

FUJITSU Software PRIMECLUSTER Global File Services

A decorative horizontal band with a red-to-dark-red gradient. It features abstract, glowing white and red lines that swirl and intersect, creating a sense of motion and technology.

Configuration and Administration Guide 4.5

Oracle Solaris 10

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Preface

The Global File Services is called "GFS" in the document.

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

Target Readers

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

To read this manual, readers will require a general knowledge of UNIX and Oracle Solaris. (From here, it will be abbreviated as "Solaris").

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 describes management commands of the GFS Shared File System.

Appendix C Troubleshooting

This appendix describes how to collect troubleshooting information and take corrective action in the event of a GFS Shared File System failure.

Appendix D SMF Services and Port Numbers in GFS

This appendix provides the explanations on SMF services and startup daemons for GFS, and the port numbers being used.

Appendix E Migrating GFS by Using OSLC

This appendix describes how to migrate an environment on which GFS is operated by using Oracle Solaris Legacy Containers (OSLC).

Appendix F Release information

This appendix describes the main contents for change of this manual.

Glossary

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

Related documentation

Please refer to the following manuals if necessary:

- *PRIMECLUSTER Concept Guide*
- *PRIMECLUSTER Installation and Administration Guide*
- *PRIMECLUSTER Web-Based Admin View Operation Guide*
- *PRIMECLUSTER Cluster Foundation (CF) Configuration and Administration Guide*
- *PRIMECLUSTER Reliant Monitor Services (RMS) with Wizard Tools Configuration and Administration Guide*
- *PRIMECLUSTER Global Disk Services Configuration and Administration Guide*
- *PRIMECLUSTER Global Link Services Configuration and Administration Guide: Redundant Line Control Function*
- *PRIMECLUSTER Global Link Services Configuration and Administration Guide: Redundant Line Control Function for Virtual NIC Mode*
- *PRIMECLUSTER Global Link Services Configuration and Administration Guide: Multipath Function*
- *PRIMECLUSTER Messages*
- *FJQSS (Information Collection Tool) User's Guide*



Note

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

- *PRIMECLUSTER Software Release Guide and Installation Guide*
The software release guide and installation guide appended to each product of PRIMECLUSTER.
The data is stored on DVD of the product. For information about the file name, see "*Product introduction*".

Manual Printing

Use the PDF file to print this manual.

Adobe Reader is required to read and print this PDF file. To get Adobe Reader, see Adobe Systems Incorporated's website.

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 UNIX 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.

Italic type

Italic types represent variables which need to be replaced by specific numerical values or character strings.

Symbol

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



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

- Oracle Solaris may be abbreviated as Solaris Operating System or Solaris OS.
- Oracle Solaris 8 is abbreviated as Solaris 8.
- Oracle Solaris 9 is abbreviated as Solaris 9.
- Oracle Solaris 10 is abbreviated as Solaris 10.
- Oracle Solaris Zones is abbreviated as Solaris Zones.

Date of publication and edition

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Chapter 1 File System Functions

This chapter describes the functions and features of the Global File Services (hereinafter GFS) Shared File System.

1.1 File System Overview

The GFS Shared File System allows simultaneous access to it from multiple Solaris systems in an integrated manner. (A file system of this type is referred to as a shared file system. A file system such as UFS that will be used only within a **node** is referred to as a local file system.)

With GFS Shared File System commercial systems can enjoy high reliability and high performance without changing applications code due to Application Program Interface (API) compatibility with UFS.

The GFS Shared File System maintains data consistency even if file data is updated from multiple nodes. So, applications on different nodes can deliver application data without changing applications code.

It is suitable for demands for high-availability in file systems due to non-disruptive file operation on another node even if one node fails.

GFS Shared File Systems can be used on the following system:

- Solaris 10 for 64 bit

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** referenced or updated 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 UFS file system, the following application interface is commonly available:

- **64-bit file system interface**
- **File lock**



See

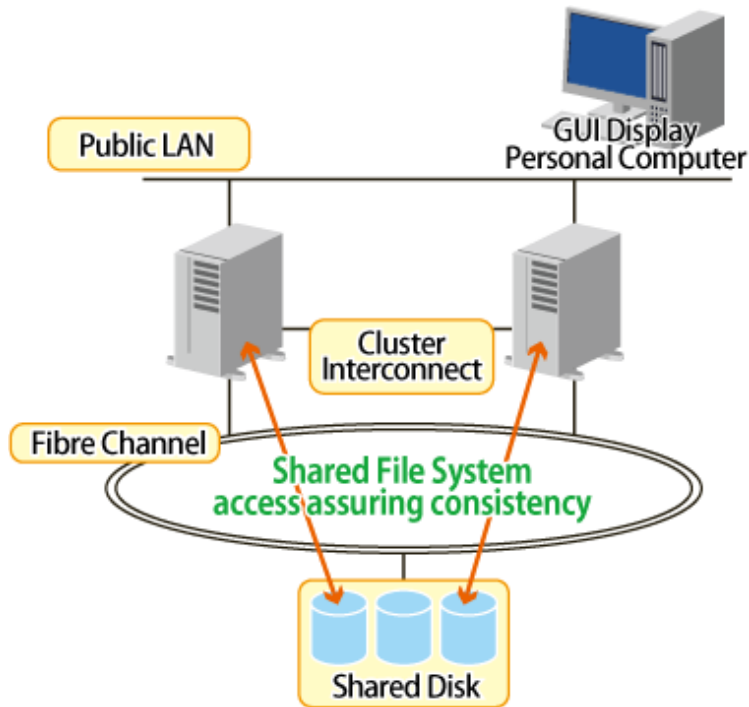
.....
For the functions that are unavailable with the GFS Shared File System, see "[1.8.2 Unavailable functions](#)"
.....

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.
- GUI display personal computer or Solaris OS computer with bit map
- NIC for public LAN

Figure 1.1 Basic hardware configuration



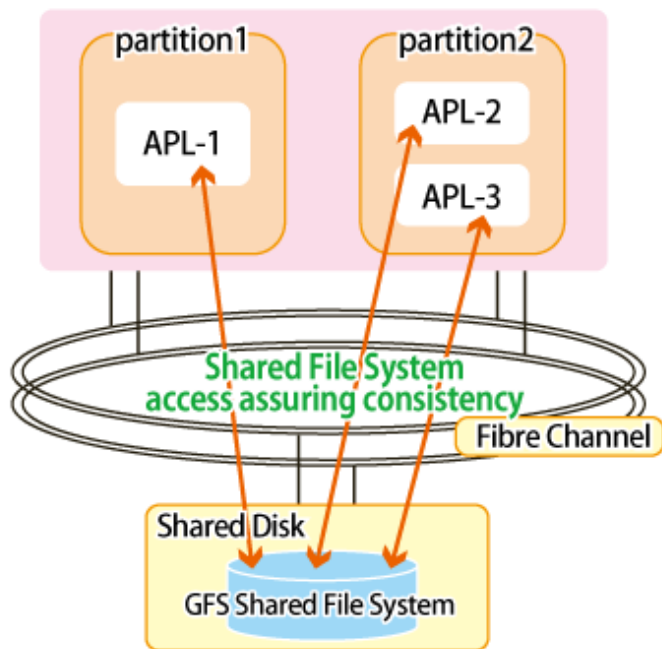
1.1.2 File system sharing with SPARC Enterprise M4000/M5000/M8000/M9000 and SPARC M10/M12

The SPARC Enterprise M4000/M5000/M8000/M9000 and SPARC M10/M12 can be used for multiple nodes by splitting one server into multiple hardware 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 physical partitioning of the system.

Figure 1.2 Sharing file system with SPARC Enterprise M4000/M5000/M8000/M9000 and SPARC M10/M12
SPARC Enterprise
M4000/M5000/M8000/M9000 and SPARC M10/M12



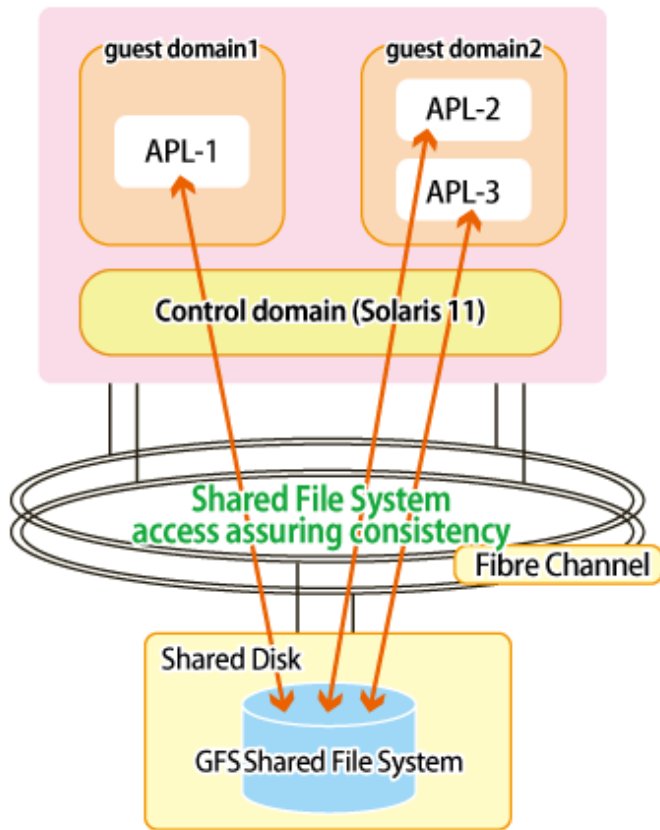
GFS : Global File Services

1.1.3 File system sharing in an Oracle VM Server for SPARC environment

In an Oracle VM Server for SPARC environment, the GFS Shared File System can be used in a guest domain.

Figure 1.3 Sharing file system in an Oracle VM Server for SPARC environment

Oracle VM Server for SPARC environment



GFS : Global File Services

1.1.4 File system sharing in a Solaris Zones environment

In a Solaris Zones environment, the GFS Shared File system that was created on a global zone can be used in a non-global zone.

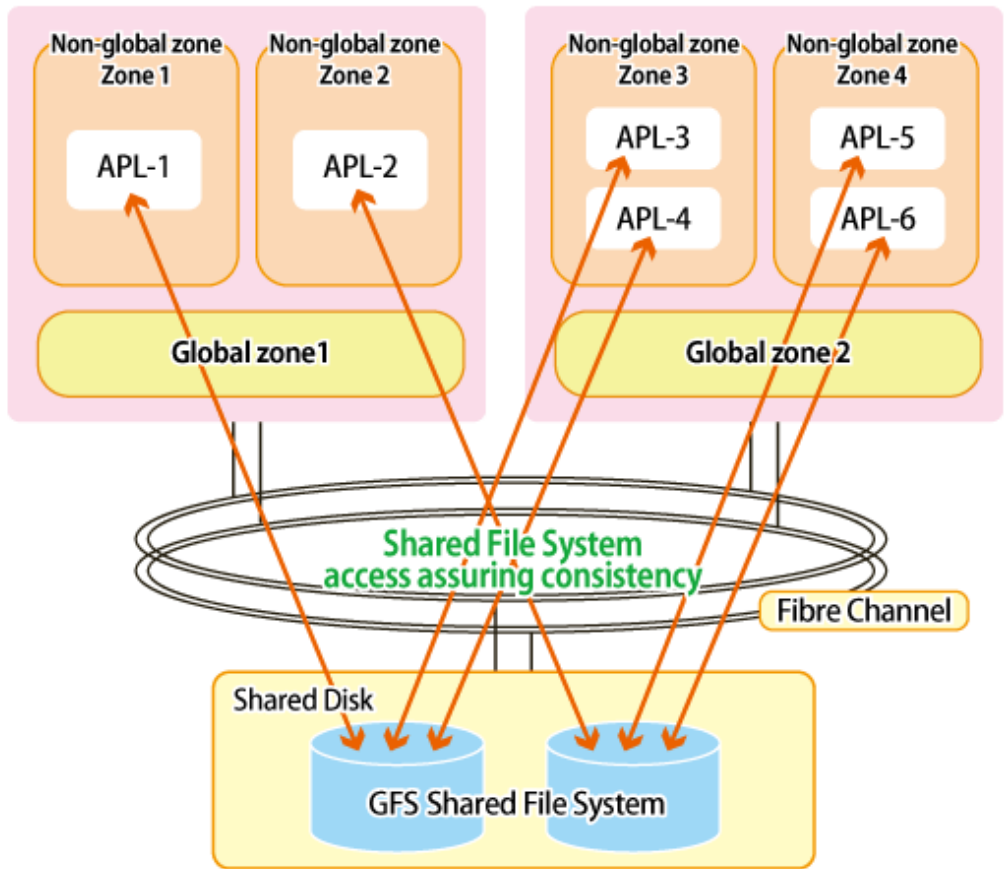


See

For the setting procedure to use the GFS Shared File system, which was created on a global zone, in a non-global zone, see Note in "1.8.10 GFS operational notices for Solaris Zones."

Figure 1.4 Sharing file system in a Solaris Zones environment

Solaris Zones environment



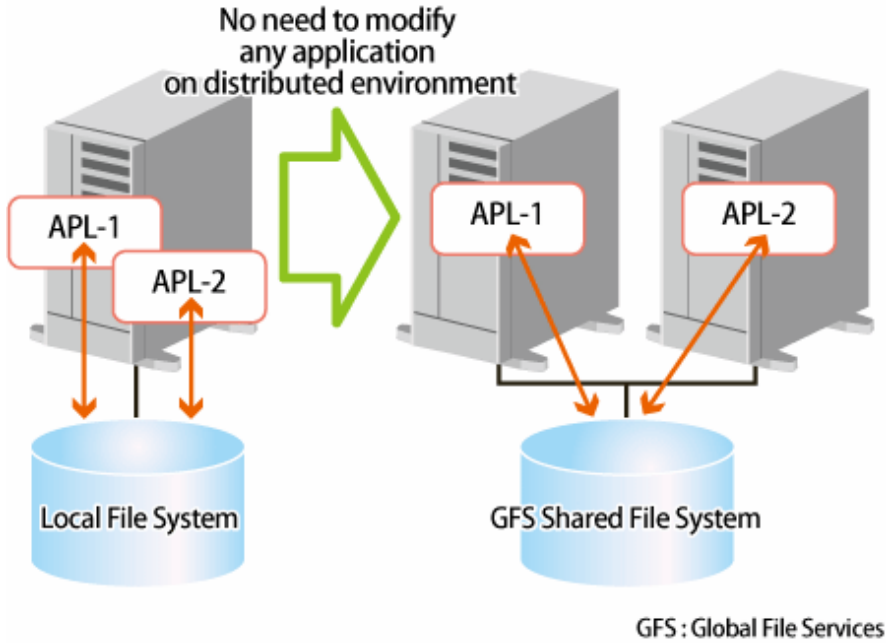
GFS : Global File Services

1.2 Simultaneous Shared Access Maintaining Coherency

The GFS Shared File System provides to access and update a file system on a shared disk device from multiple nodes simultaneously. The GFS Shared File System maintains consistency in updating from multiple nodes to files or file systems. The file lock function spanning nodes can be used with a conventional API.

In this way, applications at multiple nodes can perform exclusive updating of mutual file data and reading of the latest data. A conventional UNIX file system API, such as file lock, can do these operations.

Figure 1.5 Distributed execution of file related application



1.3 High Availability

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

1.3.1 Uninterrupted operation in case of node failure

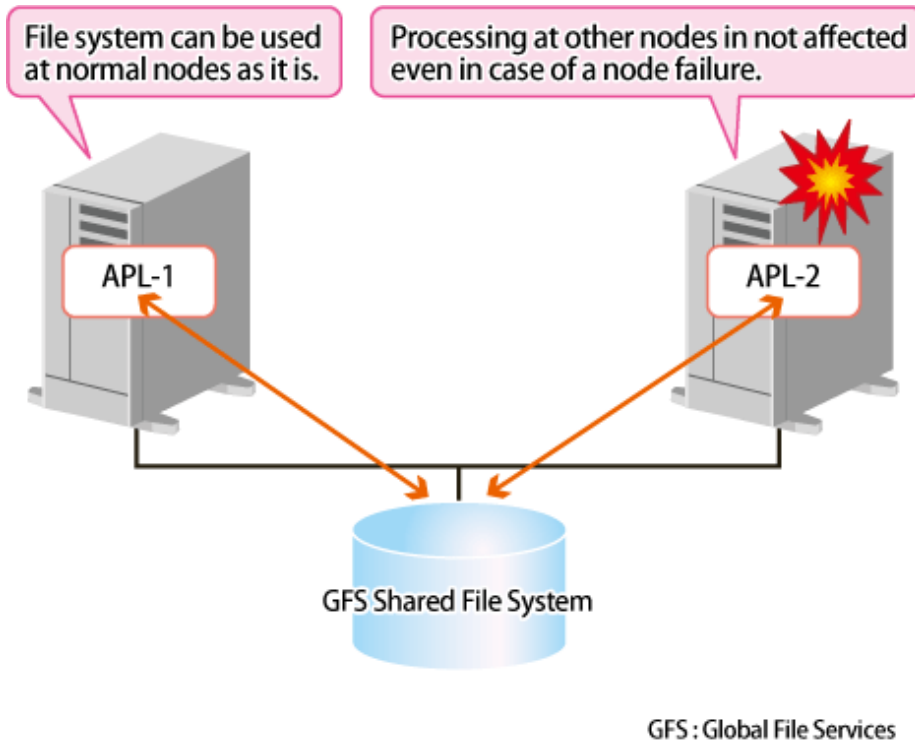
If one **node** fails and the GFS Shared File System is being used from multiple nodes, the other nodes can continue file accesses. The file system data retained by the failing node is automatically recovered in consistency within the GFS Shared File System from the other nodes. In other words, application programs operating on the other nodes can continue without a file system operation error.



See

.....
For more information on the uninterrupted operation function, see "[Chapter 3 Failure Recovery](#)".
.....

Figure 1.6 Uninterrupted operation in case of node failure



1.3.2 High-speed file system recovery

In case of a **node** failure, **fsck**(1M) 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 update 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 **fsck_sfdfs**(1M) because recovery processing of consistency is performed automatically in case of a node failure.

Note

The **fsck_sfdfs**(1M) full check mode is also provided. To recover the file system from a hardware failure on the disk, execution of **fsck_sfdfs**(1M) 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 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.

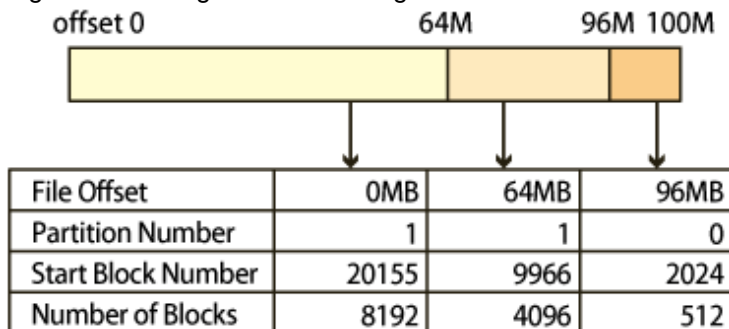
1.4.2 Contiguous block assignment

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 1.7 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 can unify **partitions** into one file system.

With the GFS Shared File System and addition of partitions, you can easily solve the problem of data insufficiency.

In multi-partition configuration, a **round robin allocation** system allows that different files can be allotted to different partitions, thus improving file system performance by distributing the I/O loads to different disks.

1.4.4 Individualized meta-cache management

The GFS Shared File System has the original cache management for **meta-data**. 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 extent management information areas on disks, taking into consideration the characteristics of the access. As a result, it improves the cache-hit ratio and reducing resources used.

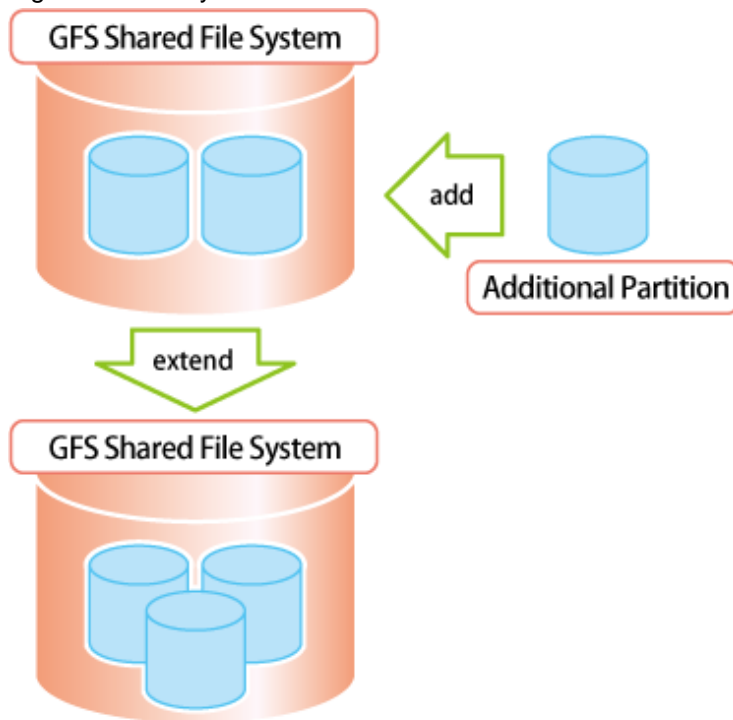
1.5 Extensibility

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 capacity is insufficient.

1.5.1 File system extension

The GFS Shared File System can expand a file system by just adding partitions. File capacity insufficiency can be resolved without complicated operations for backup and/or re-creation of the file system.

Figure 1.8 File system extension



GFS : Global File Services

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:

Table 1.1 Upper limits of file system

Item	Upper limit
Maximum file system capacity	1 terabyte - 1 kilobyte
Maximum partitions size	1 terabyte
Maximum file size	1 terabyte - 8 kilobyte
Maximum number of sharable nodes	2 nodes

Item	Upper limit
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 opened at a time on one node.

The maximum number of GFS Shared File Systems in a cluster system is 10.

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 allot a sufficient number of CPUs to relevant nodes, 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

Cluster Interconnect Protocol (CIP) must have been set up, as it is used for the **sfcfrmd** daemon of the GFS Shared File System.

See

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

The GFS Shared File System uses Global Disk Services (hereinafter GDS).

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 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."
- "PRIMECLUSTER SF" of the "PRIMECLUSTER Concepts Guide"
- "Shutdown Facility (SF)" of the "PRIMECLUSTER Cluster Foundation (CF) 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**
- Use as a mount point
- quota function
- ACL function
- Asynchronous I/O function
- File sharing with other nodes by an NFS
- Setting of hard link for a directory
- Direct I/O function
- **lockfs**(1M)
- Setup of an extension file attribute that is added on Solaris 9
- Mounting with the non-blocking mandatory lock added on Solaris 9
- Execution of **fssnap**(1M) that is added on Solaris 9
- Guaranteeing the atomicity of the write for the following operations from other nodes, when data written by **write**(2), **writew**(2), **pwrite**(2) is stored in several blocks.
 - **write**(2), **writew**(2), **pwrite**(2)
 - **truncate**(3c), **ftruncate**(3c)
 - **creat**(2), **open**(2) with **O_TRUNC**
- Execution of **open**(2) from the other node to the file where **mmap**(2) is being executed with **MAP_SHARED** and **PROT_WRITE** specified.
- Execution of **mmap**(2) from the other node to the file where **open**(2) is being executed with **MAP_SHARED** and **PROT_WRITE** specified.
- Execution of **open**(2) from the other node to the writable file where **mmap**(2) is being executed.
- Execution of **mmap**(2) from the other node to the writable file where **open**(2) is being executed.
- Advisory lock setup to the file where the recommended mandatory lock is set, and changes to the mandatory lock setting of the file where **mmap**(2) is being executed.
- If **mmap**(2) is being executed to the file where the mandatory lock is set, **EAGAIN** is returned to the **F_UNLCK** request with **fcntl**(2). If the file is being recovered, the command is terminated normally.
- As for the type except the following file type, creation of a file and use of a file are not possible.
 - Normal
 - Directory
 - Symbolic link
- Use as a swap file
- Execution of **read**(2) to the directory
- Specification of **F_SHARE** and **F_UNSHARE** in the ONC shared lock (**fcntl**(2))
- Analysis of the "**sfefs**" module through the Dtrace dynamic trace function that is added in Solaris 10.

1.8.2.2 Functional difference with GFS Shared File System Before 4.2A00 on Solaris 9 of PRIMEPOWER

The GFS Shared File System explained in this guide does not provide the following functions which were provided by the GFS Shared File System before 4.2A00 on Solaris 9 of PRIMEPOWER.

- Two or more communication paths set up from AC to MDS(multiple LAN setup)
- Separation of update log area from representative partition
- Uninterrupted operation when MDS process is downed
- MDS failback
- Addition of meta data partition to file system
- Addition of file data partition to mounted file system
- Addition of shared node to mounted file system
- High speed backup and restoration utilizing PRIMECLUSTER Global Disk Services Snapshot
- File Extension Attribute Information

1.8.3 Service ports used by the GFS Shared File System

In the GFS Shared File Systems, TCP service ports within the range of **9100** to **9163**, and **9200** are reserved.

If these port numbers conflict with those for other applications, change the entry port number beginning with **sfdfs-** and **sfdfsrm** in the **/etc/services** file. If you need to change the port numbers, be aware that the port numbers beginning with **sfdfs-** and **sfdfsrm** 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 disk label type of the disk class to which the logical volume belongs is: "VTOC".
- The disk class to which the logical volume belongs is of type: "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 the 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.



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



.....
Do not use online volume expansion for the logical volume of GDS that is including GFS Shared File System. Because the copy of the super block and of the partition configuration information of the GFS Shared File System cannot be read when the size of the logical volumes of GDS is changed by the online volume expansion, the GFS Shared File System cannot be used.

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.
.....



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*". 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*".

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1.8.5 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 and **rdate**(1M) 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.

1.8.6 Notes on use as loopback virtual file system(lofs)

When using a GFS Shared File System as a loopback virtual file system (lofs), the file system may not be stopped while any related lofs is mounted. The node will panic if the file system is stopped and a related lofs is mounted. When using a GFS Shared File System as a loopback virtual file system, unmount all related lofs before stopping the file system.

1.8.7 Notes on stopping a node

Please note the following points when you stop the node.

- Before stopping a node, please stop all the applications on a node accessing GFS Shared File System.
- Use **shutdown**(1M) to stop a node. If **reboot**(1M), **halt**(1M), **poweroff**(1M), or **uadmin**(1M) is used to stop a node, GFS may not work correctly.
- If you stop plural nodes including the node that operates the primary MDS, stop the node that operates the primary MDS at the end. Otherwise, it might take time to stop the nodes.



Information

.....

If the GFS Shared File System is unmounted by **sfcumntgl**(1M) on all nodes before the node is stopped when all shared nodes of the GFS Shared File System are stopped, the order of stopping the node need not be considered.

.....

1.8.8 Notes when CF is started and stopped by the GUI

Please note the following points when you start CF by the GUI.

- In degenerated operation in which a part of cluster nodes is stopped, CF cannot be started by the GUI. In this case, reboot the node. The following message will be output when the node is rebooted.

```
WARNING: sfcfsrcm:5001: Starting the sfcfrmd daemon was suspended because
quorum does not exist
```

See "[C.3.3 Corrective action when the sfcfrmd daemon is not started](#)" to take corrective action.

Please note the following points when you stop CF by the GUI.

- If you want to stop CF on the plural nodes including the node that operates the primary MDS, stop CF on the node that operates the primary MDS at the end. Otherwise, it might take time to stop CF.

Information

If the GFS Shared File System is unmounted by `sfcumntgl(1M)` on all nodes before CF is stopped when all CF of a shared node of the GFS Shared File System is stopped, the order of stopping CF need not be considered.

1.8.9 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 file lock setup process exists goes down.
- If the recovery procedure is executed when many file locks are set, it will take time and fail.

1.8.10 GFS operational notices for Solaris Zones

In Solaris Zones, only a global zone allows for GFS installation, command execution, and creation and management of GFS Shared File System. However, by sharing the GFS Shared File System in a non-global zone as a loopback virtual file system, you can use the GFS Shared File System also in a non-global zone.

The following is an example to share the GFS Shared File System, which is mounted on `/gfs01` in the global zone, on `/gfs` in the non-global zone whose name is `zone01` as `lofs`.

```
# zonecfg -z zone01
zonecfg:zone01> add fs
zonecfg:zone01:fs> set dir=/gfs      <- mount point in the non-global zone
zonecfg:zone01:fs> set special=/gfs01 <- mount point of the GFS Shared File System, which is
shared as lofs in the global zone
zonecfg:zone01:fs> set type=lofs
zonecfg:zone01:fs> end
zonecfg:zone01> verify
zonecfg:zone01> commit
zonecfg:zone01> exit
```

You can check the setup information by the following command:

```
# zonecfg -z zone01 info
zonename: zone01
(omitted)
fs:
    dir: /gfs
    special: /gfs01
    raw not specified
    type: lofs
    options: []
(omitted)
#
```

Point

To start a non-global zone that shares the GFS Shared File System automatically at system startup, perform the following setting:

1. Enable the service of GFS: `svc:/milestone/fjsvgfs-zones`.

Enable the service `svc:/milestone/fjsvgfs-zones` by executing `svcadm(1M)`.

```
# svcadm enable svc:/milestone/fjsvgfs-zones
```

Check the service is enabled by executing `svcs(1)`. Check that STATE is online.

```
# svcs svc:/milestone/fjsvgfs-zones
STATE          STIME          FMRI
online         10:11:22      svc:/milestone/fjsvgfs-zones:default
```

2. Set the GFS Shared File System to be automatically mounted at node startup.

For the setting, see "[11.2.4 Setting vfstab](#)".

3. Select **wait** (default) as a start mode of the `sfcrmd` daemon.

For the setting, see "[9.5 Changing the sfcrmd daemon's startup mode registered in the management partition](#)".

Without this setting, mounting of the GFS Shared File System may fail at system startup. The following message is output in `/var/adm/messages`.

```
ERROR: sfdfs_mount:0010: special is already mounted, mount_point is busy
```

For how to recover the failure, see "Response" for the above message in "[A.2.6 Error messages \(sfdfs_mount command\)](#)".

Note

- To start a non-global zone that shares the GFS Shared File System on a global zone, mount the GFS Shared File System on the global zone beforehand.
- To unmount the GFS Shared File System on a global zone, stop a non-global zone that shares the GFS Shared File System beforehand.
- To monitor applications running on a non-global zone by PRIMECLUSTER, use the Warm-standby operation. If not, set the Cmdline resource, which controls the non-global zone, to be started only on a single global zone (only a single SysNode is set).
- The number of files that can be concurrently opened on a single node is 5000 per GFS Shared File System. To access the same GFS Shared File System from multiple non-global zones on a single global zone, the number of files that can be concurrently opened is 5000 with a total of the global zone and all non-global zones.
- The GFS command cannot be executed on a non-global zone. If the GFS command installed in the `/usr/sbin` directory of the global zone is executed on a non-global zone, the following error will be detected.

```
ld.so.1: command: fatal: libsfdfs.so: open failed: No such file or directory
```

or

```
cannot be executed in non-global zone
```

1.8.11 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.

1.8.12 Notes on writing file data on the GFS Shared File System

The GFS Shared File System uses extent based area management. If a file has many extents, some of extents are stored as indirect extent management information in V-data area.

In this case, an allocation of new blocks could induce a rebuilding of indirect extent management information. It would consume many V-data area. To prevent V-data starvation, GFS prevents an allocation of new block when V-data area usage exceeds 80%. In this case, a system-call (e.g. `write(2)`) which attempts to allocate a new block fails with `ENOSPC`.

Deleting unused files or directories or moving them into other file systems helps you to reduce V-data area usage.



See

.....
For information on how to check usage of V-data area, see [df_sfcfs\(1M\)](#).
.....

1.8.13 Notes on cache of the file system

When accessing a large number of files continuously, it takes a lot of time to access files and it may affect the performance and operation of the entire system for the following reasons:

- It takes time to get new page cache with increase of unused page cache.
- If the release process runs to keep the number of i-node cache of the meta-data server below the limit value, the system load increases.

Consider the following corrective actions:

- Before and after processing, you can clear all caches for GFS if you unmount target file systems on all nodes and then mount them. By doing this, you can prevent the increase of the processing time due to unused cache.
- By dividing the process accessing a large number of files continuously into small steps and setting the processing intervals with `sleep(3C)`, the load of the entire system may be reduced and the performance of other processing that runs concurrently may be improved.

1.8.14 Notes on using the Live Migration function in an Oracle VM Server for SPARC environment

In a system where the Live Migration function is used in an Oracle VM Server for SPARC environment, set the communication timeout value of the GFS Shared File System to 630 seconds or more.

It prevents a GFS Shared File System from being blockaded by detecting a communication timeout during the Live Migration.



See

.....
For details on how to set a communication timeout value and the notes, see "[14.1.2 Communication timeout value](#)."
.....

Chapter 2 File System Structure

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

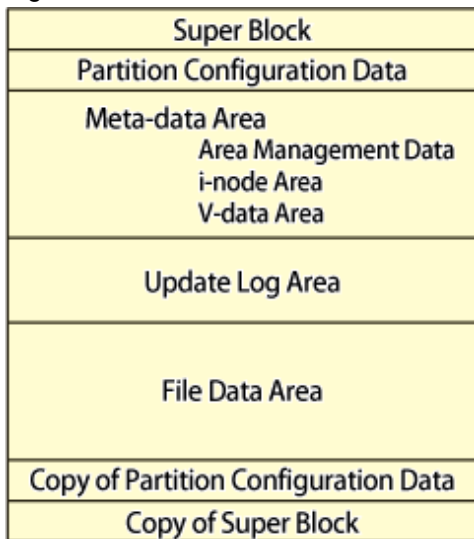
2.1 Disk Structure of File System

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 2.1 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 **mkfs_sfcfs**(1M), 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 indirect extent management information. 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 **fsck_sfcfs**(1M) 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 2.2 Single partition configuration

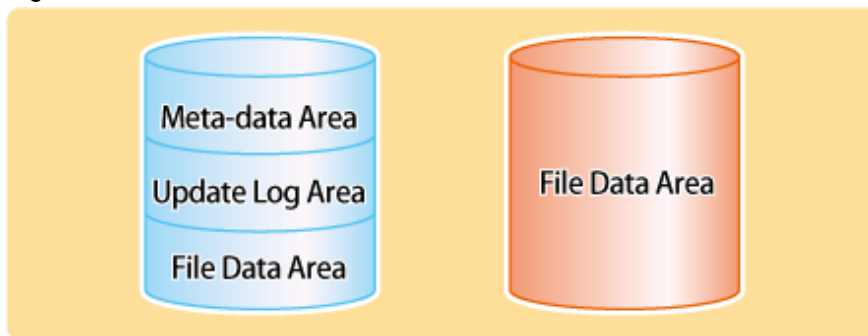


In the multi-partition configuration, the file data area can hold multiple partitions. Also, the file system can be created by detaching the file data area from the meta data area.

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

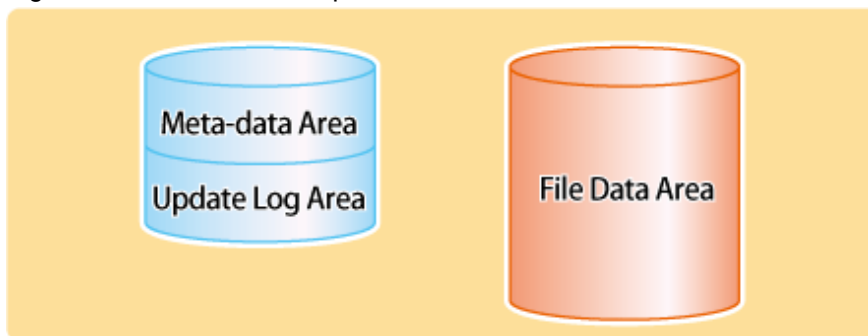
1. Adding a file data area to another partition. (file data area addition)

Figure 2.3 File data area addition



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

Figure 2.4 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.

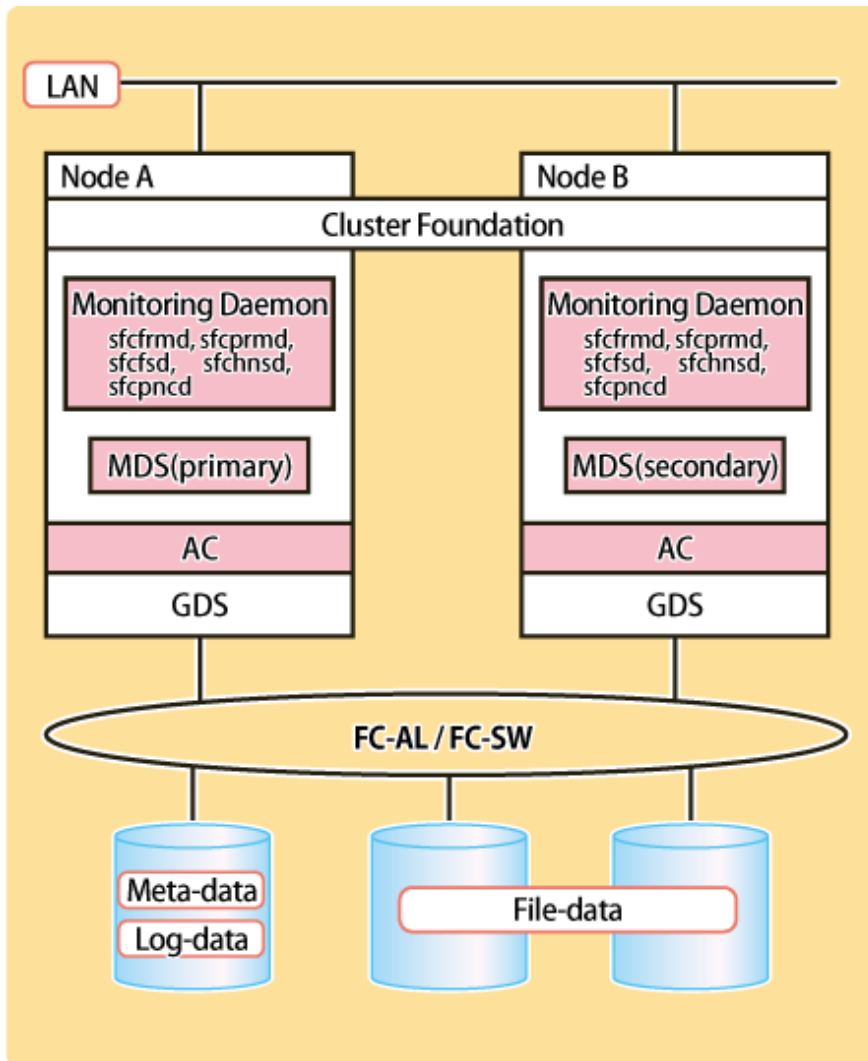
The GFS Shared File System consists mainly of three components:

1. **MDS** (Meta-data server)
The file system server function component (sfcfsmg) 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 (sfcfrmd, sfcprmd, sfcfsd, sfcchnsd, sfcpcnd)

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

Figure 2.5 Component composition



GDS : Global Disk Services

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 nodes of those that shares a file system are predefined as **MDS nodes** and MDS operates on one of these nodes. 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 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

- sfcfrmd

Receives a request from the sfcfsd or the commands and provides the communication paths of commands-sfcfsd, commands-sfcprmd and inter-node. Configuration database management and the management partition I/O functions are also provided.

- sfcprmd

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 sfcprmd, and then sfcprmd 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 sfcprmd as required is referred to as the target process.

The target process is monitored by sfcprmd and, when the process terminates normally or abnormally, the status is posted to the client process.

- sfcfsd

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.

- sfcpcnd

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.

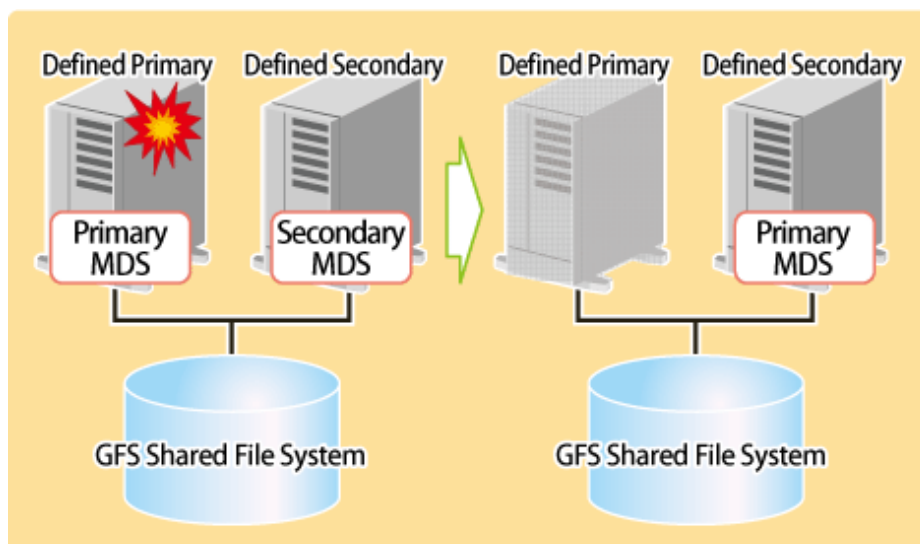
The following provides an overview of the operations performed if either the primary MDS or secondary MDS fails.

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 MDS and secondary MDS 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.



GFS : Global File Services

2. Replaying the update log

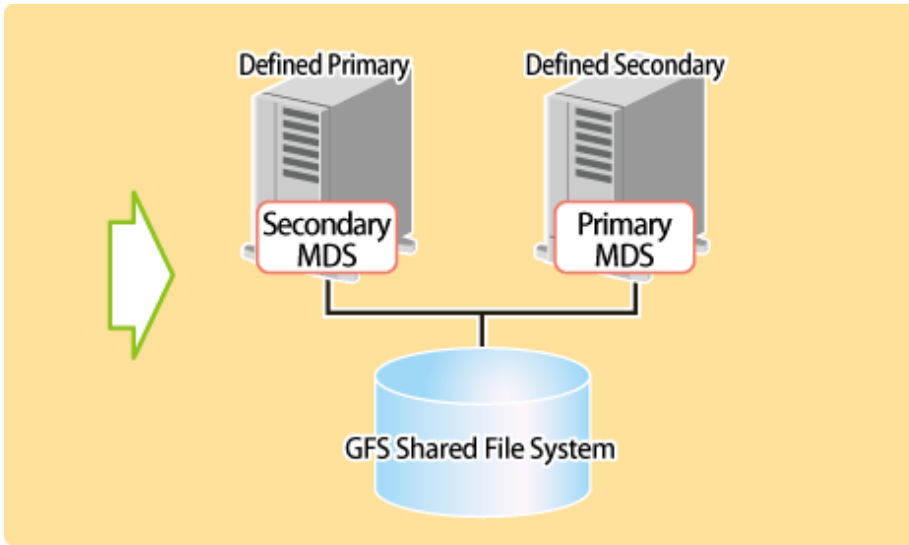
The new primary MDS replays the update log to ensure consistency of the file system.

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.



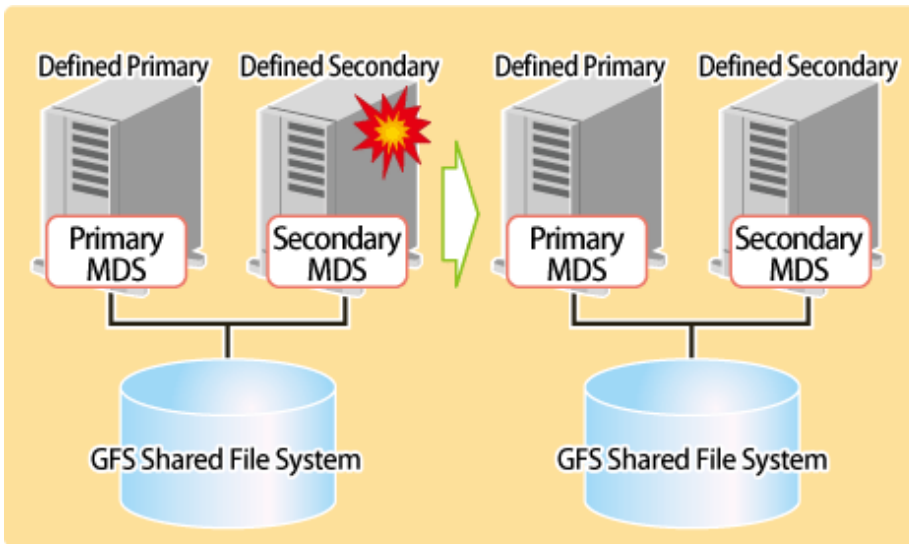
GFS : Global File Services

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.



GFS : Global File Services

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 ufs settings.

Parameter "mount at boot" in `/etc/vfstab` for all GFS Shared File Systems must be set to "no". A setup of the automatic mount at system startup is determined by setting a parameter "mount options" to "noauto" in `/etc/vfstab` or not.

When noauto is not described in the mount options field of `/etc/vfstab`, the automatic mounting is performed on system startup by activation of GFS service of Service Management Facility (SMF). Fault Managed Resource Identifier (FMRI) of GFS service is as follows:

```
svc:/milestone/fjsvgfsfsrm
```

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

GFS Shared File Systems are automatically unmounted by discontinuation of GFS service of SMF when the system is shut down.



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.



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

4.2 Disk Design

This section describes the disk design to create a GFS Shared File System.

GFS Shared File System requires GDS logical volumes for not only a file system but also a management partition (to manage the important information for GFS Shared File System operation).

The number of required GDS logical volumes is shown in the following table.

Table 4.1 Number of required GDS logical volumes on GFS Shared File System

Usage	Number of GDS logical volumes	Remarks
Management partition	1	Over 40 megabytes of volume size is necessary.
File system	1 to 32 for each file system	The maximum number of file system is 10.

GDS: Global Disk Services



For details about management partition, see "[Chapter 5 Management Partition](#)."
For details about file system design, see "[4.3 System Design](#)."

4.3 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

4.3.1 Effects of file system operation and system load

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

- File access
 - Open and close a file for *each* successive read or write, without putting all I/O together within one open and close.
 - Sequential write with a small record size (less than 1 megabyte). It can cause a fragmentation of a file data.
 - Deleting 1000 or more open files at once.
 - Copying a file exceeding 1 gigabyte by using **cp(1)**

If one or more of the above situations occur, you can improve file system performance by changing open/close frequency or timing of the target file, or optimizing I/O size.

For example, when copying a file, use **dd(1)** with large I/O size (1 megabyte or larger). This enables faster copying time than using **cp(1)**.

- Confliction between nodes, and directory access.
 - Frequently referencing a file from other nodes that is frequently updated from one or more nodes.
 - Frequently updating the same block in the same file from two or more nodes.
 - Frequently creating or deleting files or directories in the same directory from multiple nodes, and repeatedly monitoring directory updates with **readdir(3C)** or **stat(2)**.
 - When an **ls(1)** command with the **-l** option and a command requiring attributes of files in the directory such as **cp(1)**, **du(1M)**, and **tar(1)** are both issued in a directory containing more than 10000 files.

If one or more of the above situations occurs, you can improve file system performance by changing the monitoring or access frequency, or dividing up files into separate 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, which require 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.

4.3.2 Node layout

In the GFS Shared File System, up to two nodes can share one file system simultaneously.

File system processing can continue even if the node (on which MDS manages file system meta-data) fails. Two nodes that operate MDS are selected, the node that wants to operate primary MDS is made primary MDS node (on which the primary MDS usually operates), and the node that wants to operate secondary MDS is set as secondary MDS node (on which the secondary MDS usually operates).



See

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

As previously described in "4.3.1 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

MDS receives requests from all nodes sharing a file system and then updates the meta-data. Therefore, install at least two CPUs on nodes on which MDS may operate.

Note

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

4.3.3 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](#)"

4.3.4 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(1M)**.

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 Redundant Line Control Function that is a function of Global Link Services (hereinafter GLS).



See

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

4.3.5 For future expansion

When a GFS Shared File System is created with **mkfs_sfcfs(1M)**, the required minimum area is allocated according to the default settings. At file system creation, check that at least the parameter values listed in the table below are sufficient for future expansion. For example, the partition addition function cannot add partitions exceeding the **-o maxvol** parameter of **mkfs_sfcfs(1M)**. 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 4.2 Parameter that you should confirm for future expansion

mkfs_sfcfs(1M) parameter	Default	Meaning
maxdsz	File data area size at specification	Maximum file data area size
maxnode	16	Maximum number of sharing nodes
maxvol	16	Maximum number of partitions

4.4 Backup Design

This section describes the hardware required to back up and restore file systems, and also describes how to back up and restore them in the GFS Shared File System.

- Required hardware

A tape unit or hard disk unit is used to back up the GFS Shared File System.

- Backing-up and restoring procedure

The GFS Shared File System backs up and restores file systems with the following methods:

- Backing up and restoring the entire file system: **dd(1M)**
- Backing up and restoring the file system on a file basis: **cpio(1)** or **tar(1)**

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



See

For more information about backing-up and restoring in the GFS Shared File System, see "[Chapter 13 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:

- "[Chapter 8 Management Partition Operations \(GUI\)](#)"
- "[Chapter 9 Management Partition Operations \(Command\)](#)"

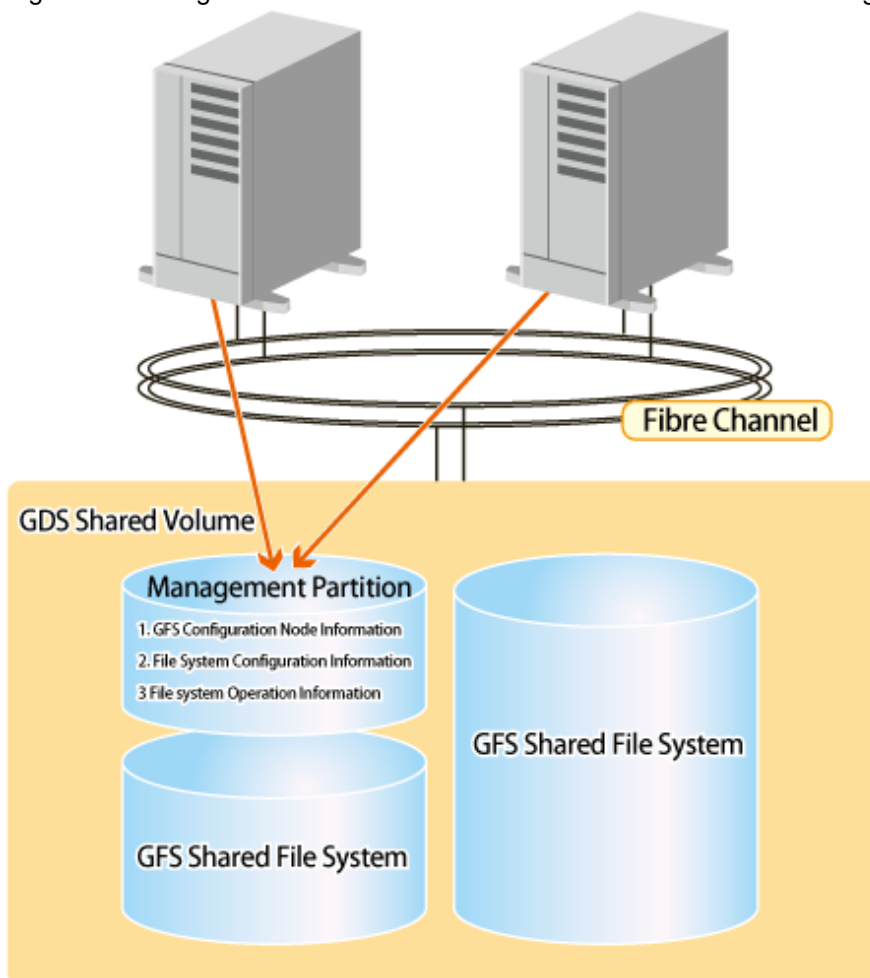
5.1 Management Partition

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(1M)**. The information of 2 and 3 can be set up, modified and added with **mkfs_sfcfs(1M)**, **sfcadm(1M)**, **sfcnode(1M)** and **sfcadd(1M)**. The **sfcgetconf(1M)** command is available for backing-up the information within the management partition.

Figure 5.1 Configuration of the connection between nodes and the management partition



GDS : Global Disk Services
GFS : Global File Services

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*."
.....



Note

.....
When setting the volume in which the management partition is created, specify the shared disk class type for the disk class type to which the volume belongs. For the scope of the disk class to which the volume belongs, specify all the nodes that share the GFS Shared File System. Additionally, set the volume status to become **ACTIVE** automatically when the node is started.

If the disk class that includes the volume in which the management partition exists is set for the Gds resource of the cluster application by mistake, the volume status does not become **ACTIVE** automatically when the node is started. In this case, the GFS Shared File System 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. If I/O to the management partition fails, GFS may panic the node with an I/O error in order to maintain the consistency of the file system. 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(1M)**.



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
- Starting Screen
- 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*"
- "*PRIMECLUSTER Cluster Foundation (CF) 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:

- "[Chapter 8 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:

- "[Chapter 10 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. Take any of the following procedures to start Web-Based Admin View.

- Startup from the command (if using Java Web Start) (recommended)
 1. Press <Win>+<R> key on the client and the [Run] dialog box opens.
 2. Input the **javaws** command with the format below and access to the management server.

```
javaws http://host-name:port-number/
```

- Startup from the Web browser (if using Java Web Start)
 1. Start the Web browser on the client.
 2. Specify the URL with the format below and access to the management server.

```
http://host-name:port-number/
```

3. When using Microsoft Edge browser, click the <Open> button at the notification bar of file download completion which is displayed at the lower part of the browser.

When the notification bar of file download confirmation is displayed, click the <Save> button or the <Save As> button to save the file and then click the <Open> button.

Note

- A downloaded file name may be something other than **WebStart.jnlp**.
- When starting Web-Based Admin View by taking this procedure, a tab remains in the Web browser after starting the Web-Based Admin View screen and the user login screen. Closing this tab will not cause any problems because it does not operate with Web-Based Admin View after starting the screen.

- Startup from the Web browser (If using Java Plug-in)

1. Start the Web browser on the client.
2. Specify the URL with the format below and access to the management server.

```
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.

See

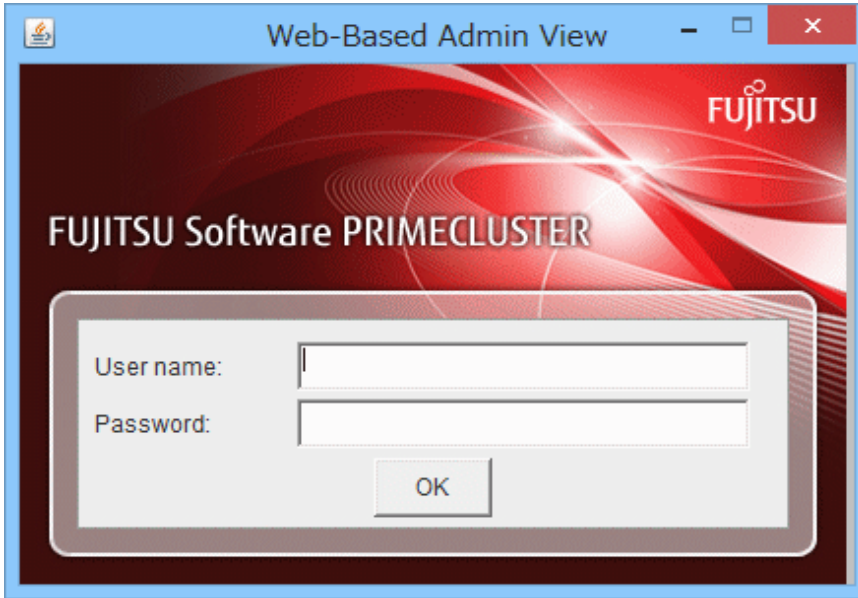
- For information about a client that starts the Web browser, see the "*PRIMECLUSTER Web-Based Admin View Operation Guide*".
- For information on how to change the http port number, see "*Change http port number*" of the "PRIMECLUSTER Web-Based Admin View Operation Guide".

Note

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.

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

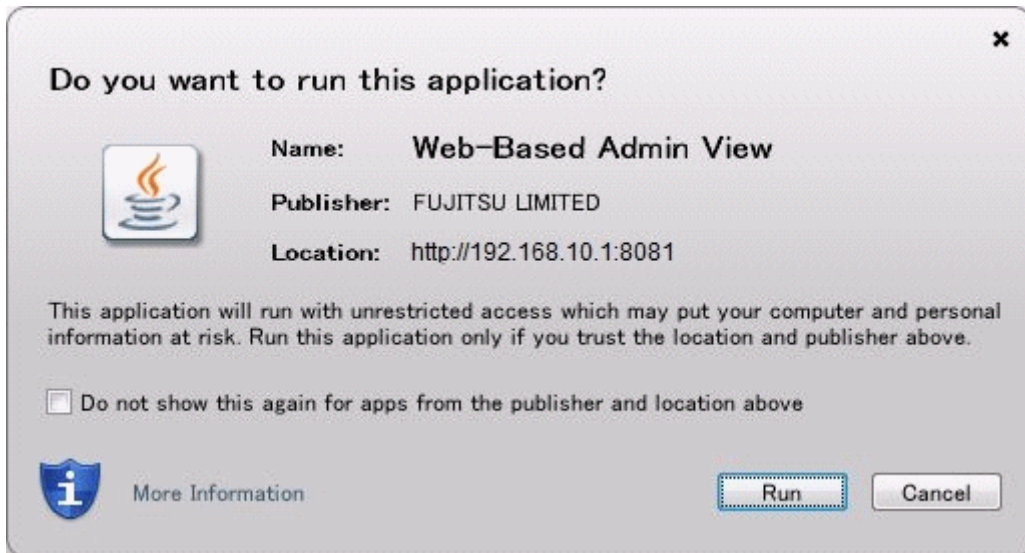
Figure 6.1 Login screen

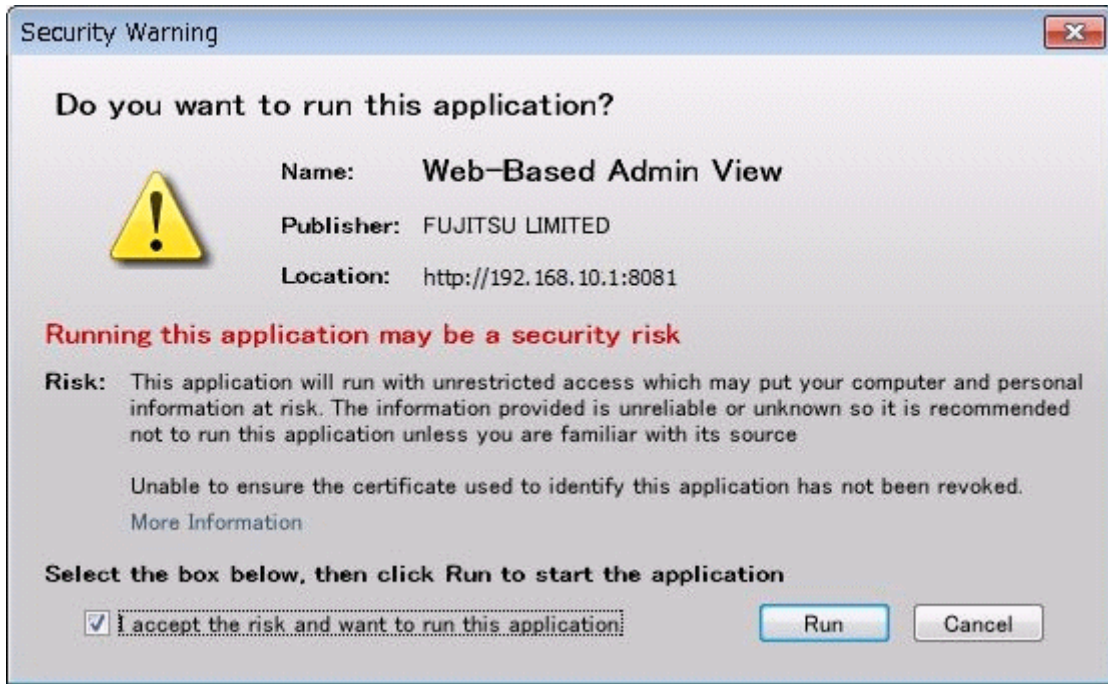


Enter user name and password for the management server then click the <OK> button.

Note

- The user login screen cannot be closed by clicking the <X> button of upper-right corner in the screen.
- Either of the pop-up warning below may be displayed before the user login screen is displayed. These pop-up warnings are verification messages when the signed Java application is run with an unrestricted access privileges. These messages will not cause any problems. Press the <Run> button to continue the operation.





3. 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 6.1 Web-Based Admin View Operation Menu Description

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

GFS: Global File Services



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*".



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

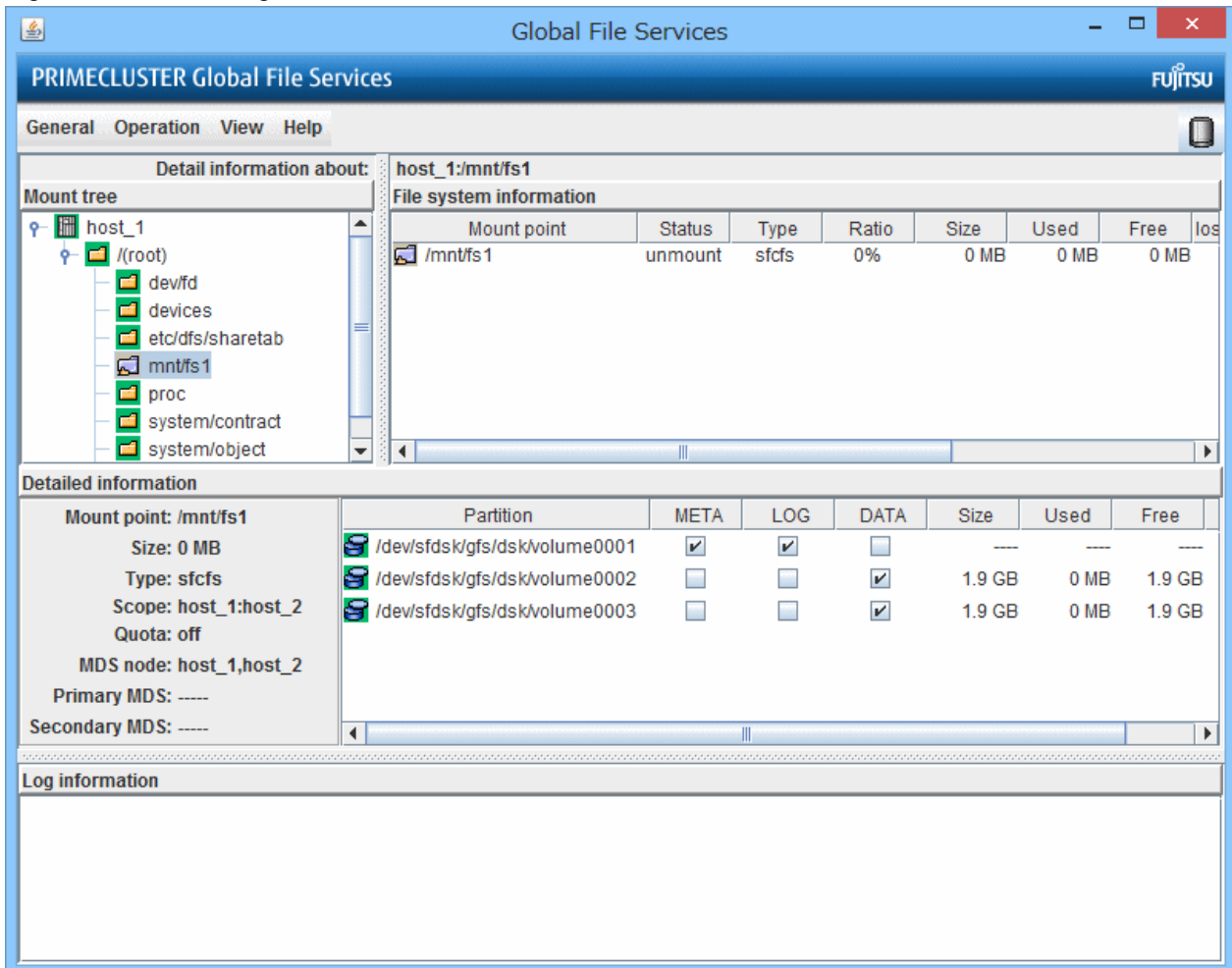
Select the [Global File Services] Menu on the Web-Based Admin View operation menu, the GFS Management screen (hereafter referred to as the main screen) opens.

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.



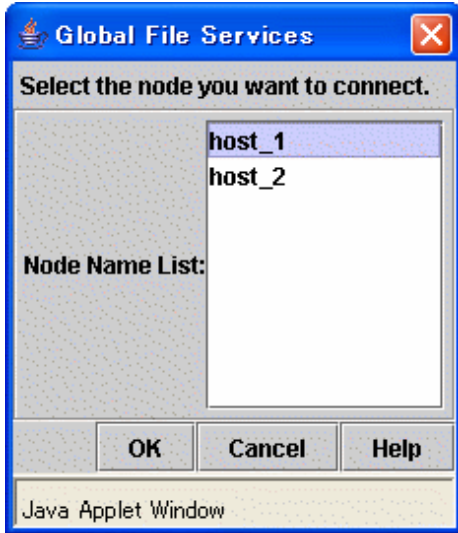
For more information, see "Chapter 8 Management Partition Operations (GUI)" and "Chapter 10 File System Operations (GUI)"

Figure 6.2 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 6.3 Select Node Screen



6.4 Exiting GFS Management View

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

Figure 6.4 Exit Screen



If you click <Yes> button, the Web-Based Admin View Screen (top menu) is displayed.

If you click <No> button, 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. The user login screen is displayed. Take either of the following steps while the user login screen remains displayed:
 - If Web-Based Admin View is started by using Java Web Start
 - Select <X> button of the upper right corner of the Web-Based Admin View menu screen.
 - If Web-Based Admin View is started by using Java Plug-in
 - Exit the Web browser.
 - Switch the screen automatically by specifying a new URL or other bookmark.
 - Click <Back> of the Web browser.
 - Select [Close tab] of the Web browser.

 **Note**

If the user login screen continues to be displayed

The user login screen will remain displayed briefly after the Web browser exits; however, no additional action is required to close the login screen as it disappears after a short period of time.

Chapter 7 Operation Management View Screen Elements

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

7.1 Screen Configuration

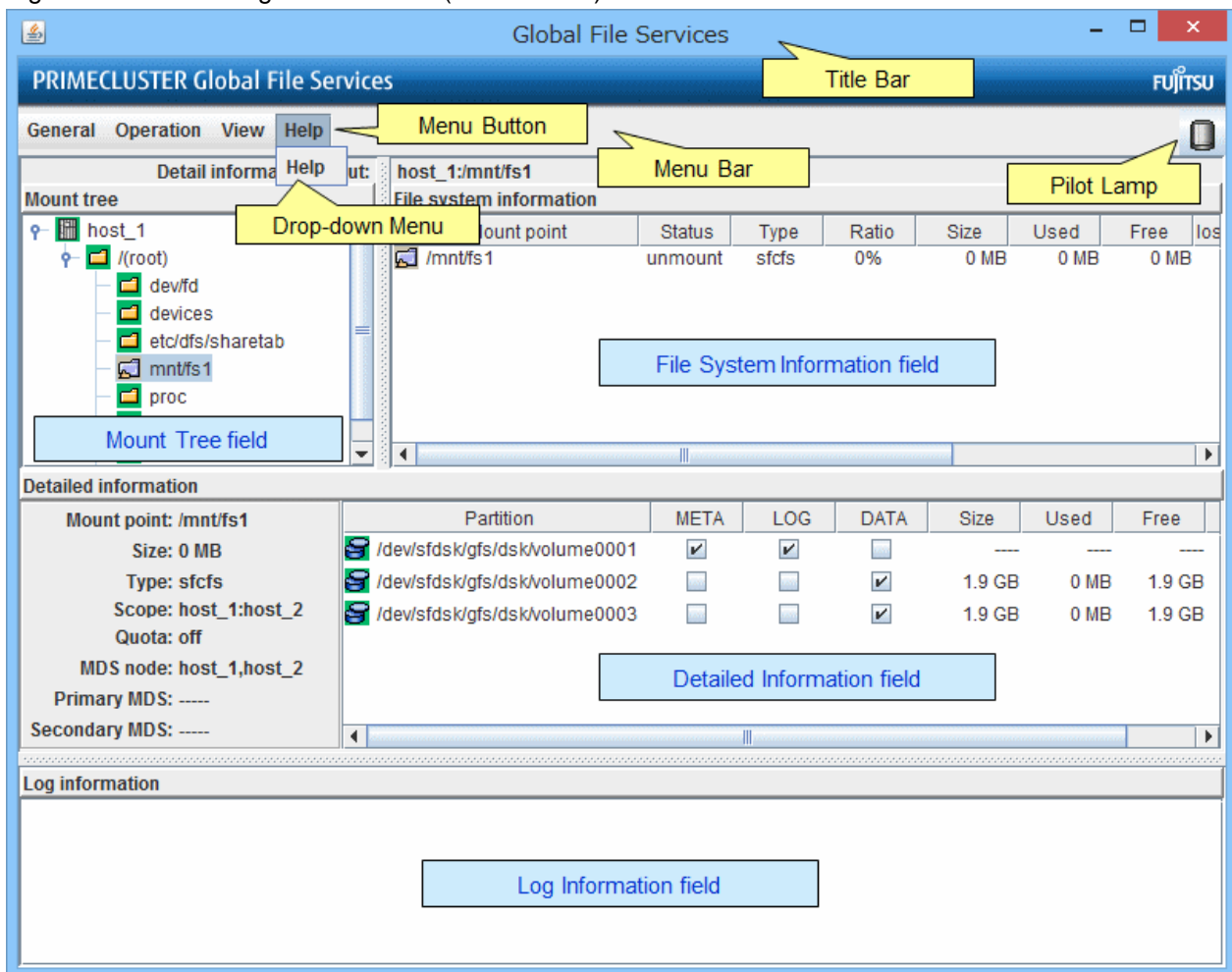
Main screen

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 7.1 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/vfstab**.

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".



Note

The [Status] of the mount point "/proc" is always shown as "unmount".

Detailed Information field

When the type of the file system selected in the "Mount Tree field" or the "File System Information field" is sfcfs, that file system's detailed informations such as the placement of the MDS and the state of quota are 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 7.1 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.

Pilot Lamp	Status	Meaning
 (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.

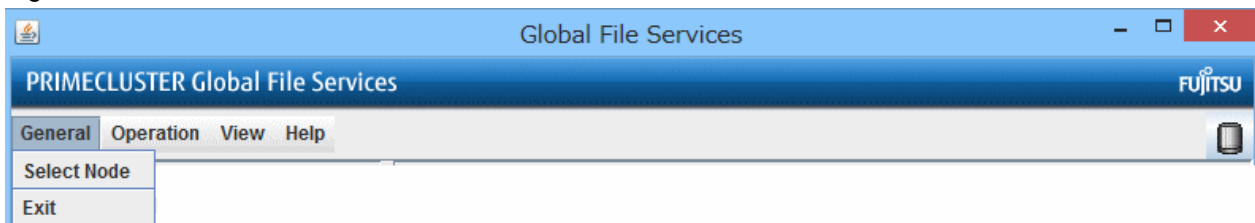
In a pop-up list of the scope, information on the nodes sharing the file system is displayed in the node (host) name format. When several host names are specified, they are displayed in parentheses.

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 7.2 General menu

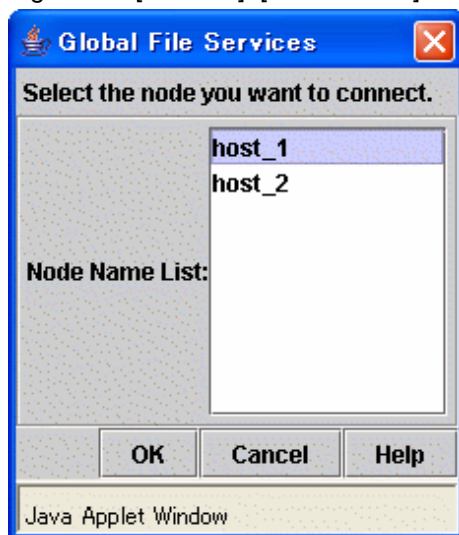


Select Node

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

If you do not need selecting node, click <Cancel> button.

Figure 7.3 [General]: [Select Node] Screen



Exit

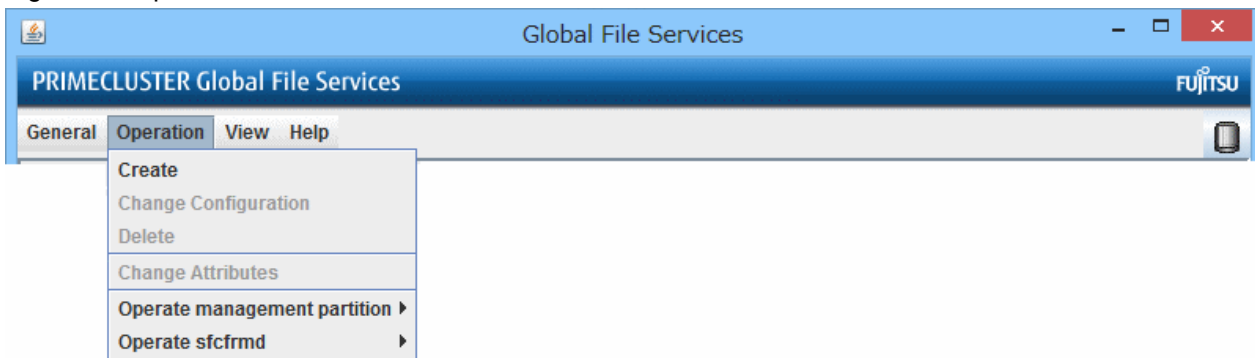
Exits Global File Services.

Figure 7.4 Figure [General]: [Exit] Screen



7.2.2 Operation

Figure 7.5 Operation menu



Create

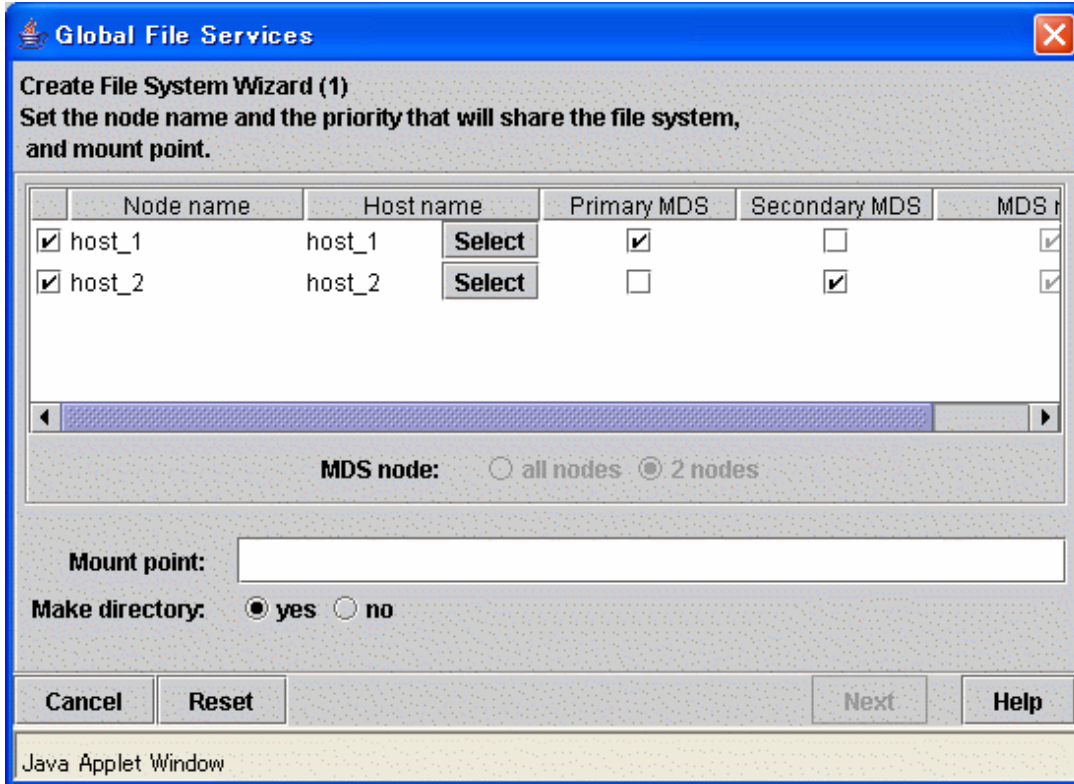
Creates a file system.



See

.....
For details, see "10.2.1 Creating a file system."
.....

Figure 7.6 [Operation]: [Create] Screen



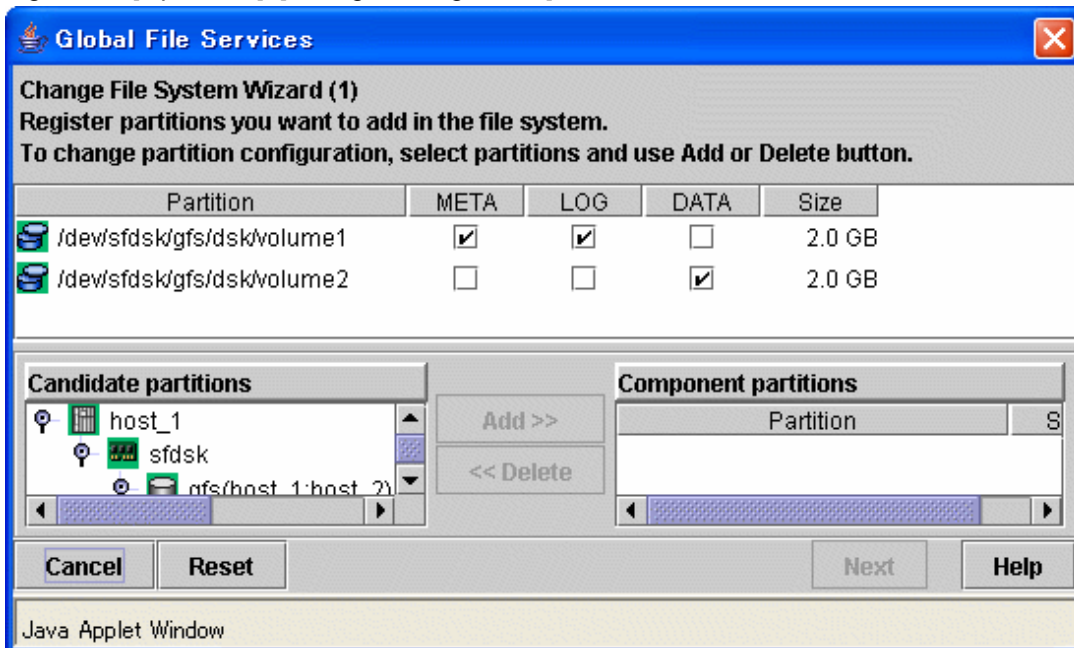
Change Configuration

Changes the partition configuration of a file system.



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

Figure 7.7 [Operation]: [Change Configuration] Screen



Delete

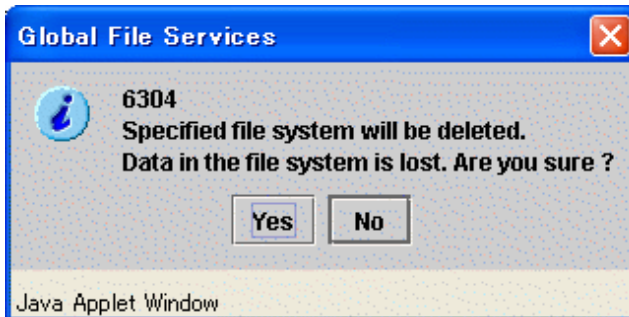
Deletes a file system.



See

For details, see "10.4.1 Deleting the file system"

Figure 7.8 [Operation]: [Delete] Screen



Change Attributes

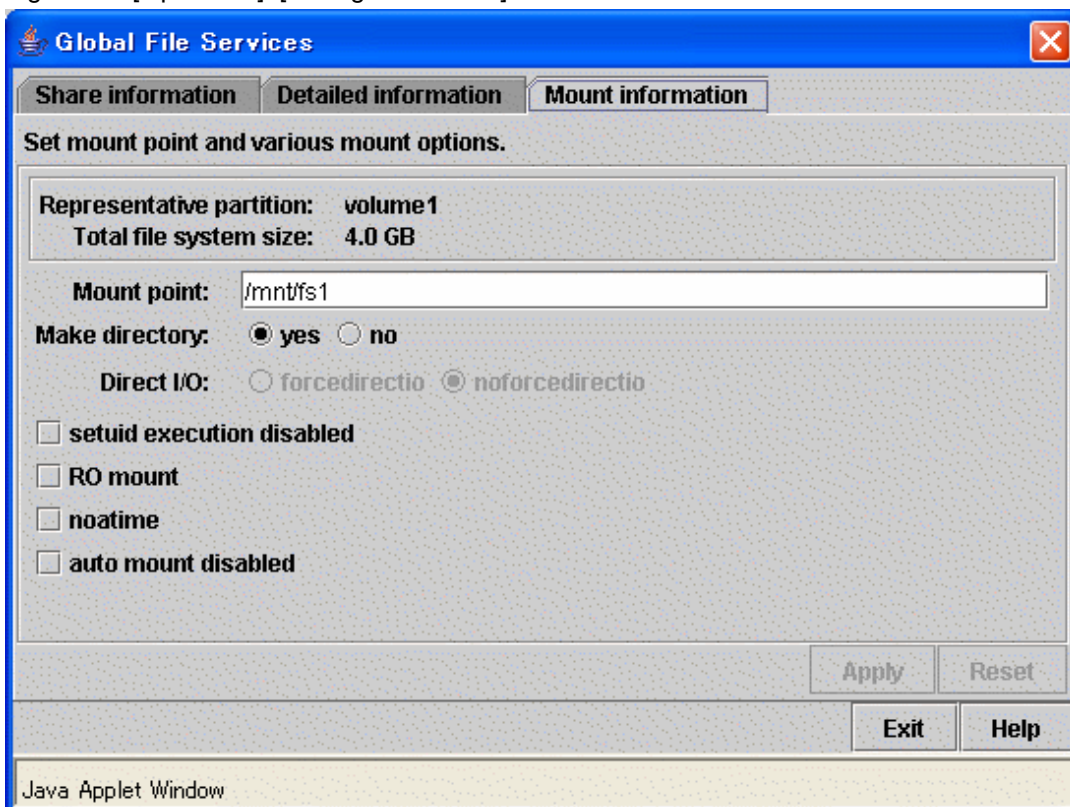
Changes the mount information, share information, and detailed information for a file system.



See

For details, see "10.3.1 Changing the file system attributes" and "10.3.3 Changing the shared node information"

Figure 7.9 [Operation]: [Change Attributes] Screen



Operate management partition

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



For details, see "8.2 Creating the management partition" and "8.3 Adding node configuration information to the management partition"

Figure 7.10 [Operation]:[Operate management partition]:[Create] Screen 1

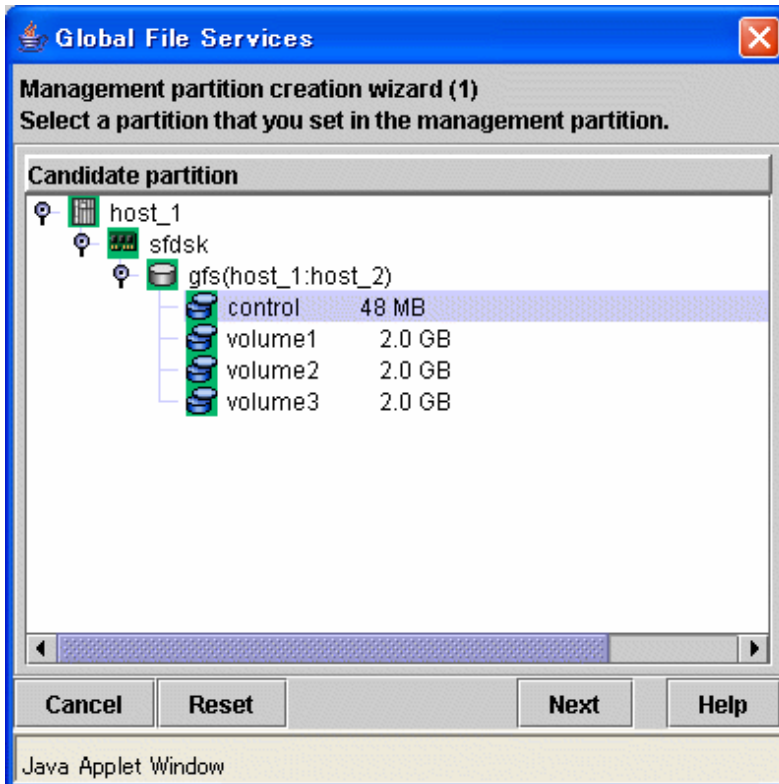


Figure 7.11 [Operation]:[Operate management partition]:[Create] Screen 2

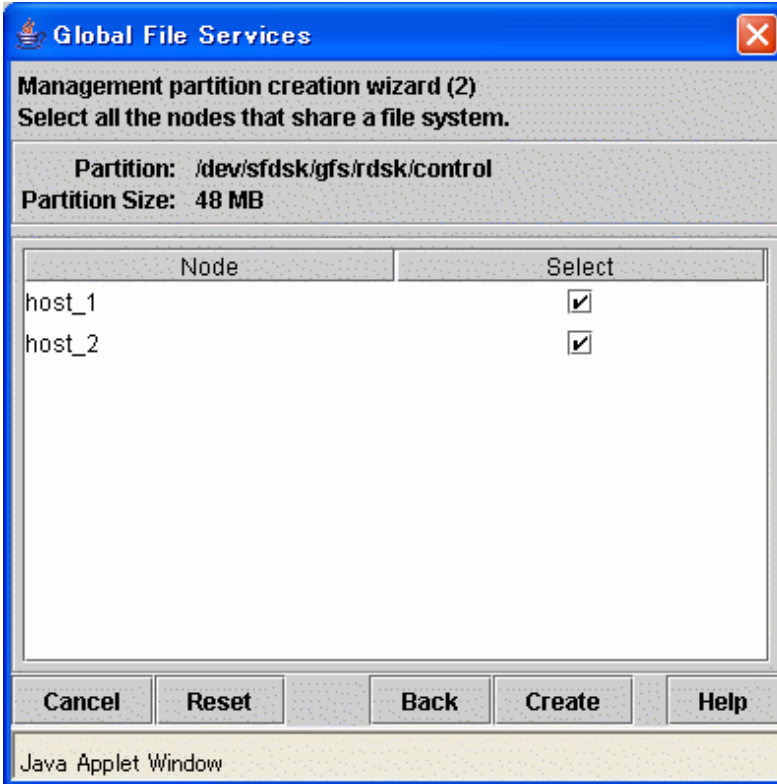
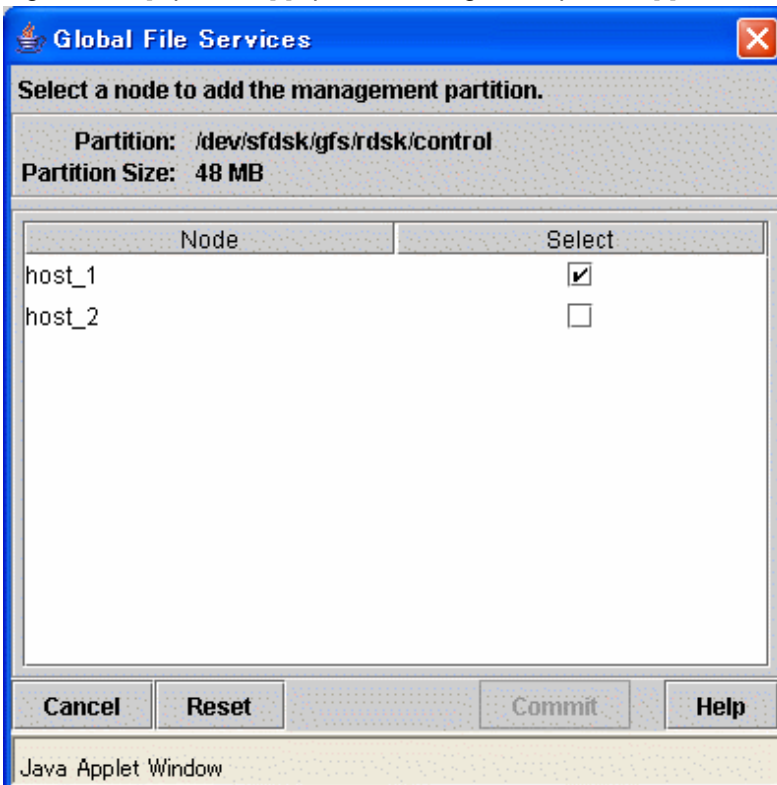


Figure 7.12 [Operation]:[Operate management partition]:[Add node] Screen



Operate sfcfrmd

sfcfrmd daemon can be started or stopped.



For details on the operation, see "8.3.4 Starting sfcfrmd daemon", "8.3.2 Stopping sfcfrmd daemon"

Figure 7.13 [Operation]: [Operate sfcfrmd]:[Start] Screen

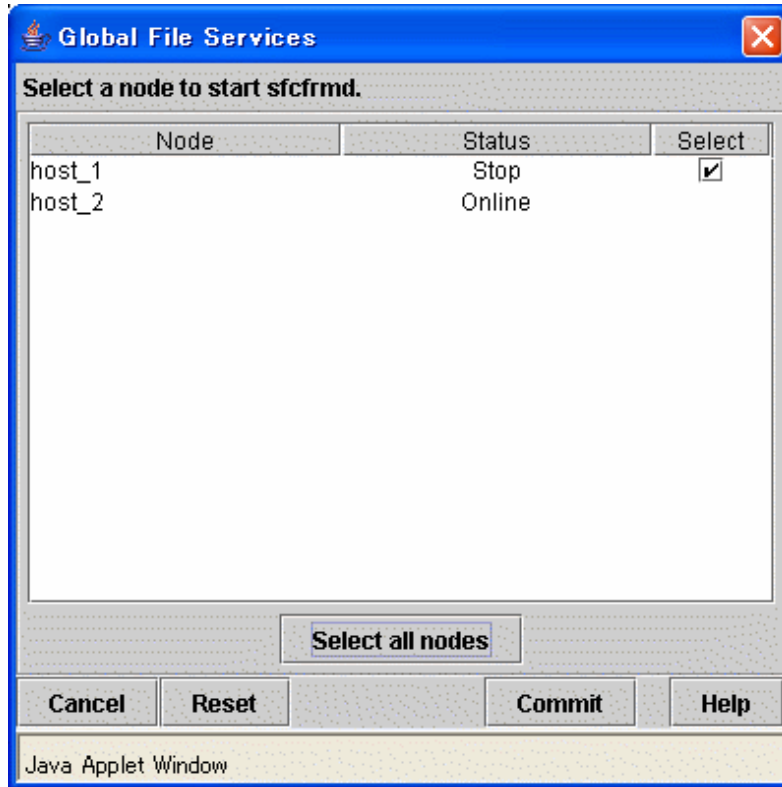
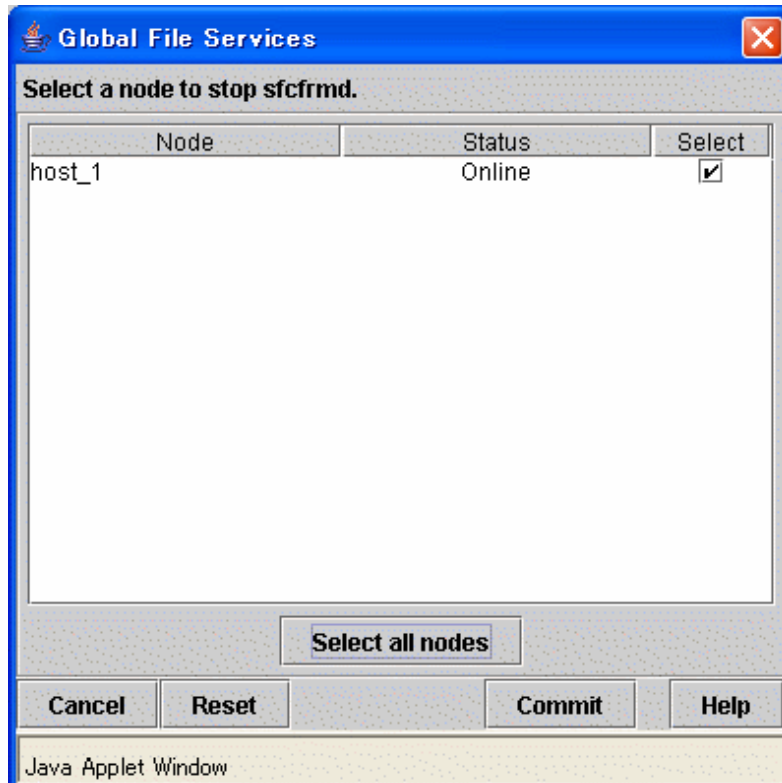
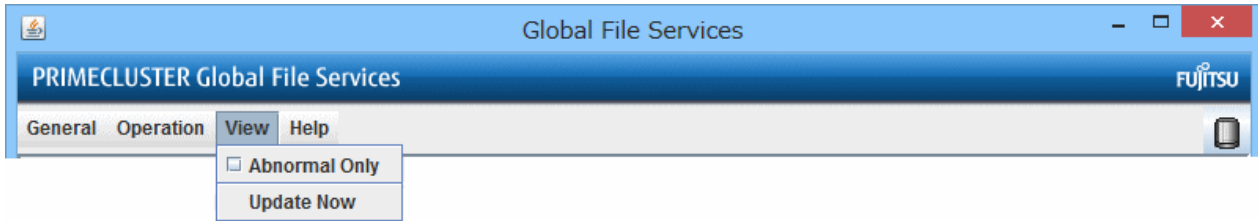


Figure 7.14 [Operation]: [Operate sfcfrmd]:[Stop] Screen



7.2.3 View

Figure 7.15 View menu



Abnormal Only

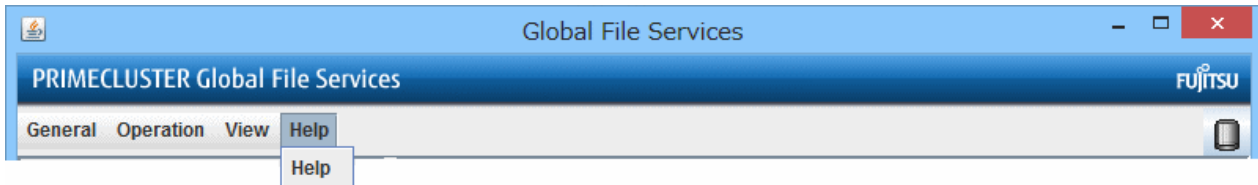
Only displays file systems with abnormalities.

Update Now

Display the latest file system information.

7.2.4 Help

Figure 7.16 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.

Icon	Status	Meaning
 (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 (ufs)

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 (file system type: sfcfs) 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 ufs, 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"
- "PRIMECLUSTER Cluster Foundation (CF) 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:

- "[Chapter 6 Starting and Exiting the Management View](#)"

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

- "[Chapter 10 File System Operations \(GUI\)](#)"
- "[Chapter 11 File System Operations \(Command\)](#)"

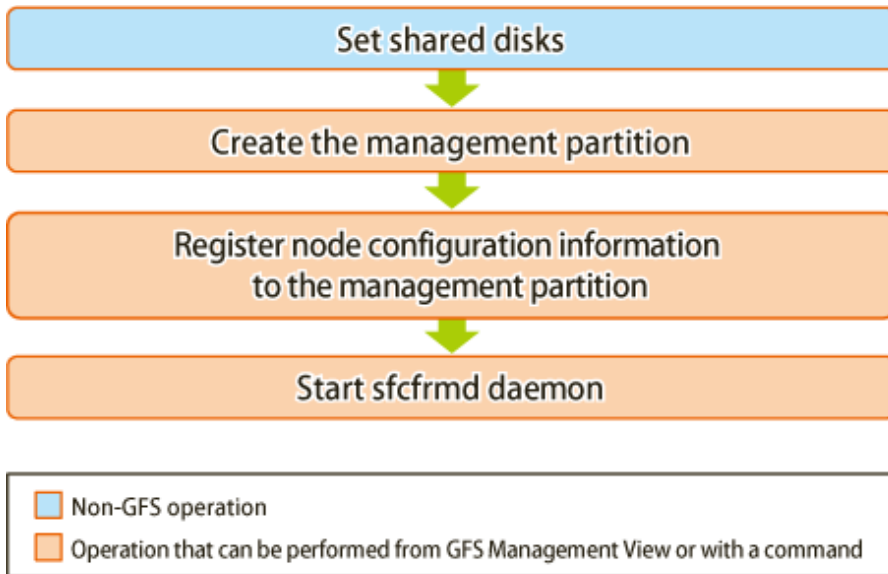
8.1 Flow of Operations

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 8.1 Operation flow for creating the management partition

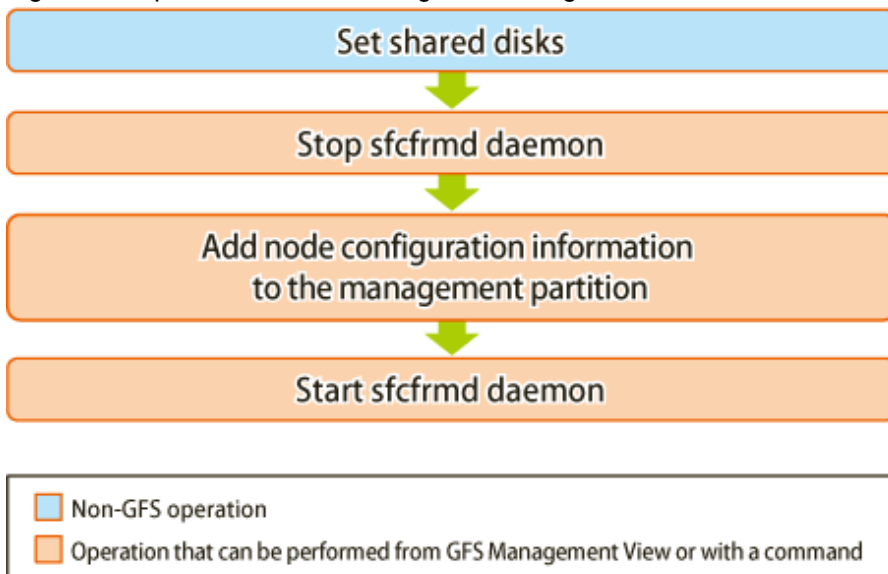


GFS : Global File Services

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 8.2 Operation flow for adding node configuration information to the management partition



GFS : Global File Services

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.3.3 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(1)`)
- It is shared from all the nodes that use the GFS Shared File System. (Check with the `sdxinfo(1)`)

See

For details on the `sdxinfo(1)`, see "[PRIMECLUSTER Global Disk Services Configuration and Administration Guide](#)".

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)

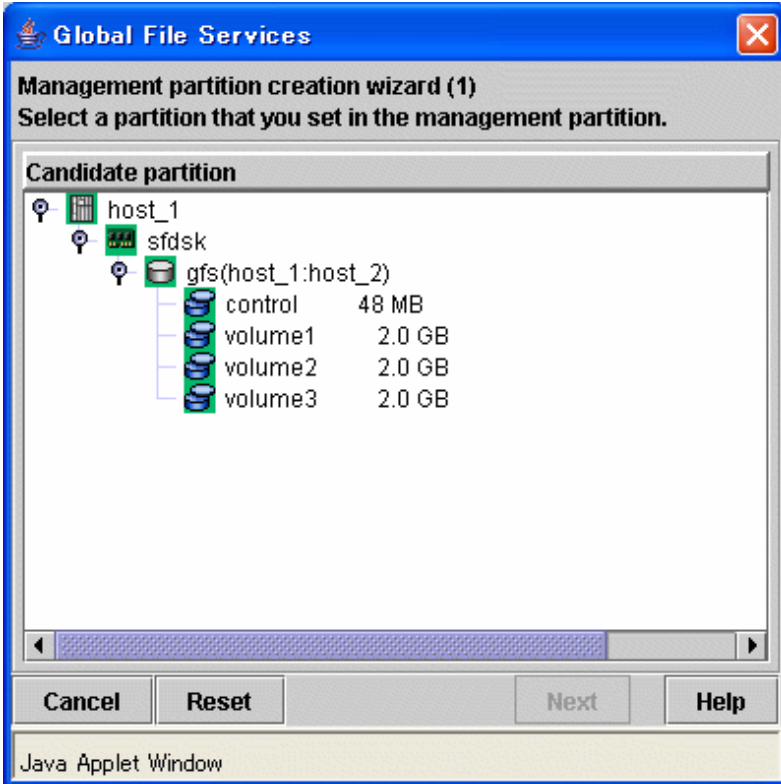
See

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](#)".

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

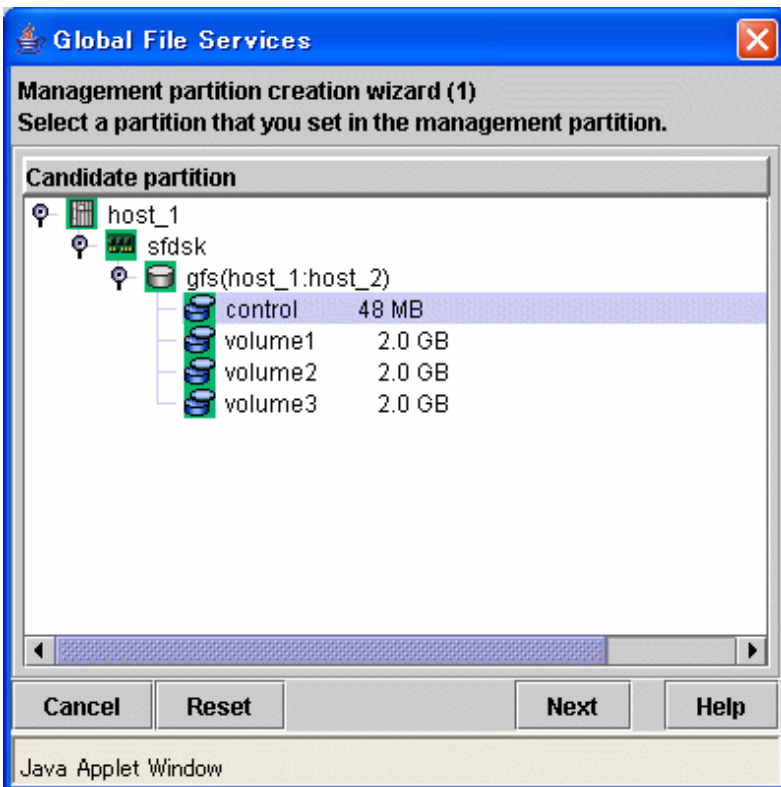
Creating the management partition and registering node configuration information can be done after selecting [Operation]:[Operate management partition]:[Create] on the GFS Management View.

Figure 8.3 Management partition creation wizard (1)



In the [Management partition creation wizard (1)] 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)] 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.

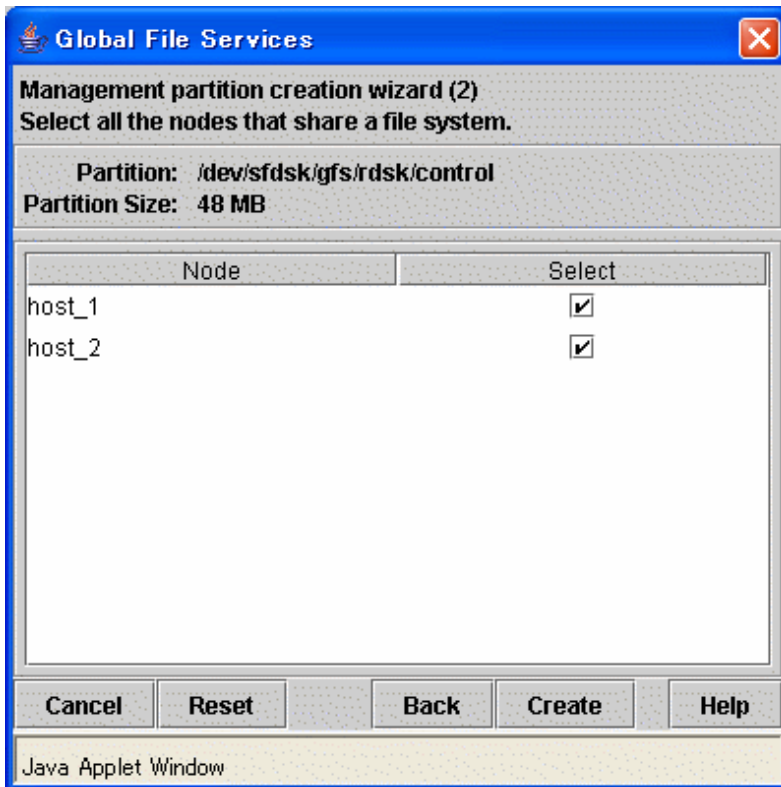
Note

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(1M)**. For details, see "9.2.2 Initializing of the management partition"

Figure 8.4 Management partition creation wizard (2)



In the [Management partition creation wizard (2)] screen, select (with the check mark) nodes to register into management partition selected in the [Management partition creation wizard (1)] 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)] screen belongs is displayed. By the default, [Select] of all nodes are checked.

Note

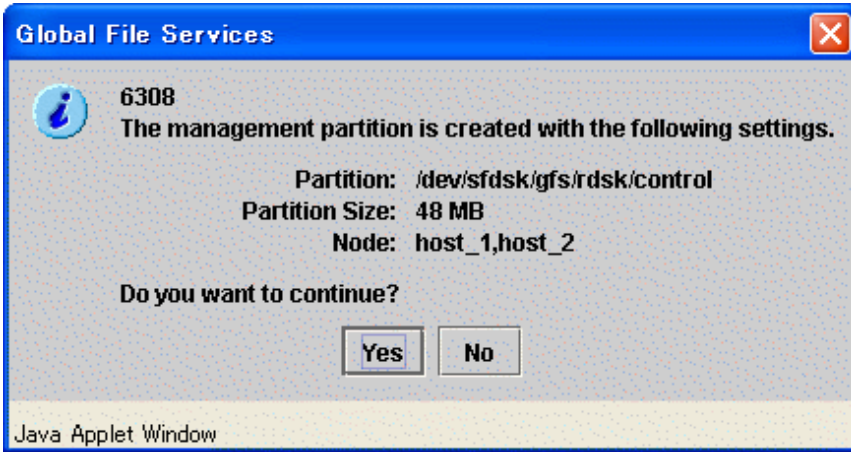
The node selected as a connecting node in [Select Node] screen appearing at the time of starting the GFS Management View needs to surely register as management partition. Therefore, the check mark of [Select] cannot be deselected.

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.

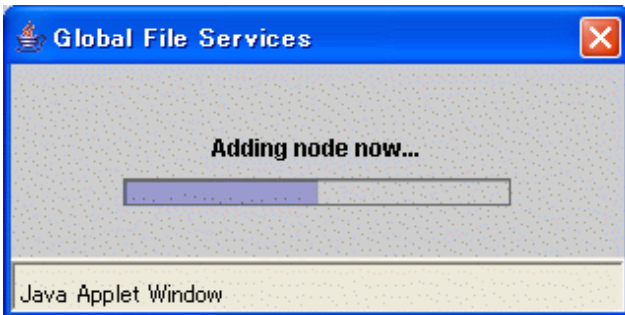
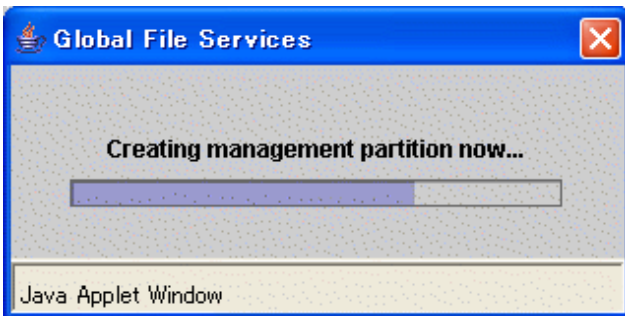
Click <Back> button when returning to the screen that selects the partition creating as a management partition.

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.

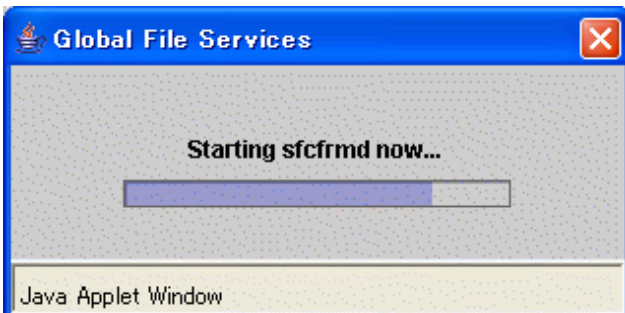


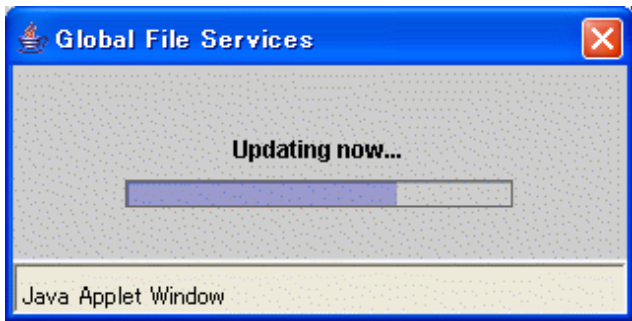
Processing will be interrupted, if you click the <No> button of the displayed message.

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 sfcfrmd 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.3.3 Corrective action when the sfcfrmd 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 sfcfrmd daemon

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

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

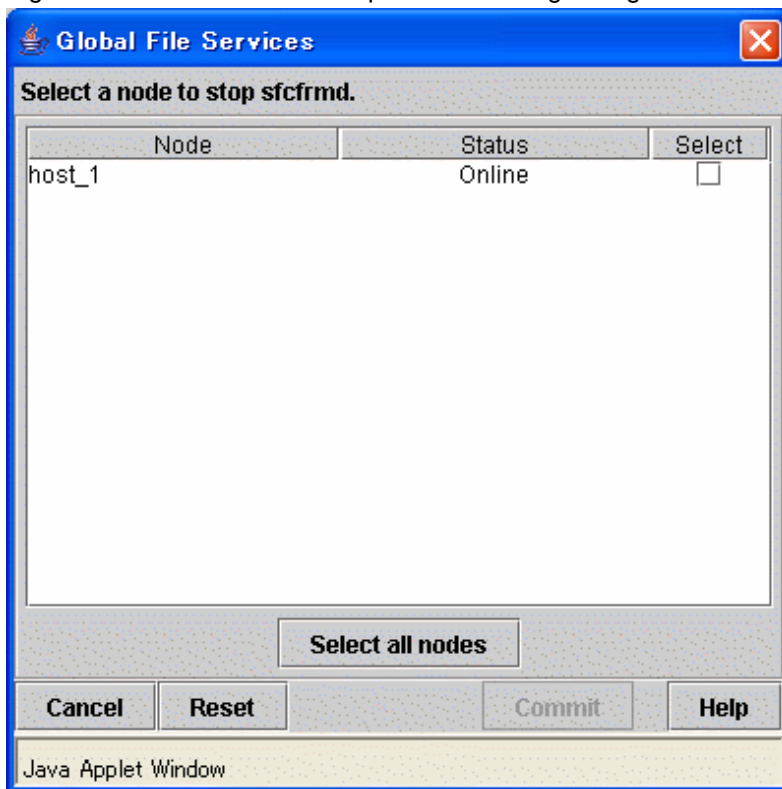
Note

Unmount all GFS Shared File Systems before stopping sfcfrmd daemon.

Information

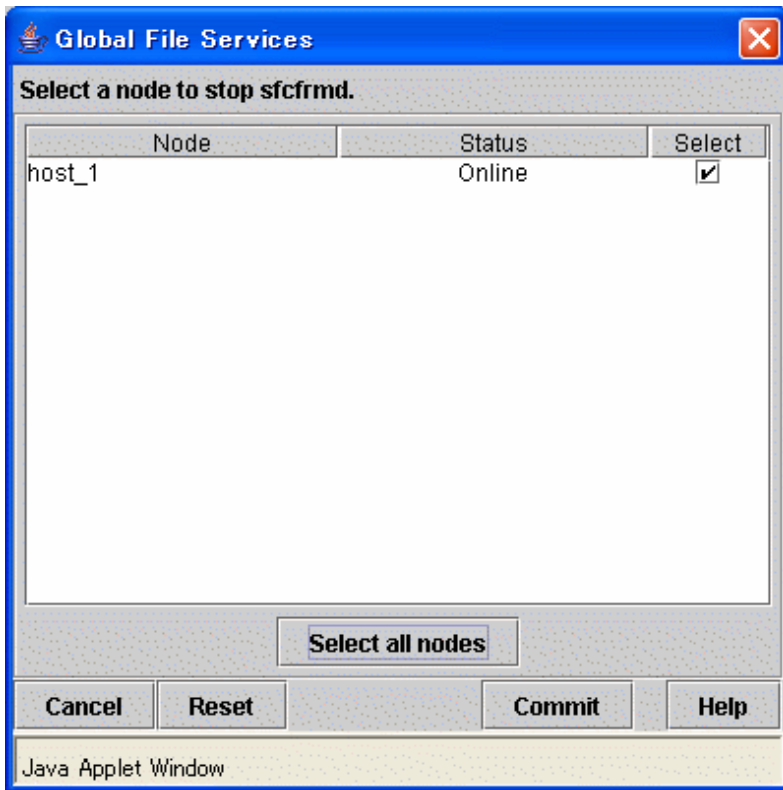
If node configuration information is added to management partition without stopping sfcfrmd daemon, sfcfrmd daemon under running is stopped automatically under processing of adding node configuration information to management partition.

Figure 8.5 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.

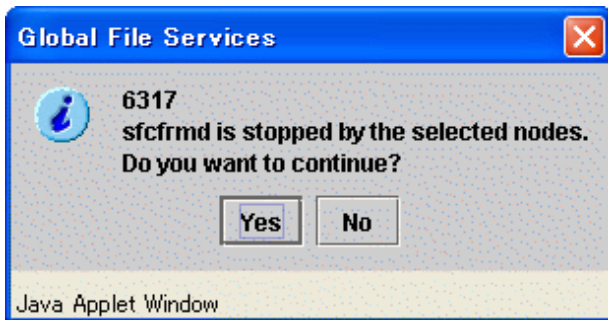


If you click the <Select all nodes> button, all the nodes will be checked.

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

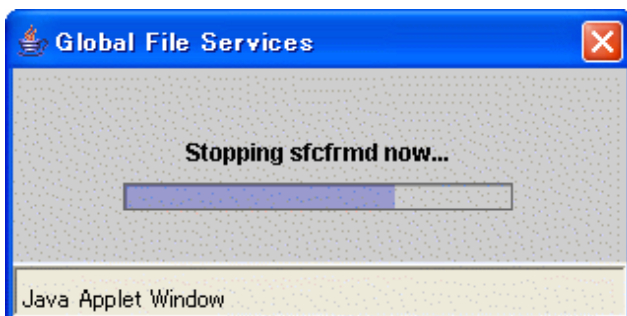
To cancel stopping sfcfrmd daemon, click the <Cancel> button.

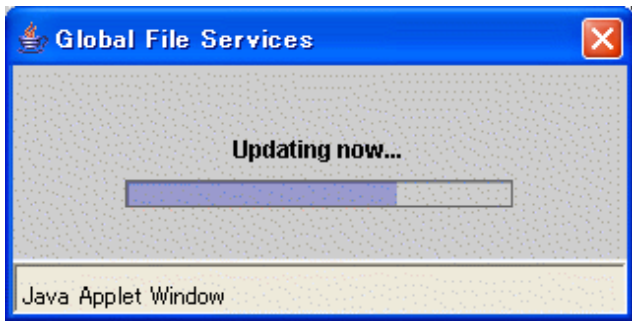
When you click <Commit> button, the following messages will be displayed.



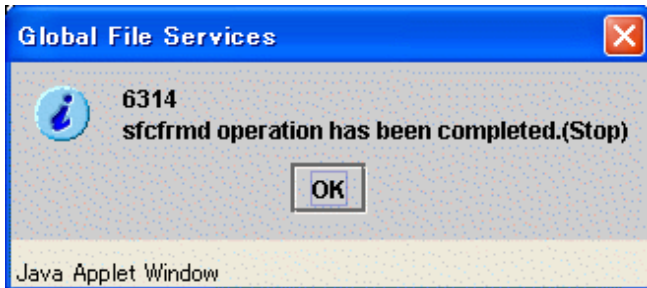
Processing will be interrupted, if you click the <No> button of the displayed message.

Stopping sfcfrmd daemon is started, if you click <Yes> button. It cannot be interrupted after stopping sfcfrmd daemon is started.





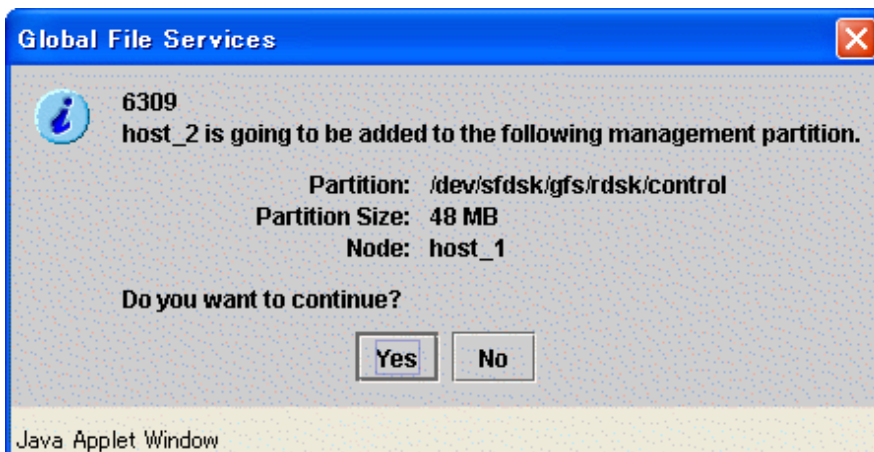
The following message appears and stopping sfcfrmd daemon is completed.



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.

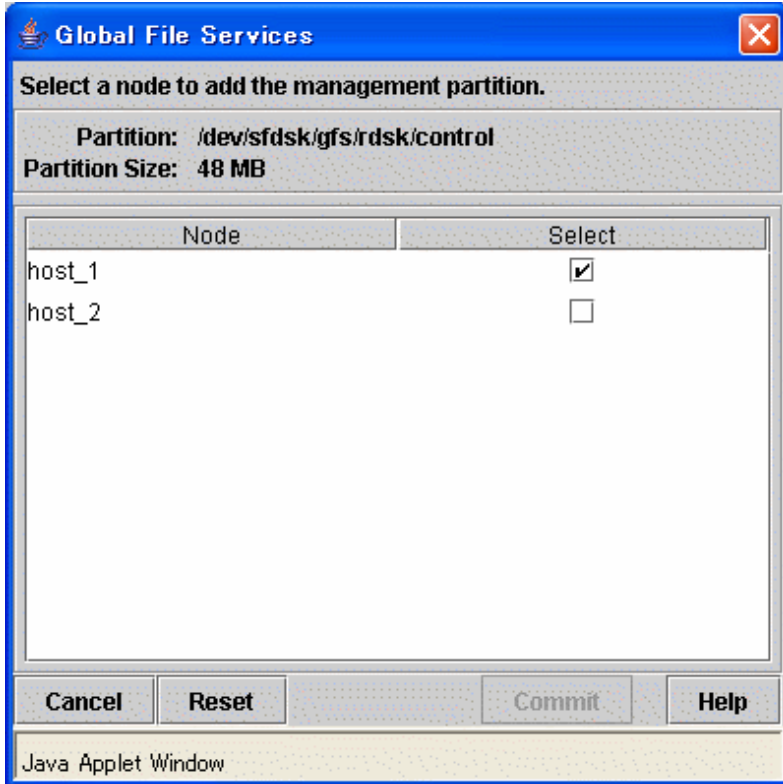


Processing will be interrupted, if you click the <No> button of the displayed message.

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 8.6 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.

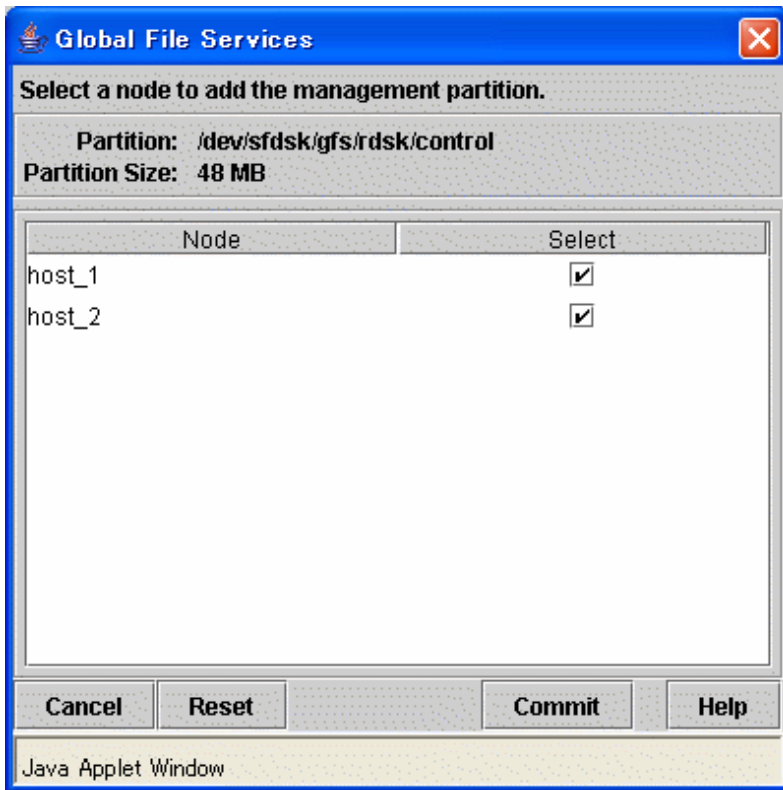
- When the node which is already registered into the management partition is selected as a connecting node in [Select Node] screen appearing at the time of starting the GFS Management View.

[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.

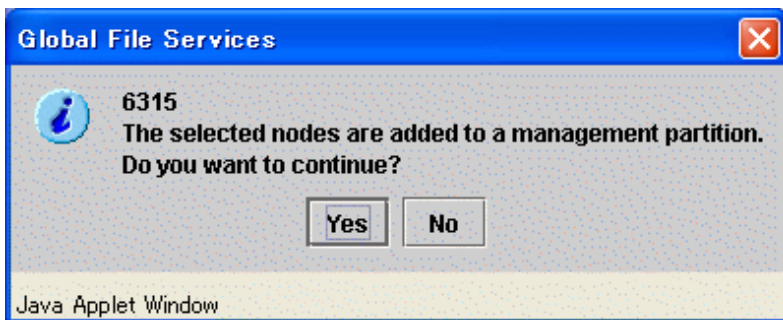
If [Select] of node added to management partition is selected with the check mark, it becomes possible to click the <Commit> button.



To stop to add nodes to the management partition, click the <Cancel> button.

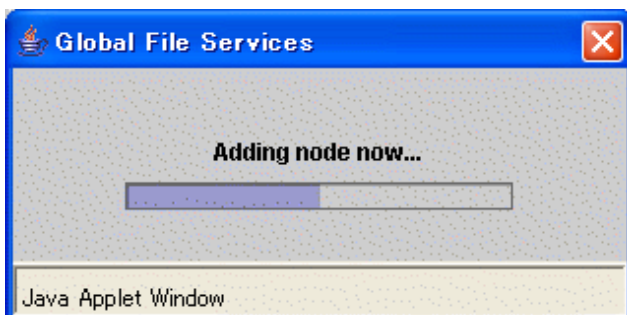
To restore the selection state to the default value, click the <Reset> button.

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

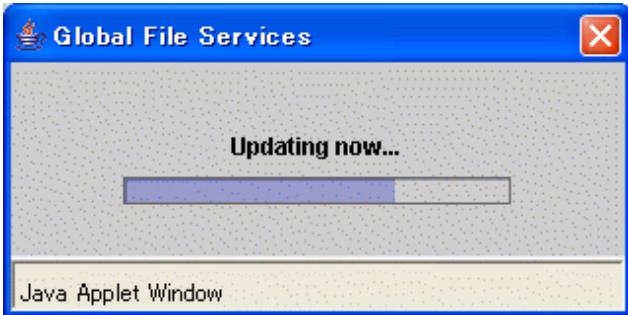
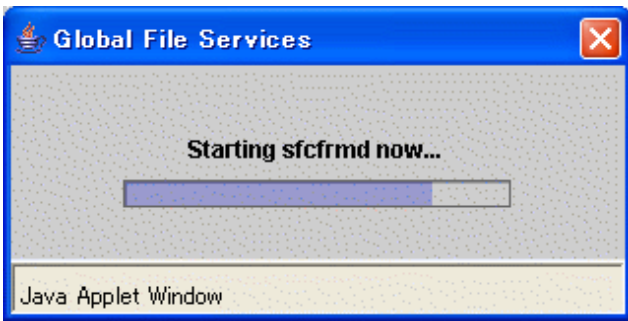


Processing will be interrupted, if you click the <No> button of the displayed message.

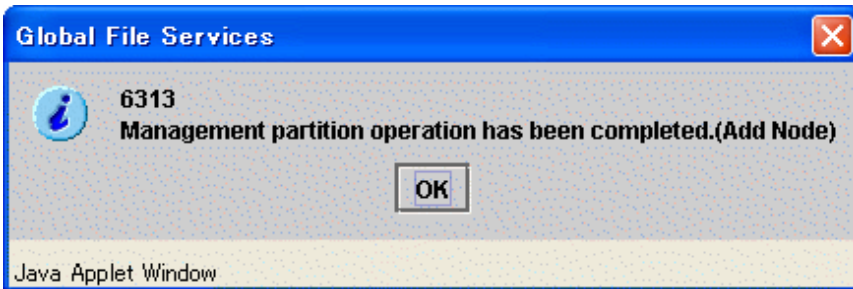
Adding node to management partition is started, if you click <Yes> button. It cannot be interrupted after adding node to management partition is started.



sfcfrmd 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 sfcfrmd daemon

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

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

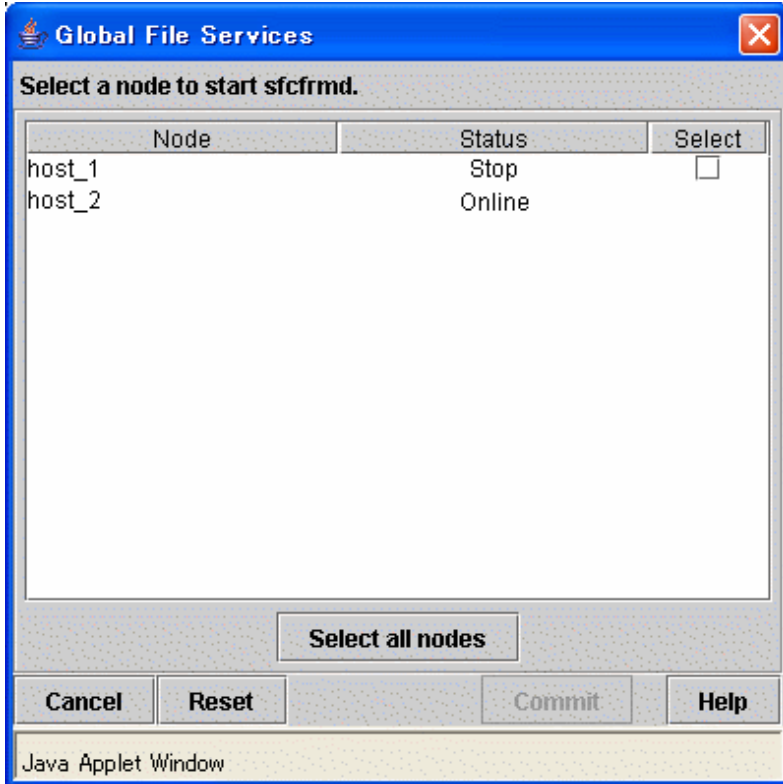
Note

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

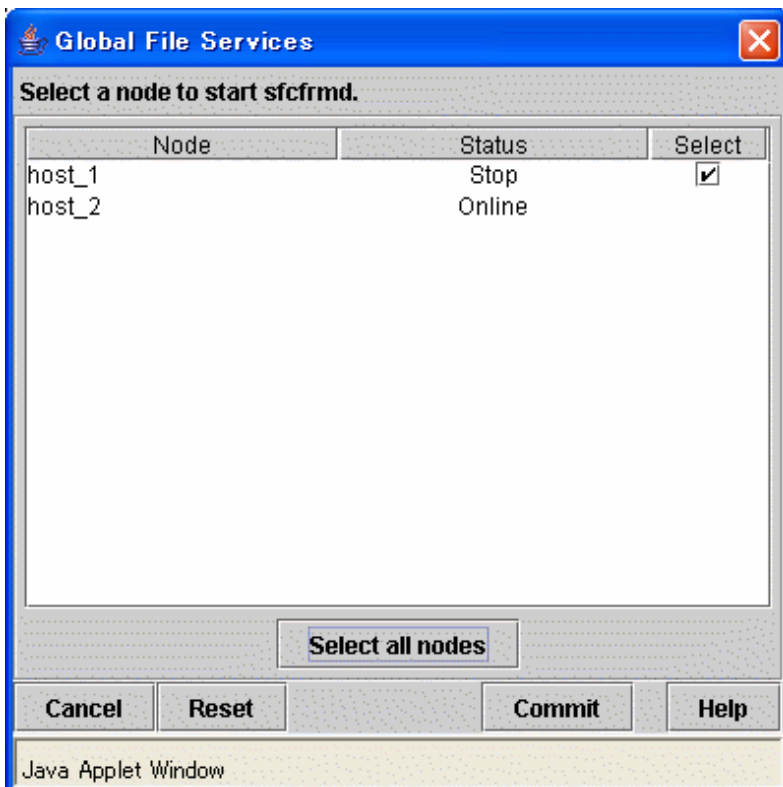
Only when you stop sfcfrmd daemon manually before adding the node configuration information to management partition, start sfcfrmd daemon.

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

Figure 8.7 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.

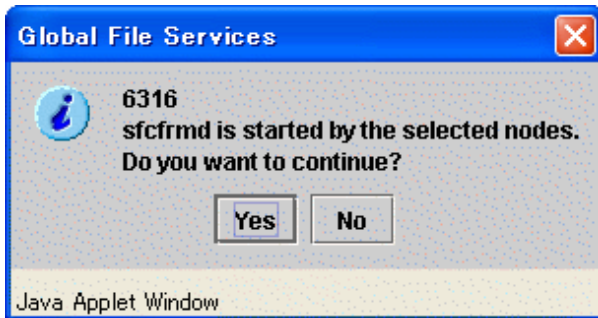


If you click the <Select all nodes> button, all the nodes will be checked.

To cancel starting sfcfrmd daemon, click the <Cancel> button.

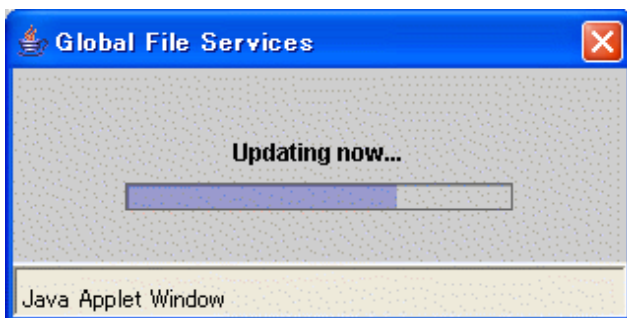
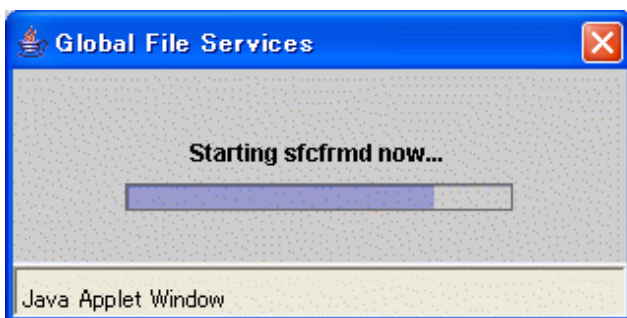
To restore the selection state to the default value, click the <Reset> button.

When you click <Commit> button, the following messages will be displayed.

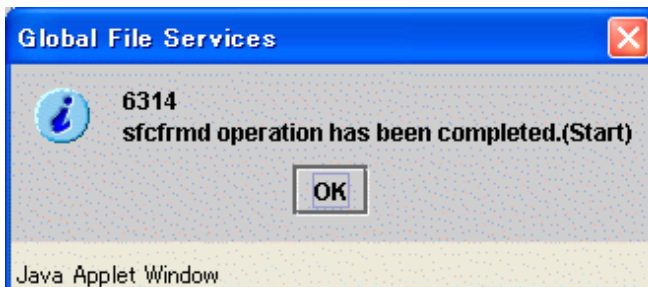


Processing will be interrupted, if you click the <No> button of the displayed message.

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



For details on each function, see the following:

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

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

- "Chapter 11 File System Operations (Command)"
- "Chapter 10 File System Operations (GUI)"

9.1 Flow of Operations

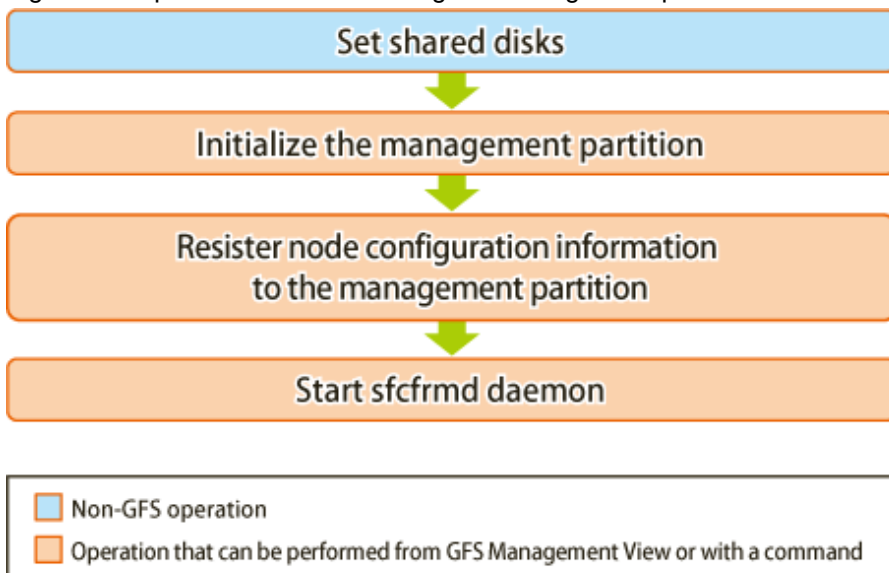
This section describes the flow of operations in **management partition**.

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 9.1 Operation flow for creating the management partition



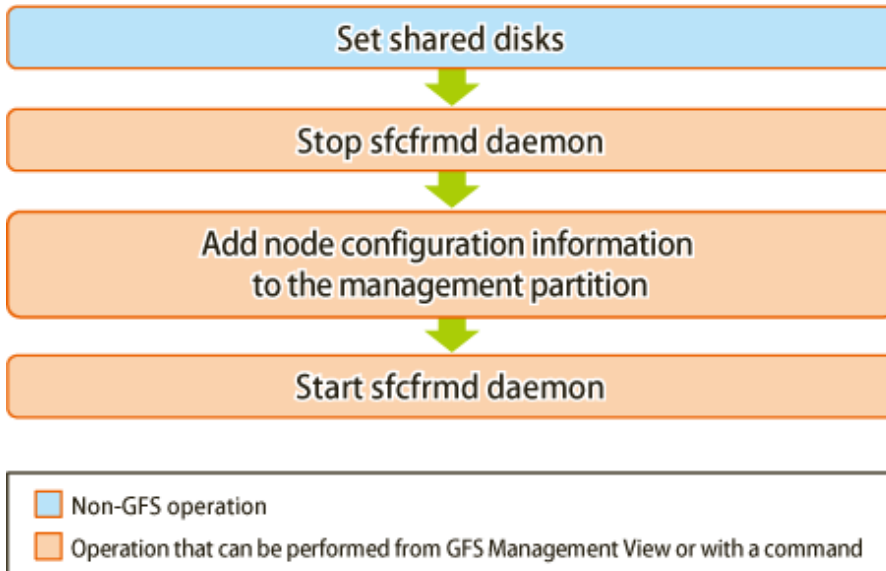
GFS : Global File Services

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



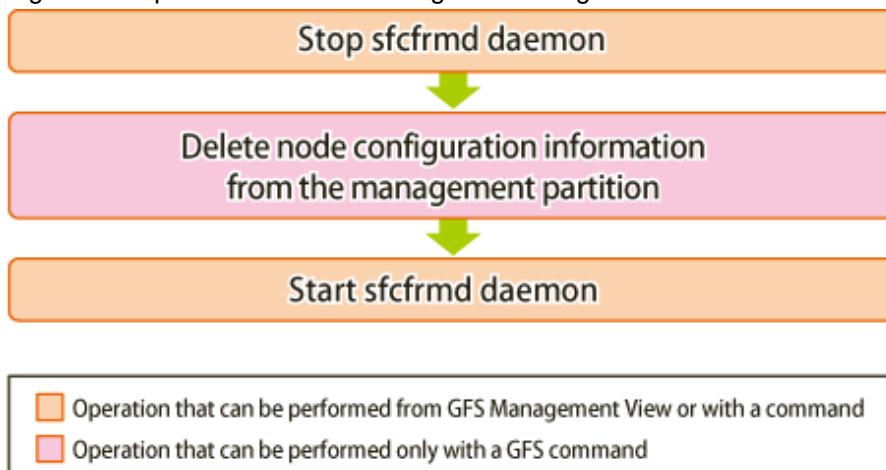
GFS : Global File Services

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 9.3 Operation flow for deleting node configuration information from the management partition



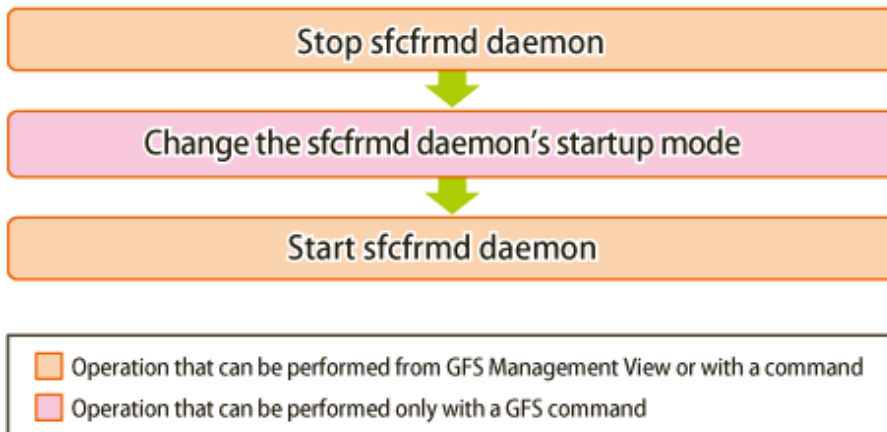
GFS : Global File Services

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



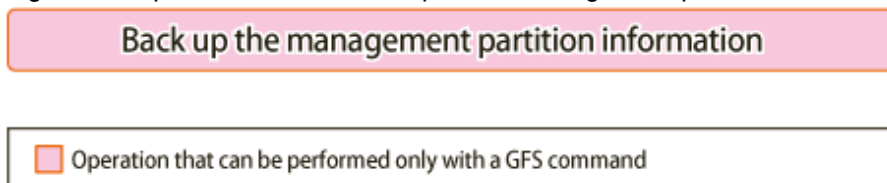
GFS : Global File Services

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 9.5 Operation flow for backup of the management partition information



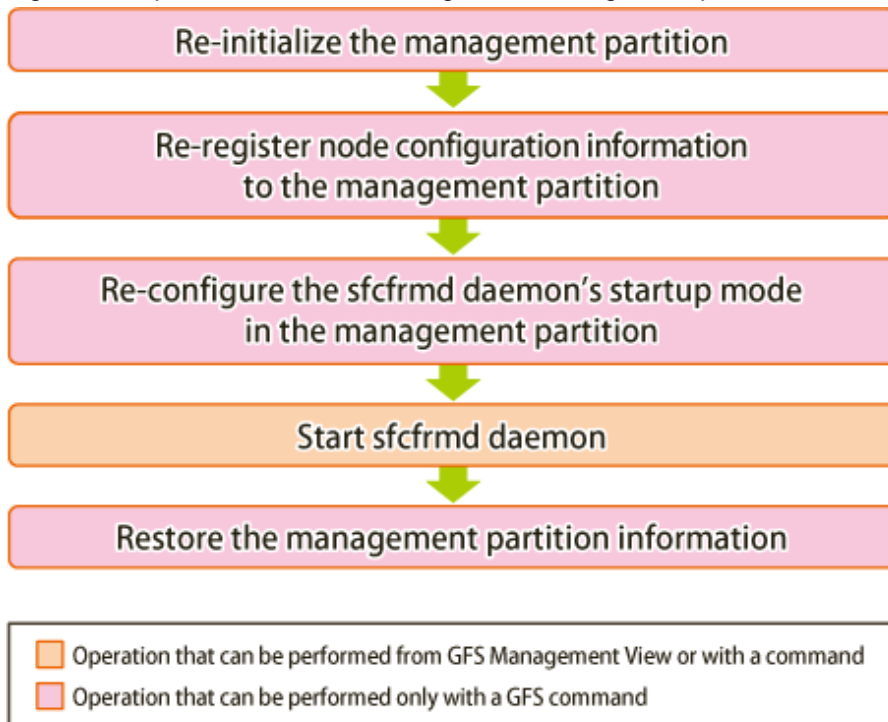
GFS : Global File Services

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 9.6 Operation flow for restoring of the management partition information



GFS : Global File Services

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.3.3 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(1M)` command with the `-c` option to initializing the management partition.



See

For details on **sfcsetup**(1M), see [sfcsetup\(1M\)](#).



Note

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

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

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



Note

Initialization of a management partition sets the **sfcfrmd** daemon's startup mode to **wait**. Use the **sfcsetup**(1M) 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(1M) 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/rdsk/control <Enter>
```


2. The path name of the management partition that has been set up can be confirmed by specifying the **-p** option for the **sfcsetup(1M)** command.

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

3. Registered node configuration information can be confirmed by executing **sfcsetup(1M)** with no option specified.

```
# sfcsetup <Enter>
HOSTID      CIPNAME      MP_PATH
80380000    sunnyRMS     yes
80380001    moonyRMS     yes
```

9.2.4 Starting sfcfrmd daemon

The sfcfrmd daemon is started by all nodes so that operation may begin. Use the **sfcfrmdstart(1M)** command to start sfcfrmd daemon.



See

For details on **sfcfrmdstart(1M)**, see [sfcfrmdstart\(1M\)](#).



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.

```
# sfcfrmdstart <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.3.3 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**(1M) to stop sfcfrmd daemon.



See

For details on **sfcfrmdstop**(1M), see [sfcfrmdstop\(1M\)](#).



Note

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

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

```
# sfcfrmdstop <Enter>
```

9.3.3 Adding node configuration information to the management partition

sfcsetup(1M) 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/rdsk/control <Enter>
```

2. The path name of the management partition that has been set up can be confirmed by specifying the **-p** option for the **sfcsetup**(1M) command.

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

3. Added node configuration information can be confirmed by executing **sfcsetup**(1M) with no option specified.

```
# sfcsetup <Enter>
HOSTID      CIPNAME      MP_PATH
80380000    sunnyRMS     yes
80380001    moonyRMS     yes
```

9.3.4 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".

9.4 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

When you delete node configuration information from the management partition, you will execute **sfcsetup(1M)** with -d option. As a result, it is deleted node information that executed **sfcsetup(1M)**, from the management partition. And it is deleted the management partition from executed sfcsetup(1M) node.



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 that includes the shared node to be deleted does not exist.
-

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, sfcnsd, 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 by 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 by 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), the default is "**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 by the GUI after stopping CF on all the nodes, see "[12.6 How to start up CF by the GUI when a GFS Shared File System is used.](#)"



Information

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.



See

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 back up the management partition information.

9.6.1 Backup of the management partition information

Use the **sfcgetconf**(1M) 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>
```



For details on **sfcgetconf**(1M), see **sfcgetconf**(1M).



To back up management partition information with **sfcgetconf**(1M), the sfcfrmd demon should be operating by the execution node. If sfcfrmd daemon is not operating, start it by using **sfcfrmdstart**(1M). For details, see "9.2.4 Starting sfcfrmd daemon".

Make a backup of the management partition information, after changing the configuration of the file system by **mkfs_sfcfs**(1M), **sfcadd**(1M), **sfcadm**(1M), **sfcnode**(1M).

sfcgetconf(1M) 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_
# Sat Feb 18 09:08:06 2012

#---- fsid : 1 ----
# MDS primary   (port) : host1 (sfcfs-1)
# MDS secondary (port) : host2 (sfcfs-1)
# MDS other      :
# AC             : host1,host2
# options       :
# device        : /dev/sfdsk/gfs01/rdsk/volume01
sfcadm -m host1,host2 -g host1,host2 -p sfcfs-1,sfcfs-1 /dev/sfdsk/gfs01/rdsk/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.



.....
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.



.....
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.



.....
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.
.....



.....
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.



.....
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**(1M) 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 "Chapter 11 File System Operations (Command)". For details about command operation, see "Chapter 11 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:

- "Chapter 5 Management Partition"

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

- "Chapter 8 Management Partition Operations (GUI)"
- "Chapter 9 Management Partition Operations (Command)"

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

- "Chapter 12 File System Management"

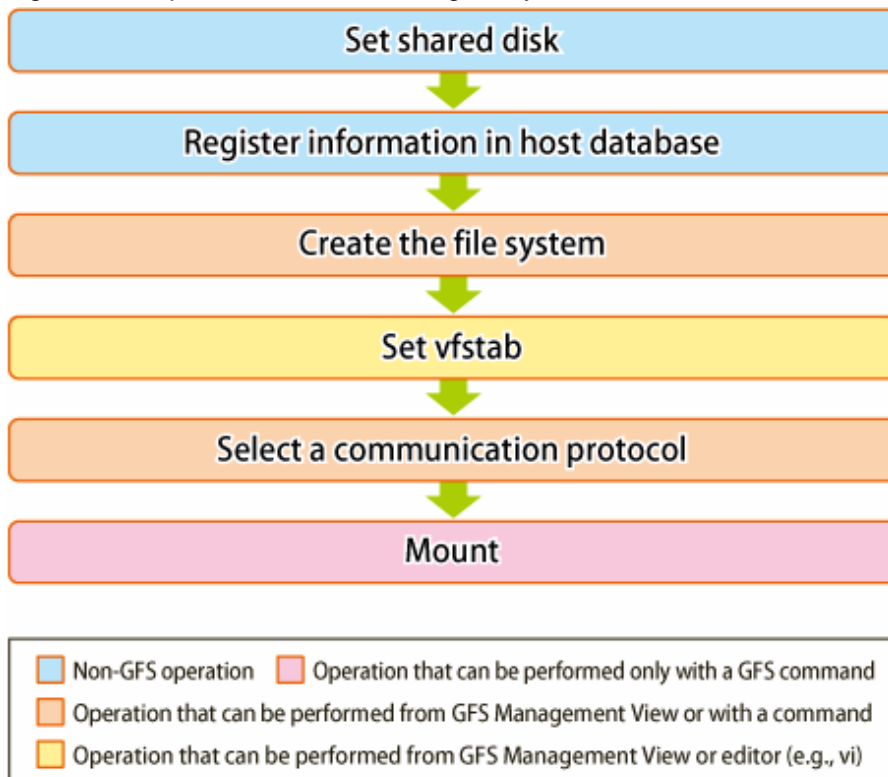
10.1 Flow of Operations

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 10.1 Operation flow for creating file system



GFS : Global File Services



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".

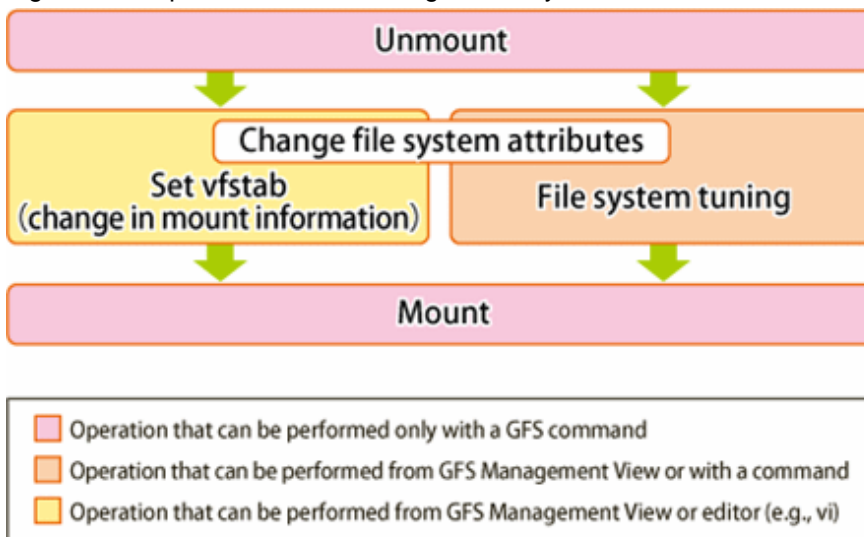
10.1.2 Change (in file system attributes)

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 10.2 Operation flow for change in file system attributes



GFS : Global File Services



See

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

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

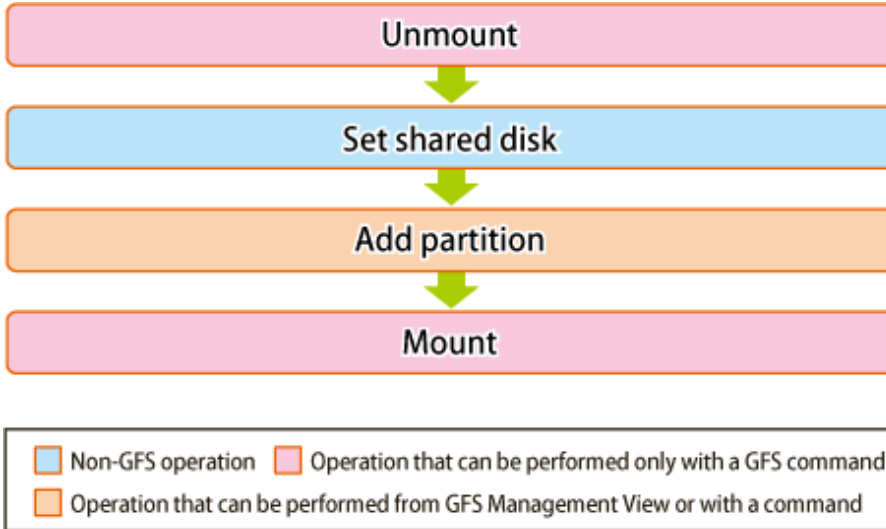
10.1.3 Change (partition addition)

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

- Addition of a file data partition

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

Figure 10.3 Operation flow for partition addition



GFS : Global File Services



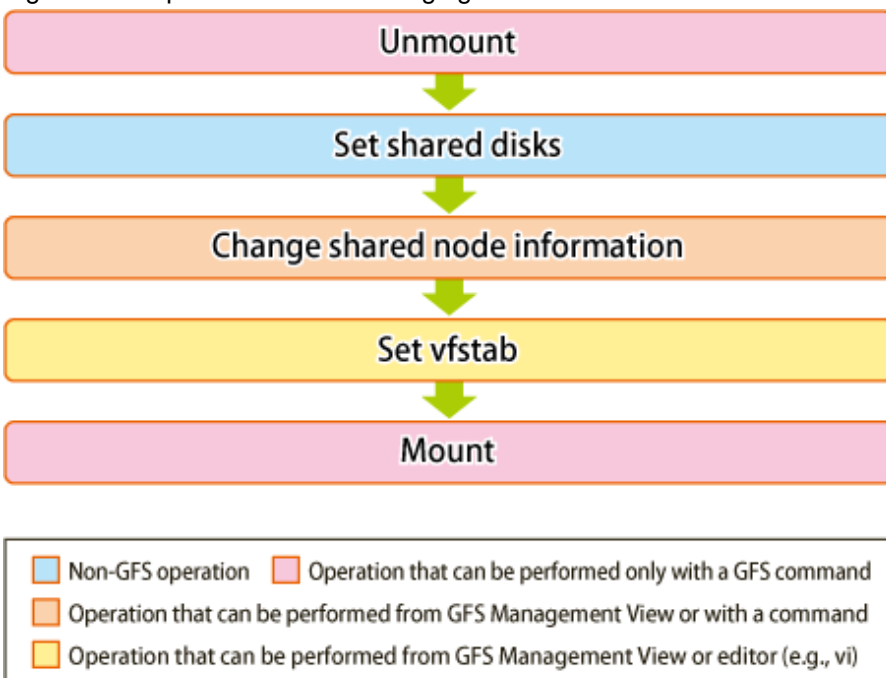
See

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 10.4 Operation flow for changing shared node information



GFS : Global File Services



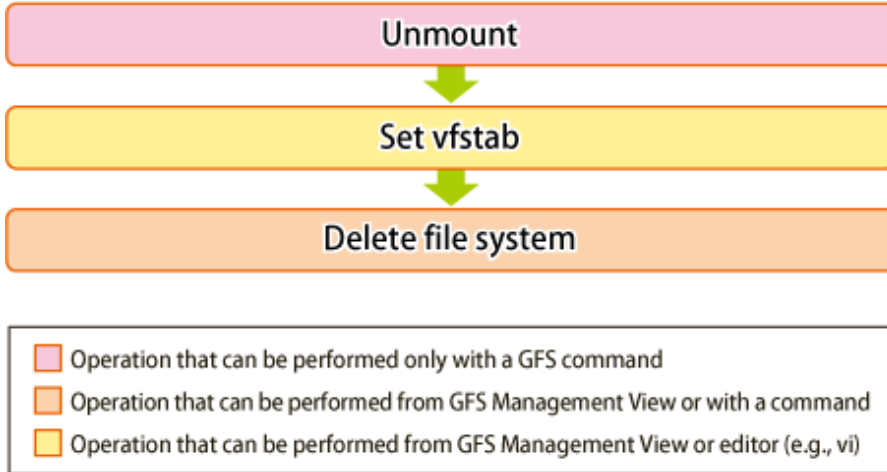
See

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 10.5 Operation flow for deleting a file system



GFS : Global File Services



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 changed on the Management View is updated on the main screen by clicking [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*".

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*".

(2) Registering information in host database

MDS communicates with AC by using the IP address corresponding to the host name of the node that shares the GFS Shared File System. Therefore, the host name of the shared node and the IP address are registered in host database (for example: **/etc/inet/hosts**).

Note

- The IP address type of the shared node needs to match the communication protocol selected in "[\(9\) Selecting a communication protocol](#)." If they are not matched, the GFS Shared File System cannot be mounted.
 - Register the host name of the shared node as the official host name (for **/etc/inet/hosts**, the host name described in the left end).
 - The following two IPv6 address types are available for the GFS Shared File System:
 - Unique Local Unicast Address
 - Global Unicast Address
 - The setting of host database must be the same on all the shared nodes. If it is not, MDS down recovery fails and it may trigger a file system blockade or system panic.
-

See

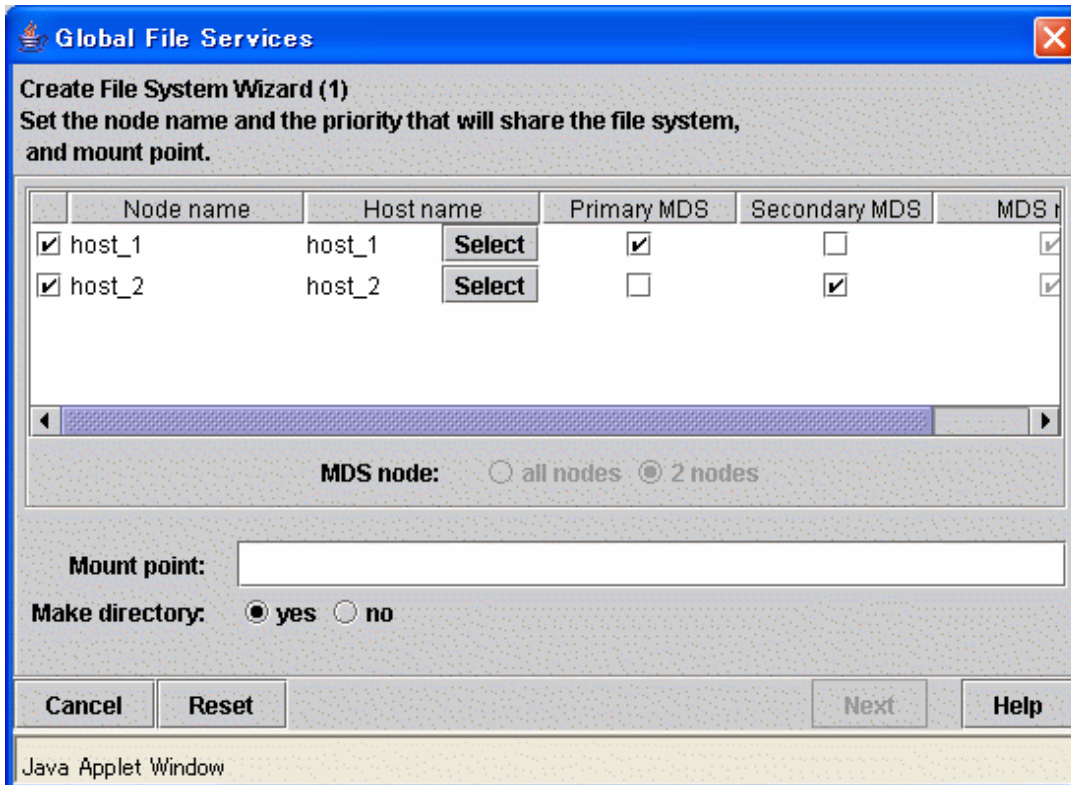
For details on **/etc/inet/hosts**, see **hosts(4)** in the Solaris documentation.

(3) 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 10.6 Create File System Wizard (1)



Selecting node names

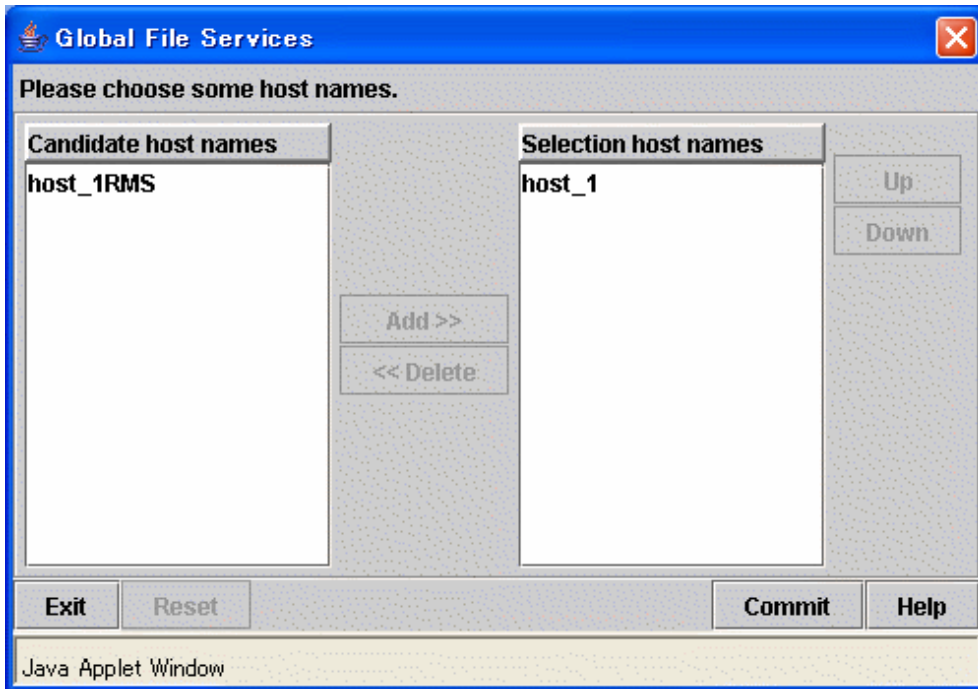
In the [Node name], select the names of the sharing nodes. Be sure to select two nodes.

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 do not click the <Select> button, the displayed host name will be used.

Figure 10.7 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> button 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)".

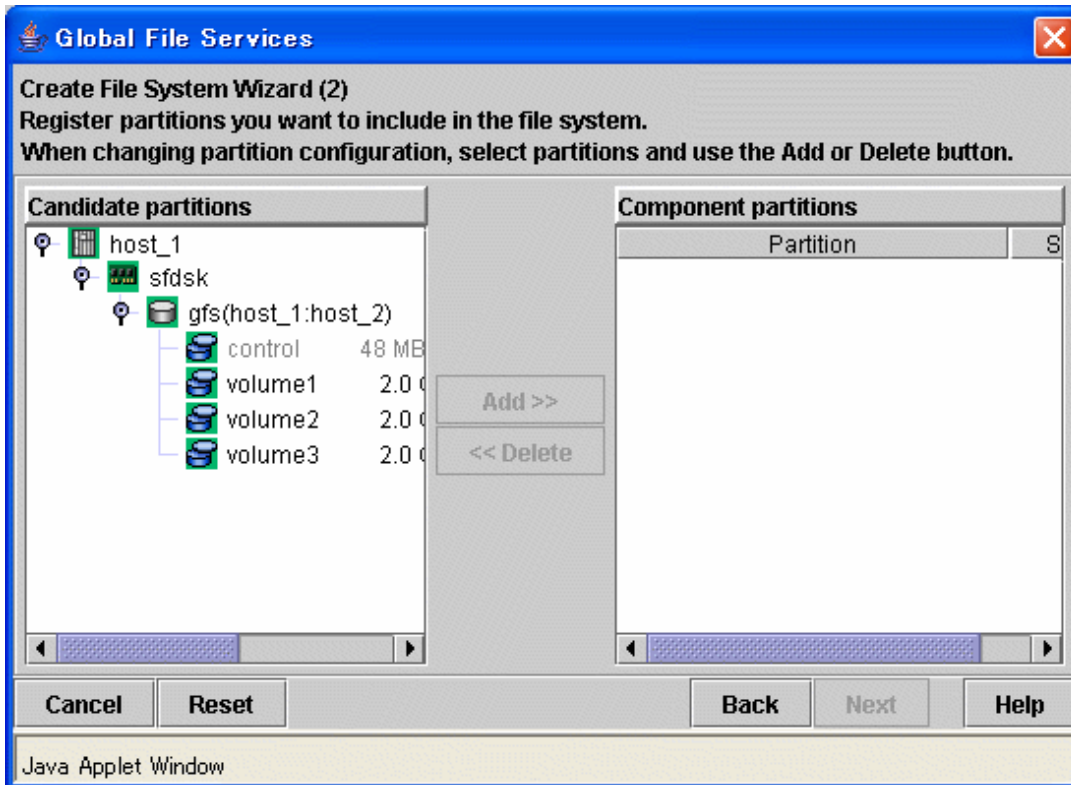
To restore the settings to their default values, click the <Reset> button.

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

(4) 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 10.8 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 cancel all selections of the partition currently displayed on [Component partitions] field, click the <reset> button.

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

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**.

(5) Setting partition information

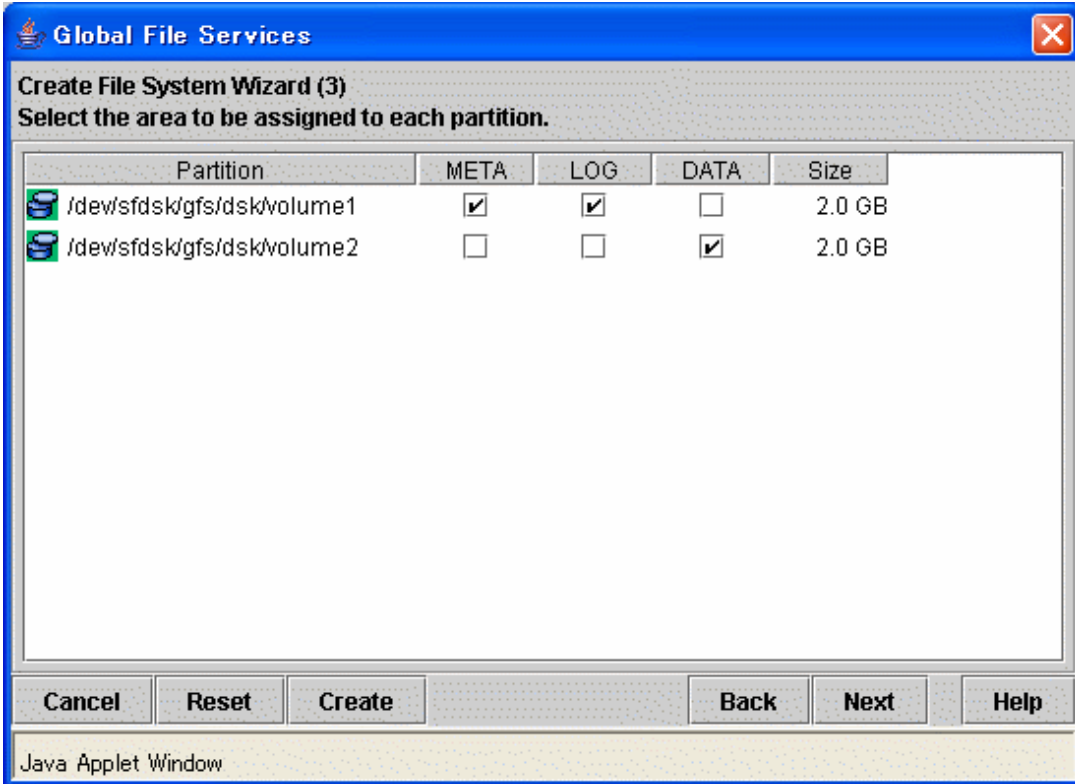
In the [Create File System Wizard (3)] screen, select the area (META/LOG/DATA) to be assigned to each partition selected in the [Create File System Wizard (2)].

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 10.9 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.

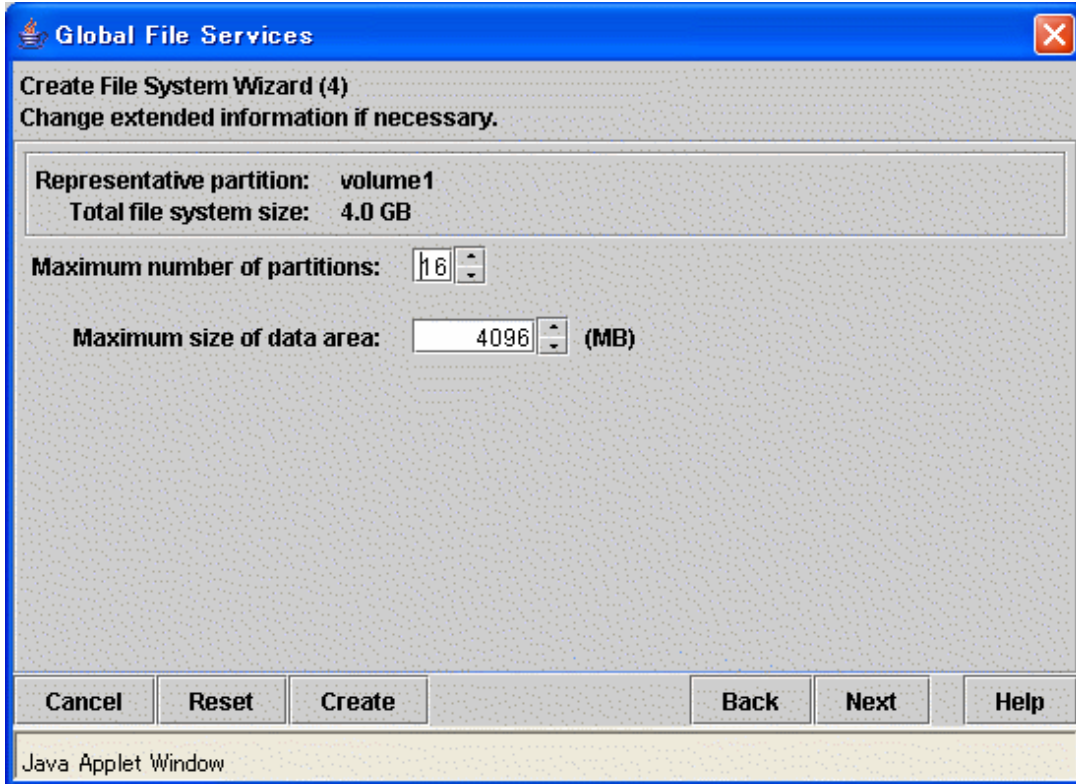
To cancel the file system creation operation, click the <Cancel> button.

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

(6) 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.

Figure 10.10 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 "4.3.5 For future expansion".

See

The above parameter for expansion setup corresponds to specific `mkfs_sfcfs(1M)` options of the GFS Shared File System as follows:

- [Maximum number of partitions]: `maxvol=n`
- [Maximum size of data area]: `maxdsz=n`

For details about the parameters, see `mkfs_sfcfs(1M)`.

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.

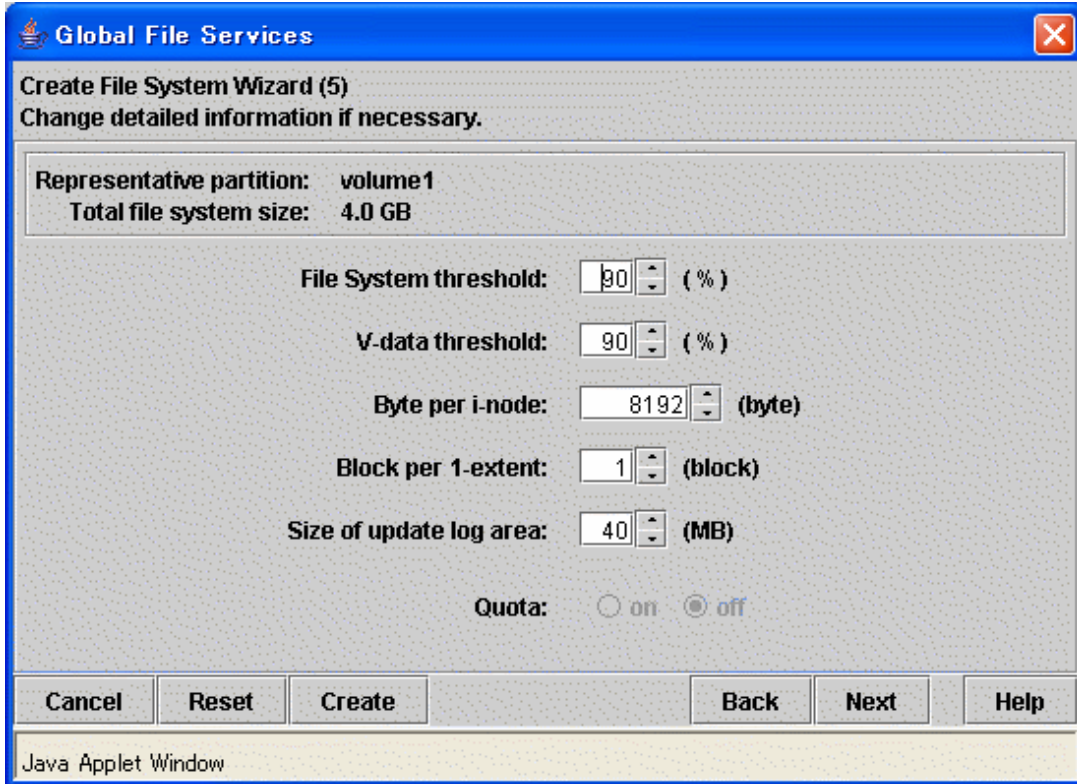
To cancel the file system creation operation, click the <Cancel> button.

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

(7) Setting detailed information

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

Figure 10.11 Create File System Wizard (5)



See

The above parameter for expansion setup corresponds to specific **mkfs_sfcfs(1M)** 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 **mkfs_sfcfs(1M)**.

Note

The [File System threshold] 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 **mkfs_sfcfs(1M)**.

The [V-data threshold] 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 **mkfs_sfcfs(1M)**.

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.

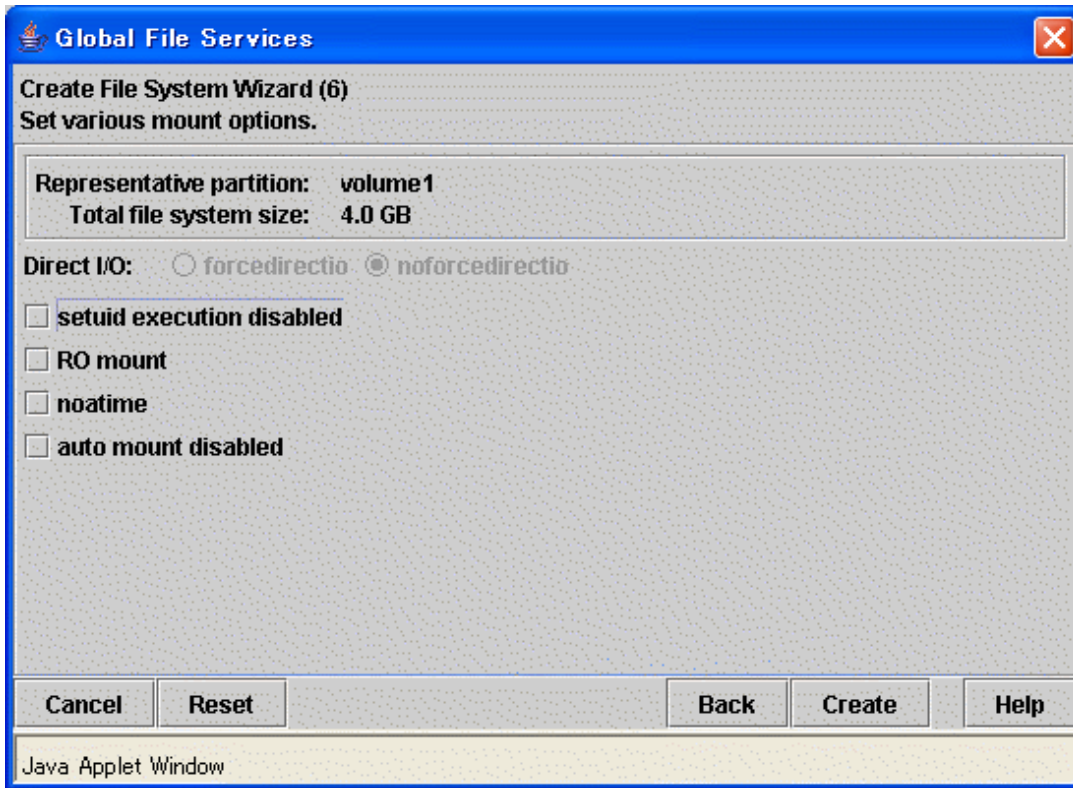
To cancel the file system creation operation, click the <Cancel> button.

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

(8) Setting mount information

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

Figure 10.12 Create File System Wizard (6)



See

The above each mount option corresponds to mount option of **mount_sfdfs(1M)** as follows:

- [setuid execution disabled]: **nosuid**
- [RO mount]: **ro**
- [noatime]: **noatime**
- [auto mount disabled]: **noauto**

For details about the parameters, see [mount_sfdfs\(1M\)](#).

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.

Note

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

(9) Selecting a communication protocol

After completing a file system creation, determine either IPv6 or IPv4 to be used as a communication protocol between MDS and AC.

The default (a communication protocol to be registered when creating a file system) is IPv4.

The setting of a communication protocol is performed in [Detailed information] of the [File System Attributes] screen started by clicking [Change Attributes] on the [Operation] menu of the GFS Management View. When using IPv4, this setting is not required.

Note

- A communication protocol can be set for each file system; however, we recommend that users set the same communication protocol for all the file systems so that it can be easily managed.
- Select the communication protocol that matches the IP address type of the shared node registered in host database in "(2) Registering information in host database." If you have selected a communication protocol that does not match it, the GFS Shared File System cannot be mounted.

See

For details of setting a communication protocol, see "10.3.1 Changing the file system attributes" in this manual.

(10) Mounting the file system

Mount the file system.

See

For information on how to mount the file system using a command, see "11.2.6 Mount".

10.3 Change

The GFS Management View provides three change operations:

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

Note

Note of Operation

- The information changed on the Management View is updated on the main screen by clicking [Update Now] on the [View] drop-down menu.
- If the sfcfs information is not available, the file system cannot be changed. Take action according to the output error message.

10.3.1 Changing the 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 [File system 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 Attributes] 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], 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.

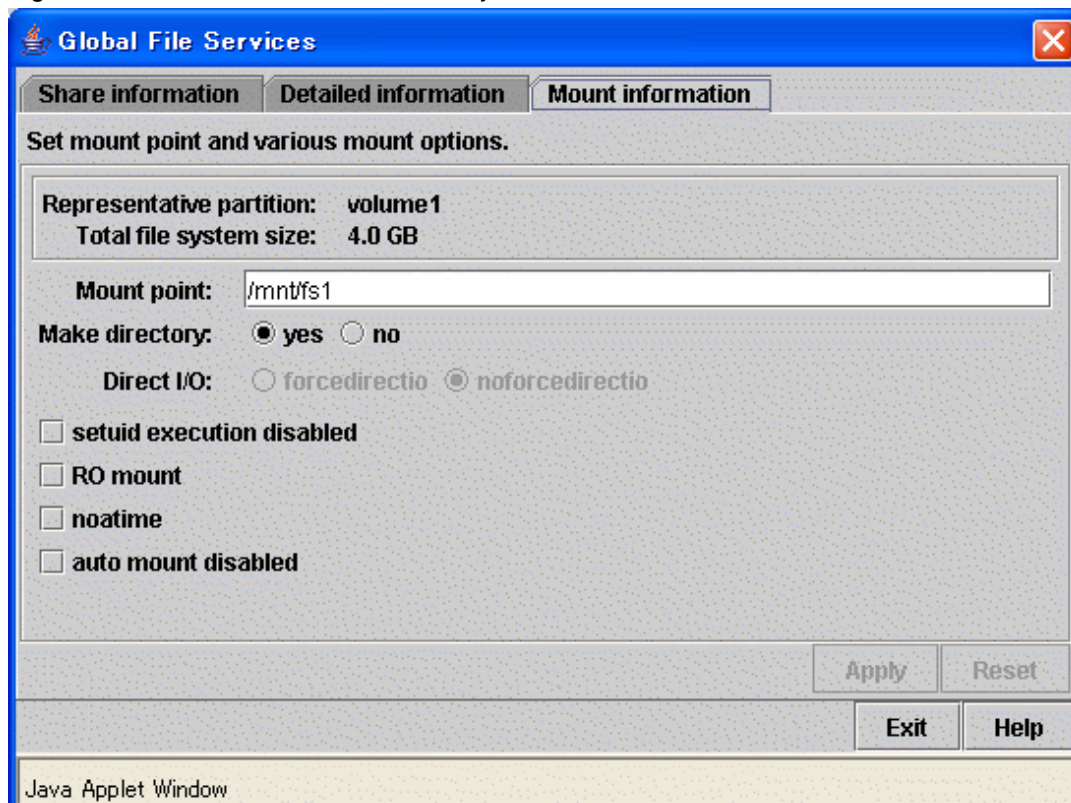
Specify the full path name of a mount point in the [Mount point] field. If [yes] is selected for [Make directory], a directory is created with the following attributes:

Owner: root

Group: sys

Access permissions: 775

Figure 10.13 Mount information for file system attributes





See

The above each mount option corresponds to mount option of **mount_sfcfs(1M)** as follows:

- [setuid execution disabled]: **nosuid**
- [RO mount]: **ro**
- [noatime]: **noatime**
- [auto mount disabled]: **noauto**

For details about the parameters, see [mount_sfcfs\(1M\)](#).



Note

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

(4) Changing detailed information

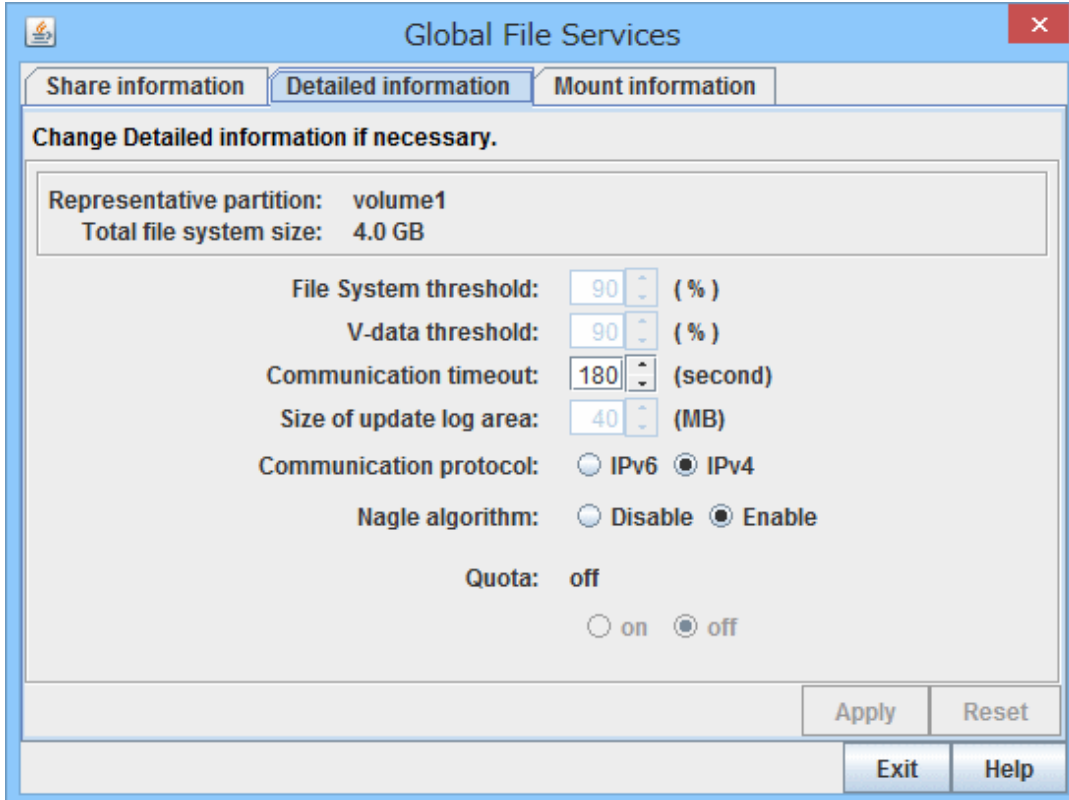
In the [Detailed information], tune the file system

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 10.14 Detailed information for file system attributes





See

The variable parameter of detailed information corresponds to the tuning parameter of the GFS Shared File System as follows:

- [Communication timeout]: **CON_TIMEOUT**
- [Communication protocol]: **SFCFS_IPV6**
- [Nagle algorithm]: **GFS_TCP_NAGLE**

For details about the tuning parameter, see "[14.1.2 Communication timeout value](#)", "[14.1.3 Communication protocol](#)", or "[14.1.4 Enabling and disabling the Nagle algorithm in the communications between MDS and AC](#)" in this manual.

(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 "[11.2.6 Mount](#)".

10.3.2 Changing the file system configuration (partition addition)

This section explains the procedure for adding file data partitions.

You can easily change file system configuration using a wizard.

To start the Change File System Configuration Wizard, click [Change Configuration] 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.

(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)



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".

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".

(3) Selecting a file system

From the [Mount tree] or [File system information] field in the main screen, select the file system to be changed. Only file systems of the **sfdfs** type can be selected.

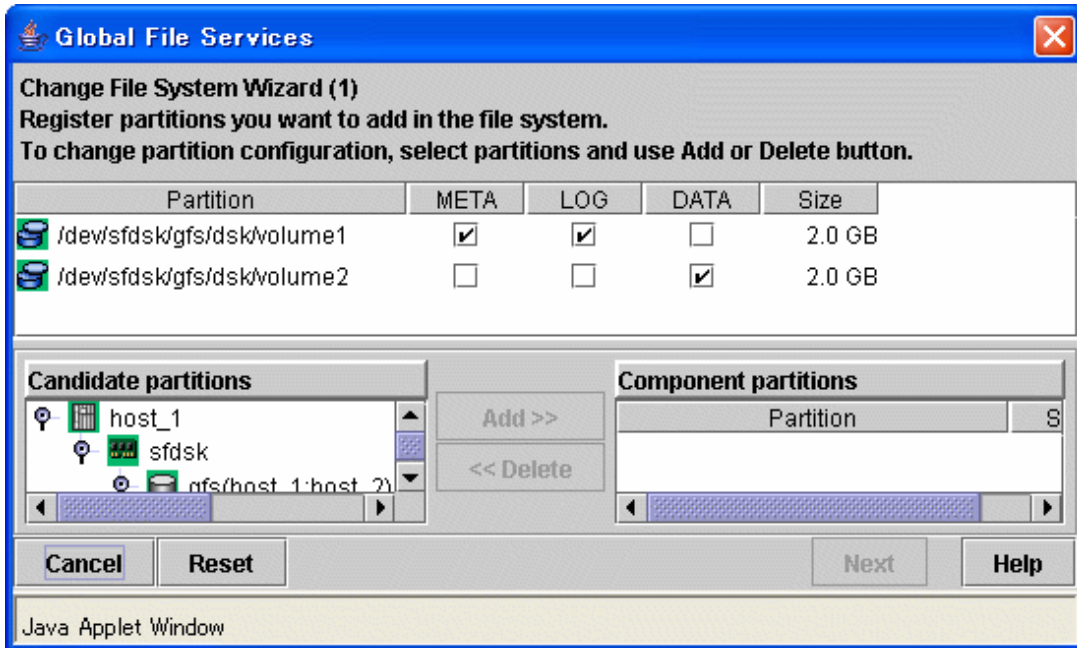
Click [Change Configuration] on the [Operation] menu, the [Change File System Configuration Wizard (1)] screen appears.

(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.

To cancel all selections of the partition currently displayed on [Component partitions] field, click the <reset> button.

Figure 10.15 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.

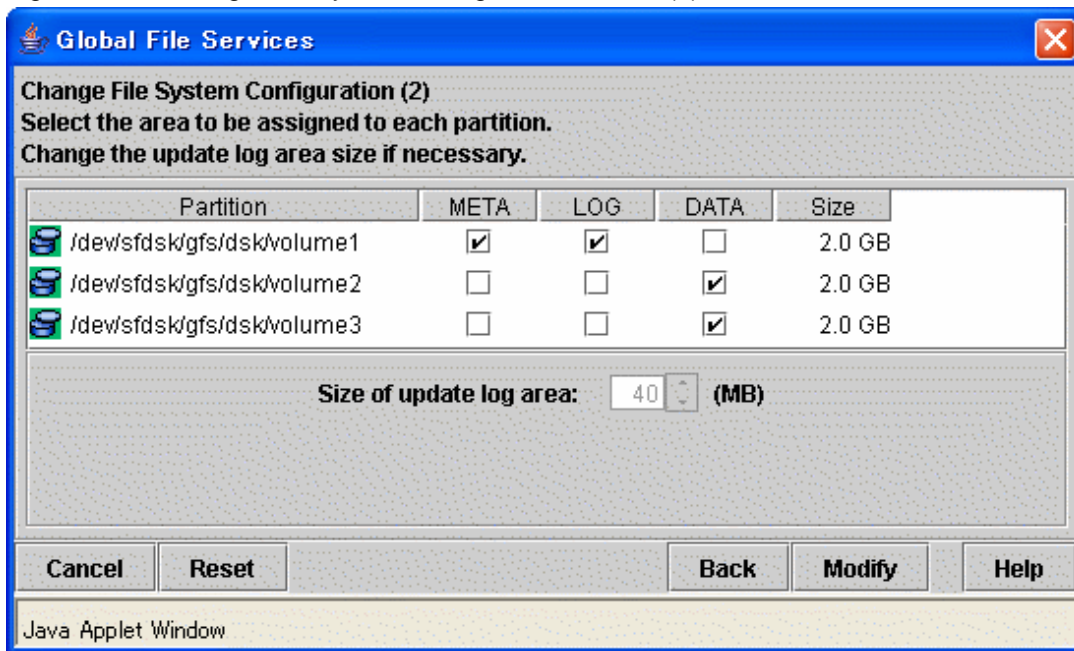
 See

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 10.16 Change File System Configuration Wizard (2)



After confirming the information items, click the <Modify> button 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 "11.2.6 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 [File system 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 go to [Share information] screen using the screen-switching tab.

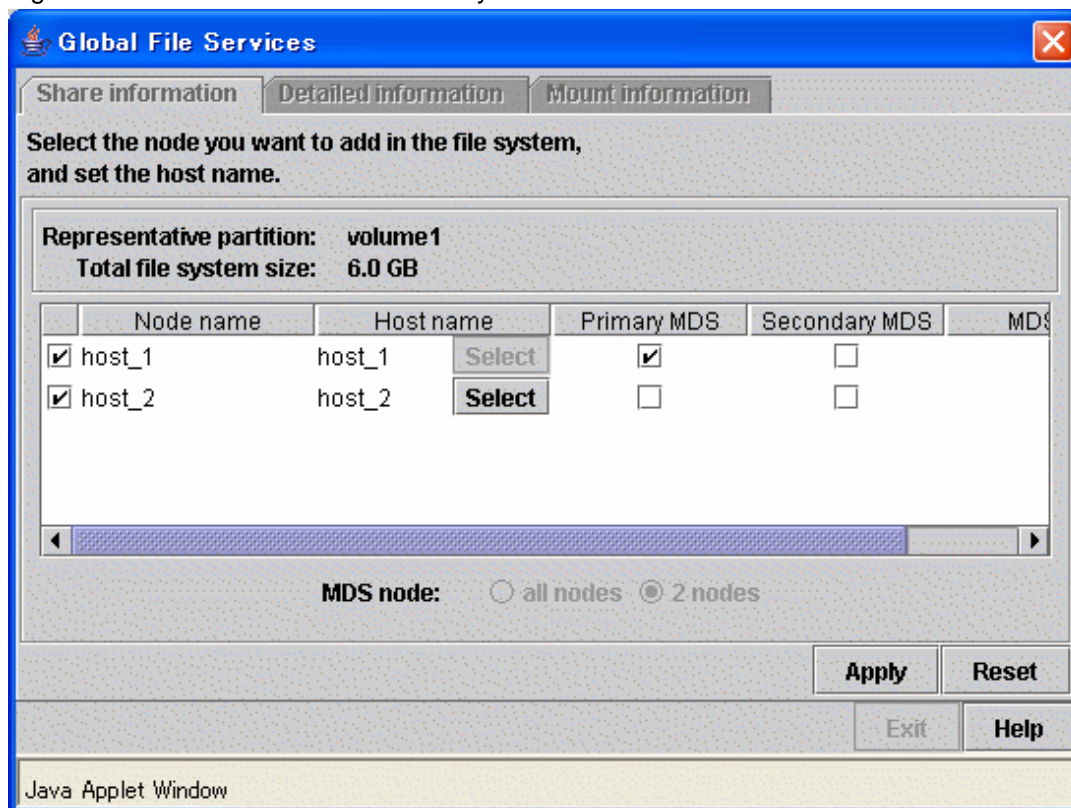
(3) Changing share information

In the [Share information], 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 10.17 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.

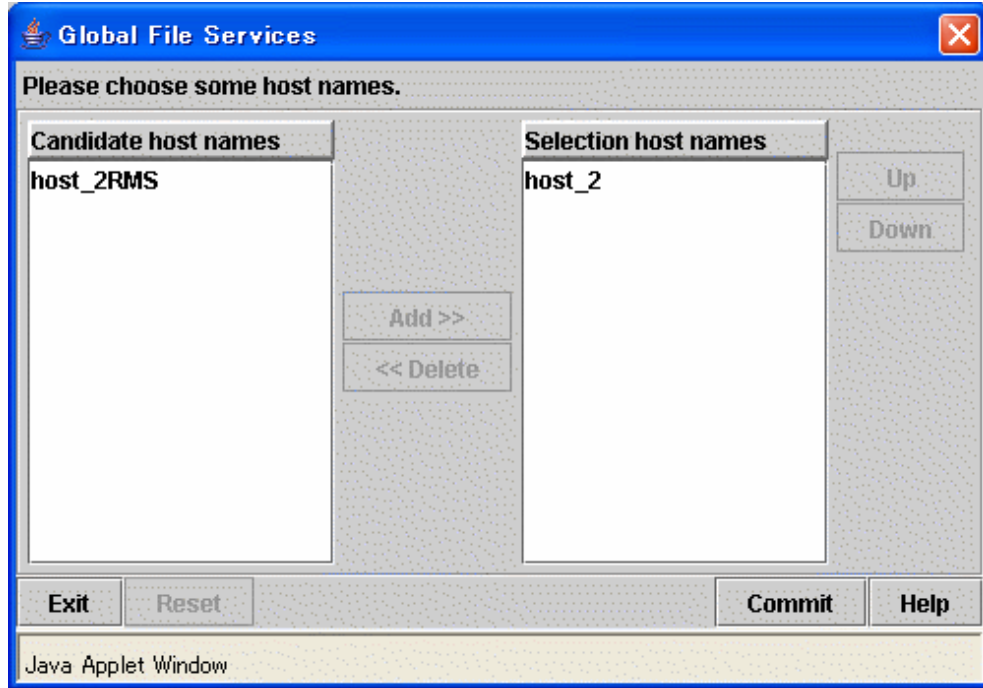
Selecting a host name

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 do not 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 10.18 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.

(4) Confirming the sharing-node information change operation

To execute the sharing-node information change operation, click the <Apply> 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/vfstab`.

(5) Mounting a file system

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

 See

For details about command, see "[11.2.6 Mount](#)".

10.4 Deletion

This section explains how to delete a file system.

 Note

Note of Operation

- The information changed on the Management View is updated on the main screen by clicking [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.

10.4.1 Deleting the file system

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

(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.

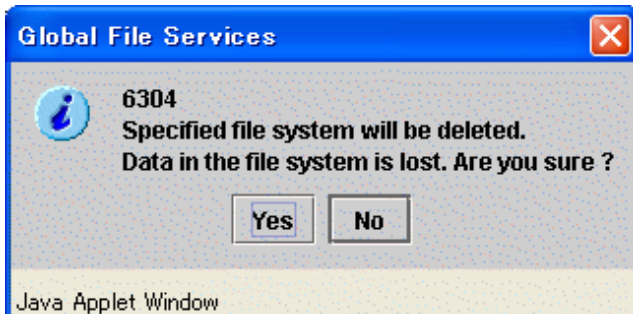
(3) Deleting the file system

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 10.19 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/vfstab`.

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 "[Chapter 10 File System Operations \(GUI\)](#)". For details about GUI operation, see "[Chapter 10 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:

- "[Chapter 5 Management Partition](#)"

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

- "[Chapter 9 Management Partition Operations \(Command\)](#)"
- "[Chapter 8 Management Partition Operations \(GUI\)](#)"

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

- "[Chapter 12 File System Management](#)"

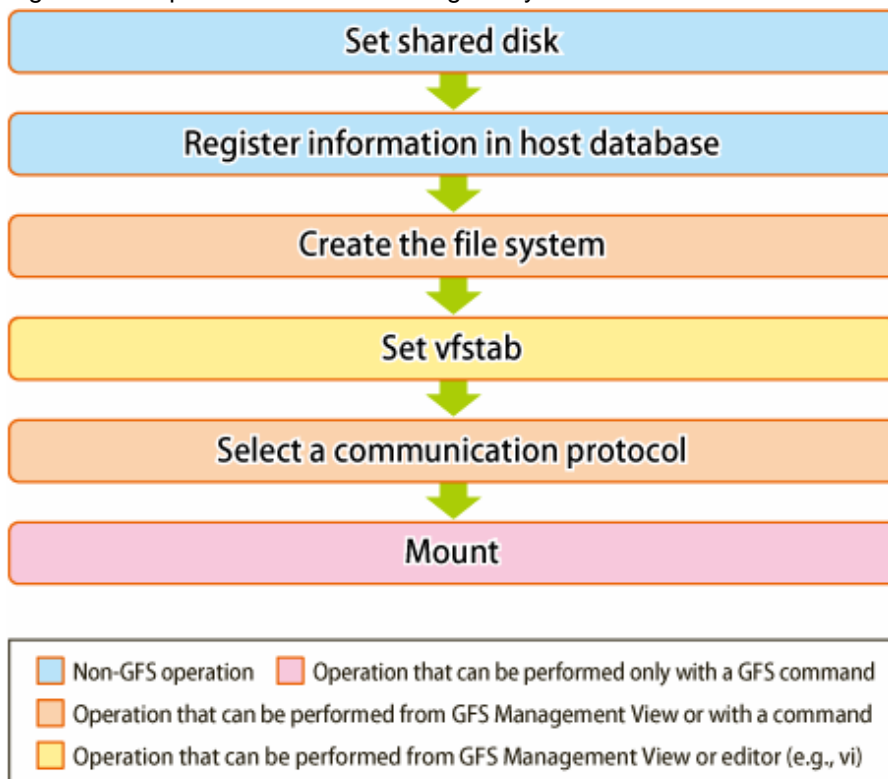
11.1 Flow of Operations

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 11.1 Operation flow for creating file system



GFS : Global File Services



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"

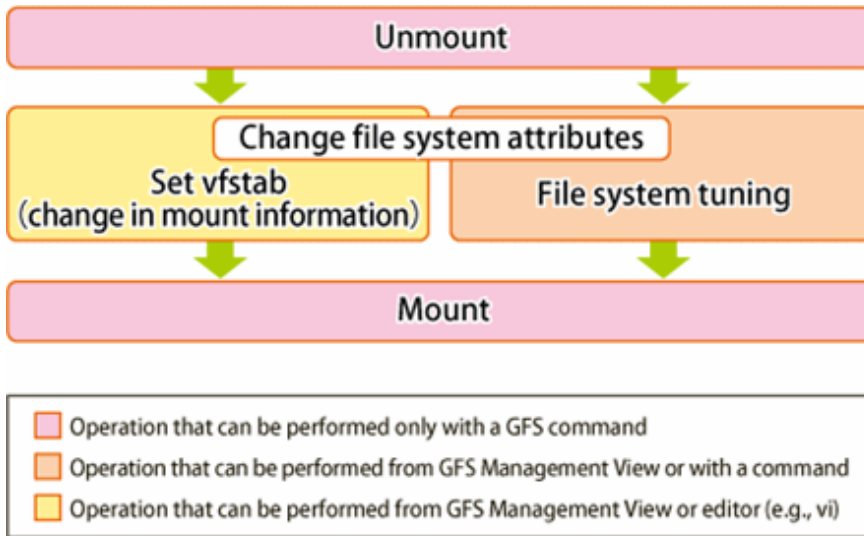
11.1.2 Change (in file system attributes)

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 11.2 Operation flow for change in file system attributes



GFS : Global File Services



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 the file system attributes"

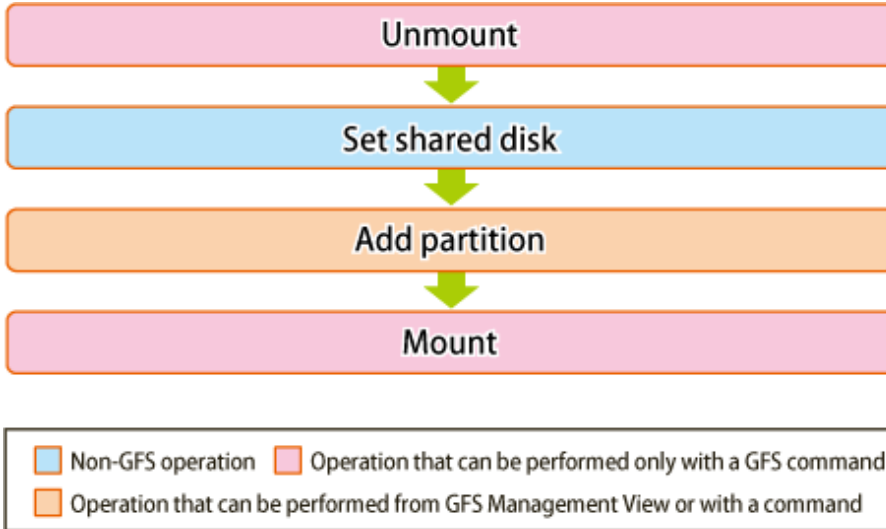
11.1.3 Change (partition addition)

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

- Addition of file data partitions

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

Figure 11.3 Operation flow for partition addition



GFS : Global File Services



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 \(partition addition\)](#)"

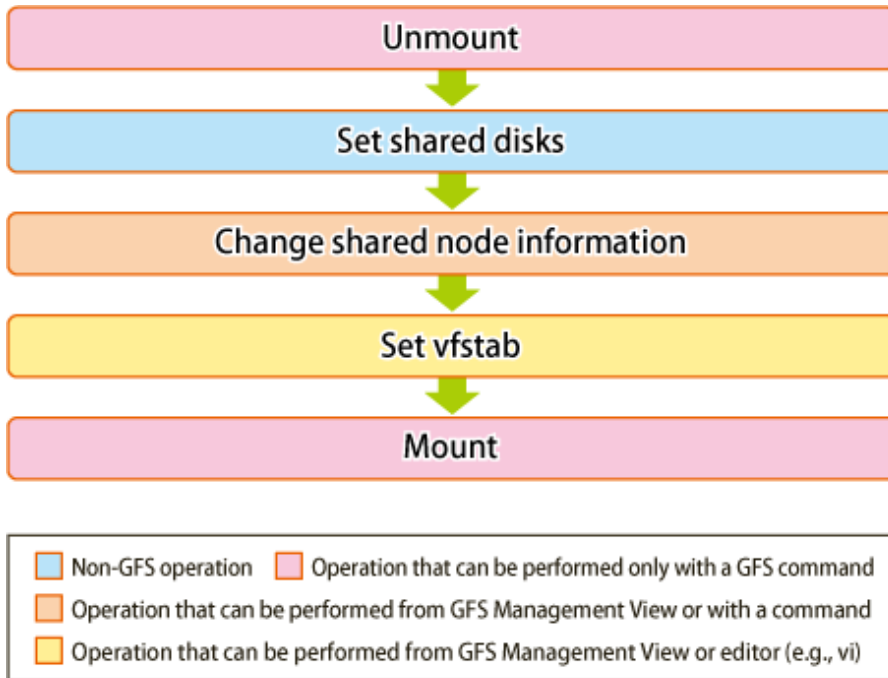
11.1.4 Change (shared node information)

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 11.4 Operation flow for changing the shared node information



GFS : Global File Services

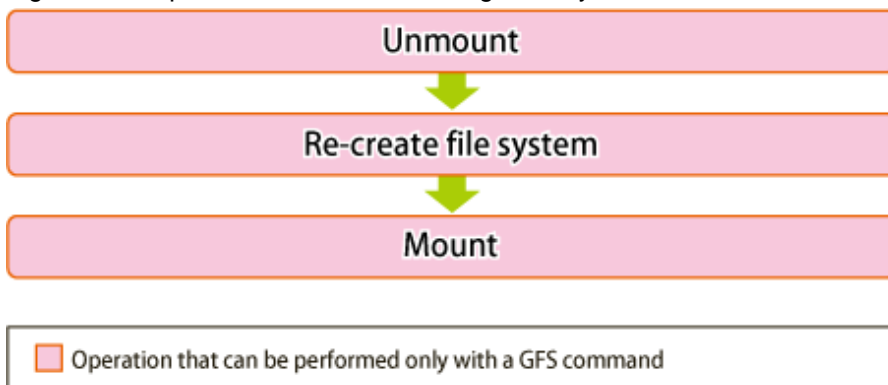
See

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 11.5 Operation flow for re-creating a file system



GFS : Global File Services

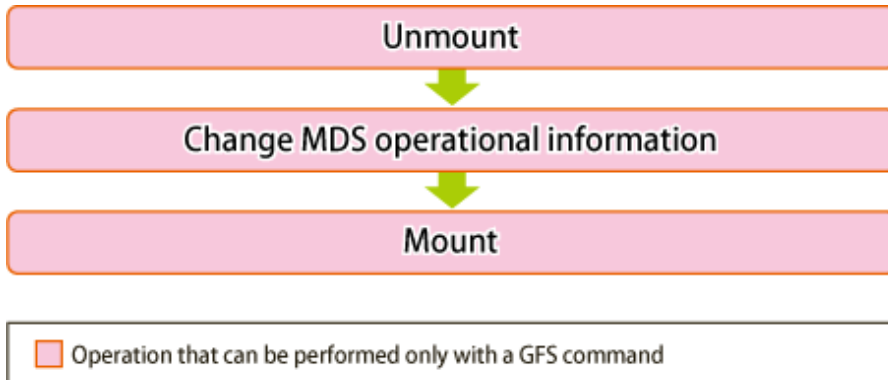
See

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 11.6 Operation flow for changing the MDS operational information



GFS : Global File Services



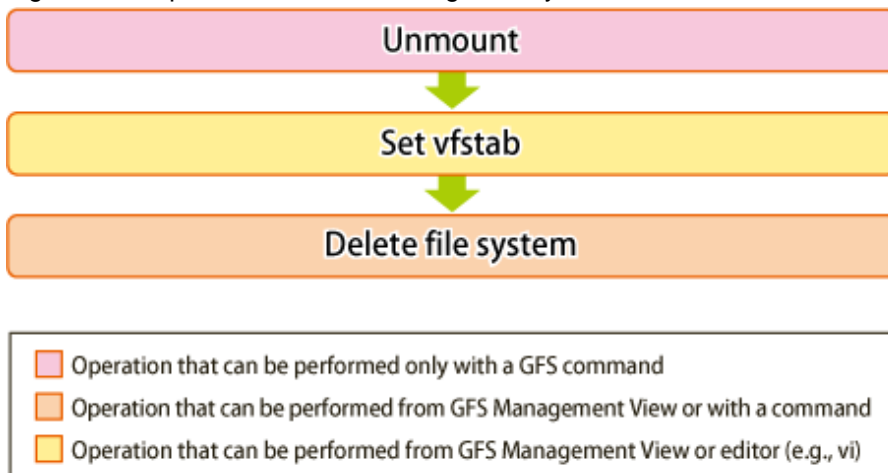
See

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 11.7 Operation flow for deleting a file system



GFS : Global File Services



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 shared disks
2. Registering information in host database
3. Creating a file system
4. Setting **vfstab**
5. Selecting a communication protocol
6. Mount
7. Checking file system status

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.



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)



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*"

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*."

11.2.2 Registering information in host database

MDS communicates with AC by using the IP address corresponding to the host name of the node that shares the GFS Shared File System. Therefore, the host name of the shared node and the IP address are registered in host database (for example: **/etc/inet/hosts**).



- The IP address type of the shared node needs to match the communication protocol selected in "[11.2.5 Selecting a communication protocol](#)." If they are not matched, the GFS Shared File System cannot be mounted.
- Register the host name of the shared node as the official host name (for **/etc/inet/hosts**, the host name described in the left end).
- The following two IPv6 address types are available for the GFS Shared File System:
 - Unique Local Unicast Address
 - Global Unicast Address
- The setting of host database must be the same on all the shared nodes. If it is not, MDS down recovery fails and it may trigger a file system blockade or system panic.



See

For details on `/etc/inet/hosts`, see `hosts(4)` of the Solaris documentation.

11.2.3 Creating a file system

To create a GFS Shared File System, use `mkfs_sfcfs(1M)`. Create the GFS Shared File System on any one of the file system shared nodes.



See

For details on `mkfs_sfcfs(1M)`, see `mkfs_sfcfs(1M)`.

For details on `mkfs(1M)`, see the Solaris documentation.

11.2.3.1 Defaults of parameters used by `mkfs_sfcfs(1M)`

Specifies a value of parameter along use of the file system that decided beforehand as had described in "[Chapter 4 File System Design](#)."

The defaults of parameters used by `mkfs_sfcfs(1M)` are as follows:

Table 11.1 Defaults of parameters used by `mkfs_sfcfs(1M)`

Parameter	Default
Data block size	Always 8192 bytes
Minimum free space (<code>-o free=<i>n</i></code>)	10% of the file data area
Number of i-nodes (<code>-o nbpi=<i>n</i></code>)	One in an 8192-byte disk area Up to 16 mega.
Update log area size (<code>-o logsz=<i>n</i></code>)	1% of the file system size The available range is from 5 megabytes to 50 megabytes.
Meta-data area size (<code>-o metasz=<i>n</i></code>)	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.

11.2.3.2 Examples of creating a representative file system

Examples of creating a typical GFS Shared File System are given below.

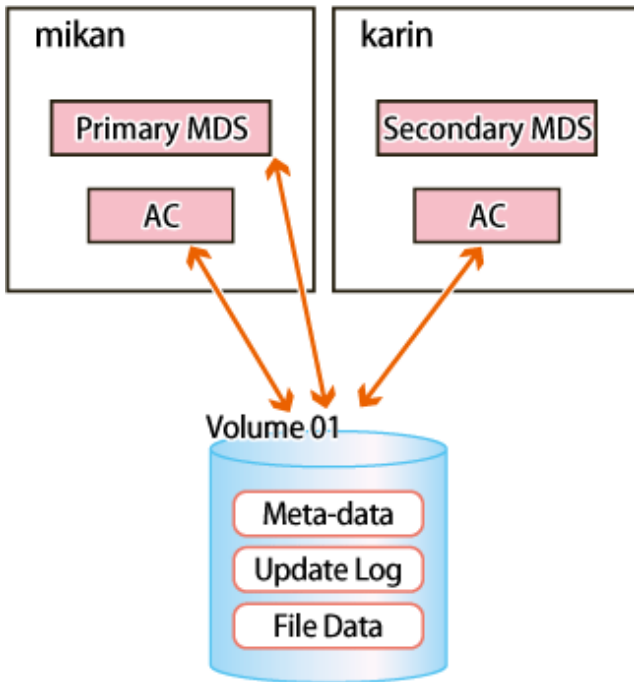
Single partition configuration

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 `mkfs_sfcfs(1M)` to create a file system with a single partition.

```
# mkfs -F sfcfs -o node=mikan,karin /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
Representative partition (meta-data, log, and data): /dev/sfdsk/gfs01/rdsk/volume01
Shared hosts      : mikan, karin
Primary MDS      : mikan
Secondary MDS     : karin
```

Figure 11.8 Single partition configuration



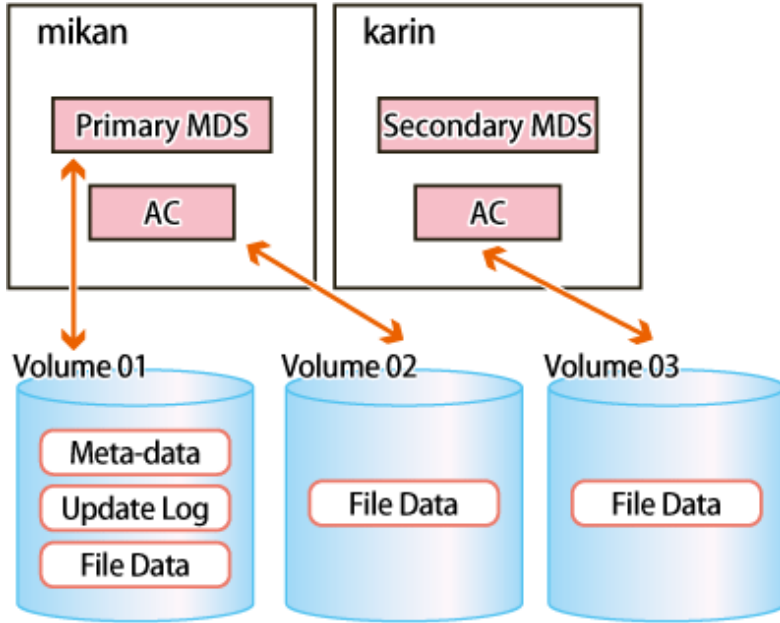
Multiple partitions configuration (Multiple file data partitions configuration)

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 `mkfs_sfcfs(1M)` to create a file system with multiple file data partitions.

```
# mkfs -F sfcfs -o data=/dev/sfdsk/gfs01/dsk/volume02,data=/dev/sfdsk/gfs01/rdsk/
volume03,node=mikan,karin /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
  Representative partition (meta-data, log, and data): /dev/sfdsk/gfs01/dsk/volume01
  Data partition: /dev/sfdsk/gfs01/rdsk/volume02, /dev/sfdsk/gfs01/rdsk/volume03
  Shared hosts: mikan,karin
  Primary MDS: mikan
  Secondary MDS: karin
```

Figure 11.9 Multiple data partitions configurations



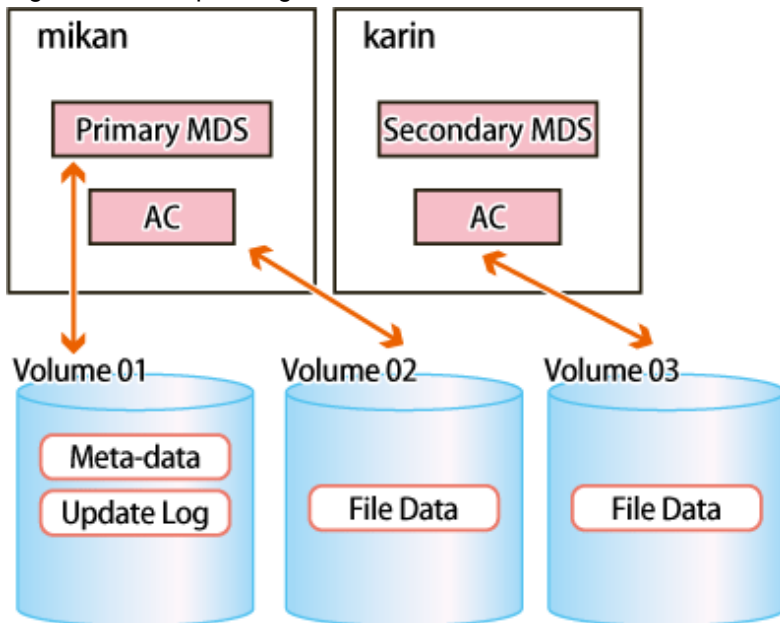
Multiple partitions configuration (Separating the data area)

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 `mkfs_sfcfs(1M)`.

```
# mkfs -F sfcfs -o dataopt=y,data=/dev/sfdsk/gfs01/rdsk/volume02,data=/dev/sfdsk/gfs01/rdsk/
volume03,node=mikan,karin /dev/sfdsk/gfs01/dsk/volume01 <Enter>
Representative partition (meta-data and log): /dev/sfdsk/gfs01/rdsk/volume01
Data partition: /dev/sfdsk/gfs01/dsk/volume02, /dev/sfdsk/gfs01/rdsk/volume03
Shared hosts: mikan, karin
Primary MDS: mikan
Secondary MDS: karin
```

Figure 11.10 Separating the data area



11.2.3.3 Customizing a GFS Shared File System

Parameters for customizing a file system are provided by **mkfs_sfcfs(1M)**, 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 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 **df_sfcfs(1M)**.) 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 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(1M)**.

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.

11.2.3.4 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 **mkfs_sfcfs(1M)** 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 operation status of actual shared nodes when starting the file system operation.

The following shows an example of creating a file system using **mkfs_sfcfs(1M)** specifying **mikan** as the primary MDS candidate and **karin** as the secondary MDS candidate.

```
# mkfs -F sfcfs -o node=mikan,karin /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
Representative partition (meta-data,log and data): /dev/sfdsk/gfs01/rdsk/volume01
Shared hosts: mikan, karin
Primary MDS: mikan
Secondary MDS: karin
```

11.2.4 Setting vfstab

In the GFS Shared File System, it is necessary to code an entry that is to be mounted on **/etc/vfstab** of all the nodes that share a file system. The entry to the same file system should be corresponding by all nodes that share the file system.

Entry of GFS Shared File System sets it to **/etc/vfstab** explains as follows.

- device to mount field

Specify the path name of a block special file to the representative partition of the GFS Shared File System which does the mount.

- **device to fsck**

Specify the path name of a character special file to the representative partition of the GFS Shared File System which is used by **fsck(1M)**.

- **mount point field**

Specify a directory becoming the mount point at the time of the abbreviation.

Please specify the directory which there is in all nodes using file system in common.

- **FS type field**

As a type of the file system, please specify **sfdfs**.

- **fsck pass field**

Please specify "-".

- **mount at boot field**

Please specify "no".

- **mount options field**

Please specify a mount option used in a mount.

Please specify **noauto** on the node where the file system is not shared.

The following table shows the detail of the mount options.

Table 11.2 Mount options

Option	Description
closesync	All non-updated data in the relevant file is reflected when the file is finally closed.
noatime	Does not update the file access time.
nosuid	Disallows a setuid execution. By default, allows setuid execution.
rw ro	Mounts in read/write mode (rw) or read only mode (ro). By default, rw is used.
noauto	Does not mount when a node is started. By default, mounting is performed when a node is started.

 **Information**

By writing the entries concerning the created file system in **/etc/vfstab** on the node that does not share the file system, you can prevent the file system from being used by mistake as other file systems.

Examples of **/etc/vfstab** entries are shown below:

Table 11.3 When mounting in rw mode at startup of the node:

Parameter	Value
device to mount	/dev/sfdsk/gfs01/dsk/volume01
device to fsck	/dev/sfdsk/gfs01/rdsk/volume01
mount point	/mnt/fs1
FS type	sfdfs
fsck pass	-
mount at boot	no
mount options	rw

Table 11.4 When mounting is not performed at startup of the node

Parameter	Value
device to mount	/dev/sfdsk/gfs01/dsk/volume01
device to fsck	/dev/sfdsk/gfs01/rdsk/volume01
mount point	/mnt/fs1
FS type	sfdfs
fsck pass	-
mount at boot	no
mount options	rw,noauto

11.2.5 Selecting a communication protocol

Determine either IPv6 or IPv4 to be used as a communication protocol between MDS and AC, and then set it for each file system.

The default (a communication protocol to be registered when creating a file system) is IPv4.



Note

- A communication protocol can be set for each file system; however, we recommend that users set the same communication protocol for all the file systems so that it can be easily managed.
- Select the communication protocol that matches the IP address type of the shared node registered in host database in "[11.2.2 Registering information in host database](#)." If you have selected a communication protocol that does not match it, the GFS Shared File System cannot be mounted.

When using IPv6, the setting procedure is as follows. When using IPv4, this setting is not required.

1. Set 1 to the tuning parameter **SFCFS_IPV6**.

```
# sfcadm -o SFCFS_IPV6=1 /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

2. Check that 1 has been set to the tuning parameter **SFCFS_IPV6**.

```
# sfcinfo -e /dev/sfdsk/gfs01/dsk/volume01 | grep SFCFS_IPV6 <Enter>
SFCFS_IPV6=1
```

11.2.6 Mount

If a GFS Shared File System is used, mount it on all the nodes.

To do so, execute the **sfcmntgl(1M)** 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 **mount_sfdfs(1M)** as well as ufs File System.

If the **sfcmntgl(1M)** is executed, sfcfsd daemon 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/vfstab**, mounting of the file system will fail. Also, **sfcmntgl(1M)** and **mount_sfdfs(1M)** 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/vfstab** will be used.

11.2.6.1 Mount of all nodes

If the file system is mounted on all the nodes, execute **sfcmntgl(1M)** on any one of the nodes.



For details on **sfcmntgl(1M)**, see [sfcmntgl\(1M\)](#).

You can mount the file system on all the nodes as follows:

- When the mount point is specified:

```
# sfcmntgl /mnt/fs1 <Enter>
Mount point: /mnt/fs1
```

- When a representative partition is specified:

```
# sfcmntgl /dev/sfdsk/gfs01/dsk/volume01 <Enter>
Representative partition: /dev/sfdsk/gfs01/dsk/volume01
```

- When both the mount point and a representative partition are specified:

```
# sfcmntgl /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.

11.2.6.2 Mount

If you want to mount a file system on specific nodes, use **mount_sfdfs(1M)**. Then, the file system will only be mounted on the nodes where the file system will be shared.



For details on **mount_sfdfs(1M)**, see [mount_sfdfs\(1M\)](#).

For details on **mount(1M)**, see the Solaris documentation.

Mount the GFS Shared File System on the node as shown below:

- When the mount point is specified:

```
# mount /mnt/fs1 <Enter>
Mount point: /mnt/fs1
```

- When a representative partition is specified:

```
# mount /dev/sfdsk/gfs01/dsk/volume01 <Enter>
Representative partition: /dev/sfdsk/gfs01/dsk/volume01
```

- When both the mount point and a representative partition are specified:

```
# mount /dev/sfdsk/gfs01/dsk/volume01 /mnt/fs1 <Enter>
Representative partition: /dev/sfdsk/gfs01/dsk/volume01
Mount point: /mnt/fs1
```

11.2.7 Checking file system status

sfcrcsinfo(1M) 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 **sfcrcsinfo**(1M), see [sfcrcsinfo\(1M\)](#).

The following example shows how to check the mount status of the GFS Shared File System whose **representative partition** is **/dev/sfdsk/gfs/rdsk/volume1** with **sfcrcsinfo**(1M).

```
# sfcrcsinfo -m /dev/sfdsk/gfs01/rdsk/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.

11.2.8 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.

11.2.8.1 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.



For information about deleting a file system, see "[11.8 Deleting](#)".

11.2.8.2 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/vfstab** and then create the GFS Shared File System.

11.3 Change (file system attributes)

To change mount information (the GFS Shared File System attribute change) or tuning the file system, perform the following tasks:

1. Unmount
2. Change the file system attributes
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 **sfcrcsinfo**(1M).



In order to use the process of the file system, execute **fuser**(1M). For details about the command, see the Solaris documentation. For information on how to check the file system status using **sfcrcsinfo**(1M), see "11.2.7 Checking file system status"

11.3.1.1 Unmount of all nodes

To unmount the file system on all the nodes, use **sfcumntgl**(1M). Execute the command on any one of the nodes where the file system is shared.



For details on **sfcumntgl**(1M), see [sfcumntgl\(1M\)](#).

- 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 **umount_sfcfs**(1M). Execute the command on any one of the nodes where the file system is shared.



For details on **umount_sfcfs**(1M), see [umount_sfcfs\(1M\)](#).

For details on **umount**(1M), see the Solaris documentation.

Unmount the GFS Shared File System on the node as shown below:

- When the mount point is specified:

```
# umount /mnt/fs1 <Enter>
Mount point: /mnt/fs1
```

- When a representative partition is specified:

```
# umount /dev/sfdsk/gfs01/dsk/volume01 <Enter>
Representative partition: /dev/sfdsk/gfs01/dsk/volume01
```

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 `/etc/vfstab` information. The parameters of **mount point** and **mount options** can be changed.



.....
For details of setting `/etc/vfstab`, see "[11.2.4 Setting vfstab](#)"
.....

11.3.2.2 Tuning file system

In the GFS Shared File System, each file system can be tuned for the following items:

- Communication timeout value (**CON_TIMEOUT**)
- Communication protocol (**SFCFS_IPV6**)
- Enabling and disabling Nagle algorithm (**GFS_TCP_NAGLE**)

Execute `sfcadm(1M)` to change the above value on any one of the nodes where the file system is shared.



.....
For details of `sfcadm(1M)`, see [sfcadm\(1M\)](#).
.....

The following example shows how to set the timeout value to 240 seconds for the existing file system (`/dev/sfdsk/gfs01/rdisk/volume01`) using `sfcadm(1M)`.

```
# sfcadm -o CON_TIMEOUT=240 /dev/sfdsk/gfs01/rdisk/volume01 <Enter>
```



.....
For details about the tuning parameter, see "[14.1.2 Communication timeout value](#)", "[14.1.3 Communication protocol](#)", or "[14.1.4 Enabling and disabling the Nagle algorithm in the communications between MDS and AC](#)" in this manual.
.....

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 "[11.2.6 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 disks
3. Partition addition
4. Mount

11.4.1 Unmount

Unmount the GFS Shared File System on all the nodes.



For details on how to unmount the GFS Shared File System, see "[11.3.1 Unmount](#)"

11.4.2 Setting shared disks

The partition that will be added to GFS Shared File System must be GDS logical volume. The volume must be **ACTIVE** on each node.



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)



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*."

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*."

11.4.3 Partition addition

To add a partition as file data area, use **sfcadd(1M)**. Execute the command on any one of the nodes where the file system is shared.



For details on **sfcadd(1M)**, see [sfcadd\(1M\)](#).



If you add a partition to the file system that is not stopped properly, recovery the file system by executing the **fscck_sfcfs(1M)** command in advance.

How to add a file data partition (**/dev/sfdsk/gfs01/rdsk/volume02**) to an existing file system (**/dev/sfdsk/gfs01/rdsk/volume01**) by **sfcadd(1M)** 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(11500000021) 14422 META  -----
  1 /dev/sfdsk/gfs01/dsk/volume01(11500000021)  5116  LOG   -----
  1 /dev/sfdsk/gfs01/dsk/volume01(11500000021) 95112 DATA -----
```

2. Add a file data partition (`/dev/sfdsk/gfs01/dsk/volume02`) as file data area.

```
# sfcadd -D /dev/sfdsk/gfs01/rdsk/volume02 /dev/sfdsk/gfs01/rdsk/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(11500000021) 14422 META -----
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021) 5116 LOG -----
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021) 95112 DATA -----
 1 /dev/sfdsk/gfs01/dsk/volume02(11500000022) 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 `mkfs_sfcfs(1M)`.
- When file data region size after adding partition exceeds the maximum file data region size specified by `mkfs_sfcfs(1M)` (`-o maxdsz=n`), a part of free area in file data region 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 "[11.2.6 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. Setting shared disks (When adding node information)
3. Registering information in host database (When adding node information)
4. Changing shared node information
5. Setting `vfstab`
6. 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 Setting shared disks (When adding node information)

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 "Adding a new node to CF" of the "*PRIMECLUSTER Cluster Foundation (CF) Configuration and Administration Guide*."

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*".

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 Registering information in host database (When adding node information)

When adding a shared node, register its host name and IP address in host database (for example: `/etc/inet/hosts`).

1. Register the host names and IP addresses of all the shared nodes in host database of the shared nodes to be added.

You can check the host names of the existing shared nodes with the `-n` option of `sfcinfo(1M)`.

```
# sfcinfo -n /dev/sfdsk/gfs01/dsk/volume01 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID  hostID      status  hostname
  1    80a4f75b  STOP    sunny
```

2. Register the host name and IP address of the shared node to be added in host database of the existing shared nodes.



Note

Register the IP address that matches the communication protocol between MDS and AC. You can check the communication protocol with `-e` option of `sfcinfo(1M)` on the existing shared node.

```
# sfcinfo -e /dev/sfdsk/gfs01/dsk/volume01 | grep SFCFS_IPV6 <Enter>
SFCFS_IPV6=1
```

If "SFCFS_IPV6=1" is displayed, the communication protocol is IPv6. If "SFCFS_IPV6=0" or nothing is displayed, the communication protocol is IPv4.



See

For notes on registering information in host database, see "11.2.2 Registering information in host database."

11.5.4 Changing shared node information

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(1M)**.



See

For details on the **sfcnode(1M)** options, see [sfcnode\(1M\)](#).

11.5.4.1 Adding node information

Described below is the procedure for using **sfcnode(1M)** to add node information (**moony**) to an existing file system (**/dev/sfdsk/gfs01/rdsk/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(1M)** 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/rdsk/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. Confirm the MDS node.

```
# sfcrcsinfo -m /dev/sfdsk/gfs01/rdsk/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
```

5. If it is necessary, set the added node as MDS node.


```
# sfcadm -g ,moony /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

6. 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/rdsk/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
```

11.5.4.2 Deleting node information

Described below is the procedure for using **sfcnode(1M)** to delete node information (**moony**) from an existing file system (**/dev/sfdsk/gfs01/rdsk/volume01**). If you are deleting node information while the file system is unmounted, execute **sfcnode(1M)** 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(1M)** 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. Confirm whether the node of the node information to delete is the MDS node.
You can do this by checking that the moony is displayed as **MDS(S)**.

```
# sfcrcsinfo -m /dev/sfdsk/gfs01/rdsk/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
```

3. If the node of the node information to delete is MDS node, delete it from the MDS node.

```
# sfcadm -g sunny /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

4. 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/rdsk/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
```

5. Delete the node information.

```
# sfcnode -d -h moony /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

6. Confirm that the node information has been deleted.
You can do this by checking that the **moony** field is not displayed in the **sfcinfo(1M)** outputs.

```
# sfcinfo -n /dev/sfdsk/gfs01/dsk/volume01 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID  hostID      status  hostname
  1   80a4f75b  STOP    sunny
```

11.5.5 Setting vfstab

In the GFS Shared File System, it is necessary to add a mount entry to **/etc/vfstab** on all of the nodes that are sharing a file system. In addition, if a mount entry is added to **/etc/vfstab** 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/vfstab** of nodes that have been added.

If nodes are deleted, change the **/etc/vfstab** settings so that the GFS Shared File System will not be mounted.



See

.....
For details on setting **/etc/vfstab**, see "[11.2.4 Setting vfstab](#)"
.....

11.5.6 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 "[11.2.6 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 **mkfs_sfcfs(1M)**. You can recreate the file system in the same configuration as before without having to delete it, using **mkfs_sfcfs(1M)** 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 **mkfs_sfcfs(1M)** options, see [mkfs_sfcfs\(1M\)](#).

The following is an example of using **mkfs_sfcfs(1M)** to re-create a file system with a single partition.

```
# mkfs -F sfcfs -o force,node=mikan,karin /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
Representative partition (meta-data, log, and data): /dev/sfdsk/gfs01/rdsk/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 "[11.2.6 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(1M)** to change information about nodes on which MDS is placed.



See

For details on **sfcadm(1M)** options, see [sfcadm\(1M\)](#).

The following example shows how to change the priority of nodes where an MDS is configured to **karin** and **mikan**, using **sfcadm(1M)**.

1. Check the current file system configuration.

```
# sfcrcsinfo -m /dev/sfdsk/gfs01/rdsk/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 priority of the MDS 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/rdsk/volume01 <Enter>
```

3. Check if the priority of nodes where an MDS is configured has been changed.

```
# sfcrcsinfo -m /dev/sfdsk/gfs01/rdsk/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 an MDS operational information is completed, mount the file system.



See

For details on how to mount the GFS Shared File System, see "[11.2.6 Mount](#)".

11.8 Deleting

To delete the GFS Shared File System, perform the following tasks:

1. Unmount
2. Removing the entry in **/etc/vfstab**
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.



See

For details on how to unmount the GFS Shared File System, see "[11.3.1 Unmount](#)".

11.8.2 Removing the entry in /etc/vfstab

To delete the GFS Shared File System, delete the file system from `/etc/vfstab` of all the nodes.

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(1M)` with the `-D` option specified. Execute the command on any one of the nodes where the file system is shared.



See

For details on the `sfcadm(1M)` options, see [sfcadm\(1M\)](#).

How to delete a file system using `sfcadm(1M)` 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(11500000021) 14422 META -----
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021)  5116 LOG  -----
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021) 95112 DATA -----
/dev/sfdsk/gfs02/dsk/volume01:
FSID special                                size Type mount
 2 /dev/sfdsk/gfs02/dsk/volume01(11500000022) 14422 META -----
 2 /dev/sfdsk/gfs02/dsk/volume01(11500000022)  5116 LOG  -----
 2 /dev/sfdsk/gfs02/dsk/volume01(11500000022) 95112 DATA -----
```

2. Delete the file system whose representative partition is `/dev/sfdsk/gfs/rdsk/volume01`.

```
# sfcadm -D /dev/sfdsk/gfs02/rdsk/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(11500000021) 14422 META -----
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021)  5116 LOG  -----
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021) 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:

- "[Chapter 10 File System Operations \(GUI\)](#)"
- "[Chapter 11 File System Operations \(Command\)](#)"

12.1 File System Management Commands

For each file system, there are two different types of management commands, namely, the general purpose management commands and the system specific management commands. The general purpose management commands that provided by Solaris OS are used for basic functions and the system specific commands are called by specifying options or file system types.

The GFS Shared File System features an exclusive management commands that act as the general purpose management command and the system specific management command for the GFS Shared File System's original functions.

Specify "**sfefs**" for **-F** option as a file system type when using the general purpose management command to a GFS Shared File System. If you omit the **-F** option, a search is made of those entries matched with "*special*" or "*mount_point*" in **/etc/vfstab** after which the registered file system types are automatically selected.

The following shows lists of file system management commands provided by the GFS. The lists show description of each command function and whether each command can be used when the target file system is in the mount or unmount state.

Table 12.1 General purpose file system management commands

Command	Description	Used in mount state	Used in unmount state
df(1M)	Displays the number of free disk blocks, number of files, etc.	A	A
fsck(1M)	Checks a file system for consistency and repairs it.	N/A	A
fstyp(1M)	Determines the file system type.	A	A
mkfs(1M)	Creates a file system.	A (-m option only)	A
mount(1M)	Mounts a file system.	N/A	A
umount(1M)	Unmounts a file system.	A	N/A

A: Applicable, N/A: Not applicable



See

For details of the general-purpose management commands, see each command's page of the Solaris documentation.

Table 12.2 Management Commands Specific to the GFS Shared File System

Command	Description	Used in mount state	Used in unmount state
sfccadd(1M)	Adds file data partitions.	N/A	A
sfccadm(1M)	Changes partition information setting.	N/A	A
sfccfrmdstart(1M)	Starts sfccfrmd daemon on a local node.	N/A	A
sfccfrmdstop(1M)	Stops sfccfrmd daemon on a local node.	N/A	A
sfccgetconf(1M)	Makes a backup of the management partition.	A	A
sfccinfo(1M)	Displays partition information.	A	A

Command	Description	Used in mount state	Used in unmount state
sfcmntgl(1M)	Mounts the GFS Shared File System on all nodes.	A (*1)	A
sfcnode(1M)	Adds, deletes, and changes node configuration information.	N/A	A
sfcscinfo(1M)	Displays file system information.	A	A
sfcsetup(1M)	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.	A (*2)	A
sfcstat(1M)	Reports statistical information of a GFS Shared File System.	A	N/A
sfcumntgl(1M)	Unmounts the GFS Shared File System from all nodes.	A	A

GFS: Global File Services

A: Applicable, N/A: Not applicable

*1) An error occurs when all nodes are in the mount state.

*2) The following options can be used in the mount state.

-p option

-m option without argument

No option

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 **fsck_sfdfs(1M)**.

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, **fsck_sfdfs(1M)** repairs the file system by replaying the update log.

If the update log data has been physically damaged, **fsck_sfdfs(1M)** 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, **fsck_sfdfs(1M)** 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 **fsck_sfdfs(1M)**. 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.

```
# fsck -F sfcfs /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

The following example performs a full check on the file system and repairs it without log replay.

```
# fsck -F sfcfs -o nolog /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```



For details about **fsck_sfdfs(1M)** options, see **fsck_sfdfs(1M)**.

12.2.1 Action to be taken when fsck terminates abnormally

The following describes available solutions for `fsck_sfcfs(1M)` abnormal termination.

12.2.1.1 Memory allocation request error

The following message is displayed if `fsck_sfcfs(1M)` 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 share the GFS Shared File System. See "[9.2.4 Starting sfcfrmd 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(1M)` to recover the partition information.

The following example shows how to restore partition information on the `"/dev/sfdsk/gfs01/rdsk/volume01"` device.

For a single partition, perform the following operation:

```
# sfcadm -r -a /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

For a multi-partition configuration, use `sfcinfo(1M)` to check the partitions and then use `sfcadm(1M)` 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(11500000021) 25418 META -----
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021)  5120 LOG  -----
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021) 232256 DATA -----
 1 /dev/sfdsk/gfs01/dsk/volume02(11500000022) 7341778 DATA -----
 1 /dev/sfdsk/gfs01/dsk/volume03(11500000023) 6578704 DATA -----

# sfcadm -r /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```




See

In the result of **sfcinfo(1M)** executed, the partition displayed the first will be the representative partition of the file system. See [sfcinfo\(1M\)](#).

12.2.1.4 Node that executed **fsck_sfcfs(1M)** is not a shared node of the file system

If the node which executed **fsck_sfcfs(1M)** is not a shared node of the file system, the following message is output.

```
No node volume entry for localhost,file system access forbidden!
```

Execute **fsck_sfcfs(1M)** 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, 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 **fsck_sfcfs(1M)**.

```
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/vfstab

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/vfstab** and **/etc/mnttab** 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.

```
***** RERUN FSCK *****  
  
<devi ce-name>: UNEXPECTED INCONSISTENCY: RUN fsck MANUALLY.  
  
Log Replay is failed.
```

Execute a full file system check using **fsck_sfcfs**(1M).

The following example shows how to perform check the file system on the `"/dev/sfdsk/gfs01/rdsk/volume01"` device.

```
# fsck -F sfcfs -o nolog /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

12.2.1.8 Executed in non-global zone

The following message is output when the **fsck_sfcfs**(1M) command is executed in a non-global zone.

```
cannot be executed in non-global zone
```

The command cannot be used in non-global zones.

For Solaris 10, only global zones can be used to operate GFS.

12.2.1.9 Collection of zone information fails

The following message is output when collection of zone setup information fails.

```
cannot get current zone information
```

When the message is output, check the system then wait until the other process is done, or expand the swap area or memory. Execute the command again.

12.2.1.10 Other messages

When the message which shows other abnormalities is output and **fsck_sfcfs**(1M) terminates abnormally, tell field engineers the output message of **fsck_sfcfs**(1M) after collecting the diagnostic data with **FJQSS** (Information Collection Tool) or **fjsnap**(1M).

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.

Use the **sfcadd**(1M) 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 "[10.3.2 Changing the file system configuration \(partition addition\)](#)". For the execution procedure using line commands, see "[11.4 Change \(partition addition\)](#)".



Note

If you schedule an expansion of file system, specify the expanding maximum file data area size (**-o maxdsz=*n***) argument of **mkfs_sfcfs**(1M) 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: sfdfs_mds:3004: fsid: too much fragment (extent)

See

For corrective action of the above message, see "[A.2.13 Information messages \(MDS \(sfdfsmsg daemon\)\)](#)".

12.4 Displaying File System Information

The usage status and management status of the file system, and the information of partition and node can be displayed in the GFS Shared File System.

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_sfdfs(1M)`.

- The following information is displayed for a meta-data area:
 - 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)
- The following information is displayed for a file data area:
 - Number of all blocks and free 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_sfdfs(1M)`.

```
# df -k /mnt <Enter>
Filesystem      kbytes   used  avail capacity  Mounted on
/dev/sfdsk/gfs01/dsk/volume01
                4684576 243704 1672416      61% /mnt

# df -F sfdfs -o 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_sfdfs(1M)` options, see `df_sfdfs(1M)`.

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(1M)**. Node information can also be displayed.

The following example shows how to display the partition and node information for a file system using **sfcinfo(1M)**.

```
# sfcinfo /dev/sfdsk/gfs01/dsk/volume01 <Enter>
FSID special                                size Type mount
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021) 14422 META -----
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021)  5116 LOG  -----
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021) 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(1M)** options, see [sfcinfo\(1M\)](#).

12.4.3 Displaying file system management state

The management state of the GFS Shared File System can be checked using **sfcrcsinfo(1M)**.

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(1M)**.

```
# 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  mikan
 2  AC      run    -         0       0       0  mikan
 2  MDS(S)  wait   -         0       0       0  karin
 2  AC      run    -         0       0       0  karin
```

The meaning of **sfcrcsinfo(1M)** 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/S-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 **S-STATE** is other than "-", MDS is in state-transition.

- **STATE/S-STATE** (AC)
 - **run** - : file system is in mounted
 - **stop** - : file system is in unmounted
 - If **S-STATE** is other than "-", AC is in state-transition.



See

For details about **sfcscinfo**(1M) options, see [sfcscinfo\(1M\)](#).

12.5 How to set GFS Shared File System applications as cluster applications

To set GFS Shared File System applications as cluster application, 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 application, it is necessary to set an RMS environment first.

- Registering an RMS host name in **/etc/inet/hosts** on each node

Define each node where RMS is configured in **/etc/inet/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 **.rhosts** 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 "Site preparation" of the "PRIMECLUSTER Reliant Monitor Services (RMS) with Wizard Tools 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/vfstab** and "no" must be specified in the "mount at boot "

Moreover, "noauto" must not be specified in "mount options" of the file system registered in **/etc/vfstab** 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 12.3 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/vfstab (See "Procedure 4" in "12.5.4.")	Adding the relevant GFS Shared File System to /etc/vfstab (See "Procedure 4" in "12.5.4.")
Setting cluster applications (See "Procedure 5" in "12.5.4."), (See the "PRIMECLUSTER Installation and Administration Guide" and "PRIMECLUSTER Reliant Monitor Services (RMS) with Wizard Tools Configuration and Administration Guide")	-	-
-	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.")

GDS: Global Disk Services

GFS: Global File Services

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", "PRIMECLUSTER Reliant Monitor Services (RMS) with Wizard Tools Configuration and Administration Guide", and the "PRIMECLUSTER Global Disk Services Configuration and Administration Guide".

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 c0t1d0=DISK1,c0t2d0=DISK2 -a scope=sunny:moony,type=shared
<Enter>
sunny# sdxdisk -M -c gfs01 -d c0t3d0=DISK3,c0t4d0=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 c0t1d0=DISK1:single -a scope=sunny:moony,type=shared
<Enter>
sunny# sdxdisk -M -c gfs -d c0t2d0=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 **mkfs_sfcfs**(1M) 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/rdsk/control <Enter>
```

- Register node information in the management partition of the GFS Shared File System on each node.

```
sunny# sfcsetup -a /dev/sfdsk/gfs/rdsk/control <Enter>
moony# sfcsetup -a /dev/sfdsk/gfs/rdsk/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.

```
# mkfs -F sfcfs -o node=sunny,moony /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

Procedure 4. Adding the relevant GFS Shared File System to /etc/vfstab (node A (active node), node B (standby node))

Add the mount information for the relevant GFS Shared File System to **/etc/vfstab** 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 /dev/sfdsk/gfs01/rdsk/volume01 /sfcfs sfcfs - no -
```

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 userApplication Configuration Wizard.



See

For details on setup, refer to "*PRIMECLUSTER Configuration and Administration Guide*" and "*PRIMECLUSTER RMS Configuration and Administration Guide*."



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 must not be registered in the GDS volume of the GFS Shared File System.
- For cluster application settings, an Fsystem resource must not be registered in the GFS Shared File System.
- For GDS volume, must not execute **/usr/opt/reliant/bin/hvgdsetup**.

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/vfstab** 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/vfstab** 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/vfstab` file is incorrect

Solution: Correct the `/etc/vfstab` 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 12.4 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.")

GDS: Global Disk Services

GFS: Global File Services

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.

See

For details on setting, see the "*PRIMECLUSTER Installation and Administration Guide*", "*PRIMECLUSTER Reliant Monitor Services (RMS) with Wizard Tools Configuration and Administration Guide*", and the "*PRIMECLUSTER Global Disk Services Configuration and Administration Guide*".

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 "[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(1M)` command.

```
sunny# sfcadd -D /dev/sfdsk/gfs01/rdsk/volume02 /dev/sfdsk/gfs01/rdsk/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 by the GUI when a GFS Shared File System is used

This section describes how to start up CF by the 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**.

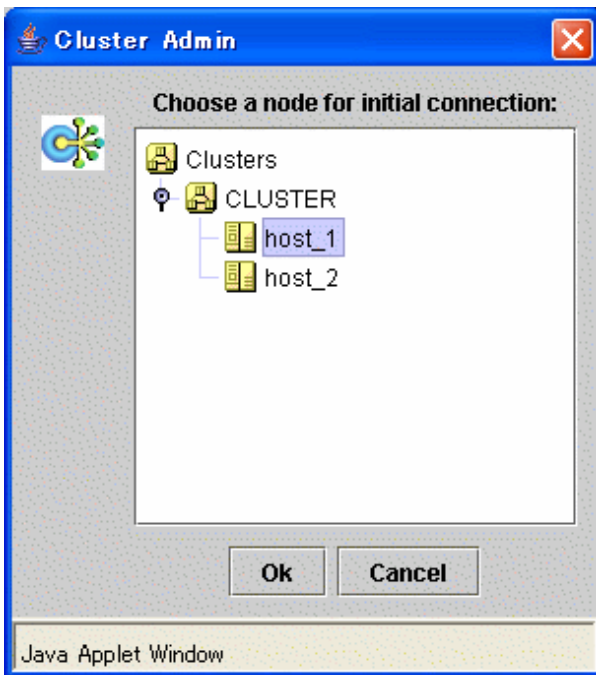
If **wait** is selected, starting the GFS Shared File System will fail because a quorum does not exist until CF is activated on all the nodes. If you need to start CF by the GUI when the CF is stopped on all the nodes, follow the steps below.



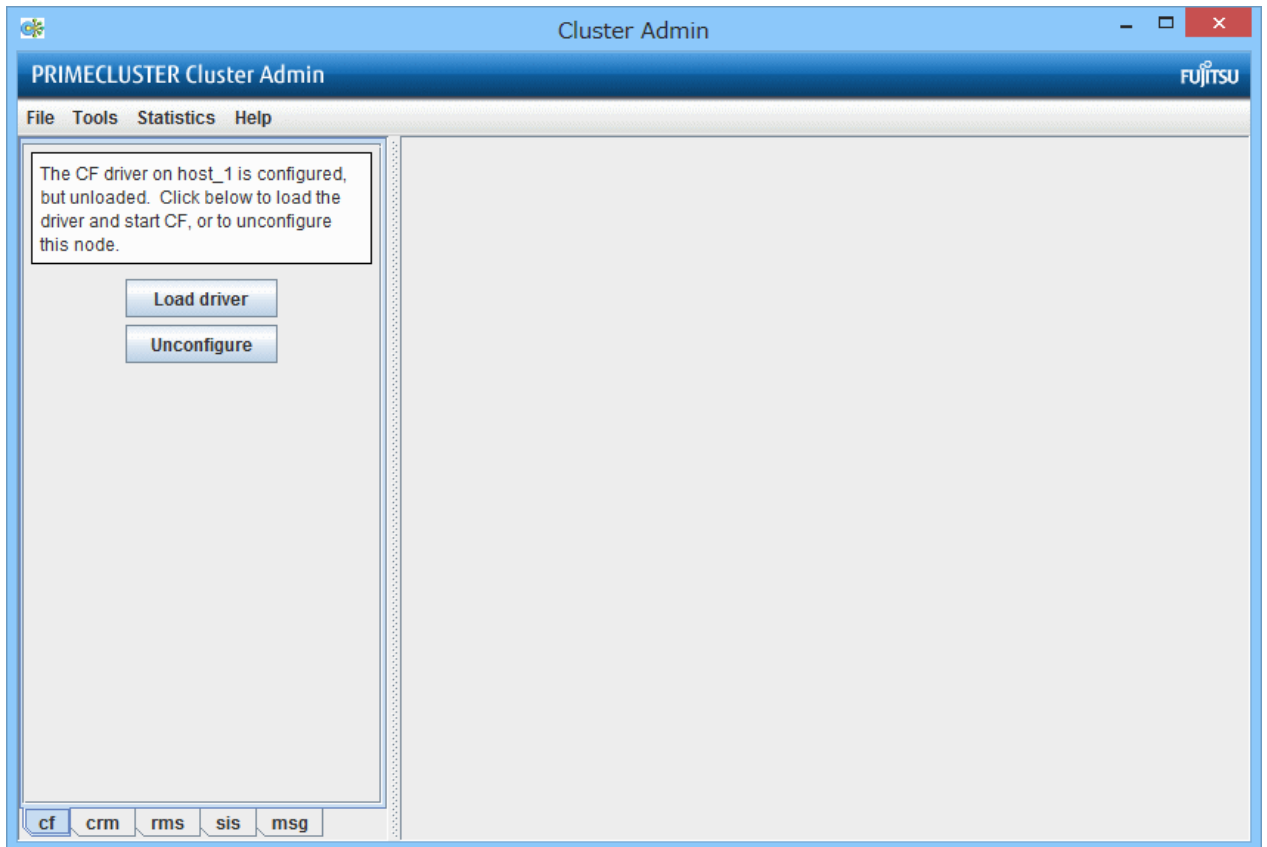
See

For information on how to start up CF, see "*Starting CF*" of the "*PRIMECLUSTER Cluster Foundation (CF) Configuration and Administration Guide*".

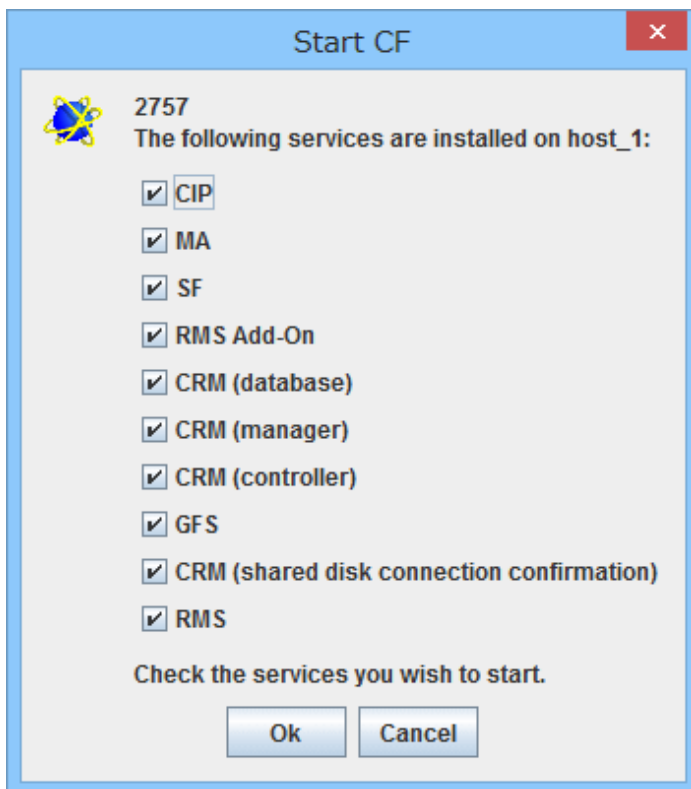
1. Select the <Cluster Admin> button menu on the Web-Based Admin View operation menu. Select the node where CF will be started, and click <OK> button.



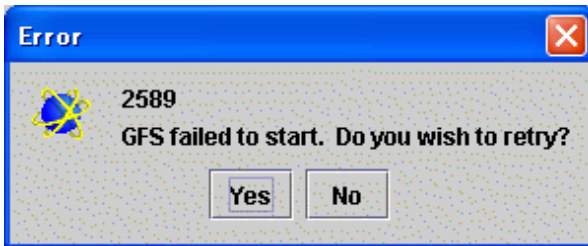
2. Click <Load driver> button then activate the CF driver.



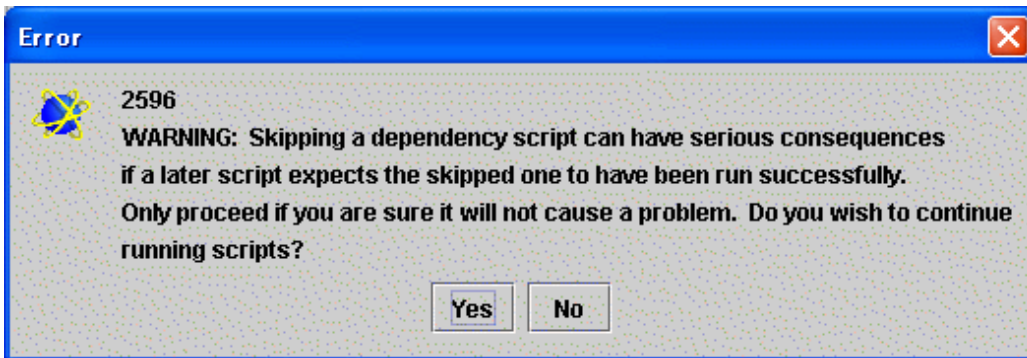
3. The [Start CF] window will pop up. Click <OK> button to start up CF.



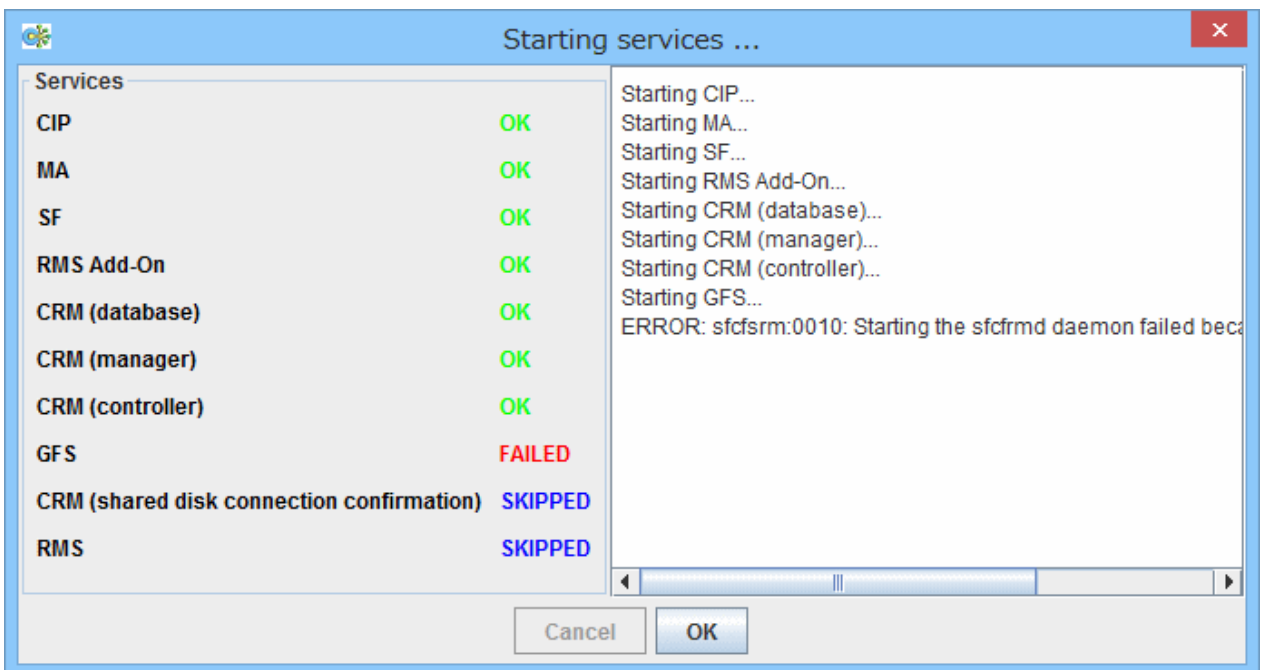
- Since CF is not activated on all the nodes, GFS startup fails then the [Error] window will pop up. Click <No> button then cancel the GFS startup processing.



- If the GFS startup is cancelled, the [Error] window will pop up again. Click <No> button then cancel the script processing.



- Check if all the services before GFS have been activated then click <OK> button.



- 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.

- 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) 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 (NetWorker, ArcServe/OPEN, etc.)
 - Standard Solaris OS commands **cpio**(1) and **tar**(1)
- Backing-up and restoring entire file system
 - Standard Solaris OS commands **dd**(1M)



Note

Commands that depend on the file system structure, such as UFS **ufsdump**(1M) and VxFS **vxdump**(1M), cannot be used to back up a GFS Shared File System.

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 Solaris OS commands **cpio**(1), **tar**(1) and **dd**(1M).

13.2 Backing-up by Standard Solaris OS commands

This section describes the methods for backing-up in units of files and file systems.

13.2.1 Backing-up file by file

To back up a single file or all files under the directory while it is mounted, use **cpio**(1) or **tar**(1).



See

For details about **cpio**(1) and **tar**(1), see the Solaris documentation.

The following are examples of backing-up on tape using **cpio**(1) and **tar**(1).

- Backing-up method with **cpio**(1)

```
# cd /userdata <Enter>
# find . -depth -print | cpio -oc > /dev/rmt/0 <Enter>
```

- Backing-up method with **tar**(1)

```
# cd /userdata <Enter>
# tar cvf /dev/rmt/0 . <Enter>
```



Note

Tapes used for data backup should be labeled for identifying the backing-up method.
cron(1M) can schedule backing-up startup.

13.2.2 Backing-up entire file system

To back up the GFS Shared File System in file system unit, use **dd**(1M). The following describes the backing-up procedure using **dd**(1M).



For details about **dd**(1M), see the Solaris documentation.

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.

The following describes examples of tape backup in case of single partition configuration and multi-partition configuration.

For a single partition configuration

Use **sfcinfo**(1M) 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 device, backup destination, 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: Backup in case of single partition

```
# sfcinfo /dev/sfdsk/gfs01/dsk/volume01 <Enter>
FSID special                                size  Type  mount
  1 /dev/sfdsk/gfs01/dsk/volume01(11500000021)  14422 META  -----
  1 /dev/sfdsk/gfs01/dsk/volume01(11500000021)   5116 LOG   -----
  1 /dev/sfdsk/gfs01/dsk/volume01(11500000021)  95112 DATA -----
# dd if=/dev/sfdsk/gfs01/rdsk/volume01 of=/dev/rmt/0 bs=1024k <Enter>
```

For a multi-partition configuration

dd(1M) 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**(1M) to check the partition configuration then back up each partition with the same procedure as used for a single partition configuration.

Example: Backup in case of two partitions

```
# sfcinfo /dev/sfdsk/gfs01/dsk/volume01 <Enter>
FSID special                                size  Type  mount
  1 /dev/sfdsk/gfs01/dsk/volume01(11500000021)  14422 META  -----
  1 /dev/sfdsk/gfs01/dsk/volume01(11500000021)   5116 LOG   -----
  1 /dev/sfdsk/gfs01/dsk/volume01(11500000021)  95112 DATA -----
  1 /dev/sfdsk/gfs01/dsk/volume02(11500000022)  95112 DATA -----
# dd if=/dev/sfdsk/gfs01/rdsk/volume01 of=/dev/rmt/0 bs=1024k <Enter>
(Change tape)
# dd if=/dev/sfdsk/gfs01/rdsk/volume02 of=/dev/rmt/0 bs=1024k <Enter>
```



- All the partitions including the relevant GFS Shared File System must be backed up.
- 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.

dd(1M) 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 **iseek** (input-side offset (number of blocks)) by the value of **count**.

Example: Backup in case of separating partition as blocks in units of 1 gigabyte

```
# dd if=/dev/sfdsk/gfs01/rdsk/volume01 of=/dev/rmt/0 bs=1024k count=1024 <Enter>
(Change tape)
# dd if=/dev/sfdsk/gfs01/rdsk/volume01 of=/dev/rmt/0 bs=1024k count=1024 iseek=1024 <Enter>
(Change tape)
# dd if=/dev/sfdsk/gfs01/rdsk/volume01 of=/dev/rmt/0 bs=1024k count=1024 iseek=2048 <Enter>
(Change tape)
# dd if=/dev/sfdsk/gfs01/rdsk/volume01 of=/dev/rmt/0 bs=1024k count=1024 iseek=3072 <Enter>
...
```

13.3 Restoring by Standard Solaris OS 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 Solaris OS commands
- Restoring by file system using **dd(1M)**

13.3.1 File-by-file restoring

Use **cpio(1)** or **tar(1)** to restore files from the backup tape to the disk.



See

For details about **cpio(1)** and **tar(1)**, see the Solaris documentation.

The following describes an example of restoring from a tape.

- Method for restoring using **cpio(1)**

```
# cd /userdata <Enter>
# cpio -icdm < /dev/rmt/0 <Enter>
```

- Method for restoring using **tar(1)**

```
# cd /userdata <Enter>
# tar xvf /dev/rmt/0 <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(1M)**.



Note

The size of the partition of the restoration destination should be equal to the size of the partition of backup source. When it is not equal, the execution of **dd(1M)** succeeds, but the partition of the restoration destination cannot be used as the GFS Shared File System.

Before executing restoring, unmount the desired GFS Shared File System from all the **nodes** using the file system, and unmounted of the file system.

The following describes examples of restoring from backup tapes in case of single partition configuration and multi-partition configuration.

For a single partition configuration

Example: Restoring in case of single partition


```
# dd if=/dev/rmt/0 of=/dev/sfdsk/gfs01/rdsk/volume01 bs=1024k <Enter>
```

For a multi-partition configuration

Example: Restoring in case of two partitions

```
# dd if=/dev/rmt/0 of=/dev/sfdsk/gfs01/rdsk/volume01 bs=1024k <Enter>
(Change tape)
# dd if=/dev/rmt/0 of=/dev/sfdsk/gfs01/rdsk/volume02 bs=1024k <Enter>
```

dd(1M) 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 **oseek**, specify the same value that was specified for **iseek**.

Example: Restoring the tape backed up as separate blocks in units of 1 gigabyte

```
# dd if=/dev/rmt/0 of=/dev/sfdsk/gfs01/rdsk/volume01 bs=1024k count=1024 <Enter>
(Change tape)
# dd if=/dev/rmt/0 of=/dev/sfdsk/gfs01/rdsk/volume01 bs=1024k count=1024 oseek=1024 <Enter>
(Change tape)
# dd if=/dev/rmt/0 of=/dev/sfdsk/gfs01/rdsk/volume01 bs=1024k count=1024 oseek=2048 <Enter>
(Change tape)
# dd if=/dev/rmt/0 of=/dev/sfdsk/gfs01/rdsk/volume01 bs=1024k count=1024 oseek=3072 <Enter>
...
```

13.3.3 Set up after Restoration

13.3.3.1 Resetting the partition information

When you restore the GFS Shared File System to a partition different from the backup origin by **dd(1M)** command use, partition information in the inside of the medium does not accord with real partition composition.

Therefore, it is necessary to set partition information again.

Information

When you restore the GFS Shared File System to totally same partition as the backup origin, operations in this section is not necessary because there is no change in partition information in the medium.

Use the **sfcadm(1M)** 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.

- When restoring the GFS Shared File System to an unused partition

The following shows how to reset the partition information with **sfcadm(1M)** after you have restored the three-partition GFS Shared File System to another partition (**/dev/sfdsk/gfs99/rdsk/volume01**, **/dev/sfdsk/gfs99/rdsk/volume02**, **/dev/sfdsk/gfs99/rdsk/volume03**) that is different from the creation source.

Note that the representative partition is **/dev/sfdsk/gfs99/rdsk/volume01**, the port name is **sfdfs-1** and that the shared nodes are **host01**, **host02**.

```
# sfcadm -m host01,host02 -g host01,host02 -p sfdfs-1,sfdfs-1 /dev/sfdsk/gfs99/rdsk/volume01,/dev/
sfdsk/gfs99/rdsk/volume02,/dev/sfdsk/gfs99/rdsk/volume03 <Enter>
```

- When restoring the GFS Shared File System to a partition in use

You can set the partition information by executing **sfcadm(1M)** after restoring the file system that consists of three partition to the partitions; **/dev/sfdsk/gfs99/rdsk/volume01**, **/dev/sfdsk/gfs99/rdsk/volume02**, and **/dev/sfdsk/gfs99/rdsk/volume03**. In these

partitions, the file system in the same configuration exists.

The representative partition is `/dev/sfdsk/gfs99/rdsk/volume01`, and the port name and shared node are the same.

```
# sfcadm /dev/sfdsk/gfs99/rdsk/volume01,/dev/sfdsk/gfs99/rdsk/volume02,/dev/sfdsk/gfs99/rdsk/volume03 <Enter>
```

Note that the state of the file system creation for the restoration destination can be confirmed with **sfcinfo(1M)**.



See

For details on **sfcinfo(1M)**, see [sfcinfo\(1M\)](#).

For details on **sfcadm(1M)**, see [sfcadm\(1M\)](#).



Note

If nodes where the file system is shared are different before and after backup or restoration, change the sharing node settings.

13.3.3.2 Repairing the file system

If you attempt to back up 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 **fsck_sfcfs(1M)**. If no inconsistency occurs, **fsck_sfcfs(1M)** 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/rdsk/volume01`. Before executing the command, be sure to check that the file system is not mounted on all the nodes.

```
# fsck -F sfcfs -y /dev/sfdsk/gfs99/rdsk/volume01 <Enter>
```



See

For details on **fsck_sfcfs(1M)**, see [fsck_sfcfs\(1M\)](#).

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.



Note

The setting value of each tuning parameter is saved in the management partition. If the value is newly added or changed, back up again the management partition by using the **sfcgetconf(1M)** command.



See

For how to back up the management partition, refer to "[9.6 Backup of the management partition information](#)" in this manual.

14.1.1 Amount of Cache

It is possible to tune the following items:

- Amount of indirect extent management information (IEX) of the file to be cached in memory (**SFCFS_NCACHE_IEX**)
- Amount of free-**extent** based management information of the file system 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**)

The areas of the following sizes are reserved in the process space of MDS for each file system:

- Cache of indirect extent management information of the file
Specified value of **SFCFS_NCACHE_IEX** x 1.4 kilobytes
- Cache of free-**extent** based management information of the file system
Specified value of **SFCFS_NCACHE_EXTENT** x 1.4 kilobytes
- Cache of directory information
Specified value of **SFCFS_NCACHE_DIRECTORY** x 1.4 kilobytes
- Cache of **i-node**
Specified value of **SFCFS_NCACHE_INODE** x 4.4 kilobytes

The following shows the default value, the range of configurable values, and amount of reserved memory for each tuning parameter.

Table 14.1 Default value, range of configurable values, and amount of reserved memory for tuning parameters

Tuning parameter name	Default value	Minimum value	Maximum value	Amount of reserved memory with the default value (megabyte)
SFCFS_NCACHE_IEX	512	512	1048576	0.7
SFCFS_NCACHE_EXTENT	2304	192	32768	3.2

Tuning parameter name	Default value	Minimum value	Maximum value	Amount of reserved memory with the default value (megabyte)
SFCFS_NCACHE_DIRECTORY	10240	64	16384	14.0
SFCFS_NCACHE_INODE	2048	32	16384	8.8

Specify the tuning parameters with the -o option of **sfcadm**(1M).

The following shows the setting example.

(Example)

```
# sfcadm -o SFCFS_NCACHE_IEX=5120 /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
# sfcadm -o SFCFS_NCACHE_EXTENT=4096 /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
# sfcadm -o SFCFS_NCACHE_DIRECTORY=20480 /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
# sfcadm -o SFCFS_NCACHE_INODE=5120 /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

Check the specified values with the -e option of **sfcinfo**(1M).

The following shows the example to check the values.

(Example)

```
# sfcinfo -e /dev/sfdsk/gfs01/dsk/volume01 | grep SFCFS_NCACHE <Enter>
SFCFS_NCACHE_IEX=5120
SFCFS_NCACHE_EXTENT=4096
SFCFS_NCACHE_DIRECTORY=20480
SFCFS_NCACHE_INODE=5120
```

Point

The actual amount of IEX cache prepared by MDS can be checked in the MDS information message output when the GFS Shared File System is mounted. This message is output in /var/adm/messages on the node where the primary MDS operates.

The following shows the example to check the actual amount of IEX cache.

(Example to check the actual amount of IEX cache)

```
# mount /mnt/gfs01 <Enter>
# grep "sfcfs_mds:3022" /var/adm/messages <Enter>
Sep  1 16:20:10 host1 sfcfsmg[7550]: [ID 702911 daemon.notice] NOTICE: sfcfs_mds:3022: 1:
amount of meta cache IEX is 5120
```

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 specify a larger value for SFCFS_NCACHE_DIRECTORY.

Also, in the case of tuning, execute **sfcstat**(1M) that reports statistics on GFS Shared File System by specifying the -m option, and check the cache-hit ratio of the meta-cache which corresponds to the tuning parameter. The cache-hit ratio is calculated from the number of accesses and the number of cache hits. If the cache-hit ratio is low, consider to specify a larger value of the tuning parameter.

The following shows the correspondence of each tuning parameter and meta-cache type displayed by the -m option of **sfcstat**(1M).

Table 14.2 Correspondence of tuning parameter and meta-cache type displayed by -m option of sfcstat(1M)

Tuning parameter name	Meta-cache type
SFCFS_NCACHE_IEX	IEX
SFCFS_NCACHE_EXTENT	NODE, LEAF
SFCFS_NCACHE_DIRECTORY	DIR

Tuning parameter name	Meta-cache type
SFCFS_NCACHE_INODE	DINODE



For the situation which tuning of SFCFS_NCACHE_IEX is required, refer to "[C.3.6 Corrective action when file access performance is low.](#)"

To back to the default amount of cache, delete each tuning parameter setting.

The following shows the example to delete and check the parameter setting.

(Example)

```
# sfcadm -o SFCFS_NCACHE_IEX= /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
# sfcadm -o SFCFS_NCACHE_EXTENT= /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
# sfcadm -o SFCFS_NCACHE_DIRECTORY= /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
# sfcadm -o SFCFS_NCACHE_INODE= /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

(Example)

```
# sfcinfo -e /dev/sfdsk/gfs01/dsk/volume01 | grep SFCFS_NCACHE <Enter>
```

If no value is displayed here, the setting has been deleted.

14.1.2 Communication timeout value

It is possible to tune the following items:

- Communication timeout value of the 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.

The default of a communication timeout value is 180 seconds.

Specify the tuning parameters with the -o option of **sfcadm**(1M).

The following shows the setting example.

(Example)

```
# sfcadm -o CON_TIMEOUT=240 /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

Check the specified values with the -e option of **sfcinfo**(1M).

The following shows the example to check the values.

(Example)

```
# sfcinfo -e /dev/sfdsk/gfs01/dsk/volume01 | grep CON_TIMEOUT <Enter>
CON_TIMEOUT=240
```

For the following cases, set the larger value to **CON_TIMEOUT**:

- When it is expected that the loading of system becomes high
- When the Live Migration function is used in an Oracle VM Server for SPARC environment (the value should be 630 seconds or more)

However, if setting the larger value to **CON_TIMEOUT**, the error return from a system call will take more time in case of the blockade by such as communication abnormality.

Set the smaller value to **CON_TIMEOUT** when there are a few file systems in use and you want to improve the response of the error return from a system call in case of the blockade by such as the communication abnormality. 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.

14.1.3 Communication protocol

In the GFS Shared File System, the following item can be tuned for communication between MDS and AC:

- Communication protocol (**SFCFS_IPV6**)

Determine either IPv6 or IPv4 to be used as a communication protocol between MDS and AC. Then, set it for **SFCFS_IPV6**. Set 1 for IPv6 and set 0 for IPv4. This value can be set for each file system.

The default is IPv4.



- A communication protocol can be set for each file system; however, we recommend that users set the same communication protocol for all the file systems so that it can be easily managed.
- When changing a communication protocol, change the IP address of the shared node that is registered in host database (for example: **/etc/inet/hosts**) to the one that matches the changed communication protocol. If the IP address does not match the communication protocol, the GFS Shared File System cannot be mounted.

Specify the tuning parameters with the **-o** option of **sfcadm(1M)**.

The following shows the example when using IPv6 as a communication protocol.

(Example)

```
# sfcadm -o SFCFS_IPV6=1 /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

Check the specified values with the **-e** option of **sfcinfo(1M)**.

The following shows the example to check the values.

(Example)

```
# sfcinfo -e /dev/sfdsk/gfs01/dsk/volume01 | grep SFCFS_IPV6 <Enter>
SFCFS_IPV6=1
```

To restore the communication protocol to IPv4 (default), delete the setting of **SFCFS_IPV6**.

(Example)

```
# sfcadm -o SFCFS_IPV6= /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

(Example)

```
# sfcinfo -e /dev/sfdsk/gfs01/dsk/volume01 | grep SFCFS_IPV6 <Enter>
```

If no value is displayed here, the setting has been deleted.

14.1.4 Enabling and disabling the Nagle algorithm in the communications between MDS and AC

It is possible to tune the following items:

- Enabling and disabling the Nagle algorithm (**GFS_TCP_NAGLE**)

For `GFS_TCP_NAGLE`, specify whether to use (enable or disable) the Nagle algorithm in the communications between MDS and AC. Set the value to 1 to enable it, and set the value to 0 to disable it. This value can be set for every file system.

The Nagle algorithm is enabled by default.

Specify the tuning parameters with the `-o` option of `sfcadm(1M)`.

The following shows the example to disable the Nagle algorithm.

(Example)

```
# sfcadm -o GFS_TCP_NAGLE=0 /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

Check the specified values with the `-e` option of `sfcinfo(1M)`.

The following shows the example to check the values.

(Example)

```
# sfcinfo -e /dev/sfdsk/gfs01/dsk/volume01 | grep GFS_TCP_NAGLE <Enter>
GFS_TCP_NAGLE=0
```

By disabling the Nagle algorithm, you can reduce the response time in accessing the GFS Shared File System from a node where the primary MDS is not running.

Especially, improvement of the performance can be expected in the following cases:

- Frequently creating files, deleting files, or accessing or modifying the attribute of files
- Accessing a lot of files (for example, backup)

However, the load may increase on the network used for communication between MDS and AC. The network load status can be checked with `netstat(1M)`.

Chapter 15 Migration to the GFS Shared File System

This chapter describes how to move the existing files such as UFS 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 UFS to the GFS Shared File System, be aware of the following important information.



- 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(1)** 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 UFS file system on a backup device or another file system using a command such as **tar(1)** and **cpio(1)**.
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 UFS 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

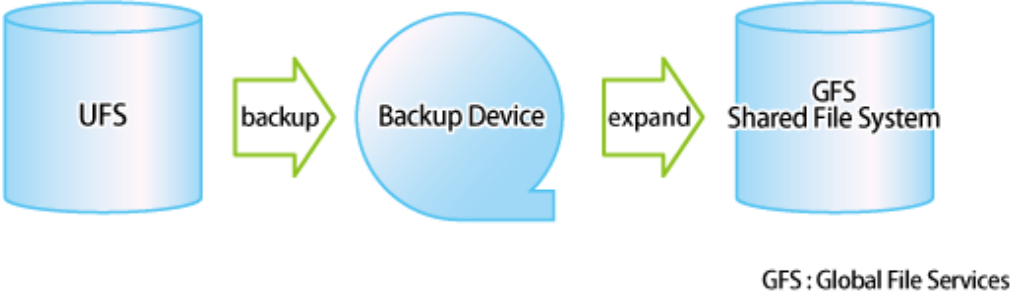
Create a GFS Shared File System and mount it according to "[10.2 Creation](#)" or "[11.2 Creation](#)"

In this example, the mount point is **/sfcfs**.

3. Restore the file.

```
# cd /sfcfs <Enter>
# tar xvf /data/backup.tar <Enter>
```


Figure 15.1 Migration from UFS



Appendix A List of Messages

This appendix explains the 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.

Types and priorities of messages are listed below.

Type	Priority (<i>facility.level</i>)
Panic message	kern.emerg
Warning message	kern.warning
Information message	kern.notice

The priorities of the messages are passed to syslogd(1M).

The output destination of the messages is defined in the `/etc/syslog.conf` file. The output destination of the messages is `/var/adm/messages` by default of the operating system.



For details about the `/etc/syslog.conf` file, see `syslog.conf(4)` in the Solaris documentation.

A.1.1 Panic messages

This sub-section describes the AC panic messages of the GFS Shared File System.

PANIC: FSP_PCLGFS_SFXFSKNL: 0001: *mountpoint*: Internal error: *details*

Explanation

An internal error occurred in the GFS Shared File System. See detailed information in *details*.

Response

Collect crash dump and a file output with `FIQSS` or `fjsnap` for troubleshooting information then contacts field engineers.

A.1.2 Warning messages

This sub-section describes the AC Warning messages of the GFS Shared File System.

WARNING: FSP_PCLGFS_SFXFSKNL: 1002: *mountpoint*: Blockade start: *details*

Explanation

The close processing of the file system (*mountpoint*) is initiated. See detailed information in *details*.

Response

None.

WARNING: FSP_PCLGFS_SFXFSKNL: 1003: *mountpoint*: Blockade end

Explanation

The close processing of the file system (*mountpoint*) is terminated. The file system will be unavailable.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

Unmount the file system on the node where the message is output.

WARNING: FSP_PCLGFS_SFXFSKNL: 1103: *mountpoint*: Cannot mount: Invalid argument: [details](#)

Explanation

An error is detected when **mount(2)** of the file system (*mountpoint*) is specified. See detailed information in *details*. Mounting of the file system fails.

Response

Display the partition information by executing the **fstyp_sfcfs(1M)** with the **-v** option then check that the file system configuration is correct. If the information is incorrect, reconfigure the file system. If it is correct, collect troubleshooting information with FJQSS or **fjsnap** then contact field engineers.

WARNING: FSP_PCLGFS_SFXFSKNL: 1104: *mountpoint*: Cannot mount: Connection failed: [details](#)

Explanation

Connection to MDS failed. See detailed information in *details*. Mounting of the file system fails.

Response

Check the following points:

- Check the network connection state with the node where MDS runs.
- Check whether the IP address of the node where MDS runs is correctly registered in host database (for example: */etc/inet/hosts*). For details, see "[11.2.2 Registering information in host database.](#)"
- If the AC information message "NOTICE: FSP_PCLGFS_SFXFSKNL: 2004: *mountpoint*: Disconnect start: *details*" was output before this message, check whether the IP address of this node is correctly registered in host database on the node where MDS runs.

If the problem cannot be solved after taking the above actions, collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

WARNING: FSP_PCLGFS_SFXFSKNL: 1199: *mountpoint*: Cannot mount: [details](#)

Explanation

See detailed information in *details*. Mounting of the file system fails.

Response

Check */var/adm/messages* on the node where MDS is running. If there are any warning message output by MDS, take corrective action according to them. Also, check the network, node, IP address settings.

WARNING: FSP_PCLGFS_SFXFSKNL: 1201: *mountpoint*: HEARTBEAT timeout (xid=*xid*)

Explanation

A timeout occurs while waiting for a heartbeat response from MDS. The file system (*mountpoint*) will be unavailable.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

WARNING: FSP_PCLGFS_SFXFSKNL: 1301: *mountpoint*: Protocol error: [details](#)

Explanation

An illegal message was received during communication with MDS of the file system (*mountpoint*). See detailed information in *details*. The file system (*mountpoint*) will be unavailable.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

WARNING: FSP_PCLGFS_SFXFSKNL: 1401: *mountpoint*: Recovery failed: *details*

Explanation

Recovery of MDS of the file system (*mountpoint*) failed. See detailed information in *details*. The file system (*mountpoint*) will be unavailable.

Response

Check the following points:

- Check the network connection state with the node where MDS runs.
- Check whether the IP address of the node where MDS runs is correctly registered in host database (for example: */etc/inet/hosts*). For details, see "[11.2.2 Registering information in host database](#)."
- If the AC information message "NOTICE: FSP_PCLGFS_SFXFSKNL: 2004: *mountpoint*: Disconnect start: *details*" was output before this message, check whether the IP address of this node is correctly registered in host database on the node where MDS runs.

If the problem cannot be solved after taking the above actions, collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

WARNING: FSP_PCLGFS_SFXFSKNL: 1501: *mountpoint*: Read error: ino=*inum* off=*offset* len=*length*

Explanation

Reading from the disk failed.

Response

Take action according to the instructions in "[C.3.1 Action for I/O errors](#)".

WARNING: FSP_PCLGFS_SFXFSKNL: 1502: *mountpoint*: Write error: ino=*inum* off=*offset* len=*length*

Explanation

Writing to the disk failed.

Response

Take action according to the instructions in "[C.3.1 Action for I/O errors](#)".

A.1.3 Information messages

This sub-section describes the AC information messages of the GFS Shared File System.

NOTICE: FSP_PCLGFS_SFXFSKNL: 2001: *mountpoint*: File system full

Explanation

The file system (mount point) is depleted. Since general users cannot use reserved area for super users, this message might be output even though the disk has sufficient free space.

Response

Expand the file system, delete unnecessary files, or move the files to the other file systems where there is sufficient free disk space. When expanding the file system, use **sfcadd**(1M).

NOTICE: FSP_PCLGFS_SFXFSKNL: 2002: *mountpoint*: Mmap conflict with open: ino=*inum*, pid=*pid*

Explanation

The file (*inum*) on which **mmap**(2) is executed on the file system (*mountpoint*) cannot be mapped. In order to ensure data integrity, file mapping is not allowed.

Response

Wait until **open**(2) is done on the other node then execute the command again.

NOTICE: FSP_PCLGFS_SFXFSKNL: 2003: *mountpoint*: Open conflict with mmap: ino=*inum*, pid=*pid*

Explanation

The file (*inum*) on which **mmap**(2) is executed on the file system (*mountpoint*) cannot be opened. In order to ensure data integrity, file opening is not allowed.

Response

Wait until **mmap**(2) is done on the other node then execute the command again.

NOTICE: FSP_PCLGFS_SFXFSKNL: 2004: *mountpoint*: Disconnect start: *details*

Explanation

Disconnection between the file system (*mountpoint*) and MDS is initiated. See detailed information in *details*.

Response

None.

NOTICE: FSP_PCLGFS_SFXFSKNL: 2005: *mountpoint*: Disconnect end

Explanation

Disconnection between the file system (*mountpoint*) and MDS is completed.

Response

None.

NOTICE: FSP_PCLGFS_SFXFSKNL: 2007: *mountpoint*: Recovery start

Explanation

Recovery of the file system (*mountpoint*) is initiated.

Response

None.

NOTICE: FSP_PCLGFS_SFXFSKNL: 2008: *mountpoint*: Recovery end

Explanation

Recovery of the file system (*mountpoint*) is completed.

Response

None.

A.2 The GFS Shared File System Daemon messages

This section explains the GFS Shared File System daemon messages.

Types, daemons or commands to be output, and priorities are listed below.

Type	Daemons or commands to be output	Priority (<i>facility.level</i>)
Panic message	MDS (sfcfsmsg daemon)	daemon.emerg
	sfcprmd daemon	daemon.emerg
Error message	sfcfrmd daemon	daemon.err

Type	Daemons or commands to be output	Priority (<i>facility.level</i>)
	MDS (sfcfsmg daemon)	daemon.err
	sfcfds daemon	daemon.err
	sfdfs_mount command	user.err
	sfcpncd daemon	daemon.err
	sfcpnrd daemon	daemon.err
Warning message	MDS (sfcfsmg daemon)	daemon.warning
	sfcfds daemon	daemon.warning
	sfchnsd daemon	daemon.warning
Information message	sfcpnrd daemon	daemon.notice
	MDS (sfcfsmg daemon)	daemon.notice
	sfcpnrd daemon	daemon.notice
	sfchnsd daemon	daemon.notice

The priorities of the messages are passed to syslogd(1M).

The output destination of the messages is defined in the `/etc/syslog.conf` file. The output destination of the messages is `/var/adm/messages` by default of the operating system.



See

For details about the `/etc/syslog.conf` file, see `syslog.conf(4)` in the Solaris documentation.

A.2.1 Panic messages (MDS(sfcfsmg daemon))

This section explains the MDS (sfcfsmg daemon) panic messages of the GFS Shared File System.

The messages do not cause a node panic.

PANIC: sfcfs_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 FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

PANIC: sfcfs_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 FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

A.2.2 Panic messages (sfcpnrd daemon)

This section explains the sfcpnrd daemon panic messages of the GFS Shared File System.

sfcpnrd: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, the GFS Shared File System management is continued by other nodes.

Response

Collect a crash dump. Also, collect a file output with FJQSS or **fjsnap** for troubleshooting information when rebooting the system, and then contact field engineers.

sfcpanicnode: PANIC: sfcprmd was down, panic for keep data integrity of GFS and continue cluster operation.

Explanation

The sfcprmd 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, the GFS Shared File System management is continued by other nodes.

Response

Collect a crash dump. Also, collect a file output with FJQSS or **fjsnap** for troubleshooting information when rebooting the system, and then contact field engineers.

sfcpanicnode: 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, the GFS Shared File System management is continued by other nodes.

Response

Collect a crash dump. Also, collect a file output with FJQSS or **fjsnap** for troubleshooting information when rebooting the system, and then contact field engineers.

sfcpanicnode: 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, the GFS Shared File System management is continued by other nodes.

Response

Collect a crash dump. Also, collect a file output with FJQSS or **fjsnap** for troubleshooting information when rebooting the system, and then contact field engineers.

A.2.3 Error messages (sfcfrmd daemon)

This section explains the sfcfrmd daemon error messages of the GFS Shared File System.

ERROR: sfcfrmd:0001: not superuser

Explanation

The sfcfrmd daemon is not performed by super user

Response

Please start sfcfrmd daemon by **sfcfrmdstart**(1M) command as a super user.

ERROR: sfcfrmd:0002: associated with a terminal device**Explanation**

The direct module is performed.

Response

Start the sfcfrmd daemon by executing **sfcfrmstart**(1M) 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 daemon 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/FJSVgfs** was broken.

Response

Make sure that **/var/opt** directory has a space by **df**(1M) command. If there is not enough space, delete unnecessary files or move them to other file systems to increase space. Then 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 sfcfsrm or *pathname* is broken.

Response

Check if **sfcfsrm<Port number>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**(4) of the Solaris documentation.

If the setting above is right, *pathname* seems broken. Collect the diagnostic data with FJQSS or **fjsnap** and contact field engineers.

ERROR: sfcfrmd:0006: cannot allocate memory space**Explanation**

Since acquisition of a memory went wrong, sfcfrmd daemon 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**

The sfcfrmd daemon starting went wrong.

Response

Please confirm whether the port number of sfcfsrm in the **/etc/services** is the same as the node starting the sfcfrmd daemon.

- When the port number is different

After changes to the same port number as the node that has started the sfcfrmd daemon, please use **sfcfrmstart**(1M) by the super user authority and start the sfcfrmd daemon. For details about the file definition, see **services**(4) of the Solaris documentation.

- When the port number is the same

Collect the diagnostic data with FJQSS or **fjsnap** in all nodes, and contact field engineers.

ERROR: sfcfrmd:0008: I/O error or data corruption of management partition: *pathname***Explanation**

The sfcfrmd daemon 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 daemon 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: sfcprmd:0011: cannot connect to sfcprmd**Explanation**

Connection with sfcprmd daemon went wrong.

Response

Make sure that the sfcprmd daemon is running by **ps(1)** command (for example, "**/usr/bin/ps -e | /usr/bin/grep sfcprmd**"). If the sfcprmd daemon was stopped by the unload dependency script, restart sfcprmd daemon by the load script ("**/opt/SMAW/SMAWcf/dep/start.d/S81sfcs 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 FJQSS or **fjsnap** for troubleshooting information then contact field engineers. Restart the node where this problem occurred.

ERROR: sfcfrmd:0012: cannot connect to sfchnsd**Explanation**

Connection with sfchnsd daemon went wrong.

Response

Make sure that the sfchnsd daemon is running by **ps(1)** command (for example, "**/usr/bin/ps -e | /usr/bin/grep sfchnsd**"). If the sfchnsd daemon was stopped by the unload dependency script, restart sfchnsd daemon by the load script ("**/opt/SMAW/SMAWcf/dep/start.d/S81sfcs 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 FJQSS or **fjsnap** for troubleshooting information then contact field engineers. Restart the node where this problem occurred.

ERROR: sfcfrmd:0013: cannot activate sfchnsd

Explanation

The sfchnsd daemon is not activated.

Response

Collect the diagnostic data with FJQSS or **fjsnap** in the node, and contact field engineers.

ERROR: sfcfcmd:0014: cannot get service port

Explanation

A service port is not able to be acquired.

Response

Check if **sfcfsm** <Port number>/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**(4) of the Solaris documentation.

ERROR: sfcfcmd: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: sfcfcmd: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 **sfctestup**(1M) command.

A.2.4 Error messages (MDS (sfcfmsg daemon))

This section explains the MDS (sfcfmsg daemon) error messages of the GFS Shared File System.

ERROR: sfdfs_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 FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

ERROR: sfdfs_mds:1001: MDS is failed

Explanation

MDS failed in recovery mounting.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

ERROR: sfdfs_mds:1002: primary MDS is terminated

Explanation

Primary MDS was terminated abnormally.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

ERROR: sfcfs_mds:1004: can't execute primary MDS
ERROR: sfcfs_mds:1005: can't execute secondary MDS

Explanation

Startup of the primary MDS or secondary MDS failed.

Response

Check the following points.

- Quantity of memory is enough.
 - Check if a message indicating insufficient memory of Solaris OS is output to the console.
- Connection 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(1M)**.
- Setting of network is normal.
- Check whether all the IP addresses of the nodes that share the file system are correctly registered in host database (for example: **/etc/inet/hosts**). For details, see "[11.2.2 Registering information in host database](#)" in this manual.
 - Check whether IP address of a DNS server is described in **/etc/resolv.conf**.
 - Check whether **/etc/nsswitch.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 Configuration and Administration Guide](#)."
- Isn't the disk breakdown?
 - Confirm whether the error message of GDS or a disk driver is output to **/var/adm/messages**. When the error message is output, please perform disposal corresponding to the message. For details, see "[PRIMECLUSTER Global Disk Services 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 shared node which the **sfcinfo(1M)** command and the **sfcrsinfo(1M)** command display and the host name specified to be **-m** option of the **sfcadm(1M)** command execution line obtained by the **sfcgetconf(1M)** command are the same.
 - **sfcinfo -n** <representative partition of the file system>
 - **sfcrsinfo -m** <representative partition of the file system>
 - **sfcgetconf -d** <representative partition of the file system> <output destination file name>
 - When not the same, please change the **-m** option to the **-u** option of the **sfcadm(1M)** command execution line obtained by the **sfcgetconf(1M)** command, and then execute the command line.

If the problem cannot be solved by the response above, collect the diagnostic data with FJQSS or **fjsnap** and contact field engineers. For details on commands, see [sfcinfo\(1M\)](#), [sfcrsinfo\(1M\)](#), and [sfcgetconf\(1M\)](#) in this manual. Moreover for the details of the **sfcadm(1M)** command execution line obtained by **sfcgetconf(1M)**, see "[9.6 Backup of the management partition information](#)" and "[9.7 Restoring of the management partition information](#)" in this manual.

ERROR: sfcfs_mds:1006: can't execute MDS

Explanation

Starting up MDS failed.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

ERROR: sfdfs_mds:1007: fsid: MDS terminated because logreplay failed. errcode=errcode

Explanation

The log replay by MDS of the file system failed.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field 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 an error in file system.

Response

Unmount the relevant file system from all of the nodes, and execute **fsck_sfdfs(1M)** 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 **fsck_sfdfs(1M)** 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 (sfcsfd daemon)

This section explains the sfcsfd daemon error messages of the GFS Shared File System.

ERROR: sfcsfd: 0001: gfs monitor daemon for mountpoint(*mountpoint*) abort: *detail*

ERROR: sfcsfd: 0002: gfs monitor daemon for fsid(*fsid*) abort: *detail*

ERROR: sfcsfd: 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 FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

ERROR: sfcsfd: 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 FJQSS or **fjsnap** and contact field engineers.

ERROR: sfcdsd: 0005: can't execute secondary MDS : mountpoint(*mountpoint*)**Explanation**

Start up of the secondary MDS has failed.

Response

Please confirm whether the message of sfcds_mds is output at the same time as this message. When the message of sfcds_mds is output, please cope with it according to the message. Otherwise, collect the diagnostic data with FJQSS or **fjsnap** and contact field engineers.

ERROR: sfcdsd: 0006: can't take over MDS : mountpoint(*mountpoint*)**Explanation**

Switchover of the MDS failed.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

ERROR: sfcdsd: 0007: primary MDS down : mountpoint(*mountpoint*)**Explanation**

The primary MDS has failed.

Response

Please confirm whether the message of sfcds_mds is output at the same time as this message. When the message of sfcds_mds is output, please cope with it according to the message. Otherwise, collect the diagnostic data with FJQSS or **fjsnap** and contact field engineers.

ERROR: sfcdsd: 0008: secondary MDS down : mountpoint(*mountpoint*)**Explanation**

The secondary MDS has failed.

Response

Please confirm whether the message of sfcds_mds is output at the same time as this message. When the message of sfcds_mds is output, please cope with it according to the message. Otherwise, collect the diagnostic data with FJQSS or **fjsnap** and contact field engineers.

ERROR: sfcdsd: 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 FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

ERROR: sfcdsd: 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 FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

ERROR: sfcdsd: 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 FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

A.2.6 Error messages (sfcfs_mount command)

This section explains the sfcfs_mount command messages that is called sfcfsd daemon of the GFS Shared File System.

ERROR: sfcfs_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: sfcfs_mount:0002: *special* : signal(2) is error: *errmsg*

Explanation

The mounting failed due to an internal error.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

ERROR: sfcfs_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: sfcfs_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: sfcfs_mount:0005: *special* : cannot read file system configuration information

Explanation

Reading the file system configuration information failed.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

ERROR: sfcfs_mount:0006: *special* : Cannot get port number of *sfcfs-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: sfcfs_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

Check the following points:

- Setting of network is normal.

Check whether the IP addresses of the MDS nodes are correctly registered in host database (for example: `/etc/inet/hosts`). For details, see "11.2.2 Registering information in host database."

- The file system configuration information is normal.

Execute `sfcrcsinfo(1M)` with the `-m` option to check whether the host names of the MDS nodes are correct.

If the host names are not correct, change them by using `sfcadm(1M)` with the `-u` option.

If the problem cannot be solved after taking the above actions, collect a file output with FJQSS or `fjsnap` for troubleshooting information then contact field engineers.

For details on the commands, see `sfcrcsinfo(1M)` and `sfcadm(1M)` in this manual.

ERROR: sfcfs_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(1M)`, and take action.

If GFS is used by a Solaris Zones environment, and if a non-global zone is set to be automatically started when a global zone is started, check that the mount point `mount_point` is not mounted with `lofs` before mounting the GFS Shared File System.

```
# mount -p | grep mount_point
mount_point - path lofs - no
```

When only the line where the forth column is `lofs` is output, take the following procedures to recover the failure:

1. Stop the non-global zone that shares the GFS Shared File System.

```
# zoneadm -z zonename halt
```

zonename is a zone name of the non-global zone.

2. Mount the GFS Shared File System.

```
# mount mount_point
```

3. Start the stopped non-global zone.

```
# zoneadm -z zonename boot
```

See also "Point" in "1.8.10 GFS operational notices for Solaris Zones" to take the permanent action.

ERROR: sfcfs_mount:0011: special : recovery mount is in progress**Explanation**

The mounting cannot be performed because recovery processing is in progress.

Response

None.

ERROR: sfcfs_mount:0012:special : cannot connect to Primary-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: sfcfs_mount:0015:special,mountpoint: mount(2) is error:errmsg

Explanation

An unexpected error was detected on the mounting.

Possible causes:

- The *special* or *mountpoint* specified is invalid.
- The network setting of a shared node is invalid.
- The host name of a shared node specified is invalid.
- The shared node fails during command execution.

Response

Execute **mount_sfcfs(1M)** again after correcting the cause of the failure according to the following procedures:

- Check whether a file and a directory specified with *special* and *mountpoint* exist. If the specification is not correct, specify the correct *special* and *mountpoint*. Create the directory specified with *mountpoint*, if it has not been created.
- Check whether the IP address of the node that shares the file system is correctly registered in host database (for example: */etc/inet/hosts*). For details, see "[11.2.2 Registering information in host database.](#)"
- Execute **sfcinfo(1M)** with the **-n** and **-a** options to check whether the host name of a shared node is correct. If the host name is not correct, change it by using **sfcadm(1M)** with **-u** option.
- If any warning message was output immediately before this message, take an action to deal with the warning message.

If the problem cannot be solved by the response above, collect the diagnostic data with FJQSS or **fjsnap** and contact field engineers.

For details on the commands, see [sfcinfo\(1M\)](#) and [sfcadm\(1M\)](#) in this manual.

ERROR: sfcfs_mount:0018:special : unknown error(errno)

Explanation

An unknown error was detected.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

ERROR: sfcfs_mount:0019: cannot open special: errmsg

Explanation

Opening of the partition (*special*) failed.

Response

Take corrective action according the detailed information *errmsg*.

ERROR: sfcfs_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 FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

ERROR: sfcfs_mount:0021: special is not sfcfs 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.

ERROR: sfcfs_mount:0023:special : invalid parameter(param)

Explanation

An invalid value was detected in the tuning parameter *param* for the file system.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

A.2.7 Error messages (sfcpcnd daemon)

This section explains the sfcpcnd daemon error messages of the GFS Shared File System.

ERROR: sfcpcnd: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

The sfcpcnd daemon failed booting.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

ERROR: sfcpcnd:0003: Cannot create the semaphore. Abort.

Explanation

Creation of the semaphore failed.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

ERROR: sfcpcnd:0004: Fatal error. Abort.

Explanation

The sfcpcnd daemon terminated abnormally.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field 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

The sfcprmd daemon failed booting.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

ERROR: sfcprmd:0003: Cannot open /dev/null. Abort.

Explanation

Opening **/dev/null** failed.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

ERROR: sfcprmd:0004: Cannot access to the /var/opt/FJSVgfs/.sfcprmd_uds. Abort.

Explanation

Accessing **/var/opt/FJSVgfs/.sfcprmd_uds** failed.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

ERROR: sfcprmd:0005: Memory not enough. Abort.

Explanation

There is insufficient memory to allow sfcprmd daemon to boot.

Response

Increase the amount of memory or the size of the swap area.

ERROR: sfcprmd:0007: Cannot access to the semaphore of sfcpncd. Abort.

Explanation

The semaphore created by sfcpncd daemon cannot be accessed.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

A.2.9 Warning messages (MDS (sfcsmsg daemon))

This section explains the MDS (sfcsmsg daemon) warning messages of the GFS Shared File System.

WARNING: sfcs_mds:2001: fsid: daemon create failed(lock_init failed). errcode=errcode

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: sfcs_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: sfcs_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: sfcs_mds:2004: fsid: bad dir: invalid offset. ino=ino-num offset=offset
WARNING: sfcs_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 **fsck_sfcs(1M)** specifying **-o nolog**.

WARNING: sfcs_mds:2008: fsid: meta data read error. type=number dev=dev_num block=block_num size=size errcode=errcode
WARNING: sfcs_mds:2009: fsid: meta data read error. type=number dev=dev_num 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: sfcs_mds:2010: fsid: bitmap read error. type=number dev=dev_num block=block_num size=size errcode=errcode
WARNING: sfcs_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: sfcfs_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: sfcfs_mds:2013: fsid: bitmap write error.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*).

Response

Unless message sfcfs_mds:2014 or sfcfs_mds:2015 is issued, recovery by retry processing was successful, so no Response is required.

WARNING: sfcfs_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: sfcfs_mds:2016: fsid: meta data write error. 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*).

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 `sfdfs_mds:2019` is issued, recovery was performed by retry processing, so no Response is required.

WARNING: `sfdfs_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`). 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: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: `sfdfs_mds:2021: fsid: cannot access, too many I/O errors. dev=dev_num`

Explanation

The file system (`fsid`) was blockaded 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: `sfdfs_mds:2022: fsid: volume information write error. dev=dev_num block=block_num size=size errcode=errcode`

WARNING: `sfdfs_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` of the file system (`fsid`).

Response

Take action according to the instructions in "[C.3.1 Action for I/O errors](#)".

WARNING: `sfdfs_mds:2024: fsid: cannot delete extents. 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 `fsck_sfdfs(1M)` specifying `-o nolog`.

WARNING: `sfdfs_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 **fsck_sfdfs**(1M) specifying **-o nolog**.

WARNING: sfdfs_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 **fsck_sfdfs**(1M) specifying **-o nolog**.

WARNING: sfdfs_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: sfdfs_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: sfdfs_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**(1M).

WARNING: sfdfs_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**(1M), 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: sfdfs_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**(1M), 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**(1M), 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. fsid= *fsid*, 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**(1M).
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.

If the tuning parameter SFCFS_NCACHE_IEX is set, check again the specified value.

WARNING: sfcfs_mds:2037: read error on log partition(errno=errno errcode=errcode): 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=error_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=error_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: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 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**(1M), 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:2046: fsid: invalid parameter(*param*)

Explanation

An invalid value was detected in the tuning parameter *param* for the file system.

Response

Check whether the tuning parameter is correctly set. For details, see "[14.1 Tuning Parameters](#)" in this manual.

WARNING: sfcfs_mds:2047: fsid: parameter(SFCFS_NCACHE_IEX=*num*) is out of range

Explanation

The value *num* is out of the valid range of the file system tuning parameter SFCFS_NCACHE_IEX (512 to 1048576) and changed within the valid range.

The validated value is confirmable from the information message "NOTICE: sfcfs_mds:3022: *fsid*: amount of meta cache IEX is *num*", which is output after this message.

Response

Use the **sfcinfo**(1M) command to check the tuning parameter, then set the correct tuning parameter by using the **sfcadm**(1M) command.

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 Warning messages (sfchnsd daemon)

If a warning message of the "sfchnsd" daemon is output, collect troubleshooting information using FJQSS or **fjsnap** then contact field engineers.

A.2.12 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

The sfcfrmd daemon was started as a master.

Response

None.

NOTICE: sfcfrmd:0002: serve as slave

Explanation

The sfcfrmd daemon was started as a slave.

Response

None.

NOTICE: sfcfrmd:0003: service start

Explanation

Service of sfcfrmd daemon was started.

Response

None.

NOTICE: sfcfrmd:0004: service stop

Explanation

Service of sfcfrmd daemon was completed.

Response

None.

A.2.13 Information messages (MDS (sfcsmsg daemon))

This section explains the MDS (sfcsmsg daemon) information messages of the GFS Shared File System.

NOTICE: sfdfs_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 **sfccadd**(1M).

NOTICE: sfdfs_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: sfdfs_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: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 sfcfs_mds:2020 is issued, recovery by retry processing was successful, so no Response is required.

NOTICE: sfcfs_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: sfcfs_mds:3008: primary super block read failed, but secondary read. errcode=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: sfcfs_mds:3009: fsid: secondary super block read failed, but primary read. dev=dev_num block=block_num size=size errcode=errcode**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: sfcfs_mds:3010: secondary super block read failed, but primary read. errcode=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: sfcfs_mds:3011: *fsid*: primary partition configuration read failed, but secondary 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 read. 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 primary 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 read. 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*: error=*error*

Explanation

The size of the specified partition on the device *dev_num* 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(1M)**.

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(1M)**.

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.

NOTICE: sfcfs_mds:3022: fsid: amount of meta cache IEX is num**Explanation**

The amount of cache of indirect extent management information of the file is set to *num*.

Response

None.

A.2.14 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.2.15 Information messages (sfchnsd daemon)

This section explains the sfchnsd daemon information messages of the GFS Shared File System.

already connected from sfcfrmd

Explanation

The UNIX domain that is used for communication with the "sfcfrmd" daemon is requested to establish communication from non-sfcfrmd daemon process.

Response

Check privileges to access `/var/opt/FJSVgfs`. Also, check if there is a process to access files in the above directory as a super user.

Cannot open libcf.so: errmsg

Explanation

Loading of `libcf.so` failed.

Response

To use GFS, the PRIMECLUSTER Clustering Base must be installed. Check if it is installed correctly.

libcf.so loaded

Explanation

Loading of `libcf.so` succeeded.

Response

None.

receive signal

Explanation

The "sfchnsd" daemon received *signal*.

Response

None.

start

Explanation

The "sfchnsd" daemon has been activated.

Response

None.

A.3 The GFS Shared File System Script Messages

This section describes the script messages of the GFS Shared File System.

Types and priorities of messages are listed below.

Type	Priority (<i>facility.level</i>)
ERROR	daemon.err
WARNING	daemon.warning
NOTICE	daemon.notice

The priorities of the messages are passed to syslogd(1M).

The output destination of the messages is defined in the /etc/syslog.conf file. The output destination of the messages is /var/adm/messages by default of the operating system.



For details about the /etc/syslog.conf file, see syslog.conf(4) in the Solaris documentation.

A.3.1 sfcfsrm script

ERROR: sfcfsrm:0001: can not execute file_name

Explanation

file_name is not executable.

Response

See "*Installation Guide*" of PRIMECLUSTER and reinstall the package.

ERROR: sfcfsrm: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 **sfcsetup -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 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](#)".

- 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 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. **sfcsetup -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 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: sfcfsrm:0003: sfcfrmstart failed

Explanation

sfcfrmd daemon failed booting.

Response

Check the error message of **sfcfrmstart**(1M) displayed previously to this message, and take corrective action about that message according to "[A.5.3 sfcfrmstart command](#)".

ERROR: sfcfsrm:0004: can not terminate daemon

Explanation

The *daemon* could not be stopped.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

ERROR: sfcfsrm:0008: An error occurred while accessing a file path : errmsg

Explanation

File access to cancel the suspension of the sfcfrmd daemon startup failed.

Response

Check that the **/var/opt/FJSVgfs** 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 Messages*", restart the system.

ERROR: sfcfsrm:0010: Starting the sfcfrmd daemon failed because quorum does not exist

Explanation

Activation of the GFS service is disrupted because a quorum does not exist when CF is started by the 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 by the GUI after CF is stopped on all the nodes, then GFS is operated.
- A cluster partition error exists.

Response

If you activate CF by the GUI after stopping it on all the nodes, see the procedure described in "[12.6 How to start up CF by the 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.3.3 Corrective action when the sfcfrmd daemon is not started.](#)"

ERROR: sfcfsrm:0011: cannot get current zone information

Explanation

The **zonename**(1) command failed.

Response

Execute the **zonename**(1) command then check the correct result is output and reboot the system. If the same problem occurs again, collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

WARNING: sfcfsrm:5001: Starting the sfcfrmd daemon was suspended because quorum 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 by the 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.3.3 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 Command messages for File System Common Management

This section explains the messages that are displayed when file system common management command is used.

A.4.1 df_sfcfs command

df: ERROR: cannot open special: errmsg

Explanation

Opening the partition (*special*) failed.

Response

Take action according to *errmsg*.

df: 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.

df: ERROR: cannot connect to FsRM

Explanation

The file system monitoring mechanism is not operating.

Response

Check whether the file system monitoring mechanism is running.

df: ERROR: cannot read file system configuration information

Explanation

Reading the file system configuration information failed.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

df: 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 FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

df: ERROR: special is not a sfcfs file system

Explanation

The specified partition (*special*) is not a sfcfs file system partition.

Response

Check whether the specified partition is a sfcfs file system partition.

df: ERROR: unknown error = errid

Explanation

An unexpected error was detected.

Response

Collect the diagnostic data with FJQSS or **fjsnap** and contact field engineers submitting it along with text of the error message displayed.

df: 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.

df: ERROR: cannot read the {superblock | volume information} of *special*

Explanation

Reading the super block or volume information on the partition (*special*) failed.

Response

Delete the target file system where it is unnecessary. For details, see "[11.8 Deleting](#)". When it is a necessary file system, restore it running a full scan with **fsck_sfcfs**(1M). For details, see "[C.3.1 Action for I/O errors](#)".

df: ERROR: cannot stat *special*: *errmsg*

Explanation

Obtaining the attribute of the specified partition (*special*) failed.

Response

Take action according to *errmsg*.

df: 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.

df: ERROR: meta volume is not found

Explanation

An error was detected in volume information.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

df: ERROR: invalid magic word 0x*magic*

Explanation

The partition configuration data of the specified partition is invalid.

Response

Check whether the specified partition is a sfcfs file system partition.

df: ERROR: invalid device: *special*

Explanation

The specified partition (*special*) is invalid.

Response

Check whether the specified partition is correct.

df: ERROR: lseek64 error retval: errmsg

Explanation

Special file I/O processing failed.

Response

Take action according to *errmsg*.

df: ERROR: fs structure is wrong

Explanation

The specified file system is not a *sfcs* file system.

Response

Check whether the specified file system is a *sfcs* file system.

df: 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.

df: 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.

df: ERROR: cannot read /etc/mnttab: errcode=errorid

Explanation

Reading **/etc/mnttab** failed.

Response

Check **/etc/mnttab**.

df: ERROR: cannot find mount point for mount_point

Explanation

The specified mountpoint (*mount_point*) cannot be found in the **/etc/mnttab** file.

Response

Check if the specified mountpoint is correct.

df: ERROR: cannot be executed in non-global zone

Explanation

The command cannot be executed in the non-global zone.

Response

For Solaris 10, GFS is allowed to be operated in the global zone only.

df: ERROR: cannot get current zone information

Explanation

Collection of the zone setup information failed.

Response

Check the system then wait until the other process is done, or expand the swap area or memory. Execute the command again.

df: ERROR: cannot realpath *directory*: *errmsg*

Explanation

Collection of the Absolute path name of specified *directory* failed.

Response

Take action according to *errmsg*.

A.4.2 fsck_sfcfs command

For details about **fsck_sfcfs**(1M) error messages, see "[12.2.1 Action to be taken when fsck terminates abnormally](#)".

A.4.3 fstyp_sfcfs command

fstyp: 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.

fstyp: ERROR: cannot open *special*: *errmsg*

Explanation

Opening the partition (*special*) failed.

Response

Take action according to *errmsg*.

fstyp: ERROR: cannot read the {superblock | volume information} of *special*

Explanation

Reading the super block or volume information on the partition (*special*) failed.

Response

Delete the target file system where it is unnecessary. For details, see "[10.4 Deletion](#)" or "[11.8 Deleting](#)". When it is a necessary file system, restore it running a full scan with **fsck_sfcfs**(1M). For details, see "[C.3.1 Action for I/O errors](#)".

fstyp: ERROR: cannot stat *special*: *errmsg*

Explanation

Obtaining the attribute of the specified partition (*special*) failed.

Response

Take action according to *errmsg*.

fstyp: ERROR: fs structure is wrong

Explanation

The specified file system is not a *sfcs* file system.

Response

Check whether the specified file system is a *sfcs* file system.

fstyp: ERROR: invalid device: *special*

Explanation

The specified partition (*special*) is invalid.

Response

Check whether the specified partition is correct.

fstyp: ERROR: lseek64 error retval: *errmsg*

Explanation

Special file I/O processing failed.

Response

Take action according to *errmsg*.

fstyp: ERROR: {primary | secondary} {superblock | volinfo} read error: *errno*

Explanation

A read error occurred with the {primary | secondary} super block.

Response

Check the disk status.

fstyp: ERROR: *special* is not a character device

Explanation

special is not a character special file.

Response

Specify a character special file.

fstyp: 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.

fstyp: 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.

fstyp: ERROR: cannot get current zone information

Explanation

Collection of the zone setup information failed.

Response

Check the system then wait until the other process is done, or expand the swap area or memory. Execute the command again.

A.4.4 mkfs_sfcfs command

mkfs_sfcfs: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.

mkfs_sfcfs: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**.

mkfs_sfcfs:ERROR: Cannot connect to cluster mkfs_sfcfs:ERROR: can not connect to CLUSTER SYSTEM

Explanation

Connecting to the cluster control facility failed.

Response

Make sure that the cluster control facility is operating using the ps command, and re-execute the command.

mkfs_sfcfs:ERROR: Cannot look up special

Explanation

Specified *special* was not found.

Response

Check whether the specified special file name is correct, and re-execute the command.

mkfs_sfcfs:ERROR: Cannot open file : filename

Explanation

Opening the file *filename* failed.

Response

Check whether the file *filename* exists, and re-execute the command.

mkfs_sfcfs: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.

mkfs_sfcfs:ERROR: can not open special : filename(errmsg)

Explanation

Opening the special file *filename* failed.

Response

Take action according to the detailed information *errmsg*.

mkfs_sfcfs:ERROR: sfcfs_synctab : Cannot write to filesystem configuration information : errmsg

Explanation

Updating the file system configuration information failed.

Response

Collect the diagnostic data with FJQSS or **fjsnap** and contact field engineers submitting it along with text of *errmsg*.

mkfs_sfcfs:ERROR: Illegal option : option

Explanation

An illegal option was specified.

Response

Specify a correct option and argument.

mkfs_sfcfs: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.

mkfs_sfcfs: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.

mkfs_sfcfs:ERROR: Not super user

Explanation

The user executing this command is not a super-user.

Response

Re-execute the command as a super-user.

mkfs_sfcfs:ERROR: Number of hostname is over *num*

Explanation

The number of specified sharing hosts exceeds the maximum *num* for the GFS Shared File System.

Response

Specify no more than *num* hosts that will share the file system.

mkfs_sfcfs: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.

mkfs_sfcfs:ERROR: No more add filesystem

Explanation

The number limit of registrable the 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\(1M\)](#) and [sfcinfo\(1M\)](#).

mkfs_sfcfs: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.

mkfs_sfcfs:ERROR: fstat(2) failed *special* : *errmsg*

Explanation

Obtaining the status of the special file *special* failed.

Response

Take action according to detailed information indicated by *errmsg*. For details, see the description of [fstat\(2\)](#).

mkfs_sfcfs:ERROR: ioctl(2) { DKIOCINFO } error : *errmsg*

Explanation

Obtaining the device information failed.

Response

Take action according to the detailed information *errmsg*.

mkfs_sfcfs:ERROR: lseek(2) failed *special* : *errmsg*

Explanation

lseek(2) could not be executed for *special*.

Response

Take action according to detailed information indicated by *errmsg*. For details, see the description of **lseek(2)**.

mkfs_sfcs: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*.

mkfs_sfcs:ERROR: special is already used

Explanation

The specified special device *special* 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.

mkfs_sfcs: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\(1M\)](#) and [sfcinfo\(1M\)](#).

mkfs_sfcs:ERROR: special is mounted, can't mkfs

Explanation

The specified partition indicated by *special* 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(1M)** and re-execute the command.

mkfs_sfcs:ERROR: special is not a sfcs 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.

mkfs_sfcs:ERROR: special is not special device, can't mkfs

Explanation

Specified *special* is not a special device file.

Response

Specify a special file.

mkfs_sfcfs:ERROR: read(2) error at special : errmsg

Explanation

read(2) for *special* failed.

Response

Take action according to detailed information indicated by *errmsg*. For details, see the description of **read(2)**.

mkfs_sfcfs:ERROR: write(2) error at special : errmsg

Explanation

The **write(2)** operation for *special* failed.

Response

Take action according to detailed information indicated by *errmsg*. For details, see the description of **write(2)**.

mkfs_sfcfs:ERROR: Fsid out of range

Explanation

An error was detected in the internal processing.

Response

Collect the diagnostic data with FJQSS or **fjsnap** and contact field engineers submitting it along with text of the error message displayed.

mkfs_sfcfs:ERROR: special partition size is over 1TB

Explanation

The size of the partition of *special* has exceeded 1 terabyte.

Response

Reduce the size of *special* or specify another partition when it is exceeding the maximum partition size, and re-execute the command.

mkfs_sfcfs: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 FJQSS or **fjsnap** and contact field engineers submitting it along with text of the error message displayed.

mkfs_sfcfs:ERROR: Not enough memory

Explanation

Memory allocation failed.

Response

Wait for the termination of another process or increase the swap space.

mkfs_sfcfs:ERROR: Not read file system configuration information

Explanation

Obtaining the file system configuration information failed.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

mkfs_sfdfs: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 FJQSS or **fjsnap** and contact field engineers submitting it along with text of the error message displayed.

mkfs_sfdfs: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.

mkfs_sfdfs:ERROR: can not unlock

Explanation

Releasing the lock in the file system failed.

Response

Re-execute the command after the **mkfs_sfdfs** termination releases the lock.

mkfs_sfdfs:ERROR: can not get fsid

Explanation

Obtaining Fsid for newly adding a file system failed.

Response

Collect the diagnostic data with FJQSS or **fjsnap** and contact field engineers submitting it along with text of the error message displayed.

mkfs_sfdfs: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.

mkfs_sfdfs:ERROR: special is already used for the management partition.

Explanation

Specified *special* has been used for the file system management.

Response

Specified *special* is not available because it is in use for the file system management.

Specify another special file to execute the command.

mkfs_sfdfs: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 FJQSS or **fjsnap** and contact field engineers submitting it along with text of the error message displayed.

mkfs_sfcs: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.

mkfs_sfcs:ERROR: *special* is not Master Partition

Explanation

special is not the representative partition.

Response

Specify the representative partition of the file system created already.

mkfs_sfcs:ERROR: Global Memory Broken

Explanation

An error was detected in the internal processing.

Response

Collect the diagnostic data with FJQSS or **fjsnap** and contact field engineers submitting it along with text of the error message displayed.

mkfs_sfcs:ERROR: cluster error

Explanation

An error was detected in the internal processing with the cluster control facility.

Response

Collect the diagnostic data with FJQSS or **fjsnap** and contact field engineers submitting it along with text of the error message displayed.

mkfs_sfcs: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.

mkfs_sfcs:ERROR: partition [*special*] is small, can't acquire data area

Explanation

Securing the file data area failed because the size of the partition *special* is small.

Response

Specify the bigger partition for *special* or adjust such parameters as **metasz** and **logsz** for smaller size in order to secure the file data area, and re-execute the command.

mkfs_sfcs:ERROR: cannot read the FsRM configuration file: errno = *value*

Explanation

Obtaining the FsRM management information failed.

Response

Collect the diagnostic data with FJQSS or **fjsnap** and contact field engineers submitting it along with text of the error message displayed.

mkfs_sfcfs:ERROR: Can not get host informations

Explanation

Acquisition of host information of the specified node failed.

Possible causes:

- The node specified is invalid.
- The network setting of the specified node is invalid.
- The specified node is stopped.
- sfcfrmd daemon is not running on the specified nodes.
- A cluster partition error exists.

Response

Execute **mkfs_sfcfs**(1M) 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. On the specified node, check whether the IP address of the specified node is correctly registered in host database (for example: **/etc/inet/hosts**). For details, see "[11.2.2 Registering information in host database](#)" in this manual.
3. Confirm that the specified node is not stopped. If the node was stopped, start it.
4. Execute the following operations on all the specified nodes.
 - a. Check if the sfcfrmd daemon is running with the **ps**(1) command.
An example is shown below.

```
# /usr/bin/ps -e | /usr/bin/grep sfcfrmd <Enter>
1629 ?      0:28 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 Solaris documentation.
.....

- b. If the sfcfrmd daemon is not running, confirm that the following message is not output to **/var/adm/messages**.

```
WARNING: sfcfsrm:5001: Starting the sfcfrmd daemon was suspended
because quorum does not exist
```

If the message is not output, execute **sfcfrmstart**(1M) command.

5. When a problem can not be resolved using operations from 1 to 4, a cluster partition error may have occurred. Correct the cluster partition error according to "[C.3.3 Corrective action when the sfcfrmd daemon is not started](#)".

mkfs_sfcfs:ERROR: cannot update the management partition: errno = value

Explanation

Registration to the file system management information failed.

Response

Collect the diagnostic data with FJQSS or **fjsnap** and contact field engineers submitting it along with text of the error message displayed.

mkfs_sfcs:ERROR: Unknown error : *value*

Explanation

An unexpected error was detected in the internal processing.

Response

Collect the diagnostic data with FJQSS or **fjsnap** and contact field engineers submitting it along with text of the error message displayed.

mkfs_sfcs:ERROR: Number of partition is over *count* in *maxvol* : *special*

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.

mkfs_sfcs: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**.

mkfs_sfcs:ERROR: total file system size is too large

Explanation

The total of specified partition sizes exceeds the maximum file system size, so a file system cannot be created.

Response

Make sure that the total of partition sizes of the file data partition specified with **-o data** and the representative partition specified with operand is less than the maximum file system size.

mkfs_sfcs:ERROR: fsid no match. *specail1* fsid *value1*, *specail2* 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 "**mkfs -F sfcs -m**" command. To make the configuration of the specified partition same as that of the displayed current partition by executing **mkfs_sfcs(1M)** with the "**-o data**" option and correct operand.

mkfs_sfcs:ERROR: *special* is mounted, can't mkfs

Explanation

The specified partition *special* is being mounted, so it cannot be changed.

Response

Unmount the file system and delete it by executing **-o force** or **sfcadm(1M)**.

mkfs_sfcfs:ERROR: cannot be executed in non-global zone

Explanation

The command cannot be executed in the non-global zone.

Response

For Solaris 10, GFS is allowed to be operated in the global zone only.

mkfs_sfcfs:ERROR: cannot get current zone information

Explanation

Collection of the zone setup information failed.

Response

Check the system then wait until the other process is done, or expand the swap area or memory. Execute the command again.

mkfs_sfcfs:ERROR: cannot get mounted device information

Explanation

There is an illegal line in **/etc/mnttab**.

Response

Recover the contents of **/etc/mnttab** correctly then execute the command again.

mkfs_sfcfs:ERROR: read_vtoc(3EXT) error

Explanation

Failed to get VTOC information in the specified partition.

Response

Check if the GDS logical volume meets the conditions described in "[1.8.4 Notes on use of logical volumes of GDS](#)." If it does not, set the logical volume again. If this message is output even when the logical volume meets the conditions, collect a file output with **FJQSS** or **fjsnap** for troubleshooting information then contact field engineers.

mkfs_sfcfs: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.

mkfs_sfcfs: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.

mkfs_sfcfs:WARNING: value : bogus metasize 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.

mkfs_sfcfs: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.

mkfs_sfcfs: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.

mkfs_sfcfs: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.

mkfs_sfcfs: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.

mkfs_sfcfs: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.

mkfs_sfcfs: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.

mkfs_sfcfs: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(1M)**. Then, calculate and specify the maximum total size of the file data area for **-o maxdsz** of **mkfs_sfcfs(1M)** and execute the command again.

mkfs_sfcfs: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(1M)**. Then, specify the maximum total number of the partitions for **-o maxvol** of **mkfs_sfcfs(1M)** and execute the command again.

A.4.5 mount_sfcfs command

ERROR: mount: 0001: Permission denied**Explanation**

Execution was attempted with other than super-user permission.

Response

Retry execution with super-user permission.

ERROR: mount: 0002: Cannot open vfstab file**Explanation**

/etc/vfstab could not be opened.

Response

Check if **/etc/vfstab** exists. If it does not, restore the file from backed up data, or define the file again according to "[11.2.4 Setting vfstab](#)".

ERROR: mount: 0003: Both special and mount_point need to be specified in vfstab**Explanation**

Special file *special*, or mount point *mount_point* is not described in **/etc/vfstab**.

Response

Check the status of **/etc/vfstab**.

ERROR: mount: 0004: { special | mount_point }: Cannot connect to cluster foundation**Explanation**

Connection to the cluster control facility failed.

Response

Confirm that the cluster control facility has started.

ERROR: mount: 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: mount: 0006: { *special* | *mount_point* }: signal(2) is error: *errmsg***Explanation**

Signal handling failed.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

ERROR: mount: 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: mount: 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** daemon by using the like of the **ps(1)** command (for example, "**/usr/bin/ps -e | /usr/bin/grep sfcfrmd**"), contact field engineers.

ERROR: mount: 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** daemon by using the like of the **ps(1)** command (for example, "**/usr/bin/ps -e | /usr/bin/grep sfcfrmd**"), contact field engineers.

ERROR: mount: 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(1M)** with the **-an** option. If the host name is missing, add it by executing **sfcnode(1M)**. If the host name is incorrect, correct it by executing **sfcadm(1M)**.

ERROR: mount: 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/vfstab` is correct. Then retry mount processing.

ERROR: mount: 0013: { *special* | *mount_point* }: sfcfrmd may not exist

Explanation

A communications channel with sfcfrmd daemon could not be established.

Response

After confirming the state of sfcfrmd daemon by using the like of the `ps(1)` command (for example, "`/usr/bin/ps -e | /usr/bin/grep sfcfrmd`"), contact field engineers.

ERROR: mount: 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: mount: 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: mount: 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(1M)`, and if it is, stop the process to use the mount point. If the special file is already mounted, unmount it.

ERROR: mount: 0019: { *special* | *mount_point* }: Mount demand processing to sfcfrmd went wrong

Explanation

Mount processing request to daemon has failed.

Response

After confirming the state of sfcfrmd daemon by using the like of the `ps(1)` command (for example, "`/usr/bin/ps -e | /usr/bin/grep sfcfrmd`"), contact field engineers.

ERROR: mount: 0020: { *special* | *mount_point* }: Time out occurred in mount demand processing to sfcfrmd

Explanation

Timeout occurred for a mount processing request to sfcfrmd daemon.

Response

After confirming the state of daemon by using the like of the `ps(1)` command (for example, "`/usr/bin/ps -e | /usr/bin/grep sfcfrmd`".), contact field engineers.

ERROR: mount: 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/vfstab` is a block special file.

ERROR: mount: 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/vfstab` is a directory.

ERROR: mount: 0023: *fstype* is described as an invalid value in vfstab

Explanation

An unexpected error was detected in the *fstype* field in `/etc/vfstab`.

Response

Check the contents of `/etc/vfstab`.

ERROR: mount: 0024: *fstype* is described not as *sfdfs* but as *fstype* in vfstab

Explanation

The specified file system is not the GFS Shared File System.

Response

Check the contents of `/etc/vfstab` and specify the GFS Shared File System.

ERROR: mount: 0025: The description form of vfstab is wrong

Explanation

The description format of `/etc/vfstab` is incorrect.

Response

Confirm the contents of `/etc/vfstab`.

ERROR: mount: 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_sfdfs(1M)` command.

ERROR: mount: 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: mount: 0030: { *special* | *mount_point* }: *mount_point* need to be representative 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: mount: 0032: cannot be executed in non-global zone

Explanation

The command cannot be executed in the non-global zone.

Response

For Solaris 10, GFS is allowed to be operated in the global zone only.

ERROR: mount: 0033: cannot get current zone information

Explanation

Collection of the zone setup information failed.

Response

Check the system then wait until the other process is done, or expand the swap area or memory. Execute the command again.

WARNING: mount: 0027: { *special* | *mount_point* }: *mount_option mntopts* is ignored, used *vfs_mntopts* in *vfstab*

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/vfstab*.

Response

If you want to mount the file system using a mount option, set the mount point in the file system definition of */etc/vfstab*.

WARNING: mount: 0028: { *special* | *mount_point* }: *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/vfstab*.

A.4.6 umount_sfcfs command

ERROR: umount: 0001: Permission denied

Explanation

Execution was attempted with other than super-user permission.

Response

Retry execution with super-user permission.

ERROR: umount: 0002: Cannot open mnttab file**Explanation**

Opening of the **/etc/mnttab** file failed. The file may be lost.

Response

Recover **/etc/mnttab** then execute the command again.

ERROR: umount: 0003: Both *special* and *mount_point* need to be specified in mnttab**Explanation**

A special file *special* and mount point *mount_point* were not registered in **/etc/mnttab**.

Response

Check if the values specified are correct.

ERROR: umount: 0004: { *special* | *mount_point* } not in mnttab**Explanation**

A special file *special* and mount point *mount_point* were not registered in **/etc/mnttab**.

Response

Check the status of **/etc/mnttab**.

ERROR: umount: 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: umount: 0006: { *special* | *mount_point* }: Cannot connect to cluster foundation**Explanation**

Connection to the cluster control facility failed.

Response

Confirm that the cluster control facility has already been started.

ERROR: umount: 0007: { *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

After confirming the state of `sfcfrmd` daemon by using the like of the `ps(1)` command (for example, "`/usr/bin/ps -e | /usr/bin/grep sfcfrmd`"), contact field engineers.

ERROR: umount: 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` daemon by using the like of the `ps(1)` command (for example, "`/usr/bin/ps -e | /usr/bin/grep sfcfrmd`"), contact field engineers.

ERROR: umount: 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 field engineers.

ERROR: umount: 0011: { *special* | *mount_point* }: sfcfrmd may not exist

Explanation

A communication path to `sfcfrmd` daemon could not be established.

Response

After confirming the state of `sfcfrmd` daemon by using the like of the `ps(1)` command (for example, "`/usr/bin/ps -e | /usr/bin/grep sfcfrmd`"), contact field engineers.

ERROR: umount: 0012: *special* not mounted

Explanation

special had already been unmounted.

Response

Specify a file system that is being mounted.

ERROR: umount: 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: umount: 0015: *special*: umount is in progress

Explanation

Unmount processing had already been performed to *special*.

Response

After the `umount_sfcfs(1M)` is completed, check if the file system is unmounted.

ERROR: umount: 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(1M)` command (for example, "`fuser -c mount_point`"). If such a process exists, kill the process and unmount the file system again. Otherwise, collect the diagnostic data with `FJQSS` or `fjsnap` and collect the kernel dump by push the NMI button and contact field engineers.

ERROR: umount: 0017: *special*: Umount demand processing to sfcfrmd went wrong**Explanation**

The unmount processing request for sfcfrmd daemon failed.

Response

After confirming the state of sfcfrmd daemon by using the like of the **ps(1)** command (for example, "**/usr/bin/ps -e | /usr/bin/grep sfcfrmd**"), contact field engineers.

ERROR: umount: 0018: *special*: Time out occurred in umount demand processing to sfcfrmd**Explanation**

A timeout occurred for the sfcfrmd daemon unmount processing request.

Response

After confirming the state of sfcfrmd daemon by using the like of the **ps(1)** command (for example, "**/usr/bin/ps -e | /usr/bin/grep sfcfrmd**"), contact field engineers.

ERROR: umount: 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: umount: 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: umount: 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: umount: 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: umount: 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/vfstab` to the directory path name.

ERROR: umount: 0024: fstype is described as an invalid value in {vfstab | mnttab}

Explanation

An unexpected error was detected in the `fstype` field in `/etc/vfstab` or `/etc/mnttab`.

Response

Recover `/etc/vfstab` or `/etc/mnttab` then execute the command again.

ERROR: umount: 0025: fstype is described not as sfcfs but as fstype in {vfstab | mnttab}

Explanation

The specified file system is not the GFS Shared File System.

Response

Check `/etc/vfstab` and `/etc/mnttab` 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: umount: 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: umount: 0028: { special | mount_point }: mount_point need to be representative 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 The GFS Shared File System Specific Management Commands' Messages

This section describes messages that can be output when the GFS Shared File System specific management commands are used.

A.5.1 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 **mkfs_sfcfs**(1M). 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 daemon by using the likes of the **ps**(1) command. If it does not, activate the file system monitoring facility by executing the **sfcfrmstart**(1M).

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 **FJQSS** or **fjsnap** then contact field 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**(1M) command.

If it is not, set the management partition using **sfcsetup**(1M). If it is, collect troubleshooting information with **FJQSS** or **fjsnap** then contact field 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 FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

sfcadd: ERROR: 0011: *special* is not found in file system configuration table**Explanation**

special does not exist in the management partition.

Response

Specify a character special file name of the existing representative partition of the GFS Shared File System for *special*.

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 FJQSS or **fjsnap** for troubleshooting information then contact field 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: 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**

A shared node of the specified file system is not included in the scope of the disk class to which GDS logical volume of *special* belongs.

Response

Specify GDS logical volume that belongs to the disk class that includes all shared nodes of the specified file system in the scope to *special*.

sfcadd: ERROR: 0017: *special* is mounted, can't sfcadd

Explanation

The special file *special* is being mounted, so the **sfcadd**(1M) 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**(1M) 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: 0021: *special* is not character special device

Explanation

The specified file (*special*) is not a character special file.

Response

Specify a character special file.

sfcadd: ERROR: 0022: *special* is already used for other file system

Explanation

The additional partition *special* is described in **/etc/vfstab**.

Response

Check the "**/etc/vfstab**" file. If the partition *special* is added, delete *special* from **/etc/vfstab**.

sfcadd: ERROR: 0023: **/etc/mnttab cannot open**

Explanation

Opening of **/etc/mnttab** failed.

Response

Recover **/etc/mnttab** then execute the command again.

sfcadd: ERROR: 0024: /etc/vfstab cannot open

Explanation

Opening of **/etc/vfstab** failed.

Response

Check if **/etc/vfstab** exists. If it does not, restore the file from backed up data, or define the file again according to "[11.2.4 Setting vfstab](#)".

sfcadd: ERROR: 0025: cannot read /etc/vfstab

Explanation

There is an invalid line in **/etc/vfstab**.

Response

Modify the **/etc/vfstab** 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 **fsck_sfcfs(1M)**. If the message "*special* is clean" is output, recover the file system by executing **fsck_sfcfs(1M)** with the options **-o f,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 **fsck_sfcfs**(1M) with the options **-o f,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 **fsck_sfcfs**(1M) with the options **-o f,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**(1M). Then, recover the file system by executing **fsck_sfcfs**(1M) 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 **fsck_sfcfs**(1M). If the message "*special* is clean" is output, recover the file system by executing **fsck_sfcfs**(1M) with the options **-o f,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: fsck -F sfcfs *special*

Explanation

sfcadd(1M) cannot be executed because the state of the file system of the partition *special* was not stopped properly.

Response

Recover the file system using **fsck_sfcfs**(1M). 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**(1M). Then, recover the file system by executing **fsck_sfcfs**(1M) with the options **-o f,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 **fsck_sfcfs**(1M) with the options **-o f,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/mnttab

Explanation

Reading of the **/etc/mnttab** file failed.

Response

Recover the `/etc/mnttab` then execute the command again.

sfcadd: ERROR: 0043: cannot get host informations

Explanation

The `sfcfrmd` daemon of the node that shares the file system has not been activated.

Response

Check if the `sfcfrmd` daemon exists by executing the `ps(1)` command on all the nodes that share the file system. The nodes can be checked with `sfcinfo(1M)`.

If the nodes are stopped, start them. If the `sfcfrmd` daemon does not exist, activate the daemon using `sfcfrmstart(1M)` on the node.

If it does, collect troubleshooting information using `FJQSS` or `fjsnap` then contact field engineers.

sfcadd: ERROR: 0044: cannot read sfcfstrm.conf

Explanation

Reading of the setup file `/var/opt/FJSVgfs/sfcfstrm.conf` failed.

Response

Recover the system in the event of a disk failure. If a disk failure does not occur, collect troubleshooting information using `FJQSS` or `fjsnap` then contact field 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.

sfcadd: ERROR: 0047: cannot be executed in non-global zone

Explanation

The command cannot be executed in the non-global zone.

Response

For Solaris 10, GFS is allowed to be operated in the global zone only.

sfcadd: ERROR: 0048: cannot get current zone information

Explanation

Collection of the zone setup information failed.

Response

Check the system then wait until the other process is done, or expand the swap area or memory. Execute the command again.

A.5.2 sfcadm and sfcnode commands

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 host information of node which is specified or which shares file system failed.

Possible causes:

- The specified node or nodes sharing the file system is stopped.
- sfcfrmd daemon is not running on the specified node or nodes sharing the file system.
- A cluster partition error exists.

Response

Execute **sfcadm**(1M) or **sfcnode**(1M) again after correcting the cause of the failure according to the following procedures.

1. Confirm that the specified node or nodes sharing the file system is not stopped. If the specified node or nodes sharing the file system was stopped, start it.
2. Execute the following operations on the specified node or nodes sharing the file system.
 - a. Check if the sfcfrmd daemon is operating by **ps**(1) command.
An example is shown below.

```
# /usr/bin/ps -e | /usr/bin/grep sfcfrmd <Enter>
1629 ?          0:28 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 Solaris documentation.

- b. If the sfcfrmd daemon is not running, confirm that the following message is not output to **/var/adm/messages**.

```
WARNING: sfcfsrm:5001: Starting the sfcfrmd daemon was suspended
because quorum does not exist
```

If the message is not output, execute **sfcfrmstart(1M)** 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.3.3 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(1M)**.

{sfcadm | sfcnode}: hostid(*hostid*) not found in volume information

Explanation

The specified host ID (*hostid*) is not a host ID of the node which shares the GFS Shared File System. Otherwise, the node which executed command is not a node which shares the GFS Shared File System.

Response

Specify the host ID of the node which shares the GFS Shared File System. Otherwise, execute the command again in the node which shares the GFS Shared File System.

{sfcadm | sfcnode}: invalid hostname

Explanation

An invalid host name was specified.

Response

Check the specified host name.

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 network setting of the *hostname* is invalid.
- The *hostname* is stopped.
- The sfcfrmd daemon is not running on the *hostname*.
- A cluster partition error exists.

Response

Execute **sfcadm**(1M) or **sfcnode**(1M) again after correcting the cause of the failure according to the following procedure:

1. Check whether the *hostname* specified is correct. If a mistake is found, specify the correct host name.
2. On the node specified with the *hostname*, check whether the IP address of the *hostname* is correctly registered in host database (for example: **/etc/inet/hosts**). For details, see "[11.2.2 Registering information in host database](#)" in this manual.
3. Confirm that the node (*hostname*) is not stopped. If the node was stopped, start it.
4. Execute the following operations on the node (*hostname*).
 - a. Check if the sfcfrmd daemon is operating by **ps**(1) command.
An example is shown below.

```
# /usr/bin/ps -e | /usr/bin/grep sfcfrmd <Enter>
1629 ?          0:28 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 Solaris documentation.
.....

- b. If the sfcfrmd daemon is not running, confirm that the following message is not output to **/var/adm/messages**.

```
WARNING: sfcfsrm:5001: Starting the sfcfrmd daemon was suspended
because quorum does not exist
```

If the message is not output, execute **sfcfrmstart(1M)** command.

5. When a problem can not be resolved using operations from 1 to 4, a cluster partition error may have occurred. Correct the cluster partition error according to "[C.3.3 Corrective action when the sfcfrmd daemon is not started](#)".

sfcnode: *hostname* registered as MDS, can't sfcnode -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.

{sfcadm | sfcnode}: invalid devicename

Explanation

An invalid partition name was specified.

Response

Check whether the specified partition name is correct.

{sfcadm | sfcnode}: 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}: 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}: major number get error

Explanation

The major number could not be obtained.

Response

Check whether the system environment is correct.

sfcadm: 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 maximum. When the file system is created by **mkfs_sfdfs(1M)**, the maximum value is set by the **maxnode** option.

Response

If you want to change the maximum values of the number of nodes in which the file system is shared, please execute **mkfs_sfdfs(1M)** again and create the file system again.

{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(1M)** and re-execute the command.

sfcadm: not enough element of sfdfs partition

Explanation

Not all the partitions belonging to the file system were specified.

Response

Specify all partitions belonging to the file system.

sfcnode: this node entry(hostID: *hostid*) 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: please specify MDS setting

Explanation

An MDS name must be specified.

Response

Specify an MDS name, and re-execute the command.

sfcadm: 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: 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 character special device

Explanation

The specified file (*special*) is not a character special file.

Response

Specify a character 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 field engineers.

{sfcadm | sfcnode}: unknown error(*error_code*)

Explanation

An invalid error was detected.

Response

Contact field engineers.

sfcadm: 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**(1M), and re-execute the command.

sfcadm: 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**(1M).

sfcadm: *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: *special* 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 "[Chapter 5 Management Partition](#)" 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: *special* is not representative partition

Explanation

The partition *special* is not a representative partition.

Response

Specify a representative partition then execute the command.

{sfcadm | sfcnode}: cannot be executed in non-global zone

Explanation

The command cannot be executed in the non-global zone.

Response

For Solaris 10, GFS is allowed to be operated in the global zone only.

{sfcadm | sfcnode}: cannot get current zone information

Explanation

Collection of the zone setup information failed.

Response

Check the system then wait until the other process is done, or expand the swap area or memory. Execute the command again.

sfcadm: The size of the partition(*special*) might have been changed after the file system was made

Explanation

The size of the partition (*special*) 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 the 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(*special*) might have been reduced

Explanation

The size of the partition (*special*) 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.

sfcadm: cannot read /etc/mnttab: errcode=errcode

Explanation

There is an illegal line in **/etc/mnttab**.

Response

Recover the contents of **/etc/mnttab** correctly then execute the command again.

sfcadm: cannot read_vtoc() special: errcode=errcode

Explanation

Failed to get VTOC information in the specified partition (*special*).

Response

Check the following points:

- The specified partition is correct.
- If -m option of the **sfcadm** command is specified after restoring the entire file system to the partition, check if the partition meets the conditions described in "[1.8.4 Notes on use of logical volumes of GDS](#)." If it does not, restore to the partition that meets the conditions then execute the command again.
- If the error still remains after taking the action above, collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

A.5.3 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**(1M) or **sfcfrmstop**(1M) 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 field 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**(1M) command, add the self-node to a host group.

ERROR: sfcfrmstart: 0010: Starting processing of sfcfrmd went wrong

Explanation

Start processing for sfcfrmd daemon failed.

Response

After confirming the state of the self-node and that sfcprmd daemon is available, contact field engineers.

ERROR: sfcfrmstart: 0011: sfcfrmd has already existed

Explanation

The sfcfrmd daemon 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**(1M) 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 daemon cannot be established.

Response

After confirming the state of the self-node and that sfcprmd daemon is available, contact field engineers.

ERROR: sfcfrmstart: 0014: State check processing to sfcprmd went wrong

Explanation

State confirmation processing for sfcprmd daemon using several different daemons failed.

Response

After confirming the state of self-node and that sfcprmd daemon is available, contact field engineers.

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 field engineers.

ERROR: sfcfrmstart: 0016: filename: open(2) error: errmsg

Explanation

File open processing for editing the **sfcsrnm.vers** file failed.

Response

Apply countermeasures as described in *errmsg*.

ERROR: sfcfmstart: 0017: filename: write(2) error: errmsg

Explanation

File write processing for editing the **sfcsrnm.vers** file failed.

Response

Apply countermeasures as described in *errmsg*.

ERROR: sfcfmstart: 0018: filename: rename(2) error: errmsg

Explanation

File rename processing for editing the **sfcsrnm.vers** file failed.

Response

Apply countermeasures as described in *errmsg*.

ERROR: sfcfmstart: 0020: An error occurred while accessing a file path : errmsg

Explanation

File access to cancel the suspension of the **sfcfmrd** daemon startup failed.

Response

Check if the **sfcfmrd** daemon is running by **ps(1)** command.

An example is shown below.

```
# /usr/bin/ps -e | /usr/bin/grep sfcfmrd <Enter>
1629 ?          0:28 sfcfmrd
# echo $? <Enter>
0
```

If **grep(1)**'s return code is 0, **sfcfmrd** daemon is running.



See

.....
For details of **ps(1)** and **grep(1)**, see the Solaris documentation.
.....

If the **sfcfmrd** 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 **sfcfmrd** daemon's startup might be broken. Reboot the system because this file is remade by booting the system.

If **sfcfmrd** daemon is running, no corrective action needs to be taken because it is thought the **sfcfmrd** daemon had been started before this file is broken.

ERROR: sfcfmstart: 0021: The suspended sfcfmrd daemon does not exist

Explanation

Startup of the **sfcfmrd** daemon has not been suspended.

Response

If the **sfcfmrd** daemon that is not being suspended is activated, execute the **sfcfmstart(1M)** command without the **-f** option.

ERROR: sfcfrmstart: 0022: cannot be executed in non-global zone**Explanation**

The command cannot be executed in the non-global zone.

Response

For Solaris 10, GFS is allowed to be operated in the global zone only.

ERROR: sfcfrmstart: 0023: cannot get current zone information**Explanation**

Collection of the zone setup information failed.

Response

Check the system then wait until the other process is done, or expand the swap area or memory. Execute the command again.

A.5.4 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**(1M) or **sfcfrmstop**(1M) 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 `sfcrmd` daemon is available, contact field engineers.

ERROR: sfcrmdstop: 0006: stop processing of sfcrmd went wrong

Explanation

Stop processing for `sfcrmd` daemon failed.

Response

The GFS may be mounted on the self-node. Perform unmount processing, and then re-execute the `sfcrmdstop(1M)` command.

ERROR: sfcrmdstop: 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: sfcrmdstop: 0011: Cannot open sfcrsm.conf

Explanation

File open processing for the `sfcrsm.conf` file failed.

Response

Check the status for the `/var/opt/FJSVgfs/sfcrsm.conf` file.

ERROR: sfcrmdstop: 0012: No entry of management partition path in sfcrsm.conf

Explanation

The `sfcrsm.conf` file contains no entry that indicates the path to the management partition.

Response

Confirm the contents of the setup file `/var/opt/FJSVgfs/sfcrsm.conf`.

ERROR: sfcrmdstop: 0013: Read error occurred on sfcrsm.conf

Explanation

Error occurred when reading of the `sfcrsm.conf` file.

Response

Check the status of the `/var/opt/FJSVgfs/sfcrsm.conf` file.

ERROR: sfcrmdstop: 0014: Cannot connect to cluster foundation

Explanation

Connection to the cluster control facility failed.

Response

Confirm that the cluster control facility has started.

INFO: sfcrmdstop: 0004: wait for other node to stop

Explanation

The completion of the stop of `sfcrmd` daemon in another node is waited.

Response

None.

INFO: sfcfrmstop: 0005: wait for LEFTCLUSTR 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.5.5 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: Cannot 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: Cannot 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

Connection to the cluster control facility failed.

Response

Confirm that the cluster control facility 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: Cannot 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](#)".

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/FJSVgfs/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/FJSVgfs/sfcsrm.conf**.

ERROR: sfcgetconf: 0016: Read error occurred on sfcsrm.conf

Explanation

Error occurred when reading of the **sfcsrm.conf** file.

Response

Check the status of the **/var/opt/FJSVgfs/sfcsrm.conf** file.

ERROR: sfcgetconf: 0017: cannot be executed in non-global zone

Explanation

The command cannot be executed in the non-global zone.

Response

For Solaris 10, GFS is allowed to be operated in the global zone only.

ERROR: sfcgetconf: 0018: cannot get current zone information

Explanation

Collection of the zone setup information failed.

Response

Check the system then wait until the other process is done, or expand the swap area or memory. Execute the command again.

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=special 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.

A.5.6 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/mnttab|etc/vfstab}: *errmsg*

Explanation

Failed to open **/etc/mnttab** or **/etc/vfstab** 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 "[Chapter 5 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 field engineers.

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 FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

sfcinfo: ERROR: system error(gethostid)

Explanation

The obtained host ID is illegal.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

sfcinfo: ERROR: cannot be executed in non-global zone

Explanation

The command cannot be executed in the non-global zone.

Response

For Solaris 10, GFS is allowed to be operated in the global zone only.

sfcinfo: ERROR: cannot get current zone information

Explanation

Collection of the zone setup information failed.

Response

Check the system then wait until the other process is done, or expand the swap area or memory. Execute the command again.

sfcinfo: ERROR: Cannot read /etc/mnttab: errcode=errcode

Explanation

There is an illegal line in **/etc/mnttab**.

Response

Recover the contents of **/etc/mnttab** correctly then execute the command again.

sfcinfo: ERROR: cannot read file system configuration information

Explanation

Reading of the management partition failed.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field 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 sfcfs file system.

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". When it is a necessary file system, restore it running a full scan with **fsck_sfcfs**(1M). For details, see "C.3.1 Action for I/O errors".

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". When it is a necessary file system, restore it running a full scan with **fsck_sfcfs**(1M). For details, see "C.3.1 Action for I/O errors".

sfcinfo: WARNING: Invalid device number device_no

Explanation

User specified a invalid device number (*device_no*).

Response

Check if the specified device number (*device_no*) is correct, and then execute the command again.

A.5.7 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 vfstab file

Explanation

`/etc/vfstab` could not be opened.

Response

Check if `/etc/vfstab` exists. If it does not, restore the file from backed up data, or define the file again according to "[11.2.4 Setting vfstab](#)".

ERROR: sfcmntgl: 0003: Both *special* and *mount_point* need to be specified in vfstab

Explanation

Special file *special*, or mount point *mount_point* is not described in `/etc/vfstab`.

Response

Check the status of `/etc/vfstab`.

ERROR: sfcmntgl: 0004: { *special* | *mount_point* } not in vfstab

Explanation

The specified *special* or *mount_point* cannot be found in `/etc/vfstab`.

Response

Check the status of `/etc/vfstab`.

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 FJQSS or `fjsnap` for troubleshooting information then contact field engineers.

ERROR: sfcmntgl: 0007: { *special* | *mount_point* }: Cannot connect to cluster foundation

Explanation

Connection to the cluster control facility 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 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 command, that sfcfrmd daemon is available.

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 daemon is available.

ERROR: sfcmntgl: 0012: *hostname: special* was not able to mount. Other process performed amount 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 field engineers.

ERROR: sfcmntgl: 0013: { *special* | *mount_point* }: sfcfrmd may not exist

Explanation

A communications channel with sfcfrmd daemon could not be established.

Response

Check whether FsRM is operating, and then contact field engineers.

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* 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 *vfstab* is wrong**Explanation**

The description format of **/etc/vfstab** is incorrect.

Response

Confirm the contents of **/etc/vfstab**.

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(1M)** 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/vfstab** 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/vfstab** is a directory.

ERROR: sfcmntgl: 0023: *fstype* is described as an invalid value in *vfstab***Explanation**

An unexpected error was detected in the *fstype* field in **/etc/vfstab**.

Response

Check the contents of **/etc/vfstab**.

ERROR: sfcmntgl: 0024: fstype is described not as sfcfs but as fstype in vfstab**Explanation**

The specified file system is not the GFS Shared File System.

Response

Check the contents of `/etc/vfstab` 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 representative 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: sfcmntgl: 0030: cannot be executed in non-global zone**Explanation**

The command cannot be executed in the non-global zone.

Response

For Solaris 10, GFS is allowed to be operated in the global zone only.

ERROR: sfcmntgl: 0031: cannot get current zone information**Explanation**

Collection of the zone setup information failed.

Response

Check the system then wait until the other process is done, or expand the swap area or memory. Execute the command again.

WARNING: sfcmntgl: 0020: hostname: special is already mounted, mount_point is busy, or the allowable number or mount points has been exceeded**Explanation**

Either special file *special* has already been mounted in *hostname*, or mount point *mount_point* is already in use. Mount processing is not performed for *hostname*.

Response

None.

WARNING: sfcmntgl: 0025: hostname: { special | mount_point }: Send mount demand processing to sfcfrmd went wrong**Explanation**

Transmission processing for sfcfrmd daemon of the mount processing request made to *hostname* failed.

Response

After confirming the state of sfcfrmd daemon with the likes of the `ps(1)` command, contact field engineers.

WARNING: sfcmntgl: 0026: { special | mount_point }: Waiting processing for a response mount demand went wrong

Explanation

Reception processing of the mount processing request made to sfcfrmd daemon failed.

Response

After confirming the state of sfcfrmd daemon with the likes of the `ps` command, contact field engineers.

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 daemon.

Response

After confirming the state of sfcfrmd daemon with the likes of the `ps` command, contact field engineers.

A.5.8 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

Connection to the cluster control facility failed.

Response

Confirm that the cluster control facility 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 field engineers.

ERROR: sfcsetup: 0010: Cannot write to sfcfsrm.conf**Explanation**

Writing to the **sfcfsrm.conf** file failed.

Response

Check the status of the **/var/opt/FJSVgfs/sfcfsrm.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/FJSVgfs/sfcfsrm.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 field engineers.

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 daemon is operating.

Response

Wait for execution of the other command to terminate or, after executing **sfcfrmstop(1M)** 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(1M)**.
 2. Check sharing node information of all GFS Shared File System by **sfcinfo -an**.
 3. Reconfigure sharing node information of the GFS Shared File System by **sfcadm -u**, or delete file system information by **sfcadm -D**.
 4. Execute **sfcfrmstop(1M)**.
 5. Retry **sfcsetup -d**.
-

ERROR: sfcsetup: 0021: Error occurred. errcode=errcode**Explanation**

An internal error occurred.

Response

Contact field engineers.

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 sfcsrm.conf**Explanation**

Reading of **sfcsrm.conf** failed.

Response

Check the status of the `/var/opt/FJSVgfs/sfcsrm.conf` file.

ERROR: sfcsetup: 0026: Cluster function may not be working**Explanation**

The cluster system may not be operating normally.

Response

Contact field engineers.

ERROR: sfcsetup: 0027: Input error**Explanation**

An input error was made.

Response

Collect a file output with FJQSS or **fjsnap** for troubleshooting information then contact field engineers.

ERROR: sfcsetup: 0028: *special* is already used as management partition**Explanation**

The block special file *special* 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: special is invalid disk device

Explanation

Either the specified device (*special*) 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 vfstab: errmsg

Explanation

The `/etc/vfstab` file could not be opened.

Response

Check the status of `/etc/vfstab`, and whether the file actually exists.

ERROR: sfcsetup: 0034: special is already exists in vfstab

Explanation

The device specified (*special*) 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/vfstab` is not needed, delete it and then re-execute the command.

WARNING: sfcsetup: 0035: Illegal line exists in vfstab

Explanation

An invalid row is included in `/etc/vfstab`.

Response

Confirm the contents of `/etc/vfstab` and correct it if necessary.

ERROR: sfcsetup: 0036: Cannot open mnttab: errmsg

Explanation

The `/etc/mnttab` file could not be opened. The problem occurs in Solaris OS.

Response

Restore `/etc/mnttab`, and execute the command again.

ERROR: sfcsetup: 0037: special is already exists in mnttab

Explanation

The device specified (*special*) 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 mnttab

Explanation

There is an illegal line in `/etc/mnttab`.

Response

Recover the contents of `/etc/mnttab` correctly then execute the command again.

ERROR: sfcsetup: 0039: Cannot open special: errmsg

Explanation

The specified device file (*special*) could not be opened.

Response

Check whether the physical connection to the disk is satisfactory.

ERROR: sfcsetup: 0040: Cannot get vtoc information

Explanation

The VTOC information for the disk containing the management information could not be acquired.

Response

Check if the management partition meets all the conditions described in "8.2.1 Setting shared disks". If it does not, configure the management partition again according to "Chapter 5 Management Partition". If it does, collect troubleshooting information with FJQSS or **fjsnap** then contact field engineers.

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/FJSVgfs/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: 0045: *special* is not raw_device_file

Explanation

The device *special* is not a character special file.

Response

Check the device name then execute the command again.

ERROR: sfcsetup: 0046: Illegal entry exists ,or no entry of path to management partition in sfcfsrm.conf

Explanation

The **sfcfsrm.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: 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 sfcfsrm.conf

Explanation

An invalid row is included in setup file **sfcfsrm.conf**.

Response

An invalid row is included in setup file **/var/opt/FJISVgfs/sfcfsrm.conf**.

ERROR: sfcsetup: 0050: Cannot open sfcfsrm.conf: *message*

Explanation

Due to the reason displayed in the *message*, opening of the FsRM setup file **sfcfsrm.conf** failed.

Response

Apply the countermeasures described in the message.

ERROR: sfcsetup: 0051: *special* is not management partition

Explanation

The volume of the specified shared disk (*special*) 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(1M)** command.

ERROR: sfcsetup: 0053: Volume(*special*) may not be active. Please activate volume**Explanation**

The shared disk volume *special* specified for a management partition may not be ACTIVE.

Response

Check if the shared disk volume is ACTIVE by executing the **sdxinfo(1M)** command then execute the command again.

ERROR: sfcsetup: 0055: cannot be executed in non-global zone**Explanation**

The command cannot be executed in the non-global zone.

Response

For Solaris 10, GFS is allowed to be operated in the global zone only.

ERROR: sfcsetup: 0056: cannot get current zone information**Explanation**

Collection of the zone setup information failed.

Response

Check the system then wait until the other process is done, or expand the swap area or memory. 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.5.9 sfcstat command

sfcstat: *special* is not a sfdfs file system**Explanation**

The specified partition (*special*) is not an sfdfs file system partition.

Response

Check whether the specified partition is an sfcs file system partition.

sfcstat: Can't get information about mounted file systems.

Explanation

Reading `/etc/mnttab` failed.

Response

Check the `/etc/mnttab` 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 FJQSS or `fjsnap` and contact field engineers.

sfcstat: missing entry of sfcs fstotal

Explanation

Statistical information could not be obtained.

Response

Check whether the file system is normal.

sfcstat: no active sfcs

Explanation

The file system is not mounted.

Response

After mount the file system, re-execute the command.

sfcstat: *special* not mounted

Explanation

`special` is not mounted.

Response

After mount the file system, re-execute the command.

sfcstat: cannot be executed in non-global zone

Explanation

The command cannot be executed in the non-global zone.

Response

For Solaris 10, GFS is allowed to be operated in the global zone only.

sfcstat: cannot get current zone information

Explanation

Collection of the zone setup information failed.

Response

Check the system then wait until the other process is done, or expand the swap area or memory. Execute the command again.

A.5.10 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 vfstab file

Explanation

`/etc/vfstab` could not be opened.

Response

Check the status of `/etc/vfstab`.

ERROR: sfcumntgl: 0003: Both *special* and *mount_point* need to be specified in vfstab

Explanation

It needs to be described by `/etc/vfstab` when both the special file *special* and mount point *mount_point* are specified as an operand.

Response

Correct the definition of the `"/etc/vfstab"` file system.

ERROR: sfcumntgl: 0004: { *special* | *mount_point* } not in vfstab

Explanation

It needs to be described by `/etc/vfstab` when both the special file *special* and mount point *mount_point* are specified as an operand.

Response

Check the status of `/etc/vfstab`.

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 foundation

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 daemon is available.

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 daemon is available.

ERROR: sfcumntgl: 0011: { *special* | *mount_point* }: sfcfrmd may not exist

Explanation

A communication path to sfcfrmd daemon could not be established.

Response

Confirm, using the likes of the **ps**(1) command, that sfcfrmd daemon 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**(1M) command (for example, "**fuser -c *special***"). If such a process exists, kill the process and unmount the file system again. Otherwise, collect the diagnostic data with FJQSS or **fjsnap** and collect the kernel dump by push the NMI button and contact field engineers.

ERROR: sfcumntgl: 0013: The description form of *vfstab* is wrong

Explanation

The description format of **/etc/vfstab** is incorrect.

Response

Confirm the contents of **/etc/vfstab**.

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(1M)** 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/vfstab** is a directory.

ERROR: sfcumntgl: 0024: *fstype* is described as an invalid value in {*vfstab* | *mnttab*}

Explanation

An unexpected error was detected in the *fstype* field in **/etc/vfstab** or **/etc/mnttab**.

Response

Restore **/etc/vfstab** or **/etc/mnttab**, and re-execute the command.

ERROR: sfcumntgl: 0025: *fstype* is described not as *sfcs* but as *fstype* in {*vfstab* | *mnttab*}

Explanation

The specified file system is not the GFS Shared File System.

Response

Check **/etc/vfstab** and **/etc/mnttab** then specify a correct mountpoint or block special file of the GFS Shared File System.

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 representative 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 daemon failed with *hostname*.

Response

After confirming the state of sfcfrmd daemon with the likes of the **ps(1)** command, contact field engineers.

WARNING: sfcumntgl: 0027: Waiting processing for a response umount demand went wrong

Explanation

Reception processing of the unmount processing request to sfcfrmd daemon failed.

Response

After confirming the state of sfcfrmd daemon with the likes of the `ps(1)` command, contact field engineers.

WARNING: sfcumntgl: 0028: 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 daemon.

Response

After confirming the state of sfcfrmd daemon with the likes of the `ps` command, contact field engineers.

A.5.11 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 daemon process exists using the `ps(1)` command.

When it does not exist, activate the file system monitoring mechanism using the `sfcfrmstart(1M)` 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/mnttab: errmsg

Explanation

Opening `/etc/mnttab` failed.

Response

Restore `/etc/mnttab`, and re-execute the command.

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](#)".

sfcrcsinfo: 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.

sfcrcsinfo: Fsrn is not active

Explanation

The file system monitoring mechanism is not operating.

Response

Check whether the file system monitoring mechanism is running.

sfcrcsinfo: 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.

sfcrcsinfo: 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.

sfcrcsinfo: cannot be executed in non-global zone

Explanation

The command cannot be executed in the non-global zone.

Response

For Solaris 10, GFS is allowed to be operated in the global zone only.

sfcrcsinfo: cannot get current zone information

Explanation

Collection of the zone setup information failed.

Response

Check the system then wait until the other process is done, or expand the swap area or memory. Execute the command again.

A.5.12 sfcextcount command

sfcextcount: ERROR: 0001: *filename* is not found

Explanation

filename is not found.

Response

Check if the file name is correct and the file exists.

Also check if the GFS Shared File System is mounted.

sfcextcount: ERROR: 0002: *filename* is not full path name

Explanation

filename is not the absolute path name.

Response

Specify the absolute path, and then execute the command again.

sfcextcount: ERROR: 0003: *inodeno* is not an i-node number of the existing file

Explanation

inodeno is not the i-node number of an existing file.

Possible causes:

- If **-i** option is specified, the specified *inodeno* may be invalid.
- If **-f** option is specified, the specified representative partition may be different from the one of the file system where *filename* exists.

Response

If **-i** option is specified, check *inodeno* then execute the command again.

If **-f** option is specified, specify the representative partition of the file system where *filename* exists, and then execute the command again.

sfcextcount: ERROR: 0004: Permission denied

Explanation

The user executing this command is not a super-user.

Response

Re-execute the command as a super-user.

sfcextcount: ERROR: 0005: *special* is not representative partition

Explanation

special is not a representative partition.

Response

Specify the representative partition, and then execute the command again.

sfcextcount: ERROR: 0006: Cannot allocate memory

Explanation

Memory allocation failed. System memory is insufficient.

Response

Check the system status then wait for the other process to be completed. After that, execute the command again.

sfccxtcount: ERROR: 0007: Cannot open special: errno=errno

Explanation

Failed to open *special*. *errno* is the error number of open(2).

Response

Check if *special* is specified correctly, and then execute the command again.

Take the appropriate action according to *errno*.

sfccxtcount: ERROR: 0008: lseek error at special: errno=errno

Explanation

Failed to lseek *special*. *errno* is the error number of lseek(2).

Response

Take the appropriate action according to *errno*.

sfccxtcount: ERROR: 0009: Cannot read special: errno=errno

Explanation

Failed to read *special*. *errno* is the error number of read(2).

Response

Take the appropriate action according to *errno*.

sfccxtcount: ERROR: 0010: Read-in data is not IEX

Explanation

The read area is not the indirect extent management information.

The specified file may be updated while the **sfccxtcount** command is executed.

Response

Make sure the specified file is not updated, and then execute the command again after a short period of time.

A.6 The GFS Shared File System Management View Messages

This appendix provides information on message dialog associated with the GFS Shared File System 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, click <Yes> button. To cancel click <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 field engineers.

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 could not be found.

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/vfstab*.

Explanation

The specified file system is already registered in */etc/vfstab*.

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**(1M) 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 click <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 click <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 "*PRIMECLUSTER Global Disk Services Configuration and Administration Guide*".

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 "*PRIMECLUSTER Global Disk Services Configuration and Administration Guide*".

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

Click <Yes> to exit, <No> to continue operation.

6301: A file system has been created.

Explanation

A file system was created.

Response

Click the <OK> button to close the message.

Start the cluster control facility 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

Click the <OK> button to close the message.

6303: Changing configuration was completed.**Explanation**

Changing configuration of the file system was completed.

Response

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

6305: A file system has been deleted.**Explanation**

A file system was deleted.

Response

Click 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**

The sfcfrmd daemon 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

The sfcfrmd daemon 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

The sfcfrmd daemon 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

The sfcfrmd daemon 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 the 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*", "*PRIMECLUSTER Cluster Foundation (CF) Configuration and Administration Guide*", "*PRIMECLUSTER Global Disk Services 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 describes management commands of the GFS Shared File System.

B.1 Commands for Common File System Management

B.1.1 `df_sfdfs(1M)` Display of usage condition and composition information

<SYNOPSIS>

```
df -F sfdfs [ generic_options ] [ -o v ]
```

```
df -F sfdfs [ directory | special ]
```

<DESCRIPTION>

The `df` command displays detailed information about the use status and the configuration of a GFS Shared File System.

The GFS Shared File System has reserved a part of an free area in the data area for each AC to allocate the file data on the AC side. This reservation area is treated while using it. Therefore, please note the report of the area more than the file data actually allocated while using it.

Moreover, the allocation of the file data uses this reservation area by priority. Therefore, please note that the area reported while using it does not necessarily increase by new writing.

Either a special file name or a mount point name can be specified. If neither is specified, all mounted file systems are displayed.

If a file system has configured with multiple partitions with a multi-partition function, specify the path name of the representative partition as a special file name.

When specified "`-o v`" option. If a GFS Shared File System is configured with multi-partitions, information for each partition can be displayed.

For meta-data area, the following information is displayed:

- inodes: Total of i-nodes
- free: Number of i-nodes that can be used
- vdata: Total of V-data blocks
- free: Number of V-data blocks that can be used
- leaf: Total of leaf for empty extent management
- free: Leaf number for empty extent management that can be used
- Type: META

For update log area, the following information is displayed:

- kbytes: Update log area size (Unit of kilobyte)
- Type: LOG

For file data area, the following information is displayed:

- kbytes: File data area size (Unit of kilobyte)
- used: File data area size under use (Unit of kilobyte)
- free: File data area size that can be used (Unit of kilobyte. The area to which only the super user is allowed to use it is contained)
- %used: Use rate of file data area (The area to which only the super user is allowed to use it is contained)
- Type: DATA

<OPTIONS>

The following options can be specified:

generic_options

generic_options is supported by the general-purpose **df**(1M).

See the options of **df**(1M).

-a

Outputs information even for a file system whose **/etc/mnttab** entry contains an **ignore** option set.

-b

Outputs the capacity available for use in kilobytes.

-e

Outputs only the number of files available for use.

-g

Outputs **statvfs** structures.

-k

Outputs the allocation state in kilobytes. The file data area size that can be used and the use rate do not contain the area to which only the super user is allowed to use it. This area is generally 10 percent of the filesystem. Therefore, Note that the area reported as being in use and available for use is smaller than the file system area.

-l

Outputs only local file systems.

-n

Outputs only the file system type.

-t

Outputs a complete list, including a total.

-V

Displays a command line, but does not execute the command.

-o *specific_options*

Allows options specific to the GFS Shared File System to be specified.

v

Displays information about each partition if the file system is configured with multi-partitions. The value displayed by this option contains the area to which only the super user is allowed to use it.

<OPERANDS>

The following operands can be specified:

directory

Specifies path name of a directory for the GFS Shared File System.

special

Specifies path name of a block-special file for the representative partition of the GFS Shared File System.

<EXAMPLES>

Single-partition configuration

```
# df -F sfcfs -o v /mnt <Enter>
Filesystem:/mnt
```

	inodes	free	vdata	free	leaf	free	Type
/dev/sfdsk/gfs01/dsk/volume01	28524	28516	9508	9487	14264	14263	META
	kbytes						
/dev/sfdsk/gfs01/dsk/volume01	5119						LOG
	kbytes	used	free	%used			
/dev/sfdsk/gfs01/dsk/volume01	228176	33272	194904	15%			DATA

Multi-partition configuration

```
# df -F sfcfs -o v /mnt <Enter>
Filesystem:/mnt
```

	inodes	free	vdata	free	leaf	free	Type
/dev/sfdsk/gfs01/dsk/volume01	45154	45150	15050	15048	22584	22582	META
	kbytes						
/dev/sfdsk/gfs01/dsk/volume01	5118						LOG
	kbytes	used	free	%used			
/dev/sfdsk/gfs01/dsk/volume01	295704	0	295704	0%			DATA
	kbytes	used	free	%used			
/dev/sfdsk/gfs01/dsk/volume02	65504	0	65504	0%			DATA

<FILES>

/etc/mnttab

The table of a mounted system file

<SEE ALSO>

[mkfs_sfcfs\(1M\)](#)

[df\(1M\)](#), [statvfs\(2\)](#), [mnttab\(4\)](#), [attributes\(5\)](#) in the Solaris documentation

B.1.2 fsck_sfcfs(1M) Check GFS Shared File System for consistency

<SYNOPSIS>

fsck -F sfcfs [*generic_options*] [*-o specific_options*] *special*

<DESCRIPTION>

The **fsck_sfcfs** command checks the GFS Shared File System for consistency and restores the system.

High-speed recovery of a GFS Shared File System can be performed by using the update log function. Specify whether to perform high-speed recovery by executing an update log replay when **fsck_sfcfs** is executed. If an update log replay cannot be executed because of a damaged update log or for some other reason, **fsck_sfcfs** executes a full file system check.

fsck_sfcfs is not executed if a device is mounted.

If there is a serious inconsistency, the operator is prompted to reply **yes** or **no** before **fsck_sfcfs** executes recovery. If the operator does not have write permission for the file system, **fsck_sfcfs** executes the operation with the **-n** option (no corrections are made).

fsck_sfcfs 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

When the inconsistency has been corrected, a message is displayed. When recovery of the file system is successful, **fsck_sfcfs** displays the number of files on the file system, the counts for blocks in use and free blocks, and the fragmentation rate.

A full check is executed for the following inconsistencies:

- A block is acquired by multiple i-nodes or free lists.
- A block is 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 exceed 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 *generic-options* is an option to support with **fsck**(1M) together.

-V

Displays a command line, but does not execute the command.

-m

Executes a check, but does not make corrections.

When specifying it, either of the following messages is output.

- sfcfs fsck: sanity check: *special* okay
Abnormality was not detected in the correspondence of *special*.
- sfcfs fsck: sanity check: *special* need log replay
special should execute the update log replay.
- sfcfs fsck: sanity check: *special* needs checking
special should execute a full check of the filesystem.

The update log replay is automatically executed if necessary at the mount.

Please refer to the **-o** option for the update log replay by **fsck_sfcfs** and the method of executing a full check.

-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 a 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 syntax 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.

<OPERANDS>

The following operand can be specified:

special

Specifies the path name to a character or block special file for the representative partition of the GFS Shared File System or the path name of the mount-point.

<EXAMPLES>

```
# fsck -F sfcfs /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
# fsck -F sfcfs -o nolog /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

<EXIT STATUS>

0

File system recovery has been completed normally, or no recovery was necessary.

1

An incorrect parameter was specified.

32

The file system is unmounted, and an update log replay or a full check is required (only when **fsck -m** is specified).

33

The file system is mounted.

34

stat(2) for the device failed.

36

The processing has terminated because a serious problem requiring operator intervention has occurred during the execution of the command with the **p** (preen) option specified.

37

An interrupt has occurred during command execution.

39

A part of correction of the filesystem was not completed by the response of **-n** or **no**. Or, abnormality occurred while executing the command, and processing was ended.

50

Although command execution with the **elog** option specified was attempted, an update log replay could not be executed the update log was physically damaged.

<SEE ALSO>

[mkfs_sfcfs\(1M\)](#)

[reboot\(1M\)](#), [stat\(2\)](#), [vfstab\(4\)](#) in the Solaris documentation.

<NOTES>

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 [fstyp_sfcfs\(1M\)](#) Determine the type of file system

<SYNOPSIS>

```
fstyp [ -v ] special
```

<DESCRIPTION>

The **fstyp** determines the type of the file system that has been specified.

fstyp executes modules for checking different file system types.

When a module matches a GFS Shared File System, the **fstyp** displays file system name "**sfcs**" as standard output and terminates with a termination status of **0**.

If all modules are unsuccessful, the command displays the error message **unknown_fstyp (no matches)** and terminates with a termination status of **1**.

If multiple modules are successful, the command displays an error message of **unknown_fstyp (multiple matches)** and terminates with the termination status of **2**.

<OPTIONS>

The following option can be specified:

-v

Outputs detailed information.

Displays information about super block and partition information.

<OPERANDS>

The following operand can be specified:

special

Specifies path name of a character or block special file for the representative partition of the targeted file system.

<EXAMPLE>

```
# fstyp /dev/sfdsk/gfs01/dsk/volume01 <Enter>
sfcs
```

<SEE ALSO>

[mkfs_sfcfs\(1M\)](#)

[fstyp\(1M\)](#), [attributes\(5\)](#), [largefile\(5\)](#) in the Solaris documentation

B.1.4 mkfs_sfcfs(1M) Build GFS Shared File System

<SYNOPSIS>

```
mkfs -F sfcfs [ generic_options ] [ -o specific_options ] special
```

<DESCRIPTION>

The **mkfs_sfcfs** builds a GFS Shared File System on the disks that were specified.

Once a 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:

generic_options

generic_options is supported by a general-purpose **mkfs(1M)**.

See the options of **mkfs(1M)** for details.

-o *specific_options*

Allows options specific to the GFS Shared File System to be specified. Insert a comma delimiter between options.

N

Displays parameters used for creating a file system.

Does not actually create a file system.

data=special

Specifies the path name of a character special file or a block special file for a file data partition.

If a file system is built with multiple partitions that are used as file data partitions, specify multiple entries for this parameter.

dataopt=y|n

Specifies whether a representative partition includes a file data area if file data partitions are specified with the **data** sub-option. If **y** is specified, the representative partition does not include a file data area. If **n** is specified, the representative partition includes a file data area.

The default is **n**.

If no file data partitions are specified, **n** is set, regardless of whether this parameter is specified.

free=n

Specifies the percentage of the file data area that only a super user is allowed to use.

The default is **10%**.

A value can be specified in the range from **0** to **99**.

force

Specify 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. When **maxdsz** has been specified, the default is about **1%** of the **maxdsz** value. If the

default value is smaller than **5** megabytes, **5** megabytes is set. If the default 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 data area of a file system that includes additional partitions. The unit is megabytes. Based on the value specified for this parameter, the size of meta-data and the update log area size are set to proper values after taking into account the additional partitions.

If this option is not specified, the sizes of meta-data area and the update log area are determined based on 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 any anticipated in future expansion with **sfcnnode(1M)**, that share a file system constructed 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, including any anticipated in future expansion with **sfcadd(1M)**, that constitute the file system constructed on disks.

The default is **16**.

A value can be specified in the range from **1** to **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. When **maxdsz** has been specified, the default is about **10%** of the **maxdsz** value. 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 **df_sfcfs(1M)**.) However, larger value than the size of the representative partition cannot be specified.

mfree=*n*

Specifies the percentage of the V-data area that only a super user is allowed to use.

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 share the file system, specify multiple entries for this parameter.

Hosts whose names are to be specified with *host* must be able to communicate with each other. MDS (meta-data server) placing nodes are selected from head of the host names specified with this option.

Unless this option is specified, only the host name of the local node is registered.

<OPERANDS>

The following operand can be specified:

special

Specifies path name of a character special file or a block special file for the representative partition of the GFS Shared File System.

<EXAMPLES>

```
# mkfs -F sfcfs -o node=host1,host2 /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
# mkfs -F sfcfs -o dataopt=y,data=/dev/sfdsk/gfs01/rdsk/volume02,data=/dev/sfdsk/gfs01/rdsk/
volume03,node=host1,host2 /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

<FILES>

/etc/vfstab

Environment file of a file system.

<SEE ALSO>

[df_sfcfs\(1M\)](#), [sfcadd\(1M\)](#), [sfcadm\(1M\)](#), [sfcnode\(1M\)](#), [sfcsetup\(1M\)](#)

[vfstab\(4\)](#) in the Solaris documentation

<NOTES>

- *hostis* necessary to be the host name of the node which constitutes the GFS Shared File System registered into the management partition by [sfcsetup\(1M\)](#).
- A file system can be created only when all hosts that share the file system have started operation and the 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\(1M\)](#).
- 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.

```
mkfs_sfcfs:WARNING: value : bogus metasz reset
```

B.1.5 mount_sfcfs(1M) Mount the GFS Shared File System on the local node

<SYNOPSIS>

```
mount -F sfcfs block_special | mount_point
```

```
mount -F sfcfs block_special mount_point
```

<DESCRIPTION>

The **mount_sfcfs** 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 sfcfsd daemon and, if necessary, MDS. Pre-defining **/etc/vfstab** is necessary.

Only a super user can perform mount processing.

<OPTIONS>

The following mount options can be specified for **/etc/vfstab**. Multiple options must be delimited with commas.

closesync

Reflects all update data not yet reflected in the file when the file is closed for the last time.

noatime

Does not update the file access time.

nosuid

Disallows a **setuid** execution. By default, allows **setuid** execution.

rw|ro

Mounts the file system as read/write enabled (**rw**) or read only (**ro**).

The default is **rw**.

noauto

If **noauto** is specified, the file system is not mounted at the node startup. By default, the file system is mounted at the node startup.

<OPERANDS>

The following operand can be specified:

block_special

Specifies the block special file path on a representative partition of the file system to be mounted.

mount_point

Specifies the name of the directory to be mounted.

<EXAMPLES>

```
# mount -F sfcfs /dev/sfdsk/gfs/dsk/volume1 /mount_point <Enter>
# mount -F sfcfs /dev/sfdsk/gfs/dsk/volume1 <Enter>
# mount /mount_point <Enter>
```

<FILES>

/etc/mnttab

Table for the currently mounted file system.

/etc/vfstab

Environment file for the file system.

<SEE ALSO>

[umount_sfcfs\(1M\)](#), [sfcmntgl\(1M\)](#), [sfcumntgl\(1M\)](#)

[mount\(1M\)](#), [mnttab\(4\)](#), [vfstab\(4\)](#) in the Solaris documentation

<NOTES>

- sfcfrmd daemon must be running to enable the execution of this command.
- Nodes outside the MDS positioning range alone cannot be mounted.
- The *block_special* and *mount_point* operands must be specified in **/etc/vfstab** in the same combination.
- Mount processing is always performed using the mount options for the mount point described in **/etc/vfstab**. When no mount options are described in **/etc/vfstab**, mount processing is performed without any options.

- `mount_sfdfs` is not accepted *generic_option* of `mount(1M)`.

B.1.6 `umount_sfdfs(1M)` Unmount the GFS Shared File System from the local node

<SYNOPSIS>

`umount block_special | mount_point`

<DESCRIPTION>

The `umount_sfdfs` command unmount the GFS Shared File System from the local node.

During the unmount processing, it stops an `sfcfsd` daemon on local node, and stops an MDS if it running on the local node.

Only a super user can perform unmount processing.

<OPERANDS>

The following operands can be specified:

block_special

Specifies the block special file path on a representative partition of the file system to be unmounted.

mount_point

Specifies the directory name of a mount point of the file system to be unmounted.

<EXAMPLES>

```
# umount /dev/sfdsk/gfs01/dsk/volume01 <Enter>
# umount /mount_point <Enter>
```

<FILES>

`/etc/mnttab`

Table for the currently mounted file system.

`/etc/vfstab`

Environment file for the file system.

<SEE ALSO>

[mount_sfdfs\(1M\)](#), [sfcmntgl\(1M\)](#), [sfcumntgl\(1M\)](#)

`umount(1M)`, `mnttab(4)`, `vfstab(4)` in the Solaris documentation

<NOTES>

- `umount_sfdfs` is not accepted `-f` option of `umount(1M)`.

B.2 The GFS Shared File System Specific Management Commands

B.2.1 `sfcadd(1M)` Adding a data partition

<SYNOPSIS>

`sfcadd -D device[,device,...] t_device`

<DESCRIPTION>

The **sfcadd** adds the file data partition to the GFS Shared File System having the representative partition which specified as *t_device*. 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.

<OPTIONS>

The following options can be specified:

-D *device[,device,...]*

Specifies a partition that will be added as the file data area using the path name of a character special file. If multiple partitions are added, separate the path name of character special files by a comma.

<OPERANDS>

The following operands can be specified:

t_device

Specifies a path of a character special file of a representative partition of the GFS Shared File System.

<EXAMPLES>

When a representative partition adds **/dev/sfdsk/gfs01/rdsk/volume02** and **/dev/sfdsk/gfs01/rdsk/volume03** to the existing GFS Shared File System (**/dev/sfdsk/gfs01/rdsk/volume01**).

```
# sfcadd -D /dev/sfdsk/gfs01/rdsk/volume02,/dev/sfdsk/gfs01/rdsk/volume03 /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

<SEE ALSO>

[fsck_sfcfs\(1M\)](#), [mkfs_sfcfs\(1M\)](#), [sfcadm\(1M\)](#), [sfcinfo\(1M\)](#), [sfcnode\(1M\)](#)

<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 (**-o maxvol=*n***) defined with [mkfs_sfcfs\(1M\)](#). When file data region size after adding partition exceeds the maximum file data region size specified by [mkfs_sfcfs\(1M\)](#) (**-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 status of the file system must be normal. If the file system status is abnormal, **sfcadd** outputs the following message:

```
file system (partition-name) is corrupted.  
To Fix fsck -F sfcfs partition-name
```

Execute **sfcadd** again after recover the file system using [fsck_sfcfs\(1M\)](#).

B.2.2 sfcadm(1M) Change partition information setting

<SYNOPSIS>

sfcadm -r [**-a**] *special*

sfcadm -N *special*,...

sfcadm -u *host*,... [**-g** *p_mds[,s_mds]*] [**-p** *p_port[,s_port]*] [**-o** *keyword=value*,...] *special*,...

sfcadm -m *host*,... **-g** *p_mds[,s_mds]* **-p** *p_port[,s_port]* [**-o** *keyword=value*,...] *special*,...

sfcadm -g *p_mds[,s_mds]* *special*

sfcadm -o *keyword=value*,... *special*

sfcadm -p *p_port[,s_port] special*

sfcadm -h *ohost nhost*

sfcadm -D *special,...*

sfcadm *special,...*

<DESCRIPTION>

The **sfcadm** command changes the partition information settings for a GFS Shared File System.

In a 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 about the nodes sharing 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
- Copying a super block and the partition configuration data
- Recovery if a copy of the partition configuration data no longer matches the original information
- Changing the information in the file system configuration information in a management partition and deleting the file system that is specified
- Change the number of placing MDS(meta-data server) nodes
- Change the priority of nodes which places MDS(meta-data server) as primary MDS or secondary MDS

The **sfcadm** updates the entries in the file system configure information 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 *special,...*

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 the **-N** option if the minor numbers of the specified devices for 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 nodes have the same minor number, specify only the device information, without specifying the **-N** option. The file system configure information in a management partition is also updated.

-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*

Specifies the node name that MDS(meta-data server) can place delimited with a comma. To change either primary MDS node or secondary MDS node, use the "*p_mds*," or "*,s_mds*" syntax and specify the new node name.

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*

Enables 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.

-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 **-m** option with the option **-g** and **-p** must be specified at the same time.

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 "*variable-name=value*" syntax. Use a comma delimiter to specify multiple variables.

When deleting a registered variable, use the specification "*variable-name=*". The file system configure information in a management partition is also updated. You can specify the timeout of communication between nodes such as followings.

For example, the timeout value of the communication between nodes is 180 seconds.

```
-o CON_TIMEOUT=180
```

It is revokable at time to judge the remote node that the response is lost to be abnormal by specifying **CON_TIMEOUT**.

When the load of the system is expected to rise, set the above-mentioned value greatly.

-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 assign the same port name to the primary and secondary ports, specify only *p_port* (a comma delimiter is not required).

The **-g** option must be specified when the **-p** option is specified.

The file system configure information in a management partition is also updated.

-r *special*

Specifies the path name of the character special file or 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.

The **-g** option or the **-p** option must be specified when the **-u** option is specified.

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 file name of the file system in use has been changed or copying between partitions is performed.

<OPERANDS>

The following operands can be specified:

special,...

Specify the path name of a character special file or a block special file for all partitions in the GFS Shared File System using a comma delimiter (,).

special

Specify the path name of a character special file or a block special file for the representative partition of the GFS Shared File System. When the **-r** option is specified, it can be specified any one partition which constitutes a file system.

<EXAMPLES>

Perform recovery of another partition using a partition information of the recovery source.

```
# sfcadm -r /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

Perform recovery of another partition using a copy of a partition information of the recovery source.

```
# sfcadm -r -a /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

Update the node and device information for all nodes in the partition information.

```
# sfcadm /dev/sfdsk/gfs01/rdsk/volume01,/dev/sfdsk/gfs01/rdsk/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/rdsk/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/rdsk/volume01 <Enter>
```

Change the number of nodes placing MDS.

- Change primary MDS to host1.

```
# sfcadm -g host1, /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

- Change secondary MDS to host2.

```
# sfcadm -g ,host2 /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

Change the priority ranking of nodes placing MDS.

```
# sfcadm -g host1,host2 /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

Assign the same port name to the primary and secondary ports.

```
# sfcadm -p sfcfs-1 /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

Register the variable XXX=60.

```
# sfcadm -o XXX=60 /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

Change the node name host1 to host2.

```
# sfcadm -h host1 host2 <Enter>
```

Delete a specific file system.

```
# sfcadm -D /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```


<SEE ALSO>

[mkfs_sfcfs\(1M\)](#), [sfcinfo\(1M\)](#), [sfcmntgl\(1M\)](#), [sfcnode\(1M\)](#), [sfcsetup\(1M\)](#)

<NOTES>

- A file system can be changed only when all nodes that share the file system have started operation and the GFS Shared File System has been installed. The reason is that the information for these nodes is required.
- *host* is necessary to be the node name of the node which constitutes the GFS Shared File System registered into the management partition by [sfcsetup\(1M\)](#).
- Using **-u** option with specified new node name or device name, **-g** option must be specified.
- When the representation partition name of a GFS Shared File System is changed by **sfcadm**, or when performing the shift to other file systems, **/etc/vfstab** needs to be set up.
- 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\(1M\)](#). Note that 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 sfcfrmstart(1M) Start sfcfrmd daemon on the local node

<SYNOPSIS>

```
sfcfrmstart [ -f ]
```

<DESCRIPTION>

The **sfcfrmstart** command is used to perform sfcfrmd daemon start processing on the local node. Only a super user can perform sfcfrmd daemon start processing.

<OPTIONS>

The following option can be specified:

-f

An sfcfrmd daemon will be suspended until it can confirm that a cluster quorum exists. If the **sfcfrmstart -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: sfcfsrm:5001: Starting the sfcfrmd daemon was suspended because quorum does not exist**" is output.

<EXAMPLES>

Starting the sfcfrmd daemon when the sfcfrmd daemon is stopped.

```
# sfcfrmstart <Enter>
```

Starting the suspended sfcfrmd daemon without waiting for a quorum.

```
# sfcfrmstart -f <Enter>
```

<FILES>

/var/opt/FJSVgfs/sfcfsrm.conf

Environment file of the sfcfrmd daemon.

<SEE ALSO>

[sfcfrmstop\(1M\)](#), [sfcsetup\(1M\)](#)

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\(1M\)](#).
- 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 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(1M) 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 perform sfcfrmd daemon stop processing.

<EXAMPLE>

```
# sfcfrmstop <Enter>
```

<SEE ALSO>

[sfcfrmstart\(1M\)](#)

<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\(1M\)](#).

B.2.5 sfcgetconf(1M) Make a backup of the management partition

<SYNOPSIS>

sfcgetconf *backupfile*

sfcgetconf -a *backupfile*

sfcgetconf -i *fsid* [-i *fsid*] ... *backupfile*

sfcgetconf -d *special* [-d *special*]... *backupfile*

<DESCRIPTION>

The **sfcgetconf** command outputs next items to *backupfile*:

- The file system configuration information in management partition.
- The procedure for using the [sfcadm\(1M\)](#) command to reconfigure the file system.

The sfcgetconf outputs the contents of **sfcsrm.conf** file when the **-a** option is specified.

The output backup file contains the procedure for executing the [sfcadm\(1M\)](#) 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\(1M\)](#).

<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\(1M\)](#) 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 *special*

Specifies the path name of a character 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 character special file, and the procedure for executing the [sfcadm\(1M\)](#) 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/rdisk/volume1** are to be output to **sfccfg.bkup.4**.

```
# sfcgetconf -d /dev/sfdsk/gfs/rdisk/volume1 sfccfg.bkup.4 <Enter>
```

<FILES>

/var/opt/FJSVgfs/sfcsrm.conf

Environment file of sfcfrmd daemon

<SEE ALSO>

[sfcadm\(1M\)](#), [sfcsetup\(1M\)](#)

<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.

B.2.6 sfcinfo(1M) Display partition information

<SYNOPSIS>

sfcinfo [-V] [-n] { *special* | *mount_point* } [{ *special* | *mount_point* } ...]

sfcinfo [-V] [-n] -d *dev* [,*dev*...]

sfcinfo -a [-V] [-n]

sfcinfo [-V] [-n]

sfcinfo -e { *special* | *mount_point* }

sfcinfo -e [-a]

<DESCRIPTION>

sfcinfo displays the partition information, the GFS Shared File System specified by *special* or *mount_point*.

For *special*, specify one partition of the partitions making up the file system as a block special file name.

For *mount_point*, specify the path name of the mount point of the file system. To specify the mount point path name, the file system must already be specified in **/etc/vfstab**.

If neither *special* nor *mount_point* is specified and the **-a** option is omitted, **sfcinfo** displays the information on all GFS Shared File System being mounted in the command execution node.

Display item, content, and meaning:

- FSID
FS identification number
- special
Special file 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 host
"-----" is displayed when no file system is mounted
- host ID
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 tuning information set by [sfcadm\(1M\)](#).

-n

Displays node information. If no parameters are specified, the information for all mounted file systems is displayed.

<OPERANDS>

The following operands can be specified:

special

Specifies the path name to a block special file for any one of partitions which are components of the file system.

mount_point

Specifies the mount point of the file system.

<EXAMPLES>

```
# sfcinfo /dev/sfdsk/gfs01/dsk/volume01 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID special                               size Type mount
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021) 14422 META /mnt
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021)  5116 LOG  /mnt
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021) 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(11500000021) 14422 META /mnt
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021)  5116 LOG  /mnt
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021) 95112 DATA /mnt

# sfcinfo /mnt <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID special                               size Type mount
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021) 14422 META /mnt
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021)  5116 LOG  /mnt
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021) 95112 DATA /mnt

# sfcinfo -d 11500000021 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID special                               size Type mount
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021) 14422 META /mnt
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021)  5116 LOG  /mnt
 1 /dev/sfdsk/gfs01/dsk/volume01(11500000021) 95112 DATA /mnt
```

```

# sfcinfo -n /dev/sfdsk/gfs01/dsk/volume01 <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID  hostID    status  hostname
  1   80000000  RUN     prime01
  1   80000001  STOP    prime02

# sfcinfo -a <Enter>
/dev/sfdsk/gfs01/dsk/volume01:
FSID  special                                     size  Type  mount
  1   /dev/sfdsk/gfs01/dsk/volume01(11500000021)  14422  META  /mnt
  1   /dev/sfdsk/gfs01/dsk/volume01(11500000021)   5116  LOG   /mnt
  1   /dev/sfdsk/gfs01/dsk/volume01(11500000021)  95112  DATA /mnt

/dev/sfdsk/gfs01/dsk/volume02:
FSID  special                                     size  Type  mount
  2   /dev/sfdsk/gfs01/dsk/volume02(11500000022)  25418  META  -----
  2   /dev/sfdsk/gfs01/dsk/volume02(11500000022)   5120  LOG   -----
  2   /dev/sfdsk/gfs01/dsk/volume02(11500000022) 232256  DATA  -----

```

<FILES>

/etc/mnttab

Mounted file system table

/etc/vfstab

List of default parameters for each file system

<SEE ALSO>

[sfcadm\(1M\)](#)

vfstab(4) in the Solaris documentation

B.2.7 sfcmntgl(1M) Mount the GFS Shared File System on all nodes

<SYNOPSIS>

sfcmntgl *block_special* | *mount_point*

sfcmntgl *block_special* *mount_point*

<DESCRIPTION>

The **sfcmntgl** mounts all nodes sharing the same file system according to the specified operands. **sfcfsd** daemon and MDS (if necessary) will be started.

The **sfcmntgl** can be executed in any nodes which are specified in the GFS configuration node data made by [sfcsetup\(1M\)](#). It is necessary to set up **/etc/vfstab** in advance.

Only a super user can perform mount processing.

<OPERANDS>

The following operand can be specified:

block_special

Specifies the block special file path on 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/mnttab

Table for the currently mounted file system.

/etc/vfstab

Environment file for the file system.

<SEE ALSO>

[mount_sfefs\(1M\)](#), [sfcsetup\(1M\)](#), [sfcumntgl\(1M\)](#), [umount_sfefs\(1M\)](#)

[mount\(1M\)](#), [mnttab\(4\)](#), [vfstab\(4\)](#) in the Solaris documentation

<NOTES>

- sfcfrmd daemon must be running to enable the execution of this command.
- When both *block_special* and *mount_point* are specified, the same set of the descriptions must be contained in **/etc/vfstab** for all nodes sharing the file system.
- Mount processing is always performed using the mount options for the mount point described in **/etc/vfstab**. When no mount options are described in **/etc/vfstab**, mount processing is performed without any options.

B.2.8 sfcnode(1M) Add, delete, and alter node configuration information

<SYNOPSIS>

sfcnode -a *host,... special*

sfcnode -d [**-h** *host,...* | **-i** *hostid,...*] *special*

<DESCRIPTION>

The **sfcnode** command adds, deletes, and changes the 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. **sfcnode** deletes the node information of the host which is specified by the **-d** or **-i** option. 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** 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)**.

<OPERANDS>

The following operand can be specified:

special

Specify the path name of a character special file or a block special file for 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\(1M\)](#) to the sharing nodes of the GFS Shared File System.

```
# sfcnode -a host2 /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

Add or update node/device information for hosts by specifying host names.

```
# sfcnode -a host1,host2 /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

Delete node/device information for hosts by specifying host names.

```
# sfcnode -d -h host2 /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

Delete node/device information for a host by specifying its ID.

```
# sfcnode -d -i 80000000 /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

Delete node/device information for the local host.

```
# sfcnode -d /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

<SEE ALSO>

[mkfs_sfcfs\(1M\)](#), [sfcadm\(1M\)](#), [sfcinfo\(1M\)](#), [sfcsetup\(1M\)](#)

hostid(1) in the Solaris documentation

<NOTES>

- A file system can be changed only when all hosts that share the file system have started operation and the 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 which constitutes the GFS Shared File System registered into the management partition by [sfcsetup\(1M\)](#).
- 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 [mkfs_sfcfs\(1M\)](#). Check the registered node information with [sfcinfo\(1M\)](#), 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 sfcrcinfo(1M) Display file system information

<SYNOPSIS>

`sfcrcinfo -m [-a | -i fsid | special]`

<DESCRIPTION>

The `sfcrcinfo` command outputs file system information for the GFS Shared File Systems.

`sfcrcinfo` outputs the following detailed information:

- **FSID** (File system ID)
- **MDS/AC**
 - **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/S-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 **S-STATE** is other than "-", MDS is in state-transition.
- **STATE/S-STATE** (AC)
 - **run** - : file system is in mounted
 - **stop** - : file system is in unmounted
 - If **S-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 file system information for the 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 the GFS Shared File System which status is mounted.

-i *fsid*

Displays the information for the file system specified by *fsid*.

<OPERANDS>

The following operand can be specified:

special

Specifies the path name of the block or character special file on a representative partition of the GFS Shared File System.

<EXAMPLES>

```
# sfcrrscinfo -m /dev/sfdsk/gfs/rdsk/volume1 <Enter>
/dev/sfdsk/gfs/dsk/volume1:
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(1M) Perform the following functions: (1) Initialization of management partition. (2) Addition, deletion and display of node information. (3) Display path of management partition. (4) Registration and display of the startup mode of the sfcfrmd daemon.

<SYNOPSIS>

sfcsetup -c [-f] *raw_device_file*

sfcsetup -a *raw_device_file*

sfcsetup -d

sfcsetup -m [*startup_mode*]

sfcsetup -p

sfcsetup

<DESCRIPTION>

The **sfcsetup** command can perform the following functions:

1. Initialization of management partition.
2. Addition, deletion and display of node information.
3. Display path of management partition.
4. Registration and display of the startup mode of the sfcfrmd daemon.

To initialize the management partition, specify the path name of the **-c** option and the character special file. When the specified character special file seems to have 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 character special file that has already been initialized for the management partition, local node information is added to the management partition.

To delete node information, specify the **-d** option. Note, however, that sfcfrmd daemon must be stopped in all nodes 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 **sfcfrmd.conf** file.

<OPTIONS>

The following options can be specified:

-c *raw_device_file*

Initializes the partition specified in *raw_device_file* for use as a management partition.

-f

Initialize a character special file that has been used as a management partition.

-a *raw_device_file*

Adds node information.

-d

Deletes node information.

-m [*startup_mode*]

Registers the startup mode of the `sfcfrmd` daemon specified in *startup_mode*. When the *startup_mode* is not specified, displays the registered startup mode of the `sfcfrmd` daemon.

The following startup mode can be specified in *startup_mode*. When initializing as management partition, **wait** is registered as startup mode of `sfcfrmd` daemon.

wait

When a node is started up, the startup of the `sfcfrmd` 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 `sfcfrmd` daemon is suspended by checking if the message "**WARNING: sfcfsrm:5001: Starting the sfcfrmd daemon was suspended because quorum does not exist**" is output.

And, when the CF is started up by the GUI, 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 by the GUI, the startup of the `sfcfrmd` 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 `sfcfrmd` daemon is suspended by checking if the message "**WARNING: sfcfsrm:5001: Starting the sfcfrmd daemon was suspended because quorum does not exist**" is output.

nowait

When a node is started up or the CF is started up by the GUI, the `sfcfrmd` daemon will be started even if it cannot confirm that a cluster quorum exists.

This startup mode exists for backward compatibility only.

-p

Display the path name of a management partition.

<OPERANDS>

The following operand can be specified:

raw_device_file

Specifies the character special file path to be used for the management partition.

<EXAMPLES>

Initializing a management partition.

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

Initializing a partition that has previously been used as a management partition.

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

When `sfcfrmd` daemon is not running in the cluster, and adding information for a node.

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

When sfcfrmd daemon is not running in the cluster, and deleting information for a node.

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

Registering the startup mode to **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
```

<FILES>

/var/opt/FJSVgfs/sfcfrmd.conf

Environment file of sfcfrmd daemon

<SEE ALSO>

[sfcadm\(1M\)](#), [sfcfrmdstop\(1M\)](#)

<NOTES>

- When the sfcfrmd daemon has started, can not perform the following functions:
 - (1) Initialization of a management partition.
 - (2) Addition and deletion of node information.
 - (3) Registering the startup mode of the sfcfrmd daemon.
- 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\(1M\)](#).
- If a cluster partition condition occurs during node startup or when the CF is started by 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(1M) Report statistics on GFS Shared File Systems

<SYNOPSIS>

```
sfcstat [ -abcdefghijklmnopqrstuvwA ] [ interval [ count ] ] [ mount_point ... ]
```

<DESCRIPTION>

The **sfcstat** command displays statistics about the GFS Shared File Systems.

The **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.

When the parameter *interval* is specified, **sfcstat** reports statistical information for the *interval* that was specified in this parameter (in seconds).

When the parameter *count* is specified, **sfcstat** reports statistical information for the *interval* it takes to *count* to *count*.

When the parameter *mount_point* is specified, **sfcstat** reports statistical information on 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 which purged tokens
- Number of purging tokens (by token type)
- Number of AC which 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 required for writing (in milliseconds)
- 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 advisory 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.

-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 required for operating files (by operation type, in milliseconds)

-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 to wait to receive replies (by operation type , in milliseconds)
- 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)

-u

Reports AC information about VOP entry function processing. Reports the following information:

- Number of executing VOP entry call (by VOP type)
- Total of VOP entry function processing time (by VOP type , in nanoseconds)
- The maximum value at VOP entry function processing time (by VOP type , in nanoseconds)
- The maximum value at VOP entry function processing time was summed up of date (by VOP type)

-v

Reports AC information about Procedure issue processing. Reports the following information:

- Number of executing procedure issue call (by Procedure type)
- Total of Procedure issue processing time (by Procedure type , in nanoseconds)
- The maximum value at Procedure issue processing time (by Procedure type , in nanoseconds)
- The maximum value at Procedure issue processing time was summed up of date (by Procedure type)

-w

Reports AC information about on number of cache hits when device is accessed. Reports the following information:

- Number of page cache hits at the time of reading
- Number of page cache hits at the time of writing

When the option is omitted, it reports on all information.

<OPERANDS>

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 Solaris documentation

<NOTES>

- 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(1M) Unmount the GFS Shared File System on all nodes

<SYNOPSIS>

sfcumntgl *block_special* | *mount_point*

sfcumntgl *block_special* *mount_point*

<DESCRIPTION>

The **sfcumntgl** unmounts a file system specified with operand on all the nodes mounting it. sfcfsd daemon and MDS will be stopped.

The **sfcumntgl** can be executed on any nodes which are specified as the GFS configuration node configured by **sfcsetup(1M)**.

Only a super user can perform unmount processing.

<OPERANDS>

The following operands can be specified:

block_special

Specifies the block special file path on a representative partition of the file system to be unmounted.

mount_point

Specifies the name of the directory to be unmounted.

<EXAMPLES>

```
# sfcumntgl /dev/sfdsk/gfs01/dsk/volume01 /mount_point <Enter>
# sfcumntgl /dev/sfdsk/gfs01/dsk/volume01 <Enter>
# sfcumntgl /mount_point <Enter>
```

<FILES>

`/etc/mnttab`

Table for the currently mounted file system.

`/etc/vfstab`

Environment file for the file system.

<SEE ALSO>

[sfcmntgl\(1M\)](#), [sfcsetup\(1M\)](#), [umount_sfcfs\(1M\)](#)

[umount\(1M\)](#), [mnttab\(4\)](#), [vfstab\(4\)](#) in the Solaris documentation

<NOTES>

- `sfcfrmd` daemon must be running to enable the execution of this command.
- When both `block_special` and `mount_point` are specified, the same set of the descriptions must be contained in `/etc/vfstab` for all nodes sharing the file system.

B.2.13 `sfcextcount (1M)` Outputs the extent information of the file.

<SYNOPSIS>

```
/etc/opt/FJSVGfs/bin/sfcextcount { -f filename | -i inodeno } special
```

```
/etc/opt/FJSVGfs/bin/sfcextcount -d { -f filename | -i inodeno } special
```

<DESCRIPTION>

The `sfcextcount` outputs the extent information of the file in the GFS Shared File System to the standard output.

`special` is specified for the representative partition of the GFS Shared File System, where the file specified by `filename` or `inodeno` exists.

For the first synopsis, the i-node number of the file, the amount of extent and the amount of indirect extent management information of the file will be output in the format below.

```
<i-node number>: <amount of extent> <amount of indirect extent management information>
```

For the second synopsis, the items below will be output for each extent.

- **offset**
File offset (block unit)
- **partition ID**
Internal control number used to show which partition the extent of the file is assigned to.
- **start block ID**
Offset in the partition used to show the starting point of the extent of the file. (block unit)
- **blocks**
Blocks of the extent of the file.
- **IEX ID**
Internal control number for the indirect extent management information of the file. (block unit)
If it is not an indirect extent, "-" will be output.

The block size of **offset**, **start block ID** and **blocks** is 8 kilobytes for regular files, and 1 kilobyte for the directory. The block size of the **IEX ID** is 1 kilobyte.

Only a super user can execute `sfcextcount`.

<OPTIONS>

The following options can be specified:

-d

Outputs the extent list for the specified file.

-f filename

Outputs the extent information of the file *filename*.

The *filename* should be specified as the absolute path name.

The **-f** option can only be used when the GFS Shared File System is mounted.

-i inodeno

Outputs the extent information of the file whose i-node number is *inodeno*.

<OPERANDS>

The following operand can be specified.

special

Specifies the block or character special file path on a representative partition of the GFS Shared File System.

<EXAMPLES>

Outputs the extent information of a file which i-node number is 4.

(Since the amount of extent is 1, this file is not fragmented.)

```
# /etc/opt/FJJSVgfs/bin/sfcextcount -i 4 /dev/sfdsk/class0001/dsk/volume0001
4: 1 0
# /etc/opt/FJJSVgfs/bin/sfcextcount -d -i 4 /dev/sfdsk/class0001/dsk/volume0001
offset          partition ID    start block ID  blocks          IEX ID
-----
                0                0          1068941         128            -
```

Output the extent information of the file which path name is /mnt/gfs/file2.

(Since the amount of extent is 52, this file is fragmented.)

```
# /etc/opt/FJJSVgfs/bin/sfcextcount -f /mnt/gfs/file2 /dev/sfdsk/class0001/dsk/volume0001
6: 52 3
# /etc/opt/FJJSVgfs/bin/sfcextcount -d -f /mnt/gfs/file2 /dev/sfdsk/class0001/dsk/volume0001
offset          partition ID    start block ID  blocks          IEX ID
-----
                0                0          1033117         1              -
                1                0           973861         1              -
                2                0          1034655         1              -
                3                0           968868         1              -
                4                0           970278         1              -
                5                0           974118         1              -
                6                0           969637         1              -
                7                0          1035677         1              -
                8                0          1034397         1              -
                9                0           968356         1              -
               10                0           968355         1              -
               11                0          1036188         1              -
               12                0           971043         1              -
               13                0           967330         1              -
               14                0           969892         1              -
               15                0          1035166         1              -
               34                0           974117         1              19
               16                0           998369         1              1
               17                0           975931         1              1
               18                0           975161         1              1
```

19	0	976955	1	1
20	0	973604	1	1
21	0	1034909	1	1
22	0	977468	1	1
23	0	977213	1	1
24	0	976189	1	1
25	0	972324	1	1
26	0	967587	1	1
27	0	967842	1	1
28	0	971556	1	1
29	0	973094	1	1
30	0	975673	1	1
31	0	976445	1	1
32	0	976444	1	1
33	0	969636	1	1
35	0	970277	1	18
36	0	968867	1	18
37	0	1034654	1	18
38	0	973860	1	18
39	0	1033116	1	18
40	0	971299	1	18
41	0	1033884	1	18
42	0	968612	1	18
43	0	968099	1	18
44	0	970788	1	18
45	0	969124	1	18
46	0	1035420	1	18
47	0	969380	1	18
48	0	1035933	1	18
49	0	998119	1	18
50	0	977722	1	18
51	0	1033627	1	18

<NOTES>

- The order of the extent information output is not in the ascending order of the **offset**.
- If specifying a file during or directly after updating, the information output will not be correct. It is necessary to wait a few seconds after updating a file before executing this command.
- When *special* is not a representative partition of file system where *filename* specified by **-f** option exists, the message "**sfccount: ERROR: 0003: inodeno is not an i-node number of the existing file**" will be output and the **sfccount** will terminate abnormally. Otherwise, the information of a different file will be output.
- Since there is a possibility that I/O of the meta-data server sent to *special* will be slow down, execute this command only when the system load is low.

Appendix C Troubleshooting

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/adm/messages**.



For corrective actions of messages related to cluster systems, see "[Appendix D Messages](#)" of the "*PRIMECLUSTER Installation and Administration Guide*".

For corrective actions of messages related to GDS, see "[Appendix E Global Disk Services Messages](#)" of the "*PRIMECLUSTER Global Disk Services Configuration and Administration Guide*".

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)*".

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 using super user access privileges when you request troubleshooting to field engineers and if your manual instructs you to do so.

1. Material collected by FJQSS or **fjsnap**
2. Crash dump file (**/var/crash/*** or **/var/crash/*/***)
3. Output of the following command: **fsck -F sfcfs -N -o nolog raw_device**

For *raw_device*, specify a character special file of the file system where the problem occurs.

If the investigation material must urgently be sent, collect the following materials for the initial investigation:

- a. Material collected by **sfcsnap.sh**
- b. **/var/adm/messages***



- The above materials 1, 2, a, and b should be collected from all nodes where the GFS Shared File System is shared.
- The above material 3 should be collected when a file system needs to be recovered.
- These materials should be collected as soon as the symptom occurred. Some material might not be collected after rebooting the system.
- The materials a and b are of initial investigation. Collect materials a and b first, and then make sure to collect materials 1 to 3.

Point

Use FJQSS if you want to collect the above material 1 with other middleware products that support FJQSS.

The following indicates how to collect materials by FJQSS, fjsnap and sfcsnap.sh.

Collecting material by FJQSS (Information Collection Tool)

1. Execute the following command.

```
# /opt/FJSVqstl/fjqss_collect
```

The product selection menu appears.

2. Put the number of the product of which you want to collect the investigation material, then input <Enter>. Select either of the following products:

- PRIMECLUSTER Enterprise Edition
- PRIMECLUSTER HA Server

If you select one of the above, you can collect investigation material for PRIMECLUSTER including GFS in a batch.

3. Input "Y<Enter>" according to the instruction in the prompt.

After the FJQSS has completed the collection, the name of the output directory of the collected material appears.

4. Verify that the material have been collected in the directory whose name is indicated in the console.

The following file is created in the output directory of the collected material.

result *YYYYMMDDHHMMSS*.tar.gz

(*YYYYMMDDHHMMSS*: time (year, month, day, hours, minutes and seconds) that the collection started)

5. Send it to field engineers.

Collecting material by fjsnap

1. Execute the following command.

```
# /opt/FJSVsnap/bin/fjsnap -a filename
```

Specify a non-existent file name to *filename*. The material is collected with this file name.

2. Send this file to field engineers.

Collecting material by sfcsnap.sh

1. Execute the following command.

```
# /etc/opt/FJSVgfs/bin/sfcsnap.sh -a -d dirname
```

Specify an existent directory to *dirname*. The material is collected under this directory.

2. Compress this directory and send it to field engineers.

See

- For information on how to collect investigation material on PRIMECLUSTER systems, see the "PRIMECLUSTER Installation and Administration Guide".
- For FJQSS, see "FJQSS (Information Collection Tool) User's Guide" included in the product's DVD. For how to see "FJQSS (Information Collection Tool) User's Guide", open the following file in the product's DVD from your browser.

documents/fjqss-manual_sollnx/index_en.html

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.

When the node starts up after the panic, the crash dump is saved as a file. The default directory that crash dump files are saved is `"/var/crash"` or `"/var/crash/<node name>"`. Please confirm the directory for saving crash dump files by using `dumpadm(1M)`.



.....
For more information about crash dump, see the Solaris documentation.
.....

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)`.

```
# /usr/bin/ps -e | /usr/bin/grep sfcrmd <Enter>
5639 ?      0:25 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.



.....
For details about `ps(1)` and `grep(1)`, see the Solaris documentation.
.....

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>
# /usr/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
#
```



.....
For details about `compress(1)`, see the Solaris documentation.
.....

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 `"sfvfs...:read error"` message indicates that an I/O error occurred while file system data was being read from a disk. The `"sfvfs...: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**(1M), 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 "sfdfs...: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 **fsck_sfdfs**(1M) 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.

```
# fsck -F sfdfs -o log special -device-name <Enter>
# fsck -F sfdfs -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.



For corrective action against an I/O error of a GDS volume, see "Troubleshooting" of the "PRIMECLUSTER Global Disk Services Configuration and Administration Guide". For details of backing-up and restoring, see "Chapter 13 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**(1M).

```
# sfcadm -r /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
```

2. Recover the consistency of the file system.

```
# fsck -F sfdfs /dev/sfdsk/gfs01/rdsk/volume01 <Enter>
:
# fsck -F sfdfs -o f,nolog /dev/sfdsk/gfs01/rdsk/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 the GFS Shared File System.


```
# mount <Enter>
```

5. Confirm on all nodes that the following messages are not output in `/var/adm/messages` when `sfcumntgl(1M)` 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.

```
# mkfs -F sfcfs -m /dev/sfdsk/gfs01/rdsk/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/rdsk/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.



Please refer to "operation" "Operation using GDS Management View" in the "*PRIMECLUSTER Global Disk Services Configuration and Administration Guide*" about the operation method of GDS volume.

13. Create the GFS Shared File System using the same partition or the partition created in step

```
# mkfs -F sfcfs -o node=sunny,moony /dev/sfdsk/gfs01/rdsk/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.

```
# 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 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 by the 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 does 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 sfcfrmd 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        Solaris Sparc
moony 2      UP        Solaris Sparc
```

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) Configuration and Administration Guide*".

Procedure 2. If a cluster partition error occurs, take the following corrective action:

- When a LEFTCLUSTER node exists

If Shutdown Facility (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) 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) 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 by the GUI when a GFS Shared File System is used.](#)"

- Activate all nodes

After stopping all nodes by shutdown(1M), 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(1M)** on each node.

1. Confirm the process ID of the sfcfsrm script by **ps(1)**. The second column of the output below shows a process ID of the sfcfsrm script.

```
# /usr/bin/ps -ef | /usr/bin/grep sfcfsrm | /usr/bin/grep -v grep <Enter>
  root  2244      8   0 13:28:16 ?                0:00 /sbin/sh /lib/svc/method/
sfcfsrm start
```

2. Stop the sfcfsrm script by **kill(1)**.

```
# kill -9 2244 <Enter>
```

3. Repeat steps 1 and 2 until no process is found because the **sfcfsrm** script is restarted several times.

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(1M)**.
If startup of a node is suspended, complete the startup of a node before executing **shutdown(1M)**. 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 **sfcfrmstart(1M)** command on all the nodes that will be used.
An example of **sfcfrmstart(1M)** is shown "Procedure 3" (below).

See

For details about **shutdown(1M)**, **ps(1)**, **grep(1)** and **kill(1)**, see the Solaris documentation.

Procedure 3. If a cluster partition error does not exist, forcibly restart the sfcfrmd daemon that has been suspended by executing the **sfcfrmstart(1M)** command on all the nodes where operation will be resumed.

```
# sfcfrmstart -f <Enter>
```

C.3.4 Corrective action when the mount processing fails

This section describes common corrective actions, if the mount processing fails due to the blockade on mounting the file system, or if any of the following messages is output.

```
ERROR: sfcfs_mds:1004: can't execute primary MDS
ERROR: sfcfs_mds:1005: can't execute secondary MDS
```

Check following points:

- Setting of network is normal.
- Check whether all the IP addresses of the nodes that share the file system are correctly registered in host database (for example: `/etc/inet/hosts`). For details, see "[11.2.2 Registering information in host database](#)" in this manual.
- State of the file system configuration information is normal.

Execute the following commands and check that the host name of the shared node which the `sfcinfo(1M)` command and the `sfcscinfo(1M)` command display and the host name specified by the "`sfcadm -m`" command line in the backup file created by the execution of the `sfcgetconf(1M)` command are the same.

- `sfcinfo -n <representative partition of the file system>`
- `sfcscinfo -m <representative partition of the file system>`
- `sfcgetconf -d <representative partition of the file system> <output destination file name>`

When not the same, please change the `-m` option to the `-u` option of the `sfcadm(1M)` command execution line obtained by the `sfcgetconf(1M)` command, and then execute the command line.

If no problems are found in the checks above, see also corrective actions described in "[Appendix A List of Messages.](#)"



See

For details on above commands, see [sfcinfo\(1M\)](#), [sfcscinfo\(1M\)](#), [sfcgetconf\(1M\)](#) in this manual.

C.3.5 Corrective action when write fails by ENOSPC

This section describes corrective actions when the write processing fails by ENOSPC (no free areas) even if data space of the file system contains free space.

When V-data area usage exceeds 80%, the write processing may fail by ENOSPC.

Execute the following command to the file system with a write failure, and then check the number of V-data blocks (vdata) and the total number of available V-data blocks (free).

```
df -F sfcfs -o v <representative partition of the file system>
```

Deleting unused files or directories, or moving them into other file systems helps you to reduce V-data area usage.



See

For details when the write processing fails by ENOSPC, see "[1.8.12 Notes on writing file data on the GFS Shared File System.](#)"



See

For details on `df`, see [df_sfcfs\(1M\)](#) in this manual.

C.3.6 Corrective action when file access performance is low

If the access performance of a file on the GFS Shared File System is getting low, the file data may be fragmented. In this case, change the amount of indirect extent management information of the file to improve the performance.

Changing the amount of indirect extent management information

GFS Shared File System manages the file data with the extent-based allocation information. If the amount of extent consisting a file increases, the allocation information of file data will be stored on the indirect extent management information (IEX).

Meta-data server (MDS) reads IEX from the disk and caches it on memory to read or write the file data. However, the IEX cache overflows in the following cases and then the performance to read or update file data is degraded:

- One file has a very great amount of extents.
- Some files to be read or written at the same time have a very great amount of extents.

To avoid such circumstances, set the tuning parameter `SFCFS_NCACHE_IEX` to increase the amount of IEX cache.



See

For details on the tuning parameter `SFCFS_NCACHE_IEX` and how to set it, refer to "[14.1.1 Amount of Cache](#)" in this manual.

Estimating the amount of IEX cache

The following example shows how to estimate the amount of IEX cache.

1. If the access performance is getting low due to concurrent access of two files, `/mnt/gfs01/fileA` and `/mnt/gfs01/fileB` on the GFS Shared File system, use `sfextcount(1M)` to check the number of IEX in these two files.

The values in the third field are the number of IEX.

```
# /etc/opt/FJSGvgs/bin/sfextcount -f /mnt/gfs01/fileA /dev/sfdsk/gfs01/dsk/
volume01
6: 81920 4724
# /etc/opt/FJSGvgs/bin/sfextcount -f /mnt/gfs01/fileB /dev/sfdsk/gfs01/dsk/
volume01
8: 98304 5668
```



See

For details on `sfextcount(1M)`, refer to "[B.2.13 sfextcount \(1M\) Outputs the extent information of the file.](#)" in this manual.

2. Calculate the total amount of IEX checked in step 1.

$$4724 + 5668 = 10392$$

Estimate the larger value than 10392 as the amount of IEX cache.

Appendix D SMF Services and Port Numbers in GFS

This appendix provides explanations on SMF services and startup daemons for GFS, and the port numbers being used.

D.1 Explanation Formats

SMF services and port numbers are explained with the following formats:

Name of service

Name of SMF service.

Function

Function of service.

Effect if stopped

Effect if service is stopped.

Dependency relationship with other services

dependency

Remote service required for starting own service.

dependent

Remote service requiring own service.

Startup daemon

Daemons started by service.

Utilized port

Port

Port number.

Protocol

Protocol - TCP or UDP.

Send/Receive

"s" if port sends data, "r" if it receives data "s, r" for both.

Network

Utilized network — any of Cluster interconnect, administrative LAN, or public LAN.

Target

Node that uses the port.

Communication target

Port

Port number of communication target.

Target

Node or device that uses the port of the communication target.

Remarks

Remarks.

D.2 SMF Service Lists

/milestone/fjsvgsinit

Function

Initialization processing for monitoring facility of GFS shared file system.

Effect if stopped

Functions of GFS shared file system cannot be used.

Dependency relationship with other services

dependency

/system/filesystem/minimal

dependent

/milestone/single-user

Startup daemon

None.

Utilized port

None.

Remarks

None.

/milestone/fjsvgsfstrm

Function

Startup control for monitoring facility of GFS shared file system, mount control for GFS shared file system.

Effect if stopped

Functions of GFS shared file system cannot be used.

Dependency relationship with other services

dependency

/milestone/multi-user

/milestone/smawcf

/milestone/fjsvclctrl

/milestone/fjsvgsinit

/milestone/fjsvclmgr2

dependent

/milestone/smawrrms

Startup daemon

/usr/lib/fs/sfcfs/sfcpcnd

/usr/lib/fs/sfcfs/sfcprmd

/usr/lib/fs/sfcfs/sfchnsd

/usr/lib/fs/sfcfs/sfcfrmd

/usr/lib/fs/sfcfs/sfcfsd

/usr/lib/fs/sfcfs/sfcfsmg

Utilized port

Port	Protocol	Send/ Receive	Network	Target	Communication target	
					Port	Target
9200 (*1)	TCP	s, r	Interconnect	Cluster node	ANY	Remote cluster node

Port	Protocol	Send/Receive	Network	Target	Communication target	
					Port	Target
9100-9163 (*2)	TCP	s, r	Interconnect and Administrative LAN	Cluster node	ANY	Local and remote cluster nodes

Remarks

When using the IP filtering function of Oracle Solaris, allow communications between all nodes.

(*1) No. 9200 is set to support the service name "sfcsfrm."

(*2) From No. 9100 to No. 9163 are set to support the service names from sfcs-1 to sfcs-64.

/milestone/fjsvgfs

Function

Size check of internal log files of GFS shared file system, and switching of logs as necessary.

Effect if stopped

Functions of GFS shared file system cannot be used.

Dependency relationship with other services

dependency

/milestone/multi-user-server
/milestone/fjsvgfsfrm

dependent

None.

Startup daemon

None.

Utilized port

None.

Remarks

None.

/milestone/fjsvgfs-zones

Function

Automatic start of the non-global zone that shares the GFS Shared File System.

Effect if stopped

When starting the non-global zone that shares the GFS Shared File System automatically, the GFS Shared File System cannot be used.

Dependency relationship with other services

dependency

/milestone/fjsvgfsfrm

dependent

/system/zones

Startup daemon

None.

Utilized port

None.

Remarks

Enable this service only when starting the non-global zone that shares the GFS Shared File system automatically.

Appendix E Migrating GFS by Using OSLC

Oracle Solaris Legacy Containers (hereafter referred to as OSLC) is a virtualization function to migrate an existing Solaris 8 or Solaris 9 environment to a Solaris 10 environment.

This appendix describes how a Solaris 8 or Solaris 9 environment on which GFS is operated can be migrated to a non-global zone on Solaris 10 by using OSLC.

E.1 Migrating GFS Local File System

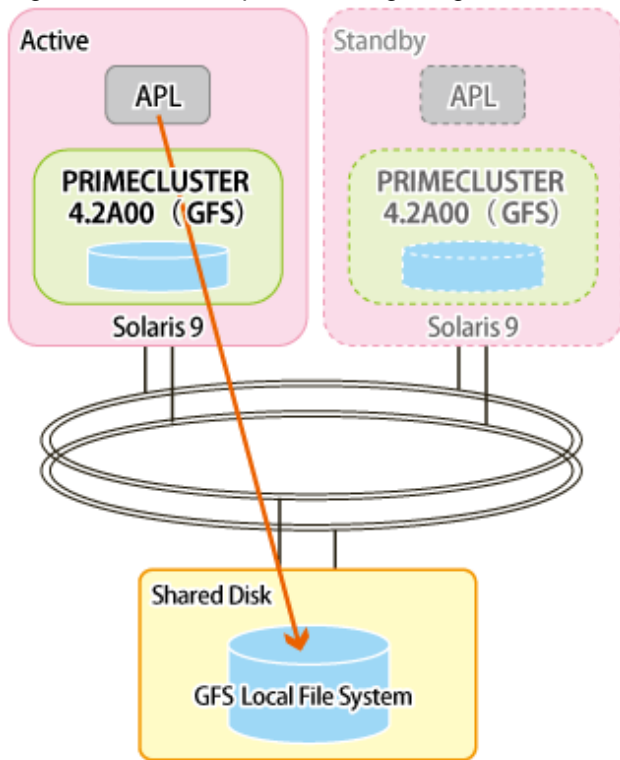
This section describes how to migrate the GFS Local File System and its migration procedure.

E.1.1 How to Migrate

Migrate the GFS Local File System to ZFS or UFS on a global zone. After that, the migrated data can be used in a non-global zone. When using the GFS Local File System as a switching file system (Fsystem resource), register ZFS or UFS on a global zone to Fsystem resource.

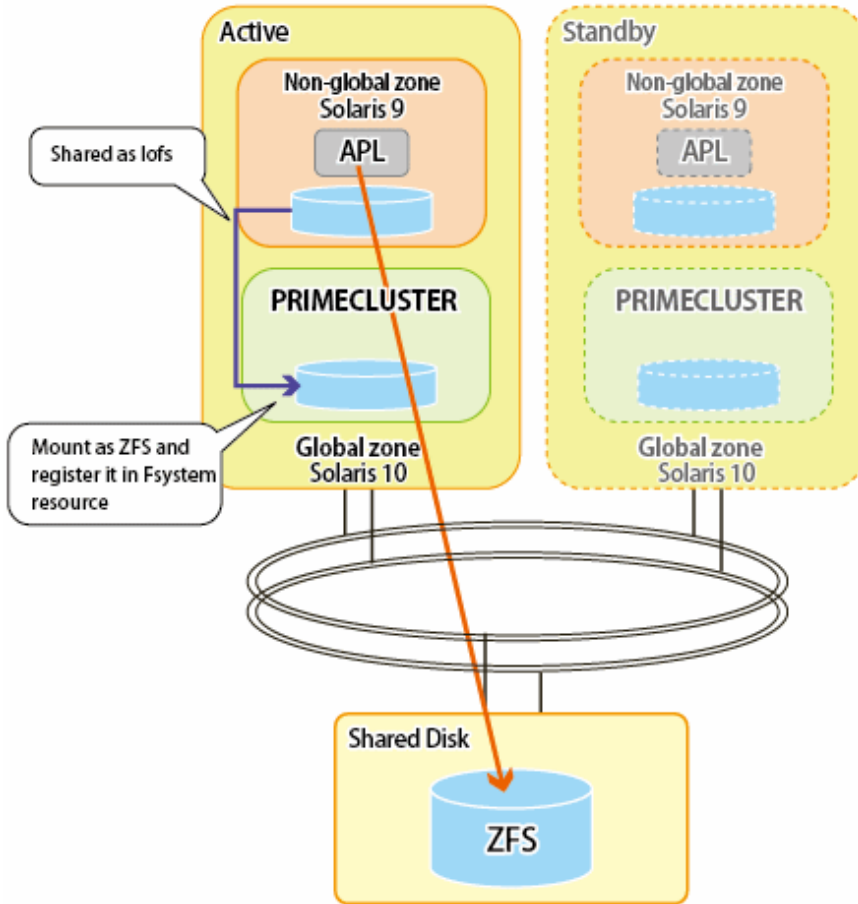
An example below indicates when using the GFS Local File System for PRIMECLUSTER 4.2A00 as a switching file system.

Figure E.1 An example when migrating the GFS Local File System (before migration)



GFS : Global File Services

Figure E.2 An example when migrating the GFS Local File System (after migration)



Note

- The GFS Local File System is incompatible with ZFS media and UFS media. To keep using the current data, you need to back up and restore each file by using `tar(1)`, `cpio(1)`, or backup software.
- Restore the backup data on the GFS Local File System on ZFS or UFS in the destination global zone.

E.1.2 Migration Procedure

The procedure below indicates how to migrate an environment in which the GFS Local File System is used.

1. Back up the data on the GFS Local File System.
Back up each file on the GFS Local File System in the migration source environment. Use `tar(1)`, `cpio(1)`, or backup software.
2. Build the migration destination environment.
Build a global zone, non-global zone, and cluster applications in the migration destination environment. For details on how to build the environment, see "Using PRIMECLUSTER in Oracle Solaris Zones Environments" in "PRIMECLUSTER Installation and Administration Guide."
3. Restore the backup data in the migration destination environment.
Restore the data on the GFS Local File System that was backed up in step 1 to ZFS in the destination global zone.

E.2 Migrating GFS Shared File System

This section describes how to migrate the GFS Shared File System and its migration procedure.

E.2.1 How to Migrate

Migrate the GFS Shared File System to the GFS Shared File System on a global zone. After that, the migrated data can be used in a non-global zone.

An example below indicates when using the GFS Shared File System for PRIMECLUSTER 4.2A00.

Figure E.3 An example when migrating the GFS Shared File System (before migration)

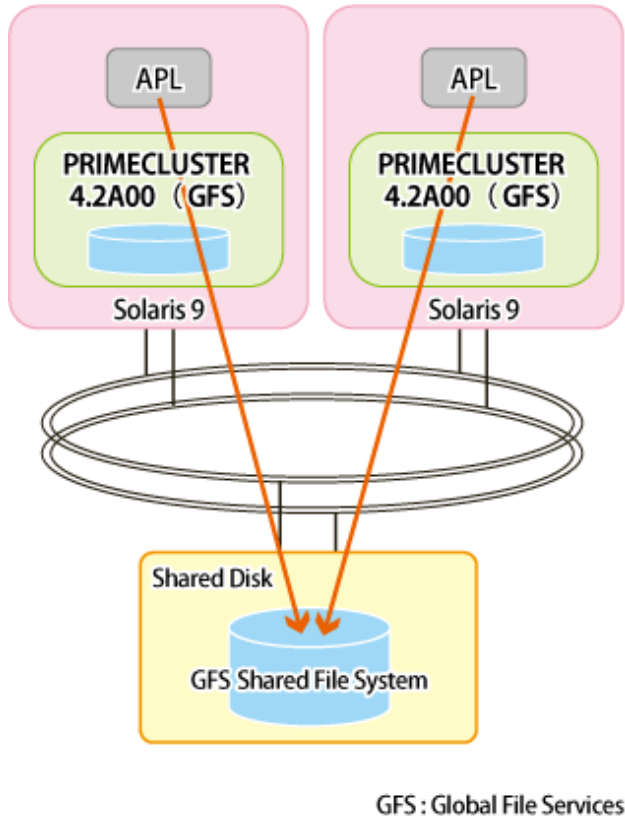
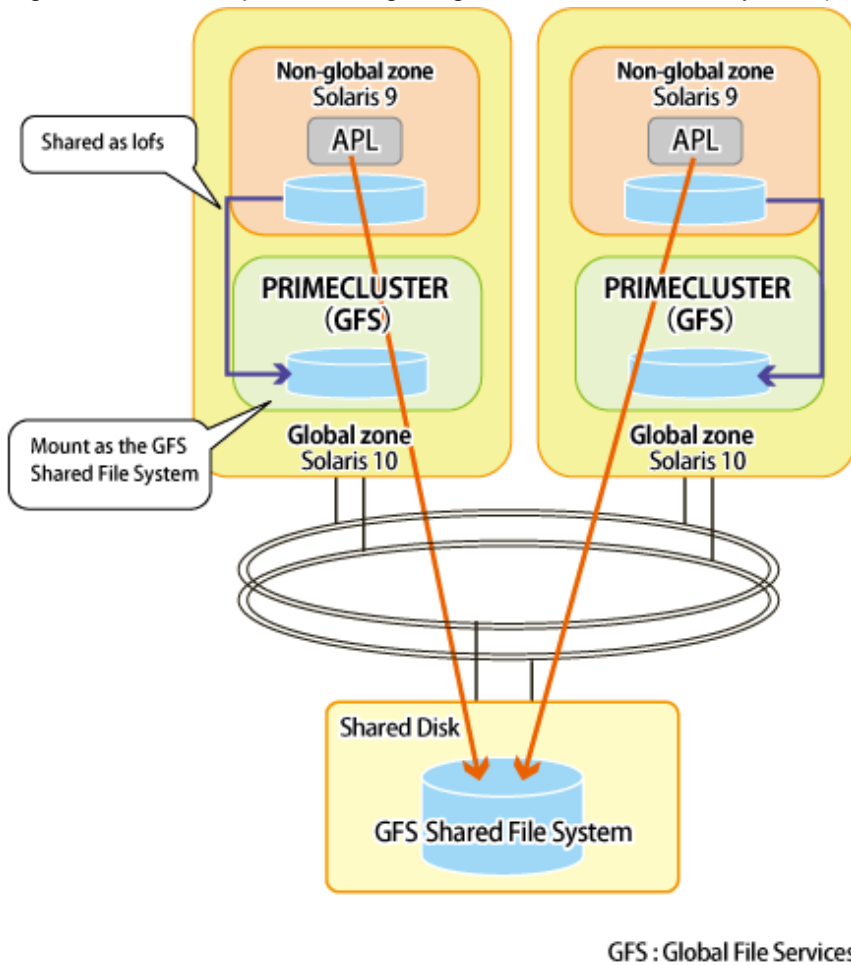


Figure E.4 An example when migrating the GFS Shared File System (after migration)



Note

- The GFS Shared File System on Solaris 10 does not provide some functions which are provided by the GFS Shared File System on Solaris 9 or Solaris 8 of PRIMEPOWER. For details, see "1.8.2 Unavailable functions" in this manual.
- The GFS Shared File System on Solaris 9 or Solaris 8 of PRIMEPOWER is incompatible with the media used on the GFS Shared File System on Solaris 10. To keep using the current data, you need to back up and restore each file by using **tar(1)**, **cpio(1)**, or backup software.
- For the notes when using the GFS Shared File System in a non-global zone, see "1.8.10 GFS operational notices for Solaris Zones" in this manual.

E.2.2 Migration Procedure

The procedure below indicates how to migrate an environment in which the GFS Shared File System is used.

1. Back up the data on the GFS Shared File System.
Back up each file on the GFS Shared File System in the migration source environment. Use **tar(1)**, **cpio(1)**, or backup software.
2. Build the migration destination environment.
Build a global zone, non-global zone, and cluster applications in the migration destination environment. For details on how to build the environment, see "Using PRIMECLUSTER in Oracle Solaris Zones Environments" in "PRIMECLUSTER Installation and Administration Guide."

3. Create the GFS Shared File System on a global zone.
Create the GFS Shared File System on a global zone.
4. Restore the backup data in the migration destination environment.
Restore the data on the GFS Shared File System that was backed up in step 1 to the GFS Shared File System in the destination global zone.
5. Share the GFS Shared File System both on a global zone and a non-global zone.
Share the GFS Shared File System which was created on a global zone in a non-global zone. For the setting, see "[1.8.10 GFS operational notices for Solaris Zones](#)" in this manual.

Appendix F Release information

This appendix describes the main contents for change of this manual.

F.1 Change of a function

This section explains outline, content, and details (the pertinence point in the manual) of function added or changed from a former version and level.

Number	VL	Function name	Contents	Details
1	4.3A10	SMF (Service Management Facility) support	Startup and stop scripts of GFS are migrated to SMF services.	<ul style="list-style-type: none"> - 4.1 Mount and unmount opportunity of the file system at the time of system starting and ending - Appendix D SMF Services and Port Numbers in GFS
2	4.3A20	IPv6 support	IPv6 is supported on networks (cluster interconnect) used by GFS.	<ul style="list-style-type: none"> - 1.8.2.1 Functions not provided by the GFS Shared File System - 1.8.12 Notes in IPv6 environments
3	4.3A20	Support of the Live Migration function of Oracle VM Server for SPARC	The Live Migration function of Oracle VM Server for SPARC is supported in the environment where GFS is used.	<ul style="list-style-type: none"> - 1.8.14 Notes on using the Live Migration function in an Oracle VM Server for SPARC environment - 14.1.2 Communication timeout value
4	4.3A40	Support of Solaris Zones and OSLC environment	GFS is available from Solaris Zones and OSLC environment	<ul style="list-style-type: none"> - 1.1.4 File system sharing in a Solaris Zones environment - 1.8.2.1 Functions not provided by the GFS Shared File System - 1.8.6 Notes on use as loopback virtual file system(lofs) - 1.8.10 GFS operational notices for Solaris Zones - A.2.6 Error messages (sfcfs_mount command) - Appendix D SMF Services and Port Numbers in GFS - Appendix E Migrating GFS by Using OSLC - Glossary
5	4.3A40	IPv6 support	IPv6 is available for communication between MDS and AC.	<ul style="list-style-type: none"> - 1.8.2.1 Functions not provided by the GFS Shared File System - 10.1.1 Creation - 10.1.4 Change (shared node information) - 10.2.1 Creating a file system - 10.3.1 Changing the file system attributes - 11.1.1 Creation - 11.1.4 Change (shared node information)

Number	VL	Function name	Contents	Details
				<ul style="list-style-type: none"> - 11.2 Creation - 11.2.2 Registering information in host database - 11.2.5 Selecting a communication protocol - 11.3.2.2 Tuning file system - 11.5 Change (shared node information) - 11.5.3 Changing shared node information - 14.1.3 Communication protocol - A.1.2 Warning messages - A.2.4 Error messages (MDS (sfcsmsg daemon)) - A.2.6 Error messages (sfdfs_mount command) - A.2.9 Warning messages (MDS (sfcsmsg daemon)) - A.4.4 mkfs_sfdfs command - A.5.2 sfcdm and sfnode commands - C.3.4 Corrective action when the mount processing fails - F.2.1 Incompatibilities from 4.1A40 - F.2.1.1 Change in AC warning messages - F.2.2 Incompatibilities from 4.2A00 - F.2.2.1 Change in AC warning messages - F.2.3 Incompatibilities from 4.3A10 - F.2.3.1 Change in AC warning messages - F.2.4 Incompatibilities from 4.3A20 - F.2.4.1 Change in AC warning messages <p>Deleted contents:</p> <ul style="list-style-type: none"> - 1.8.13 Notes in IPv6 environments
6	4.3A40	FJQSS support	FJQSS is available as the investigation material collection tool for GFS.	<ul style="list-style-type: none"> - 12.2.1.10 Other messages - Appendix A List of Messages - C.2 Collecting information for troubleshooting
7	4.5A00	Support of the function to start Web-Based Admin View by using Java Web Start	Web-Based Admin View can be started by using Java Web Start.	<ul style="list-style-type: none"> - Chapter 6 Starting and Exiting the Management View - 6.1 Starting Web-Based Admin View - 6.5 Exiting Web-Based Admin View
8	4.5A00	sfextcount(1M) support	Extent information of a file can be checked.	<ul style="list-style-type: none"> - A.5.12 sfextcount command

Number	VL	Function name	Contents	Details
				<ul style="list-style-type: none"> - B.2.13 Output of the extent information in the sfextcount(1M) file - C.3.6 Corrective action when file access performance is low
9	4.5A00	Support of the tuning parameter SFCFS_NCACHE_IEX	Access performance of the fragmented file can be improved by tuning the amount of cache of indirect extent management information of the file.	<ul style="list-style-type: none"> - 14.1.1 Amount of Cache - A.2.9 Warning messages (MDS (sfcsmsg daemon)) - A.2.13 Information messages (MDS (sfcsmsg daemon)) - C.3.6 Corrective action when file access performance is low - F.2.1 Incompatibilities from 4.1A40 - F.2.1.2 MDS information message is added - F.2.2 Incompatibilities from 4.2A00 - F.2.2.2 MDS information message is added - F.2.3 Incompatibilities from 4.3A10 - F.2.3.2 MDS information message is added - F.2.4 Incompatibilities from 4.3A20 - F.2.4.2 MDS information message is added - F.2.5 Incompatibilities from 4.3A40 - F.2.5.1 MDS information message is added - Glossary

GFS: Global File Services

F.2 Information of Incompatibility

This section explains incompatibility of the GFS Shared File System.

F.2.1 Incompatibilities from 4.1A40

There is an incompatibility with the following function compared to 4.1A40.

Table F.1 Incompatibility from 4.1A40

Number	Item
1	Change in AC warning messages
2	MDS information message is added

F.2.1.1 Change in AC warning messages

Incompatibility description

For the following AC warning messages, changed the contents of *details* if the connection with MDS fails.

WARNING: FSP_PCLGFS_SFXXFSKNL: 1104: *mountpoint*: Cannot mount: Connection failed: *details*

WARNING: FSP_PCLGFS_SFXXFSKNL: 1401: *mountpoint*: Recovery failed: *details*

Before change:

errcode: Detailed number of the error

After change:

IP=*ipaddress*, *errcode*=*errcode*

ipaddress: The IP address where the primary MDS runs.

errcode: Detailed number of the error

Corrective action

None.

F.2.1.2 MDS information message is added

Incompatibility description

The message output to `/var/adm/messages` when GFS Shared File System is mounted is added.

Before change:

No message is output.

After change:

The following message is output:

```
NOTICE: sfcfs_mds:3022: fsid: amount of meta cache IEX is num
```

fsid: File system ID

num: Amount of IEX cache

Corrective action

None.

F.2.2 Incompatibilities from 4.2A00

There is an incompatibility with the following function compared to 4.2A00.

Table F.2 Incompatibility from 4.2A00

Number	Item
1	Change in AC warning messages
2	MDS information message is added

F.2.2.1 Change in AC warning messages

Incompatibility description

For the following AC warning messages, changed the contents of *details* if the connection with MDS fails.

```
WARNING: FSP_PCLGFS_SFXXFSKNL: 1104: mountpoint: Cannot mount: Connection failed: details
```

```
WARNING: FSP_PCLGFS_SFXXFSKNL: 1401: mountpoint: Recovery failed: details
```

Before change:

errcode: Detailed number of the error

After change:

IP=*ipaddress*, *errcode*=*errcode*

ipaddress: The IP address where the primary MDS runs.

errcode: Detailed number of the error

Corrective action

None.

F.2.2.2 MDS information message is added

Incompatibility description

The message output to /var/adm/messages when GFS Shared File System is mounted is added.

Before change:

No message is output.

After change:

The following message is output:

```
NOTICE: sfcfs_mds:3022: fsid: amount of meta cache IEX is num
```

fsid: File system ID

num: Amount of IEX cache

Corrective action

None.

F.2.3 Incompatibilities from 4.3A10

There is an incompatibility with the following function compared to 4.3A10.

Table F.3 Incompatibility from 4.3A10

Number	Item
1	Change in AC warning messages
2	MDS information message is added

F.2.3.1 Change in AC warning messages

Incompatibility description

For the following AC warning messages, changed the contents of *details* if the connection with MDS fails.

```
WARNING: FSP_PCLGFS_SFXXFSKNL: 1104: mountpoint: Cannot mount: Connection failed: details
```

```
WARNING: FSP_PCLGFS_SFXXFSKNL: 1401: mountpoint: Recovery failed: details
```

Before change:

errcode: Detailed number of the error

After change:

IP=*ipaddress*, errcode=*errcode*

ipaddress: The IP address where the primary MDS runs.

errcode: Detailed number of the error

Corrective action

None.

F.2.3.2 MDS information message is added

Incompatibility description

The message output to /var/adm/messages when GFS Shared File System is mounted is added.

Before change:

No message is output.

After change:

The following message is output:

```
NOTICE: sfcfs_mds:3022: fsid: amount of meta cache IEX is num
```

fsid: File system ID

num: Amount of IEX cache

Corrective action

None.

F.2.4 Incompatibilities from 4.3A20

There is an incompatibility with the following function compared to 4.3A20.

Table F.4 Incompatibility from 4.3A20

Number	Item
1	Change in AC warning messages
2	MDS information message is added

F.2.4.1 Change in AC warning messages

Incompatibility description

For the following AC warning messages, changed the contents of *details* if the connection with MDS fails.

```
WARNING: FSP_PCLGFS_SFXXFSKNL: 1104: mountpoint: Cannot mount: Connection failed: details
```

```
WARNING: FSP_PCLGFS_SFXXFSKNL: 1401: mountpoint: Recovery failed: details
```

Before change:

errcode: Detailed number of the error

After change:

IP=*ipaddress*, errcode=*errcode*

ipaddress: The IP address where the primary MDS runs.

errcode: Detailed number of the error

Corrective action

None.

F.2.4.2 MDS information message is added

Incompatibility description

The message output to /var/adm/messages when GFS Shared File System is mounted is added.

Before change:

No message is output.

After change:

The following message is output:

```
NOTICE: sfcfs_mds:3022: fsid: amount of meta cache IEX is num
```

fsid: File system ID

num: Amount of IEX cache

Corrective action

None.

F.2.5 Incompatibilities from 4.3A40

There is an incompatibility with the following function compared to 4.3A40.

Table F.5 Incompatibility from 4.3A40

Number	Item
1	MDS information message is added

F.2.5.1 MDS information message is added

Incompatibility description

The message output to /var/adm/messages when GFS Shared File System is mounted is added.

Before change:

No message is output.

After change:

The following message is output:

```
NOTICE: sfcfs_mds:3022: fsid: amount of meta cache IEX is num
```

fsid: File system ID

num: Amount of IEX cache

Corrective action

None.

Glossary

64-bit file system interface

This interface can handle files that exceed 2 gigabytes. For details, see **largefile(5)** in the Solaris documentation.

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 Solaris documentation.

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.

CF

See Cluster Foundation.

Cluster Foundation

The set of PRIMECLUSTER modules that provides basic clustering communication services. For details, see "*PRIMECLUSTER Cluster Foundation (CF) Configuration and Administration Guide*".

cluster interconnect

The set of private network connections used exclusively for PRIMECLUSTER communications. For details, see "*PRIMECLUSTER Cluster Foundation (CF) Configuration and Administration Guide*".

cluster partition

The state in which communication with some of the nodes that constitute the cluster has been stopped. For details, see "*PRIMECLUSTER Cluster Foundation (CF) 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) 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.

GFS Management View

Software which allows various operations including configuration settings and operation management of GFS 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 Configuration and Administration Guide*."

Global Link Services

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)*."

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.

IEX

Same as indirect extent management information.

IEX cache

Memory cache of MDS used to read or write IEX from meta-data area.

indirect block

Same as indirect extent management information.

indirect extent management information

V-data to manage the extent that cannot be stored in i-node.

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) Configuration and Administration Guide*".

logical volume

A logical disk device that provides the user with a block device interface and a character (raw) device 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*".

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.

- Information on each node that constitutes the GFS Shared File System.
- Correspondence information on common node of each GFS Shared File System, and shared device.
- 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 management information, 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(1)** in the Solaris documentation.

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) 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.

Oracle VM Server for SPARC

A virtualization function using Hypervisor, which is provided as part of the firmware.

OSLC (Oracle Solaris Legacy Containers)

A virtualization function to migrate Oracle Solaris 8/9 environment to hardware on which Solaris 10 is installed.

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

State in which integrity is maintained among the nodes that configure the cluster system. Specifically, this means that the CF state of all nodes in the cluster is either UP or DOWN (i.e. none is in LEFTCLUSTER state). For details, see "*PRIMECLUSTER Cluster Foundation (CF) Configuration and Administration Guide*".

quota function

quota is a function of UFS for limiting disk space or the number of i-nodes that can be used by the user. For details, see **edquota**(1M) in the Solaris documentation.

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 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 continuous access from each AC.

sfcrmd

Receives a request from the sfcfsd or the commands and provides the communication paths of commands-sfcfsd, commands-sfcrmd and inter-node. Configuration database management and the management partition I/O functions are also provided.

sfcsfd

Provides MDS/AC control functions such as the GFS Shared File System operation start/stop, failover of MDS.

sfcprmd

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 sfcprmd, and then sfcprmd 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 sfcprmd as required is referred to as the target process.

The target process is monitored by sfcprmd and, when the process terminates normally or abnormally, the status is posted to the client process.

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 2 nodes are allowed.

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.

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 Solaris OS is installed. The entire disk containing a slice currently operating as the file system (or swap area) of one of the following:

- /
- **/usr**
- **/var**
- 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) 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 extent management information 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*".

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