

# K2

## Storage



## Cabling Guide

**KEMA Quality**

# CERTIFICATE

Certificate Number: 510040.001

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# K2

Storage

Cabling Guide

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## Grass Valley Web Site

The [www.grassvalley.com](http://www.grassvalley.com) web site offers the following:

**Online User Documentation** — Current versions of product catalogs, brochures, data sheets, ordering guides, planning guides, manuals, and release notes in .pdf format can be downloaded.

**FAQ Database** — Solutions to problems and troubleshooting efforts can be found by searching our Frequently Asked Questions (FAQ) database.

**Software Downloads** — Download software updates, drivers, and patches.



## END-OF-LIFE PRODUCT RECYCLING NOTICE

Grass Valley's innovation and excellence in product design also extends to the programs we've established to manage the recycling of our products. Grass Valley has developed a comprehensive end-of-life product take back program for recycle or disposal of end-of-life products. Our program meets the requirements of the European Union's WEEE Directive, the United States Environmental Protection Agency, and U.S. state and local agencies.

Grass Valley's end-of-life product take back program assures proper disposal by use of Best Available Technology. This program accepts any Grass Valley branded equipment. Upon request, a Certificate of Recycling or a Certificate of Destruction, depending on the ultimate disposition of the product, can be sent to the requester.

Grass Valley will be responsible for all costs associated with recycling and disposal, including freight. However, you are responsible for the removal of the equipment from your facility and packing the equipment to make it ready for pickup.



For further information on the Grass Valley product take back system please contact Grass Valley at + 800 80 80 20 20 or +33 1 48 25 20 20 from most other countries. In the U.S. and Canada please call 800-547-8949, and ask to be connected to the EH&S Department. Additional information concerning the program can be found at: [www.grassvalley.com/about/environmental-policy](http://www.grassvalley.com/about/environmental-policy)

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## ***Start with the K2 storage system diagram***

This section contains the following topics:

- *To follow cabling instructions*
- *Basic K2 SAN - Online or Production*
- *Redundant K2 SAN - Online or Production*
- *Basic Nearline K2 SAN*
- *Redundant Nearline K2 SAN*
- *K2 client with direct-connect storage*

## To follow cabling instructions

To follow cabling instructions for your K2™ Storage Area Network (SAN) or direct-connect storage K2 Summit system, do the following:

1. Find the system cabling diagram that matches your K2 system.
2. Follow the references below the system diagram to locate cabling instructions for the individual devices of your K2 system.

Refer to the "K2 10G SAN Installation and Service Manual" for more information on K2 SANs and devices. Refer to the "K2 System Guide" for more information on direct-connect K2 client storage.

### Related Links

[Basic K2 SAN - Online or Production](#) on page 9

[Redundant K2 SAN - Online or Production](#) on page 10

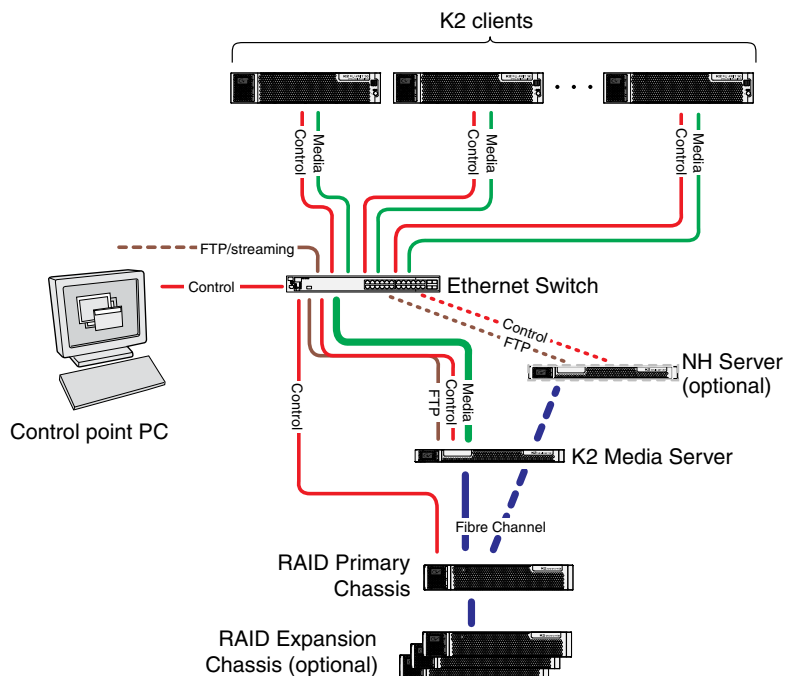
[Basic Nearline K2 SAN](#) on page 11

[Redundant Nearline K2 SAN](#) on page 12

[K2 client with direct-connect storage](#) on page 12



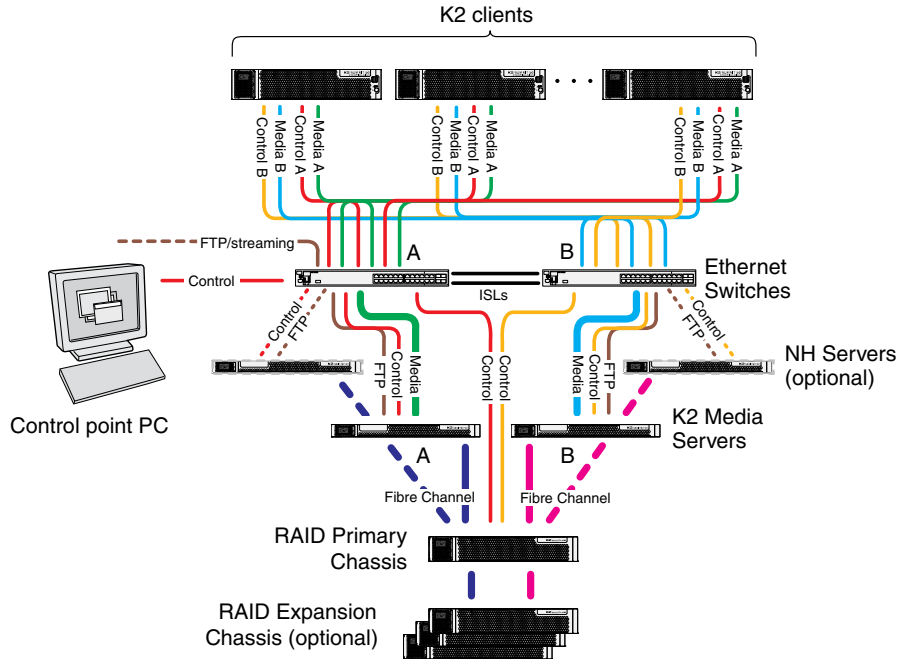
## Basic K2 SAN - Online or Production



To cable this K2 SAN device...	Of this model or platform...	Turn to these instructions:
K2 Summit system	K2 Summit 3G system or first generation K2 Summit system	<a href="#">K2-XDP basic</a> on page 14
Gigabit Ethernet Switch	HP 2910	<a href="#">K2-SWE basic online/production</a> on page 16
K2 Media Server	Dell R610	<a href="#">K2-SVR basic</a> on page 21
NH10GE K2 Media Server (optional)	Dell R610	<a href="#">K2-SVR-NH10GE online/production</a> on page 23
K2 RAID	K2 RAID	<a href="#">K2 RAID basic online/production</a> on page 25

This manual documents the default GigE switch configuration. Other configurations are available, depending on your port count and FTP bandwidth requirements.

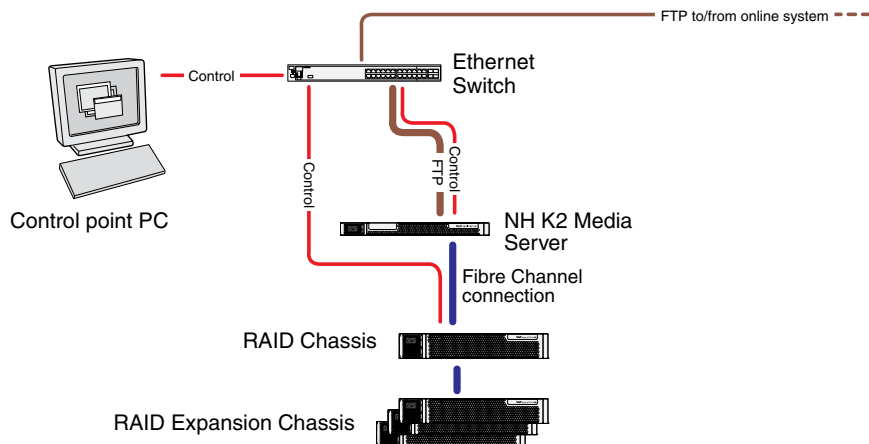
## Redundant K2 SAN - Online or Production



To cable this K2 SAN device...	Of this model or platform...	Turn to these instructions:
K2 Summit system	K2 Summit 3G system or first generation K2 Summit system	<a href="#">K2-XDP redundant</a> on page 14
Gigabit Ethernet Switch	HP 2910	<a href="#">K2-SWE redundant online/production</a> on page 18
K2 Media Server	Dell R610	<a href="#">K2-SVR redundant</a> on page 21
NH10GE K2 Media Server (optional)	Dell R610	<a href="#">K2-SVR-NH10GE online/production</a> on page 23
K2 RAID	K2 RAID	<a href="#">K2 RAID redundant online/production</a> on page 27

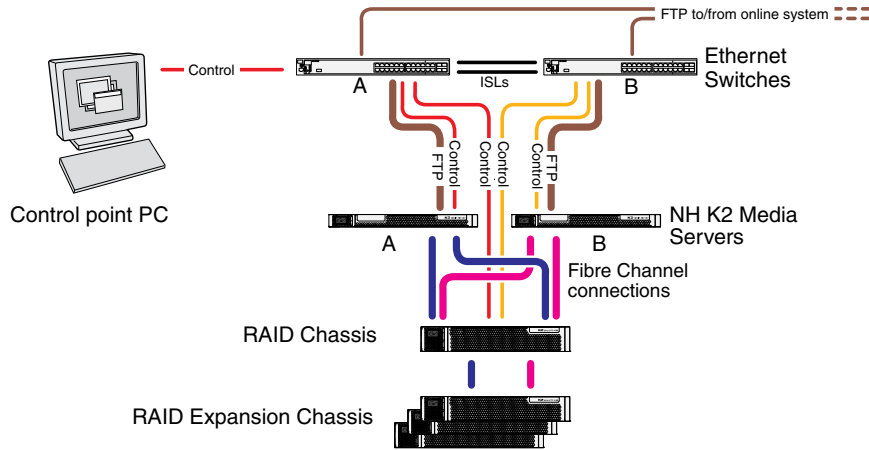
This manual documents the default GigE switch configuration. Other configurations are available, depending on your port count and FTP bandwidth requirements.

## Basic Nearline K2 SAN



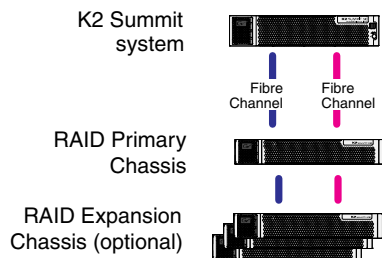
To cable this K2 SAN device...	Of this model or platform...	Turn to these instructions:
Gigabit Ethernet Switch	HP 2910	<a href="#">K2-SWE basic nearline</a> on page 19
NH10GE K2 Media Server	Dell R610	<a href="#">K2-SVR-NH10GE basic nearline</a> on page 23
K2 RAID	K2 10G RAID	<a href="#">K2 RAID basic nearline</a> on page 28

## Redundant Nearline K2 SAN



To cable this K2 SAN device...	Of this model or platform...	Turn to these instructions:
Gigabit Ethernet Switch	HP 2910	<a href="#">K2-SWE redundant nearline</a> on page 20
NH10GE K2 Media Server	Dell R610	<a href="#">K2-SVR-NH10GE redundant nearline</a> on page 23
K2 RAID	K2 10G RAID	<a href="#">K2 RAID redundant nearline</a> on page 29

## K2 client with direct-connect storage



To cable this K2 device...	Of this model or platform...	Turn to these instructions:
K2 Summit system	K2 Summit 3G system or first generation K2 Summit system	<a href="#">XDP/XDT direct-connect storage</a> on page 15
K2 RAID	K2 RAID	<a href="#">K2 RAID direct-connect</a> on page 30

## ***Cable K2 devices***

This section contains the following topics:

- *Cable K2 Summit system*
- *Cable Ethernet switch*
- *Cable K2 Media Server*
- *Cable NH10GE K2 Media Server*
- *Cable K2 RAID*

## Cable K2 Summit system

As directed by the system diagram for your K2 storage, cable the K2 Summit system using the instructions in this section.

### Related Links

[K2-XDP basic](#) on page 14

[K2-XDP redundant](#) on page 14

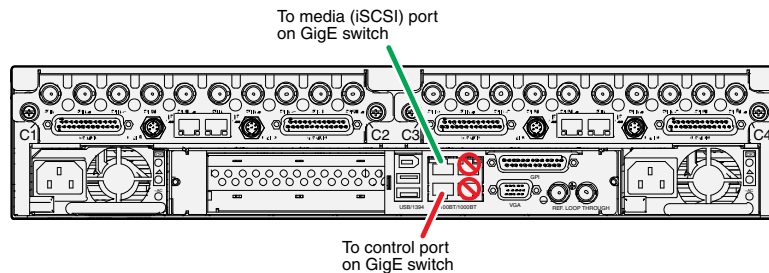
[XDP/XDT direct-connect storage](#) on page 15

## K2-XDP basic

These cabling instructions apply to the following:

- K2 Summit 3G system or first generation K2 Summit system on a basic (non-redundant) online or production K2 SAN

Refer to "K2 Summit Production Client Quick Start Guide" for additional cabling details.

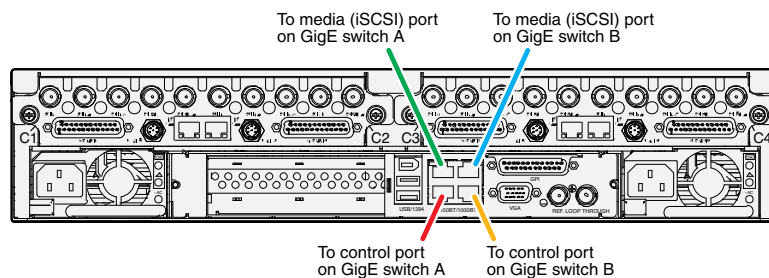


## K2-XDP redundant

These cabling instructions apply to the following:

- K2 Summit 3G system or first generation K2 Summit system on a redundant online or production K2 SAN

Refer to "K2 Summit Production Client Quick Start Guide" for additional cabling details.



## XDP/XDT direct-connect storage

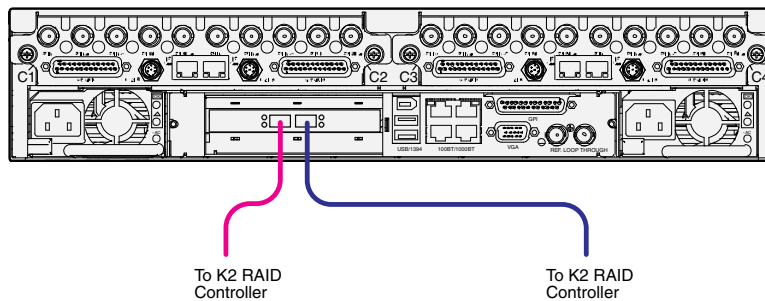
These cabling instructions apply to the following:

- K2 Summit 3G system, first generation K2 Summit system, or K2 Summit Transmission Client with direct-connect K2 RAID storage

Refer to related topics in "K2 System Guide" for additional information about direct-connect storage.

Refer to "K2 Summit Production Client Quick Start Guide" for additional cabling details.

K2 Summit system



## Cable Ethernet switch

As directed by the system diagram for your storage system, cable the switch or switches for your system using the instructions in this section.

These instructions are for the HP ProCurve switch 2900 and 2910 series. You must use this switch for iSCSI traffic.

For control and FTP/streaming traffic, it is allowed to use a different brand of switch, such as a Cisco Catalyst switch, if required by your site. If you are using a non-HP switch, apply the information in the following procedures accordingly. Refer to the documentation you received with the switch as necessary.

Install the switch in its permanent location. When installing in a video equipment rack, use 10-32 screws. Do not use HP's 12-24 screws, as they can cause thread damage.

Provide power to the switch.

### Related Links

[K2-SWE basic online/production](#) on page 16

[K2-SWE redundant online/production](#) on page 18

[K2-SWE basic nearline](#) on page 19

[K2-SWE redundant nearline](#) on page 20

## Ethernet cable requirements

For making Ethernet connections, cabling must meet the following requirements:

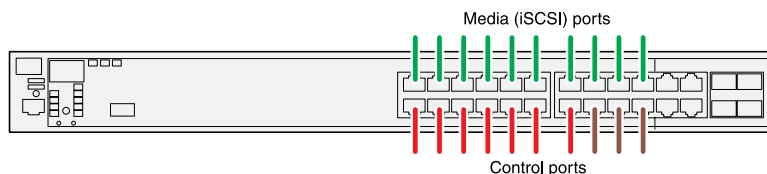
- Use CAT5e or CAT6 cables. The maximum cable length is 50 meters for CAT5e and 100 meters for CAT6.

## K2-SWE basic online/production

These cabling instructions apply to the following:

- HP 29xx series Gigabit Ethernet switch on a basic (non-redundant) online or production K2 SAN.

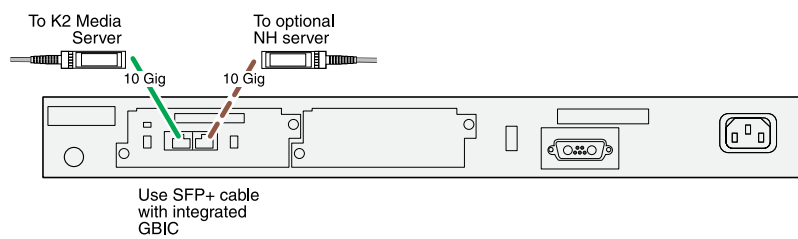
Front view



Control ports are for control connections from K2 clients, Aurora products, automation, etc., as well as FTP connections from Grass Valley and 3rd party systems.

Rear view



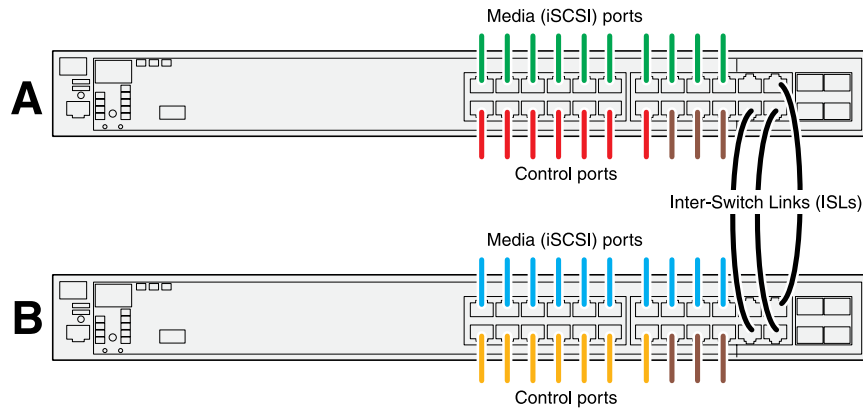


## K2-SWE redundant online/production

These cabling instructions apply to the following:

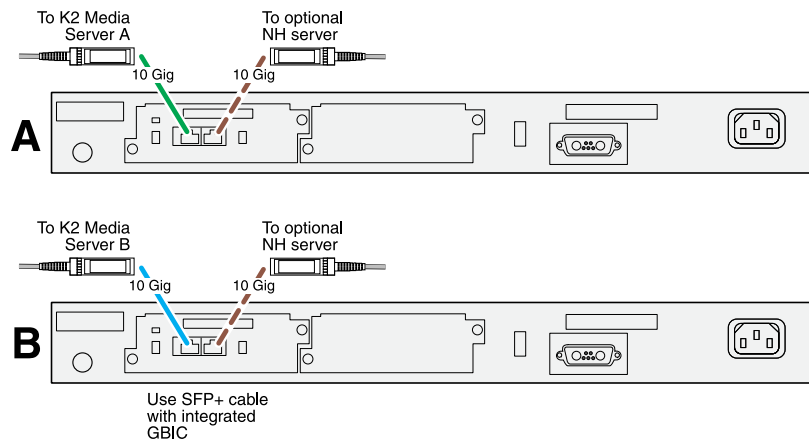
- HP 29xx series Gigabit Ethernet switch on a redundant online or production K2 SAN.

Front view



Control ports are for control connections from K2 clients, Aurora products, automation, etc., as well as FTP connections from Grass Valley and 3rd party systems.

Rear view



If you have other iSCSI clients, such as Aurora Edits, that have just one iSCSI connection and one control connection, approximately half of the clients should be connected to switch A and half of the clients should be connected to switch B. In a failover event, only the clients connected to one of the switches will remain operational, so make connections accordingly. Connect the client's iSCSI connection to one of the media ports on a switch and the client's control connection to one of the control ports on the same switch.

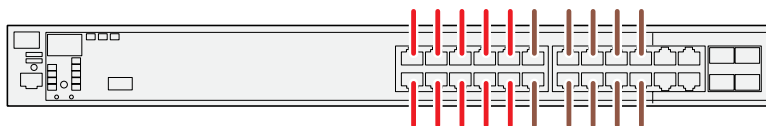
If you have more than one optional NH10GE K2 Media Servers, balance servers between switch A and switch B.

## K2-SWE basic nearline

These cabling instructions apply to the following:

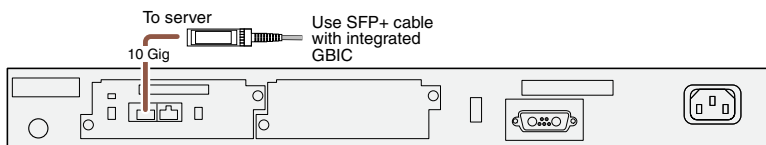
- HP 29xx series Gigabit Ethernet switch on a nearline K2 SAN with one NH K2 Media Server.

Front view



Ports are for control connections as well as FTP connections from Grass Valley and 3rd party systems.

Rear view

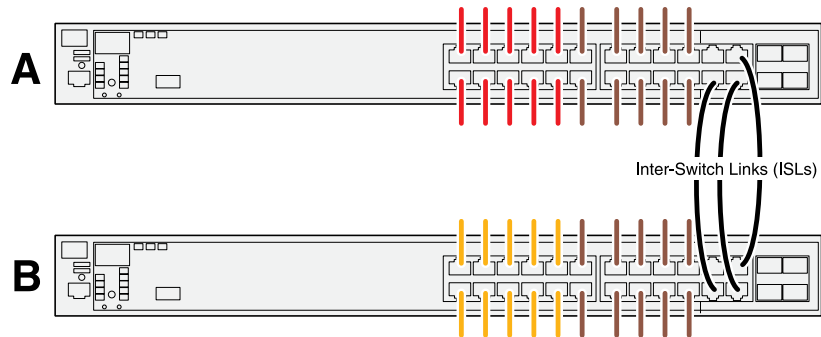


### K2-SWE redundant nearline

These cabling instructions apply to the following:

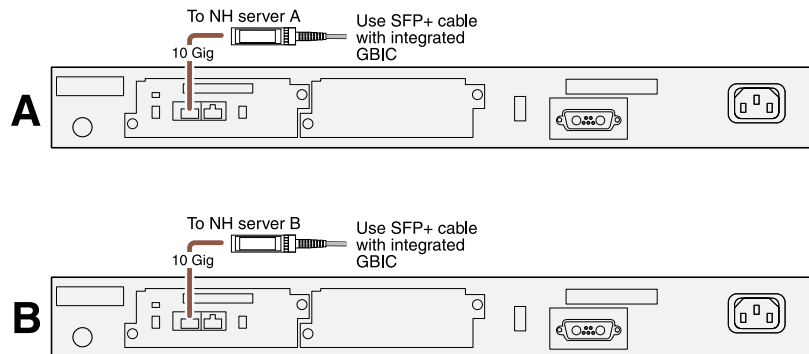
- HP 29xx series Gigabit Ethernet switch on a nearline K2 SAN.

Front view



Ports are for control connections as well as FTP connections from Grass Valley and 3rd party systems.

Rear view



## Cable K2 Media Server

As directed by the system diagram for your K2 SAN, cable the K2 Media Server or Servers for your K2 SAN using the instructions in this section.

### Related Links

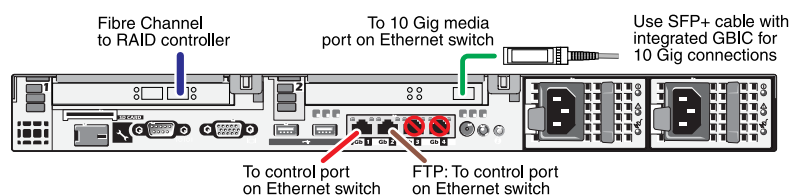
[K2-SVR basic](#) on page 21

[K2-SVR redundant](#) on page 21

### K2-SVR basic

These cabling instructions apply to the following:

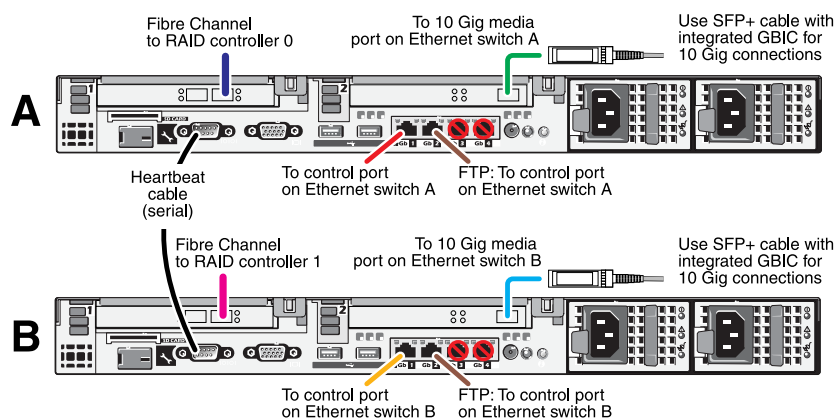
- Dell R610 PowerEdge Server on a basic (non-redundant) online or production K2 SAN.



### K2-SVR redundant

These cabling instructions apply to the following:

- Dell 1950 PowerEdge Server on a redundant online or production K2 SAN.



#### Redundant server heartbeat serial cable

Take care to use the proper serial cable to interconnect redundant K2 Media Servers that take the role of file system/database servers. This cable supports the heartbeat mechanism whereby the servers monitor each other's health. It is a 9 pin serial cable, but it is not a standard RS-232 null

modem cable. The heartbeat cable is supplied with your system (Grass Valley part number 174-8137-00) and has a pin configuration as follows:

1 – 4

2 – 3

3 – 2

4 – 1&6

5 – 5

6 – 4

7 – 8

8 – 7

9 – No Connect

## Cable NH10GE K2 Media Server

As directed by the system diagram for your K2 SAN, cable the NH10GE K2 Media Server or Servers for your K2 SAN using the instructions in this section

### Related Links

[K2-SVR-NH10GE online/production](#) on page 23

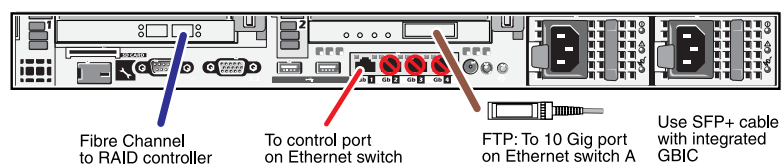
[K2-SVR-NH10GE basic nearline](#) on page 23

[K2-SVR-NH10GE redundant nearline](#) on page 23

## K2-SVR-NH10GE online/production

These cabling instructions apply to the following:

- Dell R610 PowerEdge Server NH10GE on an online or production K2 SAN.

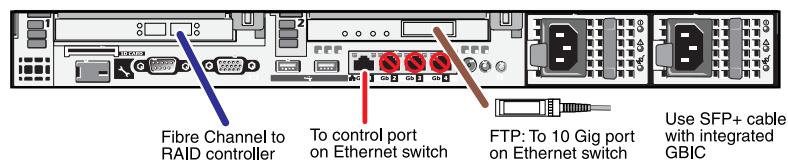


If you have more than one NH1 server, balance servers between controller 0 and controller 1.

## K2-SVR-NH10GE basic nearline

These cabling instructions apply to the following:

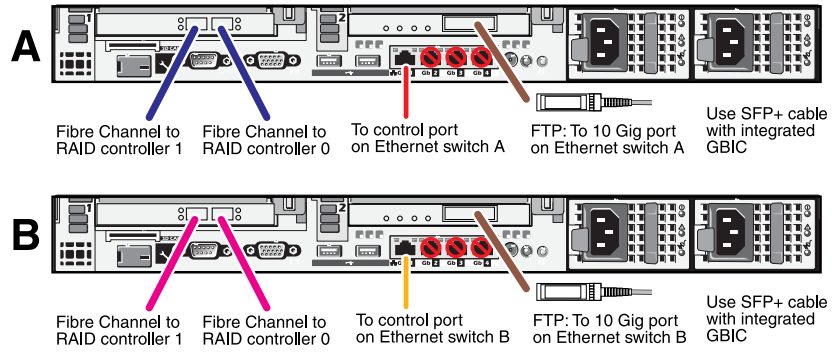
- Dell R610 PowerEdge Server NH10GE on a basic nearline K2 SAN.



## K2-SVR-NH10GE redundant nearline

These cabling instructions apply to the following:

- Dell R610 PowerEdge Server NH10GE on a nearline K2 SAN.





## Cable K2 RAID

Before cabling, install the K2 RAID chassis in its permanent location. After mounting the chassis in the rack, you must secure brackets to the front rail to support the Grass Valley bezel. Refer to related topics in "K2 10G SAN Installation and Service Manual" for rack mount instructions.

On the 10G RAID, you do not need to manually set a Fibre Channel address ID on controllers or a chassis address on Expansion chassis.

As directed by the system diagram for your storage system, cable the K2 RAID devices using the instructions in this section.

Once the RAID storage is connected and configured, do not swap Expansion chassis or otherwise reconfigure storage. If you connect an Expansion chassis in a different order or to the wrong controller, the controller will see a configuration mismatch and fault.

### Related Links

[K2 RAID basic online/production](#) on page 25

[K2 RAID redundant online/production](#) on page 27

[K2 RAID basic nearline](#) on page 28

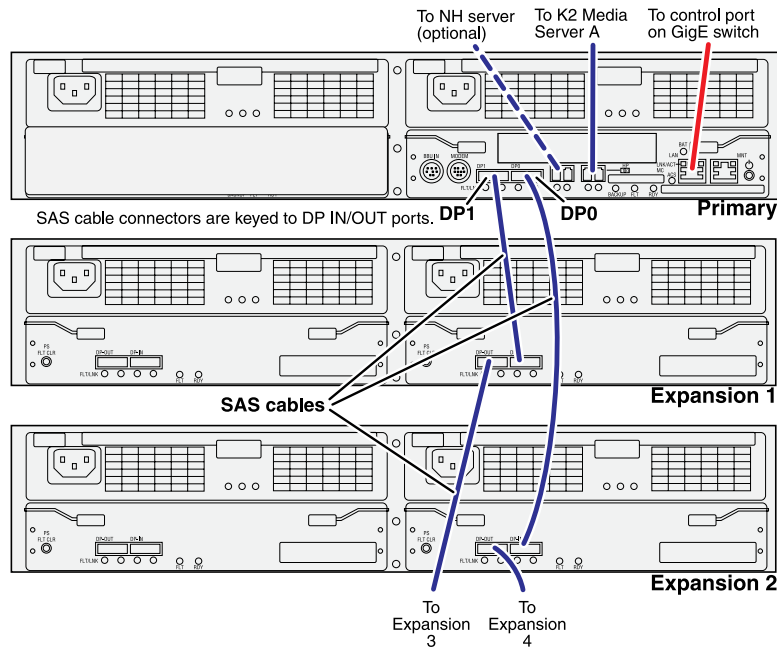
[K2 RAID redundant nearline](#) on page 29

[K2 RAID direct-connect](#) on page 30

## K2 RAID basic online/production

These cabling instructions apply to the following:

- K2 RAID (Condor with 10G controller) on a basic (non-redundant) online or production K2 SAN.

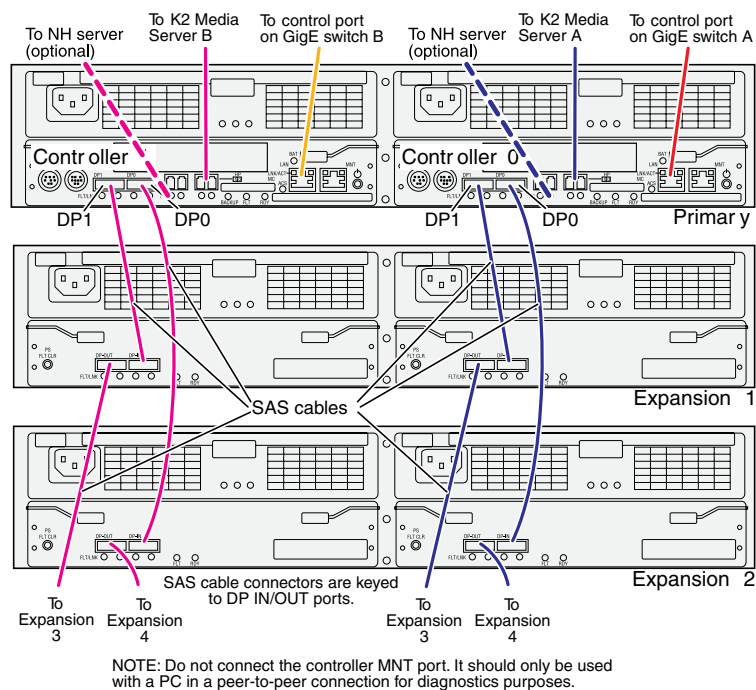


If you have more Expansion chassis than those illustrated, continue the indicated cabling pattern, alternating connections for additional Expansion chassis between DP1 and DP0. Expansion chassis 1, 3, 5, 7, etc. (odd numbers) connect to DP1. Expansion chassis 2, 4, 6, 8, etc. (even numbers) connect to DP0. For example, if you have four Expansion chassis (an even number), they are evenly balanced, so you have two connected to DP1 and two connected to DP0. If you have five Expansion chassis (an odd number), the “plus one” Expansion chassis is always connected to DP1, so you have three connected to DP1 and two connected to DP0.

## K2 RAID redundant online/production

These cabling instructions apply to the following:

- K2 RAID (Condor with 10G controllers) on a redundant online or production K2 SAN.

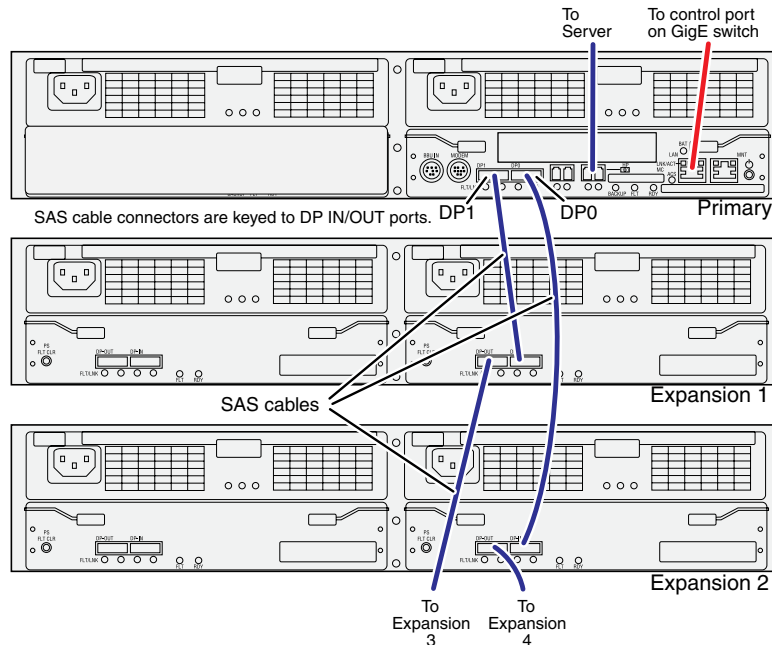


If you have more Expansion chassis than those illustrated, continue the indicated cabling pattern, alternating connections for additional Expansion chassis between DP1 and DP0. Expansion chassis 1, 3, 5, 7, etc. (odd numbers) connect to DP1. Expansion chassis 2, 4, 6, 8, etc. (even numbers) connect to DP0. For example, if you have four Expansion chassis (an even number), they are evenly balanced, so you have two connected to DP1 and two connected to DP0. If you have five Expansion chassis (an odd number), the “plus one” Expansion chassis is always connected to DP1, so you have three connected to DP1 and two connected to DP0.

## K2 RAID basic nearline

These cabling instructions apply to the following:

- K2 RAID (Condor with 10G controllers) on a basic nearline K2 SAN.



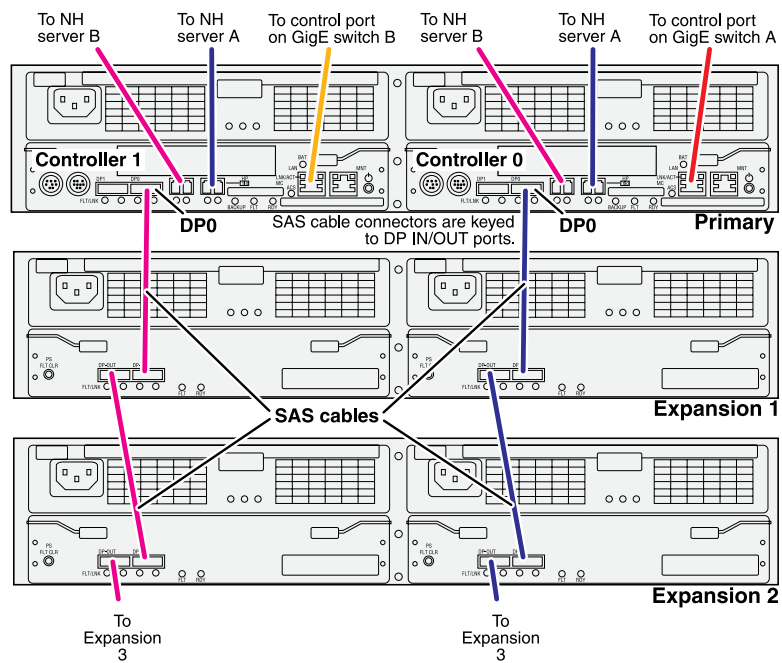
NOTE: Do not connect the controller MNT port. It should only be used with a PC in a peer-to-peer connection for diagnostics purposes.

If you have more Expansion chassis than those illustrated, continue the indicated cabling pattern, alternating connections for additional Expansion chassis between DP1 and DP0. Expansion chassis 1, 3, 5, 7, etc. (odd numbers) connect to DP1. Expansion chassis 2, 4, 6, 8, etc. (even numbers) connect to DP0. For example, if you have four Expansion chassis (an even number), they are evenly balanced, so you have two connected to DP1 and two connected to DP0. If you have five Expansion chassis (an odd number), the “plus one” Expansion chassis is always connected to DP1, so you have three connected to DP1 and two connected to DP0.

## K2 RAID redundant nearline

These cabling instructions apply to the following:

- K2 RAID (Condor with 10G controllers) on a Nearline K2 SAN.



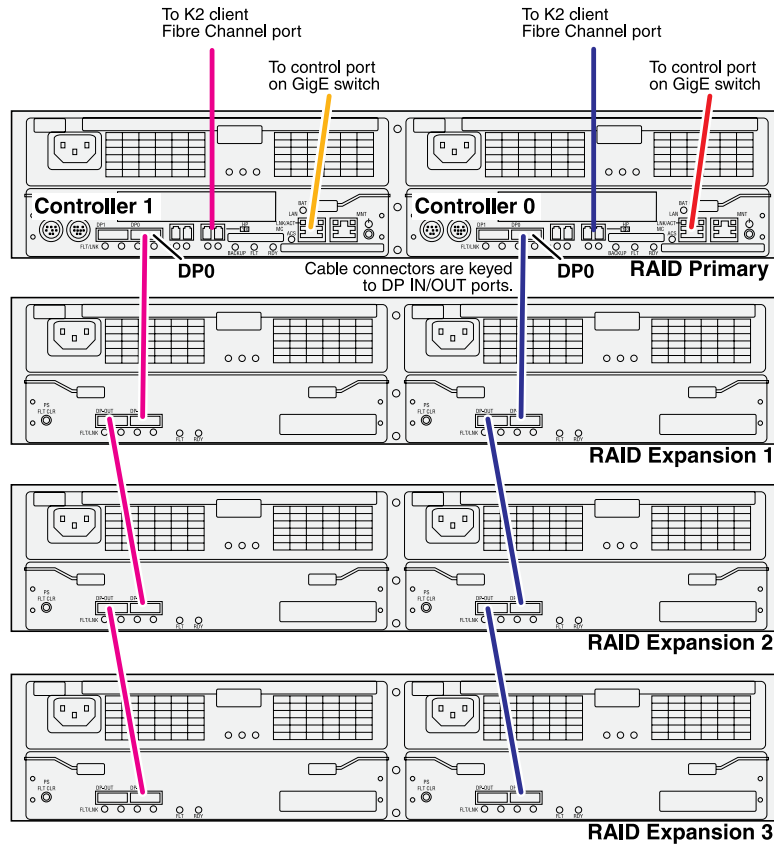
NOTE: Do not connect the controller MNT port. It should only be used with a PC in a peer-to-peer connection for diagnostics purposes.

Continue this cable pattern for additional Expansion Chassis.

## K2 RAID direct-connect

These cabling instructions apply to the following:

- K2 RAID (Condor) providing direct-connect storage for a K2 Summit system.



NOTE: Do not connect the controller MNT port. It should only be used with a PC in a peer-to-peer connection for diagnostics purposes.

## ***For more information***

This section contains the following topics:

- *For the installer of a standalone K2 product with internal storage*
- *For the installer of a K2 product with direct connect storage*
- *For the installer of K2 Summit systems with K2 SAN shared storage*
- *K2 Release Notes*
- *Quick Start Guides*
- *K2 Storage Cabling Guide*
- *K2 Documentation Set*
- *On-line Help Systems*
- *K2 FCP Connect documentation*
- *NetCentral documentation*
- *Grass Valley Website*
- *Dell Server Documentation*

## For the installer of a standalone K2 product with internal storage

If you are installing a K2 system, such as a K2 Summit/Solo system, with standalone internal storage, refer to documentation in the following sequence:

	<b>Find this document...</b>	<b>In these locations...</b>	<b>In these formats:</b>
1	K2 Release Notes	Grass Valley Website	PDF file
2	Quick Start Guide for the K2 product	K2 product shipping box	Printed
		K2 Documentation Set	PDF file
		Grass Valley Website	PDF file
3	K2 System Guide	K2 Documentation Set	PDF file
		Grass Valley Website	PDF file

## For the installer of a K2 product with direct connect storage

If you are installing a standalone K2 system, such as a K2 Summit system, with direct connect external RAID storage, refer to documentation in the following sequence:

	<b>Find this document...</b>	<b>In these locations...</b>	<b>In these formats:</b>
1	K2 Release Notes	Grass Valley Website	PDF file
2	K2 Storage Cabling Guide	K2 RAID shipping box	Printed
		K2 Documentation Set	PDF file
		Grass Valley Website	PDF file
3	Quick Start Guide for the K2 product	K2 product shipping box	Printed
		K2 Documentation Set	PDF file
		Grass Valley Website	PDF file
4	K2 System Guide	K2 Documentation Set	PDF file
		Grass Valley Website	PDF file



## For the installer of K2 Summit systems with K2 SAN shared storage

If you are installing a K2 SAN with connected K2 Summit systems, refer to documentation in the following sequence:

	Find this document...	In these locations...	In these formats:
1	K2 Release Notes	Grass Valley Website	PDF file
2	K2 Storage Cabling Guide	K2 RAID shipping box	Printed
		K2 Documentation Set	PDF file
		Grass Valley Website	PDF file
3	Quick Start Guide for the K2 product	K2 product shipping box	Printed
		K2 Documentation Set	PDF file
		Grass Valley Website	PDF file
4	K2 SAN Installation and Service Manual	K2 Documentation Set	PDF file
		Grass Valley Website	PDF file
5	K2 System Guide	K2 Documentation Set	PDF file
		Grass Valley Website	PDF file

### K2 Release Notes

Contains the latest information about the software shipped on your system, including software upgrade instructions, software specifications and requirements, feature changes from the previous releases, and any known problems. You should always check the Grass Valley Website to determine if there is an updated version of release notes available.

### Quick Start Guides

The Quick Start Guide is a printed document, shipped in the product packaging with K2 Summit/Solo systems and K2 Dyno Replay Controllers. The Quick Start Guide provides step-by-step installation instructions for basic installation and operation of the product.

### K2 Storage Cabling Guide

The K2 Storage Cabling Guide is a printed document, shipped in the product packaging with the primary RAID storage chassis. The cabling guide provides instructions for K2 Storage Area Network (SAN) cabling and external configuration. The cabling guide provides instructions for each level of K2 SAN and covers both redundant and basic (non-redundant) systems. It also provides instructions for connecting direct-connect external RAID storage to K2 Summit systems.

## K2 Documentation Set

Except for the release notes, the full set of support documentation, including this manual, is available in the K2 or K2/STRATUS Documentation Set. You can find the Documentation Set on the Grass Valley website. The following URL allows you to browse by K2 software version:

[http://www.grassvalley.com/dl/k2\\_summit](http://www.grassvalley.com/dl/k2_summit)

You can also find the Documentation Set on the USB Recovery Flash drive that ships with your K2 Summit/Solo system.

The Documentation Set includes the following K2 product documents:

K2 AppCenter User Manual	Provides instructions for configuring and operating the media channels of product.
Quick Start Guides	The Quick Start Guide provides step-by-step installation instructions for basic installation and operation of the product.
K2 System Guide	Contains the product specifications and instructions for modifying system settings.
K2 Service Manuals	Contains information on servicing and maintaining the K2 product.
K2 SAN Installation and Service Manual	Contains installation, configuration, and maintenance procedures for shared storage options.
K2 Storage Cabling Guide	The cabling guide provides instructions for K2 Storage Area Network (SAN) cabling and external configuration. The cabling guide provides instructions for each level of K2 SAN and covers both redundant and basic (non-redundant) systems. It also provides instructions for connecting direct-connect external RAID storage to K2 Summit systems.
RAID Instruction Manuals	There is an Instruction Manual for each type of RAID storage device that can be a part of a K2 SAN. These manuals contain procedures for configuring and servicing the device.
Fibre Channel Switch Installation Manual	Contains information on configuring and servicing the Fibre Channel switch.
SiteConfig User Manual	Contains information on using SiteConfig, Grass Valley's system management tool, for network configuration and software deployment.

## On-line Help Systems

You can find documentation online with products as follows:

K2 AppCenter Help	Contains information on using K2 AppCenter. In the AppCenter user interface menu bar select <b>Help</b> , then choose <b>AppCenter Help Topics</b> from the drop-down menu.
NetCentral Help	Contains information on using NetCentral. From the NetCentral interface select <b>Help   NetCentral Help Topics</b> .
SiteConfig Help	Contains information on using SiteConfig. In the SiteConfig user interface menu bar select <b>Help</b> , then choose <b>SiteConfig Help Topics</b> from the drop-down menu.

## K2 FCP Connect documentation

The K2 FCP Connect product has its own documentation set, described as follows:

GV Connect User Manual	Provides instructions for using GV Connect, which is a Final Cut Pro plugin, to access and work with K2 assets. GV Connect is part of the K2 FCP Connect product.
GV Browse User Manual	Provides instructions for using GV Browse, which is a Final Cut Pro plugin, to access and work with assets on a MediaFrame server in an Aurora Browse system. GV Connect is part of the K2 FCP Connect product.
K2 FCP Connect Installation Manual	Provides detailed instructions to install and configure the K2 FCP Connect product.
K2 FCP Connect Release Notes	Contains the latest information about the K2 FCP Connect product, including software upgrade instructions, software specifications and requirements, feature changes from the previous releases, and any known problems. You should always check the Grass Valley Website to determine if there is an updated version of release notes available.

## NetCentral documentation

The NetCentral product has its own documentation set, described as follows:

NetCentral Quick Start Guide	Provides an overview of the installation process to quickly set up and run NetCentral.
NetCentral Installation Guide	Identifies requirements and procedures to correctly set up servers and devices, as well as provides detailed instructions to install and configure NetCentral software.
NetCentral User Guide	Describes how to use the NetCentral Manager to monitor devices.
NetCentral Help	Contains information on using NetCentral. From the NetCentral interface select <b>Help   NetCentral Help Topics</b> .

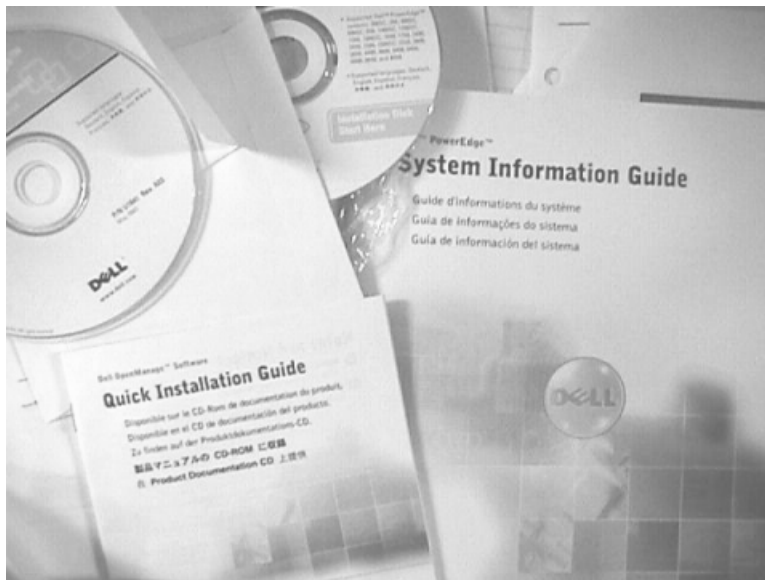
## Grass Valley Website

This public Web site contains all the latest manuals and documentation, and additional support information. Use the following URL.

<http://www.grassvalley.com>.

## Dell Server Documentation

If your system includes a Grass Valley product on a Dell server platform, refer to the applicable Grass Valley product manual for installation and configuration information. However, a full set of Dell server documentation has been provided on the *Dell Product Documentation* CD-ROM. Refer to the documents on this CD-ROM only as required by procedures in Grass Valley product manual.



Information referenced on the *Dell Product Documentation* CD-ROM includes, but is not limited to:

- Unpacking and rack-mounting
- Important safety and regulatory information
- Status indicators, messages, and error codes
- Troubleshooting help

**⚠ CAUTION:** Do not use the Dell Quick Installation Guide provided with the Dell CD-ROM package. This guide includes instructions for using the OpenManage software CD-ROM to install an operating system, which is not necessary on the Grass Valley product.

## ***Trademarks and Agreements***

This section contains the following topics:

- *Trademarks*
- *JPEG acknowledgment*

## **Trademarks**

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## **JPEG acknowledgment**

This software is based in part on the work of the Independent JPEG Group.