PROMISE®
TECHNOLOGY, INC.

VTRAK

J830s, J630s

Product Manual

Version 1.1

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Important data protection information

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This version of the *Product Manual* supersedes all previous versions.

Recommendations

In this *Product Manual*, the appearance of products made by other companies, including but not limited to software, servers, and disk drives, is for the purpose of illustration and explanation only. Promise Technology does not recommend, endorse, prefer, or support any product made by another manufacturer.

Contents

Chapter 3: Management, cont.

Chapter 1: Introduction to VTrak

This chapter covers the following topics:

Thank you for purchasing a Promise VTrak J830s or J630s external disk subsystem.

About This Manual

This *Product Manual* describes how to setup, use, and maintain the VTrak J830s or J630s subsystem. It also describes how to use the built-in command-line interface (CLI) software.

This manual refers to the VTrak in the following interchangeable terms:

- VTrak Subsystem
- VTrak Unit
- VTrak Enclosure

This manual includes a full table of contents, index, chapter task lists and numerous cross-references to help you find the specific information you are looking for.

Also included are four levels of notices:

Note

A *Note* provides helpful information such as hints or alternative ways of doing a task.

Important

An *Important* calls attention to an essential step or point required to complete a task. Important items include things often missed.

Caution

A *Caution* informs you of possible equipment damage or loss of data and how to avoid them.

Warning

A *Warning* notifies you of probable equipment damage or loss of data, or the possibility of physical injury, and how to avoid them.

VTrak Overview

The Promise VTrak J830s and J630s are optimized for organizations deploying cost-effective small-to-medium application clusters, disk-to-disk backup and midrange storage solutions.

Figure 1. VTrak J830s front view

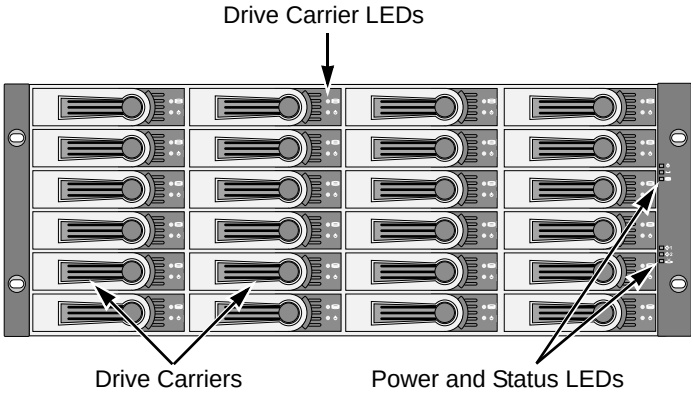
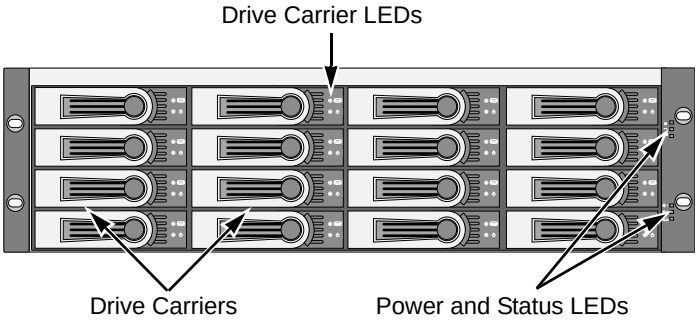


Figure 2. VTrak J630s front view



The dual 6Gb SAS host interface ports offer the ease of management and performance required by companies running popular departmental and back-office applications including file/print, e-mail, database and Web services.

Figure 3. VTrak J830s rear view

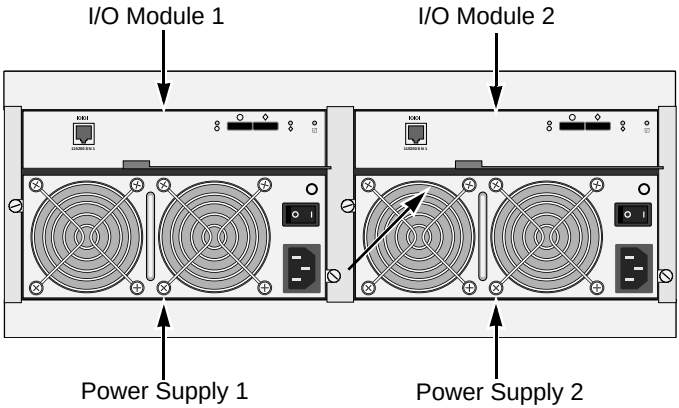
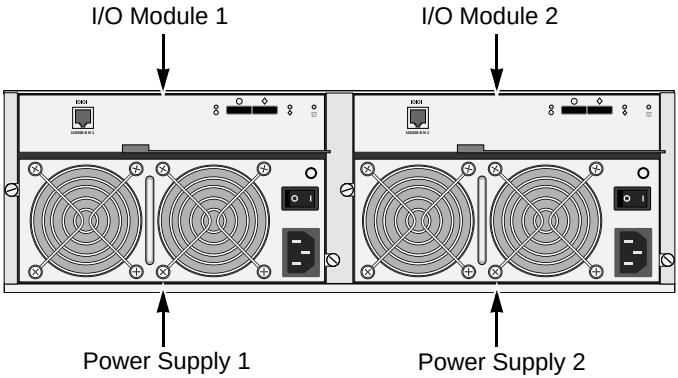


Figure 4. VTrak J630s rear view



The two external SAS ports provide the needed connectivity and bandwidth for large capacity solutions requiring multiple JBOD boxes cascaded together while still providing dual server support and host port failover or aggregation.

Architectural Description

The VTrak J830s packs up to 24 drives per system, offering industry-leading capacity in just 4U of standard 19-inch rack space. The VTrak J630s supports up to 16 drives per system, in just 3U of standard 19-inch rack space. The J830s and J630s unit's compact form factor maximizes density, increasing capacity per unit of rack space.

Multiple J830s and J630s systems can also be connected to the same server using standard SAS features to deliver massive storage to capacity hungry applications such as disk-to-disk backup, media archiving, video surveillance and compliance storage

Promise has designed the J830s and J630s chassis to be fully compatible with all future Promise external storage products. By using the same chassis, drive carriers, and cooling units, upgrading the RAID controllers and JBOD modules is fast and simple.

With the VTrak J830s and J630s, Promise has dramatically narrowed the gap between simple fault tolerance and *No Single Point of Failure*. The VTrak J830s and J630s use a fully redundant, hot-swappable design and continuously monitors all system components. It can withstand failures to disks, power supplies, and I/O modules without interrupting system operation.

Features and Benefits

Feature	Benefit
4U or 3U 19-inch wide enclosure	Installs easily in any standard rackmount.
Supports Serial Attached SCSI disk drives	Allows you to use the new dual-port SAS disk drives.
Supports Serial ATA disk drives	Allows you to use your legacy SATA disk drives.
Hot-swap feature for drive carriers, I/O modules, and power supplies	Allows a defective component to be replaced without interrupting data accessibility to the host system.
Supports SBB 2.0 standard	Allows controller inter-connectability with controllers of the same capacity from other manufacturers.
Tool-less field-replaceable units (FRUs)	All FRUs can be replaced without tools, saving time and effort for support personnel.
Complete cable-less design	All components easily plug directly into boards. No cables to complicate setup or maintenance.
Redundant, hot-swappable power supplies	Load sharing and full operation even with a failed power supply.
Dual, active/active I/O Modules	High level of availability even with a failed I/O module.
Two SAS ports per I/O module	Enables host access or cascading JBOD subsystems.
Command-line interface	Control and monitoring with simple, straightforward interface.
Management through in-band SAS or serial port	Choice of local or network management options
Compatible with leading SAS HBA and RAID cards	Works the first time with all major SAS HBA or RAID adapters

Specifications

Drives and Ports

Drive Bay Count: J830s, 24 drives. J630s, 16 drives.

Supported Disk Drive Interfaces:

Serial Attached SCSI (SAS), 6Gb/s and 3Gb/s

Serial ATA (SATA), 3Gb/s and 1.5Gb/s

External I/O Ports: SAS host port and SAS expansion port.

Operating System Support

- Windows Vista, Business, Enterprise, or Ultimate
- Windows 2008 Server
- Windows 2003 Server
- Windows XP Professional
- Windows 2000
- RedHat Linux
- SuSE Linux

The list above refers to both 32-bit and 64-bit versions of the OS in the Host PC or server. The actual OS support depends upon your SAS HBA or RAID adapter. Check your SAS HBA or RAID adapter user documentation.

Power

VTrak Model	Input Voltage	Current	Power Consumption	Thermal Output
J830s	110V	4.206A	458W	1563.1 BTU/Hr
	220V	2.128A	450W	1535.8 BTU/Hr
J630s	110V	2.972A	326W	1112.6 BTU/Hr
	220V	1.756A	372W	1269.6 BTU/Hr
All figures include disk drives.				

Power Supply:

J830s, Dual 750W, 100–240 VAC auto-ranging, 50–60 Hz, dual hot swap and redundant with PFC, N+1 design.

J630s, Dual 580W, 100–240 VAC auto-ranging, 50–60 Hz, dual hot swap and redundant with PFC, N+1 design.

Environmental

Operating Temperature: 10° to 40°C (10° to 35°C recommended for SAS drives)

Non-operating Temperature: -40° to 60°C

Operating Humidity: 8% to 80% non-condensing.

Non-operating Humidity: 8% to 95% non-condensing

Operating Vibration: 0.3g (0 to peak), swept sine, 5 to 500Hz, ½ octave per minute.

Non-operating Vibration: 1g (0 to peak), swept sine, 5 to 500Hz, ½ octave per minute.

Operating Shock: 5g amplitude, 11ms duration.

Non-operating Shock: 10g amplitude, 11ms duration.

Altitude: 0 to 2100 m (7000 ft) or 0 to 3000 m (10,000 ft) at less than 35°C

Acoustics: 50 decibels, A-weighted (sound pressure) with fans operating at low speed.

Dimensions

Enclosure (height x width x depth):

J830s, 13.1 x 44.7 x 56.1 cm (5.2 x 17.6 x 22.1 in)

J630s, 8.8 x 44.7 x 56.1 cm (3.5 x 17.6 x 22.1 in)

Note

At the time of this writing, weight information was still preliminary.

Net Weight:

J830s, 30.5 kg (67.2 lb) without drives, 38.5 kg (84.9 lb) with 24 drives, assuming 0.5 kg (1.1 lb) per drive.

J630s, 26.5 kg (58.4 lb) without drives, 32.5 kg (71.7 lb) with 16 drives, assuming 0.5 kg (1.1 lb) per drive.

Gross Weight (including carton):

J830s, 37.5 kg (82.7 lb) without drives.

J630s, 33.0 kg (72.8 lb) without drives.

Safety Standards

UL1950, EN60950, CSA 950; BSMI, VCCi, cUL, TUV, MIC

Warranty and Support

Warranty: Three years complete system limited warranty.

Support: 24x7 email and phone support (English only). 24x7 access to Promise support site to download firmware, utilities, and manuals; to obtain compatibility information and knowledge bulletins.

CE Statement

Warning: This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

GOST-R Statement

Предупреждение. Данный продукт относится к классу A. В домашних условиях он может быть причиной возникновения радиопомех, в этом случае пользователю, возможно, потребуется принять соответствующие меры.

IRAM Statement

Advertencia: Este es un producto de clase A. En un ambiente doméstico, este producto puede causar interferencia de las ondas de radio, en cuyo caso se podría requerir que el usuario tome las medidas adecuadas.

KCC Statement

A 급 기기 (업무용 방송통신기기)

이 기기는 업무용(A 급)으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이점을 주의하시 기 바라며, 가정 외의 지역에서 사용하는 것을 목적으로 합니다.

Chapter 2: Installation

Please read through these instructions completely before you begin. You might need additional items to complete your installation.

Unpacking the VTrak

The VTrak J830s or J630s box contains the following items:

- VTrak Unit
- *Quick Start Guide*
- RJ11-to-DB9 serial data cables (2)
- 1.0m (3.3 ft) SFF-8088 4X to 4X external SAS cable
  Dual-controller models, 2
  Single-controller models, 1
- Screws for disk drives
  (J830s: 106, including 10 spares)
  (J630s: 70, including 6 spares)
- Left and right mounting rails
- 1.5m (4.9 ft) Power cords (2)
- CD with *Product Manual* and *Quick Start Guide*

Warning

The electronic components within the VTrak are sensitive to damage from Electro-Static Discharge (ESD). Observe appropriate precautions at all times when handling the VTrak or its subassemblies.

Caution

VTrak supports disk drive hot-swapping. To avoid hand contact with an electrical hazard, do not remove more than one drive carrier a time.

Notices

Warning to User: This is Class A ITE product which might cause radio frequency interference if it is used in a residential environment. In such case, the user would be requested to adopt certain appropriate measures.

A 급 기기 (업무용 방송통신기기)

이 기기는 업무용(A 급)으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이점을 주의하시 기 바라며, 가정 외의 지역에서 사용하는 것을 목적으로 합니다.

Figure 1. VTrak J630s front view. The J830s is similar

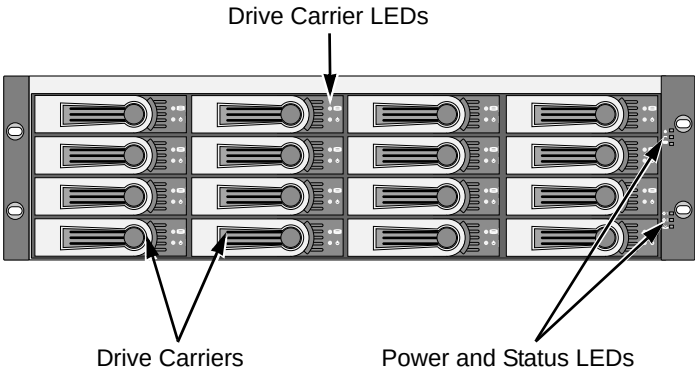
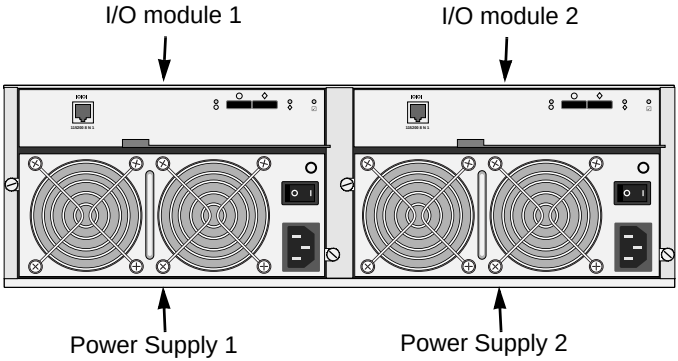


Figure 2. VTrak J630s rear view. The J830s is similar



Mounting the VTrak in a Rack

Cautions

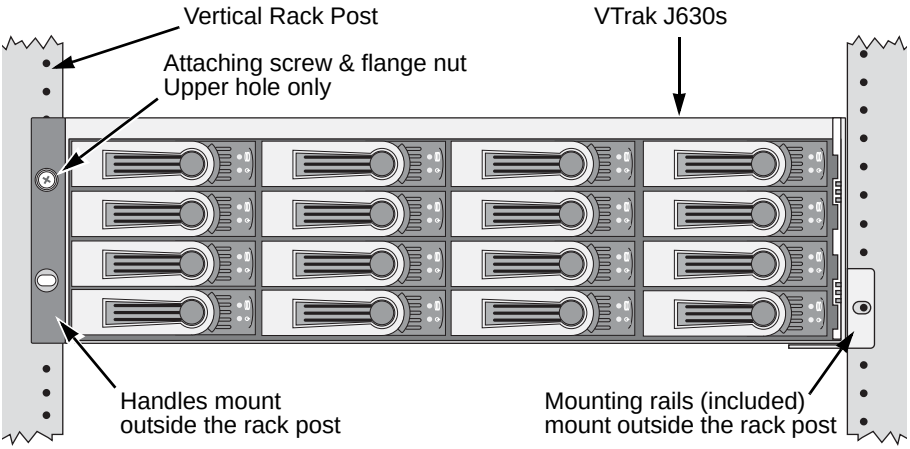
- At least two persons are required to safely lift, place, and attach the VTrak unit into a rack system.
- Do not lift or move the VTrak unit by the handles, power supplies or the controller units. Hold the subsystem itself.
- Do not install the VTrak unit into a rack without rails to support the subsystem.
- Only a qualified technician who is familiar with the installation procedure should mount and install the VTrak unit.
- Be sure all switches are OFF before installing the VTrak unit or exchanging components.
- Mount the rails to the rack using the appropriate screws and flange nuts, fully tightened, at each end of the rail.
- Do not load the rails unless they are installed with screws as instructed.
- The rails that ship with the Promise VTrak unit are designed to safely support that Promise VTrak unit when properly installed. Additional loading on the rails is at the customer's risk.
- Promise Technology, Inc. cannot guarantee that the mounting rails will support your Promise VTrak unit unless you install them as instructed.

Note

To lighten the VTrak enclosure, remove the power supplies. Replace the power supplies after the VTrak unit is mounted in your rack.

The J830s and J630s subsystems install to the rack using the supplied mounting rails. You can also use your existing rails.

Figure 3. VTrak J630s mounted in a rack with the supplied rails



To install the VTrak subsystem into a rack with the supplied mounting rails:

1. Check the fit of the mounting rails in your rack system. See page 13, Figure 4.
2. Adjust the length of the mounting rails as needed.

   The rear rail slides inside the front rail. The rail halves are riveted together and use no adjustment screws.
3. Attach the mounting rail assemblies to the outside of the rack posts, using the attaching screws and flange nuts from your rack system.

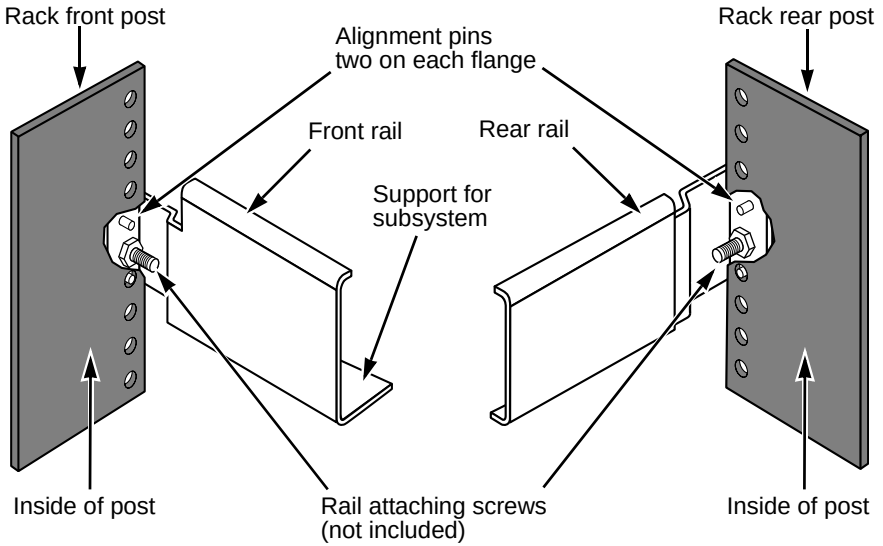
   Be sure the front rail support is on the bottom facing inward.

   The alignment pins fit into the rack holes above and below the attaching screws.

   Use the attaching screws and flange nuts from your rack system. Tighten the screws and flange nuts according to your rack system instructions.
4. Place the VTrak subsystem onto the rails.
5. Secure the VTrak subsystem to the rack.

   One screw each side, upper hole only. Use the attaching screws and flange nuts from your rack system. Tighten the screws and flange nuts according to your rack system instructions.

Figure 4. Rack mount assembly diagram



Note that only the front rail has a support for the subsystem.

Installing Disk Drives

You can populate the VTrak enclosure with SAS or SATA disk drives. See the *Compatibility List* on the Promise Website for complete listings of qualified disk drives.

For optimal performance, install disk drives of the same model and capacity.

Drive Slot Numbering

You can install any suitable disk drive into any slot in the enclosure. The diagrams below show how VTrak's drive slots are numbered.

Figure 5. VTrak J830s drive slot numbering

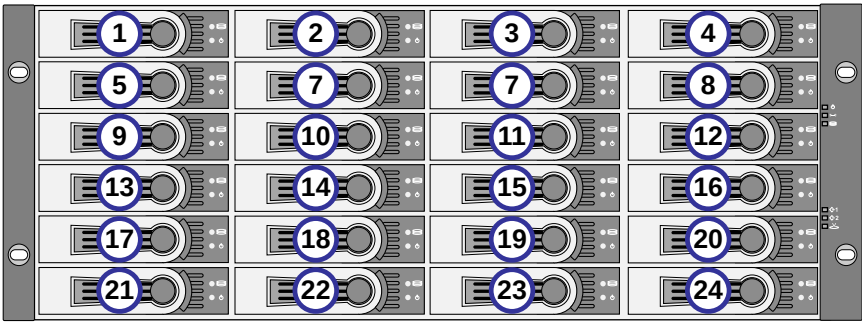
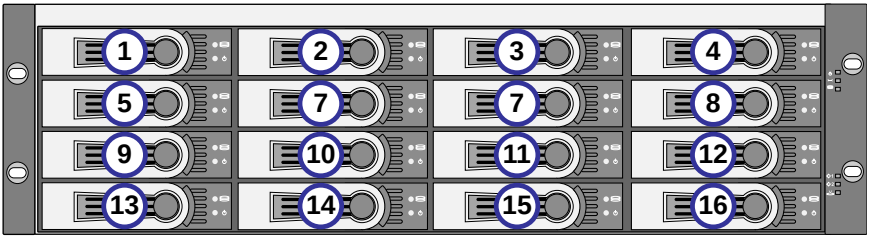


Figure 6. VTrak J630s drive slot numbering



Install all of the drive carriers into the VTrak enclosure to ensure proper airflow, even if you do not populate all the carriers with disk drives.

Installing 3.5-inch Disk Drives

Important

- If your VTrak has two I/O modules and you are installing SATA disk drives, an AAMUX adapter is required so that both modules can access the SATA disk drive. Obtain AAMUX adapters from Promise Technology, Inc.
- Proper installation ensures adequate grounding and minimizes vibration. Always install the disk drives using all four screws.

To install your 3.5-inch disk drives:

1. Remove a disk drive carrier.
2. Carefully lay the drive into the drive carrier at the front, so that the screw holes on the sides line up.

   If you are installing a AAMUX adapters and SATA disk drives:
   First attach the adapter to the drive. Then install the mounting screws.
   See page 16, Figure 7.
3. Insert the screws through the holes in the sides of the drive carrier and into the disk drive. See page 16, Figures 7 and 8.
   - For the disk drive, install only the screws supplied with the VTrak.
   - For the adapter, install only the screws supplied with the adapter.
   - Install four screws per drive.
   - Install two screws per adapter.
   - Snug each screw. Be careful not to over tighten.
4. Reinstall the drive carrier into the VTrak chassis.
5. Repeat steps 2 through 4 until all of your disk drives are installed.

Caution

VTrak supports disk drive hot-swapping. To avoid hand contact with an electrical hazard, do not remove more than one drive carrier a time.

Figure 7. Drive carrier with 3.5-inch SATA disk drive and AAMUX

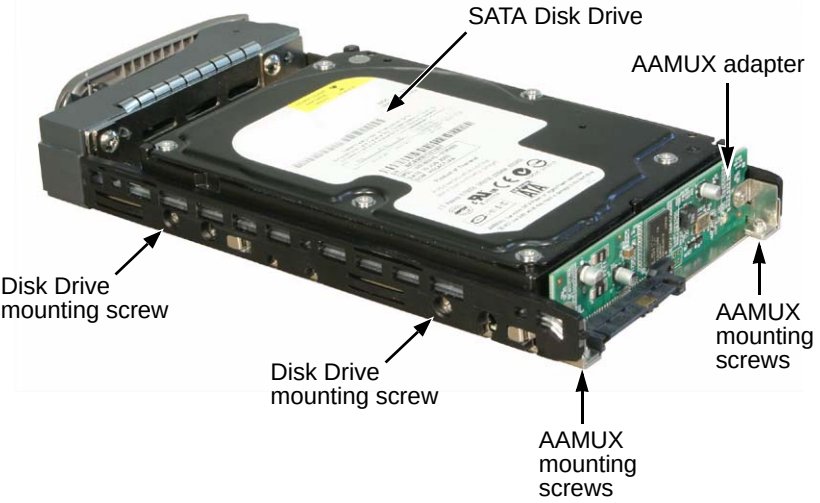
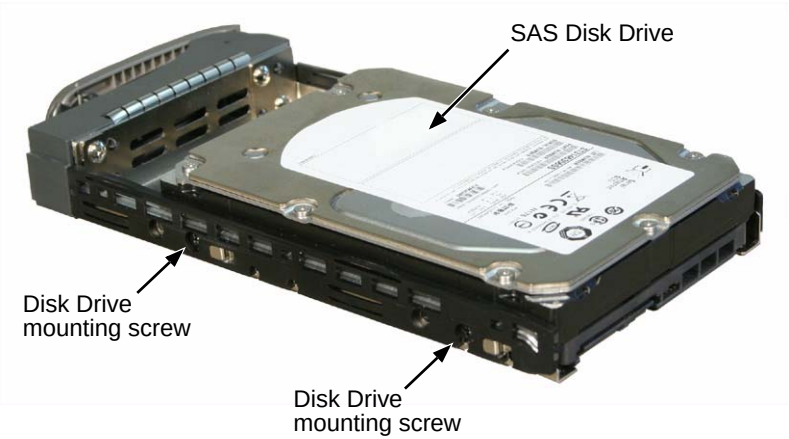


Figure 8. Drive carrier with 3.5-inch SAS disk drive



Installing 2.5-inch Disk Drives

Cautions

- Always use mounting brackets to install 2.5-inch disk drives. Never install disk drives by inserting screws through the bottom of the drive carrier. Obtain mounting brackets and screws from Promise Technology, Inc.
- Hold 2.5-inch disk drives by the edge to prevent damage to the drive.
- VTrak supports disk drive hot-swapping. To avoid hand contact with an electrical hazard, do not remove more than one drive carrier a time.

Important

- If your VTrak has two I/O modules and you are installing SATA disk drives, an AAMUX adapter is required so that both modules can access the SATA disk drive. Obtain AAMUX adapters from Promise Technology, Inc.
- Proper installation ensures adequate grounding and minimizes vibration. Always install the disk drives using all four screws.

To install your 2.5-inch disk drives:

1. Attach a bracket to the disk drive. See page 18, Figure 9.
   - Install only the screws supplied with the bracket.
   - Install two screws per bracket.
   - Snug each screw. Be careful not to over tighten.
2. Remove a disk drive carrier.
3. Carefully lay the drive into the drive carrier at the front, so that the screw holes on the sides line up.

   If you are installing a AAMUX adapters and SATA disk drives:
   First attach the adapter to the drive. Then install the mounting screws.
4. Insert the screws through the holes in the sides of the drive carrier and into the disk drive. See page 18, Figure 10.
   - For the disk drive, install only the screws supplied with the VTrak.
   - For the bracket, install only the screws supplied with the bracket.
   - For the adapter, install only the screws supplied with the adapter.

- Install two screws per drive, two screws per bracket, and two screws per adapter.
- Snug each screw. Be careful not to over tighten.

5. Reinstall the drive carrier into the VTrak chassis.
6. Repeat steps 2 through 5 until all of your disk drives are installed.

Figure 9. 2.5-inch disk drive and mounting bracket

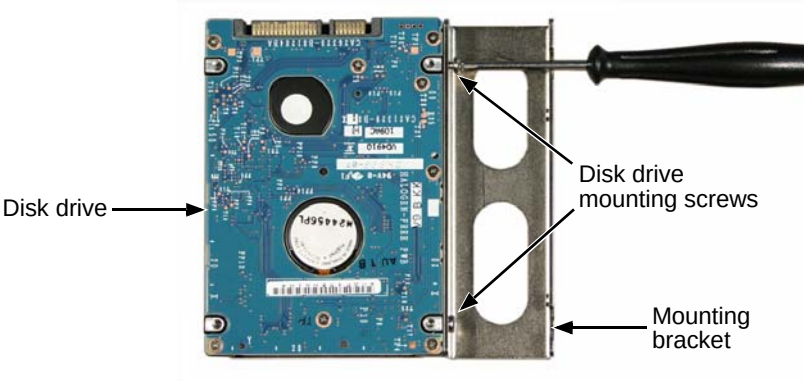


Figure 10.Drive carrier mounting screw locations

Note: The bracket screws are larger than disk drive screws.

Making Data Connections

You can configure your VTrak JBOD as:

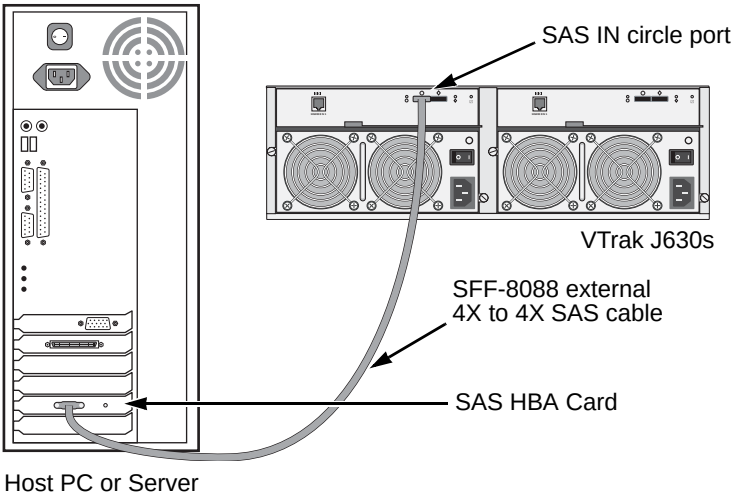
- Basic Direct Attached Storage (DAS) Connection (below)
- Cascading DAS Connection (page 20)
- Redundant Cascading DAS Connection (page 21)

Basic DAS Connection

To setup a basic DAS connection:

- You must have a SAS HBA card in the Host PC or server.
- Connect the SAS HBA card in the Host PC to the SAS IN port (with the circle icon) on the VTrak. See Figure 11.
- Use the SFF-8088 4X to 4X external SAS cable supplied with the VTrak.

Figure 11. A basic DAS connection



The diagram above shows the VTrak J630s. A connection with the J830s is exactly the same.

This completes data and management connections. Go to “Setting Up Serial Cable Connections” on page 23.

Cascading DAS Connection

To setup a cascading DAS connection:

1. Connect the SAS HBA card in the Host PC to the SAS IN port (with the circle icon) on the first VTrak.

   See Figure 12. Use a SFF-8088 4X to 4X external SAS cable (supplied with the VTrak).

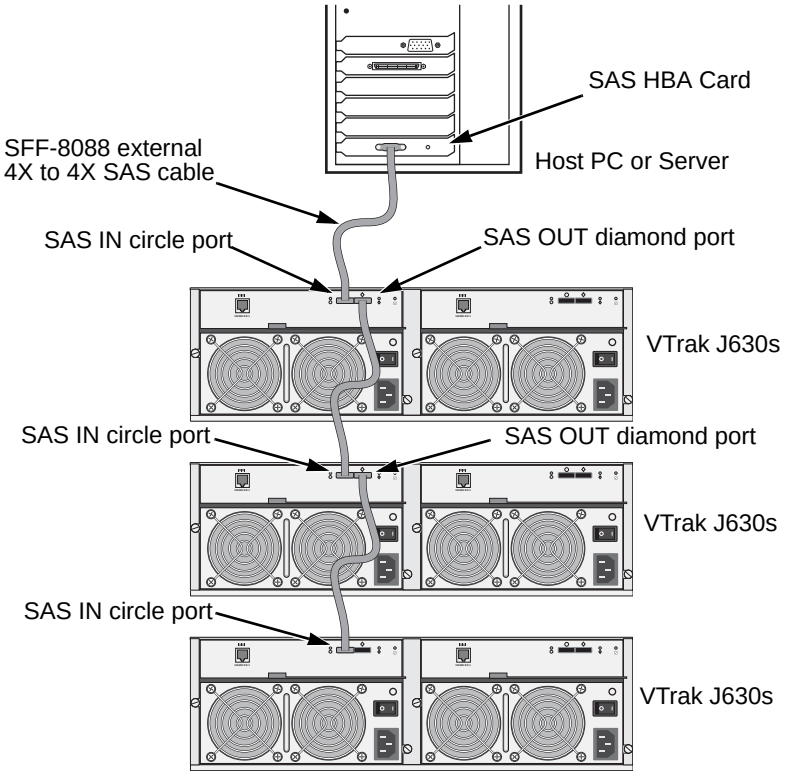
2. Connect the SAS OUT port (with the diamond icon) on the same I/O module of the first VTrak to the SAS IN port (with the circle icon) on the second VTrak.

   Be sure to connect circle icon to diamond icon or vice versa.

   You can cascade up to four VTrak units in this manner.

   You can mix J830s and J630s units as well as J610s and J310s units in the same cascade. Note that Jx10s are 3Gb units and might reduce data throughput.

Figure 12. A cascaded DAS connection



The diagram on page 20 shows the VTrak J630s. Connections with the J830s are exactly the same.

This completes data and management connections. Go to “Setting Up Serial Cable Connections” on page 23.

Redundant Cascading DAS Connection

To setup a redundant cascading DAS connection:

1. Connect the SAS HBA card in the first Host PC to the SAS IN port (with the circle icon) on the first VTrak.

   See page 22, Figure 13. Use a SFF-8088 4X to 4X external SAS cable (supplied with the VTrak).
2. Connect the SAS OUT port (with the diamond icon) on the same I/O module of the first VTrak to the SAS IN port (with the circle icon) on the second VTrak.
3. Connect the SAS HBA card in the second Host PC to the SAS IN port (with the circle icon) to the other I/O module on the first VTrak.
4. Connect the SAS OUT port (with the diamond icon) on the same I/O module of the first VTrak to the SAS IN port (with the circle icon) of the other I/O module on the second VTrak.
5. Connect the remaining VTraks in the same manner.

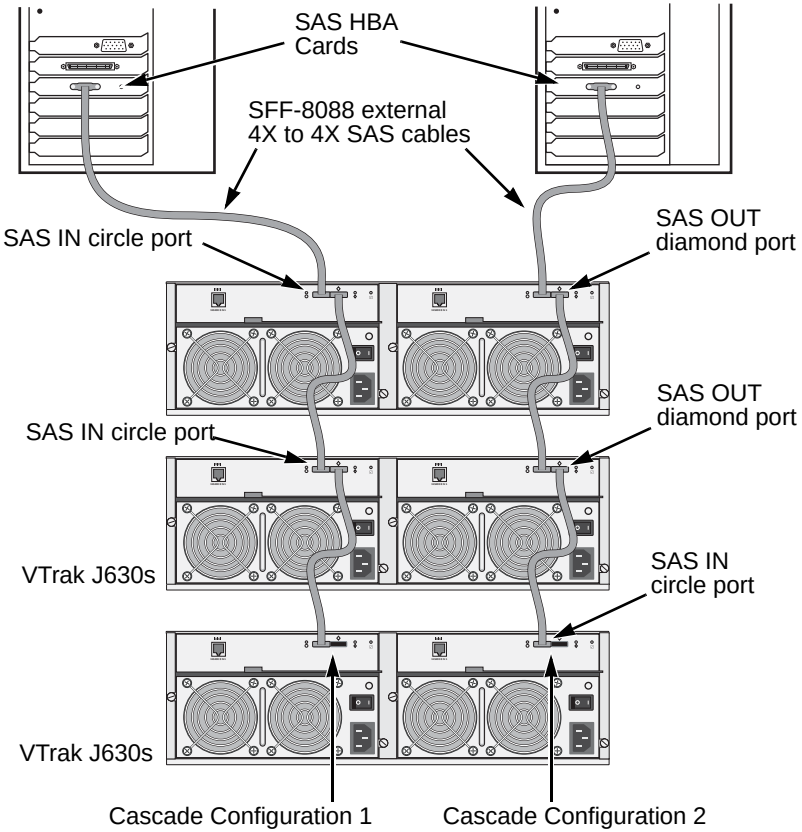
   Be sure to connect circle icon to diamond icon or vice versa.

   Do not cross-connect the I/O modules. Maintain a separate cascade configuration from each Host PC or Server to the last VTrak. See page 22, Figure 13.

   You can cascade up to four VTrak units in this manner.

   You can mix J830s and J630s units as well as J610s and J310s units in the same cascade. Note that Jx10s are 3Gb units and might reduce data throughput.

Figure 13.A redundant cascading DAS connection



The diagram above shows the VTrak J630s. A connection with the J830s is exactly the same.

This completes data and management connections. Go to “Setting Up Serial Cable Connections” on page 23.

Setting Up Serial Cable Connections

Serial communication enables the Command Line Interface (CLI) on your PC to monitor and control the VTrak JBOD. The CLI is explained in “Setting Up the CLI Connection” on page 26.

The VTrak box includes a RJ11-to-DB9 serial data cable.

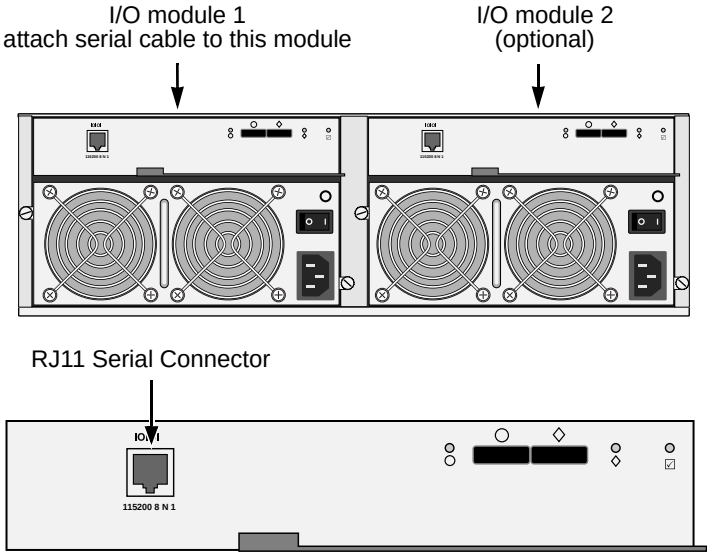
To set up a serial cable connection:

1. Attach the RJ11 end of the serial data cable to the RJ11 serial connector on the left I/O module on the back of the VTrak.

   See Figure 14.

2. Attach the DB9 end of the serial data cable to a serial port on the Host PC or Server.

Figure 14.Use the serial connector on the left I/O module



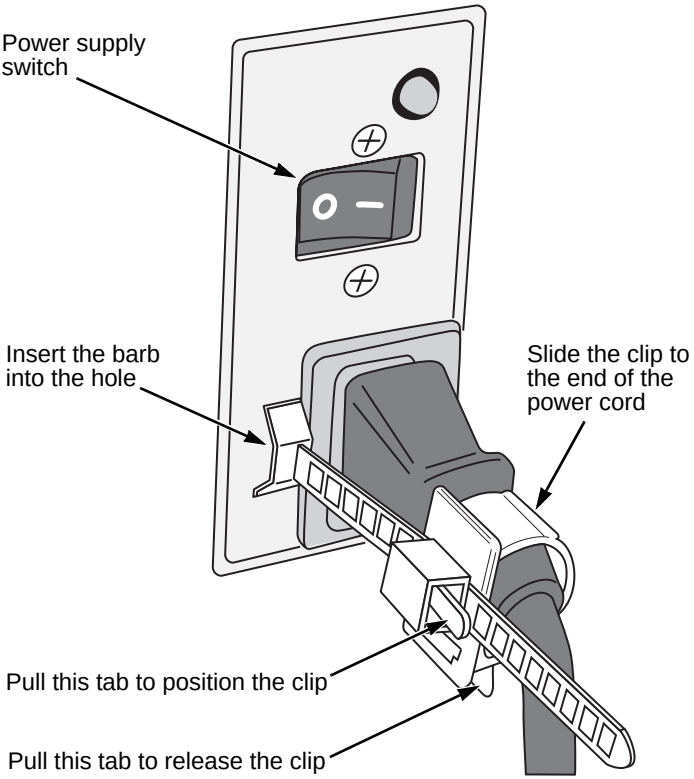
Connecting the Power

VTrak ships with clip assemblies to secure the power cords.

To secure the power cords:

1. Insert the barbed end of the band into the hole until it snaps into place.
2. Attach the power cord to the power supply.
3. Place the clip over the power cord, slide the clip to the end as shown in the Figure below, then squeeze the clip to tighten it.

Figure 15. Securing a power cord with the clip assembly



To reposition or release the clip, pull the tabs as shown.

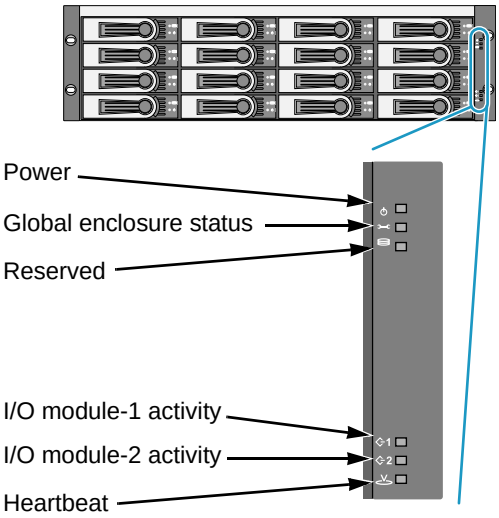
4. Switch on the power supplies.

   When the power is switched on, the LEDs light up.

When boot-up is finished and the VTrak subsystem is functioning normally:

- Power and Global enclosure status LEDs display green continuously.
- I/O module activity LEDs flash green when there is I/O module activity.
- System heartbeat LED blinks green once every 4 seconds if one I/O module is installed or once every 2 seconds if two I/O modules are installed.

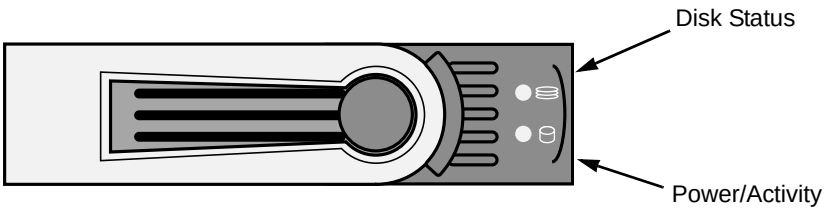
Figure 16.VTrak J630s front panel LED display. The J830s is similar



Generally speaking, if there is a disk drive in the carrier, the Power/Activity LED displays green. If not, the LED remains dark. The Power/Activity LED flashes during drive activity.

The Disk Status LED displays green when the drive has been configured.

Figure 17.Drive carrier LEDs



Setting Up the CLI Connection

The VTrak has a Command Line Interface (CLI) to manage all of its functions, including customization. Access the CLI via your PC's terminal VT100 or ANSI emulation program, such as Microsoft HyperTerminal.

The VTrak must be running and the RJ11-to-DB9 serial data cable connected to the primary I/O module and the Host PC or Server's serial port. See page 23.

To set up the CLI connection:

1. Change your terminal emulation program settings to agree with the following:
   - Bits per second: 115200
   - Data bits: 8
   - Parity: None
   - Stop bits: 1
   - Flow control: none
2. Start your PC's terminal emulation program.
3. Press Enter once to launch the CLI.

   The cli> prompt on your screen indicates that you have a connection and the CLI is ready to accept commands.

   See "Command Line Interface" on page 32.

Chapter 3: Management

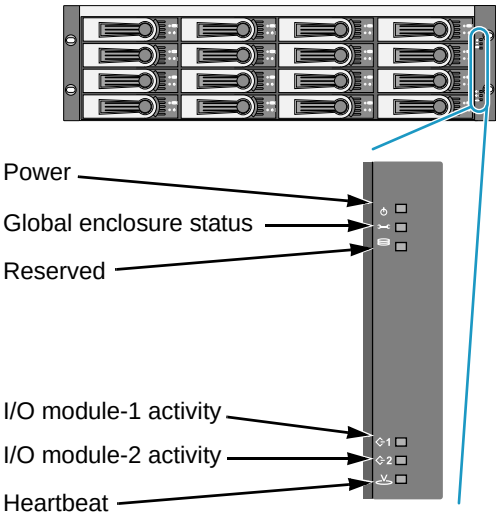
Front Panel LEDs

The LEDs on the front panel of the VTrak J830s or J630s unit provide important status information about the subsystem.

When boot-up is finished and the VTrak subsystem is functioning normally:

- Power and Global enclosure status LEDs display green continuously.
- I/O module activity LEDs flash green when there is activity on the SAS ports.
- System heartbeat LED blinks green once every 4 seconds if one I/O module is installed or once every 2 seconds if two I/O modules are installed.

Figure 1. VTrak J630s front panel LED display. The J830s is similar



See the table on the next page for more information.

LEDs	State				
	Dark	Steady Green	Flashing Green	Amber	Red
Power	System Off	Normal	—	—	—
Global enclosure status	System Off	Normal	—	Malfunction – one power supply	Malfunction – both power supplies
I/O module 1 or 2	No Activity	—	Activity	—	—
Heartbeat	System Off	—	Normal*	—	—
* Blinks once every 4 seconds if one I/O module is installed or once every 2 seconds if two I/O modules are installed.					

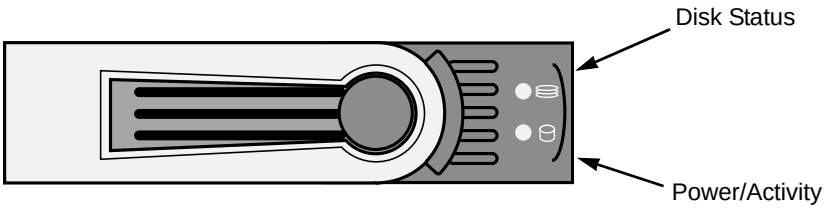
Drive Carrier LEDs

There are two LEDs on each drive carrier.

Generally speaking, if there is a disk drive in the carrier, the Power/Activity LED displays green. If not, the LED remains dark. The Power/Activity LED flashes during drive activity.

The Disk Status LED displays green when the drive has been configured.

Figure 2. Drive carrier LEDs



If you have SATA disk drives installed without an AAMUX adapter (see page 16), the Power/Activity LED behavior depends on the specific disk drive.

The Disk Status LED behavior depends on your HBA or RAID controller. See the table on the next page.

LEDs	State				
	Dark	Steady Green	Flashing Green	Steady Blue	Flashing Blue
Status	HBA/RAID controller determines the LED behavior*				
Power/Activity**	No Drive	—	—	Drive Present	Activity

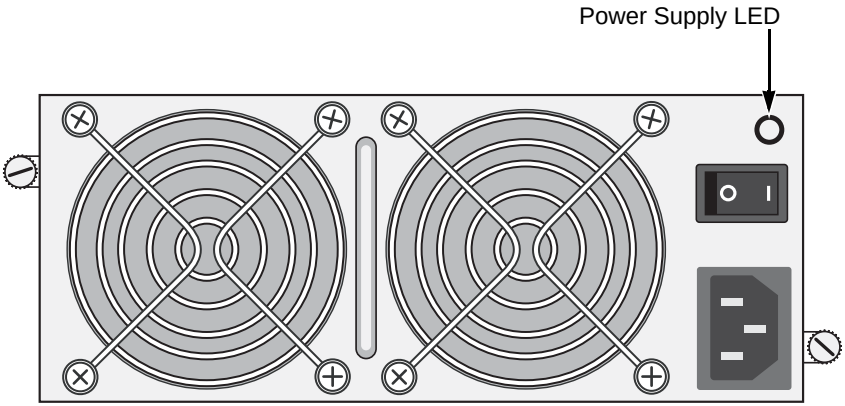
* Refer to the user documentation for your HBA or RAID controller for this information.

** Refers to SAS drives or SATA drives with an AAMUX adapter. For SATA drives without an AAMUX adapter, LED behavior depends on the specific disk drive.

Power Supply LED

The LED on the VTrak unit's power supplies indicate status of the power supply.

Figure 3. VTrak power supply LED



Under normal conditions, the power supply LED displays green.

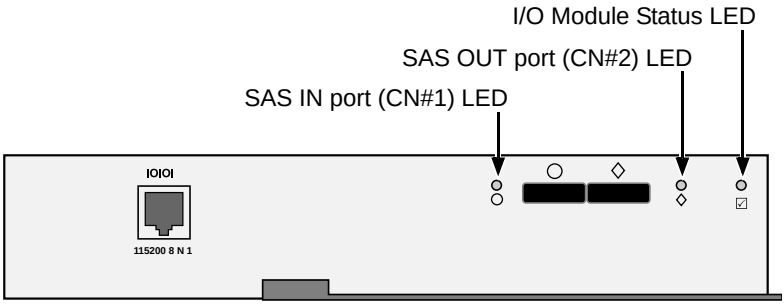
LED	State			
	Dark	Steady Green	Flashing Green	Red
Power supply	Not detected	OK	OK but Powered off	Failed

To check a power supply's installation, follow the same procedure as replacing the power supply, except that you reinstall the original rather than a new one. In most cases, this action fixes a bad connection and allows VTrak to detect the power supply. If this action does not correct the problem, replace the power supply.

I/O Module LEDs

The LEDs on the VTrak unit's I/O modules indicate activity on each of its SAS ports and I/O module status.

Figure 4. The I/O modules have two SAS ports



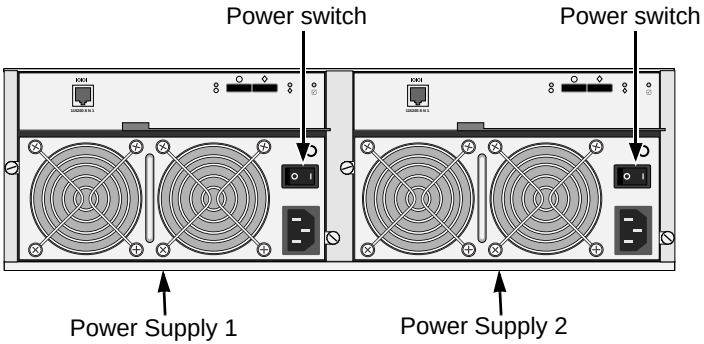
The I/O module status LED shows red at startup. Within 2 or 3 seconds, it turns green to indicate that the I/O module is ready.

LEDs	State			
	Dark	Steady Green	Flashing Green	Red
Connectors CN#1, CN#2	Link Down	Link Up	Activity	—
I/O module status	Off	Ready	—	Starting up*
* First I/O module's status LED turns green a few seconds after subsystem startup. Second I/O module's status LED takes longer.				

Shutting Down and Restarting the VTrak

To shutdown the VTrak, turn OFF the switches on both power supplies.

Figure 5. Power switches on VTrak J630s. The J830s is similar



To restart the VTrak, wait at least 30 seconds after shutdown, then turn ON the switches on both power supplies.

Command Line Interface

Command Set

The CLI uses the following set of commands:

enclosure – Displays enclosure settings and component information.

factorydefaults – Restores the factory default settings to the enclosure.

help – Use alone to see the list of commands. Use with a command to see a list of options. Examples: **enclosure -help** and **help enclosure**.

link – Displays the current status of the Phys (links) and the error counter.

route – Displays table routing information (downstream connections).

uptime – Displays the number of days, hours, minutes and seconds since the firmware was loaded (since the VTrak was started or restarted).

? – Use alone to see the list of commands. Use with a command to see a list of options. Example: **enclosure -?**

Commands and options are not case-sensitive.

Enclosure Command

The Enclosure command performs the following functions:

The CLI reports information for the I/O module to which it is connected and for the rest of the components in the VTrak enclosure.

The VTrak units ship with one or two I/O modules. I/O module 1, on the left, is the *Default Primary.* See page 23.

Under SAS specifications, both I/O modules are active at the same time. The terms *Primary* and *Secondary* are for enclosure management purposes only.

Viewing Enclosure Information

To view enclosure information:

At the cli> prompt, type **enclosure** and press Enter.

```
cli>enclosure
```

The system returns:

```
------------------------------------------------------------------------
Time Since Power Up   : 1 day 9 hours 46 minutes 36 seconds
Enclosure             : SBB SAS 6G JBOD 3U-16 Bay
Serial Number         : S987123
I/O Module ID         : 1               Max I/O Module Cnt       : 2
Firmware Version      : 6.04.0000.00    I/O Module Role          : Primary
Max HDD Slot          : 16              Max Connectors           : 2
Max PSU Cnt           : 2               Max Fan Cnt              : 4
Max Temp Sensors Cnt  : 10              Max Voltage Sensor Cnt   : 6
========================================================================
PSU     Status           Fan1Speed       Fan2Speed
========================================================================
1       Operational      3168 rpm        2970 rpm
2       Operational      2970 rpm        3168 rpm
------------------------------------------------------------------------
========================================================================
ID  Location        Temp Reading     ID   Location         Temp Reading
========================================================================
1   I/O Module1     24C/ 75F         2    I/O Module1      34C/ 93F
3   I/O Module2     24C/ 75F         4    I/O Module2      33C/ 91F
5   Backplane       22C/ 71F         6    Backplane        22C/ 71F
7   PSU1            25C/ 77F         8    PSU1             25C/ 77F
9   PSU2            24C/ 75F         10   PSU2             24C/ 75F
------------------------------------------------------------------------
Thermal Management                                          : Enabled
Allows shutdown the system when critical temperature is reached: Yes
Current minimum fan speed                                   : Low
Enclosure temperature threshold : 61C/141F (critical) 51C/123F (warning)
Controller temperature threshold: 90C/194F (critical) 75C/167F (warning)
========================================================================
ID    Location          Voltage
========================================================================
 1    I/O Module1         1.11V
 2    I/O Module1         0.93V
 3    I/O Module1         3.21V
 4    I/O Module2         1.11V
```

```
 5    I/O Module2          0.93V
 6    I/O Module2          3.21V
------------------------------------------------------------------------------
Expander SAS Address:
SAS Base  50 00 15 56 00 03 82 00
SSP       50 00 15 56 00 03 82 3E
SMP       50 00 15 56 00 03 82 3F

Attached SAS Address:
Slot 1    50 01 0B 90 00 04 5E B2
Slot 2    50 01 0B 90 00 04 80 C2
Slot 3    50 01 0B 90 00 04 22 02
Slot 4    50 01 0B 90 00 04 8F B2
Slot 5    50 01 0B 90 00 04 D0 62
Slot 6    50 01 0B 90 00 04 DE E2
Slot 7    50 01 0B 90 00 04 8E F2
Slot 8    50 01 0B 90 00 04 97 62
Slot 9    50 01 0B 90 00 04 36 62
Slot 10   50 01 0B 90 00 04 18 E2
Slot 11   50 01 0B 90 00 04 18 D2
Slot 12   50 01 0B 90 00 04 8E 52
Slot 13   50 01 0B 90 00 04 E2 22
Slot 14   50 01 0B 90 00 04 49 C2
Slot 15   50 01 0B 90 00 04 DC F2
Slot 16   50 01 0B 90 00 04 B2 5E
Slot 17   50 01 0B 90 00 04 C2 80
Slot 18   50 01 0B 90 00 04 02 22
Slot 19   50 01 0B 90 00 04 B2 8F
Slot 20   50 01 0B 90 00 04 62 D0
Slot 21   50 01 0B 90 00 04 E2 DE
Slot 22   No Device Attached
Slot 23   No Device Attached
Slot 24   No Device Attached
CN#1      50 0E 00 4A 00 BD 22 55
CN#2      50 0E 00 4A 00 BD 22 3F
PSU ID       Shutdown Event
============================
PSU 01              AC loss
PSU 02              AC loss
```

Slot numbers represent physical drives.

CN#1 is the SAS IN port (circle icon).

CN#2 is the SAS OUT port (diamond icon).

PSU 01 and PSU 02 are the power supply units.

Making Enclosure Settings

The Enclosure command also enables you to make settings:

- Viewing Current Settings (page 35)
- Setting Temperature Thresholds (page 35)
- Setting Thermal Management (page 36)
- Setting Shutdown (page 36)
- Setting Minimum Fan Speed (page 36)

Viewing Current Settings

To view current enclosure settings:

1. At the cli> prompt, type **enclosure** and press Enter.
2. Look for the following section in the system return:

```
------------------------------------------------------------------------
Thermal Management                                                : Enabled
Allows shutdown the system when critical temperature is reached : Yes
Current minimum fan speed                                         : Low
Enclosure temperature threshold : 61C/141F (critical) 51C/123F (warning)
Controller temperature threshold: 90C/194F (critical) 75C/167F (warning)
========================================================================
```

Setting Temperature Thresholds

Warning temperature tells Thermal Management when to increase fan speed. Critical temperature tells Automatic Shutdown when to shut down the subsystem.

To set the enclosure critical temperature to 61°C (141°F):

At the cli> prompt, type **enclosure -a mod -s** "**enc_critical=61**" and press Enter.

To set the I/O module warning temperature to 75°C (167°F):

At the cli> prompt, type **enclosure -a mod -s** "**ctrl_warning=75**" and press Enter.

For this command:

- **enc** means enclosure
- **ctrl** means I/O module
- Enclosure warning temperature range – 10° to 51°C (50° to 123°F)
- Enclosure critical temperature range – 51° to 61°C (123° to 141°F)
- I/O module warning temperature range – 10° to 75°C (50° to 167°F)
- I/O module warning temperature range – 75° to 90°C (167° to 194°F)
- Numbers mean degrees centigrade and must be within the respective threshold ranges

Setting Thermal Management

Thermal Management monitors enclosure and I/O module temperature and adjusts fan speeds for proper cooling. Promise recommends that you set Thermal Management to *enabled*.

To enable Thermal Management:

At the cli> prompt, type **enclosure -a mod -s** "**thermalmanager=1**" and press Enter.

For this command, **1** enables and **0** disables.

Setting Shutdown

When enabled, Shutdown automatically shuts down the VTrak 30 seconds after the enclosure or I/O module reaches critical temperature to avoid damage from overheating. Promise recommends that you set Shutdown to *enabled*.

To enable Shutdown:

At the cli> prompt, type **enclosure -a mod -s** "**allowshutdown=1**" and press Enter.

For this command, **1** enables and **0** disables.

Setting Minimum Fan Speed

Minimum Fan Speed specifies the minimum fan speed when the enclosure or I/O module reaches warning temperature.

To set the minimum fan speed to medium high:

At the cli> prompt, type **enclosure -a mod -s** "**minfanspeed=3**" and press Enter.

For this command:

- **1** means low
- **2** means medium-low
- **3** means medium-high
- **4** means high

The actual speed depends on the fan manufacturer.

Factorydefaults Command

Caution

Restoring default settings can disrupt your VTrak's function. Use this feature only when necessary.

To reset all subsystem settings to their factory default values:

1. At the cli> prompt, type **factorydefaults** and press Enter.

   ```
   cli>factorydefaults
   ```

   The system returns:

   ```
   Do you wish to proceed restoring factory default? (y/n):
   ```

2. At the (y/n) prompt, type **y** and press Enter.

   ```
   Do you wish to proceed restoring factory default? (y/n):y
   ```

   The system returns:

   ```
   Please reboot the system for the change to take effect
   ```

3. Restart the VTrak. See page 31.

   The subsystem restarts with all settings at their factory default values.

Help Command

The VTrak CLI uses the standard Unix online help system.

To access general help:

At the cli> prompt, type **help** and press Enter

```
cli>help
```

To access help with a specific function:

At the cli> prompt, type one of the following strings and press Enter:

- **help** command
- command **-help**

```
cli>help enclosure
cli>enclosure -help
```

Link Command

The Link command displays information about SAS data links, including:

- Viewing Link Status (page 38)
- Viewing Link Statistics (page 39)
- Clearing the Error Count (page 41)

Viewing Link Status

To view link status:

At the cli> prompt, type **link** and press Enter.

```
cli>link
```

The system returns:

```
Link Status:
==========================================================================
Phy     Port      Type     Rate      Init     Dev      Link     PRdy
==========================================================================
 0      Slot1     SAS      3.0G      OK       End      ----     Rdy
 1      Slot2     SAS      3.0G      OK       End      ----     Rdy
 2      Slot3     SAS      3.0G      OK       End      ----     Rdy
 3      Slot4     SAS      3.0G      OK       End      ----     Rdy
 4      Slot5     SAS      3.0G      OK       End      ----     Rdy
 5      Slot6     SAS      3.0G      OK       End      ----     Rdy
 6      Slot7     SAS      3.0G      OK       End      ----     Rdy
 7      Slot8     SAS      3.0G      OK       End      ----     Rdy
 8      Slot9     SAS      3.0G      OK       End      ----     Rdy
 9      Slot10    SAS      3.0G      OK       End      ----     Rdy
10      Slot11    SAS      3.0G      OK       End      ----     Rdy
11      Slot12    SAS      3.0G      OK       End      ----     Rdy
12      Slot13    SAS      3.0G      OK       End      ----     Rdy
13      Slot14    SAS      3.0G      OK       End      ----     Rdy
14      Slot15    SAS      3.0G      OK       End      ----     Rdy
15      Slot16    SAS      3.0G      OK       End      ----     Rdy
16      Slot17    SAS      3.0G      OK       End      ----     Rdy
17      Slot18    SAS      3.0G      OK       End      ----     Rdy
18      Slot19    SAS      3.0G      OK       End      ----     Rdy
19      Slot20    SAS      3.0G      OK       End      ----     Rdy
20      Slot21    SAS      3.0G      OK       End      ----     Rdy
21      Slot22    ----     ----      ----     ----     ----     ----
22      Slot23    ----     ----      ----     ----     ----     ----
23      Slot24    ----     ----      ----     ----     ----     ----
24      CN#1      SAS      6.0G      OK       End      ----     Rdy
25      CN#1      SAS      6.0G      OK       End      ----     Rdy
26      CN#1      SAS      6.0G      OK       End      ----     Rdy
```

```
27      CN#1      SAS      6.0G      OK      End      ----     Rdy
28      CN#2      SAS      6.0G      OK      End      ----     Rdy
29      CN#2      SAS      6.0G      OK      End      ----     Rdy
30      CN#2      SAS      6.0G      OK      End      ----     Rdy
31      CN#2      SAS      6.0G      OK      End      ----     Rdy
Phy : PHY ID              Port: Port Type         Type: SAS or SATA
Rate: Rate 1.5G/3G/6G     Init: Init Passed       Dev : Device Type
Link: Link Connected      PRdy: Phy Ready
```

The following items are reported in the table above:

- **Phy number** – Links are individual Phys, numbered 0 through 31 on J830s units, and 0 through 23 on J630s units.
- **Port number** – Physical drive slots or connectors. Each drive slot has one Phy. See “Drive Numbering” on page 19.

  CN#1 and CN#2 represent the external SAS connectors. Each connector has four Phys. CN#1 is the SAS IN port, CN#2 is the SAS OUT port. See Figure 4 on page 30.
- **Drive Type** – SAS or SATA
- **Data Rate** – Data rate in Gb/s. The maximum rate is shown
- **Device Type** – **End** means an end device. **Exp** means an expansion device
- **Link Connection** – Normally, ---- is displayed. If there is a connection at the moment the link command runs, CONN is displayed
- **Phy Ready Status** – If the port is ready, Rdy is displayed

Link Statistics display after Link Status. A separate command is not required.

```
Link Statistics:
================================================================================
Phy   Type     InDW       DsEr       DwLo       PhRe       CoVi       PhCh
================================================================================
 0    Slot1    ---------- ---------- ---------- ---------- ---------- ----
 1    Slot2    ---------- ---------- ---------- ---------- ---------- ----
 2    Slot3    ---------- ---------- ---------- ---------- ---------- ----
 3    Slot4    ---------- ---------- ---------- ---------- ---------- ----
 4    Slot5    ---------- ---------- ---------- ---------- ---------- ----
 5    Slot6    ---------- ---------- ---------- ---------- ---------- ----
 6    Slot7    ---------- ---------- ---------- ---------- ---------- ----
 7    Slot8    ---------- ---------- ---------- ---------- ---------- ----
 8    Slot9    ---------- ---------- ---------- ---------- ---------- ----
 9    Slot10   ---------- ---------- ---------- ---------- ---------- ----
10    Slot11   ---------- ---------- ---------- ---------- ---------- ----
11    Slot12   ---------- ---------- ---------- ---------- ---------- ----
12    Slot13   ---------- ---------- ---------- ---------- ---------- ----
```

```
13    Slot14   --------- --------- --------- ---------   ---------   ----
14    Slot15   --------- --------- --------- ---------   ---------   ----
15    Slot16   --------- --------- --------- ---------   ---------   ----
16    Slot17   --------- --------- --------- ---------   ---------   ----
17    Slot18   --------- --------- --------- ---------   ---------   ----
18    Slot19   --------- --------- --------- ---------   ---------   ----
19    Slot20   --------- --------- --------- ---------   ---------   ----
20    Slot21   --------- --------- --------- ---------   ---------   ----
21    Slot22   --------- --------- --------- ---------   ---------   ----
22    Slot23   --------- --------- --------- ---------   ---------   ----
23    Slot24   --------- --------- --------- ---------   ---------   ----
24    CN#1     --------- --------- --------- ---------   ---------   ----
25    CN#1     --------- --------- --------- ---------   ---------   ----
26    CN#1     --------- --------- --------- ---------   ---------   ----
27    CN#1     --------- --------- --------- ---------   ---------   ----
28    CN#2     --------- --------- --------- ---------   ---------   ----
29    CN#2     --------- --------- --------- ---------   ---------   ----
30    CN#2     --------- --------- --------- ---------   ---------   ----
31    CN#2     --------- --------- --------- ---------   ---------   ----
InDW: Invalid Dword Count       DsEr: Disparity Err Count
DwLo: Dword Sync Loss Count     PhRe: Phy Reset Problem Count
CoVi: Code Violations Cnt       PhCh: Phy Change Count
```

The following items are reported in the table above. All counts are hexadecimal:

- **Phy number** – Links are individual Phys, numbered 0 through 31 on J830s units, and 0 through 23 on J630s units.

  The Link Status list matches Phy number to Slot or Connector number, where you can identify the disk drive or external SAS port reported in the Link Counter. See page 38.

- **Type** – Physical drive slots or connectors. Each slot has one Phy. See “Drive Numbering” on page 19.

  CN#1 and CN#2 represent the external SAS connectors. Each connector has four Phys. CN#1 is the SAS IN port, CN#2 is the SAS OUT port. See Figure 4 on page 30.

- **Invalid D-word Count**
- **Disparity Error Count**
- **PHY Reset Problem Count**
- **Code Violation Count**
- **PHY Change Count**

  If the count is zero, the counter shows dashes (----------).

  The fact that errors occur does not necessarily indicate a link problem or that the VTrak unit is malfunctioning.

  However, an individual error count that increments regularly does indicate a possible problem and requires further investigation.

Clearing the Error Count

To clear all link error counts:

At the cli> prompt, type **link -a clear** and press Enter.

```
cli>link -a clear
```

To clear the link error count for a specific Phy:

At the cli> prompt, type **link -a clear -p <**Phy Number**>** and press Enter.

```
cli>link -a clear -p 1
```

Route Command

To view the SAS addresses of the devices in your domain:

At the cli> prompt, type **route** and press Enter.

```
cli>route
```

The system returns:

```
Routing Table Mapping:
Index       SAS Address                 CN#          PHY
-----------------------------------------------------------
0000        50 00 00 E0 11 4D 8F B2     CN#2         20
0002        50 00 CC A0 09 01 E0 ED     CN#2         20
0010        50 00 15 50 0F F0 72 07     CN#2         20
0014        50 00 15 50 0F F0 72 0B     CN#2         20
0029        50 00 15 50 0F F0 12 06     CN#1         16
0043        50 00 C5 00 04 E1 2E 9D     CN#1         16
0057        50 00 15 50 0F F0 72 16     CN#2         20
0061        50 00 15 50 0F F0 22 3F     CN#1         16
0063        50 00 C5 00 01 B0 89 4D     CN#1         16
0076        50 00 C5 00 01 62 6C 5D     CN#1         16
0088        50 00 15 50 0F F0 72 12     CN#2         20
0091        50 00 C5 00 01 37 C7 51     CN#1         16
0107        50 00 15 50 0F F0 72 03     CN#2         20
0111        50 00 15 50 0F F0 72 0F     CN#2         20
0114        50 00 C5 00 01 BA B6 01     CN#2         20
0124        50 00 15 50 0F F0 12 02     CN#1         16
0185        50 00 15 50 0F F0 22 04     CN#1         16
0187        50 00 15 50 0F F0 32 00     CN#1         16
0189        50 00 15 50 0F F0 22 08     CN#1         16
0216        50 00 15 50 0F F0 22 00     CN#1         16
0217        50 00 C5 00 01 BA B0 71     CN#2         20
0218        50 00 15 50 0F F0 32 04     CN#1         16
0220        50 00 15 50 0F F0 22 0C     CN#1         16
0222        50 00 15 50 0F F0 32 08     CN#1         16
```

The route command displays SAS addresses that are attached to the SAS ports of the VTrak unit. Three items are reported:

- **Index** – Arbitrary numbers, listed in numerical sequence.
- **SAS Address** – SAS address of the drive or component.
- **CN#** – Downstream SAS port connector number. See page 21 for a diagram of connectors on the I/O module.
- **Phy number** – Links are individual Phys, numbered 0 through 31 on J830s units, and 0 through 23 on J630s units.

Route Troubleshooting

At the cli> prompt, if you type **route** and press Enter, and your system returns:

```
No SAS Routing Entry Exists
```

It indicates that no downstream devices are found.

Uptime Command

The uptime command informs you of the elapsed period of time since the VTrak unit was powered on.

To display uptime:

At the cli> prompt, type **uptime** and press Enter.

```
cli>uptime
```

The system returns:

```
System has been running for     : 1 day 9 hours 46 minutes 36 seconds
I/O Module1 has been running for: 1 day 9 hours 46 minutes 36 seconds
I/O Module2 has been running for: 1 day 9 hours 46 minutes 32 seconds
```

Note that I/O module 1, the default primary module, started before I/O module 2. See page 32 for more information.

? Command

The VTrak CLI uses the standard Unix online help system.

For the command usage:

At the cli> prompt, type the command, followed by **-?** and press Enter.

```
cli>enclosure -?
cli>link -?
cli>route -?
```

Choose any command from the list under “Command Line Interface” on page 32.

Chapter 4: Support

This chapter covers the following topics:

Frequently Asked Questions

What kind of disk drives can I use with VTrak?

VTrak supports 2.5-inch and 3.5-inch SAS and SATA disk drives. See the *Compatibility List* on the Promise Website for a list of qualified disk drives.

If your VTrak subsystem has two I/O modules, you must install an AAMUX adapter on each of your SATA drives. Obtain AAMUX adapters from Promise Technology, Inc.

How do I install a 2.5-inch drive into a 3.5-inch drive carrier?

To install your 2.5-inch disk drives into VTrak's drive carriers, you must first attach a mounting bracket to each of your drives. See page 17. Never install the drives by inserting screws through the bottom of the drive carrier.

Obtain mounting brackets and screws from Promise Technology, Inc.

How can I tell when the VTrak has fully booted?

When the VTrak unit is fully booted up, the Power and FRU LEDs light up green. The heartbeat LED blinks green once every 4 seconds if one I/O module is installed or once every 2 seconds if two I/O modules are installed.

How can I tell my CLI connection is to the primary default I/O module?

After you establish the CLI connection, type Enclosure and press Enter. Look at the top of the display for an item called I/O Module Role.

- If the Role is **Primary**, you are connected to the default primary I/O module.
- If the Role is **Secondary**, you are connected to the default secondary I/O module.

What happens if a disk drive fails?

Depending on the nature of the failure, the failed drive might not appear in the CLI, or the failed drive might display errors when you run the **enclosure** command or the **link** command. See pages 32 and 38 for more information.

Can I hot-swap a failed drive with a new one?

Yes. Disk drives are hot-swappable on the VTrak unit.

Can the VTrak run using just one power supply?

Yes, it is possible to run the VTrak unit on a single power supply. However, leaving one power supply off means there is no redundancy if the remaining power supply fails. And it reduces air flow through the enclosure, which can contribute to overheating. Always switch on both power supplies.

Contacting Technical Support

Promise Technical Support provides several support options for Promise users to access information and updates. We encourage you to use one of our electronic services, which provide product information updates for the most efficient service and support.

If you decide to contact us, please have the following information available:

- Product model and serial number
- BIOS and firmware version numbers
- A description of the problem or situation
- System configuration information, including: motherboard and CPU type, disk drive models, SAS or SATA drives, and error counts.

Technical Support Services

Promise Online™ Website	http://www.promise.com/support/support_eng.asp. (technical documents, drivers, utilities, etc.)

United States

E-mail Support	e-Support On-Line
Fax Support	+1 408 228 1100 Attn: Technical Support
Phone Support	+1 408 228 1400 option 4
If you wish to write us for support:	Promise Technology, Inc. 580 Cottonwood Drive Milpitas, CA 95035, USA

The Netherlands

E-mail Support	e-Support On-Line
Fax Support	+31 0 40 256 9463 Attn: Technical Support
Phone Support	+31 0 40 235 2600
If you wish to write us for support:	Promise Technology Europe B.V. Science Park Eindhoven 5542 5692 EL Son, The Netherlands

Germany

E-mail Support	e-Support On-Line
Fax Technical Support	+49 0 2 31 56 76 48 29 Attn: Technical Support
Phone Technical Support	+49 0 2 31 56 76 48 10
If you wish to write us for support:	Promise Technology Germany Europaplatz 9 44269 Dortmund, Germany

Italy

E-mail Support	e-Support On-Line
Fax Support	+39 0 6 367 124 00 Attn: Technical Support
Phone Support	+39 0 6 367 126 26
If you wish to write us for support:	Promise Technology Italy Piazza del Popolo 18 00187 Roma, Italia

Taiwan

E-mail Support	e-Support On-Line
Fax Support	+886 3 578 2390 Attn: Technical Support
Phone Support	+886 3 578 2395 ext. 8822 or 8823
If you wish to write us for support:	Promise Technology, Inc. 2F, No. 30, Industry E. Rd. IX Science-based Industrial Park Hsin-Chu 30075, Taiwan (R.O.C.)

China

E-mail Support	e-Support On-Line
Fax Support	+86 10 8857 8015 Attn: Technical Support
Phone Support	+86 10 8857 8085 or 8095
If you wish to write us for support:	Promise Technology China – Beijing Room 1205, Tower C Webok Time Center, No.17 South Zhong Guan Cun Street Hai Dian District, Beijing 100081, China

E-mail Support	e-Support On-Line
Fax Support	+86 21 6249 4627 Attn: Technical Support
Phone Support	+86 21 6249 4192, 4193, or 4199
If you wish to write us for support:	Promise Technology China – Shanghai Room 508, Leader Tower 1189 West Wu Ding Road Jing An District, Shanghai 200042, China

Limited Warranty

Promise Technology, Inc. (“Promise”) warrants that this product, from the time of the delivery of the product to the original end user:

a) all components for a period of three (3) years;

b) will conform to Promise’s specifications;

c) will be free from defects in material and workmanship under normal use and service.

This warranty:

a) applies only to products which are new and in cartons on the date of purchase;

b) is not transferable;

c) is valid only when accompanied by a copy of the original purchase invoice.

d) Is not valid on spare parts.

This warranty shall not apply to defects resulting from:

a) improper or inadequate maintenance, or unauthorized modification(s), performed by the end user;

b) operation outside the environmental specifications for the product;

c) accident, misuse, negligence, misapplication, abuse, natural or personal disaster, or maintenance by anyone other than a Promise or a Promise-authorized service center.

Disclaimer of other warranties

This warranty covers only parts and labor, and excludes coverage on software items as expressly set above.

Except as expressly set forth above, Promise DISCLAIMS any warranties, expressed or implied, by statute or otherwise, regarding the product, including, without limitation, any warranties for fitness for any purpose, quality, merchantability, non-infringement, or otherwise. Promise makes no warranty or representation concerning the suitability of any product for use with any other item. You assume full responsibility for selecting products and for ensuring that the products selected are compatible and appropriate for use with other goods with which they will be used.

Promise DOES NOT WARRANT that any product is free from errors or that it will interface without problems with your computer system. It is your responsibility to

back up or otherwise save important data before installing any product and continue to back up your important data regularly.

No other document, statement or representation may be relied on to vary the terms of this limited warranty.

Promise's sole responsibility with respect to any product is to do one of the following:

a) replace the product with a conforming unit of the same or superior product;

b) repair the product.

Promise shall not be liable for the cost of procuring substitute goods, services, lost profits, unrealized savings, equipment damage, costs of recovering, reprogramming, or reproducing of programs or data stored in or used with the products, or for any other general, special, consequential, indirect, incidental, or punitive damages, whether in contract, tort, or otherwise, notwithstanding the failure of the essential purpose of the foregoing remedy and regardless of whether Promise has been advised of the possibility of such damages. Promise is not an insurer. If you desire insurance against such damage, you must obtain insurance from another party.

Some states do not allow the exclusion or limitation of incidental or consequential damages for consumer products, so the above limitation may not apply to you.

This warranty gives specific legal rights, and you may also have other rights that vary from state to state. This limited warranty is governed by the State of California.

Your Responsibilities

You are responsible for determining whether the product is appropriate for your use and will interface with your equipment without malfunction or damage. You are also responsible for backing up your data before installing any product and for regularly backing up your data after installing the product. Promise is not liable for any damage to equipment or data loss resulting from the use of any product.

Returning the Product For Repair

If you suspect a product is not working properly, or if you have any questions about your product, contact our Technical Support Staff through one of our Technical Services, making sure to provide the following information:

- Product model and serial number (required)
- Return shipping address
- Daytime phone number
- Description of the problem
- Copy of the original purchase invoice

The technician will assist you in determining whether the product requires repair. If the product needs repair, the Technical Support Department will issue an RMA (Return Merchandise Authorization) number.

Important

Obtain an RMA number from Technical Support *before* you return the product and write the RMA number on the label. The RMA number is essential for tracking your product and providing the proper service.

Return ONLY the specific product covered by the warranty. Do not ship cables, manuals, diskettes, etc.

USA and Canada:	Promise Technology, Inc. Customer Service Dept. Attn.: RMA # _____ 47654 Kato Road Fremont, CA 94538
Other Countries:	Return the product to your dealer or retailer. Contact them for instructions before shipping the product.

You must follow the packaging guidelines for returning products:

- Use the original shipping carton and packaging
- Include a summary of the product's problem(s)
- Write an attention line on the box with the RMA number
- Include a copy of your proof of purchase

You are responsible for the cost of insurance and shipment of the product to Promise. Note that damage incurred due to improper transport or packaging is not covered under the Limited Warranty.

When repairing returned product(s), Promise may replace defective parts with new or reconditioned parts, or replace the entire unit with a new or reconditioned unit. In the event of a replacement, the replacement unit will be under warranty for the remainder of the original warranty term from purchase date, or 30 days, whichever is longer.

Promise will pay for standard return shipping charges only. You will be required to pay for any additional shipping options, such as express shipping.

Appendix A: Miscellaneous

Adding a Second I/O Module

Warning

The electronic components within the VTrak are sensitive to damage from Electro-Static Discharge (ESD). Observe appropriate precautions at all times when handling the VTrak or its subassemblies.

The VTrak J830s and J630s units ship with one or two I/O modules. If your VTrak came with only one I/O module, you can upgrade by installing a second I/O module. The following instructions describe how to install a second I/O module.

Note

Powering down the VTrak is not required for this procedure.

To install a second I/O module into a VTrak J830s or J630s unit:

1. Press the release button on the dummy I/O module, pull the handle down and remove the dummy I/O module from the enclosure.
2. Slide the new I/O module into the slot.
3. Gently push the new I/O module all the way into the slot until the handle locks.
4. Connect your data cables to the new I/O module.

   See page 19 for more information.
5. Connect your serial cable to the new I/O module.

   See page 23 for more information.
6. Power up the VTrak.
7. At the cli> prompt, type **enclosure** and press Enter to verify the new I/O module's function.

The system returns:

```
----------------------------------------------------------------
Time Since Power Up   : 0 days 0 hours 1 minute 45 seconds
Enclosure             : SBB SAS 6G JBOD 3U-16 Bay
Serial Number         : S987123
I/O Module ID         : 2              Max I/O Module Cnt       : 2
Firmware Version      : 6.04.0000.00   I/O Module Role          : Secondary
                                    .
                                    .
                                    .
Slot 24               No Device Attached
CN#1                  50 0E 00 4A 00 BD 22 55
CN#2                  50 0E 00 4A 00 BD 22 3F
PSU ID        Shutdown Event
============================
PSU 01                AC loss
PSU 02                AC loss
```

Because the new I/O module is installed in the right slot, it automatically takes ID 2 and the Secondary role under enclosure information.

8. Disconnect your serial cable from the new I/O module.

Replacing a Power Supply Fan

Warning

The electronic components within the VTrak are sensitive to damage from Electro-Static Discharge (ESD). Observe appropriate precautions at all times when handling the VTrak or its subassemblies.

The power supply fans cool the VTrak enclosure as well as the power supplies themselves. If a power supply fan fails, replace the fan assembly as soon as possible. Contact Promise Technical Support for replacement parts. See page 44.

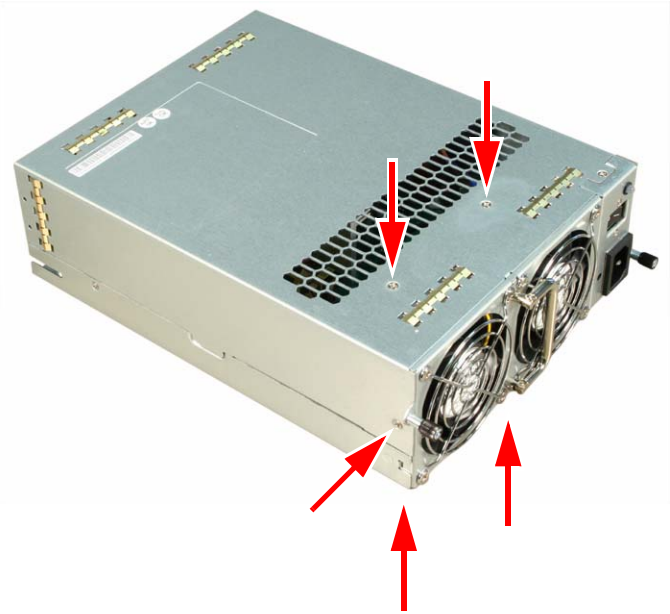
Removing the Fan Assembly

To remove the power supply fan assembly:

1. Shut off the power supply at the switch and unplug the power cord.
2. Loosen the mounting screws, pull the power supply out of the VTrak enclosure, and place the power supply on a static-free surface.
3. Remove the screws holding the fan assembly in place.

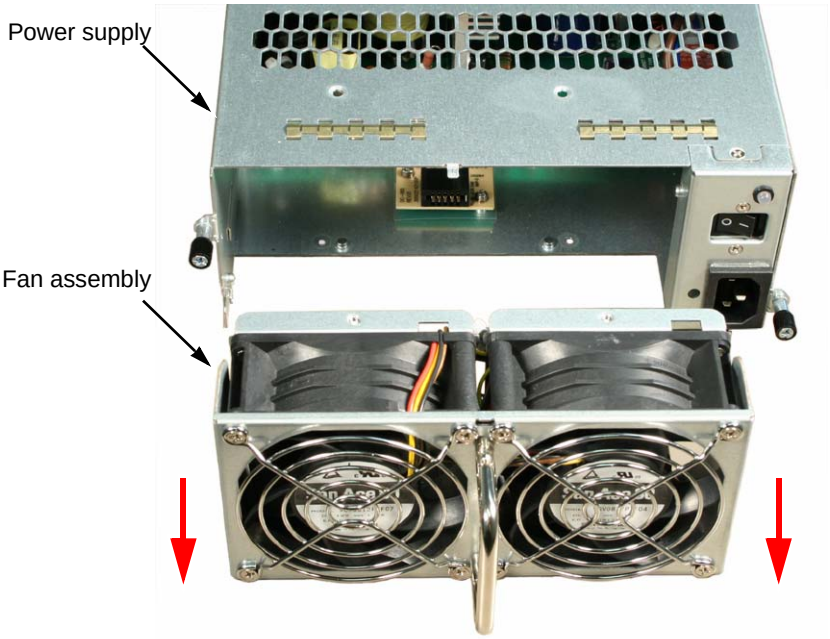
   There are five screws: two on top, two on the bottom, and one on the side. See Figure 1.

Figure 1. Five screws hold the fan assembly



4. Pull the fan assembly out of the power supply. See Figure 2.

Figure 2. Pulling the fan assembly from the power supply



Installing the Fan Assembly

To install the power supply fan assembly:

1. Insert the new fan assembly into the power supply.

   Be sure the tab passes through the locator hole. See Figure 3.

Figure 3. Tab in locator hole

2. Install the five screws that hold the fan assembly in place.

   See page 53, Figure 1.

3. Put the power supply back into the VTrak enclosure and tighten the mounting screws.
4. Plug in the power cord and turn on the power supply at the switch.

This completes the replacement procedure for the power supply fan.

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