

K2

Storage
10G SAN and Direct-Connect



Cabling Guide



Affiliate with the N.V. KEMA in The Netherlands



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Headquarters
400 Providence Mine Rd
Nevada City, CA 95959
United States

15655 SW Greystone Ct.
Beaverton, OR 97006
United States

10 Presidential Way
Suite 300
Woburn, MA 01801
United States

Kapittelweg 10
4827 HG Breda
The Netherlands

7140 Baymeadows Way
Ste 101
Jacksonville, FL 32256
United States

2300 So. Decker Lake Blvd.
Salt Lake City, UT 84119
United States

Rue du Clos Courtel
CS 31719
35517 Cesson-Sevigné Cedex
France

1 rue de l'Hautil
Z.I. des Boutries BP 150
78702 Conflans-Sainte
Honorine Cedex
France

Technopole Brest-Iroise
Site de la Pointe du Diable
CS 73808
29238 Brest Cedex 3
France

40 Rue de Bray
2 Rue des Landelles
35510 Cesson Sevigné
France

Spinnereistrasse 5
CH-5300 Turgi
Switzerland

Brunnenweg 9
D-64331 Weiterstadt
Germany

Carl-Benz-Strasse 6-8
67105 Schifferstadt
Germany

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ISO 9001:2008

Scope:

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KEMA-Registered Quality, Inc.
4377 County Line Road
Chalfont, PA 18914
Ph: (215)997-4519
Fax: (215)997-3809

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Experience you can trust.

K2

Storage
10G SAN and Direct-Connect

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Revision Status

Rev Date	Description
03 September 2009	Initial release of the K2 Storage Cabling Guide - 071-8713-00
01 April 2010	Correct NH Server GigE cabling — 071-8713-01
November 2010	Update for K2 10G SAN and K2 10G RAID. Remove L2-L35 information. — 071-8780-00

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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 client, 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 SAN Installation and Configuration Guide* 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

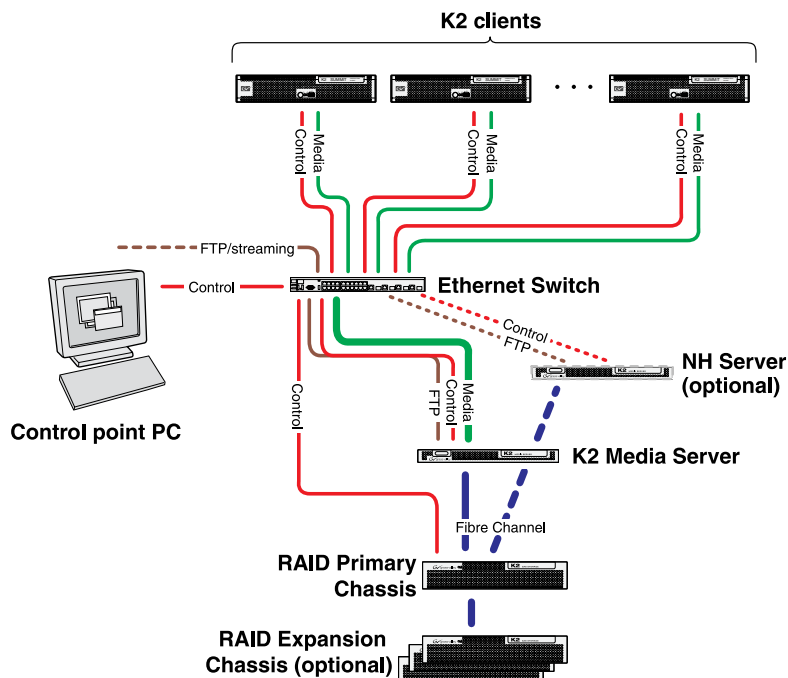
[*Redundant K2 SAN - Online or Production*](#) on page 10

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

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

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

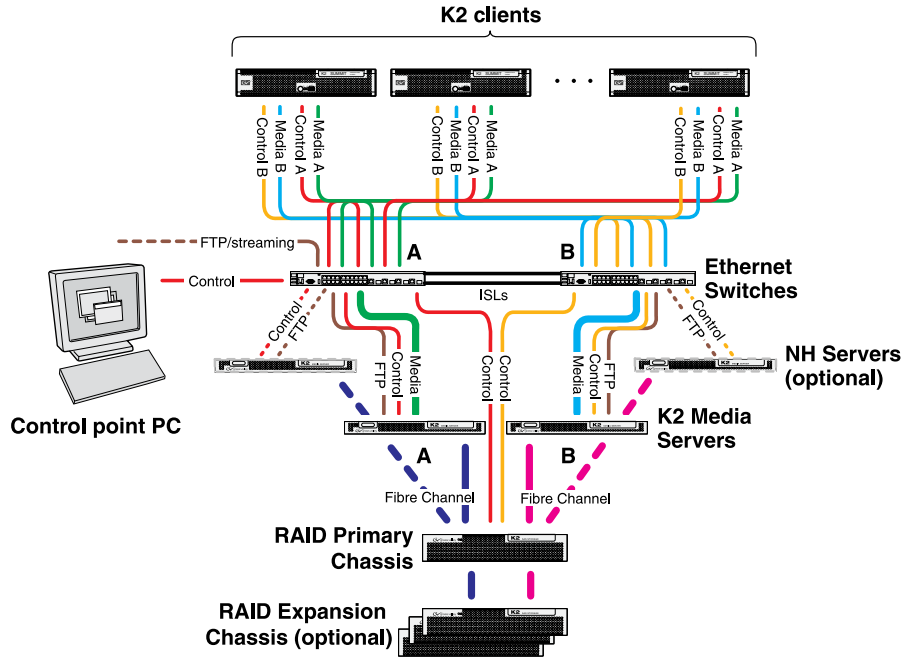
Basic K2 SAN - Online or Production



To cable this K2 SAN device...	Of this model or platform...	Turn to these instructions:
K2 client	K2 Summit Production Client	K2 Summit Production Client for basic K2 SAN on page 14
Gigabit Ethernet Switch	HP 2910	29xx HP GigE switch for basic K2 SAN on page 16
K2 Media Server	Dell R610	Dell R610 GS for basic K2 SAN on page 21
NH10GE K2 Media Server (optional)	Dell R610	Dell R610 NH10GE for online or production K2 SAN on page 23
K2 RAID	K2 RAID	K2 RAID for basic K2 SAN on page 25

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

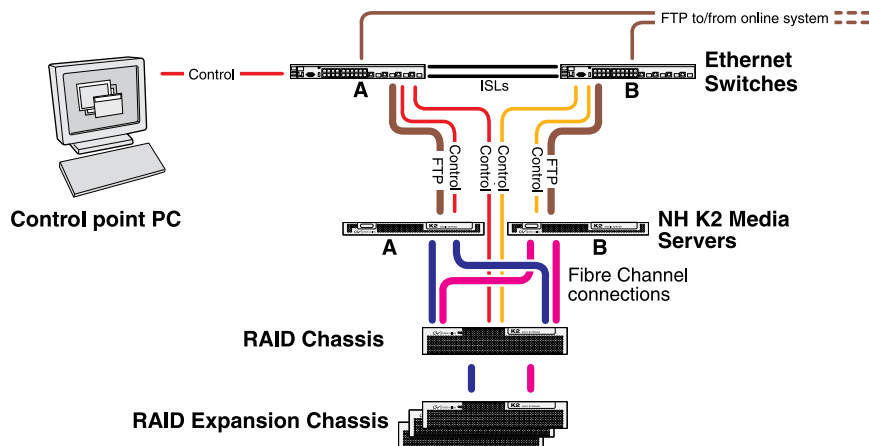
Redundant K2 SAN - Online or Production



To cable this K2 SAN device...	Of this model or platform...	Turn to these instructions:
K2 client	K2 Summit Production Client	K2 Summit Production Client for redundant K2 SAN on page 14
Gigabit Ethernet Switch	HP 2910	29xx HP GigE switch for redundant K2 SAN on page 18
K2 Media Server	Dell R610	Dell R610 GS for redundant K2 SAN on page 21
NH10GE K2 Media Server (optional)	Dell R610	Dell R610 NH10GE for online or production K2 SAN on page 23
K2 RAID	K2 RAID	K2 RAID for redundant K2 SAN on page 27

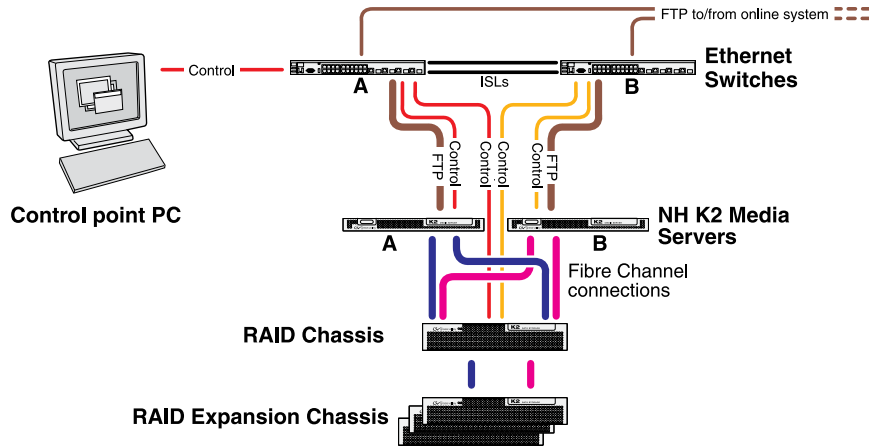
This manual documents the default GigE switch configuration. Other configurations are available, depending on your port count and FTP bandwidth requirements.

Basic Nearline K2 SAN



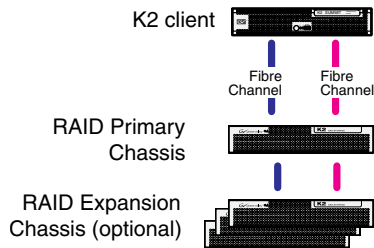
To cable this K2 SAN device...	Of this model or platform...	Turn to these instructions:
Gigabit Ethernet Switch	HP 2910	29xx HP GigE switch for basic nearline K2 SAN on page 19
NH10GE K2 Media Server	Dell R610	Dell R610 NH10GE for basic nearline K2 SAN on page 23
K2 RAID	K2 10G RAID	K2 RAID for basic nearline K2 SAN 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	29xx HP GigE switch for redundant nearline K2 SAN on page 20
NH10GE K2 Media Server	Dell R610	Dell R610 NH10GE for redundant nearline K2 SAN on page 23
K2 RAID	K2 10G RAID	K2 RAID for redundant nearline K2 SAN on page 29

K2 client with direct-connect storage



To cable this K2 device...	Of this model or platform...	Turn to these instructions:
K2 client	K2 Summit Production Client	K2 Summit Production Client with direct-connect storage on page 15
K2 RAID	K2 RAID	K2 RAID for K2 client direct-connect storage on page 30

Cable K2 devices

This section contains the following topics:

- *Cable K2 client*
- *Cable Ethernet switch*
- *Cable K2 Media Server*
- *Cable NH10GE K2 Media Server*
- *Cable K2 RAID*

Cable K2 client

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

Related Links

[K2 Summit Production Client for basic K2 SAN](#) on page 14

[K2 Summit Production Client for redundant K2 SAN](#) on page 14

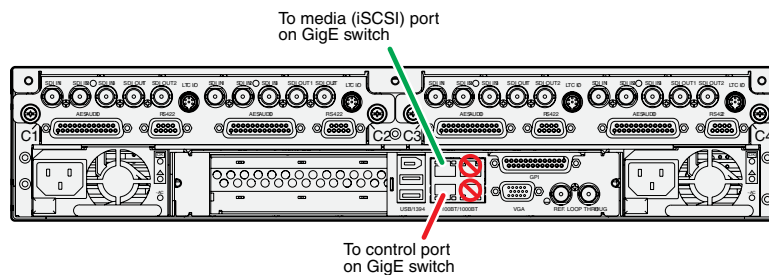
[K2 Summit Production Client with direct-connect storage](#) on page 15

K2 Summit Production Client for basic K2 SAN

These cabling instructions apply to the following:

- K2 Summit Production Client on a basic (non-redundant) online or production K2 SAN

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

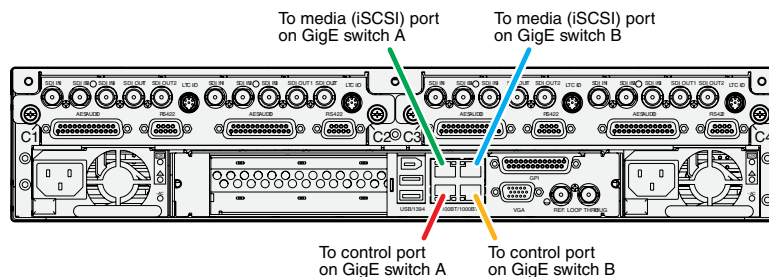


K2 Summit Production Client for redundant K2 SAN

These cabling instructions apply to the following:

- K2 Summit Production Client on a redundant online or production K2 SAN

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



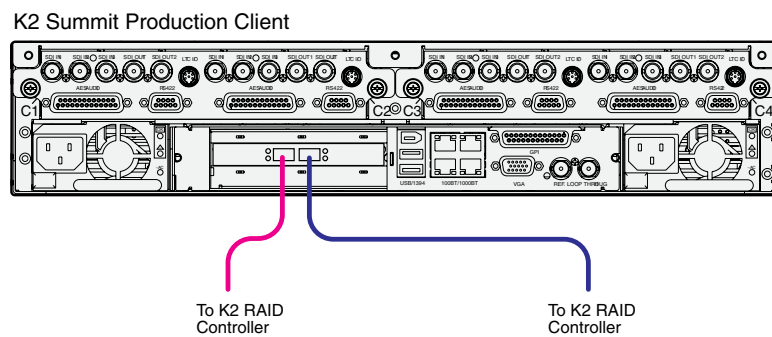
K2 Summit Production Client with direct-connect storage

These cabling instructions apply to the following:

- K2 Summit Production Client with direct-connect K2 RAID storage

Refer to the *K2 System Guide* for additional information about direct-connect storage.

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



Cable Ethernet switch

As directed by the system diagram for your K2 SAN, cable the switch or switches for your K2 SAN 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.

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

Related Links

[29xx HP GigE switch for basic K2 SAN](#) on page 16

[29xx HP GigE switch for redundant K2 SAN](#) on page 18

[29xx HP GigE switch for basic nearline K2 SAN](#) on page 19

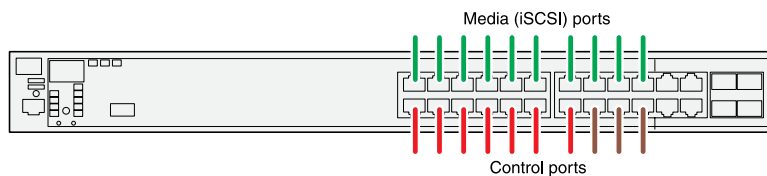
[29xx HP GigE switch for redundant nearline K2 SAN](#) on page 20

29xx HP GigE switch for basic K2 SAN

These cabling instructions apply to the following:

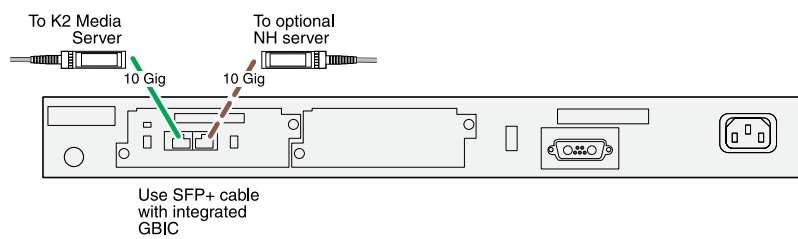
- HP 29xx series Gigabit Ethernet switch on a basic (non-redundant) online or production K2 SAN.

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

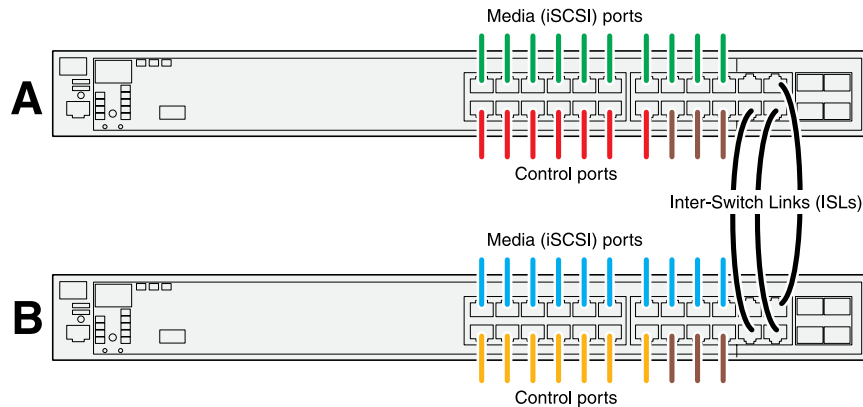


29xx HP GigE switch for redundant K2 SAN

These cabling instructions apply to the following:

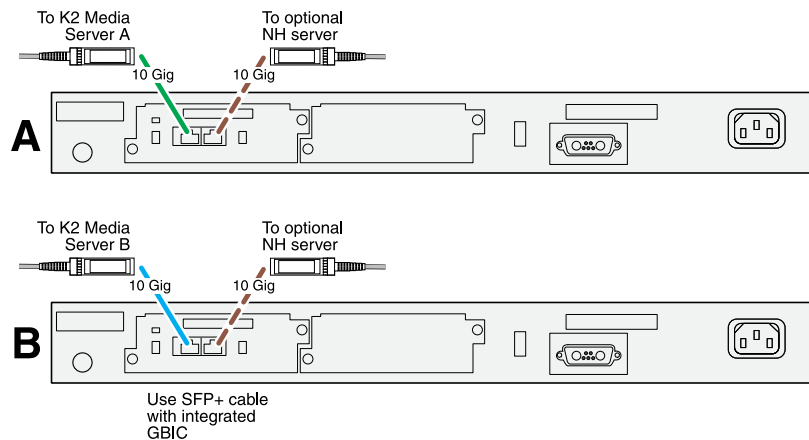
- HP 29xx series Gigabit Ethernet switch on a redundant online or production K2 SAN.

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.

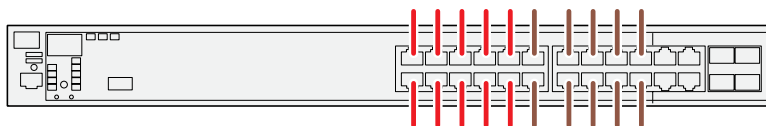
If you have more than one optional NH10GE K2 Media Servers, balance servers between switch A and switch B.

29xx HP GigE switch for basic nearline K2 SAN

These cabling instructions apply to the following:

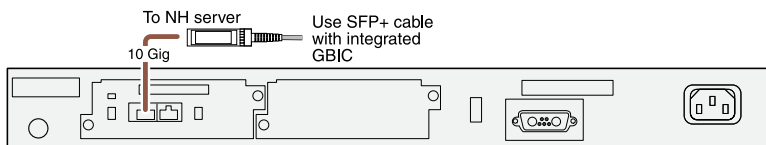
- HP 29xx series Gigabit Ethernet switch on a nearline K2 SAN with one NH K2 Media Server.

Front view



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

Rear view

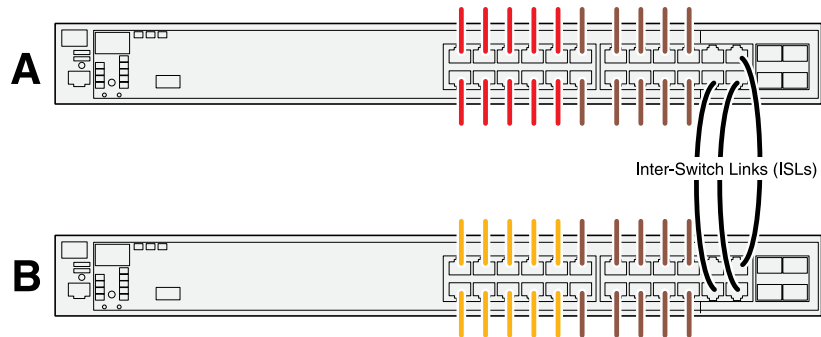


29xx HP GigE switch for redundant nearline K2 SAN

These cabling instructions apply to the following:

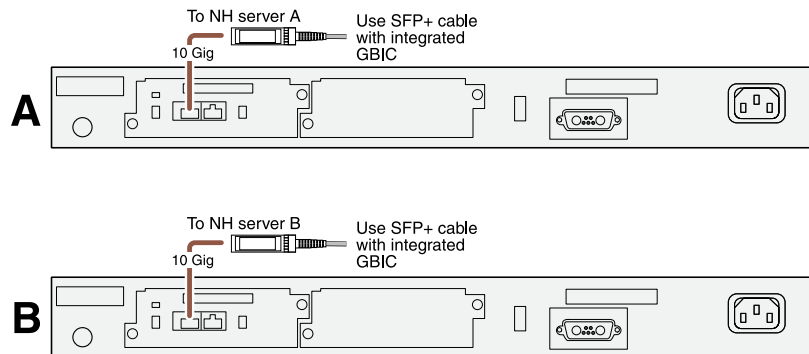
- HP 29xx series Gigabit Ethernet switch on a nearline K2 SAN.

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

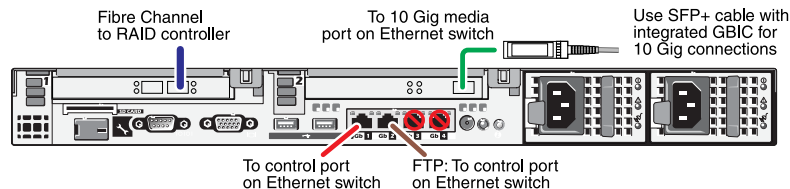
[Dell R610 GS for basic K2 SAN](#) on page 21

[Dell R610 GS for redundant K2 SAN](#) on page 21

Dell R610 GS for basic K2 SAN

These cabling instructions apply to the following:

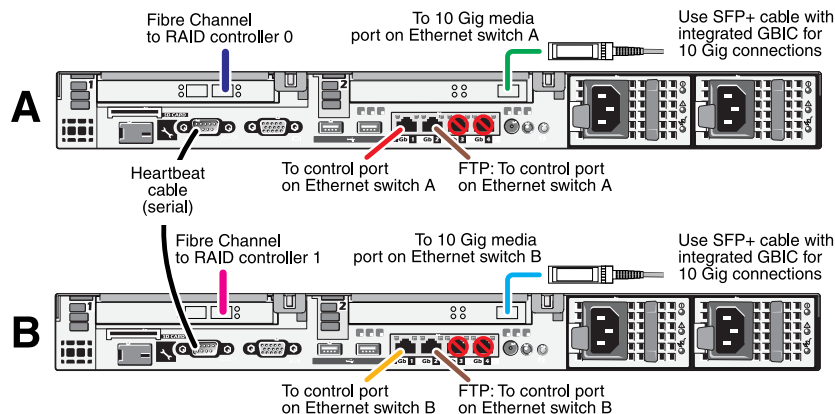
- Dell R610 PowerEdge Server on a basic (non-redundant) online or production K2 SAN.



Dell R610 GS for redundant K2 SAN

These cabling instructions apply to the following:

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



Serial cable specifications

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

[Dell R610 NH10GE for online or production K2 SAN](#) on page 23

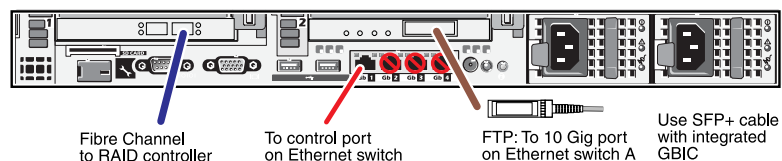
[Dell R610 NH10GE for basic nearline K2 SAN](#) on page 23

[Dell R610 NH10GE for redundant nearline K2 SAN](#) on page 23

Dell R610 NH10GE for online or production K2 SAN

These cabling instructions apply to the following:

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

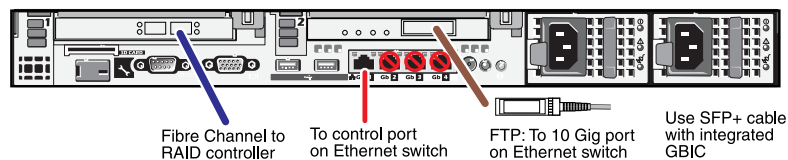


If you have more than one NH1 server, balance servers between controller 0 and controller 1.

Dell R610 NH10GE for basic nearline K2 SAN

These cabling instructions apply to the following:

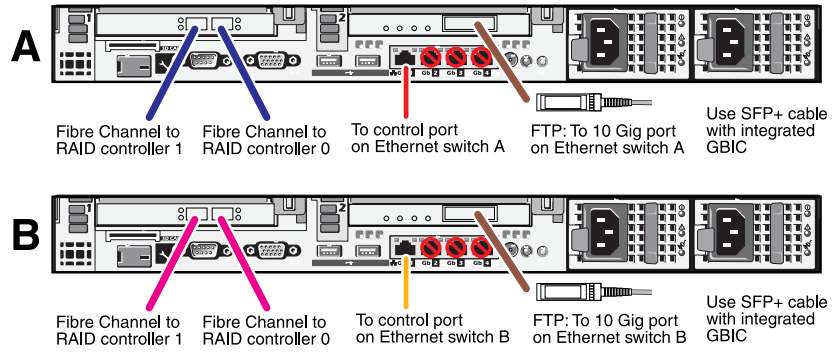
- Dell R610 PowerEdge Server NH10GE on a basic nearline K2 SAN.



Dell R610 NH10GE for redundant nearline K2 SAN

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 the *K2 10G RAID Instruction 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 K2 storage, 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 for basic K2 SAN](#) on page 25

[K2 RAID for redundant K2 SAN](#) on page 27

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

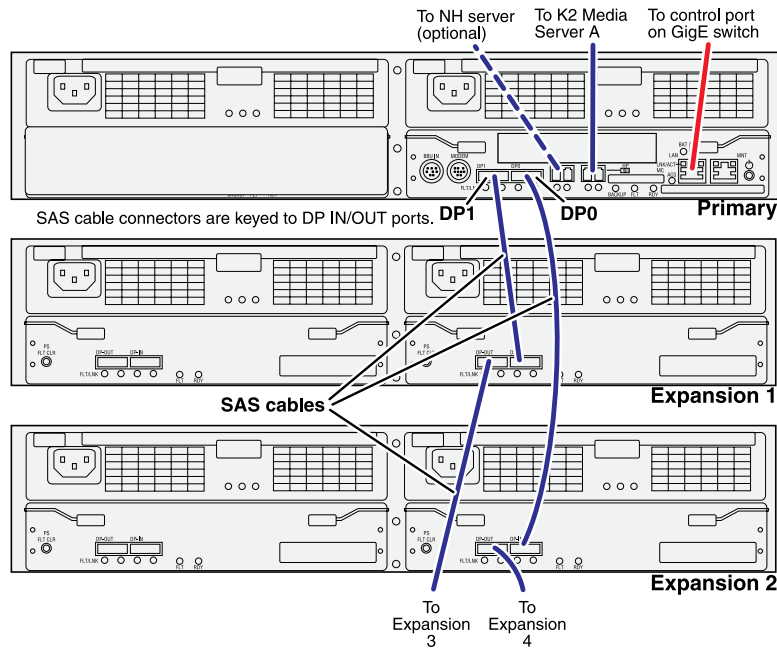
[K2 RAID for redundant nearline K2 SAN](#) on page 29

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

K2 RAID for basic K2 SAN

These cabling instructions apply to the following:

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



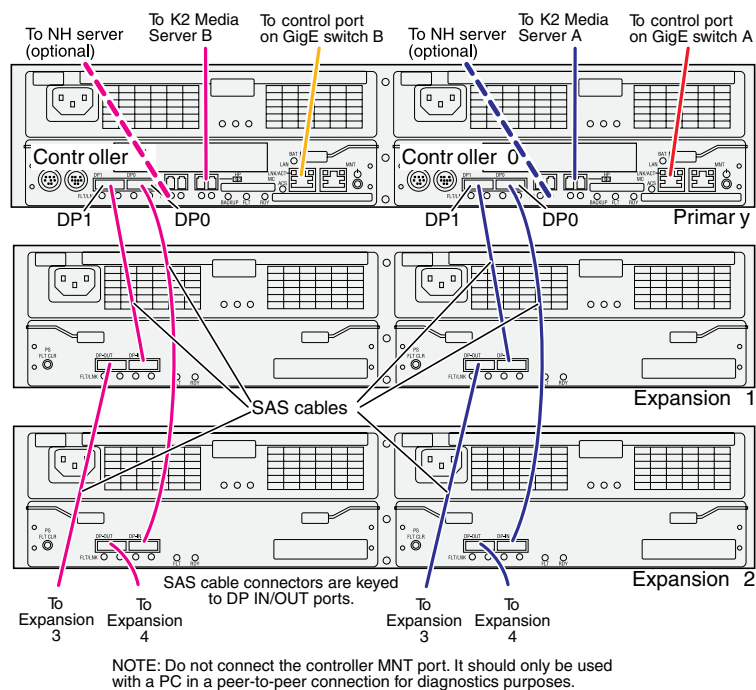
NOTE: Do not connect the controller MNT port. It should only be used with a PC in a peer-to-peer connection for diagnostics purposes.

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 for redundant K2 SAN

These cabling instructions apply to the following:

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

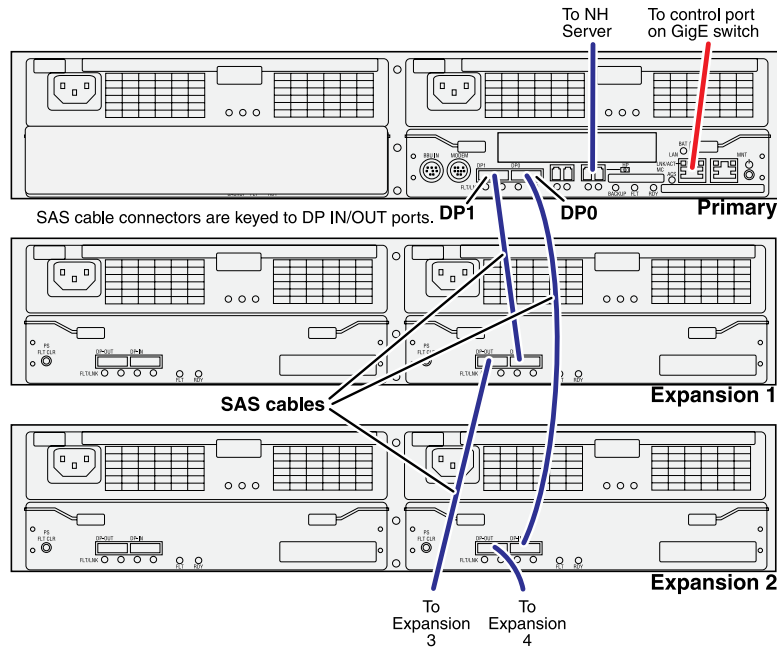


If you have more Expansion chassis than those illustrated, continue the indicated cabling pattern, alternating connections for additional Expansion chassis between DP1 and DP0. Expansion chassis 1, 3, 5, 7, etc. (odd numbers) connect to DP1. Expansion chassis 2, 4, 6, 8, etc. (even numbers) connect to 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 for basic nearline K2 SAN

These cabling instructions apply to the following:

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



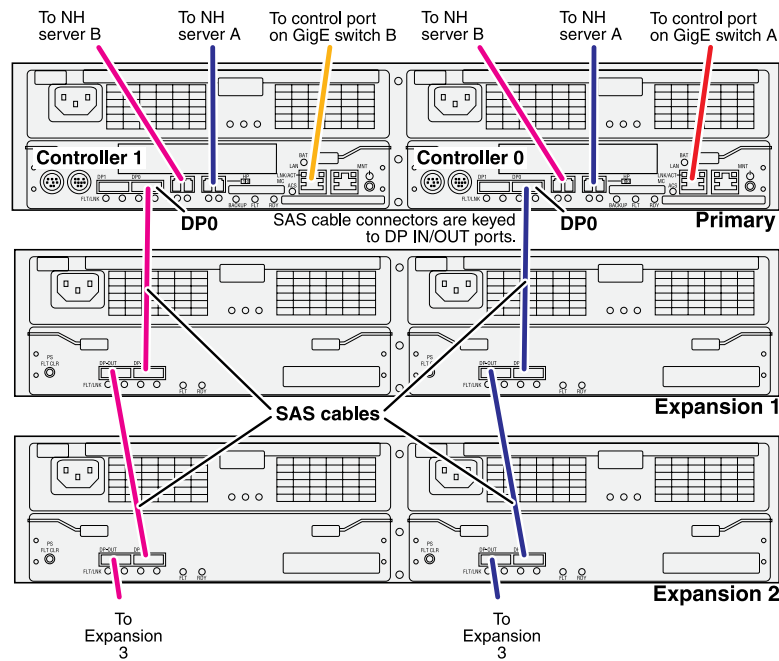
NOTE: Do not connect the controller MNT port. It should only be used with a PC in a peer-to-peer connection for diagnostics purposes.

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 for redundant nearline K2 SAN

These cabling instructions apply to the following:

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



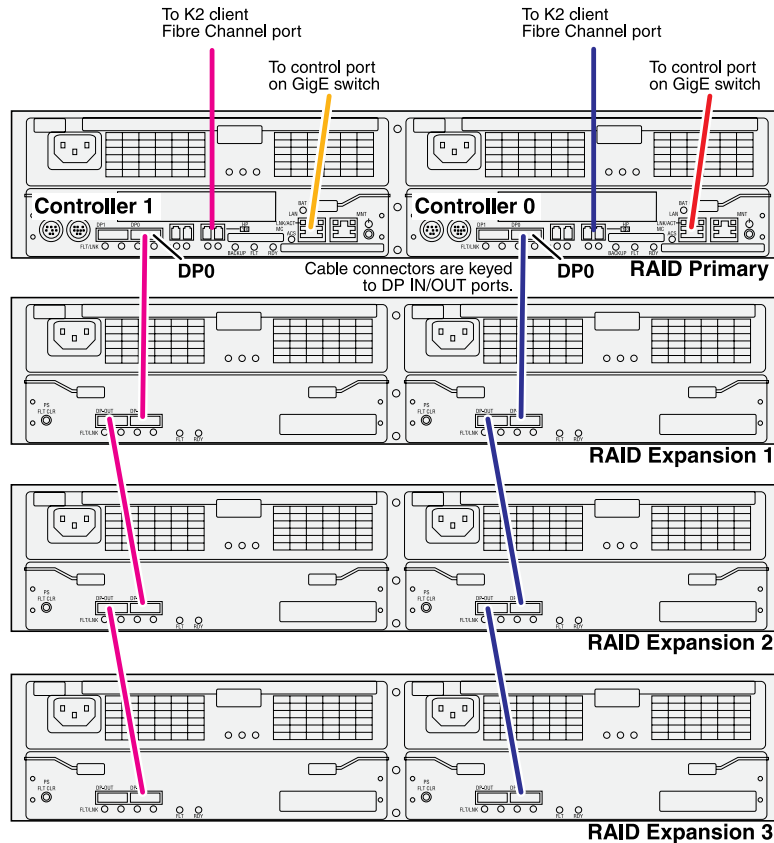
NOTE: Do not connect the controller MNT port. It should only be used with a PC in a peer-to-peer connection for diagnostics purposes.

For the Nearline system, 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, etc. connect to DP1. Expansion chassis 2, 4, 6, etc. connect to DP0.

K2 RAID for K2 client direct-connect storage

These cabling instructions apply to the following:

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



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:

- *K2 Release Notes*
- *K2 Documentation CD*
- *On-line Help Systems*
- *NetCentral documentation*
- *Grass Valley Website*
- *Dell Server Documentation*
- *Grass Valley Product Support*

K2 Release Notes

The K2 Release Notes contain the latest information about the software shipped on your system. The release notes include 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.

K2 Documentation CD

Except for the release notes, the full set of support documentation, including this manual, is available on the K2 Documentation CD that you receive with your K2 product. You can find the Documentation CD packaged in K2 product shipping boxes.

The Documentation CD includes the following:

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 cabling and external configuration. The cabling guide provides instructions for each level of K2 SAN and covers both redundant and basic (non-redundant) systems. You can find the cabling guide packaged with the primary RAID storage chassis.
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 Help , then choose AppCenter Help Topics from the drop-down menu.
NetCentral Help	Contains information on using NetCentral. From the NetCentral interface select Help NetCentral Help Topics .
SiteConfig Help	Contains information on using SiteConfig. In the SiteConfig user interface menu bar select Help , then choose SiteConfig Help Topics from the drop-down menu.

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 Help NetCentral Help Topics .

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>.

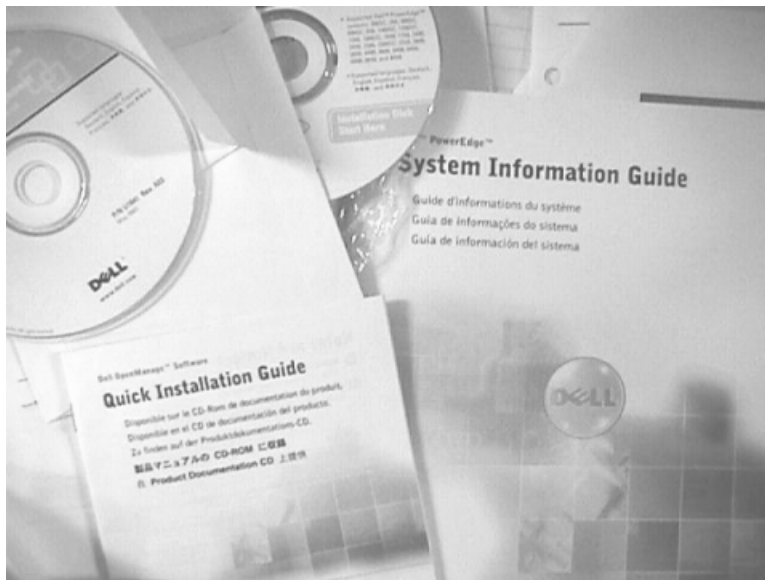
Dell Server Documentation

This manual contains all of the information you need to install the K2 SAN, however, a full set of Dell server documentation has been provided on the *Dell Product Documentation* CD-ROM. The Dell server documentation applies to the K2 Media Server. Refer to the documents on this CD-ROM only as required by procedures in this manual.

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

- Unpacking and rack-mounting the K2 Media Server
- Important safety and regulatory information
- K2 Media Server Status indicators, messages, and error codes
- Troubleshooting help for the K2 Media Server hardware.

⚠ 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. The K2 Media Server comes fully configured and is ready for installation. To begin installation, refer to one of the installation chapters in this manual.*



Grass Valley Product Support

To get technical assistance, check on the status of a question, or to report a new issue, contact Grass Valley Product Support via e-mail, the Web, or by phone or fax.

Web Technical Support

To access support information on the Web, visit the product support Web page on the Grass Valley Web site. You can download software or find solutions to problems.

World Wide Web: <http://www.grassvalley.com/support/>

Technical Support E-mail Address: gvtechsupport@grassvalley.com

Grass Valley Knowledge Base: <http://grassvalley.novosolutions.net/>

In the Knowledge Base you can search by topic, search by product, or browse the Table of Contents to find Frequently Asked Questions (FAQ).

Telephone Support

Use the following information to contact Product Support by phone.

International Support Centers

Our international support centers are available 24 hours a day, 7 days a week.

Support Center	Toll free	In country
France	+800 80 80 20 20	+33 1 48 25 20 20
United States	+1 800 547 8949	+1 530 478 4148

Authorized Local Support Representative

A local support representative may be available in your country. To locate a support center during normal local business hours, refer to the following list. This list is regularly updated on the website for Grass Valley Product Support

(<http://www.grassvalley.com/support/contact/phone/>)

After-hours local phone support is also available for warranty and contract customers.

For more information

Region	Country	Telephone
Asia	China	+86 10 5883 7575
	Hong Kong, Taiwan, Korea, Macau	+852 2531 3058
	Japan	+81 3 6848 5561
	Southeast Asia - Malaysia	+603 7492 3303
	Southeast Asia - Singapore	+65 6379 1313
	India	+91 22 676 10324
Pacific	Australia	1 300 721 495
	New Zealand	0800 846 676
	For callers outside Australia or New Zealand	+61 3 8540 3650
Central America, South America	All	+55 11 5509 3440
North America	North America, Mexico, Caribbean	+1 800 547 8949; +1 530 478 4148
Europe	UK, Ireland, Israel	+44 1189 230 499
	Benelux – Netherlands	+31 (0) 35 62 38 421
	Benelux – Belgium	+32 (0) 2 334 90 30
	France	+800 80 80 20 20; +33 1 48 25 20 20
	Germany, Austria, Eastern Europe	+49 6150 104 444
	Belarus, Russia, Tadzhikistan, Ukraine, Uzbekistan	+7 495 258 09 20
	Northern Europe	+45 404 72 237
	Southern Europe – Italy	+39 06 87 20 35 28
	Southern Europe – Spain	+34 91 512 03 50
Middle East, Near East, Africa	Middle East	+971 4 299 64 40
	Near East and Africa	+800 80 80 20 20; +33 1 48 25 20 20

Waste Electrical and Electronic Equipment Directive



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 or 530-478-4148, and ask to be connected to the EH&S Department. Additional information concerning the program can be found at: www.thomsongrassvalley.com/environment



