

# **gFiler™ Gateway Series**

## **Getting Started with the gFiler for Hitachi Data Systems®**

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# Preface

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## About this guide

This guide introduces you to the gFiler for Data ONTAP™ 6.5.3, provides an overview of the tasks required to set up a gFiler, and provides configuration guidelines and sample configurations.

## Audience

This guide is for users who are familiar with operating systems, such as UNIX®, Windows® 95, Windows NT®, Windows 2000, and Windows XP, and who will be planning for and installing gFiler gateways. This guide does not discuss basic system or network administration topics, such as IP addressing, routing, and network topology; it emphasizes the characteristics of the NetApp® gateway.

## Special messages

This guide contains special messages that are described as follows:

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### Note

A note contains important information that helps you install or operate the system efficiently.

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### Caution

A caution contains instructions that you must follow to avoid damage to the equipment, a system crash, or loss of data.

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## About this chapter

This chapter introduces you to the gFiler™ gateway and provides an overview of the tasks that you need to do to set up your storage subsystem, gFiler hardware, and Data ONTAP™ software on a gFiler. Use this guide in conjunction with the *Hardware Installation Guide* and the *Software, Setup, and Management Guide*.

## Topics in this chapter

This chapter discusses the following topics:

- ◆ [“What a gFiler is”](#) on page 2
- ◆ [“Features”](#) on page 3
- ◆ [“Setup task overview”](#) on page 5

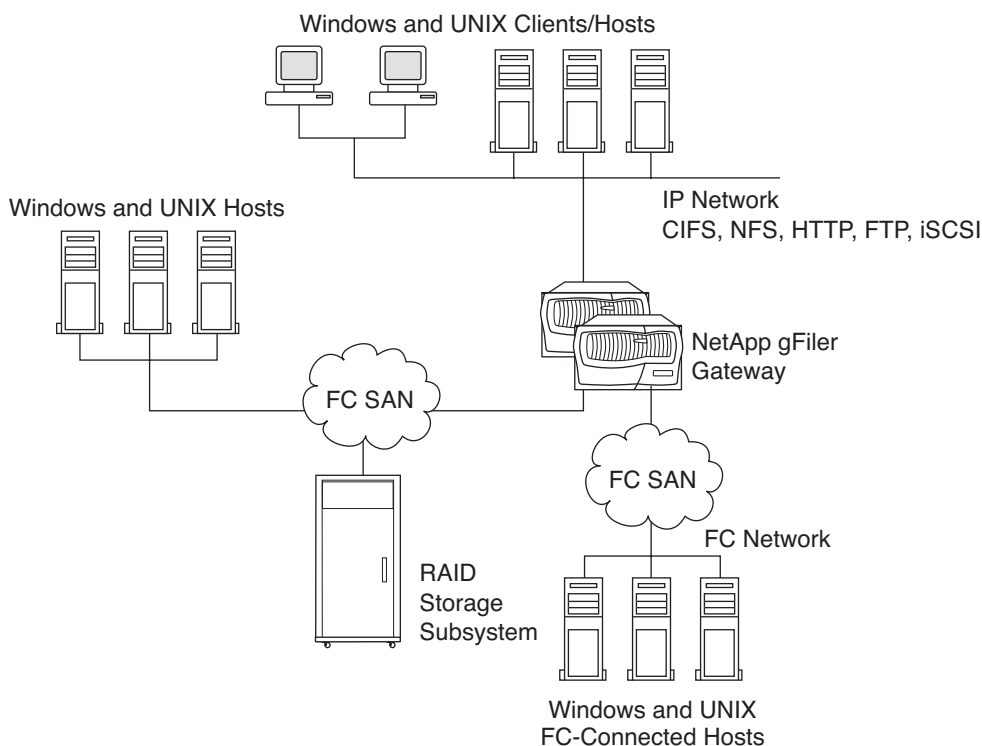
# What a gFiler is

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## Overview of a gFiler in the network

The NetApp industry-standard gFiler gateway is a virtualization and storage consolidation solution that provides unified NAS and SAN access to data stored in heterogeneous Fibre Channel (FC) SAN storage subsystems. The gFiler provides file-level and block-level access to data stored in Fibre Channel storage subsystems through client systems and application hosts on an IP network, a Fibre Channel network, or both.

Like all NetApp storage appliances, the gFiler is based on the Data ONTAP operating system, which supports multiprotocol file services and advanced data management capabilities for consolidating, protecting, and recovering data for applications and users.



# Features

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## Supported gFiler platforms

The following gFiler platforms are supported:

- ◆ GF270c
- ◆ GF825, GF825c
- ◆ GF920, GF920c
- ◆ GF940, GF940c
- ◆ GF960, GF960c
- ◆ GF980, GF980c

The “c” in the model name denotes clustered systems. The GF800 and GF900 platforms use the cluster interconnect adapter to connect the gFilers to one another. Unlike the rest of the gFiler models, the GF270c contains two CPU modules (heads) and integrated cluster interconnect adapters inside the same case. Each CPU module must be configured separately.

## Supported storage subsystems

The gFiler supports the following storage subsystem platforms:

- ◆ 9570V
- ◆ 9580V
- ◆ 9910
- ◆ 9960
- ◆ 9970V
- ◆ 9980V
- ◆ Universal Storage Platform (USP)

## Microcode versions

The following table lists the microcode versions for your storage subsystem.

| Storage subsystem model | Microcode                                                     | System parameter        |
|-------------------------|---------------------------------------------------------------|-------------------------|
| USP                     | See the <i>gFiler Support Matrix for Hitachi Data Systems</i> |                         |
| 9570V/9580V             | V3.2                                                          | No_RSV_ConfMode Enabled |
| 9910/9960               | 01-19-03-00/00                                                | System mode 254 on      |

| Storage subsystem model | Microcode      | System parameter   |
|-------------------------|----------------|--------------------|
| 9970V/9980V             | 21-05-23-00/00 | System mode 254 on |

## Data ONTAP features not supported

The gFiler supports most Data ONTAP 6.5 features that are described in the Data ONTAP documentation set. You can read about any differences in the gFiler's use with a feature in the *gFiler Gateway Series Software Setup, Installation, and Management Guide*.

The following Data ONTAP features are not supported by the gFiler:

- ◆ RAID-4 or RAID DP  
The gFiler uses RAID-0 on top of RAID-1, RAID-5, or RAID-10 on RAID storage subsystems. See Appendix C, “[Terminology](#),” on page 81 for more information.
- ◆ Disk sanitization and disk scrubbing
- ◆ NetApp NOW Web site (<http://now.netapp.com>)  
HDS customers do not have access to the NOW Web site, which is referenced throughout the gFiler gateway series documents and the Data ONTAP documents. See your authorized reseller to obtain software or for information that is referenced.
- ◆ SnapLock Compliance
- ◆ MetroCluster and SyncMirror on the GF270c
- ◆ Autosupport  
The Autosupport feature is supported by the gFiler. However, HDS might be using the Hitachi HiTrack feature instead of Autosupport. See your authorized reseller for more information.

# Setup task overview

---

**Setup task overview**    The following table provides a high level summary of the tasks involved in setting up the storage subsystems and the gFiler to work together. For each task, you are directed to where you can find the information that you need to perform the task.

| Step | Task                                | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Planning your gateway configuration | <p>You decide the gateway configuration in which you connect your gateway to your storage subsystem.</p> <ol style="list-style-type: none"><li>1. Determine the type of configuration between your gFiler gateway and your storage subsystem, as discussed in Chapter 2, “<a href="#">Planning Your Configuration</a>,” on page 11 of this guide.</li><li>2. Review the configuration rules for your gateway before you allocate space on your storage subsystem for your gateway, as discussed in Chapter 2, “<a href="#">Planning Your Configuration</a>,” on page 11 of this guide.</li><li>3. Verify all site prerequisite information by reviewing Chapter 1, “Preparing Your Site for Your Gateway,” in the <i>gFiler Gateway Series Hardware Installation Guide</i>.</li></ol> |

| Step | Task                                                                                                                          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2    | Installing the gateway and connecting it to the storage subsystem                                                             | <p>You install the gateway in a rack and connect the gateway to the storage subsystem.</p> <ol style="list-style-type: none"> <li>1. Install the gateway into a rack, as described in Chapter 2, “Installing your gateway into a rack,” in the <i>gFiler Hardware Installation Guide</i>.</li> <li>2. You connect your gateway to your storage subsystem, as described in Chapter 3, “Connecting to your Storage Subsystem,” in the <i>gFiler Hardware Installation Guide</i>.</li> <li>3. You connect your gateway to an ASCII terminal and power it on in Maintenance Mode to obtain WWNs for the ports on your HBAs, as described in Chapter 4, “Preparing Your Gateway for LUN Configuration” in the <i>gFiler Hardware Installation Guide</i>.</li> </ol> <p><b>Note</b>—<br/>If you are planning a configuration with no LUN security, you do not need to obtain the WWNs on your gateway.</p> |
| 3    | Setting up the storage subsystem to work with the gFiler gateways                                                             | <p>You must create LUNs on the storage subsystem and export (map) them to a storage subsystem port so that the LUNs will be available for the gFiler gateways connected to the port.</p> <p>See your storage subsystem documentation per model for information about configuring LUNs on the storage subsystem.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 4    | Connecting your gFiler to a network and any third-party tape backup devices, and then powering on and booting in regular mode | <p>You connect your gateway to a network and to any third-party tape backup devices, if applicable, and to an AC power source, as described in Chapter 5, “Connecting Your Gateway,” in the <i>gFiler Hardware Installation Guide</i>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

| Step | Task                                                                                                                          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2    | Installing the gateway and connecting it to the storage subsystem                                                             | <p>You install the gateway in a rack and connect the gateway to the storage subsystem.</p> <ol style="list-style-type: none"> <li>1. Install the gateway into a rack, as described in Chapter 2, “Installing your gateway into a rack,” in the <i>gFiler Hardware Installation Guide</i>.</li> <li>2. You connect your gateway to your storage subsystem, as described in Chapter 3, “Connecting to your Storage Subsystem,” in the <i>gFiler Hardware Installation Guide</i>.</li> <li>3. You connect your gateway to an ASCII terminal and power it on in Maintenance Mode to obtain</li> </ol> |
|      |                                                                                                                               | <p><b>Note</b>—described in Chapter 4, “Preparing Your Gateway for LUN Configuration” in the <i>gFiler Hardware Installation Guide</i>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|      |                                                                                                                               | <p>If you are planning a configuration with no LUN security, you do not need to obtain the WWNs on your gateway.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 3    | Setting up the storage subsystem to work with the gFiler gateways                                                             | <p>You must create LUNs on the storage subsystem and export (map) them to a storage subsystem port so that the LUNs will be available for the gFiler gateways connected to the port.</p> <p>See your storage subsystem documentation per model for information about configuring LUNs on the storage subsystem.</p>                                                                                                                                                                                                                                                                               |
| 4    | Connecting your gFiler to a network and any third-party tape backup devices, and then powering on and booting in regular mode | <p>You connect your gateway to a network and to any third-party tape backup devices, if applicable, and to an AC power source, as described in Chapter 5, “Connecting Your Gateway,” in the <i>gFiler Hardware Installation Guide</i>.</p>                                                                                                                                                                                                                                                                                                                                                        |

| Step | Task                                                                  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5    | Basic initial software setup and installation                         | <p>Your initial setup and configuration of gFiler gateways involves</p> <ul style="list-style-type: none"> <li>◆ Designating which gFiler can read data from and write data to a specific LUN on a storage subsystem.</li> <li>◆ Providing system information, such as IP address and media type</li> <li>◆ Installing the Data ONTAP software</li> </ul> <p>See the <i>gFiler Software Setup, Installation, and Management Guide</i> for details.</p> <hr/> <p><b>Note</b></p> <p>If you are upgrading the Data ONTAP software on a gFiler, specific steps must be followed to ensure that a gFiler has read and write capability to LUNs on the storage subsystem under the new scheme introduced in Data ONTAP 6.5. See the gFiler <i>Data ONTAP 6.5.1 Upgrade Guide</i> for more information.</p> <hr/> |
| 6    | Configuring Data ONTAP features that you want to use with your gFiler | <p>You might want to use some of Data ONTAP features to manage your gFiler gateways. Use the Data ONTAP documentation set in conjunction with the gFiler <i>Software Setup, Installation, and Management Guide</i> to learn about the Data ONTAP features that are available and how to set them up.</p> <p>Features that are specific to the gFiler (that is, not applicable to the filer) are described in the gFiler <i>Software Setup, Installation, and Management Guide</i>. Additionally, the gFiler <i>Software Setup, Installation, and Management Guide</i> discusses any special considerations in using standard Data ONTAP features with gFiler gateways.</p>                                                                                                                                  |

| Step | Task                         | Description                                                                                                                                                                                                                                                                                                                                                     |
|------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7    | Enabling the HiCommand agent | <p>If the Hitachi data storage system is being managed by Hitachi Device Manager Server (HDM) and you want to monitor the gFiler through HDM, you must enable the NetApp HiCommand gateway agent. Otherwise, HDM cannot show storage utilization by the gFiler. See Chapter 3, “<a href="#">Working with Hitachi HiCommand Device Manager</a>,” on page 23.</p> |



**About this chapter**

This chapter discusses configuration types and rules for connecting your gateway to your storage subsystem.

**Topics in this chapter**

This chapter discusses the following topics:

- ◆ [“gFiler capacity metrics”](#) on page 12
- ◆ [“gFiler metrics for LUNs”](#) on page 14
- ◆ [“LUN sizing”](#) on page 15
- ◆ [“Types of configurations”](#) on page 17
- ◆ [“Guidelines for configuring ports on your storage subsystem”](#) on page 18
- ◆ [“gFiler neighborhood described”](#) on page 20
- ◆ [“Storage subsystem restrictions”](#) on page 21

## gFiler capacity metrics

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### Units of measurement for storage

NetApp defines units of measurement for storage as follows:

Kilobyte (KB) = 1,024 bytes

Megabyte (MB) = 1,024 x 1,024 bytes

Gigabyte (GB) = 1,000 bytes x MB

Terabyte (TB) = 1,000 bytes x GB

### gFiler capacity limits

gFiler models have the following maximum and minimum capacity limits.

---

#### Note

In the table, “Required” assumes 60 percent compression. A core dump is not guaranteed. “Recommended” assumes no compression and a guaranteed coredump.

---

| Model  | Maximum total capacity          | Minimum total capacity                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GF270c | 6 TB                            | Each CPU module (head) must have <ul style="list-style-type: none"><li>◆ A root volume of the following size:<ul style="list-style-type: none"><li>❖ Recommended: 72 GB</li><li>❖ Required: 1 GB</li></ul></li><li>◆ A spare LUN of at least 1.5 GB is also required in case a problem occurs that results in a system failure. The system can then dump core to the spare LUN, and NetApp can analyze the core dump to determine the cause of the problem.</li></ul> |
| GF825  | 3 TB unmirrored; 6 TB mirrored  | Recommended: 141 GB<br>Required: 85 GB                                                                                                                                                                                                                                                                                                                                                                                                                                |
| GF825c | 6 TB unmirrored; 12 TB mirrored | For each node, single node values apply.                                                                                                                                                                                                                                                                                                                                                                                                                              |
| GF920  | 6 TB                            | Recommended: 254 GB<br>Required: 153 GB                                                                                                                                                                                                                                                                                                                                                                                                                               |

| Model  | Maximum total capacity | Minimum total capacity                   |
|--------|------------------------|------------------------------------------|
| GF920c | 12 TB                  | For each node, single node values apply. |
| GF940  | 12 TB                  | Recommended: 364 GB<br>Required: 220 GB  |
| GF940c | 24 TB                  | For each node, single node values apply. |
| GF960  | 24 TB                  | Recommended: 704 GB<br>Required: 423 GB  |
| GF960c | 48 TB                  | For each node, single node values apply. |
| GF980  | 32 TB                  | Recommended: 958 GB<br>Required: 575 GB  |
| GF980c | 64 TB                  | For each node, single node values apply. |

## Connection to multiple storage subsystems

Multiple storage subsystems can connect to a stand-alone or clustered gFiler if the storage subsystems are within the same series.

### Note

The 9900 series includes the 9910, 9960, 9970V, and 9980V. These platforms cannot connect to a gFiler that is already connected to a 9570V and 9580V.

You can connect to multiple storage subsystems using the same configurations described in Appendix A, “[Recommended Configurations](#),” on page 29.

## gFiler metrics for LUNs

---

### Maximum and minimum number of LUNs per gFiler

The following table shows the maximum number of LUNs on the storage subsystem that the gFiler can support and the minimum number of LUNs that the gFiler requires.

| Model  | Maximum number of LUNs           | Minimum number of LUNs                                                                                                                                                                                                           |
|--------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GF270c | 42 (21 on each CPU module)       | The GF270c requires a total of four LUNs. Each CPU module (head) of the GF270c requires a minimum of two LUNs: <ul style="list-style-type: none"><li>◆ One for the root volume</li><li>◆ One spare LUN for a core dump</li></ul> |
| GF825  | 84                               | <ul style="list-style-type: none"><li>◆ A gFiler other than a GF270c must own at least one LUN.</li><li>◆ A cluster configuration must own at least two LUNs, one for each CPU module.</li></ul>                                 |
| GF825c | 168 (84 on each cluster node)    |                                                                                                                                                                                                                                  |
| GF920  | 168                              |                                                                                                                                                                                                                                  |
| GF920c | 336 (168 on each clustered node) |                                                                                                                                                                                                                                  |
| GF940  | 336                              |                                                                                                                                                                                                                                  |
| GF940c | 672 (336 on each cluster node)   |                                                                                                                                                                                                                                  |
| GF960  | 336                              |                                                                                                                                                                                                                                  |
| GF960c | 672 (336 on each cluster node)   |                                                                                                                                                                                                                                  |
| GF980  | 336                              |                                                                                                                                                                                                                                  |
| GF980c | 672 (336 on each cluster node)   |                                                                                                                                                                                                                                  |

### LUN sizes

The gateway has restrictions on the maximum and minimum size LUN supported.

**Maximum LUN size:** The maximum LUN size the gFiler supports is 500 GB.

**Minimum LUN size:** The minimum LUN size that the gFiler supports is 1 GB.

# LUN sizing

---

## Maximum and minimum LUN sizes

There are maximum and minimum LUN sizes the gateway supports:

**Maximum LUN size:** The maximum LUN size supported is 500 GB.

**Minimum LUN size:** The minimum LUN size supported is 1 GB.

## Usable space on a LUN

The usable space of a LUN size is modified by the following elements:

- ◆ 12.5%–Block checksum
- ◆ 10%–WAFL® (Write-Anywhere File Layout) reserve
- ◆ 1%– Core dump
- ◆ 20%–Snapshot (default setting)

---

### Note

Space for your snapshot reserve is optional and changeable through Data ONTAP.

---

## Determining LUN size

You can determine LUN size in the following respects:

- ◆ Usable capacity (the actual capacity available for storage)
- ◆ Desired capacity (the exact LUN size desired)

**Calculating the usable capacity:** To determine the usable capacity for storage in a LUN, after taking into account snapshot reserve, use the following formula, where Y is the usable capacity for storage and N is the total capacity of the LUN.

$$Y = N \times \{0.875 \times 0.9 \times 0.99 \times \text{snapshot reserve}\}$$

**Example:** Total capacity of LUN is 4 GB with snapshot reserve set at default:

$$4 \times \{0.875 \times 0.9 \times 0.99 \times 0.8\} = 2.49 \text{ GB}$$

---

### Note

One GB is equal to 1,000 x 1,024 x 1,024 bytes

---

**Calculating desired capacity:** To determine the LUN capacity needed to obtain the desired capacity, while taking reserved space into account, use the following formula, where Y is the exact desired LUN size:

$Y \text{ divided by } \{0.875 \times 0.9 \times 0.99 \times \text{Snapshot reserve}\} = \text{Actual capacity needed}$

**Example:** Desired LUN capacity is 10 GB of usable capacity.

- ◆ Calculating actual LUN size without accounting for snapshot reserve.

$10 \text{ GB divided by } \{0.875 \times 0.9 \times 0.99\} = 13.3 \text{ GB}$

- ◆ Snapshot reserve left on default setting.

$10 \text{ GB divided by } \{0.875 \times 0.9 \times 0.99 \times 0.8\} = 16 \text{ GB}$

# Types of configurations

---

## Types of configurations

You can connect your gateway to your storage subsystem in the following configurations:

- ◆ Direct-attached stand-alone
- ◆ Direct-attached cluster
- ◆ Switch-attached stand-alone
- ◆ Switch-attached cluster
- ◆ MetroCluster

For recommended configurations for each configuration type and for each gFiler gateway model, go to Appendix A, “[Recommended Configurations](#),” on page 29.

## Connection to multiple storage subsystems

Multiple storage subsystems can connect to a stand-alone or clustered gFiler if the storage subsystems are within the same series. Multiple gFilers can connect to the same storage subsystem.

## Planning your configuration

You must devise a port-to-port connectivity scheme after selecting the configuration you plan to deploy.

For recommended port-to-port connectivity schemes for each configuration type and for each gFiler gateway model, go to Appendix A, “[Recommended Configurations](#),” on page 29.

# Guidelines for configuring ports on your storage subsystem

---

## **Channel adapter LUN configuration**

Always configure ports in pairs, with the same configuration on each port.

## **Sharing LUNs in a parity group**

LUNs in a parity group can be shared between gFiler gateways and non-gFiler hosts.

## **Gateway sharing channel adapter ports with other hosts**

If you are using the host storage domain support feature on your storage subsystem, you can share channel adapter ports among gFiler gateways and non-gFiler hosts.

## **Preventing overwriting of data**

To prevent overwriting of data, gFiler gateways and non-gFiler hosts must not share each other's LUNs. You can prevent overwriting of data by other hosts by using one of the following methods:

- ◆ Configuring switch zoning  
gFiler gateways and non-gFiler hosts can share the same switch if you configure switch zoning. See your third-party switch documentation for details about zoning.
- ◆ Configuring the LUN access controls on the storage subsystem

## Guidelines for configuring Fibre Channel ports

After selecting the Fibre Channel port you want to configure, use the following guidelines to set port options on the UI of your storage subsystem.

| Port parameter                             |                                                  | Guideline                                                                                                                                                                                                                       |
|--------------------------------------------|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Port address                               |                                                  | Any port address                                                                                                                                                                                                                |
| Fibre Channel topology                     | Whether a fabric switch is used—Fabric ON or OFF | Select whether a fabric switch is used to connect the gateway to the storage subsystem. If you use a fabric switch, select Fabric ON. If not, select Fabric OFF.                                                                |
|                                            | Connection type—Fibre Channel or Point-to-Point  | Select whether the connection type is Fibre Channel or Point-to-Point. If you use a fabric switch, select point-to-point. If not, that is, if the gateway is directly connected to the storage subsystem, select Fibre Channel. |
| Host speed—1 or 2 Gb/s per second, or Auto |                                                  | Set channel speed to <i>auto</i> or 2 Gb per second.                                                                                                                                                                            |

## gFiler neighborhood described

---

### gFiler neighborhood defined

A *gFiler neighborhood* is one or more stand-alone gFiler gateways or clustered gFiler gateways that share access to LUNs on the storage subsystem. By sharing access to LUNs, these gFiler gateways can view the same LUNs on the storage subsystem. Through the LUN ownership feature in the gFiler configuration, you use Data ONTAP to restrict access to a particular LUN to a specific gFiler, thereby preventing one gFiler from writing over LUNs assigned to another gFiler in the neighborhood.

---

#### Note

LUN access control mechanisms allow sharing of ports while preventing hosts from accessing each others' LUNs. These mechanisms can be used only for LUNs in different neighborhoods or for non-gFiler hosts.

---

### Guidelines for designing your gFiler neighborhood

Use the following guidelines and rules when designing a gFiler neighborhood:

- ◆ There can be up to six nodes in a gFiler neighborhood, four of which can be in MetroClusters.  
In a given gFiler neighborhood, you can configure a maximum of two MetroClusters. If needed, you can have two additional gFiler gateways outside of the MetroClusters.
- ◆ You can have multiple gFiler neighborhoods in a switch fabric, that is, multiple zones in the fabric.
- ◆ Migration of volumes through SnapMover is supported between the six nodes in a gFiler neighborhood. (See the *gFiler Software Setup, Installation, and Management Guide* for more information about SnapMover.)
- ◆ A gFiler neighborhood can support different gFiler models. However, GF270c gateways cannot be mixed with other gFiler models in a gFiler neighborhood.

You must adhere to the following rules:

- ◆ Zone switch ports that connect to your gFiler Host Bus Adapters (HBAs) so that each gFiler in the neighborhood can access each other's LUNs.
- ◆ Set the access control on your storage subsystem so that the gFiler gateways can access each other's LUNs.
- ◆ If there are multiple MetroClusters, each MetroCluster interconnect adapter must be in a separate zone.

# Storage subsystem restrictions

---

## Restrictions for all storage subsystems

The following restriction applies to the 9900V series:

- ◆ Maximum number of LUNs allowed for each channel adapter port or host group—256.

## Restrictions for the 9570V/9580V/9585V storage subsystem

The following restrictions apply to the 9570V/9580V/9585V storage subsystem:

- ◆ LUN mapping—NetApp recommends that you enable LUN mapping for all configurations on your 9570V/9580V/9585V.
- ◆ LUN formatting—Do not reboot your gateway while a LUN is formatting on the 9570V/9580V/9585V.
- ◆ Data sharing—You must use the data sharing mode when your gateway is attached to the 9570V/9580V/9585V.
- ◆ LUN security—You can use LUN management software to impose security in switch-attached configurations.
- ◆ Shutting down the 9570/9580V/9585V—You must power down the gateway before shutting down the 9570/9580V/9585V.
- ◆ No RSV\_Conf mode—No RSV Conf mode must be enabled for connection to the 9570V/9580V/9585V.

## Restrictions for the 9900 series storage subsystems

The following restriction applies to the 9900 series storage subsystems:

- ◆ System mode 254 must be set to “on” for connection to 9900 storage subsystems.



|                              |                                                                                                                                                                                                                                                  |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>About this chapter</b>    | This chapter describes how to configure the Hitachi® HiCommand™ agent options and enable the HiCommand agent on your gateway. The HiCommand agent for the gateway is included with the Data ONTAP software that is preinstalled on your gateway. |
| <b>Topic in this chapter</b> | This chapter discusses “ <a href="#">Enabling the Hitachi HiCommand Device Manager Agent</a> ” on page 24.                                                                                                                                       |

# Enabling the Hitachi HiCommand Device Manager Agent

---

## When you need to use this agent

If the Hitachi data storage system is being managed by Hitachi Device Manager Server (HDM) and you want to monitor the gFiler through HDM, you must enable the NetApp HiCommand gateway agent on the gFiler. If the agent is not enabled, HDM cannot show storage utilization by the gFiler.

## Prerequisites

**Adding a user for the Device Manager:** You must define a user in the Hitachi HiCommand Device Manager for your HiCommand agent. See the *Hitachi HiCommand Device Manager Server Installation and Configuration Guide* for instructions about adding a user with Peer user group privileges. This user gives your HiCommand agent the appropriate privileges to update the host information in the Device Manager.

**Required information:** You need the following information to configure your HiCommand agent options:

- ◆ The IP address of the Device Manager Server
- ◆ The port number of the Device Manager Server
- ◆ The user name of the user created in the Device Manager Server for your gateway
- ◆ The password for the user name that you specified using the Device Manager Server
- ◆ The number of minutes desired between successive reports on your gateway
- ◆ The version of the Device Manager to determine the uri that publishes the http POST

**Configuring the  
HiCommand agent  
options**

To configure the HiCommand agent options, complete the following steps at the command-line prompt of your gateway.

| Step | Action                                                                                                                                                                                                                                                                                                                                                         |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | <p>Configure the HiCommand agent option for the IP address or the host name of the Device Manager Server by entering the following command:</p> <pre>options gfagent.hdm.host { ip_address   host_name }</pre> <p><b>Note</b>_____</p> <p>DNS service is required if you want to use the host name.</p> _____                                                  |
| 2    | <p>Configure the HiCommand agent option for the port number of the Device Manager Server by entering the following command:</p> <pre>options gfagent.hdm.port port_number</pre>                                                                                                                                                                                |
| 3    | <p>Configure the HiCommand agent option for the user name of the Device Manager Server by entering the following command:</p> <pre>options gfagent.hdm.user user_name</pre>                                                                                                                                                                                    |
| 4    | <p>Configure the HiCommand agent option for the password of the Device Manager Server by entering the following command:</p> <pre>options gfagent.hdm.password password</pre> <p><b>Note</b>_____</p> <p>The combination of user name and password authenticates the agent to update Device Manager Server information. This is a write-only option.</p> _____ |

| Step | Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5    | <p>Configure the HiCommand agent option for the time interval, in minutes, between two successive scans or reports for updating the Device Manager Server by entering the following command:</p> <pre>options gfagent.interval.minutes <i>minutes</i></pre> <p><b>Note</b>—<br/>The range for the time interval is between thirty minutes to twenty-four hours. It is recommended that you set the time interval to 24 hours (1440 minutes) for daily updates.</p> <p><b>Example:</b> To configure daily updates, enter the following command:</p> <pre>options gfagent.interval.minutes 1440</pre> |

### Determining whether you need to configure the uri

The uri is where the Device Manager Server publishes the HTTP POST. The uri is determined by the version of Device Manager.

If your version of Device Manager is 2.2 or later, you do not need to configure this option. The option is preconfigured as /service/StorageManager.

If your version of Device Manager is earlier than 2.2, you must configure the uri with the options `gfagent.hdm.uri uri` command, where *uri* may be /service/HiScan. Consult your authorized reseller to verify the correct uri.

### Configuring the uri

If you receive instructions from your authorized reseller to reconfigure the uri to another location, complete the following step.

| Step | Action                                                                            |
|------|-----------------------------------------------------------------------------------|
| 1    | <p>Enter the following command:</p> <pre>options gfagent.hdm.uri <i>uri</i></pre> |

## Enabling your HiCommand agent

To enable your HiCommand agent, complete the following step.

| Step | Action                                                                                                                            |
|------|-----------------------------------------------------------------------------------------------------------------------------------|
| 1    | <p>Enter the following command:</p> <pre>options gfagent.enable on</pre> <p><b>Note</b>_____</p> <p>The default is off.</p> _____ |

## Disabling your HiCommand agent

If you need to disable your HiCommand agent, complete the following step.

| Step | Action                                                                    |
|------|---------------------------------------------------------------------------|
| 1    | <p>Enter the following command:</p> <pre>options gfagent.enable off</pre> |



**About this appendix** This appendix describes the various types of configurations and provides examples of each configuration with each gFiler platform.

**Configuration types** The following configuration types are discussed:

- ◆ Direct-attached stand-alone
- ◆ Direct-attached cluster
- ◆ Switch-attached stand-alone
- ◆ Switch-attached cluster
- ◆ MetroCluster

**How redundant ports are shown in illustrations**

Redundant paths to the same set of LUNs on the storage subsystem go through two different ports. Pairs of redundant connections are shown in the illustrations using different line types. For example, in the illustration in “[Connecting a GF940/GF960/GF980](#)” on page 33, the redundant connections are as follows:

- ◆ 1A to 1A and 2B to 2A (solid black line)
- ◆ 1B to 1B and 2A to 2B (gray line)

# Direct-attached stand-alone configuration

---

**About this section**

This section describes how to configure the following platforms in a direct-attached stand-alone configuration:

- ◆ GF825
- ◆ GF920
- ◆ GF940
- ◆ GF960
- ◆ GF980

**Connections required**

The following table describes the number of ports and cable connections required for a direct-attached stand-alone configuration.

| Gateway model      | Gateway HBA ports used | Storage subsystem ports used | Number of total cable connections |
|--------------------|------------------------|------------------------------|-----------------------------------|
| GF825              | 2                      | 2                            | 2                                 |
| GF920              | 2                      | 2                            | 2                                 |
| GF940/GF960 /GF980 | 2                      | 2                            | 2                                 |
|                    | 4                      | 4                            | 4                                 |

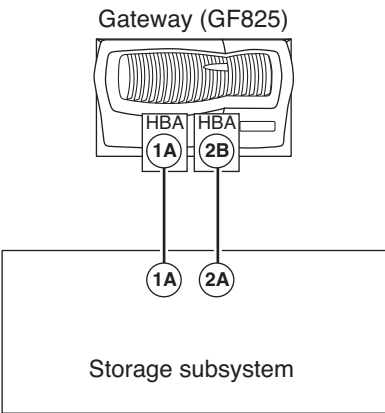
Direct-attached stand-alone configuration

# Connecting a GF825

**GF825 connectivity diagram**

The following diagram shows how the GF825 connects to your storage subsystem.

**Configuration shown supports maximum of 84 LUNS**



**Port-to-port connectivity**

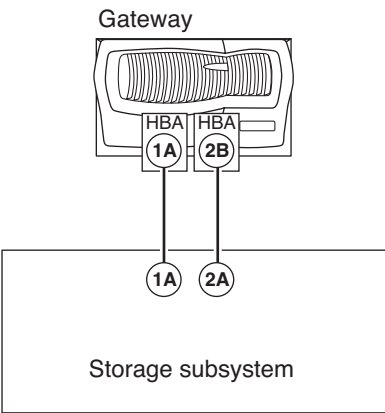
The following port-to-port scheme supports a maximum of 84 LUNs on each port in a redundant configuration.

| Port-to-port connectivity scheme |                   |
|----------------------------------|-------------------|
| Gateway                          | Storage subsystem |
| 1A                               | CL1-A             |
| 2B                               | CL2-A             |

**GF920/GF940 connectivity diagram**

The following diagram shows how the GF920/GF940 connects to your storage subsystem.

**Configuration shown supports maximum number of LUNS**



**Port-to-port connectivity**

The following port-to-port scheme supports a maximum of number of LUNs for either the GF920 in a redundant configuration.

| Port-to-port connectivity scheme |                   |
|----------------------------------|-------------------|
| Gateway                          | Storage subsystem |
| 1A                               | CL1-A             |
| 2B                               | CL2-A             |

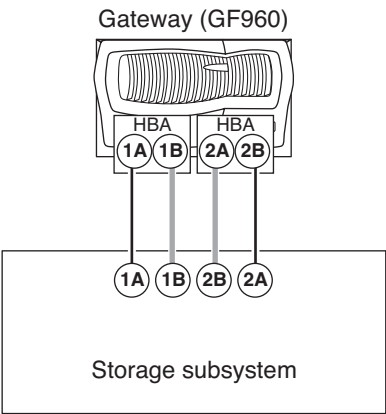
Direct-attached stand-alone configuration

# Connecting a GF940/GF960/GF980

**GF940/GF960/  
GF980 connectivity  
diagram**

The following diagram shows how the GF940/GF960/GF980 connects to your storage subsystem according to the port-to-port connectivity scheme of configuration B.

**Configuration shown supports maximum of 336 LUNS**



**Port-to-port  
connectivity**

**Configuration A:** The following port-to-port scheme supports a maximum of 256 LUNs in a redundant configuration.

| Port-to-port connectivity scheme |                   |
|----------------------------------|-------------------|
| Gateway                          | Storage subsystem |
| 1A                               | CL1-A             |
| 2B                               | CL2-A             |

**Configuration B:** The following port-to-port scheme supports a maximum of 336 LUNs in a redundant configuration.

| Port-to-port connectivity scheme |                   |
|----------------------------------|-------------------|
| Gateway                          | Storage subsystem |
| 1A                               | CL1-A             |
| 1B                               | CL1-B             |
| 2B                               | CL2-A             |
| 2A                               | CL2-B             |

# Direct-attached cluster configuration

---

**About this section**

This section describes how to configure the following platforms in a direct-attached cluster configuration:

- ◆ GF270c
- ◆ GF825c
- ◆ GF920c
- ◆ GF940c
- ◆ GF960c
- ◆ GF980c

**Connections required**

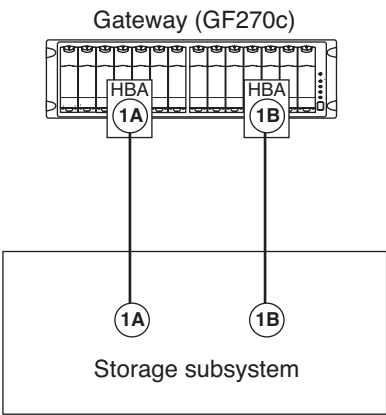
The following table describes the number of ports and cable connections required for a direct-attached cluster configuration.

| Gateway model               | Gateway HBA ports used | Storage subsystem ports used | Number of total cable connections |
|-----------------------------|------------------------|------------------------------|-----------------------------------|
| GF270c                      | 2                      | 2                            | 2                                 |
| GF825c                      | 4                      | 4                            | 4                                 |
| GF920c                      | 4                      | 4                            | 4                                 |
| GF940c<br>GF960c/<br>GF980c | 4                      | 4                            | 4                                 |
|                             | 8                      | 8                            | 8                                 |
|                             | 12                     | 12                           | 12                                |
|                             | 12                     | 12                           | 12                                |

**GF270c connectivity diagram**

The following diagram shows how the GF270c connects to your storage subsystem.

**Configuration shown supports maximum number of LUNS**



**Port-to-port connectivity**

The following port-to-port scheme supports a maximum of 42 LUNs in a redundant configuration.

| Port-to-port connectivity scheme |                   |
|----------------------------------|-------------------|
| CPU module 1                     | Storage subsystem |
| 1A                               | CL1-A             |
| CPU module 2                     | Storage subsystem |
| 1B                               | CL1-B             |

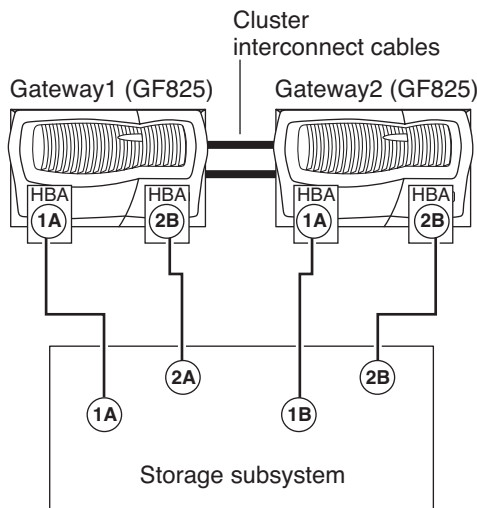
Direct-attached cluster configuration

# Connecting a GF825c

GF825c connectivity diagram

The following diagram shows how the GF825c connects to your storage subsystem.

Configuration shown supports maximum of 168 LUNS



Port-to-port connectivity

The following port-to-port scheme supports a maximum of 168 LUNs in a redundant configuration.

| Port-to-port connectivity scheme |                   |
|----------------------------------|-------------------|
| Gateway 1                        | Storage subsystem |
| 1A                               | CL1-A             |
| 2B                               | CL2-A             |

| Port-to-port connectivity scheme |                   |
|----------------------------------|-------------------|
| Gateway 2                        | Storage subsystem |
| 1A                               | CL1-B             |
| 2B                               | CL2-B             |

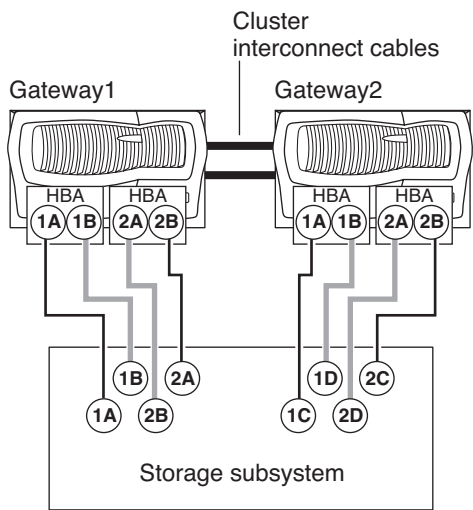
Direct-attached cluster configuration

# Connecting a GF920c

**GF920c/GF940c connectivity diagram**

The following diagram shows how the GF920c connects to your storage subsystem, according to the connectivity scheme of configuration B.

**Configuration shown supports maximum number of LUNS**



**Port-to-port connectivity**

**Configuration A:** The following port-to-port connectivity scheme supports a maximum of 336LUNs for the GF920c and 672 LUNs for the GF940c in a redundant configuration.

| Port-to-port connectivity scheme |                   |
|----------------------------------|-------------------|
| Gateway 1                        | Storage subsystem |
| 1A                               | CL1-A             |
| 2B                               | CL2-A             |

| Port-to-port connectivity scheme |                   |
|----------------------------------|-------------------|
| Gateway 2                        | Storage subsystem |
| 1A                               | CL1-B             |
| 2B                               | CL2-B             |

**Configuration B:** The following port-to-port connectivity scheme supports the maximum number of LUNs for either the GF920c or the GF940c in a redundant configuration.

| Port-to-port connectivity scheme |                   |
|----------------------------------|-------------------|
| Gateway 1                        | Storage subsystem |
| 1A                               | CL1-A             |
| 1B                               | CL1-B             |
| 2B                               | CL2-A             |
| 2A                               | CL2-B             |
| Gateway 2                        | Storage subsystem |
| 1A                               | CL1-C             |
| 1B                               | CL1-D             |
| 2B                               | CL2-C             |
| 2A                               | CL2-D             |

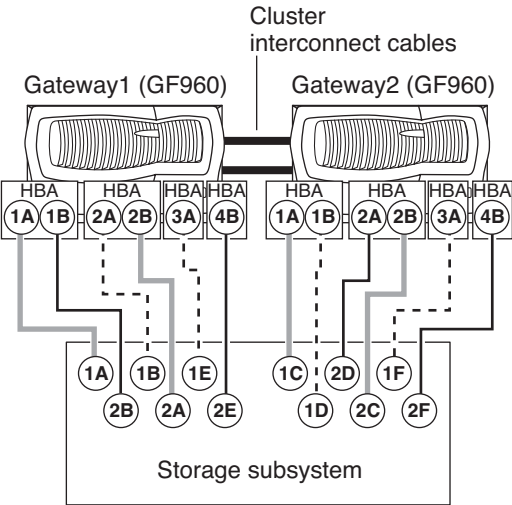
Direct-attached cluster configuration

# Connecting a GF940c/GF960c/GF980c

**GF940c/GF960c/  
GF980c  
connectivity  
diagram**

The following diagram shows how the GF960c connects to your storage subsystem, according to the connectivity scheme of configuration D.

**Configuration shown supports maximum of 672 LUNS**



**Port-to-port  
connectivity**

**Configuration A:** The following port-to-port connectivity scheme supports a maximum of 256 LUNs in a redundant configuration.

| Port-to-port connectivity scheme |                   |
|----------------------------------|-------------------|
| Gateway 1                        | Storage subsystem |
| 1A                               | CL1-A             |
| 2B                               | CL2-A             |

| Port-to-port connectivity scheme |                   |
|----------------------------------|-------------------|
| Gateway 2                        | Storage subsystem |
| 1A                               | CL1-B             |
| 2B                               | CL2-B             |

**Configuration B:** The following port-to-port connectivity scheme supports a maximum of 512 LUNs in a redundant configuration.

| Port-to-port connectivity scheme |                   |
|----------------------------------|-------------------|
| Gateway 1                        | Storage subsystem |
| 1A                               | CL1-A             |
| 1B                               | CL1-B             |
| 2B                               | CL2-A             |
| 2A                               | CL2-B             |
| Gateway 2                        | Storage subsystem |
| 1A                               | CL1-C             |
| 1B                               | CL1-D             |
| 2B                               | CL2-C             |
| 2A                               | CL2-D             |

**Configuration C:** The following port-to-port connectivity scheme supports a maximum of 672 LUNs in a redundant configuration.

| Port-to-port connectivity scheme |                   |
|----------------------------------|-------------------|
| Gateway 1                        | Storage subsystem |
| 1A                               | CL1-A             |
| 1B                               | CL1-B             |
| 2B                               | CL2-A             |
| 2A                               | CL1-C             |
| 3A                               | CL2-B             |
| 3B                               | CL2-C             |
| Gateway 2                        | Storage subsystem |
| 1A                               | CL1-D             |
| 1B                               | CL1-E             |
| 2B                               | CL2-D             |
| 2A                               | CL1-F             |
| 3A                               | CL2-E             |
| 3B                               | CL2-F             |

**Configuration D:** The following port-to-port connectivity scheme supports a maximum of 672 LUNs in a redundant configuration.

| <b>Port-to-port connectivity scheme</b> |                          |
|-----------------------------------------|--------------------------|
| <b>Gateway 1</b>                        | <b>Storage subsystem</b> |
| 1A                                      | CL1-A                    |
| 2A                                      | CL1-B                    |
| 2B                                      | CL2-A                    |
| 1B                                      | CL2-B                    |
| 3A                                      | CL1-E                    |
| 4B                                      | CL2-E                    |
| <b>Gateway 2</b>                        | <b>Storage subsystem</b> |
| 1A                                      | CL1-C                    |
| 1B                                      | CL1-D                    |
| 2B                                      | CL2-C                    |
| 2A                                      | CL2-D                    |
| 3A                                      | CL1-F                    |
| 4B                                      | CL2-F                    |

# Connecting in a switch-attached stand-alone configuration

---

**About this section**      This section describes how to configure the following platforms in a switch-attached stand-alone configuration:

- ◆ GF825
- ◆ GF920
- ◆ GF940
- ◆ GF960
- ◆ GF980

**Connections required**      The following table describes the number of ports and cable connections required for a switch-attached stand-alone configuration.

| Gateway model             | Gateway HBA ports used | Storage subsystem ports used | Number of total cable connections |
|---------------------------|------------------------|------------------------------|-----------------------------------|
| GF825                     | 2                      | 2                            | 4                                 |
| GF920                     | 2                      | 2                            | 4                                 |
| GF940/<br>GF960/<br>GF980 | 2                      | 2                            | 4                                 |

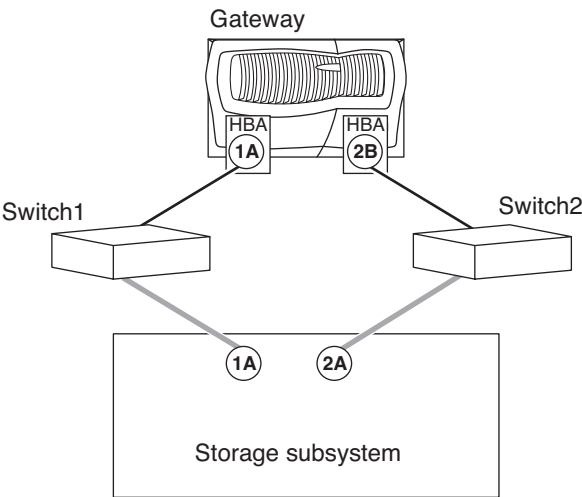
Switch-attached stand-alone configuration

# Connecting a GF825

**GF825 connectivity diagram**

The following diagram shows how the GF825 connects to your storage subsystem.

**Configuration shown supports maximum of 84 LUNS**



**Port-to-port connectivity**

The following port-to-port connectivity scheme supports a maximum of 84 LUNs.

| Port-to-port connectivity scheme |                      |
|----------------------------------|----------------------|
| Gateway                          | Switch               |
| 1A                               | Any port on switch 1 |
| 2B                               | Any port on switch 2 |
| Storage subsystem                | Switch               |
| CL1-A                            | Any port on switch 1 |
| CL2-A                            | Any port on switch 2 |

Switch-attached stand-alone configuration

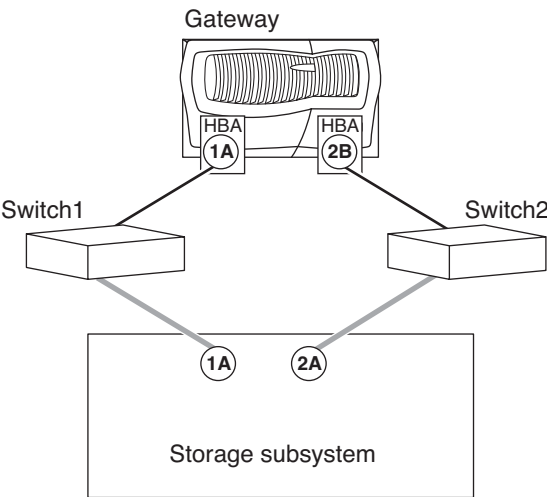
# Connecting a GF920

---

Connecting a GF920/GF940

The following diagram shows how the GF920 connects to your storage subsystem.

Configuration shown supports maximum number of LUNS



Port-to-port connectivity

The following port-to-port connectivity scheme supports the maximum number of LUNs for either the GF920 or the GF940 in a redundant configuration.

| Port-to-port connectivity scheme |                      |
|----------------------------------|----------------------|
| Gateway                          | Switch               |
| 1A                               | Any port on switch 1 |
| 2B                               | Any port on switch 2 |

| Port-to-port connectivity scheme |                      |
|----------------------------------|----------------------|
| Storage subsystem                | Switch               |
| CL1-A                            | Any port on switch 1 |
| CL2-B                            | Any port on switch 2 |

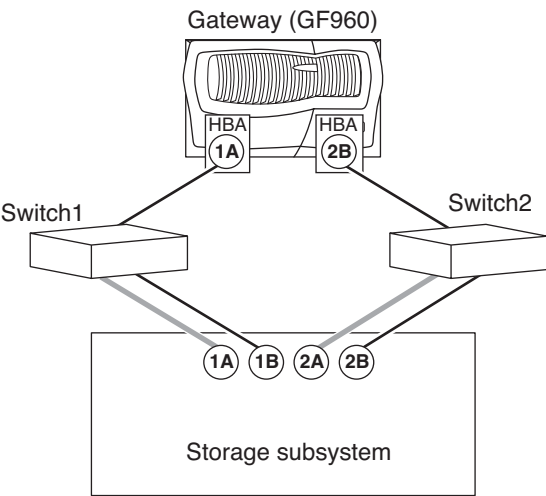
Switch-attached stand-alone configuration

# Connecting a GF940/GF960/GF980

Connecting a GF940/GF960/GF980

The following diagram shows how the GF960 connects to your storage subsystem.

Configuration shown supports maximum of 336 LUNS



Port-to-port connectivity

**Configuration A:** The following port-to-port connectivity scheme supports a maximum of 336 LUNs in a redundant configuration.

| Port-to-port connectivity scheme |                      |
|----------------------------------|----------------------|
| Gateway                          | Switch               |
| 1A                               | Any port on switch 1 |
| 2B                               | Any port on switch 2 |

| Port-to-port connectivity scheme |                      |
|----------------------------------|----------------------|
| Storage subsystem                | Switch               |
| CL1-A                            | Any port on switch 1 |
| CL2-A                            | Any port on switch 2 |

# Connecting in a switch-attached cluster configuration

---

**About this section**

This section describes how to configure the following platforms in a switch-attached cluster configuration:

- ◆ GF270c
- ◆ GF825c
- ◆ GF920c
- ◆ GF940c
- ◆ GF960c
- ◆ GF980c

**Connections required**

The following table describes the number of ports and cable connections needed for a switch-attached cluster configuration.

| Gateway model                | Gateway HBA ports used | Storage subsystem ports used | Number of total cable connections |
|------------------------------|------------------------|------------------------------|-----------------------------------|
| GF270c                       | 2                      | 2                            | 4                                 |
| GF825c                       | 2                      | 2                            | 6                                 |
| GF920c                       | 4                      | 4                            | 8                                 |
| GF940c/<br>GF960c/<br>GF980c | 4                      | 4                            | 8                                 |

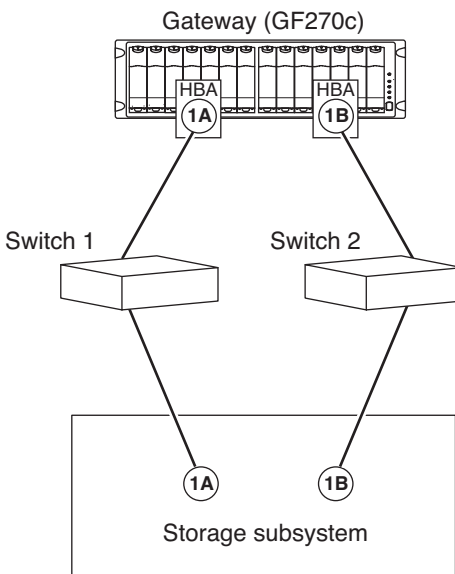
## Connecting a GF270c

---

### Connecting a GF270c

The following diagram shows how the GF270c connects to your storage subsystem.

**Configuration shown supports maximum number of LUNS**



**Port-to-port connectivity**

The following port-to-port connectivity scheme supports a maximum of 84 LUNs in a redundant configuration.

| Port-to-port connectivity scheme |                      |
|----------------------------------|----------------------|
| CPU module 1                     | Switch               |
| 1A                               | Any port on switch 1 |
| CPU module 2                     | Switch               |
| 1A                               | Any port on switch 1 |
| Storage subsystem                | Switch               |
| CL1-A                            | Any port on switch 1 |
| CL2-A                            | Any port on switch 2 |

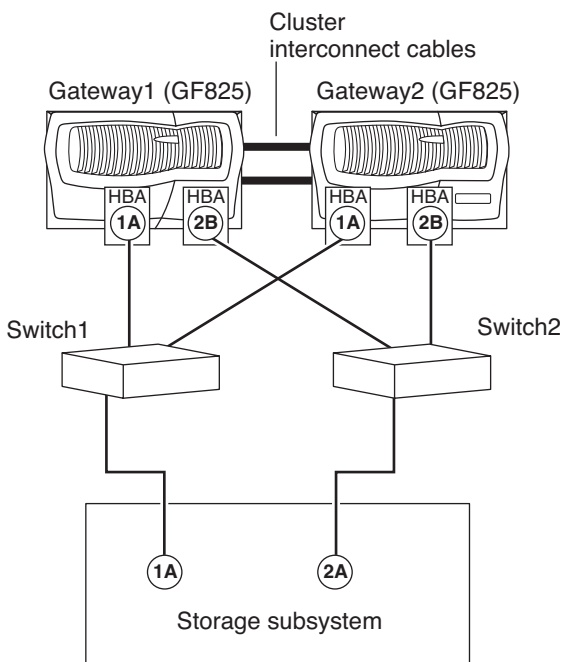
## Connecting a GF825c

---

### Connecting a GF825c

The following diagram shows how the GF825c connects to your storage subsystem.

**Configuration shown supports maximum of 168 LUNS**



**Port-to-port connectivity**

The following port-to-port connectivity scheme supports a maximum of 168 LUNs in a redundant configuration.

| Port-to-port connectivity scheme |                      |
|----------------------------------|----------------------|
| Gateway 1                        | Switch               |
| 1A                               | Any port on switch 1 |
| 2B                               | Any port on switch 2 |
| Gateway 2                        | Switch               |
| 1A                               | Any port on switch 1 |
| 2B                               | Any port on switch 2 |
| Storage subsystem                | Switch               |
| CL1-A                            | Any port on switch 1 |
| CL2-A                            | Any port on switch 2 |

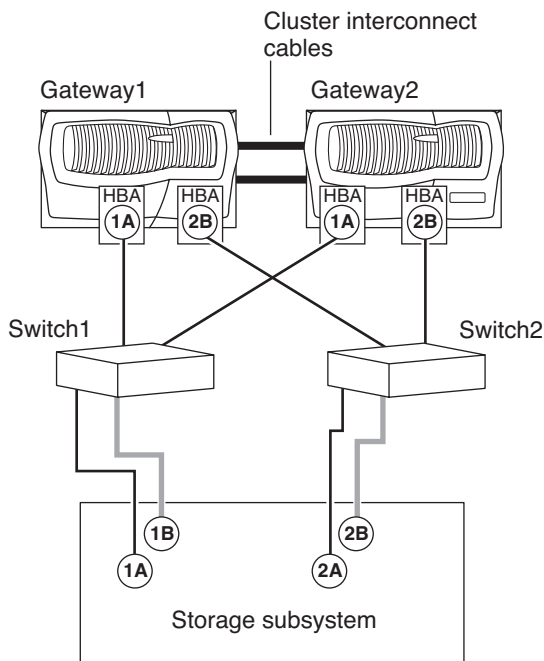
## Connecting a GF920c

---

### Connecting a GF920c/GF940c

The following diagram shows how the GF920c connects to your storage subsystem.

**Configuration shown supports maximum number of LUNS**



**Port-to-port connectivity**

The following port-to-port connectivity scheme supports the maximum number of LUNs for either the GF920c or the GF940c in a redundant configuration.

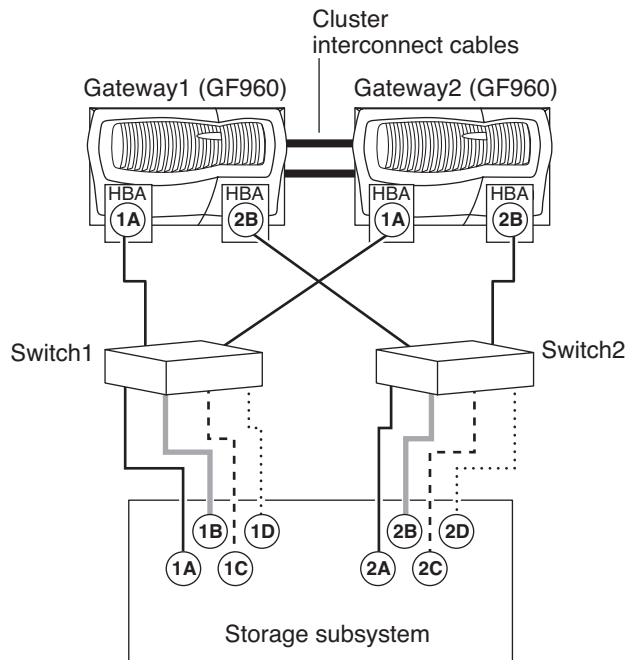
| Port-to-port connectivity scheme |                      |
|----------------------------------|----------------------|
| Gateway 1                        | Switch               |
| 1A                               | Any port on switch 1 |
| 2B                               | Any port on switch 2 |
| Gateway 2                        | Switch               |
| 1A                               | Any port on switch 1 |
| 2B                               | Any port on switch 2 |
| Storage subsystem                | Switch               |
| CL1-B                            | Any port on switch 1 |
| CL2-B                            | Any port on switch 2 |
| CL1-A                            | Any port on switch 1 |
| CL2-A                            | Any port on switch 2 |

## Connecting a GF940c/GF960c/GF980c

### Connecting a GF940c/GF960c/ GF980c

The following diagram shows how the GF960c connects to your storage subsystem, as shown in configuration B.

**Configuration shown supports maximum of 672 LUNS**



**Port-to-port connectivity**

**Configuration A:** The following port-to-port connectivity scheme supports a maximum of 512 LUNs in a redundant configuration.

| Port-to-port connectivity scheme |                      |
|----------------------------------|----------------------|
| Gateway 1                        | Switch               |
| 1A                               | Any port on switch 1 |
| 2B                               | Any port on switch 2 |
| Gateway 2                        | Switch               |
| 1A                               | Any port on switch 1 |
| 2B                               | Any port on switch 2 |
| Storage subsystem                | Switch               |
| CL1-A                            | Any port on switch 1 |
| CL2-A                            | Any port on switch 2 |
| CL1-B                            | Any port on switch 1 |
| CL2-B                            | Any port on switch 2 |

## Port-to-port connectivity

**Configuration B:** The following port-to-port connectivity scheme supports a maximum of 672 LUNs in a redundant configuration.

| Port-to-port connectivity scheme |                      |
|----------------------------------|----------------------|
| Gateway 1                        | Switch               |
| 1A                               | Any port on switch 1 |
| 2B                               | Any port on switch 2 |
| Gateway 2                        | Switch               |
| 1A                               | Any port on switch 1 |
| 2B                               | Any port on switch 2 |
| Storage subsystem                | Switch               |
| CL1-A                            | Any port on switch 1 |
| CL1-B                            | Any port on switch 1 |
| CL1-C                            | Any port on switch 1 |
| CL1-D                            | Any port on switch 1 |
| CL2-A                            | Any port on switch 2 |
| CL2-B                            | Any port on switch 2 |
| CL2-C                            | Any port on switch 2 |
| CL2-D                            | Any port on switch 2 |

# MetroCluster configuration

---

**About MetroCluster configurations**

This section discusses how to configure your gateway in a MetroCluster configuration. The MetroCluster configuration expands on the switch-attached cluster configuration.

Also included in this section are rules for zoning switch ports, which is required for MetroCluster configurations.

**Supported gateways**

The following gateways support the MetroCluster configuration:

- ◆ GF825
- ◆ GF920
- ◆ GF940
- ◆ GF960
- ◆ GF980

**Required adapters and hardware for connectivity**

You need the following adapters for a MetroCluster:

- ◆ Fibre Channel HBAs
- ◆ Virtual Interface MetroCluster adapter (VI-MC)
- ◆ Inter Switch Link (ISL)

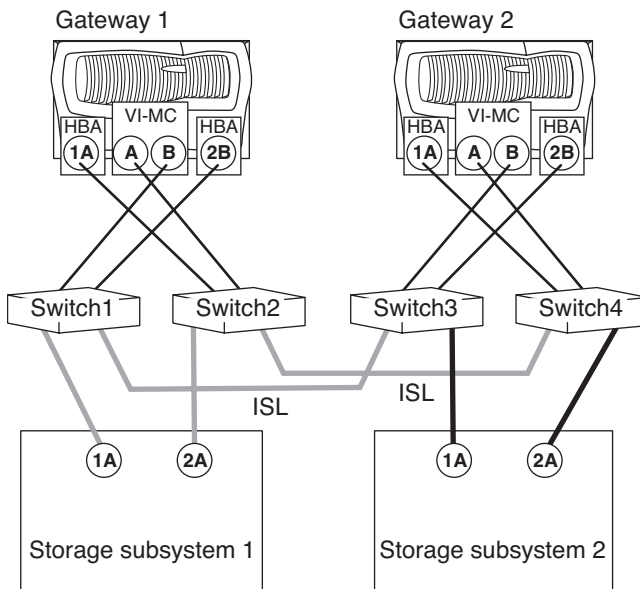
**Connectivity overview**

The following table describes the number of ports and cable connections needed for a MetroCluster configuration.

| Number of gateways | Number of storage subsystems | Number of switches | Number of ISL connections | Number of cables from gateway to switch |
|--------------------|------------------------------|--------------------|---------------------------|-----------------------------------------|
| 2                  | 2                            | 4                  | 2                         | 18                                      |
| 4                  | 2                            | 4                  | 2                         | 24                                      |

## Connecting a gateway

**Configuration A:** The following diagram provides an example of how the low-end gFilers connect to your storage subsystem for maximum capacity.



## Port-to-port connectivity

The following port-to-port scheme supports a maximum of 448 LUNs for the low-end gFilers and a maximum of 512 LUNs for the higher-end gFilers in a redundant configuration.

| Port-to-port connectivity scheme |    |                      |          |
|----------------------------------|----|----------------------|----------|
| Gateway 1                        |    | Switch               | Zone     |
| FC HBA                           | 1A | Any port on switch 1 | Optional |
|                                  | 2B | Any port on switch 2 |          |
| VI-MC                            | A  | Any port on switch 1 | 1        |
|                                  | B  | Any port on switch 2 | 2        |
| Storage subsystem 1              |    | Switch               | Zone     |
| CL1-A                            |    | Any port on switch 1 | Optional |
| CL2-A                            |    | Any port on switch 2 |          |
| Gateway 2                        |    | Switch               | Zone     |
| FC HBA                           | 1A | Any port on switch 3 | Optional |
|                                  | 2B | Any port on switch 4 |          |
| VI-MC                            | A  | Any port on switch 3 | 1        |
|                                  | B  | Any port on switch 4 | 2        |
| Storage subsystem 2              |    | Switch               | Zone     |
| CL1-C                            |    | Any port on switch 3 | Optional |
| CL2-D                            |    | Any port on switch 4 |          |
| ISL connection                   |    |                      | Zone     |
| Any port on switch 1             |    | Any port on switch 3 | 1        |
| Any port on switch 2             |    | Any port on switch 4 | 2        |

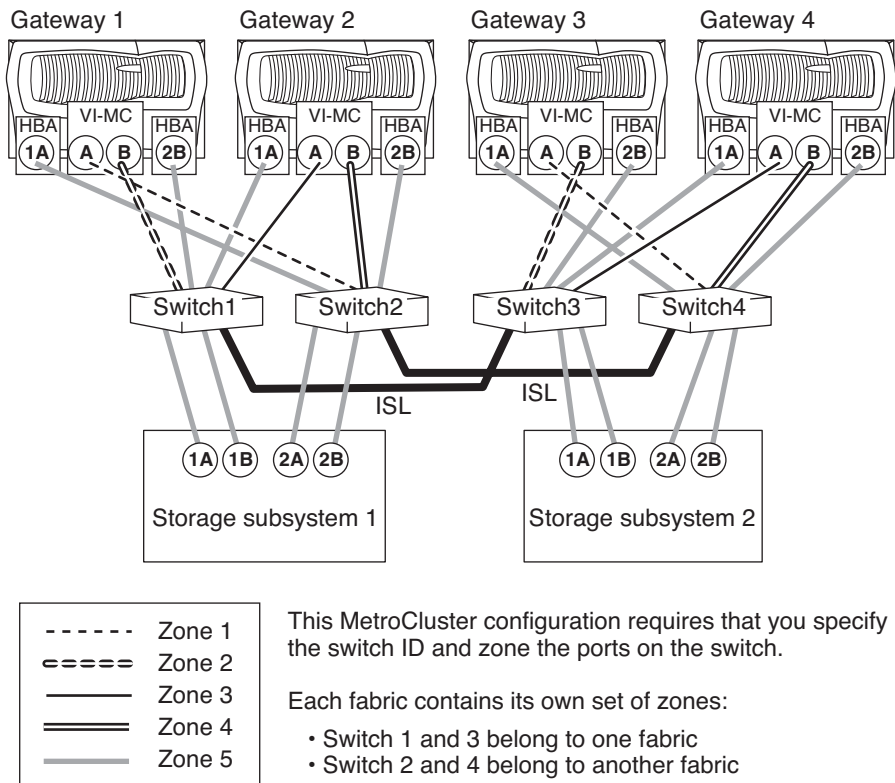
**Configuration B:** The following diagram provides an example of how the GF940/GF960/GF980 connects to your storage subsystem for a maximum of 672 LUNs.

**Note**

HBA connections must never share the same zone as VI-MC connections. Zoning individual HBA connections is not required.

The illustration below shows a MetroCluster configuration with two cluster nodes. Gateways 1 and 3 are partner nodes and gateways 2 and 4 are partner nodes.

**Configuration shown supports maximum of 672 LUNs**



## Port-to-port connectivity

The following port-to-port scheme supports a maximum of 672 LUNs in a redundant configuration.

| Port-to-port scheme     |    |                      |          |
|-------------------------|----|----------------------|----------|
| First MetroCluster pair |    | Fabric 1             |          |
| Gateway 1               |    | Switch               | Zone     |
| FC HBA                  | 1A | Any port on switch 1 | Optional |
|                         | 2B | Any port on switch 2 |          |
| VI-MC                   | A  | Any port on switch 1 | 1        |
|                         | B  | Any port on switch 2 | 2        |
| Gateway 2               |    | Switch               | Zone     |
| FC HBA                  | 1A | Any port on switch 1 | Optional |
|                         | 2B | Any port on switch 2 |          |
| VI-MC                   | A  | Any port on switch 1 | 3        |
|                         | B  | Any port on switch 2 | 4        |
| Storage subsystem 1     |    | Switch               | Zone     |
| CL1-A                   |    | Any port on switch 1 | Optional |
| CL2-A                   |    | Any port on switch 2 |          |
| CL1-B                   |    | Any port on switch 1 |          |
| CL2-B                   |    | Any port on switch 2 |          |

| Port-to-port scheme      |    |                      |          |
|--------------------------|----|----------------------|----------|
| Second MetroCluster pair |    | Fabric 2             |          |
| Gateway 3                |    | Switch               | Zone     |
| FC HBA                   | 1A | Any port on switch 3 | Optional |
|                          | 2B | Any port on switch 4 |          |
| VI-MC                    | A  | Any port on switch 3 | 1        |
|                          | B  | Any port on switch 4 | 2        |
| Gateway 4                |    | Switch               | Zone     |
| FC HBA                   | 1A | Any port on switch 1 | Optional |
|                          | 2B | Any port on switch 2 |          |
| VI-MC                    | A  | Any port on switch 1 | 3        |
|                          | B  | Any port on switch 2 | 4        |
| Storage subsystem 2      |    | Switch               | Zone     |
| CL1-C                    |    | Any port on switch 3 | Optional |
| CL2-D                    |    | Any port on switch 4 |          |
| CL1-D                    |    | Any port on switch 3 |          |
| CL2-C                    |    | Any port on switch 4 |          |
| ISL connection           |    |                      | Zone     |
| Any port on switch 1     |    | Any port on switch 3 | 1 or 3   |
| Any port on switch 2     |    | Any port on switch 4 | 2 or 4   |

---

**Caution**

You can attach a standard cluster to either the first or second pair of MetroClustered gateways, but not to both pairs.

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## **Zoning rules for MetroCluster maximum configuration**

You must zone the ports on your switch if the following conditions are true:

- ◆ You have more than one MetroCluster (two nodes in a MetroCluster) on the same fabric (that is, there is more than one interlink on the fabric) and your MetroCluster contains two gateway MetroCluster interconnects cabled to the same pair of switches.
- ◆ Your MetroCluster is sharing the switch with more than six nodes on the same fabric.



**About this appendix** This appendix provides information specific to setting up LUNs on the user interface of your 9500 series and 9900V series storage subsystem.

# 9900V series user interface information

## 9900 series documentation

The 9900 series documentation discusses the Service Processor (SVP) user interface to configure LDEVs, LUNs, and ports.

### Note

All these actions take place after you connect your gateway to your 9900V Series storage subsystem.

For detailed information, see the SVP section of the Maintenance Manual for the 9900V storage subsystem, pages SVP02-670 to SVP2-880 and SVP03-260 to SVP03-330. Also see the Installation section of the Maintenance Manual, pages INSTA05-440 to INSTA05-950.

## What to do to configure LDEVs

When you configure LDEVs, you can use any emulation type to create volumes that meet customer storage requirements. Network Appliance recommends that you create a root volume that is at least 72 GB because 72 GB is large enough to hold core and log files that might be generated.

Use the following tables if you are configuring LDEVs. The tables lists capacities for standard LDEV, LUSE, and CVS (for Vol0) sizes.

| Parameter                       | OPEN-3                                                | OPEN-8                                                | OPEN-9                                                | OPEN-E                                                | OPEN-L                                                |
|---------------------------------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|
| LU capacity                     | 2.4 GB                                                | 7.3 GB                                                | 7.3 GB                                                | 14.5 GB                                               | 36.4 GB                                               |
| Possible number of expanded LUs | 2 - 36 LUs (including LDEVs in existing LUSE volumes) | 2 - 36 LUs (including LDEVs in existing LUSE volumes) | 2 - 36 LUs (including LDEVs in existing LUSE volumes) | 2 - 36 LUs (including LDEVs in existing LUSE volumes) | 2 - 36 LUs (including LDEVs in existing LUSE volumes) |
| Expanded LU capacity            | 4.8 GB - 88.6 GB                                      | 14.6 GB - 264.4 GB                                    | 14.7 GB - 265.8 GB                                    | 29.1 GB - 524.4 GB                                    | 72.9 GB - 1312.2 GB                                   |
| Product name                    | OPEN-3*n (n = # of LUs in the expanded LU)            | OPEN-8*n (n = # of LUs in the expanded LU)            | OPEN-9*n (n = # of LUs in the expanded LU)            | OPEN-E*n (n = # of LUs in the expanded LU)            | OPEN-L*n (n = # of LUs in the expanded LU)            |

## Setting up a LUSE device

You might have to set up LUSE devices. The following is an overview of setting up a LUSE device. For details about setting up LUSE devices, see INST05-880.

| Step | Action                                                                                                                    |
|------|---------------------------------------------------------------------------------------------------------------------------|
| 1    | Select LU Size Expansion from the LUSE menu in the main window.<br><b>Result:</b> The LU Expansion Define window appears. |
| 2    | Set each item for the LUSE device and click OK.                                                                           |
| 3    | When Change Configuration appears, click Close.                                                                           |

## Configuring an LDEV

To configure an LDEV, complete the following steps.

### Note

For details, see pages INST05-80 to INST05-310 and INST05-430 to INST05-650 of the Installation section of the Maintenance Manual for the 9900V storage subsystem. For your convenience, steps contain page references to the Maintenance Manual, where applicable.

| Step | Action                                                                                                       |
|------|--------------------------------------------------------------------------------------------------------------|
| 1    | From the Install window of the SVP, select the Define Configuration and Install option (see page INST05-80). |
| 2    | Set the Control Unit (CU) number if one is not already set (see page INST05-130).                            |
| 3    | Define a parity group by selecting either RAID5 (3D + 1P) or RAID5 (7D + 1P) (see page INST05-150).          |
| 4    | Select the drives from the pull-down list (see page INST05-150).                                             |
| 5    | Select the emulation type that satisfies the customer storage requirements (see page INST05-160).            |
| 6    | Define the LDEV ID (see page INST05-200).                                                                    |
| 7    | Define the Subsystem ID (SSID) boundary (see page INST05-210).                                               |
| 8    | Follow the steps to install the configuration (see page INST05-250 to 260).                                  |

| Step | Action                                                                                                                                          |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 9    | Select Linear or Disperse mode (see page INST05-300).<br><br><b>Note</b> _____Linear mode keeps the LDEV within the same parity group.<br>_____ |
| 10   | Repeat <a href="#">Step 1</a> through <a href="#">Step 9</a> to configure additional LDEVs.                                                     |

## Setting the security switch

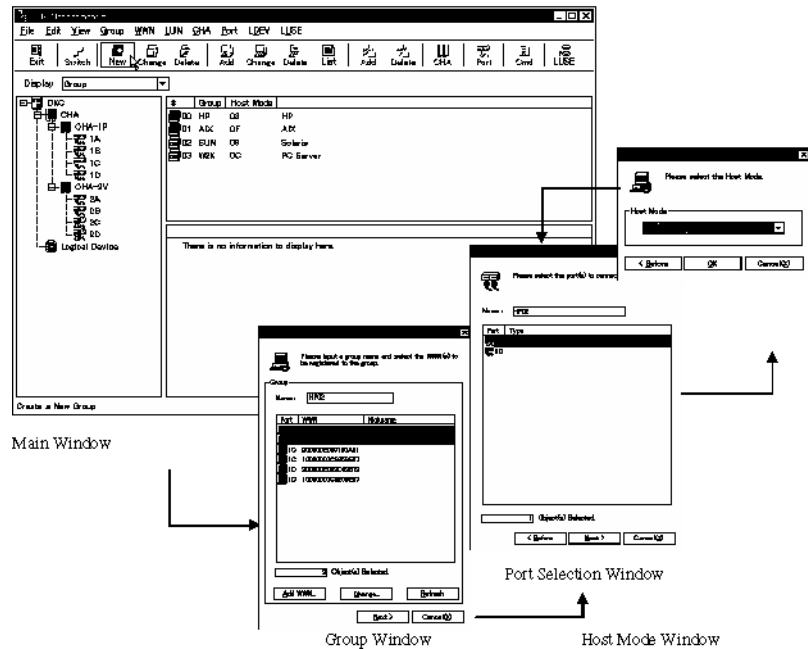
To set the security switch, complete the following steps. For details, see page INST05-650 of the 9900V Maintenance Manual.

| Step | Action                                                                                                                                                                                                   |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | In the Main window, at the CHA level, move down the tree in the left list to the CL1 or CL2 level.<br><br><b>Note</b> _____Ensure that Group is set on the Display.<br>_____                             |
| 2    | Select the port whose security switch you want to set.<br><br><b>Result:</b> Groups associated with the port appear in the upper right list. Details of a selected group appear in the lower right list. |
| 3    | Select Security Switch from the Port menu.                                                                                                                                                               |
| 4    | Select the On or Off box and click OK.<br><br><b>Result:</b> The status of the security switch appears in the Main window.                                                                               |

## Adding a group

To add a group, complete the following steps, using the figure for reference.

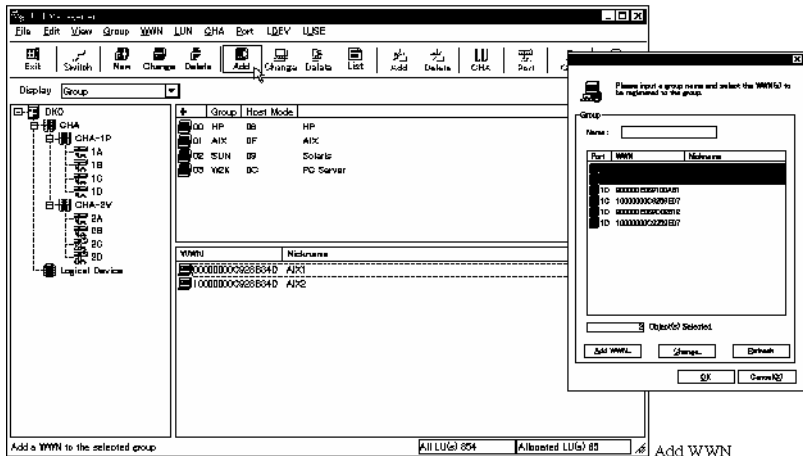
See page INST05-670 of the 9900V Maintenance Manual for details about the Main window and pages INST05-680 through 750 for details about other windows mentioned in the following procedure.



| Step | Action                                                                                             |
|------|----------------------------------------------------------------------------------------------------|
| 1    | Select New from the Group menu in the Main window.<br><b>Result:</b> The Add Group window appears. |
| 2    | Enter a group name and click Next.<br><b>Result:</b> The Port Selection window appears.            |
| 3    | Select a port from the list and click Next.<br><b>Result:</b> The Host Mode window appears.        |
| 4    | Select the standard setting (00) for the host mode and click OK.                                   |

Adding the gateway WWNs

To add the gateway WWNs, complete the following steps, using the figure for reference.

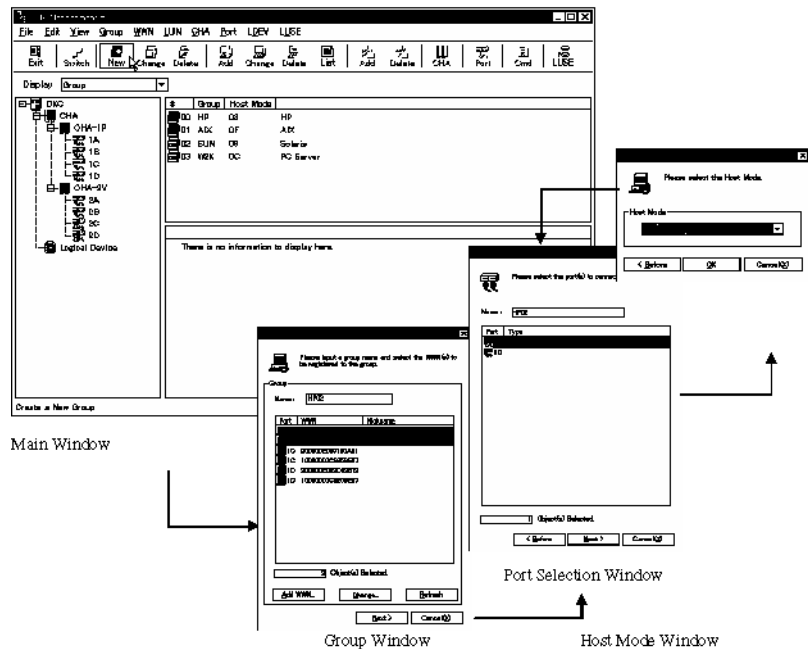


| Step | Action                                                                                            |
|------|---------------------------------------------------------------------------------------------------|
| 1    | Select the group from the upper right list to which you want to add a WWN.                        |
| 2    | Select Add from the WWN menu in the Main menu.<br><b>Result:</b> The Add WWN window appears.      |
| 3    | Select the gateway WWNs from the list.                                                            |
| 4    | Click OK.<br><b>Result:</b> The added WWNs are listed in the lower right list of the Main window. |

## Registering LUNs

To register LUNs, complete the following steps, using the figure for reference.

See page INST05-770 of the 9900V Maintenance Manual for details about the Main window and Add LUN window.



| Step | Action                                                                                                                                                    |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Change the Display in the Main window to LUN.                                                                                                             |
| 2    | Select a group to which you are adding LUNs from the upper right list.                                                                                    |
| 3    | Select Add from the LUN menu.<br><b>Result:</b> The Add LUN window appears.                                                                               |
| 4    | Select the LUNs and CU:LDEVs that you are adding and click Set.<br><b>Result:</b> The Add Follows list in the Add LUN window displays the newly set LUNs. |
| 5    | Click OK.                                                                                                                                                 |

What you do to configure Fibre Channel ports

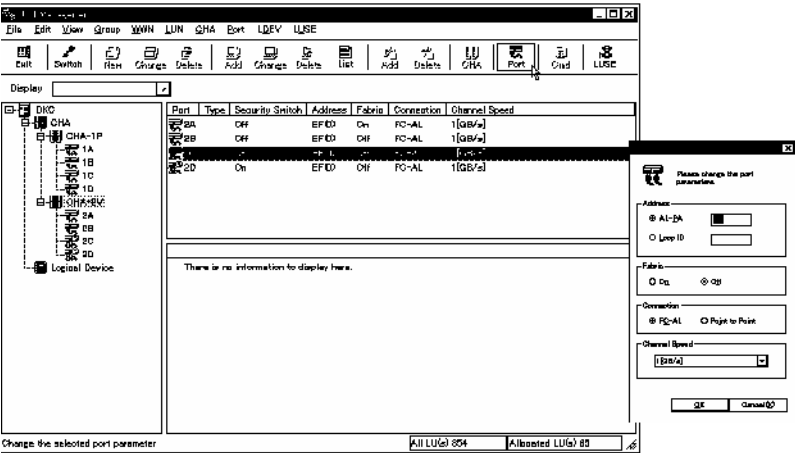
After selecting the Fibre Channel port you want to configure, you set the following port options from the LUN Management window on the SVP:

- ◆ Port address
- ◆ Fibre Channel topology
  - ❖ Whether a fabric switch is used—Fabric ON or OFF
  - ❖ Connection type—FC-AL or Point-to-Point
- ◆ Host speed—1 GB/s, 2 GB/s, or Auto

See page INST05-840 of the 9900V Maintenance Manual for details.

Selecting port options

To select port options, complete the following steps, using the figure for reference.



Port Parameter Window

| Step | Action                                                                                        |
|------|-----------------------------------------------------------------------------------------------|
| 1    | Select a port from the upper right list in the Main window.                                   |
| 2    | Select Parameter from the Port menu.<br><br><b>Result:</b> The Port Parameter window appears. |

| Step | Action                                                                                                                                                                                                                                                                                                                            |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3    | <p>Select a port address from the Fibre Address drop-down list. Network Appliance recommends that you select port address EF (loop 0).</p> <p><b>Note</b>—<br/>The following section lists port addresses and their associated loop IDs.</p>                                                                                      |
| 4    | Select whether a fabric switch is used to connect the gateway to the storage. If a fabric switch is used, select <code>yes</code> from the Fabric drop-down list. If not, select <code>no</code> .                                                                                                                                |
| 5    | Select whether the connection type is Fibre Channel or point-to-point. If a fabric switch is used, select <code>P to P</code> from the Connection drop-down list. If the gateway is directly connected to the storage subsystem, that is, no fabric switch is used, select <code>FC-AL</code> from the Connection drop-down list. |
| 6    | Select <code>auto</code> from the Channel Speed drop-down list.                                                                                                                                                                                                                                                                   |
| 7    | Click OK.                                                                                                                                                                                                                                                                                                                         |

**Available addresses for ports**      The following tables list port addresses and their associated loop IDs.

| AL AP | Loop ID | AL AP | Loop ID | AL AP | Loop ID | AL AP | Loop ID |
|-------|---------|-------|---------|-------|---------|-------|---------|
| EF    | 0       | CD    | 16      | B2    | 32      | 98    | 48      |
| E8    | 1       | CC    | 17      | B1    | 33      | 97    | 49      |
| E4    | 2       | CB    | 18      | AE    | 34      | 90    | 50      |
| E2    | 3       | CA    | 19      | AD    | 35      | 8F    | 51      |
| E1    | 4       | C9    | 20      | AC    | 36      | 88    | 52      |
| E0    | 5       | C7    | 21      | AB    | 37      | 84    | 53      |
| DC    | 6       | C6    | 22      | AA    | 38      | 82    | 54      |
| DA    | 7       | C5    | 23      | A9    | 39      | 81    | 55      |
| D9    | 8       | C3    | 24      | A7    | 40      | 80    | 56      |
| D6    | 9       | BC    | 25      | A6    | 41      | 7C    | 57      |
| D5    | 10      | BA    | 26      | A5    | 42      | 7A    | 58      |
| D4    | 11      | B9    | 27      | A3    | 43      | 79    | 59      |
| D3    | 12      | B6    | 28      | 9F    | 44      | 76    | 60      |
| D2    | 13      | B5    | 29      | 9E    | 45      | 75    | 61      |
| D1    | 14      | B4    | 30      | 9D    | 46      | 74    | 62      |
| CE    | 15      | B3    | 31      | 9B    | 47      | 73    | 63      |

| AL AP | Loop ID | AL AP | Loop ID | AL AP | Loop ID | AL AP | Loop ID |
|-------|---------|-------|---------|-------|---------|-------|---------|
| 72    | 64      | 55    | 80      | 3A    | 96      | 25    | 112     |
| 71    | 65      | 54    | 81      | 39    | 97      | 23    | 113     |
| 6E    | 66      | 53    | 82      | 36    | 98      | 1F    | 114     |
| 6D    | 67      | 52    | 83      | 35    | 99      | 1E    | 115     |
| 6C    | 68      | 51    | 84      | 34    | 100     | 1D    | 116     |
| 6B    | 69      | 4E    | 85      | 33    | 101     | 1B    | 117     |
| 6A    | 70      | 4D    | 86      | 32    | 102     | 18    | 118     |
| 69    | 71      | 4C    | 87      | 31    | 103     | 17    | 119     |
| 67    | 72      | 4B    | 88      | 2E    | 104     | 10    | 120     |
| 66    | 73      | 4A    | 89      | 2D    | 105     | 0F    | 121     |
| 65    | 74      | 49    | 90      | 2C    | 106     | 08    | 122     |
| 63    | 75      | 47    | 91      | 2B    | 107     | 04    | 123     |
| 5C    | 76      | 46    | 92      | 2A    | 108     | 02    | 124     |
| 5A    | 77      | 45    | 93      | 29    | 109     | 01    | 125     |
| 59    | 78      | 43    | 94      | 27    | 110     |       |         |
| 56    | 79      | 3C    | 95      | 26    | 111     |       |         |



**About this appendix** The purpose of this appendix is to define some basic terms that are used in Data ONTAP that you might not be familiar with and to provide a “mapping” between the terms that the storage system users and the gFiler users might be using.

**Topics in this appendix**

This appendix discusses the following topics:

- ◆ [“Terms”](#) on page 82
- ◆ [“Terminology differences in Data ONTAP documents”](#) on page 86

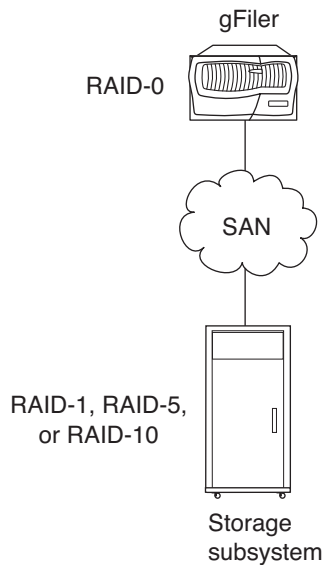
# Terms

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|                                    |                                                                                                                                                                                                                                                                    |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Array group</b>                 | On the storage subsystem, the arrangement of disks in the back-end that together form the defined RAID level. An array group might also be referred to as a parity group or an ECC group.                                                                          |
| <b>Channel adapter (CHA)</b>       | Includes the Client-Host Interface Processor (CHIP). The interface between the system and hosts or servers on an open system.                                                                                                                                      |
| <b>Cluster</b>                     | Two gFiler gateways directly connected to each other. This type of deployment provides redundancy in case one gFiler in the cluster becomes unavailable. Each of the gFiler gateways in the cluster might be referred to as a node—a local node or a partner node. |
| <b>LDEV</b>                        | Logical Device: Unit of capacity, defined at format time, that are used as capacity placeholders until they are mapped as a LUN.                                                                                                                                   |
| <b>LUN</b>                         | Logical Unit Number (LUN). An area on the storage subsystem that is available for a gFiler or non-gFiler host to read data from or write data to.                                                                                                                  |
| <b>Mapping or port definitions</b> | The task of assigned LDEVs, by address, to Fibre Channel ports.                                                                                                                                                                                                    |
| <b>Neighborhood</b>                | The number of nodes that can see each others' LUNs. When you configure LUNs on the storage subsystem, you identify the hosts in particular neighborhoods.                                                                                                          |
| <b>Node</b>                        | In a gFiler cluster, either the local or partner gFiler.                                                                                                                                                                                                           |
| <b>Parity group</b>                | Same as Array Group or ECC Group.                                                                                                                                                                                                                                  |

## RAID protocols supported

gFiler gateways support storage subsystems that use the RAID-1, RAID-5, and RAID-10 protocols, although the gFiler gateways do not themselves use RAID-1, RAID-5, or RAID-10. The following illustration provides a conceptual view of RAID-0 used on the gFiler and the RAID-1, RAID-5, and RAID-10 storage subsystems.



The gFiler stripes across LUNs in RAID-0, thereby maximizing performance because it is using more spindles. Another benefit of the gFiler using RAID-0 for striping across LUNs is that you can add LUNs to a NetApp volume.

There is no need for the gFiler to provide disk protection. The LUNs are already protected with the redundancy provided by RAID-1, RAID-5, and RAID-10 on the storage systems.

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### Note

The filer uses the RAID-4 and RAID DP for disk protection. RAID-4 is not needed for gFiler gateways because the storage subsystems provide disk protection. Most of the disk information in the Data ONTAP documentation does not apply to the gFiler because it is about RAID-4.

---

## RAID group

A NetApp volume is composed of one or more NetApp RAID (Redundant Array of Independent Disks) groups. From the perspective of gFiler gateways, Data ONTAP uses RAID groups to determine where to allocate data to the LUNs. (From the perspective of NetApp filers, a RAID group is composed of one or

more data disks, across which client data is striped and stored, plus one or two parity disks that ensure data recoverability even if as many as two disks within the RAID group fail.)

Each RAID group belongs to only one volume (physical file system); you cannot assign a RAID group to more than one volume.

See “[Volume](#)” on page 84.

## Volume

In Data ONTAP, *volumes* are the primary means of organizing and managing data. You can think about a volume as a container for storing data. You identify the collection of LUNs that are to be in the volume (where collection could mean only one LUN); those LUNs provide the capability for data storage. You manage data storage by managing volumes through the Data ONTAP system administration interface.

The capability of associating LUNs with volumes provides you a great deal of flexibility for data management. For example, you could create volumes to accommodate your users if they speak more than one language, for example, create one volume for data in French and another for data in German. Alternatively, you can include all LUNs one volume, the root volume that the gFiler setup process creates. The *gFiler Software Setup, Installation, and Management Guide* contains information about volume management.

**Relationship of RAID groups to volumes:** A NetApp volume is composed of one or more NetApp RAID groups.

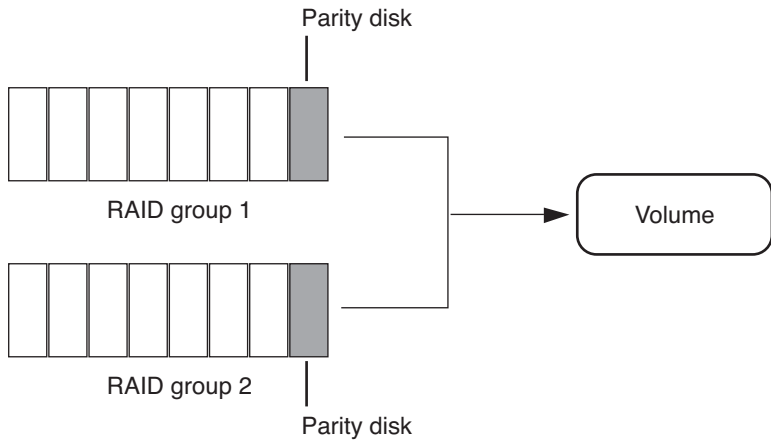
The following illustration shows the components of a volume from the *filer* perspective—each volume is made up of one or more RAID groups, which are made up of one or more disks.

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**Note**

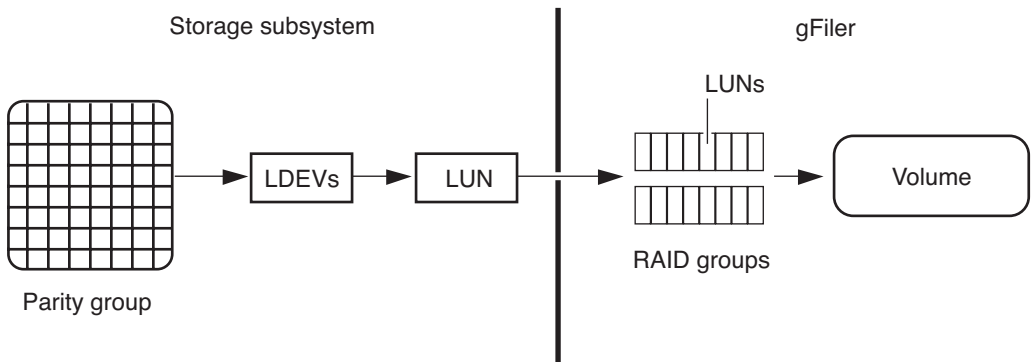
The volume discussed is a RAID-4 volume, not RAID DP.

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The following illustration shows the concept of the components of a volume from the perspective of a storage subsystem—each NetApp volume is made up of one or more LUNs in one or more RAID groups.

#### gFiler view of RAID groups



# Terminology differences in Data ONTAP documents

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## Terminology differences

In some cases, different terminology is used between filer users and gFiler users. In most cases, the Data ONTAP documents use the terminology relevant to filer users. Therefore, you will have to “translate” some of the words in the Data ONTAP documents to the context applicable to the gFiler. For example:

- ◆ Filers store data on disks in disk shelves. gFiler gateways access data stored in LUNS on the storage subsystems.
- ◆ Translate the term *filer* to *gFiler* or *gateway*.
- ◆ Translate the term *disk* to *LUN*.

If a command uses the term *disk*, replace it with the term *LUN*. For example, the `vol create` command syntax after replacing *disk* with *LUN* is

```
vol create volname LUN-list
```

- ◆ Generally, you can disregard discussions about disk shelves.

Any specific platform information stated for the filer is true for the gFiler series counterpart.