operation type)
- Number of failed replies (by operation type)
- Time(msec) required for operating files (by operation type)

**-q**

Reports MDS information about operations for allocated extents. Reports the number of search requests, the number of times blocks acquired, the number of acquired blocks, the number of blocks acquisition failed, the number of times blocks released, the number of released blocks, the number of times released blocks successfully linked, the number of division of free extent management, and the number of joining free extent management.

**-r**

Reports AC information about file operation. Reports the following information:

- Number of sending requests to operate files
- Number of receiving replies
- Number of timeouts while receiving replies
- Number of requests waiting to be sent (by operation type)
- Time for requests to wait to be sent (by operation type)
- Number of sending requests (by operation type)
- Time(msec) to wait to receive replies (by operation type)
- Number of successful replies (by operation type)
- Number of replies failed because no file existed (by operation type)
- Number of replies failed because file attributes changed (by operation type)

- Number of replies failed because file existed (by operation type)
- Number of replies failed because of other error (by operation type)
- Number of failure to receive replies (by operation type)

**-s**

Reports MDS information about operations for reserving extents. Reports the number of requests to reserve extents, the number of reserved extents, the number of reserved blocks, the number of requests to reserve extents contiguously, and the number of extents failed to reserve.

**-t**

Reports the number of times MDS is request to purging tokens. Reports the following information:

- Number of changing information about extent allocations
- Number of extents whose allocation information were changed
- Number of blocks whose allocation information were changed
- Number of changing information about extent allocations partially
- Number of extents whose allocation information were changed partially
- Number of blocks whose allocation information were changed partially
- Number of purging tokens (by token type)

If the options are omitted, the command reports all information.

#### <OPERAND>

The following operand can be specified:

***mount\_point***

Specifies the path name of the mount point where the file system has been mounted.

#### <EXAMPLE>

```
# sfcstat 5 /mnt <Enter>
```

#### <SEE ALSO>

**sar(1)** in the online manual.

#### <NOTE>

- The AC does not get meta-data management buffers dynamically at present. So, AC information about meta-data management buffers such as the numbers of buffer allocations, dynamic buffer allocations, and sleep that occurred during buffer requests will be 0 at all times.

## B.2.12 **sfcumntgl(8)** Unmount the GFS Shared File System from all nodes

---

#### <SYNOPSIS>

***sfcumntgl device | mount\_point***  
***sfcumntgl device mount\_point***

**<DESCRIPTION>**

The **sfcumntgl** unmounts all nodes sharing the same file system according to the specified operands. **sfcfsd** and **MDS** will be stopped.

**sfcumntgl** can be executed from any nodes as the GFS configuring nodes that are set with [sfcsetup\(8\)](#).

Only a super user can perform unmount processing.

When unmount processing goes wrong, error information is outputted to the console of each node. Please perform management according to the outputted error information.

**<OPERANDS>**

The following operands can be specified:

***device***

Specifies the block special file name for a representative partition of the file system to be mounted.

***mount\_point***

Specifies the name of the directory to be mounted.

**<EXAMPLES>**

```
# sfcumntgl /dev/sfdsk/gfs01/dsk/volume01 /mount_point <Enter>
# sfcumntgl /dev/sfdsk/gfs01/dsk/volume01 <Enter>
# sfcumntgl /mount_point <Enter>
```

**<FILES>*****/etc/mtab***

Table for the currently mounted file system.

***/etc/fstab***

Environment file for the file system.

**<SEE ALSO>**

[sfcmntgl\(8\)](#), [sfcsetup\(8\)](#), [sfcumount\(8\)](#).

**umount(8)** and **fstab(5)** in the online manual.

**<NOTES>**

- **sfcfrmd** daemon must be running to enable the execution of this command.
- When both *device* and *mount\_point* are specified, the same set of the descriptions must be contained in */etc/fstab* for all nodes sharing the file system.





## Appendix C      **Trouble shooting**

This appendix describes how to collect troubleshooting information and take corrective action in the event of a GFS Shared File System failure.

Please cope with a GFS Shared File System failure in the following procedures

- “C.1 [Corrective actions of messages](#)”
- “C.2 [Collecting information for troubleshooting](#)”

## C.1 Corrective actions of messages

If a command of the GFS Shared File System fails, take corrective action of the message. See “Appendix A [List of Messages](#).”

If the problem could not be resolved, take corrective action according to the message output to the console or the message stored in `/var/log/messages`.



[See](#)

For corrective actions of messages related to cluster systems, see “Appendix D Messages” of the “*PRIMECLUSTER Installation and Administration Guide (Linux)*”.

For corrective actions of messages related to GDS, see “Appendix E GDS Messages” of the “*PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)*”.

For corrective actions of messages related to GLS, see “Appendix A List of Error Messages” of the “*PRIMECLUSTER Global Link Services Configuration and Administration Guide : Redundant Line Control Function (Linux)*”.

For corrective actions of messages related to GFS Management View, see “Appendix A Messages” of the “*PRIMECLUSTER Web-Based Admin View Operation Guide*”.

For corrective actions of messages related to GFS Shared File System, see “Appendix A [List of Messages](#)” of this document.

## C.2 Collecting information for troubleshooting

Collect following material for investigation when you request troubleshooting to local Customer Support and if your manual instructs you to do so.

1. Material acquired in `/opt/FJSVsnap/bin/fjsnap -a filename` (Need to be executed with root access privilege)
2. `/var/crash/*/*`
3. Output of following command: `"sfcsck -N -o nolog device"` \* When file system restoration is necessary

If the investigation material must urgently be sent, prepare the followings at least. This material is a part of material collected by `fjsnap` and required for the initial investigation of GFS Shared File System.

- a. Material collected by `/etc/opt/FJSVsfdfs/bin/sfcsnap.sh -a -d dirname` (Collect by executing with a root access privilege)
- b. `/var/log/messages*`



Note

- All material above should be collected from all nodes where the GFS Shared File System is shared.
- For above 3, collect troubleshooting information required to recover a file system. For *device*, specify a block special file of the file system where the problem occurs.
- This material should be collected as soon as the symptom occurred. Some material might not be collected after rebooting the system.
- Specify the file name that does not exist for *filename* that is specified with `fjsnap`.
- For the directory *dirname* designated in `sfcsnap.sh`, specify the existing directory. Material is stored in the sub-directory.
- a and b information is of initialized investigation. Collect information from 1 to 3 after collecting it.



See

For information on how to collect troubleshooting information on PRIMECLUSTER systems, see the "*PRIMECLUSTER Installation and Administration Guide (Linux)*".

### C.2.1 Collecting a crash dump file

Collect a crash dump file as troubleshooting information of the GFS Shared File System in the event of a node panic.

A system dump will be saved as a file during node startup after the panic. The storage directory will be `/var/crash/number` as default.

## C.2.2 Collecting a core image of the daemon

It may be necessary to collect a core image of each daemon according to the corrective action of the GFS Shared File System.

The following procedure shows how to collect a core image of the `sfcrmd` daemon on all the nodes that share the GFS Shared File System using super user access privileges.

### 1. Determine the process ID

Determine the process ID using `ps(1)`. For non `sfcrmd` daemons, change argument of `grep(1)`.

```
# /bin/ps -e | /bin/grep sfcrmd <Enter>
5639 ?      00:00:25 sfcrmd
```

The beginning of the above output shows a process ID of the `sfcrmd` daemon. If the `sfcrmd` daemon is not running, the process number will not be output. In such a case, collect troubleshooting information on the other node.



See

For details about `ps(1)` and `grep(1)`, see the online manual page.

### 2. Acquire a core image

Acquire the core image of `sfcrmd` in the “`var/tmp/sfcrmd_node1.5639`” file using `gcore(1)`. After that, compress the file using `compress(1)`.

```
# /usr/bin/gcore -o /var/tmp/sfcrmd_node1 5639 <Enter>
gcore: /var/tmp/sfcrmd_node1.5639 dumped
# /usr/bin/compress /var/tmp/sfcrmd_node1.5639 <Enter>
# /bin/ls -l /var/tmp/sfcrmd_node1.5639.Z <Enter>
-rw-rw-r-- 1 root  other  1075577 Jun 12  16:30 /var/tmp/sfcrmd_node1.5639.Z
#
```



See

For details about `compress(1)`, see the online manual page.

## C.3 Common corrective actions against failures

This section describes most common corrective actions against system failures.

### C.3.1 Action for I/O errors

The "sfcfs...:read error" message indicates that an I/O error occurred while file system data was being read from a disk. The "sfcfs...:write error" message indicates that an I/O error occurred while file system data was being written to a disk.

If the messages are displayed, recovery processing is required because an I/O path or device is faulty.

Perform the recovery processing using the following procedures:

1. Locate the file system and partition in which the error occurred.

Pinpoint it with `sfcinfo (8)`, a GFS Shared File System management command, using the device number in the error message as a key.

```
# sfcinfo d device-number <Enter>
```

2. If an `sfcfs...:write error` occurs

This error indicates that file system information updated in memory cannot be reflected on the disk. If this happens, files in the file system should be backed up before unmounting to prevent the updated information from being lost by unmounting.

3. Unmount the file system service in which the error occurred.

Unmount the file system service.

4. Correct the file system in which the error occurred.

Restore data integrity of the file system using `sfcfsck(8)` after creating a copy of the file system data of the failed partition. After the file system is restored, replay update log and perform full check.

```
# sfcfsck -o log special-device-name <Enter>
# sfcfsck -o nolog special-device-name <Enter>
```

5. If the file system in which the error occurred cannot be corrected

When step 4 cannot repair the file system, swap the faulty part, re-create the file system, and restore the backed up data.



See

For corrective action against an I/O error of a GDS volume, see "Troubleshooting" of the "PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)". For details of backing-up and restoring, see "Chapter13 [File System Backing-up and Restoring.](#)"

### C.3.2 Corrective action in the event of data inconsistency

This section explains procedure when it becomes impossible to mount the GFS Shared File System because super block or partition configuration data differ from each copy data.

Perform the recovery in accordance with the following procedures.

1. Recover super block and partition configuration information in the partition using `sfcadm(8)`.

```
# sfcadm -r /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

2. Recover the consistency of the file system.

```
# sfcfsck /dev/sfdsk/gfs01/dsk/volume01 <Enter>
:
# sfcfsck -o f,nolog /dev/sfdsk/gfs01/dsk/volume01 <Enter>
:
#
```

3. Mount the recovered file system.

```
# sfcmntgl /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

4. Confirm that the recovered file system can be mounted on all nodes sharing GFS Shared File System.

```
# mount <Enter>
```

5. Confirm on all nodes that the following messages are not output in `/var/log/messages` when `sfcmntgl` was performed in step 3. No need the following operations if the message is not output.

```
WARNING: sfcfs_mds:2042: fsid: The size of the partition might have been changed after
the file system was made.
```

No need the following operations if the message is not output.

If the message is output, there is a possibility that the GDS volume used for the GFS Shared File System was expanded. The file system can keep on using, but please perform the following operations promptly because GFS does not deal with expanded volume of GDS.

6. Back up the files in the recovered file system. For the way to back up, refer to “13.2.1 [Backing up file by file.](#)”



Please be sure to perform the backup with each file.

7. Unmount the recovered file system.

```
# sfcumntgl /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

8. Confirm that the recovered file system can be unmounted on all nodes sharing GFS Shared File System.

```
# mount <Enter>
```

9. The parameter information on a GFS Shared File System is evacuated.

```
# sfcmkfs -m /dev/sfdsk/gfs01/dsk/volume01 > /tmp/mkfs_cmd <Enter>
```

The command line used when the file system was created is stored in /tmp/mkfs\_cmd by the above procedure.

10. Delete the recovered file system.

```
# sfcadm -D /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

11. Confirm the file system is deleted.

```
# sfcinfo -a <Enter>
```

12. Depending on the situation, re-create the partition.

Please re-create GDS volume only when you will return to the volume size before expanding GDS volume and resume manipulation. It is not necessary to re-create if resume manipulation in the volume size after expanding GDS volume.



See

Please refer to "Operation" "Operation using GDS Management View" of the *"PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)"* about the operation method of GDS volume.

13. Create the GFS Shared File System using the same partition or the partition created in step

```
# sfcmkfs -o node=sunny,moony /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

When creating the GFS Shared File System with the same parameters that used before volume expansion of GDS is performed, it is created using the information which evacuated in step 9.

```
# /bin/sh /tmp/mkfs_cmd <Enter>
```

14. Confirm that the GFS Shared File System is created.

```
# sfcinfo -a <Enter>
```

15. Mount the created file system.

```
# sfcmntgl /dev/sfdsk/gfs01/dsk/volume01 <Enter>
```

16. Restore the file backed up in step 6. For the way to restore, refer to “13.3.1 ["File-by-file restoring."](#)”

### C.3.3 Action to Be Taken When Unmounted by umount(8)

---

This section describes the action to be taken when a GFS Shared File System is unmounted by umount(8).

Perform the recovery processing taking the following procedures.

Unmount all of the file systems on the node where the file system was unmounted using umount(8).

```
# mount | /bin/grep sfcfs <Enter>
:
/dev/sfdsk/gfs/dsk/volume1 on /mnt/fs1 type sfcfs (rw)
/dev/sfdsk/gfs/dsk/volume2 on /mnt/fs2 type sfcfs (rw)
# sfcumount /mnt/fs1 <Enter>
# sfcumount /mnt/fs2 <Enter>
```

Stop the operation of the GFS Shared File System.

```
# /bin/sh /etc/init.d/sfcfsrm stop <Enter>
```

Start the operation of the GFS Shared File System.

```
# /bin/sh /etc/init.d/sfcfsrm start <Enter>
```

### C.3.4 Corrective action when the sfcfrmd daemon is not started

---

This section describes corrective actions when the sfcfrmd daemon is not started during node is started up, the node enters multi-user mode, or CF is started from GUI.

For integrated file system access being maintained, startup of the sfcfrmd daemon will be suspended until a quorum exists.

If activation of the daemon is suspended, the following message will be output;

```
WARNING: sfcfsrm:5001: Starting the sfcfrmd daemon was suspended because quorum dose not exist
```

Normally, no corrective action should be taken to activate the sfcfrmd daemon because it will be started as soon as a quorum exists.

In the following cases, a quorum does not exist, so corrective action should be taken to start operation of the GFS Shared File System.

- A cluster partition error exists.
- When all the cluster nodes or CF are stopped then part of nodes or CF are started and operated due to a failure.



If GFS cannot be operated because the `sfcrmd` daemon is not activated, using the following steps:

**Procedure 1.** Check the state of all the cluster nodes.

Connect all the operating nodes and check if the same state is displayed using the **`cftool(1M)`** command or Cluster Admin GUI.

```
# cftool -n <Enter>
Node Number State      Os      Cpu
sunny 1      UP       Linux   Pentium
monny 2      UP       Linux   Pentium
```

If the node state is different on all the operating nodes, a cluster partition error exists.



See

For details about **`cftool(1M)`**, see “Node details” or “Manual pages” of the “*PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide*”.

**Procedure 2.** If a cluster partition error occurs, take the following corrective action:

- When a LEFTCLUSTER node exists

If SF is running properly on all the cluster nodes, it will solve the cluster partition error, so no corrective action is necessary. If SF is not running properly, or forced shutdown of the node through SF fails, you need to recover the node manually. Take corrective action according to “Caused by a cluster partition” of the “*PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide*”.

- When a LEFTCLUSTER node does not exist

- Perform a CF or node restart

Take corrective action according to “Join-related problems” of the “*PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide*”.

- Activate all the CF's

After stopping all the CFs, solve the cluster partition error then restart CF according to “12.6 How to start up CF from GUI when a GFS Shared File System is used”.

- Activate all nodes

After stopping all nodes by **`shutdown(8)`**, solve the cluster partition error then restart all nodes.



Note

If startup of a node is suspended, complete the startup of a node using operations below, before executing **`shutdown(8)`** on each node.

- a- Confirm the process ID of the `sfcrmd` script by **`ps(1)`**. The beginning column of the output below shows a process ID of the `sfcrmd` script.

```
# /bin/ps -e | /bin/grep sfcfstrm <Enter>
18550 ?          00:00:00 S76sfcfstrm
```

- b- Stop the sfcfstrm script by **kill(1)**.

```
# kill -9 18550 <Enter>
```



Information

If you want to resume operation immediately with a part of the nodes, take the following action:

- 1- Decide which nodes will be used in the cluster after performing "Procedure 1" (above).  
Typically, you will choose the nodes that have the largest number of nodes in it or the one where the most important hardware is connected or the most important application runs. In addition, the nodes that will be used need to include at least one MDS node for using the GFS Shared File System.
- 2- Stop all nodes that will not be used with **shutdown(8)**.  
If startup of a node is suspended, complete the startup of a node before executing **shutdown(8)**. Procedure is shown [Note] (above).
- 3- Check the state of all the nodes that will be used using "Procedure 1" again. The state of all the nodes must be the same.
- 4- Forcibly restart the sfcfrmd daemon that has been suspended by executing the **sfcrmdstart(8)** command on all the nodes that will be used.  
An example of **sfcrmdstart(8)** is shown "Procedure 3" (below).



See

For details about **shutdown(8)**, **ps(1)**, **grep(1)** and **kill(1)**, see the online manual page.

**Procedure 3.** If a cluster partition error does not exist, forcibly restart the sfcfrmd daemon that has been suspended by executing the [sfcrmdstart\(8\)](#) command on all the nodes where operation will be resumed.

```
# sfcrmdstart -f <Enter>
```

## **Appendix D    Incompatibility from Each Version**

This appendix describes an incompatibility from each version of the GFS Shared File System.

## D.1 Incompatibilities from 4.1A30

There are some incompatibilities with the following functions compared to 4.1A30:

**Table Incompatibilities from 4.1A30**

Number	Item	Linux kernel version after upgrading
1	Does not support sendfile(2)	Linux 2.6
2	Changes operation of truncate(2), ftruncate(2), creat(2), and open(2) specified with O_TRUNC from the other node to the file where mmap(2) is being executed	All
3	Changes port numbers reserved by GFS	All
4	Changes the type of a special file specified for the GFS command argument	All
5	Change in error message of sfcdf(8)	All
6	Change in error message of sfcfsck(8)	All
7	Check strengthening of parameter specified for -o <i>specific_options</i> option of sfcmkfs(8)	All
8	Changes allocated reserved area size by writing operations	All
9	Add the upper limit of concurrently open files	All
10	Addition of the i-node's cache memory release function at the time of accessing many files	All

### D.1.1 Does not support sendfile(2)

#### Incompatibility description

Action of sendfile(2) to the GFS Shared File System has been changed.

Before change: Normal exit

After change: Abnormal exit (return code: -1, errno: EINVAL)

#### Corrective action

If sendfile(2) is used, combine both the read processing (\*1) and write processing (\*2).

\*1: read(2), readv(2), pread(2)

\*2: write(2), writev(2), pwrite(2)

See the following example.

The program copies file data to the other file with a total transfer length of 512 bytes.

Before change

```
#include <sys/sendfile.h>
:
int
func(void)
{
    int out_fd = 0, in_fd = 0;
    off_t offset = 0;
    :
    while (1) {
        ssize_t write_size;

        write_size = sendfile(out_fd, in_fd, &offset, 512);
        if (write_size == -1) {
            :
            return -1;
        }
        if (write_size == 0) {
            break;
        }
    }
    :
    return 0;
}
```

After change

```
#include <unistd.h>
:
int
func(void)
{
    int out_fd = 0, in_fd = 0;
    char buf[512];
    :
    while (1) {
        ssize_t read_size, write_size;

        read_size = read(in_fd, buf, 512);
        if (read_size == -1) {
            :
            return -1;
        }
        if (read_size == 0) {
            break;
        }

        write_size = write(out_fd, buf, read_size);
        if (write_size == -1) {
            :
            return -1;
        }
    }
    :
    return 0;
}
```

### D.1.2 Changes operation of truncate(2), ftruncate(2), creat(2), and open(2) specified with O\_TRUNC from the other node to the file where mmap(2) is being executed

---

#### Incompatibility description

When the following system calls are issued on another node for a file within mmap(2) on the GFS Shared File System, action of them is changed.

- truncate(2)
- ftruncate(2)
- creat(2)
- open(2) specified with O\_TRUNC

Before change: Normal exit

After change: Abnormal exit (return code: -1, errno: EBUSY)

**Corrective action**

None.

**D.1.3 Changes port numbers reserved by GFS**

---

---

**Incompatibility description**

Port numbers reserved by GFS in the `/etc/services` file have been changed.

Before change: 9200 – 9300

After change: 9200 – 9263, 9300

**Corrective action**

No corrective action is required.

**D.1.4 Changes the type of a special file specified for the GFS****command argument**

---

---

**Incompatibility description**

The type of special files has been changed in the following commands:

- `sfcdf(8)`
- `sfcsck(8)`
- `sfcmkfs(8)`
- `sfcadm(8)`
- `sfcgetconf(8)`
- `sfcnode(8)`
- `sfcsetup(8)`

Before change: Specify a character special file

After change: Specify a block special file. A character special file cannot be specified.

**Corrective action**

If a special file is specified for the argument of the above command, specify a block special file. If a character special file is specified, the commands will output error messages and abnormal exit.

**D.1.5 Change in error message of `sfcdf(8)`**

---

---

**Incompatibility description**

In the `sfcdf(8)` command, the error message output at the following conditions has been changed.

1) `-m` option is specified. And,

2-1) A special file name which does not exist is specified for the argument. Or,

2-2) A special file name other than the GFS shared file system is specified for the argument.

Before change:

For 2-1)

sfcd: ERROR: cannot open *special: errmsg*

For 2-2)

sfcd: ERROR: invalid device: *special*

After change:

sfcd: ERROR: *special* is not a sfcs file system

### Corrective action

None.

## D.1.6 Change in error message of sfcfsck(8)

---

---

### Incompatibility description

In the sfcfsck(8) command, the error message output at the following conditions has been changed.

- 1) A special file name other than the GFS shared file system is specified for the argument.

Before change:

*device-name* is not for sfcs

After change:

Can't check *device-name*

### Corrective action

None.

## D.1.7 Check strengthening of parameter specified for -o *specific\_options* option of sfcmkfs(8)

---

---

### Incompatibility description

The operation of sfcmkfs(8) for the following conditions was changed.

- 1) Any of the following -o *specific\_options* options is specified.

*free=n*

*logsz=n*

*maxnode=n*

*metasz=n*

*mfree=n*

*nbpi=n*

*nblkpext=n*

- 2) The first character of *n* is a digit. And,

- 3) When characters other than the figure are included since the second character of *n*.

Before change:

The string only of a digit consecutive from the first character in *n* is recognized as a parameter.



Example) "-o free=9a0" is considered to be "-o free=9".

After change:

The following error messages are output, and it terminates abnormally.

```
sfcmkfs:ERROR: Illegal option : value
```

### Corrective action

Please specify the string only of the digit for the parameter.

## D.1.8 Changes allocated reserved area size by writing operations

### Incompatibility description

When executing write processing for a file on the GFS Shared File System, reserve area size by a node basis was increased. Within this change, used data area that is obtained by **df(1)**, **sfcdf(8)**, or **statfs(2)** is increased, after executing write processing.

As the example, an output result of **df(1)** is shown below in case an 1 kilobyte file is created on a GFS Shared File System just after making.

Before change:

Filesystem	1K-blocks	Used	Available	Use%	Mounted on
/dev/sfdsk/c1/dsk/vol1	56569128	5200	50907016	1%	/mnt/gfs1

After change:

Filesystem	1K-blocks	Used	Available	Use%	Mounted on
/dev/sfdsk/c1/dsk/vol1	56569128	20480	50891736	1%	/mnt/gfs1

Reserve area is increased because it is interpreted as used data area (column of "Used"), and available data area (column of "Available") is decreased.

### Corrective action

None.

## D.1.9 Add the upper limit of concurrently open files

### Incompatibility description

When 5000 different files are being concurrently opened on a GFS Shared File System, it was changed that operation of **open(2)** or **creat(2)**'s execution for 5001th file.

Before change: Normal exit

After change: Abnormal exit (return code: -1, errno: ENFILE)

### Corrective action

Please check the following message in **/var/log/messages**.

```
kernel: VFS: file-max limit number reached
```

If this message is not output, 5000 different files are already being opened on the GFS Shared

File System where the file tried to open exists.

Please execute **close(2)** to files that are being opened and can be closed (have already been transacted).

If you need to open 5000 and over files on the GFS Shared File System, please disperse the target files to multiple GFS Shared File Systems.

## D.1.10 Addition of the i-node's cache memory release function at the time of accessing many files

---

### Incompatibility description

When the amount of i-node's cache memory used by MDS exceeded 20000, processing that decreases the amount of i-node's cache memory from 20000 to 12000 was added.

Before change:

The function of releasing i-node's cache memory used by MDS doesn't work.

After change:

- 1) When the amount of i-node's cache memory used by MDS exceeds 20000, the following message is output and release processing of i-node's cache memory will be started.

```
NOTICE: sfcfs_mds:3020: mountpoint: The total number of vnodes used reached the upper bound. vnodes used=totalnum: upper bound=20000: lower bound=12000
```

- 2) When the i-node's cache memory used by MDS has been released until 12000, release processing will stop with the following indication.

```
NOTICE: sfcfs_mds:3021: mountpoint: The total number of vnodes used(=totalnum) is the lower bound(=12000).
```

### Corrective action

None.

But the i-node's cache memory release is in progress in the period of between the two message indications, "NOTICE : sfcfs\_mds:3020" and "NOTICE : sfcfs\_mds:3021". During release processing, file accessibility on the file system will be affected. Please minimize file access.

## D.2 Incompatibilities from 4.1A20

There are some incompatibilities with the following functions compared to 4.1A20:

**Table Incompatibilities from 4.1A20**

Number	Item	Linux kernel version after upgrading
1	Does not support sendfile(2)	Linux 2.6
2	Changes operation of truncate(2), ftruncate(2), creat(2), and open(2) specified with O_TRUNC from the other node to the file where mmap(2) is being executed	All
3	Changes port numbers reserved by GFS	All
4	Changes the type of a special file specified for the GFS command argument	All
5	Change in error message of sfcdf(8)	All
6	Change in error message of sfcfsck(8)	All
7	Check strengthening of parameter specified for -o <i>specific_options</i> option of sfcmkfs(8)	All
8	Changes allocated reserved area size by writing operations	All
9	Add the upper limit of concurrently open files	All
10	Addition of the i-node's cache memory release function at the time of accessing many files	All
11	Omitted value of the communication timeout between nodes	All
12	Deletion of the sfcfrmd information message	All

Please refer to "D.2 [Incompatibilities from 4.1A30](#)" for article 1-10. Here, it explains article 11 and 12.

### D.2.1 Communication timeout value between nodes

#### Incompatible contents

In the monitoring of the node by communication, the default of timeout value is changed after a communicative response is lost until it estimates a partner node to be an abnormal state.

Before change: 60 seconds

After change: 180 seconds

#### Corrective action

No corrective action is required



Information

You do not have to change the communication timeout between nodes. The value can be changed.



See

Please refer to "14.1.2 [Communication timeout value](#)", "10.1.2 [Change \(in file system attributes\)](#)" and "11.1.2 [Change \(in file system attributes\)](#)" about the change method of the communication timeout value between nodes.

## D.2.2 Information message of sfcfrmd demon

---

### Incompatibility description

The information message outputted at the time of starting sfcfrmd is deleted.

Before change: The following messages are outputted.

```
sfcfrmd[pid]: INFO: sfcfrmd:0001: set number of threads 16
sfcfrmd[pid]: INFO: sfcfrmd:0002: set service port number 9300
sfcfrmd[pid]: INFO: sfcfrmd:0003: set connection timeout value 30 [sec]
```

After change: The above message is not outputted.

### Corrective action

No corrective action is required.

# Glossary

## 64-bit file system interface

This interface can handle files that exceed 2 gigabytes.

## AC

See [Access client](#).

## Access client

Access client. Module which operates in the kernel layer (file system layer) on each node sharing GFS Shared File System. An AC communicates with the MDS if a user application operating on the node sends an access request in a system call. File operations are performed using meta-data sent from the MDS and direct access to the real.

## ACL

ACL is a file security system that specifies file access authority for specific users or groups in addition to the owner and owner group. For details, see **setfacl(1)** in the online manual.

## alternate file system

The file system that made on the shared disk device is exclusive used in active node and the standing node in RMS Cluster.

## area management data

Area management data includes information on i-nodes, V-data, and file data allocation information. It is stored in the meta-data area.

## array disk

Disk file unit in which two or more physical disks are grouped as a single virtual disk. By dividing access between two or more physical disks, performance improves and high reliability can be implemented. Ordinarily, two or more access methods, which are called redundant array of inexpensive disks (RAID) levels, are provided. The major RAID levels are RAID 0 (striping), RAID 1 (mirroring), RAID 5 (striping with parity), and RAID 0+1 (striping set mirroring).

## CF

See [Cluster Foundation](#).

## Cluster Foundation

The set of PRIMECLUSTER modules that provides basic clustering communication services. For details, see "*PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide*".

## cluster interconnect

The set of private network connections used exclusively for PRIMECLUSTER communications. For details, see "*PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide*".

## cluster partition

A cluster state in which communications with some of the nodes that constitute the cluster have been interrupted. For details, see "*PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide*".

## copy of partition structure information

If a block failure on a disk device destroys partition structure information, a copy is available for continued processing of the file system.

**data**

The term data refers to file data.

**data area**

The term data area refers to a file data area.

**data block**

A data block is the fundamental unit of file allocation.

**direct I/O**

Direct I/O refers to a mode of data input/output that does not use kernel buffering.

**Domain**

A single cluster system that is configured through PRIMECLUSTER, or a single server (computing machine) that is not belonging to a cluster system

**DOWN**

A node state that indicates that the node is unavailable (marked as down). A LEFTCLUSTER node must be marked as DOWN before it can rejoin a cluster. For details, see "*PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide*".

**extent**

An extent is a group of contiguous data blocks of the file system that are handled as a single unit. Each extent is defined by its start block and length.

**extent-base**

The extent base is a method of managing file system data based on extents.

**fibre channel**

One of the interfaces using optical fibre cables as transmission media. In a cluster system, a fibre channel is used to connect an array disk and the computer.

**file data**

File data is the data part of a file.

**file data area**

The file data area in disk partitions contains file data. It is also called data area. The file data area is allocated in the representative partition and the file data partitions.

**file data partition**

The file data partition is a partition that consists of a file data area (data area).  
The file data partitions are added to an existing file system in order to extend it. The file data partition will be specified in file data allocation attribute information.

**file lock**

File lock is a means for synchronization among processes that concurrently access data in the same file. There are two types of file locks: mandatory locks and advisory locks.

**GDS**

See [Global Disk Services](#).

**GFS Management View**

Software which allows various operations including GFS Shared File System configuration setting and operation management using the Web screen.

**Global Disk Services**

Volume management software for protecting data by managing a disk storage device totally within a SAN environment. For details, refer to "*PRIMECLUSTER Global Disk Services (Linux) Configuration and Administration Guide*".

**Global Link Services**

GLS(Global Link Services) software provides High Reliability of network communications by duplexing network communication paths using redundant NIC(Network Interface Card)s. For details, refer to "*PRIMECLUSTER Global Link Services Configuration and Administration Guide : Redundant Line Control Function (Linux)*."

**GLS**

See [Global Link Services](#).

**i-node**

The i-node contains information on the file locations on the disk, on file sizes, and on the time when the respective files were last. It also includes other information for identification.

**i-node area**

The i-node area contains an i-node. It is located in the meta-data area.

**LEFTCLUSTER**

A node state that indicates that the node cannot communicate with other nodes in the cluster. That is, the node has left the cluster. The reason for the intermediate LEFTCLUSTER state is to avoid the network partition problem. For details, see "*PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide*".

**logical volume**

A logical disk device that provides the user with a block special file interface as well as a physical slice (disk partition). The user can access data on a physical disk through accessing the logical volume. Logical volumes are classified into single volumes, mirror volumes, stripe volumes, the volumes in concatenation groups ,and switch volumes. Logical volumes may be called "volumes." For details, see "*PRIMECLUSTER Global Disk Services Configuration and Administration Guide (Linux)*"

**management partition**

Required information is managed when employing the GFS Shared File System. Moreover, this is used in order for sfcfrmd daemon to maintain informational adjustment. The following information is included in the management partition.

1. Information on each node that constitutes the GFS Shared File System.
2. Correspondence information on common node of each GFS Shared File System, and shared device.
3. MDS arrangement information on each GFS Shared File System.

**MDS**

See [meta-data server](#).

**MDS node**

Same as the [node where an MDS](#).

**meta area**

Same as the [meta-data area](#).

**meta-data**

Various types of management data for the file system are collectively referred to as meta-data. Meta-data includes information on free areas, i-nodes, indirect extent blocks, directories and symbolic links.

**meta-data area**

The meta-data area contains meta-data. It is allocated in the representative partition.

**meta-data server**

Program that provides integrated management of file system management information (Meta

data). The program is running on the primary server or secondary server. Each AC communicates with MDS then operates files based on the Meta data from MDS.

**Mount point**

Point that is used to connect a file system on the directory tree.

**network partition**

This condition exists when two or more nodes in a cluster cannot communicate over the interconnect; however, with applications still running, the nodes can continue to read and write to a shared device, compromising data integrity.

**node**

A node is a computer system that runs under one operating system.

**node identifier**

The node identifier is a universal name that is assigned to each node in the PRIMECLUSTER system. For each node, the node identifier is normally the same as the node name. However, if the node name was assigned to the standby node such as in hot standby mode, the correspondence between physical name and node name is temporarily disrupted. In this event, the node can be managed via the node identifier, which is the name for the physical device. The node identifier is displayed as each node name using PRIMECLUSTER Management View.

**node name**

The node name is the name of a node that is displayed with the "uname -n" command and identified in the communication network. For details, see **uname(1L)** in the online manual.

**node state**

Every node in a cluster maintains a local state for every other node in that cluster. The node state of every node in the cluster must be either UP, DOWN, or LEFTCLUSTER. For details, see "*PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide*".

**node where an MDS**

The node with the possibility that MDS performs. MDS performs in either node that it is defined as MDS node in nodes that share the file system. The default MDS node is 2 for the primary and secondary MDS.

**partition**

The partition is a physical or logical disk slice.

**partition configuration data**

This information refers to the partitions that constitute the GFS Shared File System. It includes information about the size of the meta-data area, update log area, file data area (data area) and on their layout in the configuration partition.

**primary management server**

Node on which the management server daemon of the Web-Based Admin View operates during normal operation. The primary management server uses the menus of the GFS Management View to accept operation and display requests from the client and to transfer the requests to the monitored nodes.

**primary server**

Node on which the MDS operates during normal operation in a cluster system. This server should be set during file system registration.

**public LAN**

The local area network (LAN) by which normal users access a machine.

**quorum**

The state in which integrity is maintained among the nodes that configure the cluster system.



Specifically, the CF state in all nodes that configure the cluster system is either UP or DOWN (there is no LEFTCLUSTER node). For details, see “*PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide*”.

**quota function**

quota is a function for limiting disk space or the number of i-nodes that can be used by the user. For details, see `edquota(8)` in the online manual.

**Reliant Monitor Services (RMS)**

The package that maintains high availability of user-specified resources by providing monitoring and switchover capabilities. For details, see “*PRIMECLUSTER Reliant Monitor Services (RMS) with Wizard Tools (Solaris, Linux) Configuration and Administration Guide*”.

**representative partition**

The representative partition is a GFS Shared File System partition that consists of meta-data, update log, and file data (data) areas. It may also consist of meta-data and file data (data) areas.

**RMS**

See [Reliant Monitor Services](#).

**Rolling update**

Update method used to fix an application or maintenance within the cluster system. Fix application is enabled by applying fixes to each node sequentially without stopping jobs.

**round robin allocation**

Round robin allocation is a file data allocation mode for allocating separate file data to multiple file data areas.

**scope**

A range of node set that can share an object when a disk class is shared.

**secondary management server**

Node on which the Web-Based Admin View management server daemon operates if an error occurs on the primary management server. A secondary management server is set when the Web-Based Admin View operating environment is set. If an error occurs on the primary management server, the management server function of the Web-Based Admin View passes to the secondary management server.

**secondary server**

Server that takes over the MDS function if an error occurs on the primary server in a cluster system. The secondary server must be set during file system registration before it can assume the MDS function when an error occurs on the primary server. The file system status is restored to assure contiguous access from each AC.

**sfcrmd**

The demand from the commands or `sfcsd` daemon is received and the communication way for realizing commands `sfcsd`, `sfcrmd`, and communication between nodes is offered. Management of a composition database and a management partition I/O function are offered.

**sfcsd**

Employment start and employment stop of the GFS Shared File System, taking over employment (failover) of MDS, an on-line node addition and deletion, file system composition cut return in the definition state (my gray SHON), etc. offer the function which controls MDS and AC.

**sfcrmd**

Starting and stop, down surveillance of the process which constitutes a GFS Shared File System is performed. When a composition process starts and executes other demons and commands, a

demand is transmitted to `sfcprmd` and `sfcprmd` executes a demon and a command according to a demand.

The process which transmits a demand is called client process and the process started from `sfcprmd` according to a demand is called target process.

A target process notifies the situation to a client process, when it is supervised by `sfcprmd` and a process carries out a normal end and unusual end.

**shared objects**

Object set which belongs to shared disk class. Each object may also be referred to as shared class, shared group and shared disk.

**shared disk**

One of operation modes of a shared disk device. Applications in each node can simultaneously access a shared disk device on their own. (Note that the terms shared disk device and shared disk have different meanings. To distinguish between the two terms, a "shared disk" may be referred to as a "shared disk for simultaneous access.")

**shared disk device**

Disk device connected to multiple nodes. FDU/FUs and disk arrays are available as PRIMECLUSTER shared disk devices. Shared disk devices can be designated as shared disks or switched disks according to whether multiple nodes are allowed to access them simultaneously. (Note that the terms shared disk device and shared disk has different meanings.)

**shared node**

The nodes shared the data of GFS Shared File System. Up to 4 nodes are allowed.

**slice**

A slice is an alias of a partition.

**super block**

The super block contains information on the type of the file system, dates of creation and updating, label information, information on size and layout of the file system, and summary information on free areas.

**super block copy**

A copy of the super block is created so that file system processing can continue even if the original super block is damaged by a block fault in the disk device.

**system disk**

Disk on which the operating Linux OS is installed. The entire disk containing a slice currently operating as the file system (or swap area) of one of the following:

- 1- /
- 2- /usr
- 3- /var
- 4- swap area

**UP**

A node state that indicates that the node can communicate with other nodes in the cluster. For details, see "*PRIMECLUSTER Cluster Foundation (CF) (Linux) Configuration and Administration Guide*".

**update log**

The update log contains the history of updates made to the file system structure. The history information is used to make a high-speed recovery of a file system possible. The area that contains the update log is called the update log area. Data in this area is overwritten cyclically.

**update log area**

The update log area contains update log.

**update log buffer**

Update log data that was loaded into memory.

**update log replay**

Update log replay updates meta-data in the update log area for which an update had been interrupted. This feature is used to recover the file system in the case of failures.

**V-data**

Directory blocks, symbolic link path names, and indirect blocks are collectively referred to as V-data. This data is stored in the V-data area that was allocated in the meta-data area.

**V-data area**

The V-data area contains V-data. It is allocated in the meta-data area.

**Volume**

See [logical volume](#).

**Web-Based Admin View**

Software for system operation and management using the Web screen. For details, see "*PRIMECLUSTER Web-Based Admin View Operation Guide*".



---

# Index

## *B*

**64-bit file system interface** ..... 2, 403

## *A*

**AC**..... 28, 29, 42, 214  
AC (Information messages)..... 221  
AC (Panic messages)..... 214  
AC (Warning messages) ..... 215  
Access client..... 403  
ACL..... 403  
adding node configuration information ..... 69  
alternate file system..... 403  
**area management data**..... 24, 25, 403  
array disk ..... 403

## *B*

backing-up entire file system ..... 197  
backing-up file by file ..... 197  
Backup..... 195

## *C*

cache-hit ratio ..... 9  
CF ..... 191, 403  
Cluster Foundation ..... 403  
cluster interconnect ..... 403  
cluster partition ..... 403  
copy of partition structure information ..... 361, 403  
cpio ..... 197, 200  
Create File System Wizard..... 120

## *D*

data area..... 404  
data block ..... 147, 355, 404  
dd..... 197, 200  
direct I/O..... 377, 404  
directory block ..... 9, 25  
DOWN ..... 404

## *E*

extent..... 25, 206, 354, 378, 404  
**extent-base**..... 25, 404

## *F*

failure recovery ..... 33, 34  
fibre channel ..... 404  
file data area ..... 9, 24, 26, 29, 147, 150, 404  
file data area (Add) ..... 27

---

file data area (Separate).....	27, 149
<b>file data partition</b> .....	148, 150, 160, 353, 404
file data partition (Add) .....	116, 130, 142, 160
file lock.....	404
file system (Create) .....	64, 114, 119, 140, 146
file system (Delete).....	66, 117, 136, 145, 170
file system (re-creating).....	143, 166
file system (Tuning) .....	129
file system status .....	154
file-data.....	26, 29, 404

## *G*

GDS.....	404
GFS Management Screen.....	60
<b>GFS Management View</b> .....	114, 336, 404
GFS Management View (Error messages) .....	336
GFS Management View (Exit).....	56
GFS Management View (Information messages) .....	339
GFS Management View (Start).....	54
GFS Management View (Warning messages) .....	337
Global Disk Services .....	404
Global Link Services.....	405
GLS.....	405

## *H*

host name.....	120, 134
host name selection wizard .....	135

## *I*

<b>i-node</b> .....	9, 31, 206, 350, 354, 405
i-node area .....	25, 405

## *L*

LEFTCLUSTER.....	391, 405
logical volume.....	405

## *M*

management partition.....	67, 365, 405
management partition (Adding node configuration information) .....	76, 84, 87, 96, 105, 374
management partition (Backup) .....	99, 110, 366
management partition (Changing the sfcfrmd daemon's startup mode) .....	98
management partition (Create).....	68, 76, 79, 96, 101, 374
management partition (Deleting node configuration information) .....	97, 106, 374
management partition (Restore).....	99, 112
maximum data area size .....	150, 353
maximum directory size.....	12
maximum file size.....	12
maximum file system capacity.....	12
maximum number of concurrently open files.....	12
maximum number of directories.....	12
maximum number of file lock setting .....	12
maximum number of i-nodes.....	12

---

maximum number of partitions .....	12, 150, 354
maximum number of sharing nodes .....	12
<b>MDS</b> .....	28, 29, 34, 42, 223, 227, 237, 246, 362, 381, 405
MDS (Error messages) .....	227
MDS (Information messages) .....	246
MDS (Panic messages) .....	223
MDS (Warning messages) .....	237
MDS node .....	405
MDS operational information .....	151, 168
MDS operational information (Change) .....	144, 360
<b>meta-data</b> .....	9, 405
meta-data area .....	25, 29, 147, 348, 354, 405
meta-data area size .....	147, 150
meta-data server .....	405
minimum percentage of free area .....	147
mount .....	356, 370
mount information .....	66, 126, 128
mount point .....	121, 128
multi-partition configuration .....	9, 26

## *N*

network partition .....	406
node .....	354, 406
node identifier .....	406
node information (Add) .....	163
node information (Delete) .....	164
node name .....	120, 134, 406
node state .....	406
node where an MDS .....	406
number of i-nodes .....	147

## *P*

Panic messages (sfcpemd daemon) .....	<b>223</b>
<b>partition</b> .....	121, 131, 197, 200, 360, 406
partition configuration (Change) .....	141
<b>partition configuration data</b> .....	24, 25, 27, 65, 122, 360, 406
primary management server .....	406
primary MDS .....	121, 135
primary server .....	406
public LAN .....	406
purging token .....	377

## *Q*

quorum .....	108, 191, 254, 390, 406
quota function .....	407

## *R*

Reliant Monitor Services .....	407
<b>representative partition</b> .....	122, 147, 353, 361, 407
restore .....	201
Restore .....	195
RMS .....	184, 407

---

---

Rolling update.....	407
<b>round robin allocation.....</b>	<b>9, 407</b>

**S**

scope .....	407
secondary management server.....	407
secondary MDS.....	121, 135
secondary server.....	407
sfcadd .....	150, 160, 284, 359
sfcadd (Messages) .....	284
sfcadm .....	157, 168, 170, 201, 206, 207, 292, 360
sfcadm (Messages) .....	292
sfcdf .....	256, 348
sfcdf (Messages) .....	256
sfcfrmd.....	28, 29, 69, 224, 246, 364, 365, 407
sfcfrmd (Error messages).....	224
sfcfrmd (Information messages).....	246
sfcfrmd (start).....	90
sfcfrmd (Start) .....	70, 103
sfcfrmd (Startup mode) .....	108
sfcfrmd (stop).....	84
sfcfrmd (Stop) .....	70, 104
sfcfrmstart .....	302, 364
sfcfrmstart (Messages) .....	302
sfcfrmstop .....	306, 365
sfcfrmstop (Messages) .....	306
sfcfs_mount .....	232
sfcfs_mount (Error messages) .....	232
sfcfsck.....	6, 259, 350
sfcfsck (Messages).....	259
sfcfsd .....	28, 29, 230, 245, 356, 357, 381
sfcfsd (Error messages) .....	230
sfcfsd (Warning messages) .....	245
sfcfsmg .....	29, 223, 227, 237, 246
sfcfsmg (Error messages) .....	227
sfcfsmg (Information messages) .....	246
sfcfsmg (Panic messages) .....	223
sfcfsmg (Warning messages) .....	237
sfcfsm .....	252
sfcfsm (Messages) .....	252
sfcgetconf .....	308, 365
sfcgetconf (Messages) .....	308
sfchnsd .....	28, 29
sfinfo .....	197, 311, 367
sfinfo (Messages) .....	311
sfcmkfs.....	146, 161, 166, 259, 352
sfcmkfs (Messages).....	259
sfcmntgl .....	153, 314, 370
sfcmntgl (Messages) .....	314
sfcmount .....	154, 273, 355
sfcmount (Messages) .....	273
sfcnode .....	163, 292, 371

---



---

sfcnode (Messages) .....	292
sfcpcnd .....	28, 29, 235
sfcpcnd (Error messages) .....	235
sfcprmd .....	28, 29, 236, 251
sfcprmd (Error messages) .....	236
sfcprmd (Information messages) .....	251
sfcrcinfo .....	154, 333, 373
sfcrcinfo (Messages) .....	333
sfcsetup .....	319, 374
sfcsetup (Messages) .....	319
sfcstat .....	328, 376
sfcstat (Messages) .....	328
sfcumntgl .....	156, 329, 380
sfcumntgl (Messages) .....	329
sfcumount .....	157, 278, 357
sfcumount (Messages) .....	278
shared disk .....	408
shared disk device .....	408
shared node .....	116, 408
shared node information (Change) .....	116, 133, 142, 163
shared objects .....	408
single partition configuration .....	26
slice .....	408
startup mode of the sfcfrmd daemon .....	374
statistics .....	377
<b>super block</b> .....	24, 27, 408
<b>super block copy</b> .....	24, 408
system disk .....	408

**T**

tar .....	197, 200
token .....	29, 31

**U**

unmount .....	357, 381
UP .....	408
update log .....	7, 34, 350, 408
<b>update log area</b> .....	24, 29, 147, 348, 354, 408
Update log area .....	25
update log area (Change size) .....	147, 150, 353
update log buffer .....	409
update log replay .....	351, 409

**V**

V-data .....	31, 409
V-data area .....	25, 354, 409
volume .....	409

**W**

Web-Based Admin View .....	52, 53, 56, 409
Web-Based Admin View (Exit) .....	57
Web-Based Admin View (Messages) .....	343

---

---