PROMISE® TECHNOLOGY, INC.

VTRAK
VTJ930s
Product Manual

Version 1.0

Copyright

Important data protection information

You should back up all data before installing any drive controller or storage peripheral. PROMISE Technology is not responsible for any loss of data resulting from the use, disuse or misuse of this or any other PROMISE Technology product.

Notice

Although PROMISE Technology has attempted to ensure the accuracy of the content of this document; it is possible that this document may contain technical inaccuracies, typographical, or other errors. PROMISE Technology assumes no liability for any error in this publication, and for damages, whether direct, indirect, incidental, consequential or otherwise, that may result from such error, including, but not limited to loss of data or profits.

PROMISE Technology provides this publication "as is" without warranty of any kind, either express or implied, including, but not limited to implied warranties of merchantability or fitness for a particular purpose. The published information in the manual is subject to change without notice. PROMISE Technology reserves the right to make changes in the product design, layout, and driver revisions without notification to its users. This version of this document 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 1: Introduction to VTrak

This chapter covers the following topics:

Thank you for purchasing a PROMISE VTrak J930s JBOD expansion unit.

About This Manual

This *Product Manual* describes how to setup, use, and maintain the VTrak J930s unit. It also describes how the WebPAM PROe management software running on a VTrak RAID subsystem, can manage the J930s unit.

This manual refers to the VTrak J930s JBOD expansion unit in the following interchangeable terms:

* VTrak J930s
* J930s unit
* J930s enclosure

The term *RAID subsystem* applies to an enclosure with a RAID controller, such as the PROMISE VTrak E830f/i and E630f/i RAID subsystems.

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:

Warning

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

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

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

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

VTrak Overview

The PROMISE VTrak J930s JBOD expansion units are optimized for organizations deploying cost-effective small-to-medium application clusters, disk-to-disk backup and midrange storage solutions.

Figure 1. VTrak J930s front view

Front panel LEDs

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

VTrak J930s JBOD expansion unit can be attached directly to a SAS HBA card in a host PC or server. However, the J930s unit is intended to provide JBOD expansion to a VTrak RAID subsystem.

Figure 2. VTrak J930s rear view

PCM 1   PCM 2

I/O Module 1   I/O Module 2
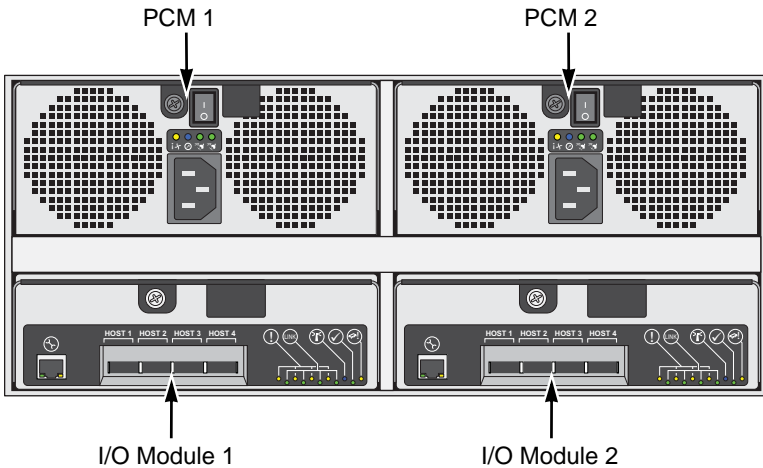
PCM stands for Power Supply/Cooling Module.

Architectural Description

The PROMISE VTrak J930s JBOD expansion unit packs up to 60 physical drives per system, offering industry-leading capacity in just four units (4U) of standard 19-inch rack space.

Up to two J930s units can also be connected to the same RAID subsystem 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

The four external SAS ports provide the needed connectivity and bandwidth for large capacity solutions requiring multiple J930s units cascaded together while still providing dual server support and host port failover or aggregation.

As implemented by PROMISE, only two of the four SAS ports are used.

With the VTrak J930s, PROMISE has dramatically narrowed the gap between simple fault tolerance and *No Single Point of Failure*. The VTrak J930s expansion unit uses a fully redundant, hot-swappable design and continuously monitors all system components. It can withstand failures to drives, power supplies, and I/O modules without interrupting system operation.

Features and Benefits

Feature	Benefit
4U 19-inch wide enclosure	Installs easily in any standard rack.
Supports Serial Attached SCSI physical drives	Allows you to use the new dual-port SAS physical drives.
Supports Serial ATA physical drives	Allows you to use your legacy SATA physical drives.
Supports hard disk drives (HDDs) and solid state drives (SSDs)	Allows flexibility to use the new SSDs.
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	I/O modules and power supplies 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.
Management through in-band SAS	Management does not require a separate connection
Compatible with leading SAS HBA and RAID cards	Works the first time with all major SAS HBA or RAID adapters
Supports WebPAM PROe on the RAID subsystem	In-band management via browser-based software application

Specifications

Drive Support

- 3.5-inch and 2.5-inch form factor
- SAS drives, 6 Gb/s and 3 Gb/s
- Hard disk drives (HDDs) and solid state drives (SSDs)
- Supports any mix of SAS and SATA drives simultaneously in the same enclosure

    For a list of supported drives, go to PROMISE support:
    http://www.promise.com/support/

External I/O Ports

Four 6 Gb/s SAS ports with an SFF-8088 SAS connector, per I/O module

Power Supplies

Dual 1200W, 90-264 VAC auto-ranging, 47-63 Hz, dual hot swap and redundant with PFC, N+1 design.

Voltage

90-264 VAC

Current In

12.9 A @ 110 VAC

Current Out

- 71 A @ 12.1 VDC
- 70 A @ 5.1 VDC
- 2 A @ 3.3 VDC

Power Conversion Efficiency

90% @ 208V

Operating Environment

Temperature Range

- Operational: 5° to 35°C (41° to 95°F) at sea level.
    Reduce by 2% for every 300m (1000 ft) of altitude.
- Non-Operational: -40° to 45°C (-40° to 113°F)

Humidity Range

- Operational: 20% to 80% (Non-Condensing)
- Non-Operational: 10% to 90% (Non-Condensing)

Noise, Shock, and Vibration

Acoustic Noise Levels

- Typical: 79 dB
- Maximum: 94 dB (estimated)

Shock

- Operational: 5G, 11 ms duration
- Non-Operational: 10G, 11ms duration

Vibration

- Operational: 0.1G, 5 to 500 Hz
- Non-Operational: 1G, 5 to 500 Hz

Dimensions

(Height, Width, Depth)

4U/60 Bay: 17.7 x 42.1 x 86.4 cm (7.0 x 16.6 x 34.0 in)

Weight

- 47.6 kg/105 lbs (without drives)
- 97.5 kg/215 lbs (with drives)

Safety Standards

• CB	• FCC Class A	• UL/cUL
• CE	• TUV	• VCCI Class A

Warranty

- Three year complete system limited warranty with advanced parts replacement
- Optional extended warranty
- Optional on-site parts replacement program

Support

- 24 hour, 7 days a week e-mail and phone support (English only)
- 24 hour, 7 days a week access to PROMISE support site
- Firmware and compatibility lists

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.

VCC Statement

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

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.

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 box contains the following items:

- VTrak J930s unit
- Front bezel
- Bezel mounting screws (4)
- 1.0m (3.3 ft) SFF-8088 4X to 4X external SAS cables, 2

- Screws for physical drives
- Left and right mounting rails
- 1.5m (4.9 ft) power cables (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.

Mounting the J930s Unit in a Rack

Cautions

- Only a qualified technician who is familiar with the installation procedure should mount and install the J930s unit.

- Do not lift the J930s unit by hand. Use a lift table to raise the unit to the rack.

- Be sure all switches are OFF before installing the J930s unit.

- Do not lay one J930s unit on top of another. Mount each enclosure supported by its own set of rails.

- 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 J930s unit are designed to safely support that J930s 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 VTrak J930s unit unless you install them as instructed.

- Install all of your devices in the rack with their weight spread as evenly as possible.

- Verify that the maximum ambient temperature in the rack system is less than the J930s unit's maximum operational temperature of 35°C (95°F). Also see "Operating Environment" on page 5.

- Verify that there is ample airflow around the J930s unit.

- Determine the maximum amperage draw of all devices in the rack and verify that it is less than the maximum amperage for the rack's power circuit. See "Power Supplies" on page 5.

- Verify that all devices in the rack are properly grounded, especially any devices attached to power strips.

Note

To lighten the J930s enclosure, remove the power supplies. If your J930s unit shipped with physical drives installed, remove all of the drive carriers, also.

Mounting the Enclosure in a Rack

The VTrak J930s enclosure installs into your rack using the supplied mounting rail kit.

Before you start, verify that you have these rack-mount components:

• Rack rails (one left and one right)

• Rail installation hardware (screws, guides, and bars)

• Enclosure rails (one left and one right)

The rails are marked R for right and L for left, viewing from the front of the enclosure.

To install the J930s enclosure into a rack:

1. Loosen the screws on the left and right rack rails and adjust the lengths accordingly to match the depth of the rack. Then re-tighten the screws.

2. Secure the rack rails to the front and rear supports of the rack, using the screws and hardware as shown below.

Figure 1. Left rack rail, front view

Rack rail attached at the front the rack

Figure 2. Left rack rail, rear view

Rack rail attached at the rear of the rack

3. Tighten all screws securing the rack rails into the rack.
4. Position the enclosure rails on each side of the J930s unit with the rails over the five keyhole tabs. Then slide the enclosure rails into place. See Figure 3.

Figure 3. Side rails attached to the J930s unit

Keyhole tabs   J930s unit

Attaching screw
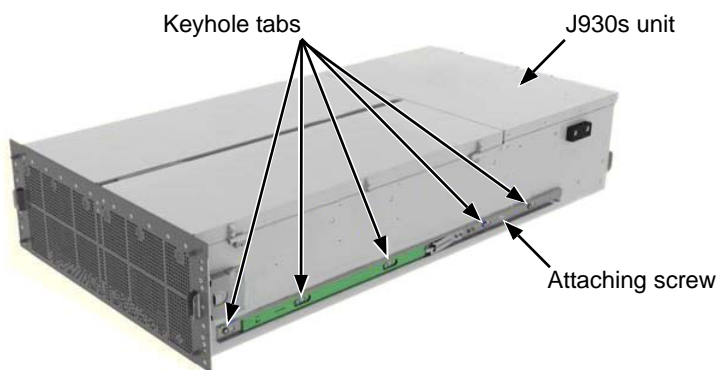
5. Anchor the rail to each side of the J930s unit as shown below using a single screw. See Figure 3.
6. Lift the J930s unit and place it in the rack with the guide blocks on top of the rails.

This action removes some of the weight while connecting the rails from the rack to the enclosure. See Figure 4.

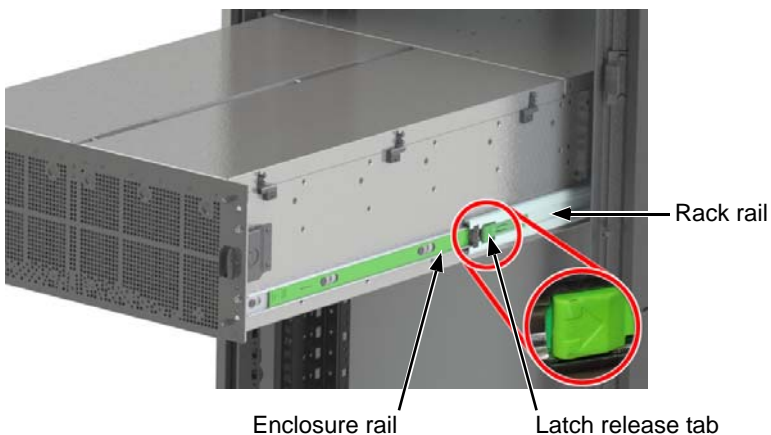*Figure 4. Guide blocks rest on top of the side rails*
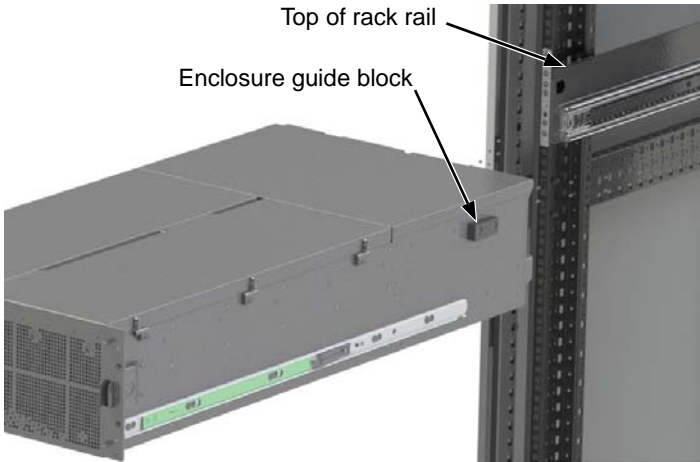
7. Carefully engage the enclosure rails into the rack rails and slide the J930s unit into the rack in until you hear a click. See Figure 5.

   The click indicates that the enclosure rail tabs are locked into place.

Figure 5. Enclosure and rack rails

8. Push the J930s unit all the way into the rack.

   This completes mounting your J930s unit in the rack.

Installing the Front Bezel

To install the bezel onto the front of the J930s unit:

1. Squeeze the two release tabs on the front of the J930s unit. See Figure 6.

2. Carefully pull the J930s out of the rack until the enclosure rail tabs engage.

Figure 6. Front of the J930s unit without bezel

Bezel alignment pins

Release tabs

Bezel alignment pins
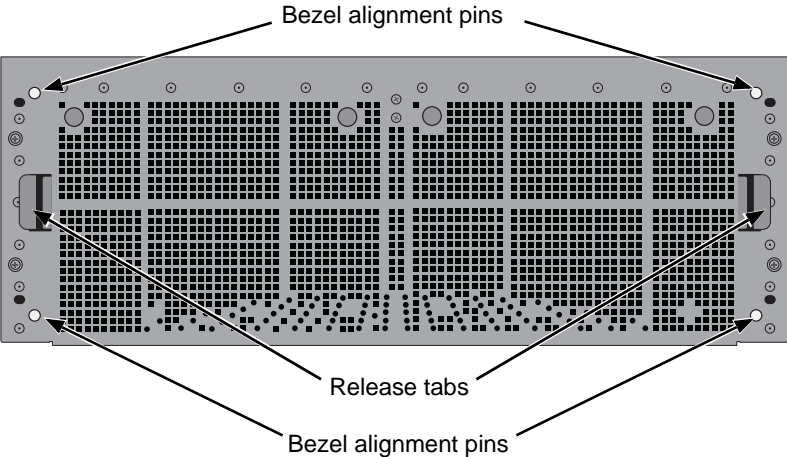
3. Hold the bezel with the lightpipe assembly at the bottom. Position the bezel so the alignment pins on the J930s unit slide into the alignment guides on the inside of the bezel. See Figure 7.

Figure 7. Inside view of the bezel

Bezel alignment guides

Lightpipe assembly
This side down
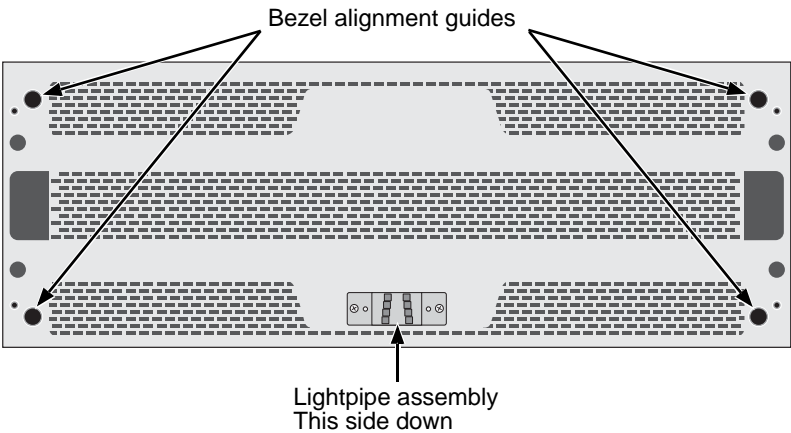
4. Insert the screws through the ears on each side of the J930s unit.

    Two screws on each side. Gently tighten the screws. See Figure 8.
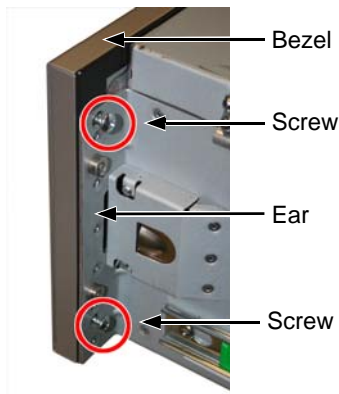
Figure 8. Attaching the bezel to the J930s unit

Bezel

Screw

Ear

Screw

5. Press the green rail tabs on either side of the J930s.
6. Carefully push the J930s into the rack until the two release tabs engage.

Installing the Cable Management Kit

The J930s unit includes a cable management kit to organize your and SAS and power cables in the rack. The cable guides enable you to slide the J930s unit out of the rack without disconnecting or tangling your cables.

You must install the J930s unit in the rack before you can install the cable management kit.

To install the cable management kit:

1. Attach one end of each cable guide as shown below to the rear of the enclosure using the attached thumbscrews. See page 16, Figure 9.

Figure 9. Cable guides attached to rear of a J930s unit

Thumbscrews (2)   J930s unit   Cable guides (2)
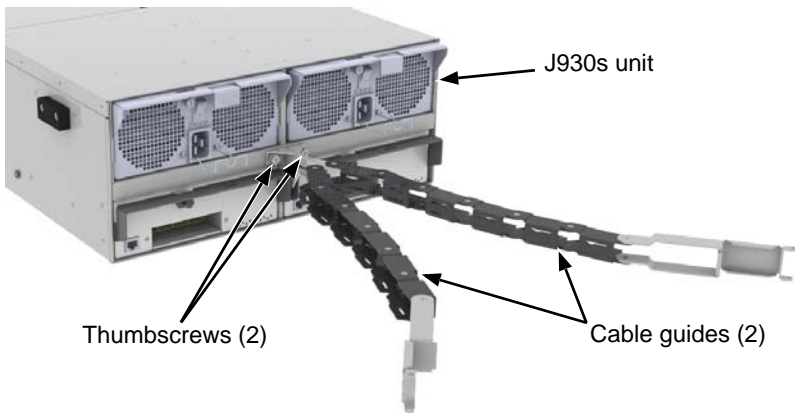
2.   Attach the other end of cable guides to the rack rails using the pins from rack rail kit. See Figure 10.

Figure 10.Cable hardware attached to rear of rack.

Mounting pins
(1 on each side)   Rack rail
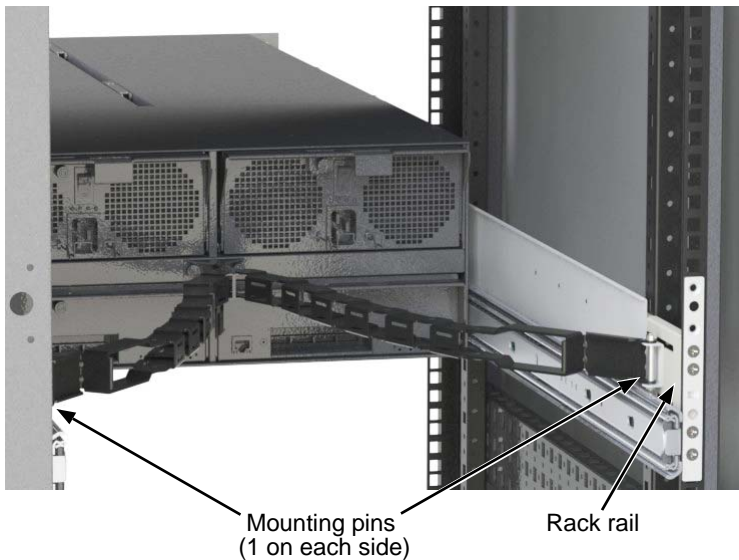
3.   Route the SAS and power cables through the cable management rails as shown below.

The cable management rails have slots for plastic ties or Velcro cable wraps to hold the cables in place. See page 17, Figure 11.

Ties and wraps are not included.

Cautions

- Do NOT plug the power cables into the power supplies at this time.
- Use only the power cables supplied with the J930s unit. For additional power cables, please contact PROMISE.

Figure 11. Cable guide with SAS and power cables installed

Power and SAS cables   Install cable wraps here
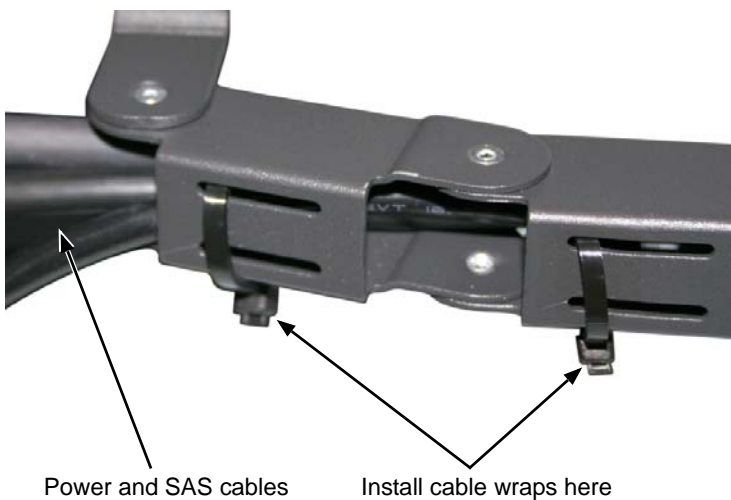
4. Test the cable management system by sliding the J930s unit all the way out on the rails. Ensure that the unit moves smoothly and that there are no cables loose or binding when the system is slid back into the rack.

   This completes the installation of the cable management kit.

Installing Physical Drives

The VTrak J930s JBOD expansion unit supports:

• 3.5-inch and 2.5-inch form factor

• SAS drives, 6 Gb/s and 3 Gb/s

• Hard disk drives (HDDs) and solid state drives (SSDs)

• Supports any mix of SAS and SATA drives simultaneously in the same enclosure

For a list of supported physical drives, download the latest compatibility list from the PROMISE support web site.

Assembling Drive Carriers for 3.5-inch Drives

Caution

When handling physical drives, take static precautions, such as wrist straps, a grounded ESD mat, etcetera.

The drive carrier consists of two parts, a release rail and a pivot rail, plus the attaching screws.

To assemble a drive carrier:

1. Attach the release rail to the physical drive with two screws, as shown on page 19, Figure 12.

   The drive's data/power connector is at the bottom.

2. Position the carrier pivot rail to the physical drive so that Tab A on the release rail inserts into Slot B on the pivot rail.

3. Attach the pivot rail to the physical drive with two screws.

4. Tighten the drive carrier screws to 4 to 6 inch-pounds (0.45 to 0.67 Nm).

   Do not over-tighten.

   This completes drive carrier assembly. See page 19, Figure 13.

Figure 12. Drive carrier with a 3.5-inch drive

Release rail
Handle
Pivot rail
Mounting screw
Slot B
Mounting screw
Tab A
Mounting screw
Mounting screw
Physical drive
Data/power connector

Figure 13. Assembled drive carrier with a 3.5-inch drive

Pivot rail
Physical drive
Release rail
Data/power connector

Assembling Drive Carriers for 2.5-inch Drives

Caution

When handling physical drives, take static precautions, such as wrist straps, a grounded ESD mat, etcetera.

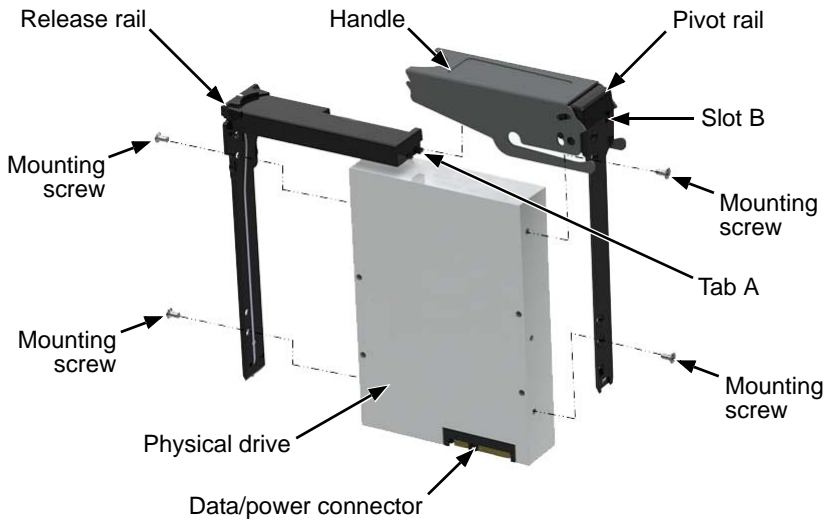The drive carrier consists of three parts, a release rail, pivot rail, and a drive tray, plus the attaching screws.
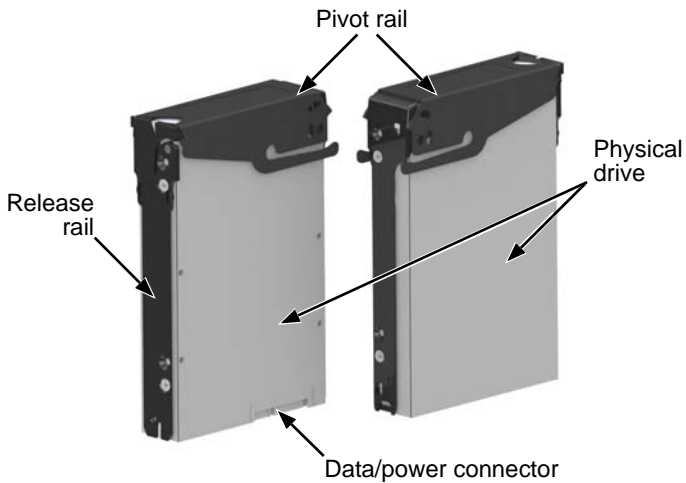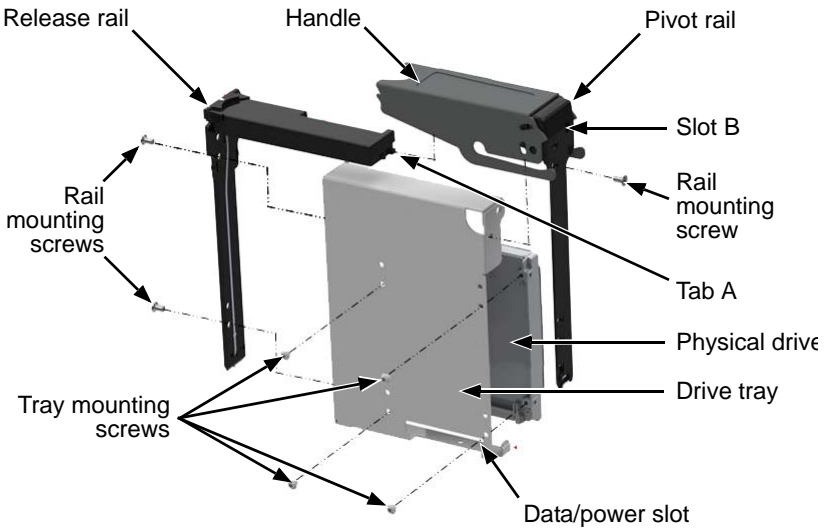
To assemble a drive carrier:

1. Attach the release rail to the drive tray with two screws, as shown in Figure 14.

   The tray's data/power slot is at the bottom.

2. Position the pivot rail to the drive tray so that Tab A on the release rail inserts into Slot B on the pivot rail.

3. Attach the pivot rail to the drive tray with one screw.

4. Tighten the drive carrier screws to 4 to 6 inch-pounds (0.45 to 0.67 Nm).

   Do not over-tighten.

5. Position the physical drive into the drive tray. Line up the data/power slot on the drive with the data/power slot on the tray, as shown in Figure 14.

6. Install and tighten the drive tray screws to 4 to 6 inch-pounds (0.45 to 0.67 Nm).

   Do not over-tighten.

Figure 14.Drive carrier with a 2.5-inch drive

Release rail   Handle   Pivot rail

Slot B

Rail
mounting
screws

Rail
mounting
screw

Tab A

Physical drive

Drive tray

Tray mounting
screws

Data/power slot

This completes drive carrier assembly. See page 21, Figure 15.

Figure 15.Assembled drive carrier with a 2.5-inch drive

Pivot rail

Release
rail

Drive
tray

2.5-inch
physical
drive

Data/power connector
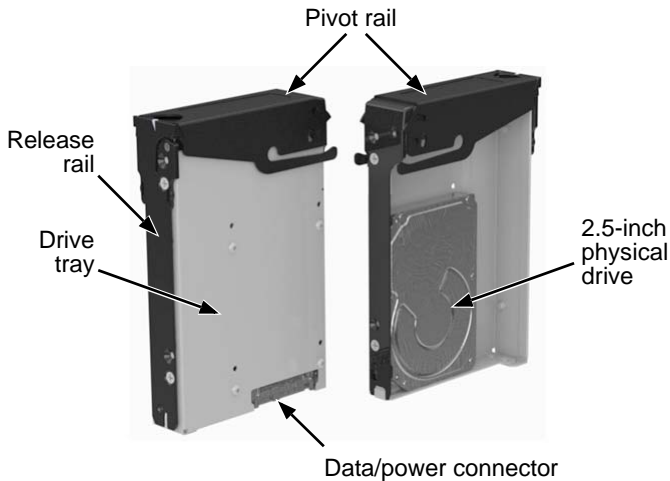
Installing the Drive Carriers

Cautions

- Ensure that physical drives are at room temperature before installing them and powering up the J930s unit. Allow at least two hours for the drives to acclimate to room temperature before using them.
- To avoid hand contact with an electrical hazard, remove only one drive carrier a time.

To install the drive carriers into the J930s unit:
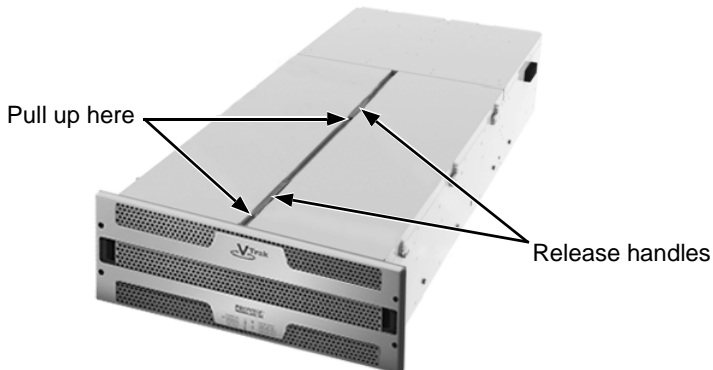
1. Squeeze the two release tabs on the front of the J930s unit. See Figure 16.

Figure 16. Rack release tabs on the J930s unit
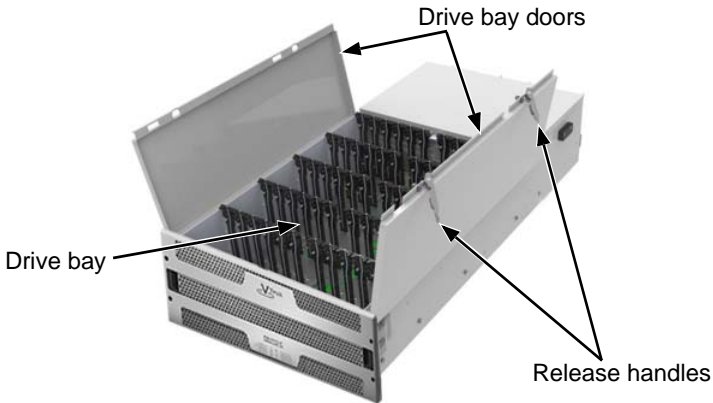

Release tabs
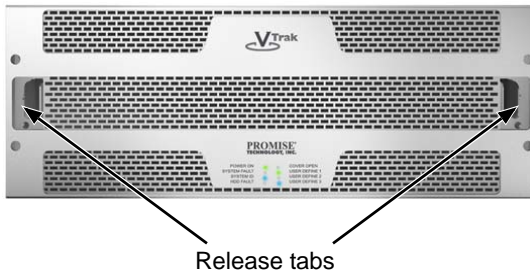
2. Carefully pull the J930s unit out of the rack until the latches engage.
3. Pull up on the release handles of the drive bay doors to unlock them.
   See page 22, Figure 17.

Figure 17. Drive bay doors

Pull up here

Release handles

---

4. Open the drive bay doors.

Figure 18. Drive bay open

Drive bay doors

Drive bay

Release handles

5. Pick up a drive carrier assembly and press the release catch to release the handle. See Figure 19.

Figure 19. Drive carrier assembly
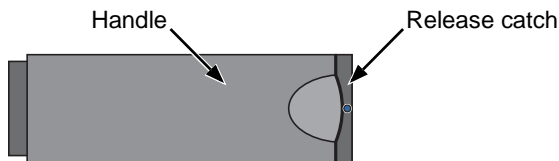
Handle

Release catch

6. Slide the drive carrier assembly into a drive slot until the carrier contacts the baseboard. Carefully press down on the handle until it locks the drive carrier assembly into place. See Figure 20.

Figure 20. Sliding the drive carrier assembly into a slot

Handle open

Handle down and locked

Front

Drive carrier assembly
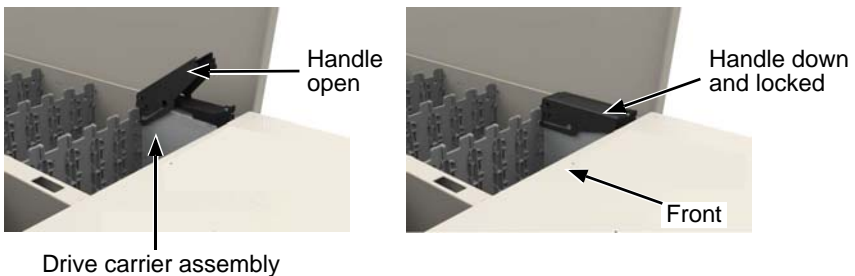
7. Repeat Steps 5 and 6 for all remaining drives.

8. Close the drive bay doors and press the release handles to lock them into place.

9. Press the green latch release tabs on both sides of the J930s unit.

10. Carefully push the unit back into the rack until the front latches engage.
    See Figure 21.

Figure 21. Latch release tab

Latch release tab

When you have finished installing your drives, go to "Making Data Connections" on page 25.

Making Data Connections

You can configure your VTrak J930s unit as:

- Basic Direct Attached Storage (DAS) Connection (below)
- Cascading DAS Connection (page 26)
- Redundant Cascading DAS Connection (page 27)

Basic DAS Connection

To setup a basic DAS connection:

- Connect the SAS EXP port on the VTrak RAID subsystem to the HOST 1 (SAS IN) port on the J930s unit. See Figure 22.
- Use the SFF-8088 4X to 4X external SAS cable supplied with the J930s unit.

Figure 22. A basic DAS connection

SFF-8088 external 4X to 4X SAS cable

VTrak RAID Subsystem

VTrak J930s

HOST 1 port
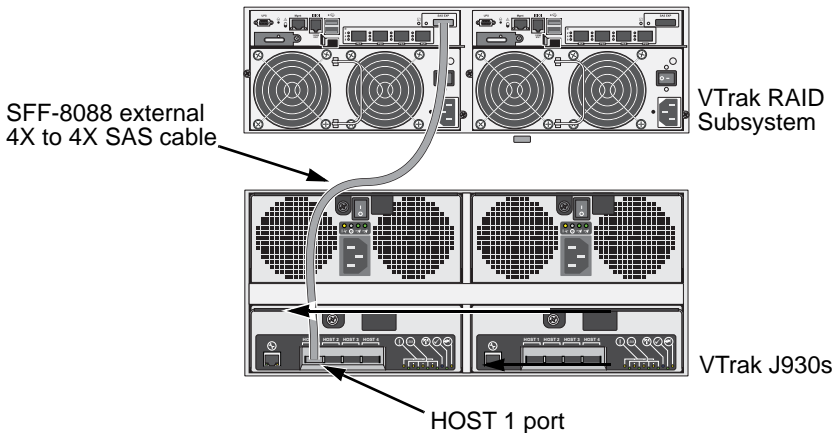
This completes data cable connections. Go to "Connecting the Power" on page 28.

Cascading DAS Connection

To setup a cascading DAS connection:

1. Connect the SAS EXP port on the VTrak RAID subsystem to the HOST 1 (SAS IN) port on the first J930s unit.

    See Figure 23. Use a SFF-8088 4X to 4X external SAS cable (supplied with the J930s unit).

2. Connect the HOST 3 (SAS OUT) port on the same I/O module of the first VTrak to the HOST 1 (SAS IN) port on the second J930s unit.

    You can cascade up to two J930s units in this manner.

Figure 23. A cascaded DAS connection

This completes the data cable connections. Go to "Connecting the Power" on page 28.

Redundant Cascading DAS Connection

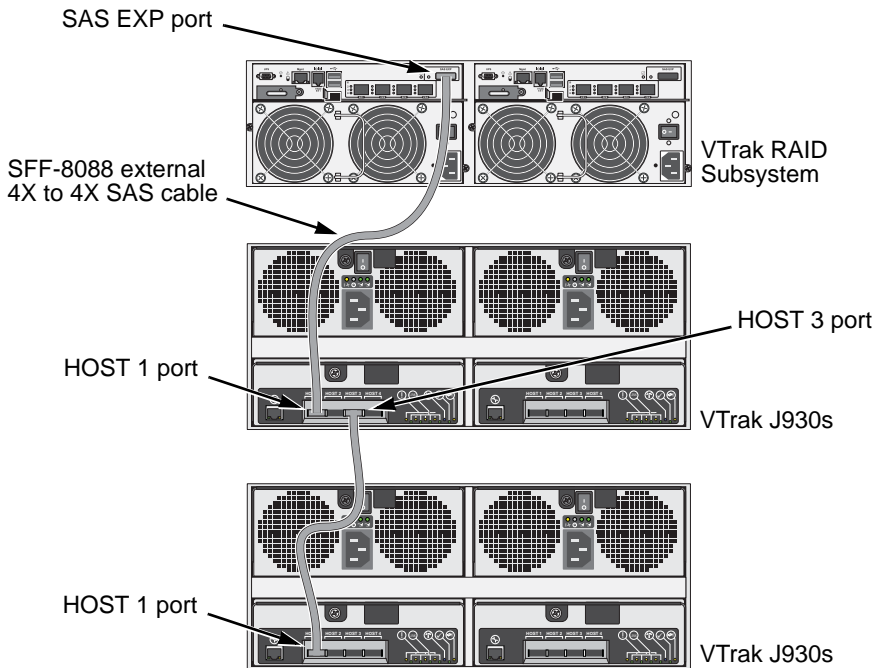To setup a redundant cascading DAS connection:

1. Connect a SAS EXP port on the VTrak RAID subsystem to the HOST 1 (SAS IN) port on the first J930s unit.

   See page 28, Figure 24. Use a SFF-8088 4X to 4X external SAS cable (supplied with the J930s unit).

2. Connect the HOST 3 (SAS OUT) port on the same I/O module of the first J930s unit to the SAS IN port on the second J930s unit.

3. Connect the other SAS EXP port on the VTrak RAID subsystem to the HOST 1 (SAS IN) port to the other I/O module on the first J930s unit.

4. Connect the HOST 3 (SAS OUT) port on the same I/O module of the first J930s unit to the HOST 1 (SAS IN) port of the other I/O module on the second J930s unit.

5. Connect the remaining J930s units in the same manner.

   Do not cross-connect the I/O modules. Maintain a separate cascade configuration from the VTrak RAID subsystem to the last J930s unit. See page 28, Figure 24.

   You can cascade up to two J930s units in this manner.

Figure 24.A redundant cascading DAS connection

SAS EXP port   SAS EXP port

VTrak RAID
subsystem

SFF-8088 external
4X to 4X SAS cables

HOST 3 port   HOST 1 port

VTrak J930s

HOST 1 port   HOST 3 port

HOST 1 port

VTrak J930s

HOST 1 port

HOST 1 port

Cascade Configuration 1   Cascade Configuration 2
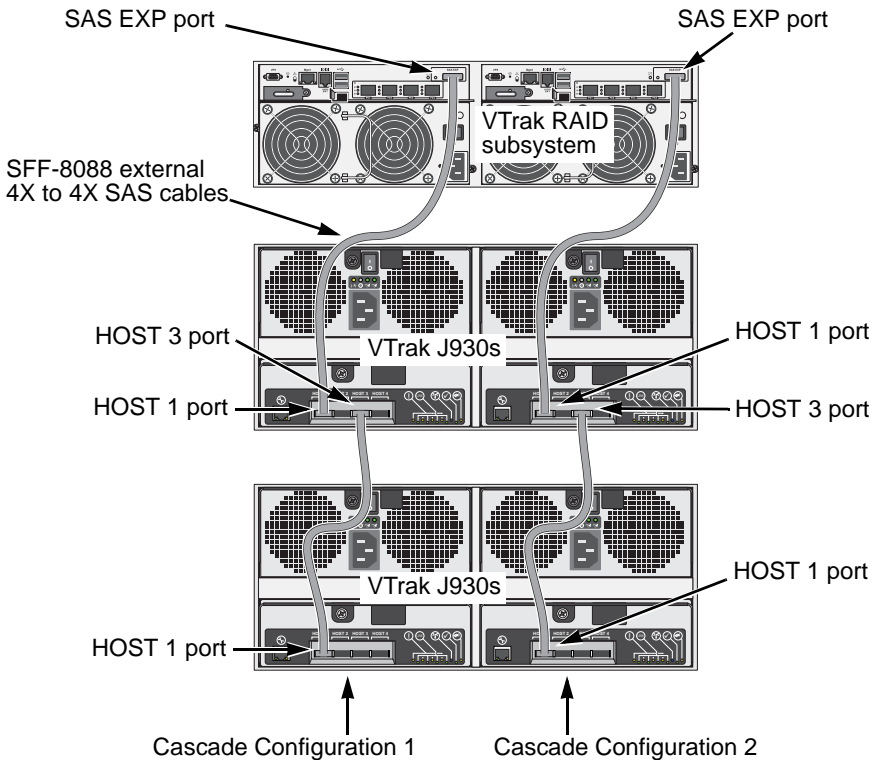
This completes the data cable connections. Go to "Connecting the Power" on page 28.

Connecting the Power

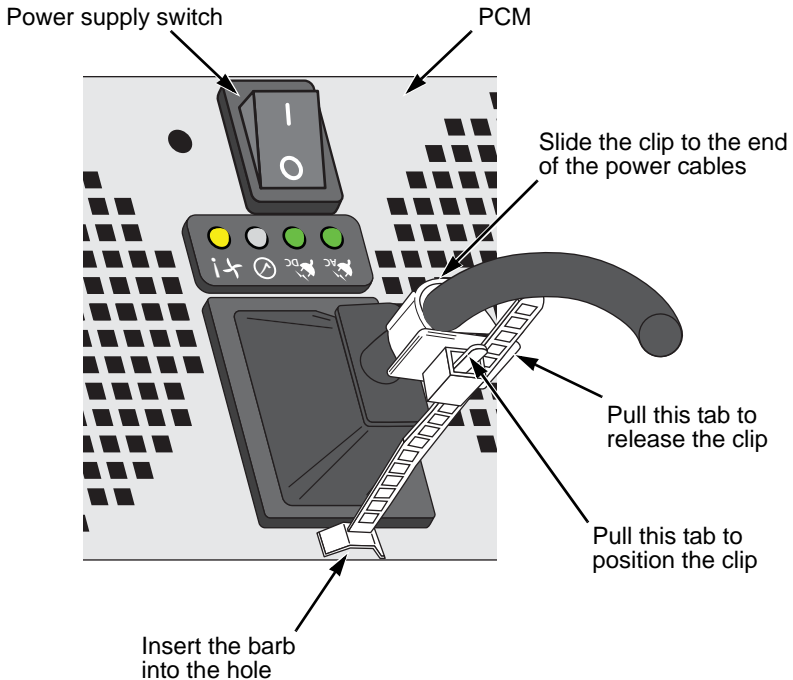|	**Caution**
⚠️	Use only the power cables supplied with the J930s unit. Do not use extension cords or any other type of power cable.

The VTrak J930s ships with clip assemblies to secure the power cables. The clips attach to the Power Supply/Cooling Unit (PCM).

To secure the power cables:

1.   Insert the barbed end of the band into the hole until it snaps into place.

2.   Attach the power cables to the PCM.

3. Place the clip over the power cables, slide the clip to the end, then squeeze the clip to tighten it. See Figure 25.

Figure 25. Securing a power cable with the clip assembly

Power supply switch

PCM

Slide the clip to the end of the power cables

Pull this tab to release the clip

Pull this tab to position the clip

Insert the barb into the hole

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

Power-up Sequence – Single Unit

To power up a single VTrak J930s unit:

1. Switch ON both PCMs of the J930s unit.
2. Wait at least one minute and then power up the VTrak RAID subsystem.

Power-up Sequence – Multiple Units

In the power up sequence, the "first J930s" refers to the J930s unit connected to the VTrak RAID subsystem. The "last J930s" refers to the J930s unit at the end of the cascade.
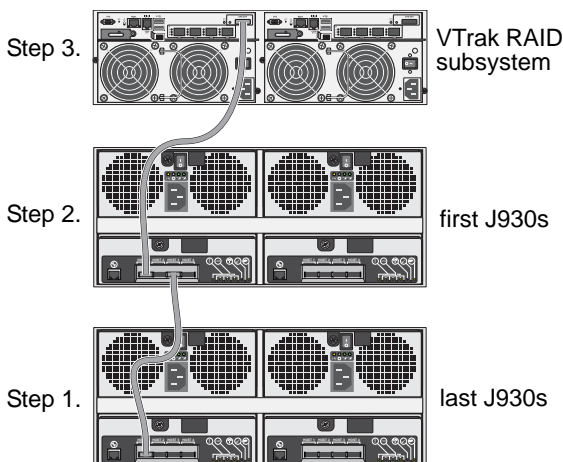
To power up the multiple VTrak J930s units:

1. Switch ON both PCMs of the *last* J930s unit in the cascade.

2. Wait at least one minute and then switch ON both PCMs of the *first* J930s unit in the cascade.

3. Wait at least one minute and then power up the VTrak RAID subsystem.
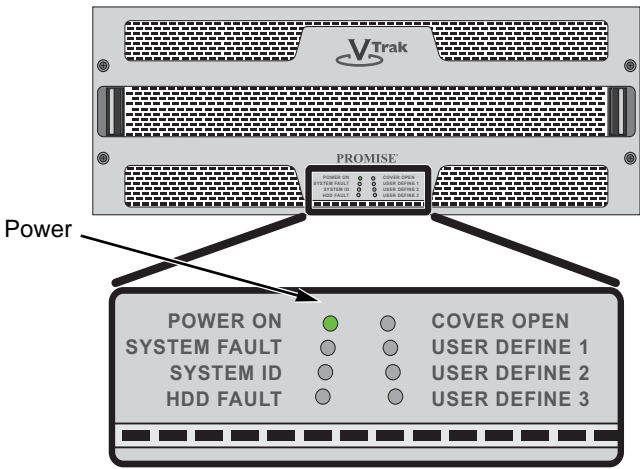
Figure 26. Power-up sequence for cascaded units

When boot-up is finished and the J930s unit is functioning normally:

- The Power LED shows green.
- Other LEDs are dark.

Figure 27. J930s front panel LED display

Power

If any other LEDs are lit, see "Front Panel LEDs" on page 33.

Command Line Interface

Unlike other VTrak JBOD models, the J930s unit does not support a command line interface. All software management functions are handled through the WebPAM PROe on the VTrak RAID subsystem.

For more information on WebPAM PROe, see Chapter 4 of the VTrak RAID subsystem *Product Manual*.
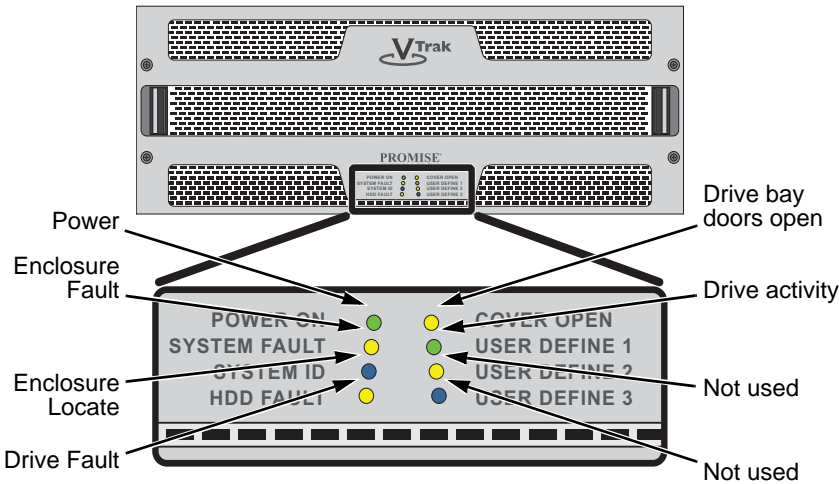
Chapter 3: Management

Front Panel LEDs

The LEDs on the front panel provide important status information about the VTrak J930s unit.

Figure 1. J930s front panel LED display

See the table on the next page for more information.

Enclosure Front LEDs		
LED	**ON**	**OFF**
Power	DC power on	No DC power
Enclosure Fault	Problem with enclosure	OK
Enclosure Locator*	Identifies this enclosure	Locator is disabled
Drive Fault	Problem with physical drive	OK
Drive Bay Doors	Doors open	Doors closed and latched
Drive Activity	Read/write activity	No activity
* The Locator feature is triggered from WebPAM PROe on the VTrak RAID subsystem. It causes the LEDs to blink on and off for one minute to help you identify a specific J930s enclosure.		

Drive Carrier LED

The drive carrier LEDs are used only for the purpose of locating a physical drive. To see the drive carrier LEDs, you must slide the J930s unit out of the rack and open the cover.

Figure 2. Drive carrier LED

Locator LED

| Drive Carrier LED		
LED	**ON**	**OFF**
Locator*	Identifies this drive	Locator is disabled
* The Locator feature is triggered from WebPAM PROe on the VTrak RAID subsystem. It causes the LEDs to blink on and off for one minute to help you identify a specific physical drive.		

I/O Module LEDs

When the Enclosure Fault LED on the front panel shows amber, check the LEDs on the I/O module on the back of J930s unit.

Figure 3. I/O module LEDs

SAS Link Fault	SAS Link Established	I/O Module Locator
I/O Module OK	I/O Module Fault	

I/O Module LEDs		
LED	**ON**	**OFF**
SAS Link Fault	Problem with the link on this port	OK
SAS Link Established	Valid link established on this port	No SAS link on this port
I/O Module Locator*	Identifies this I/O module	Locator is disabled
I/O Module OK	Booted and functioning properly	Problem with this I/O module
I/O Module Fault	Problem with this I/O module	OK
* The Locator feature is triggered from WebPAM PROe on the VTrak RAID subsystem. It causes the LEDs to blink on and off for one minute to help you identify the I/O Module.		

SAS link LEDs are mapped to specific SAS ports. See page 36, Figure 4.

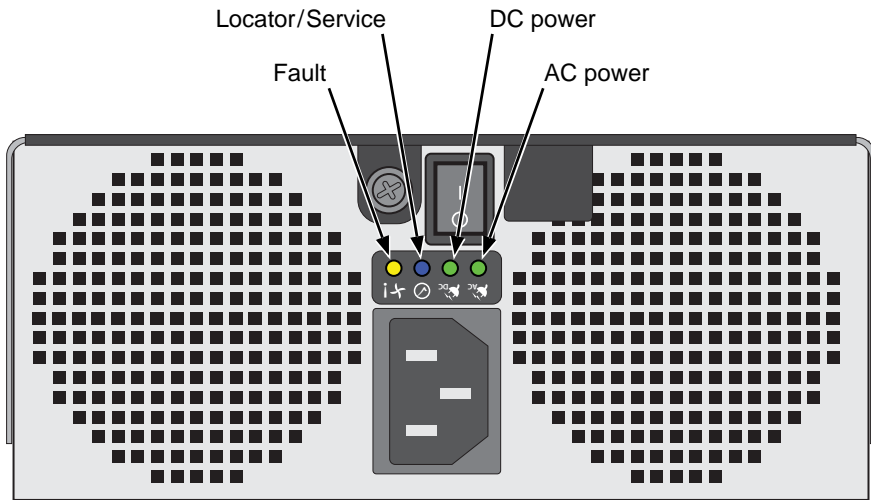*Figure 4. SAS port LED mapping*
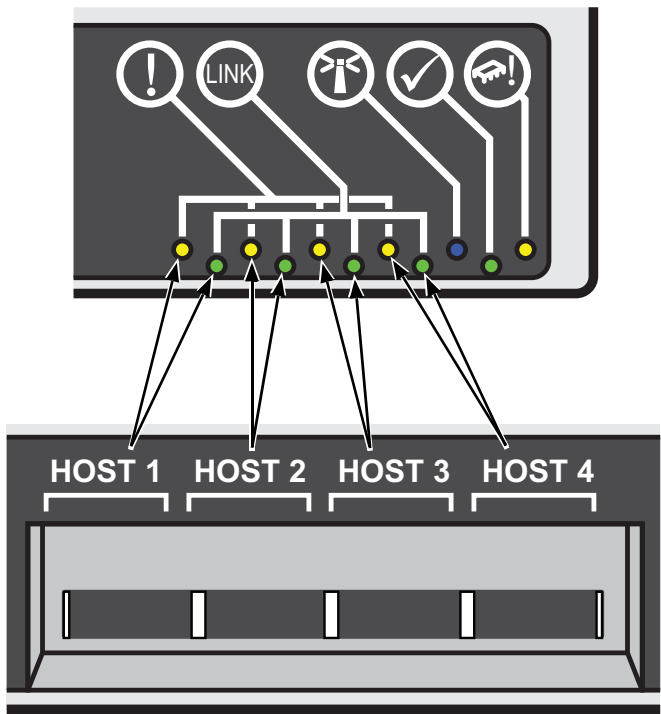
Note: For most applications, only ports HOST 1 and HOST 3 are used.

PCM LEDs

On the J930s front panel, when the Power LED goes dark or the Enclosure Fault LED shows amber, check the LEDs on the Power Supply/Cooling Module (PCM) on the back of J930s unit.

Figure 5. PCM LEDs

Power Supply/Cooling Module LEDs		
LED	**ON**	**OFF**
AC Power	OK	Power supply turned off or problem with AC input
DC Power	OK	Problem with DC output
Locator*/Service	OK to replace power supply	ID and Service Allowed are disabled.
Fault	Problem with power supply/ cooling module	OK
* The Locator feature is triggered from WebPAM PROe on the VTrak RAID subsystem. It causes the LEDs to blink on and off for one minute to help you identify the PCM.		

Replacing Physical Drives

- Sliding the Enclosure in and out of the Rack (page 38)
- Accessing the Drive Carriers (page 39)
- Drive Slot Numbering (page 41)
- Activating the Locator LED (page 42)
- Replacing the Physical Drive (page 43)

On VTrak J930s, the physical drives are hot-swappable.

Sliding the Enclosure in and out of the Rack

To slide the J930s unit out of the rack:

1. Squeeze the two release tabs on the front of the J930s unit.
   See Figure 6.
2. Carefully pull the J930s out of the rack until the enclosure rail tabs engage.

Figure 6. Rack release tabs on the front of the J930s

Release tabs
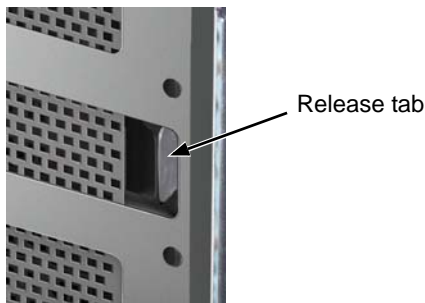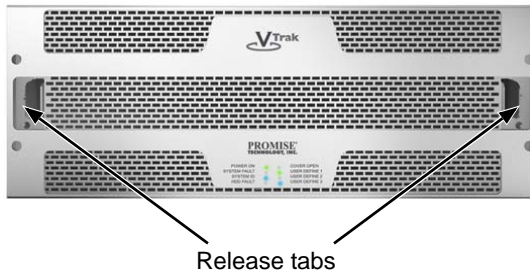
Release tab

To slide the J930s unit back into the rack:

1. Press the green latch release tabs on both sides of the J930s unit.
2. Carefully push the unit back into the rack until the front latches engage.
   See page 39, Figure 7.

Figure 7. Latch release tab

Latch release tab
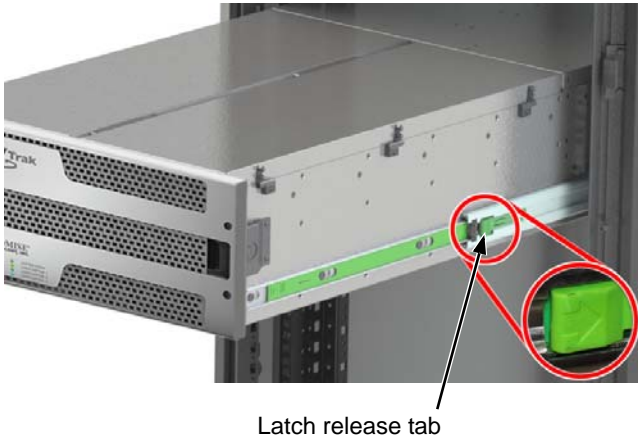
Accessing the Drive Carriers
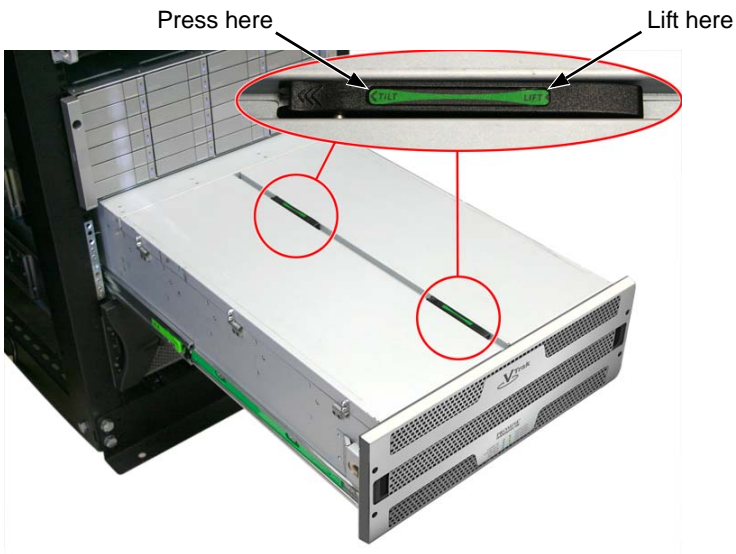
To access the drive carriers:

1. Press the TILT end of the release handles, then lift the LIFT end to unlock the drive bay doors.

    See Figure 9.

Figure 8. Drive bay door release handles

Press here   Lift here

2.   Open the drive bay doors.

   See Figure 9.

Figure 9.   Drive bay doors open

Caution

To prevent overheating, leave the drive bay doors open no longer than five minutes.
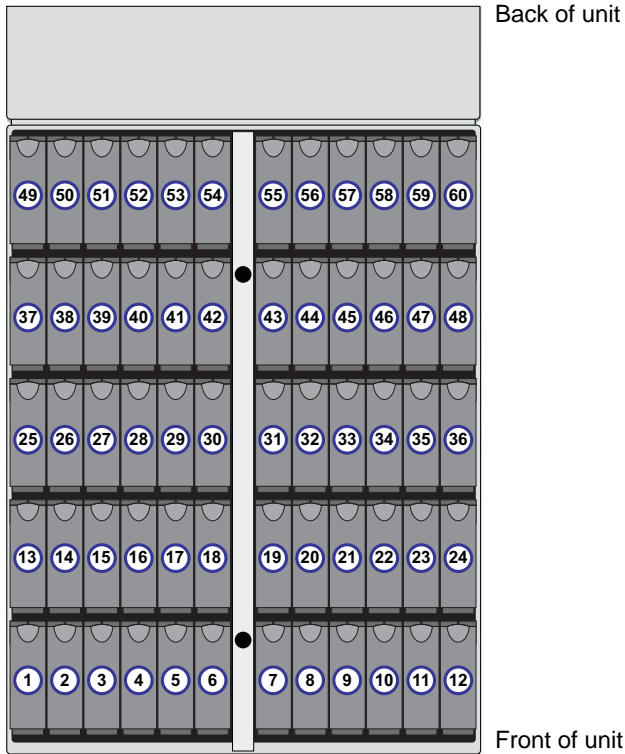
Note

When you open the drive bay doors an intermittent alarm sounds and the Drive Bay Doors LED lights. See page 33, Figure 1.

Drive Slot Numbering

The diagram below shows how the drive slots are numbered on the VTrak J930s unit. The same numbering is found in the WebPAM PROe interface.

For more information on WebPAM PROe, see Chapter 4 of the VTrak RAID subsystem *Product Manual*.

Figure 10.VTrak J930s drive slot numbering

Back of unit

| 49 | 50 | 51 | 52 | 53 | 54 | | 55 | 56 | 57 | 58 | 59 | 60 |
37	38	39	40	41	42		43	44	45	46	47	48
25	26	27	28	29	30		31	32	33	34	35	36
13	14	15	16	17	18		19	20	21	22	23	24
1	2	3	4	5	6		7	8	9	10	11	12

Front of unit

Activating the Locator LED

Use WebPAM PROe on the VTrak RAID subsystem to activate the Locator LED on the physical drive you need to identify.

For more information on WebPAM PROe, see Chapter 4 of the VTrak RAID subsystem *Product Manual*.

The Locator LED blinks for one minute.

Figure 11.The Locator LED

Back of unit

Locator LED blinks
for one minute

Front of unit
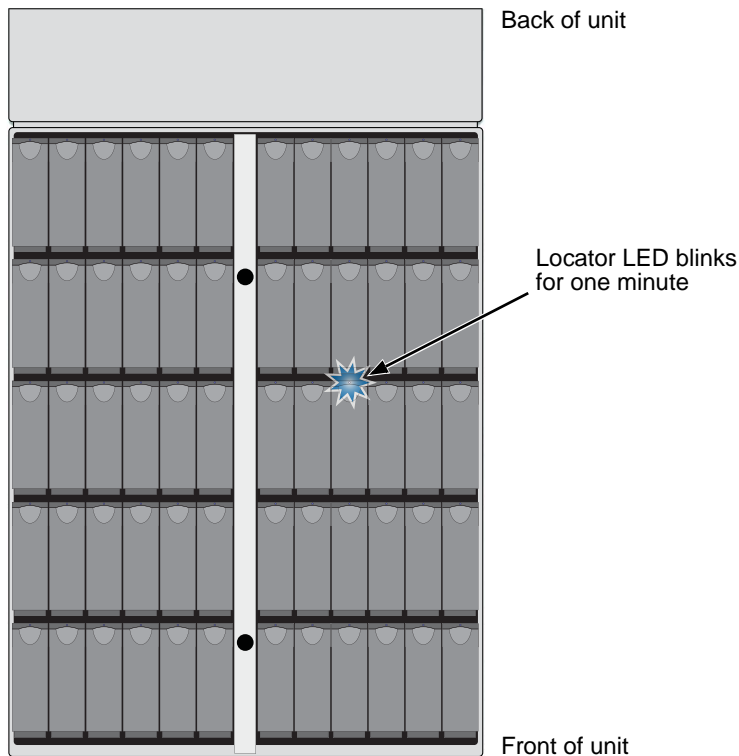
Replacing the Physical Drive

Cautions

⚠

- When handling physical drives, take static precautions, such as wrist straps, a grounded ESD mat, etcetera.
- Ensure that the replacement physical drive is at room temperature before installing them into the J930s unit.
- To avoid hand contact with an electrical hazard, remove only one drive carrier a time.

To replace a physical drive:

1. Press the release catch to release the handle.

Figure 12. Drive carrier assembly

Handle   Release catch
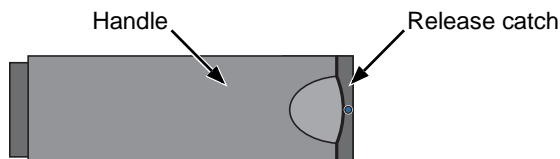
2. Lift the drive carrier assembly out of the enclosure.
3. Remove the drive carrier sections from old physical drive and attach them to the new drive.
4. Slide the drive carrier assembly into a drive slot until the carrier contacts the baseboard. Carefully press down on the handle until it locks the drive carrier assembly into place.
5. Close the drive bay doors and press the release handles to lock them into place. See page 40, Figure 9.

    When you close and latch the drive bay doors the intermittent alarm goes silent and the Drive Bay Doors LED goes dark.
6. Depress the green latches on each of the two rail assemblies and carefully push the unit back into place until the front latches engage.

Replacing a PCM

On VTrak J930s, the PCMs are hot swappable.

Activating the Locator LED

Use WebPAM PROe on the VTrak RAID subsystem to activate the Locator LED on the PCM you need to replace.

For more information on WebPAM PROe, see Chapter 4 of the VTrak RAID subsystem *Product Manual*.

The Locator LED blinks for one minute. See page 45, Figure 13.

Replacing the PCM

Cautions

- When handling the PCM, take static precautions, such as wrist straps, a grounded ESD mat, etcetera.
- To prevent overheating, do NOT leave the PCM out of the enclosure for more than five minutes.
- To avoid hand contact with an electrical hazard, do not reach into the enclosure with your hand or a tool.

Note

When you remove the PCM, the cooling fans increase to maximum speed and an intermittent alarm sounds.

On the PCM you plan to replace:

1. Turn OFF the power switch.

   See page 45, Figure 13.

2. Remove the power cable.

3. Loosen the thumbscrew.

4. Grasp the tab on the lock bar and carefully pull it toward you.

   The cam assembly releases and the PCM begins to slide out of the enclosure.

5. Pull the PCM completely out of the enclosure.

Figure 13.PCM

Power cable attaches here
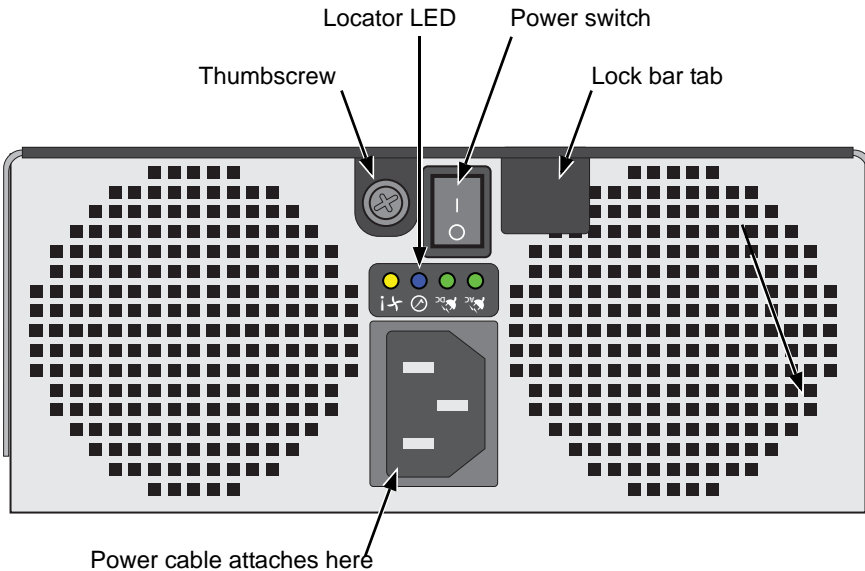
On the new PCM:

1. Press the PCM completely into the enclosure.
2. Press the tab on the lock bar and toward the PCM until it locks in place.
3. Tighten the thumbscrew.
4. Attach the power cable.
5. Turn ON the power switch.

   After a few moments, the J930s unit detects the replacement PCM. The cooling fans resume normal speed and the alarm goes silent.

   This completes the PCM replacement.

Replacing an I/O Module

On VTrak J930s, the I/O modules s are hot swappable.

Activating the Locator LED

Use WebPAM PROe on the VTrak RAID subsystem to activate the Locator LED on the I/O Module you need to replace.

For more information on WebPAM PROe, see Chapter 4 of the VTrak RAID subsystem *Product Manual*.

The Locator LED blinks for one minute. See page 47, Figure 14.

Replacing the I/O Module

Caution

- When handling the I/O Module, take static precautions, such as wrist straps, a grounded ESD mat, etcetera.
- To prevent overheating, do NOT leave the I/O Module out of the enclosure for more than five minutes.
- To avoid hand contact with an electrical hazard, do not reach into the enclosure with your hand or a tool.

Note

When you remove the I/O Module, the cooling fans increase to maximum speed and an intermittent alarm sounds.

On the I/O Module you plan to replace:

1. Verify that no data transactions are taking place.
2. Remove the SAS cables.
3. Loosen the thumbscrew.
4. Grasp the tab on the lock bar and carefully pull it toward you.

   The cam assembly releases and the I/O Module begins to slide out of the enclosure.
5. Pull the I/O Module completely out of the enclosure.

   See page 47, Figure 14.

Figure 14.I/O Module
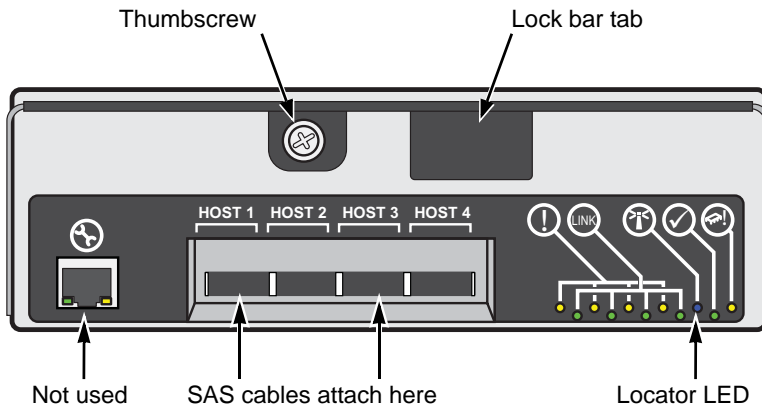
On the new I/O Module:

1. Press the I/O Module completely into the enclosure.
2. Press the tab on the lock bar and toward the I/O Module until it locks in place.
3. Tighten the thumbscrew.
4. Attach the SAS cables.

   After a few moments, the J930s unit detects the replacement I/O Module. The cooling fans resume normal speed and the alarm goes silent.

   This completes the I/O Module replacement.

Shutting Down and Restarting the VTrak

Shutdown Sequence – Single Unit

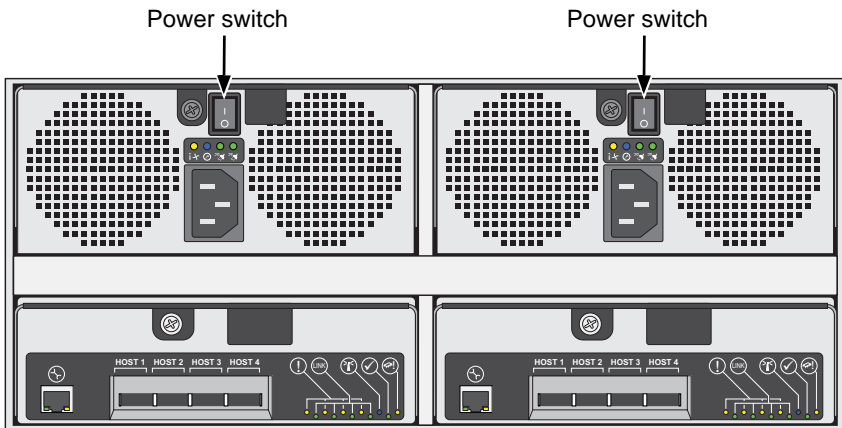To shut down a single VTrak J930s unit:

1. Power down the VTrak RAID subsystem.
2. Turn OFF the switches on both power supplies on the J930s unit.

Shutdown Sequence – Multiple Units

To shut down multiple VTrak J930s units:

1. Power down the VTrak RAID subsystem.
2. Turn OFF the switches on both PCMs of the first J930s unit in the cascade.
3. Turn OFF the switches on both PCMs of the last J930s unit in the cascade.

Figure 15. Power switches

Power switch   Power switch

Important

Wait at least 30 seconds after shutdown before you restart the J930s unit.

Power-up Sequence – Single Unit

To power up a single VTrak J930s unit:

1. Switch ON both PCMs on the J930s unit.
2. Wait at least one minute and then power up the VTrak RAID subsystem.

Power-up Sequence – Multiple Units

To power up the multiple VTrak J930s units:

1. Switch ON both PCMs of the last J930s unit in the cascade.

   See Figure 16.
2. Wait at least one minute and then switch ON both PCMs of the first J930s unit in the cascade.
3. Wait at least one minute and then power up the VTrak RAID subsystem.

Figure 16. Power-up sequence for cascaded units
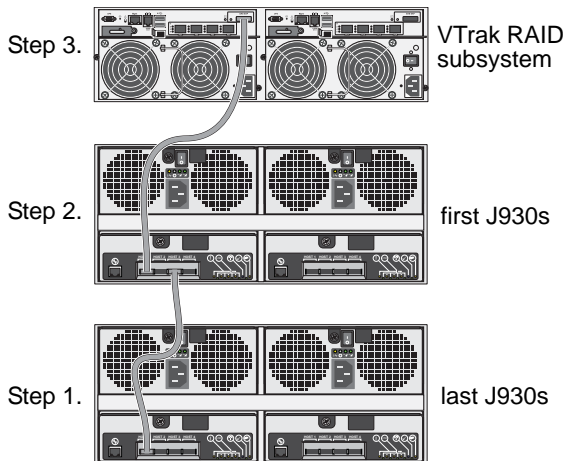
Chapter 4: Support

This chapter covers the following topics:

Frequently Asked Questions

What kind of physical drives can I use with VTrak?

VTrak J930s supports:

- 3.5-inch and 2.5-inch form factor
- SAS drives, 6 Gb/s and 3 Gb/s
- Hard disk drives (HDDs) and solid state drives (SSDs)
- Supports any mix of SAS and SATA drives simultaneously in the same enclosure

For a list of compatible drives, go to PROMISE support: http://www.promise.com/support/.

VTrak J930s does not support Parallel ATA (PATA) disk drives.

How can I tell when the VTrak has fully booted?

When boot-up is finished and the J930s unit is functioning normally:

- The Power LED shows green.
- Other LEDs are dark.

See "Front Panel LEDs" on page 33 for more information.

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

Yes. Physical drives are hot-swappable on the J930s unit.

Can I connect the VTrak J930s to a SAS HBA card in my host PC?

Yes. The J930s unit can be connected to a SAS HBA card in a host PC or server, without using a RAID subsystem.

Why is there an Ethernet connector on each I/O module?

The Ethernet network connector (right) is not used in the field. It is used for de-bugging only.

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.

PROMISE E-Support: https://support.promise.com

PROMISE web site: http://www.promise.com/apple/

When you contact us, please have the following information available:

* Product model and serial number
* BIOS, firmware, and driver version numbers
* A description of the problem / situation
* System configuration information, including: motherboard and CPU type, hard drive models, SAS/SATA/ATA/ATAPI drives & devices, and other controllers.

United States

580 Cottonwood Drive

Milpitas, Ca 95035, USA

Apple Pre-Sales: 1 408 228-1400 Option 2

Apple Support Phone Toll Free: 1-800-888-0245 Option 8

Fax: 1 408 228-1097

Apple Sales Email: apple@promise.com

Technical Support (E-Support): https://support.promise.com

Web site: http://www.promise.com/apple/

Australia

Apple Pre-Sales Toll Free: 1800-149-746

Apple Support Phone Toll Free: 1800-149-746

Apple Sales Email: apple@promise.com

Technical Support (E-Support): https://support.promise.com

Web site: http://www.promise.com/apple/

EMEA

Netherlands

Science Park Eindhoven 5228

5692 EG Son, The Netherlands

Apple Pre-Sales Toll Free Phone (0830 to 1700): 0800-917-027

Apple Support Phone (0830 to 1700) Toll Free: 0800-917-027

Apple Support Phone (After Hours, English only) Toll Free: 0800-917-027

Fax: +31 (0) 40-256-9463

Apple Sales Email: apple@promise.com

Technical Support (E-Support): https://support.promise.com

Web site: http://www.promise.com/apple/

Austria

Apple Pre-Sales Toll Free Phone (0830 to 1700): 0800-295-731

Apple Support Toll Free Phone (0830 to 1700): 0800-295-731

Apple Support Toll Free Phone (After Hours, English only): 0800-295-731

Apple Sales Email: apple@promise.com

Technical Support (E-Support): https://support.promise.com

Web site: http://www.promise.com/apple/

France

Apple Pre-Sales Toll Free Phone (0830 to 1700): 0800-917-027

Apple Support Toll Free Phone (0830 to 1700): 0800-917-027

Apple Support Toll Free Phone (After Hours, English only): 0800-917-027

Apple Sales Email: apple@promise.com

Technical Support (E-Support): https://support.promise.com

Web site: http://www.promise.com/apple/

Germany

Europaplatz 9

44269 Dortmund, Germany

Apple Pre-Sales Toll Free Phone (0830 to 1700): 0800-187-3557

Apple Support Toll Free Phone (0830 to 1700): 0800-187-3557

Apple Support Toll Free Phone (After Hours, English only): 0800-187-3557

Apple Sales Email: apple@promise.com

Technical Support (E-Support): https://support.promise.com

Web site: http://www.promise.com/apple/

Sweden

Apple Pre-Sales Toll Free Phone (0830 to 1700): 020-797-720

Apple Support Toll Free Phone (0830 to 1700): 020-797-720

Apple Support Toll Free Phone (After Hours, English only): 020-797-720

Apple Sales Email: apple@promise.com

Technical Support (E-Support): https://support.promise.com

Web site: http://www.promise.com/apple/

Switzerland ITF

Apple Pre-Sales Toll Free Phone (0830 to 1700): 0800-562-898

Apple Support Toll Free Phone (0830 to 1700): 0800-562-898

Apple Support Toll Free Phone (After Hours, English only): 0800-562-898

Apple Sales Email: apple@promise.com

Technical Support (E-Support): https://support.promise.com

Web site: http://www.promise.com/apple/

Norway ITF

Apple Pre-Sales Toll Free Phone (0830 to 1700): 0800-15406

Apple Support Toll Free Phone (0830 to 1700): 0800-15406

Apple Support Toll Free Phone (After Hours, English only): 0800-15406

Apple Sales Email: apple@promise.com

Technical Support (E-Support): https://support.promise.com

Web site: http://www.promise.com/apple/

Belgium

Apple Pre-Sales Toll Free Phone (0830 to 1700): 0800-71915

Apple Support Toll Free Phone (0830 to 1700): 0800-71915

Apple Support Toll Free Phone (After Hours, English only): 0800-71915

Apple Sales Email: apple@promise.com

Technical Support (E-Support): https://support.promise.com

Web site: http://www.promise.com/apple/

 Luxembourg

Apple Pre-Sales Toll Free Phone (0830 to 1700): 0800-26425

Apple Support Toll Free Phone (0830 to 1700): 0800-26425

Apple Support Toll Free Phone (After Hours, English only): 0800-26425

Apple Sales Email: apple@promise.com

Technical Support (E-Support): https://support.promise.com

Web site: http://www.promise.com/apple/

United Kingdom

Apple Pre-Sales Toll Free Phone (0830 to 1700): 0800-587-1068

Apple Support Toll Free Phone (0830 to 1700): 0800-587-1068

Apple Support Toll Free Phone (After Hours, English only): 0800-587-1068

Apple Sales Email: apple@promise.com

Technical Support (E-Support): https://support.promise.com

Web site: http://www.promise.com/apple/

Taiwan

Apple Pre-Sales Toll Free (24x7 English only): 008-0113-6030

Apple Support Phone Toll Free (24x7 English only): 008-0113-6030

Apple Sales Email: apple@promise.com

Technical Support (E-Support): https://support.promise.com

Web site: http://www.promise.com/apple/

China

Room 1108, West Wing, Shi Chuang Plaza, 22 Information Road

Shangdi IT Park, Hai Dian District, Beijing 100085

Apple Pre-Sales Toll Free: 86-10-8857-8085/8095

Apple Support Phone Toll Free: 86-10-8857-8085/8095

Fax: 86-10-8857-8015

Apple Sales Email: apple@promise.com

Technical Support (E-Support): https://support.promise.com

Web site: http://www.promise.com/apple/

Korea

Apple Pre-Sales Toll Free (24x7 English only): 00798-14-800-7784

Apple Support Phone Toll Free (24x7 English only): 00798-14-800-7784

Apple Sales Email: apple@promise.com

Technical Support (E-Support): https://support.promise.com

Web site: http://www.promise.com/apple/

Hong Kong

Apple Pre-Sales Toll Free Phone (24x7 English only): 800-933-480

Apple Support Toll Free Phone (24x7 English only): 800-933-480

Apple Sales Email: apple@promise.com

Technical Support (E-Support): https://support.promise.com

Web site: http://www.promise.com/apple/

Singapore

Apple Pre-Sales Toll Free Phone (24x7 English only): 800-492-2153

Apple Support Toll Free Phone (24x7 English only): 800-492-2153

Apple Sales Email: apple@promise.com

Technical Support (E-Support): https://support.promise.com

Web site: http://www.promise.com/apple/

Japan

3F, Mura Matsu Bldg, 3-8-5, Hongo Bunkyo-ku

Tokyo 113-0033, Japan

Apple Pre-Sales Toll Free Phone (24x7 English only): 0066-3384-9021

Apple Support Toll Free Phone (24x7 English only): 0066-3384-9021

Apple Sales Email: apple@promise.com

Technical Support (E-Support): https://support.promise.com

Web site: http://www.promise.com/apple/

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.

Index