



User's Guide

Includes GVS900 2XU
VTR information, setup
guide, and important
monitoring information

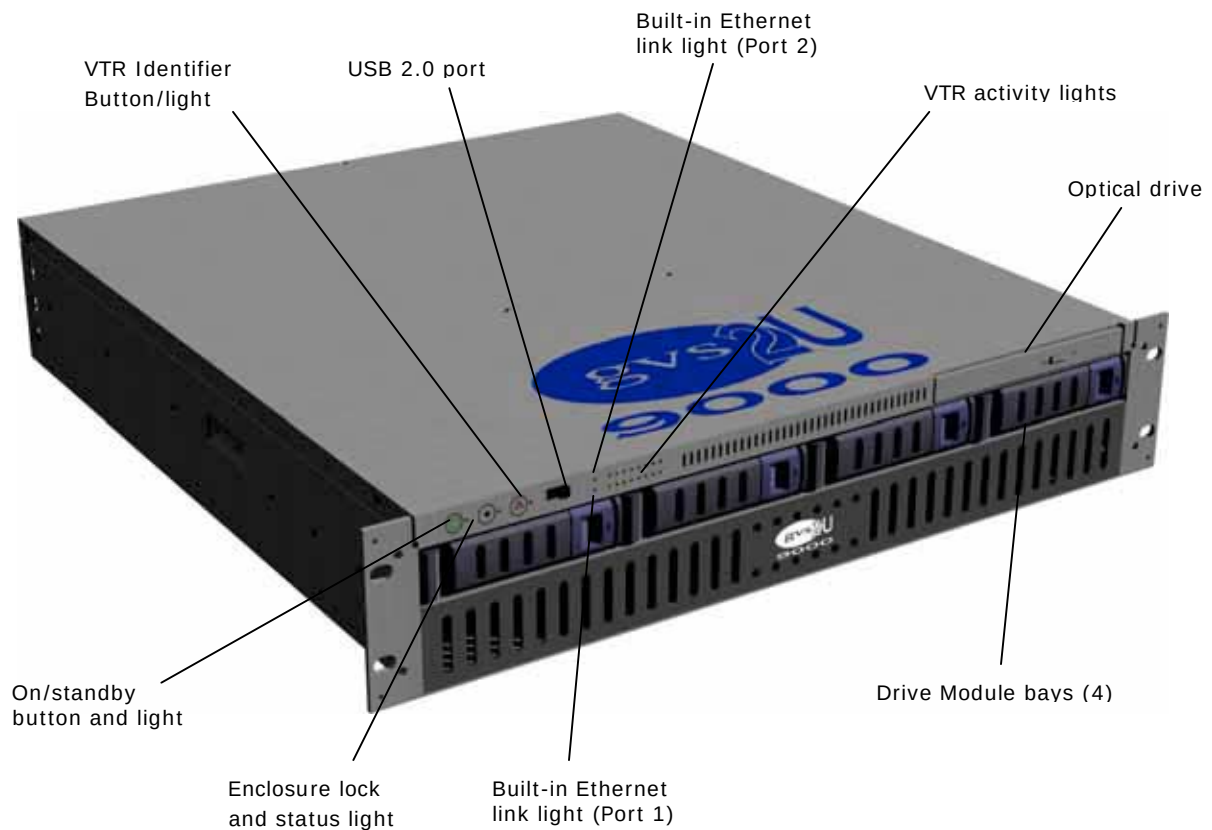
1		4
	GVS9000 2XU Overview	4
	Your GVS9000 2XU at a Glance—Front Panel	4
	Your GVS9000 2XU at a Glance—Rear Panel	6
	Your GVS9000 2XU at a Glance—Mounting Hardware	8
2		9
	Preparing to Install Your GVS9000 2XU	9
	Guidelines for GVS9000 2XU Installation	9
	Choose the GVS9000 2XU's Position in a Rack	9
	Electrical Power	10
	Operating Environment	11
	Rack Stability	11
	Considerations for Cables	11
	Security	12
3		13
	Installing Your GVS9000 2XU in a Rack	13
	Determine the Position for the GVS9000 2XU in the Rack	15
	Preparing the GVS9000 2XU for Installation	16
	Installing the GVS9000 2XU in a Four-Post Rack or Cabinet	16
4		22
	Using Your GVS9000 2XU	22
	Starting Up the GVS9000 2XU	22
	Monitoring Status Lights and Other Indicators on the GVS9000 2XU	23
	Monitoring the GVS9000 2XU	24
	To turn the VTR identifier light on or off at the GVS9000 2XU:	25
	To turn on the VTR identifier light remotely:	25
	Interpreting the GVS9000 2XU Status Lights	25
	VTR Identifier	26
	Processor Activity	27
	Ethernet Link Status	28
	Power Supply Status	29
Appendix A		32
	Specifications	32
	Optical Drive Specifications	35
	Ethernet Specifications	35
	FireWire Specifications	35
	USB Specifications	36
	Power Supply	36

1

GVS9000 2XU Overview

This chapter introduces the key components of your GVS9000 2XU VTR.

Your GVS9000 2XU at a Glance—Front Panel



On/standby button and light

Press to turn on the GVS9000 2XU.

Enclosure lock and lock status light

The lock secures the enclosure and drive modules in the GVS9000 2XU. It can be locked and unlocked with the enclosure key supplied with the GVS9000 2XU. An option in the Security pane of VTR Preferences lets you inactivate a connected keyboard and mouse when the enclosure lock is engaged. This option is turned off by default. See “Controlling Access to a Connected Keyboard and Mouse” for details.

When the enclosure lock is locked (the light is on), the GVS9000 2XU may not recognize

peripheral devices such as a keyboard, mouse, or storage device. Unlock the lock to use those devices.

VTR identifier button and light

The VTR identifier light turns on if a problem is detected. It also can be turned on manually by pressing the button. This indicator is useful for locating a particular unit in a rack with multiple GVS9000 2XUs. A duplicate VTR identifier button and light are on the back panel.

USB 2.0 port

Provides a USB 2.0 connection on the front of the GVS9000 2XU. The enclosure lock must be unlocked for the GVS9000 2XU to recognize some devices connected to this port. (See “USB Specifications” for information about USB ports and connectors.)

Ethernet link lights

Two lights indicate whether the GVS9000 2XU is connected to an Ethernet network. Each light represents one of the two built-in Ethernet ports.

VTR activity lights

Two rows of eight lights indicate VTR activity. In a GVS9000 2XU with a single processor, the rows of VTR activity lights operate in sync; in a dual-processor GVS9000 2XU, the rows of lights operate independently to show each processor’s activity. These lights also show the options in front panel mode; see “Entering Firmware Boot Commands From the VTR’s Front Panel” for details.

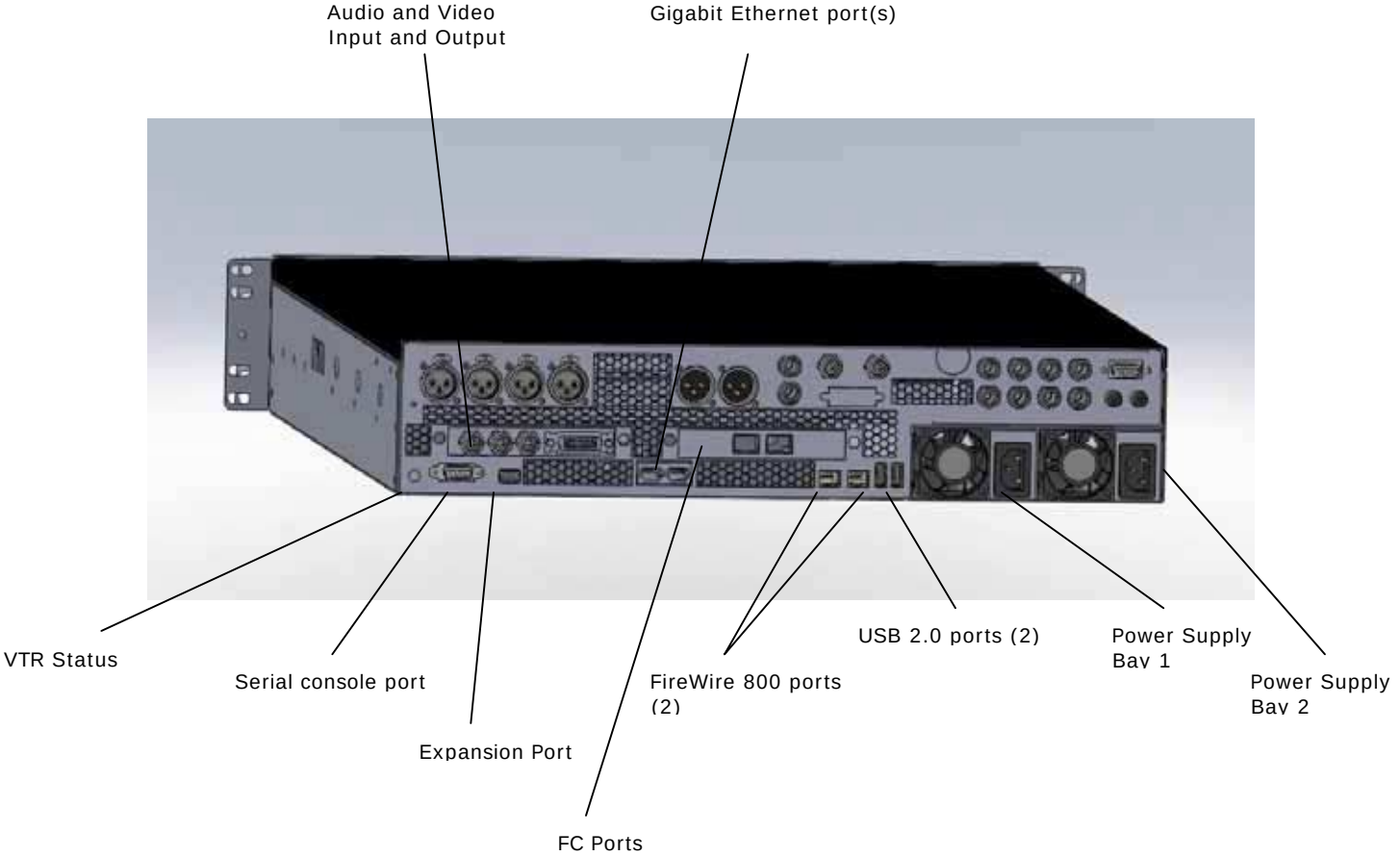
Optical drive

You can use the tray-load optical drive to add or reinstall software on the GVS9000 2XU.

Drive modules and lights

You can install up to four Serial ATA (SATA) drive modules in the GVS9000 2XU. These modules can be removed and installed while the GVS9000 2XU is running. (See “Installing or Replacing a GVS Drive Module” for more information.)

Your GVS9000 2XU at a Glance—Rear Panel



VTR identifier button and light

The VTR identifier light turns on if a problem is detected. It also can be turned on manually by pressing the button. This indicator is useful for locating a particular unit in a rack with multiple GVS9000 2XUs. A duplicate VTR identifier button and light are on the front panel.

Serial console port

Connect a serial device or computer with a serial port. This console supports RS-232– compatible connections.

Expansion port

You can connect special devices to the GVS9000 2XU using this port. The GVS9000 2XU comes with a VGA adapter cable. A DVI adapter is available separately.

Gigabit Ethernet ports

Connect your GVS9000 2XU to a high-speed Ethernet network using the two built-in Ethernet ports. Ethernet ports adjust automatically to the transmission speed supported by network components. A green light to the left of each port indicates whether that port is connected to an Ethernet network; a blue light to the right of each port indicates activity. Always connect an Ethernet cable to the lower port 1 (Rear right) first

FireWire 800 ports

Connect FireWire devices to the GVS9000 2XU. A FireWire 400 port is also located on the front panel. The enclosure lock must be unlocked for the GVS9000 2XU to recognize some devices connected to this port. (See “FireWire Specifications” on page 86 for information about FireWire ports and connectors.)

USB 2.0 ports

Connect USB devices, such as a keyboard or mouse. The enclosure lock must be unlocked for the GVS9000 2XU to recognize some devices connected to these ports.

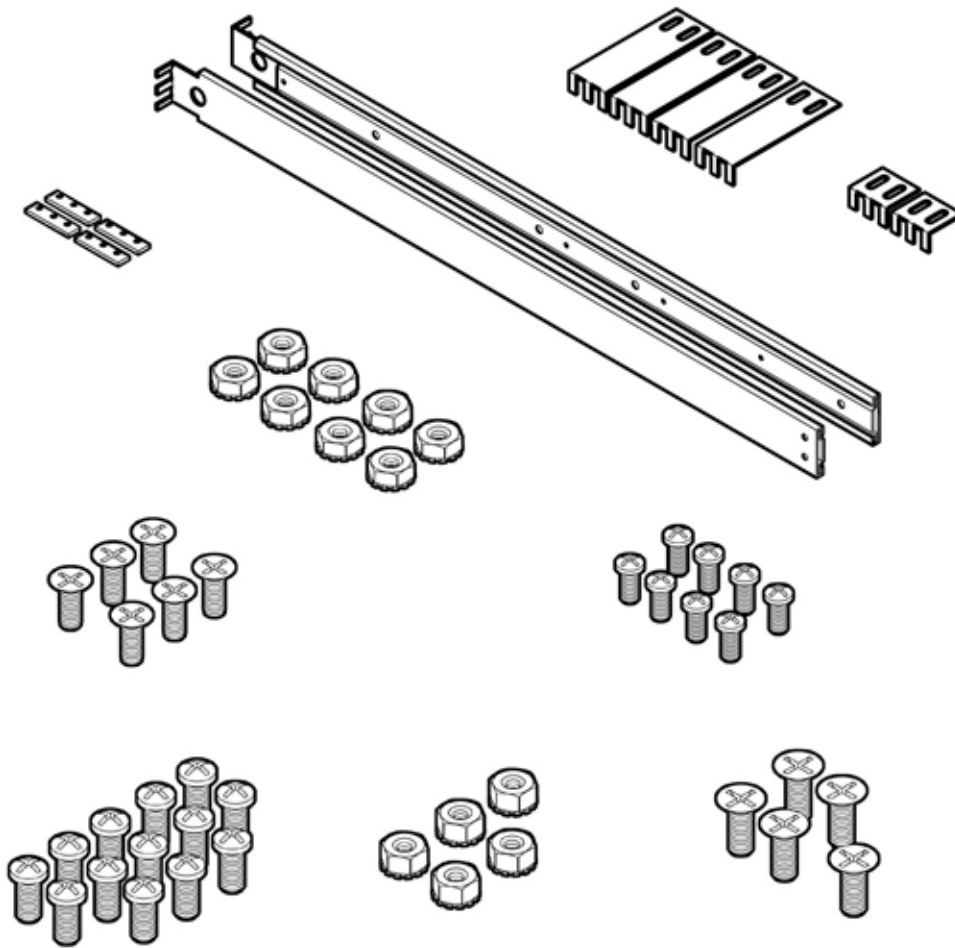
AV and FC slots

You have option of various AV connectors in the back of GVS9000 2XU. Slot 1 always contains AV interfaces and Slot 2 contains FC ports.

Power Supply Bay 1 and 2

A removable power supply for the GVS9000 2XU. You can install two power supplies for redundancy; either supply can take over the full load for the GVS9000 2XU if the other supply fails or is removed. The power cord connects here; it is held in place by a special clip so that it stays connected when the GVS9000 2XU is setup in the rack.

Your GVS9000 2XU at a Glance—Mounting Hardware



Short-rack brackets

These two brackets attach the back of the GVS9000 2XU to a short rack, 24 or 26 inches deep.

Long-rack brackets

These two brackets attach the back of the GVS9000 2XU to a long rack, 32 or 36 inches deep.

Screws and clips for attaching brackets and braces to the rack and GVS9000 2XU cover

Two sets of screws are provided; one set (English) is size 10-32; the other is metric size M5. Short screws are provided for mounting the VTR in a two-post rack or a short fourpost rack. Some clips are also included for use with racks that do not have prethreaded holes. See “Getting Ready to Install” on page 26 for more about the mounting hardware.

Preparing to Install Your GVS9000 2XU

Before you install the GVS9000 2XU in a rack, you should carefully consider the placement of the unit in its rack and several factors in the infrastructure that will keep the GVS9000 2XU operating efficiently.

Guidelines for GVS9000 2XU Installation

To ensure safe and smooth operation of your GVS9000 2XU, it's essential that you plan for proper location of the GVS9000 2XU in its rack, adequate power to the components in the rack, and the appropriate operating environment for the rack.

As you plan for GVS9000 2XU installation, follow these guidelines to ensure that the GVS9000 2XU and its environment are safely and appropriately positioned for efficient operation and service.

Choose the GVS9000 2XU's Position in a Rack

When determining the location for the GVS9000 2XU in a rack, be sure to allow adequate space for airflow and servicing from both the front and back.

- Air to cool the GVS9000 2XU flows from front to back. Do not cover the front or back of the GVS9000 2XU or any of the openings in the GVS9000 2XU's front and back panels and case.



- The GVS9000 2XU slides out of the rack from the front. Be sure to leave a minimum of 36 inches clear in front of the GVS9000 2XU to allow room to open and service it. To provide access to the GVS9000

2XU's back panel and cables, leave at least 24 inches clear behind the GVS9000 2XU.

- If you are installing multiple GVS9000 2XUs or other components in the rack, place the GVS9000 2XU so that you can easily open and service it. For example, in a multiplecomponent installation, the heaviest items—such as an uninterruptible power supply—are usually placed at or near the bottom of a rack; GVS9000 2XUs are often located near the middle of the rack.
- For a rack with multiple components, you may want to prepare a list of all equipment in the rack and the requirements for each unit. Such a list should include the following information:

Component	Power needed	Clear area front / back	Height in rack	Temperature range	Other
GVS9000 2XU 1					
GVS9000 2XU 2					
Storage					

Electrical Power

If you plan to install the GVS9000 2XU in a rack that contains other components, be sure that the circuitry and power connections are sufficient for the combined power needs of all components. To plan for safe and adequate power to the GVS9000 2XU, follow these guidelines:

- Check the documentation for all components in the rack to determine their power requirements. Also determine that the available power supply for the rack is sufficient for the planned components.
- If you need assistance in determining the power needs of the components in the rack, consult an electrical expert who is familiar with your facility.

Important: When planning for electrical power, make sure you have more power than specified for all components. Also make certain that the power load is distributed evenly among circuits to the rack's location. Consult an electrician or other expert if you need assistance with planning for the power needs of your components.

- Make sure that the power connections for the GVS9000 2XU and all other components are grounded (according to local and national standards). Consult an electrician if you need assistance with grounding.
- See Appendix A, "Specifications," for more information about electrical power requirements for the GVS9000 2XU.

- This model is certified only as a component for use with other equipment, where the suitability of the combination has been determined by a Nationally Recognized Testing Laboratory.

Operating Environment

The operating environment for the GVS9000 2XU's rack must meet certain requirements:

- Verify that the temperature range of the rack's location is within the limits established for the GVS9000 2XU and all other components.
- Make certain that the rack's location has adequate ventilation to maintain the necessary temperature range. This is particularly important for a rack that is enclosed in a cabinet.
- If multiple components are installed in the rack, consider additional cooling to ensure efficient operation of the GVS9000 2XUs and other equipment.

Rack Stability

The rack must be stable and strong enough to hold the components installed.

- Check the documentation for the rack to make certain that it can carry the load of components.
- Make certain that all components are secured in the rack.
- When working with components in the rack, never slide out more than one unit at a time.

Considerations for Cables

For optimal efficiency in GVS9000 2XU operation and maintenance, follow these guidelines for handling cables connected to the GVS9000 2XU and other components in a rack.

- Install the cable-management arm supplied with the GVS9000 2XU. If you don't install this device, you must disconnect all cables from the GVS9000 2XU's back panel before opening the GVS9000 2XU in the rack.
- Arrange all component cables so that they do not interfere with access to the rack. Ideally each component should have a cable-management option in place so that anyone servicing units in the rack can readily determine where each cable is connected.
- To ensure full signal strength for Ethernet, serial, and other connections, make sure cables do not exceed established length limits.

Security

Whatever the location of the GVS9000 2XU and rack, it should be secure.

- Make sure that only authorized staff members or technicians can gain access to the rack's location.
- If using a GVS9000 2XU cabinet that is not in a secure room, be sure that the cabinet is adequately locked and that access to it is limited to authorized staff.
- Develop a plan for distributing and controlling keys to the GVS9000 2XU environment and access codes that allow others to manage GVS9000 2XUs over the network. Keep the plan updated with names of key staff and relevant emergency information and procedures.
- Store a copy of essential GVS9000 2XU access information in a safe location away from the GVS9000 2XU site.

Installing Your GVS9000 2XU in a Rack

This chapter shows you how to install the GVS9000 2XU in a rack.

GVS9000 2XU is specifically designed for rack mounting. It is not designed for use as a desktop VTR.

Warning: Do not place a monitor on the GVS9000 2XU or use the top of the GVS9000 2XU as a shelf in the rack. Any weight on the GVS9000 2XU's enclosure could damage the components inside.

You can install the GVS9000 2XU in several types of racks, including:

- Open four-post rack, 19 inches wide and 24 or 26 inches deep.
- Cabinet with four-post rack inside, 19 inches wide and up to 28 inches deep.

The GVS9000 2XU is 3.5 inches (2XU) high.

Important: Any rack used for GVS9000 2XU should meet the specifications of the American National Standards Institute (ANSI)/Electronic Industries Association (EIA) standard ANSI/EIA-310-D-92, International Electrotechnical Commission (IEC) 297, and Deutsche Industrie Norm (DIN) 41494. See the documentation for the rack to determine whether it is compatible with these standards.

The brackets and screws necessary to attach the GVS9000 2XU to any of these racks are included with your GVS9000 2XU, along with some extra screws of each type. You need to supply medium-sized (such as size 1) and very small (size 0) Phillips screwdrivers for the installation.

Getting Ready to Install

As noted previously, you can install the GVS9000 2XU in a four-post rack of varying depth or a two-post rack. Instructions for these procedures are given below. Preparations for installing are the same regardless of the type of rack you use.

Important: Check the documentation for your rack for any special requirements.

Before beginning work with the GVS9000 2XU and rack, make the following preparations.

- If possible, arrange to work with another person as you prepare the GVS9000 2XU and install it in a rack.
- Assemble the tools, brackets, and connectors you'll need for the installation. (Everything except the screwdrivers is provided with the GVS9000 2XU.)
- A medium-sized Phillips screwdriver (such as size 1). If you have a power screwdriver, use it.
- A very small Phillips screwdriver (such as size 0, needed for a four-post rack if you are attaching the cable-management arm).
- For a four-post rack that is between 29 and 36 inches deep, you'll use two small brackets (each has two rivets), two long U-shaped braces, and eight attachment screws. Also get the cable-management arm and the two screws to attach it to the GVS9000 2XU.
- For a four-post rack that is 24 or 26 inches deep, you'll use two small brackets (each with one post), four attachment screws, and two short screws.
- For a two-post rack, you'll use two L-shaped brackets, four attachment screws, and four short screws.

Note: Two sets of screws are provided with the GVS9000 2XU. One set (English) is size 10-32; the other set is size M5 metric and fits racks with metric holes. Check the documentation for your rack and use the appropriate set of screws; most racks use one of the two sizes. If screws are provided with your rack, you can use those as well.

- To measure and mark the position of the GVS9000 2XU in the rack, you may want to use a straightedge, such as a yardstick. You'll also need a pen or pencil and some masking tape or similar tape.
- Clear a table, cart, or other flat surface near the rack. You'll need to put the GVS9000 2XU on it temporarily during installation, and you can use it to lay out the brackets and screws you'll use to attach the GVS9000 2XU to the rack.

Determine the Position for the GVS9000 2XU in the Rack

Review the guidelines for positioning the GVS9000 2XU in the rack (see “Guidelines for GVS9000 2XU Installation”). Then follow these steps to measure and mark its specific location.

- 1 Determine the exact position where you want to attach the GVS9000 2XU and mark it on one side of the rack.

Some racks have marks at regular intervals (such as 1U) to aid in positioning a GVS9000 2XU; others may provide a template to help place the GVS9000 2XU in the rack. If your rack does not have such aids, measure or count holes from an established point.

The distance between holes may vary somewhat on racks made by different manufacturers.

- 2 Use the mounting template or a straightedge to mark the same spot on the other side of the rack.

You can put a pencil mark or a piece of tape on each side of the rack to mark the correct spot.

Identify the appropriate holes in all mounting posts before you install the GVS9000 2XU so that it is mounted level.



For a four-post rack, measure and mark the posts at the front and back.

- 3 To verify that the position is correct, measure 3.5 inches (the GVS9000 2XU's height) down from the hole you've marked on the rack.

Preparing the GVS9000 2XU for Installation

If possible, work with another person as you prepare and install the GVS9000 2XU in a rack.

Follow these steps to prepare the GVS9000 2XU hardware for installation.

- 1 Unpack the GVS9000 2XU from its box and place it on the table.

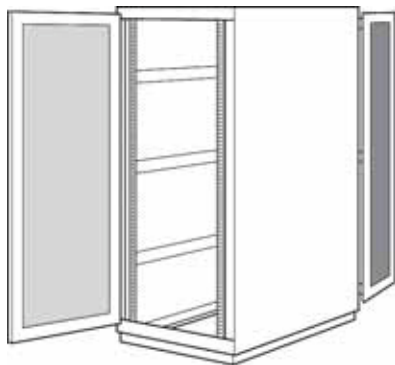


When you've installed optional items, you're ready to connect the GVS9000 2XU to the rack.

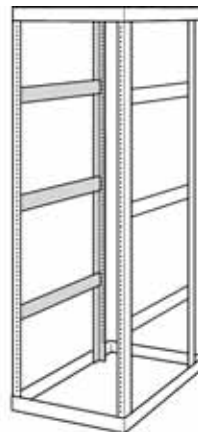
Installing the GVS9000 2XU in a Four-Post Rack or Cabinet

A four-post rack can be open or enclosed in a cabinet. Examples of both racks are shown below. You follow the same steps to attach the GVS9000 2XU to either of these racks. For a cabinet, however, you may have to remove the door before installing the GVS9000 2XU.

Important: Be sure to check the documentation for your rack for any specific mounting instructions.



Four-post cabinet rack



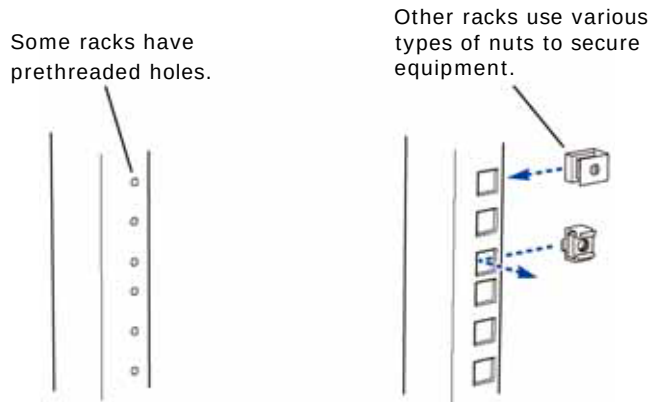
Four-post open rack

Once you've marked the exact position for the GVS9000 2XU on the rack, you're ready to attach the GVS9000 2XU. Here is an overview of the procedure.

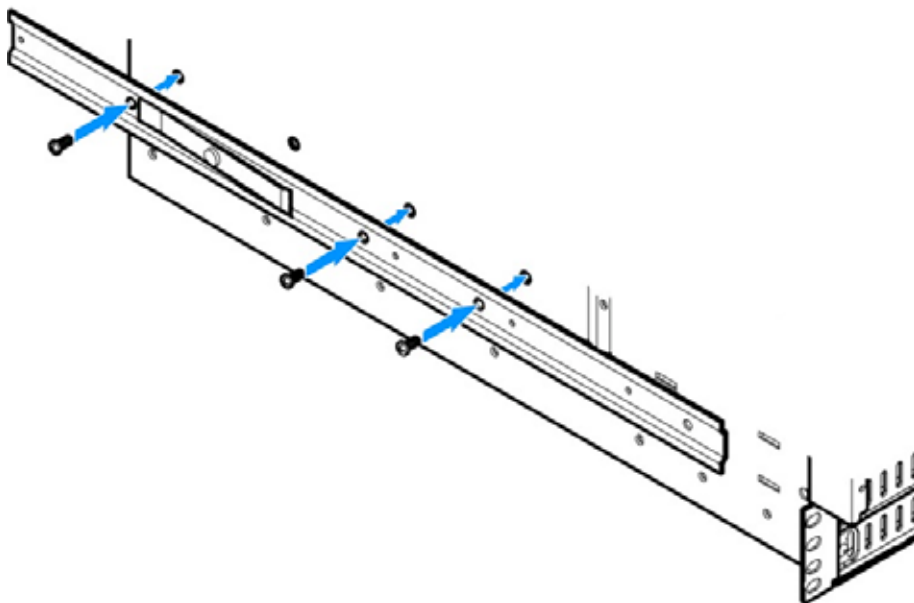
- Assemble the rear mounting hardware.
- Connect the rear mounting hardware to the GVS9000 2XU enclosure.
- Slide the GVS9000 2XU into the rear mounting rails and secure it.
- Connect the front ears to the rack.
- Install the cable-management arm.

Follow these steps to attach the GVS9000 2XU to the rack.

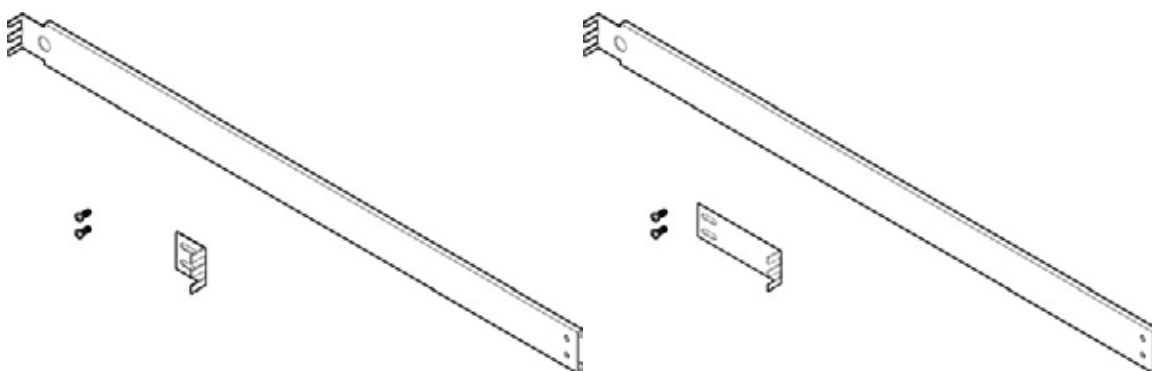
Some racks have prethreaded holes and some have square holes that take clips with attached nuts. You may need to insert a clip into the appropriate hole before attaching the screw. Several of these clips, also called “cage nuts,” are included with the mounting hardware.



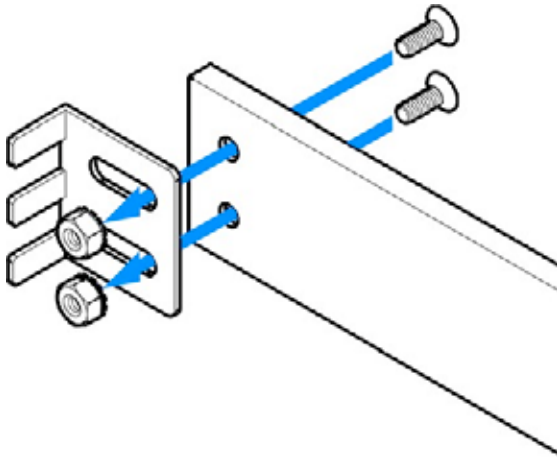
- 1 Remove Chassis Sections (inner members) from slides.
- 2 Remove hardware kit (not containing mounting brackets) from box, and attach the Chassis Sections firmly to the device to be extended.



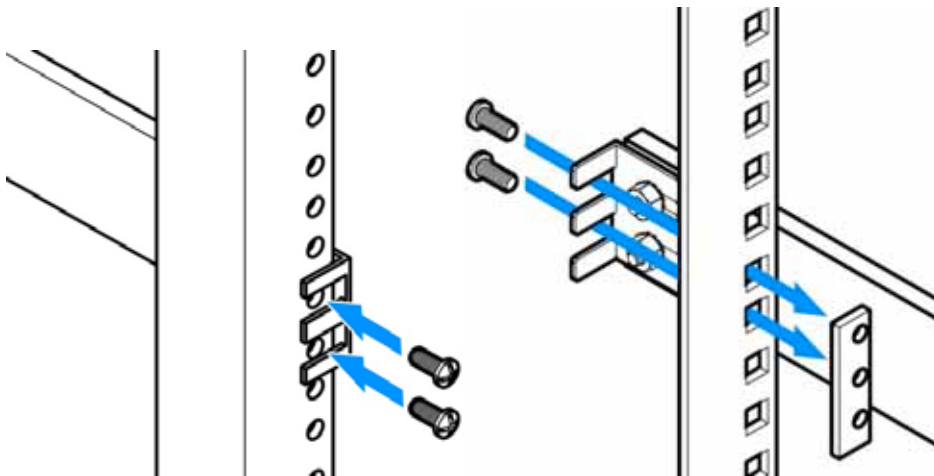
- 3** Attach rear mounting brackets to the rear of the Stationary (non-moving) Sections using hardware supplied, tightening screws finger tight. Use short ear extensions for short racks and long extensions for deeper ones.



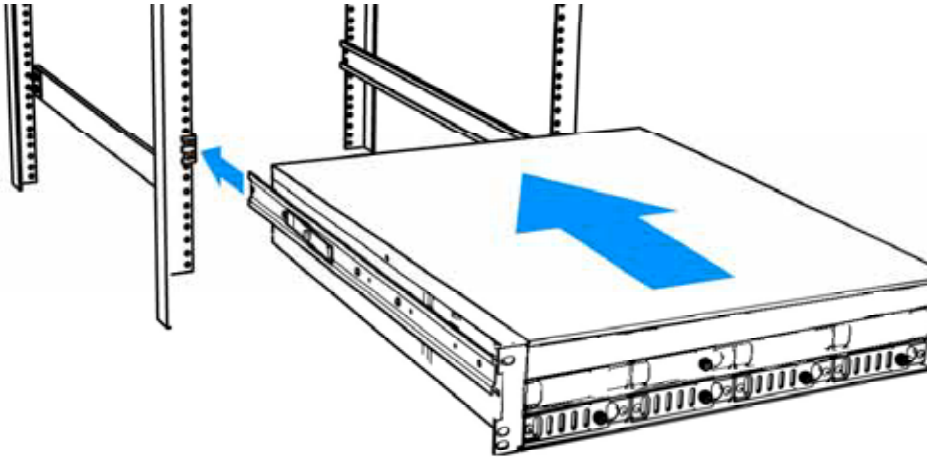
- 4** Attach above assembly to mounting surfaces using remaining hardware, tightening screws finger tight..



5 Make sure slides are level and parallel.



- 6 Pull the Intermediate Sections (center moving member) out of the Stationary Sections until they are locked in the extended position.
- 7 Insert Chassis Sections into extended Intermediate Sections and push until slide becomes locked (about 3").
- 8 Depress stop assembly buttons on the outside of each slide, releasing the slide to close, and close completely.



Note: Extend slide fully and close, then extend it again and close it fully. This is to allow the slide to self align.

- 9 Tighten all previously finger-tightened screws.
- 10 To further secure the GVS9000 2XU and prevent removal of the drive modules, use the enclosure key (supplied with the GVS9000 2XU) to fasten the security locks on the front panel. (See the illustration below.)



- 11** If you've installed the GVS9000 2XU in a cabinet, replace and close the cabinet door.

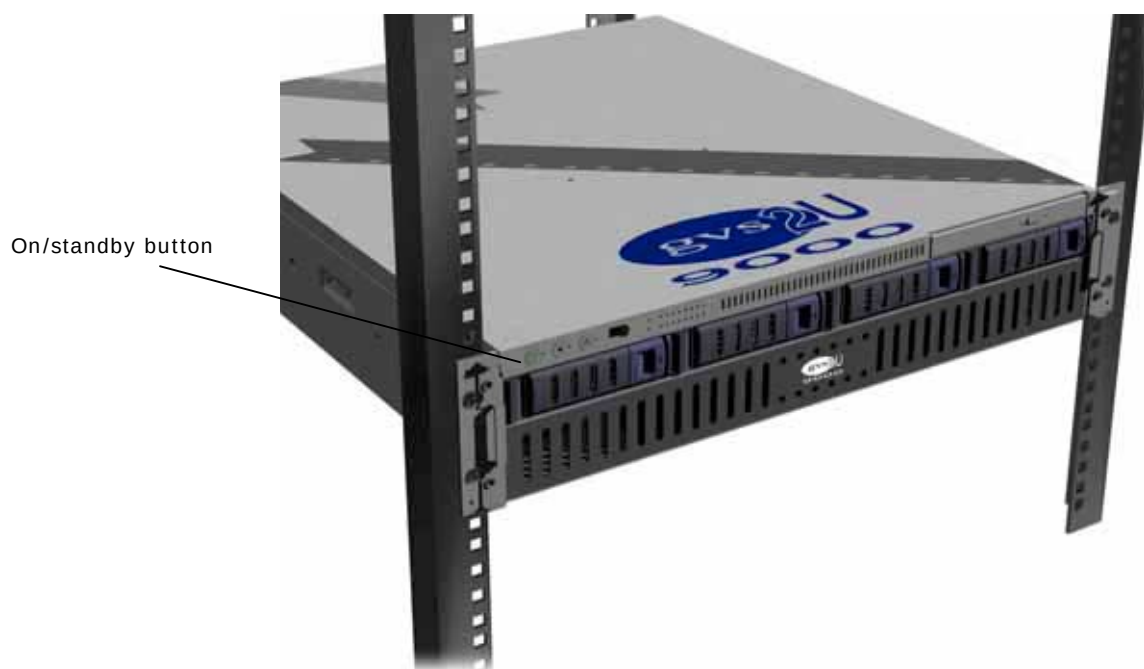
Using Your GVS9000 2XU

After you have connected the cables and peripheral devices you plan to use with your GVS9000 2XU, you can turn it on and set up the software and network services.

Starting Up the GVS9000 2XU

Press the on/standby button at the left side of the GVS9000 2XU's front panel to turn it on.

The power indicator light turns on and the GVS9000 2XU starts up. Status lights on the front panel indicate network connection, VTR activity, and drive module use.



Monitoring Status Lights and Other Indicators on the GVS9000 2XU

The GVS9000 2XU has a number of built-in sensors that detect and report essential operating factors, such as power, temperature, and condition of several key components. You can monitor the GVS9000 2XU's operation using the lights on the unit or using the remote monitoring tools.

Indicator	Color	Description
Power	White	On and OK
Security lock	Yellow	Lock is engaged. When the enclosure is locked (the light is on), the GVS9000 2XU may not recognize peripheral devices such as a keyboard and mouse or a storage device. Unlock the lock to use those devices. See "Controlling Access to a Connected Keyboard and Mouse" on page 59 for information about a software control related to the lock.
VTR identifier	Yellow	There is an alarm condition in the GVS9000 2XU or someone has turned on the light manually; check the GVS9000 2XU monitoring application for more information.
Ethernet (lower is port 1; upper is port)	Green Blue (on back panel only)	Link good (network sends and receives) Activity
VTR activity	Blue	Two rows of eight LEDs; in a GVS9000 2XU with one processor, rows of lights work in tandem; in a dual-processor GVS9000 2XU, rows operate independently for each processor.
Drive module (upper LED)	Green Yellow Red	Powered and running Warning condition Problem or failure
Drive module (lower LED)	No light Blinking blue	Drive module can be removed. Disk activity; do not remove drive module. Be sure to unmount a drive before removing that drive module from the GVS9000 2XU. See "Installing or Replacing an GVS Drive Module" on page 70 for details.

The GVS9000 2XU's status lights are listed in the table below.

5

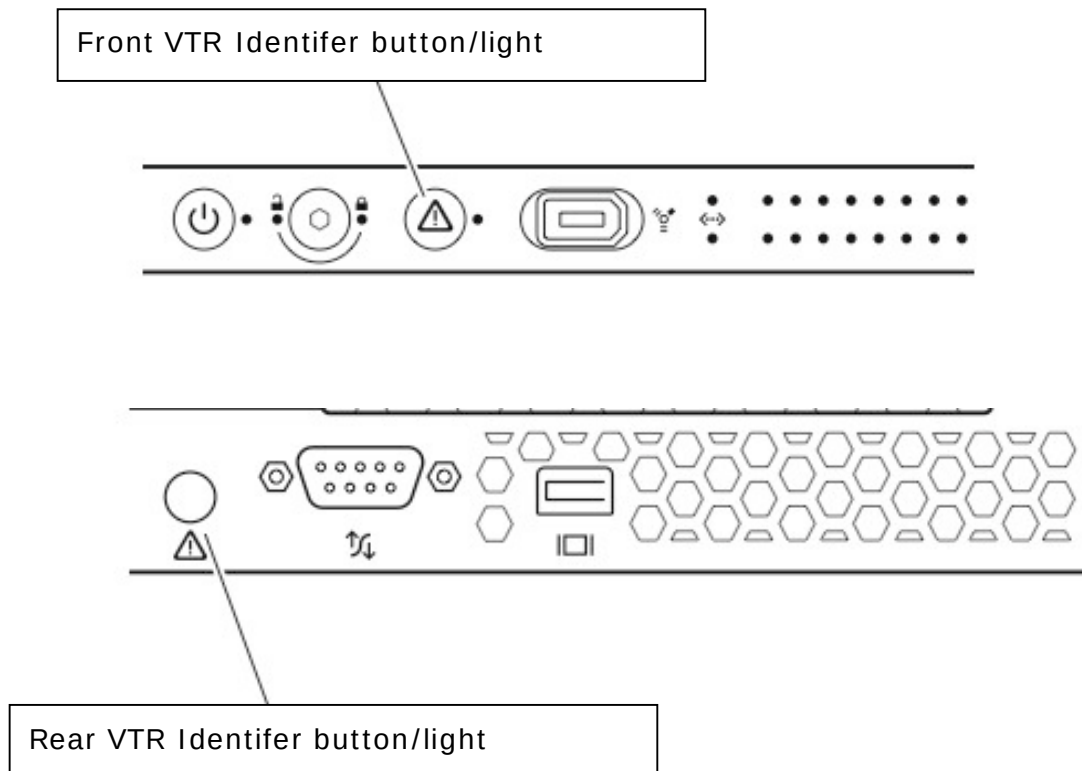
Monitoring the GVS9000 2XU

You can check the status of the GVS9000 2XU whether you're nearby or in a remote location.

This chapter shows how to check whether the GVS9000 2XU is operating normally, how to get details if the GVS9000 2XU detects a problem, how to interpret the hardware status lights, and how to monitor conditions such as the various internal temperatures and power supply voltages.

Identifying the GVS9000 2XU in a Rack

If you have several GVS9000 2XU VTRs in a rack, you can use the VTR identifier lights to identify and flag a particular GVS9000 2XU. The light can help you return to the right server when you walk around to the other side of the rack. You can also turn on the VTR identifier light from the GVS Monitor application so you can find the GVS9000 2XU in the rack.



To turn the VTR identifier light on or off at the GVS9000 2XU:

- Press the VTR identifier button on either the front or back panel.

To turn on the VTR identifier light remotely:

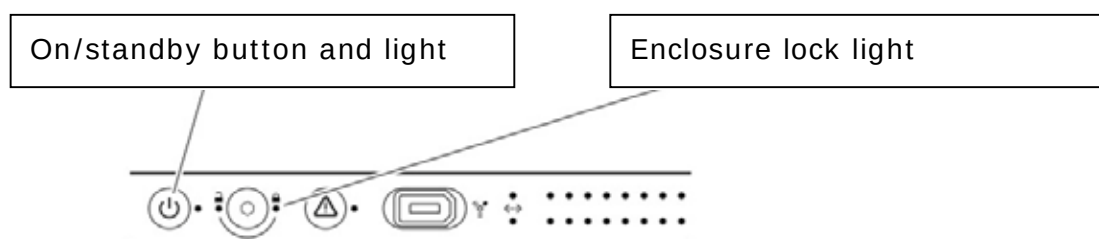
- Open GVS Monitor, choose the GVS9000 2XU in the list, and click the “VTR identifier light” button.

Interpreting the GVS9000 2XU Status Lights

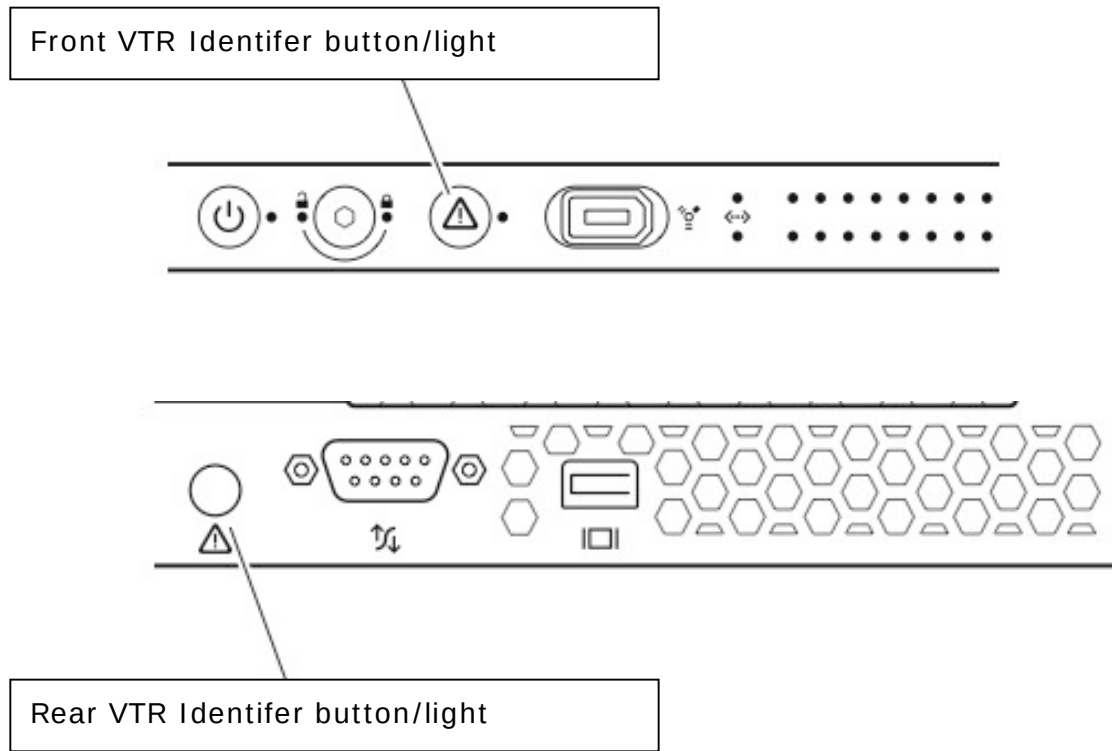
You can check the overall status of the GVS9000 2XU and the status of some components such as drive modules, network interfaces, and power supplies, just by glancing at the indicator lights on the GVS9000 2XU.

Indicator light	Color	Indicates
Power (front panel)	White	The GVS9000 2XU is turned on.
	White Pulsing	The GVS9000 2XU is in sleep.
Enclosure lock	Yellow	The lock is engaged. When the enclosure is locked (the light is on), the GVS9000 2XU might not recognize a keyboard, mouse, or hot-pluggable storage device, depending on a security preference. For information, see “Controlling a Keyboard and Mouse” on page 19.

Overall GVS9000 2XU Status



VTR Identifier



Indicator light	Color	Indicates
VTR Identifier	Yellow Flashing	The GVS9000 2XU has detected an alarm condition. Open GVS Monitor for detailed information.
	Yellow	The identifier light has been turned on manually using GVS Monitor or by someone pressing the front or rear VTR identifier button.

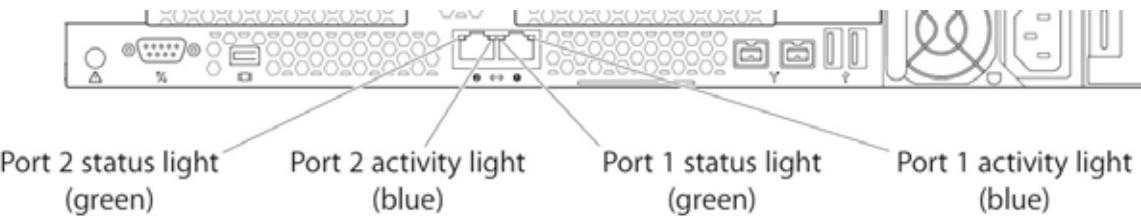
Processor Activity



Indicator light	Color	Indicates
VTR Activity	Blue Intermittent	Processor activity and load. Each row is divided in half, with four lights representing each of the four processor cores.

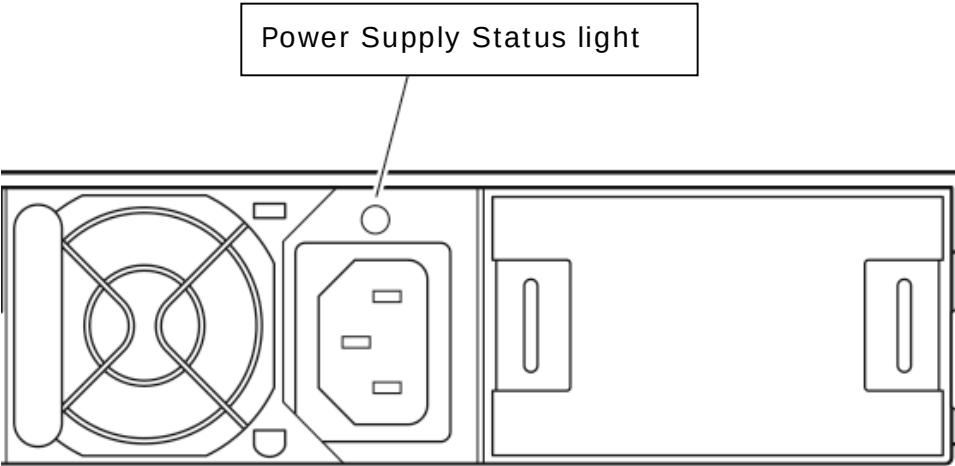
Ethernet Link Status

Ethernet link light (Port 2) Ethernet link light (Port 1)



Indicator light	Color	Indicates
Ethernet link status (Front Panel)	Green	The cable is connected and the link is good (the GVS9000 2XU can send and receive). The lower light is for port 1, the upper for port 2.
Ethernet link status (on rear connector)	Green	The link is good (the GVS9000 2XU can send and receive).
Ethernet activity (on rear connector)	Blue Intermittent	The link is active. The light is on while data is being transferred.

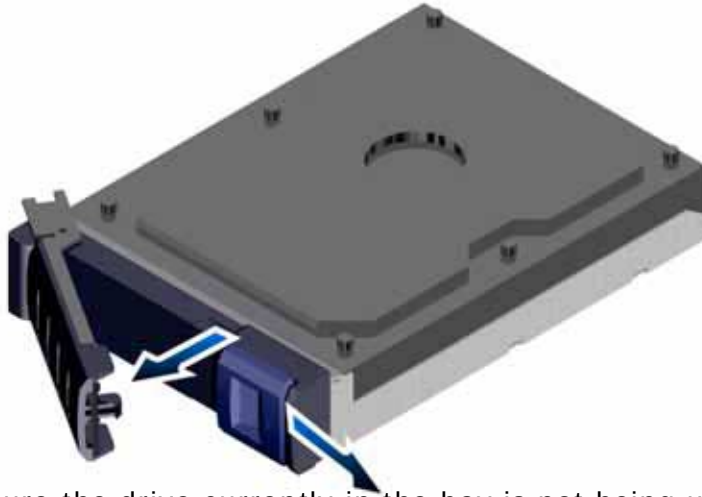
Power Supply Status



Indicator light	Color	Indicates
Power Supply (rear panel, on power supply)	Green	AC power is available and the supply is providing DC power to the GVS9000 2XU components. The GVS9000 2XU is turned on.
	Green blinking	AC power is available but power to GVS9000 2XU components from this supply is on standby (usually because the GVS9000 2XU is turned off).
	Red	No AC power is available to this supply from the power cord or this power supply has failed. The other power supply is providing power for the GVS9000 2XU.

Follow these steps to install or replace a drive module.

- 1** If necessary, use the enclosure key to unlock the security locks on the GVS9000 2XU's front panel.
- 2** Remove the empty drive module or the drive currently installed.
 - If there is no drive installed, press the button on the front of the blank drive module so that the handle pops out.
 - If there is a drive module already in the bay:



- a** Make sure the drive currently in the bay is not being used by any application and that the drive is not being shared by the GVS9000 2XU. (See the OS X GVS9000 2XU documentation for information about shared drives.)
- b** Unmount the drive by using the GVS9000 2XU's command-line tools or by dragging the drive's icon to the Trash (if the GVS9000 2XU has a monitor and keyboard connected).

- c Press the button on the front of the drive module so that the handle pops out.
- d Wait for the disk light to go off, then grasp the handle and pull the drive module out of its bay and set it aside.

Pull the GVS9000 2XU drive module out of the GVS9000 2XU.



- 3 Press to open the handle of the replacement drive module and slide the module into the empty bay until it is firmly seated.



Insert the drive module into the open bay and push on the handle until the module is firmly seated and the handle latches into position.

- 4 Press the handle so that it is flush with the front panel.



Appendix A

Specifications

Video and Audio Specifications

Formats

525i 29.97

625i 25

720p 59.94

720p 60

1080i 25

1080i 29.97

1080i 50

1080psf 23.98

1080psf 24

Codecs

PhotoJPEG, Data rate: approximately 1-3 MB/second standard definition or high definition

DV (DV25), Data rate: 3.13 MB/second (megabyte/second) standard definition only

DV50, Data rate: 6.26 MB/second standard definition only

DVCPRO HD, Data rate: 12 MB/second high definition

HDV, Data rate: 19 MB/second high definition 720p, 25 MB/second high definition 1080i

ProRes 422 & ProRes 422 HQ (SD or HD), Data rate: 145 MB/second for ProRes 422, 220 MB/second for ProRes 422 HQ

Uncompressed 8-bit, Data rate: 21 MB/second standard definition, or 100-124 MB/second high definition

Uncompressed 10-bit, Data rate: 28 MB/second standard definition, or 133-166 MB/second high definition

Video Input

Digital: 8 or 10 bit HD-SDI/SDI, SMPTE-259/292/296, Dual-rate

Analog:

Composite/S-Video (Y/C): NTSC, NTSCJ, PAL

12 bit A/D, 2x oversampling

3 line adaptive comb filter decoding

+/- .25 db to 5.0 MHz Y Frequency Response

+/- .25 db to 1 MHz C Frequency Response

.5% 2T pulse response

< 1.5% Diff Phase

< 1.5% Diff Gain

Component: SMPTE/EBU N10, Betacam 525 line, Betacam 525J, RGB

12 bit A/D, 2x oversampling

+/- .25 db to 5.5 MHz Y Frequency Response

+/- .25 db to 2.5 MHz C Frequency Response

.5% 2T pulse response

<2 ns Y/C delay inequity

Video Output

Digital: SD-SDI, SMPTE, 259M, 8 or 10-bits, BNC

HD-SDI SMPTE, 292/296, 8 or 10-bits, BNC

Analog:

Composite/S Video: NTSC, NTSCJ, PAL

12 bit D/A, 8x oversampling

+/- .2 db to 5 MHz Y Frequency Response

+/- .2 db to 1 MHz C Frequency Response

.5% 2T pulse response

< 1% Diff Phase

< 1% Diff Gain

SD Component: SMPTE/EBU N10, Betacam 525 line,

Betacam 525J, RGB

12 bit D/A, 8x oversampling

+/- .2 db to 5.5 MHz Y Frequency Response

+/- .2 db to 2.5 MHz C Frequency Response

.5% 2T pulse response

<1 ns Y/C delay inequity

Analog SD and HD Output, 12-bits, BNC

HD: YPbPr, RGB

SD: YPbPr, RGB (component mode)

Composite/YC (composite mode)

Audio Input

Digital: 2-channel 24 bit AES/EBU, 48KHz sample rate

Synchronous or Non-synchronous (Internal sample rate conversion)

24 bit SMPTE-259 SDI embedded audio, 8-ch, 48kHz synchronous

Analog: 2-channel balanced input

+24dbu Full Scale Digital

24 bit A/D, 48 KHz sample rate

+/- 0.2db 20 to 20 KHz Frequency Response

Audio Output

Digital: 2-ch 24-bit AES/EBU, 48 KHz sample rate

24 bit SMPTE-259 SDI embedded audio, 8-ch, 48 KHz synchronous

Analog: 2-channel Balanced output (XLR)

+24dbu Full Scale Digital (0dbFS)

24 bit D/A, 48 KHz sample rate

+/- 0.2db 20 to 20 KHz Frequency Response

2-channel unbalanced output (RCA-jack)

Down-Conversion

Hardware: 10-bit output, 24-bit internal processing

Anamorphic: full-screen

Letterbox: image is reduced with black top and bottom added to image area with the aspect ratio preserved

Crop: image is cropped horizontally

Reference Input

Analog Color Black or HD Tri-level

2 BNCs, passive loop-through (can be connected to another VTR or terminated with a 75-ohm terminator)

LTC Input & Output

Input: Analog 1-Channel unbalanced audio input (BNC)

Output: Analog 1-Channel unbalanced audio output loop (BNC)

Machine Control

RS-422, Sony 9-pin D-connector pinout is as follows:

1.....GND
2.....RX-
3.....TX+
4.....GND
5.....No Connection
6.....GND
7.....RX+
8.....TX-
9.....GND
Shell.....GND

Operating Environment

- *Operating temperature:* 10° to 35° C (50° to 95° F)
- *Storage temperature:* -40° to 47° C (-40° to 116.6° F)
- *Relative humidity:* 5% to 95% (noncondensing)
- *Altitude:* 0 to 3048 meters (0 to 10,000 feet)

Optical Drive Specifications

- Slot-loading 8X dual-layer (DVD-RW/CD-RW)
- Disc dimensions supported: 12 cm (4.7 in.)

Ethernet Specifications

- IEEE 802.3 compliant
- *Maximum cable length:* 100 meters (m)
- *Connectors:* RJ-45 for 10Base-T, 100Base-TX, and 1000Base-T
- *Media, 10Base-T:* Category 3 or higher UTP on 2 pairs up to 100 m
- *Media, 100Base-TX:* Category 5 UTP on 2 pairs up to 100 m
- *Media, 1000Base-T:* Category 5 and 6 UTP on 4 pairs up to 100 m
- *Channel speeds:* IEEE Auto Negotiation of 10Base-T, 100Base-TX, and 1000Base-T

FireWire Specifications

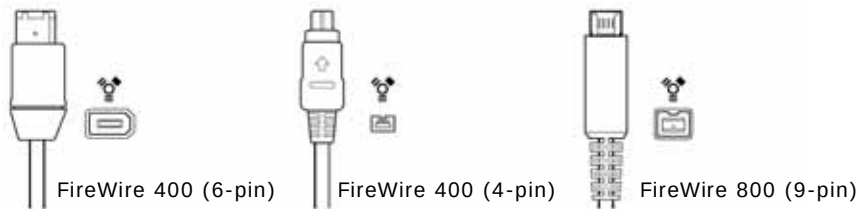
- *Data transfer speed:* 100, 200, 400, and up to 800 megabits per second (Only Two 800 Mbps ports available on back-panel)

Note: The FireWire 800 ports on your GVS9000 2XU VTR transfer data from 800 Mbps devices much faster than was possible before. These

ports have 9-pin connectors, and are compatible with original FireWire devices with 6-pin or 4-pin connectors.

With an appropriate cable, the new 9-pin ports work seamlessly with all FireWire devices. Cables are available for connecting a 9-pin port to 4-pin, 6-pin, and 9-pin devices.

- Cables with the three types of FireWire connectors



- Output voltage range: Approximately 12 to 30 V
- Output power range: Up to 15 W

USB Specifications

- Support for USB 2.0
- Two external Universal Serial Bus (USB) Type A ports
- Separate 480 megabit per second (Mbps) USB channel for each port
- 500 milliamperes (mA) at 5V available per port for a total of 1 amp (A)

Power Supply

One or two 750 Watt power supplies

- AC line input: 100–240 V alternating current (AC), single phase, 50–60 hertz (Hz)
- Maximum AC line current: 8A (100–120V) or 4A (200–240V). If two power supplies are installed, they split this load.