PROMISE® TECHNOLOGY, INC.

VTRAK J300S PRODUCT MANUAL

Version 1.2

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Contents

Chapter 1: Introduction

Thank you for purchasing Promise Technology's VTrak J300s external disk array subsystem.

About This Manual

This *Product Manual* describes how to setup, use and maintain the VTrak J300s external disk subsystem. It also describes how to use the built-in command-line interface (CLI) software.

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.

Overview

The Promise VTrak J300s is optimized for organizations deploying cost effective small to medium application clusters, disk-to-disk backup and midrange storage solutions.

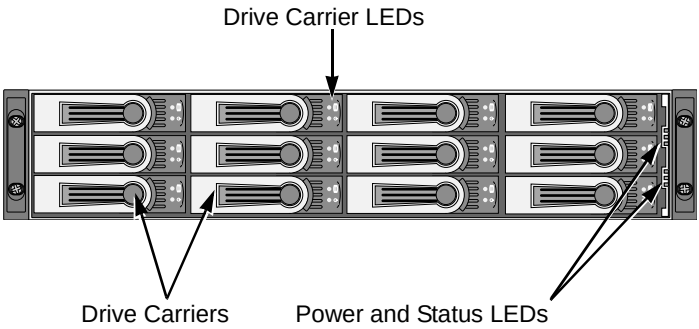

Figure 1. VTrak J300s front view

The dual 3Gb 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

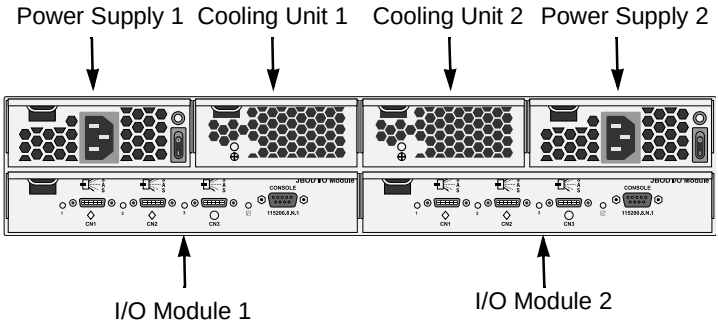

Figure 2. VTrak J300s rear view

The three 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 J300s packs up to 12 drives per system, offering industry-leading capacity in just 2U of standard 19 inches of rack space. The J300's compact form factor maximizes density, increasing capacity per unit of rack space.

Multiple J300s 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 J300s 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 J300s, Promise has dramatically narrowed the gap between simple fault tolerance and *No Single Point of Failure*. The VTrak J300s uses a fully redundant, hot-swap design and continuously monitors all system components. It can withstand failures to disks, power supplies, cooling and I/O modules without interrupting system operation.

Features and Benefits

Feature	Benefit
2U 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, !/O modules, power supplies and fans	Allows a defective component to be replaced without interrupting data accessibility to the host system.
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 cooling units	Load sharing and full operation even with multiple failed fans.
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 host SAS ports	Makes it easier to set up clustering.
Single expansion SAS port	Enables 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	Easy, works-the-first-time connections with your current systems

Specifications

Drive Capacity: 12 SAS or SATA disk drives (3.5" x 1" form factor only).

External I/O Ports: Dual SAS host ports, single SAS expansion port.

Supported Disk Interfaces: Serial Attached SCSI (SAS) and Serial ATA (SATA), 3Gb/s and 1.5Gb/s

Supported Operating Systems:

- Windows 2000
- Windows XP Professional
- Windows 2003
- RedHat Linux
- SuSE Linux
- Novell Netware
- Sun Solaris

Current: 8 A @ 100 VAC; 4 A @ 200 VAC (max. rating with two power cords)

Power Consumption: 470 watts

Power Supply: Dual 360W, 100–240 VAC auto-ranging, 50–60 Hz, dual hot swap and redundant with PFC, N+1 design

Thermal Output: 1604 BTU/hour (max current)

Operating Temperature: 41° to 104°F (5° to 40°C)

Non-operational Temperature: -40° to 140°F (-40° to 60°C)

Relative Humidity: Maximum 90%

Vibration: Random, 0.21 grms, 5 to 500Hz, 30Mins, X, Y, Z axis

Management Tools: Command Line Interface

Management Interfaces: RS232 (Serial)

Notification: Visible alarms

Dimensions: Height, 3.50 in (8.90 cm); Width, 17.56 in (44.60 cm); Depth, 23.50 in (59.70 cm)

Weight: 46.30 lbs (21.00 Kg) without drives; 59.52 lbs (27.00 Kg) with 12 drives installed

Safety Certifications: CE, FCC Class A, BSMI, VCCi, cUL, TUV, MIC

Limited Warranty: 3 Years

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.

Chapter 2: Installation

Unpack the VTrak J300s

The VTrak J300s box contains the following items:

- VTrak J300s Unit
- Quick Start Guide
- Null Modem Cable (1)
- 1.0m (3.3 ft) SAS cable (1)
- Screws for disk drives (52 including 4 spares)
- 1.5m (4.9 ft) Power cords (2)
- CD with *Product Manual* and *Quick Start Guide*

Warning

The electronic components within the J300s unit is sensitive to damage from Electro-Static Discharge (ESD). Observe appropriate precautions at all times when handling the J300s unit or its subassemblies.

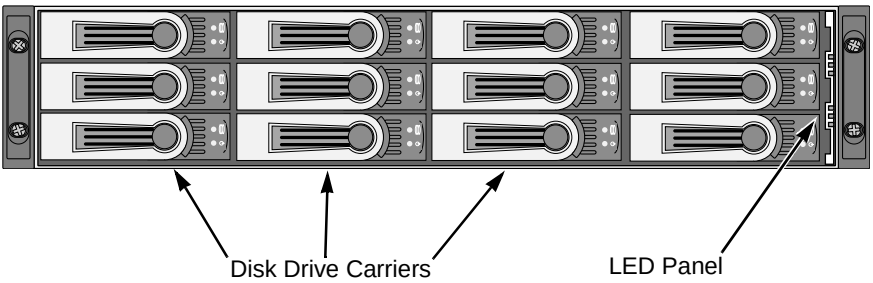

Figure 1. VTrak J300s Front View (bezel removed)

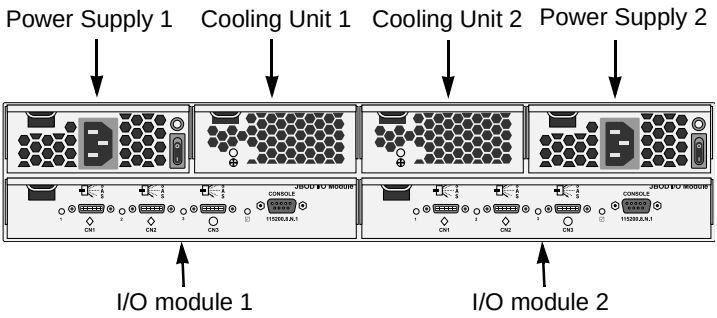

Figure 2. VTrak J300s Rear View

Some J300s units ship with a single I/O module and a blank unit installed in the place of the second I/O module. You can upgrade your J300s unit by installing a second I/O module. See page 39.

Some J300s units ship with a single power supply and an auxiliary cooling unit installed in the place of the second power supply to provide a comparable level of air circulation inside the enclosure.

Mount J300s Unit in a Rack

The VTrak J300s unit installs directly to the rack with or without rails.

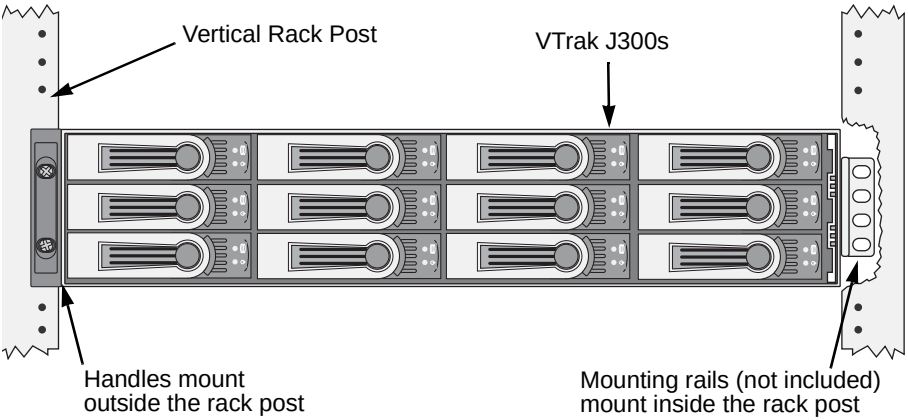

Figure 3. Rackmounted J300s unit

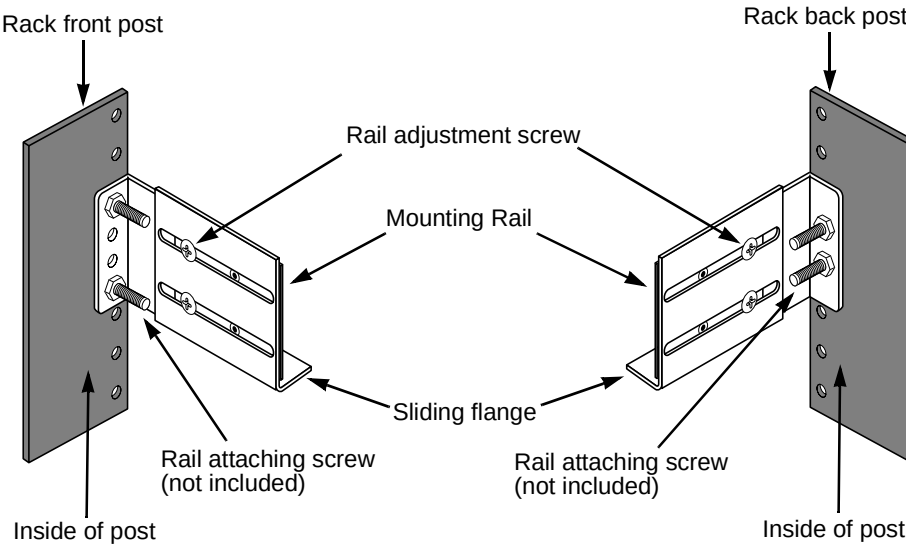

Figure 4. Mounting rail installation

The illustrations above show the optional rails available from Promise Technology.

Install Disk Drives

Populate the VTrak with 3.5-inch SAS drives.

Install all of the drive carriers into the J300s enclosure to ensure proper airflow, even if you do not populate all the carriers with disk drives.

Caution

Use only the counter-sink screws supplied with the J300s unit. Use of other types of screws can damage the adjacent drives.

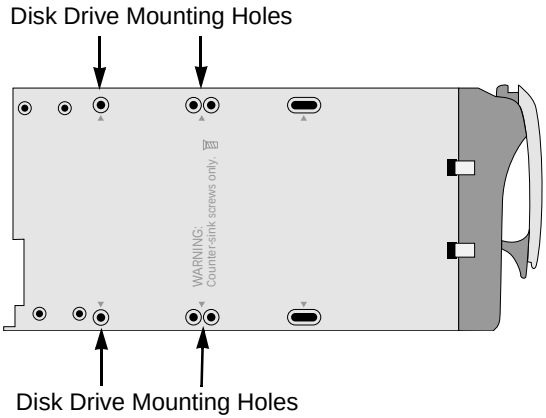

Figure 5. J300s unit drive carrier mounting holes

1. Remove the front bezel (drive door).
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 bottom line up.
4. Insert the screws through the holes in the drive carrier and into the bottom of the disk drive (see Figure 5).
   - Install only the screws supplied with the VTrak.
   - Install four screws per drive.
   - 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.
7. Replace the front bezel.

Caution

- If you plan to operate your VTrak with fewer than a full load of disk drives, install all of the drive carriers into the enclosure, to ensure proper airflow for cooling.
- A VTrak J300s carrier is similar in appearance but is NOT interchangeable with a VTrak M500f/i/p drive carrier.

Important

Be sure each drive is securely fastened to its carrier. Proper installation ensures adequate grounding and minimizes vibration. Do not install drives with fewer than four screws.

Drive Numbering

Each disk drive in the J300s unit is identified by a number that corresponds to the Port number used for management. See “Link Command” on page 26.

Numbers are stamped above each drive bay for easy indentification.

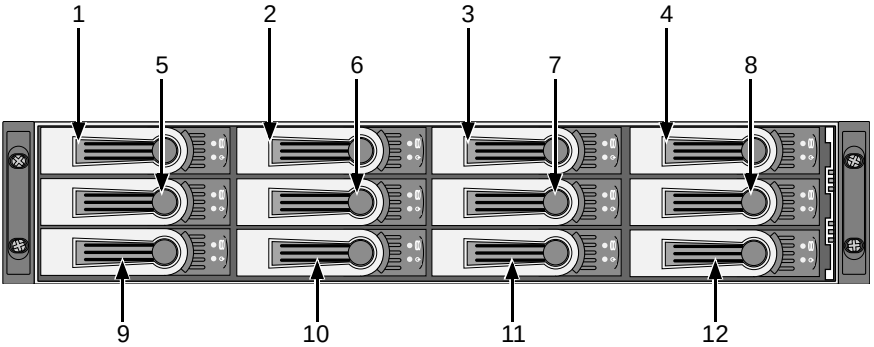

Figure 8. J300s unit disk drive carriers are numbered as shown

Set Up Data Cable Connections

The VTrak J300s unit provides Direct Attached Storage (DAS) support to the Host PC.

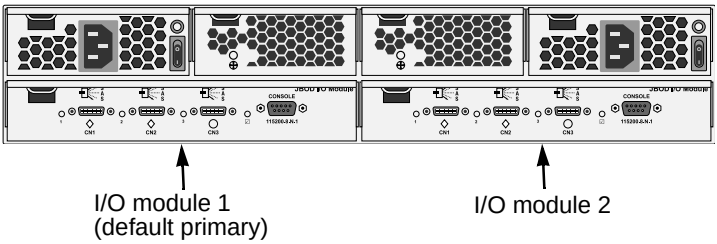

Figure 9. VTrak J300s has one or two I/O modules

There can be one or two Input Output Modules (I/O modules) on the J300s unit.

- If your J300s has two I/O modules, I/O module 1 (on the left) is the default primary.
- If your J300s has only one I/O module, that I/O module is the default primary.

Under SAS specifications, both I/O modules are active at the same time. The terms *primary* and *secondary* are for enclosure management purposes only. To verify which I/O module is the default primary, see “Enclosure Command” on page 24.

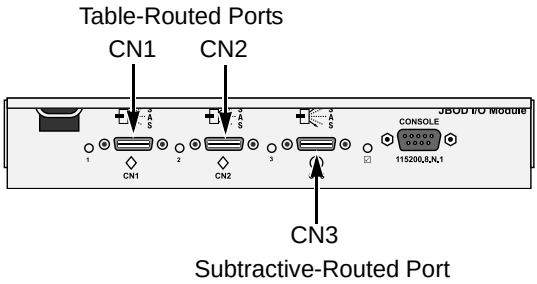

Figure 10. VTrak J300s I/O modules have two table-routed ports and one subtractive-routed port

Each I/O module has two table-routed external receptacles (CN1 and CN2) and one subtractive-routed external receptacle (CN3).

Note

SAS HBA cards are User-supplied items. They are not included with the VTrak unit.

Basic DAS Connection

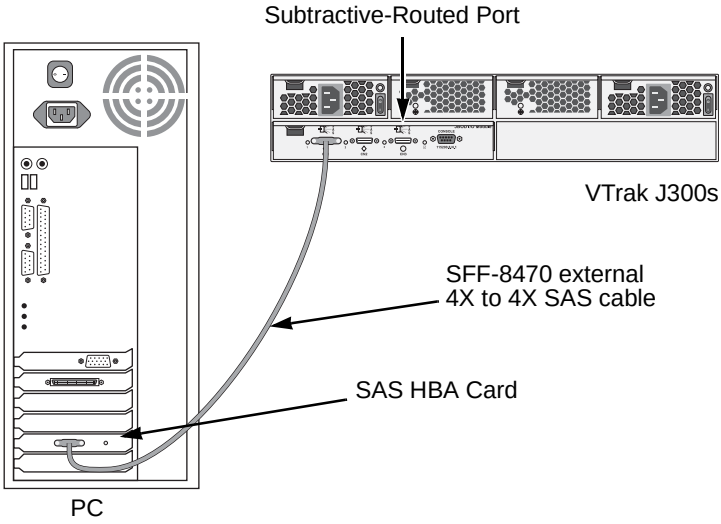

Figure 11. An example of a basic DAS connection between one Host PC and one VTrak J300s unit

The arrangement above is the minimum DAS system with a single SAS HBA card in the Host PC. Connect the SAS card to the table-routed port (CN1) on the I/O module.

Use a SFF-8470 4X to 4X external SAS cable with thumbscrew connectors (supplied with the J300s unit).

Because the Host SAS HBA card is an end device, you can connect it to any of the three SAS ports (CN1, CN2 or CN3) on the J300s unit's I/O module.

Cascading DAS Connection

If you are using multiple J300s units and want to manage them from the same SAS HBA card, connect the J300s units in a cascade.

Connect the SAS HBA card in the Host PC to a table-routed port (CN1) of the I/O module. Use a SFF-8470 4X to 4X external SAS cable with thumbscrew connectors (supplied with the J300s unit).

Connect the I/O module's subtractive-routed port (CN3) on the first J300s unit to the table-routed port (CN1) on the next J300s unit. You can cascade up to four J300s units in this manner.

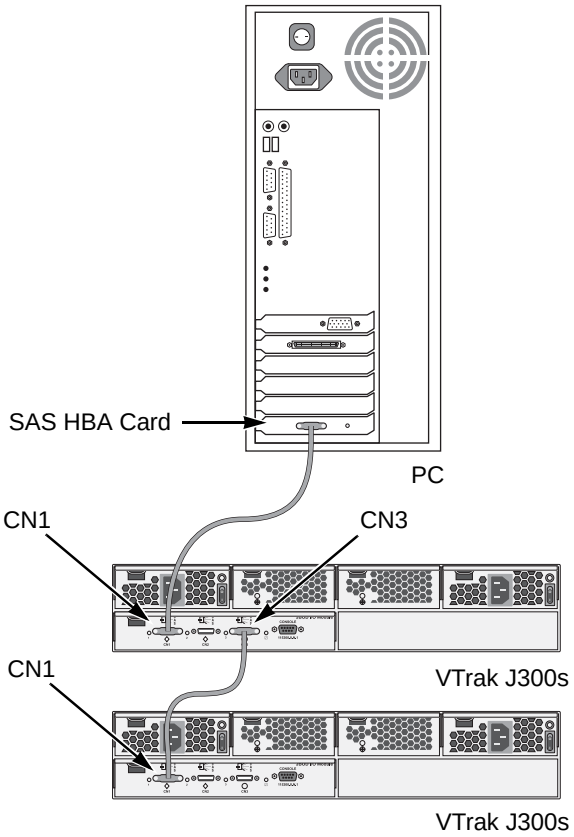

Figure 12. An example of a cascaded DAS connection between one Host PC and three VTrak J300s units

Redundant DAS Connection

The arrangement below is a DAS system with full redundancy.

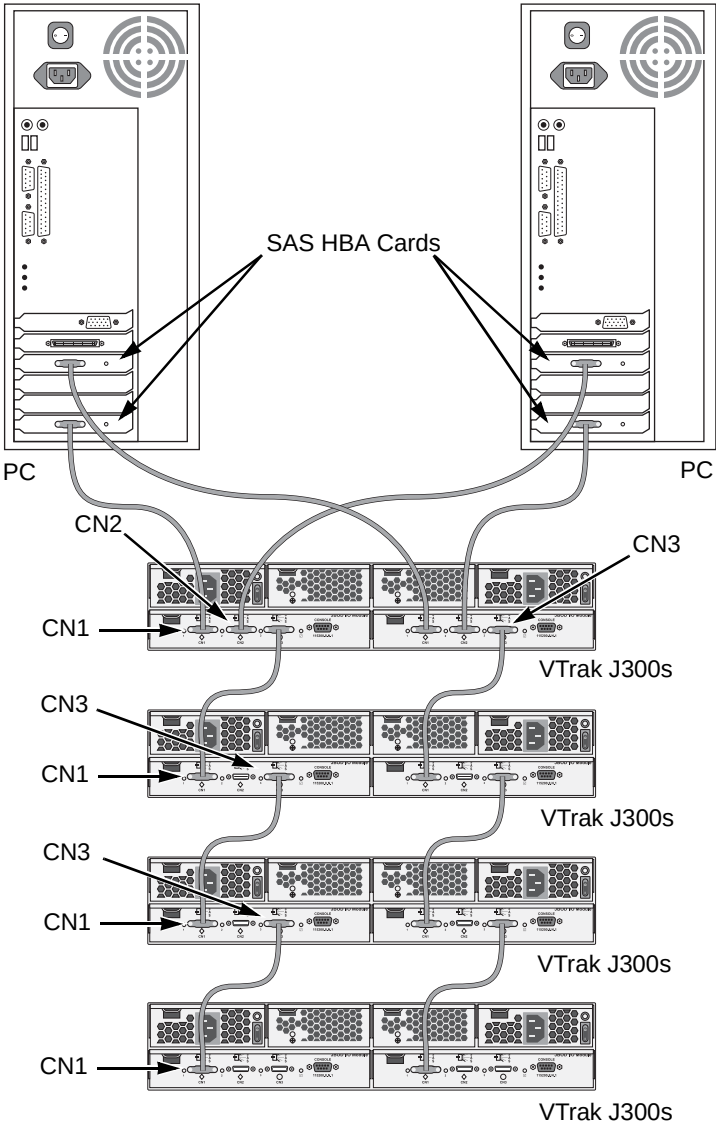

Figure 13. An example of a redundant DAS connection between two Host PCs and four cascaded VTrak J300s units

The arrangement requires J300s units with dual I/O modules and Host PCs with dual SAS HBA cards in each PC.

Connect the SAS HBA cards in the first Host PC to the table-routed ports (CN1) on the I/O modules of the first J300s unit.

Connect the SAS HBA cards in the second Host PC to the other table-routed ports (CN2) on the I/O modules of the first J300s unit.

Connect the subtractive-routed port (CN3) on the I/O modules of the first J300s unit to the table-routed ports (CN1) on the I/O modules of the next J300s unit.

Connect the remaining J300s units in the same manner.

Use SFF-8470 4X to 4X external SAS cables with thumbscrew connectors.

Set Up Serial Cable Connections

The RS-232 Serial connection enables your PC to monitor and control the J300s unit through the Command Line Interface (CLI).

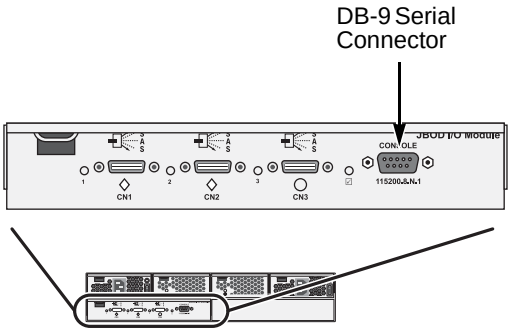

Figure 14. A serial connector is located on the I/O module

Connect a null-modem cable (supplied with the J300s unit) to the DB-9 connector on the I/O module. If your J300s unit has two I/O modules, connect the null-modem cable to the I/O module on the left.

Connect the other end of the cable to the DB-9 COM port on the Host PC.

If your PC has a second DB-9 COM port and your J300s unit has two I/O modules, you can connect a second null-modem cable to the DB-9 connector on the I/O module on the right.

See “Set Up Data Cable Connections” on page 12 for an explanation of which I/O module is the default primary. To verify which I/O module is the default primary, see “Enclosure Command” on page 24.

Connect the Power

Plug the power cords and switch on both power supplies on. When the power is switched on, the LEDs on the front of the VTrak will light up.

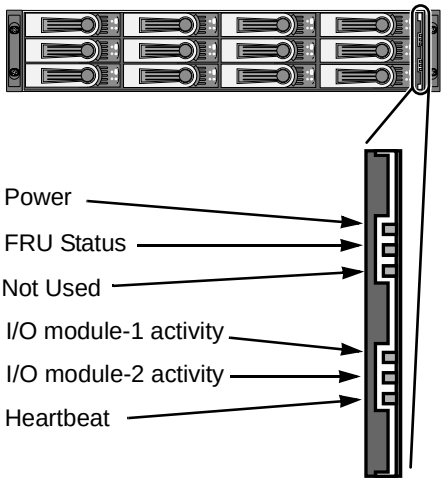

Figure 15. VTrak J300s front panel LED display

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

- The heartbeat LED blinks green once every 3 seconds if one I/O module is installed, or twice every 3 seconds if two I/O modules are installed.
- Power and FRU LEDs display green continuously.
- I/O module LEDs flash green if there is activity on that connection.

There are two LEDs on each Drive Carrier. They report the presence of power and a disk drive, and the current condition of the drive.

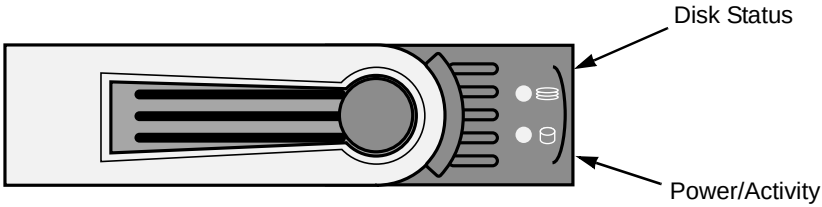

Figure 16. VTrak J300s disk carrier LEDs

Within one minute, the Power/Activity should display Green.

If there is no disk drive in the carrier, the Disk Status LED and the Power/Activity LED will remain dark.

Setup CLI Connection

The J300s unit 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.

With the J300s unit running and the null-modem cable connected to the primary I/O module:

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 "CLI Command Set" on page 22.

Chapter 3: Management

Front Status Indicators

Even though the Command Line Interface (CLI) offers comprehensive monitoring of VTrak, the LED indicators on the VTrak unit provide important status information.

When the power is switched on, the LEDs on the front of the VTrak will light up.

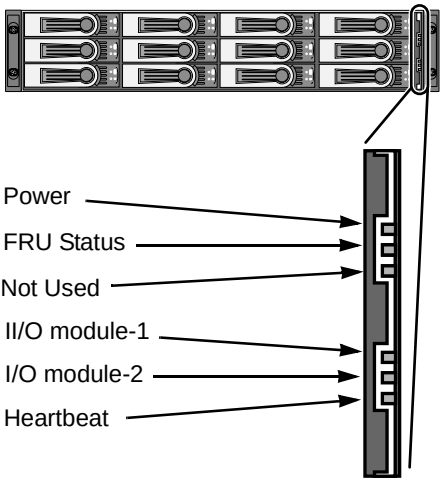

Figure 1. VTrak J300s front panel LED display

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

- The heartbeat LED blinks green once every 3 seconds if one I/O module is installed, or twice every 3 seconds if two I/O modules are installed.
- Power and FRU LEDs display green continuously.
- I/O module LEDs flash green if there is activity on that connection.

LEDs	State				
	Dark	Steady Green	Flashing Green	Amber	Red
Power	System Off	Normal	n/a	n/a	n/a
FRU*	System Off	Normal	n/a	Fan or Power Supply Problem	Fan or Power Supply Failed
I/O Module 1 or 2	No Activity	n/a	Activity	n/a	n/a
Controller	System Off	n/a	Normal**	n/a	n/a

"n/a" means this state does not apply to this LED.

* Field Replacement Unit. "n/a" means this state does not apply to this LED.

** Blinks intermittantly.

Drive Status Indicators

After a few moments the Power/Activity should display Green.

If there is no disk drive in the carrier, the Disk Status LED and the Power/Activity LED will remain dark. .

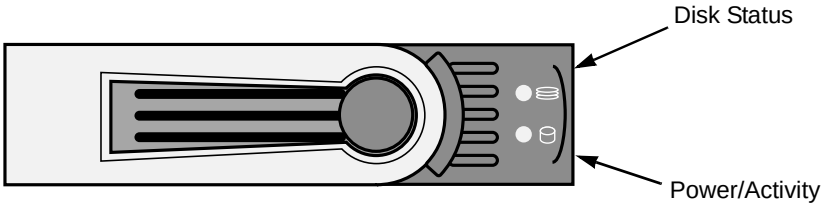

Figure 2. VTrak J300s disk carrier LEDs

The VTrak spins up the disk drives sequentially in order to equalize power draw during start-up. After a few moments the Power/Activity and Disk Status LEDs should display green.

LEDs	State				
	Dark	Steady Green	Flashing Green	Amber	Red
Power/ Activity	No Drive	Drive Present	Activity	n/a	n/a
Status	No Power/ No Drive	Drive OK	n/a	n/a	Drive Error
"n/a" means this state does not apply to this LED.					

Back Status Indicators

The VTrak J300s I/O module has LEDs that indicate activity on each of its ports

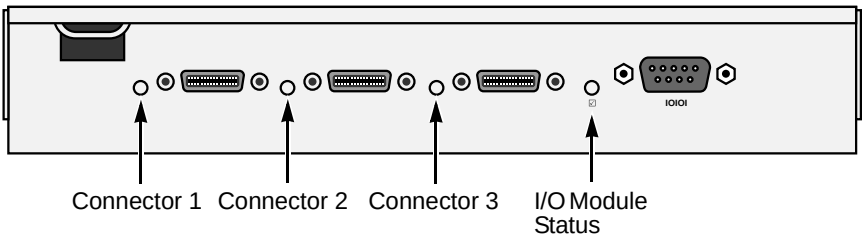

Figure 3. VTrak J300s I/O Module LEDs

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.

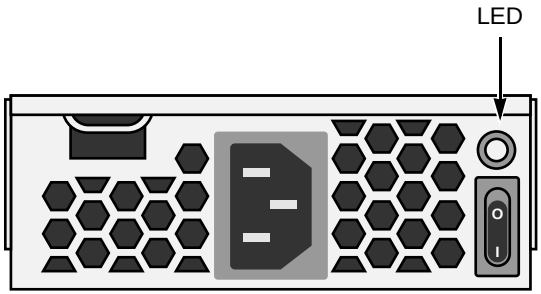

Figure 4. VTrak J300s Power Supply LED

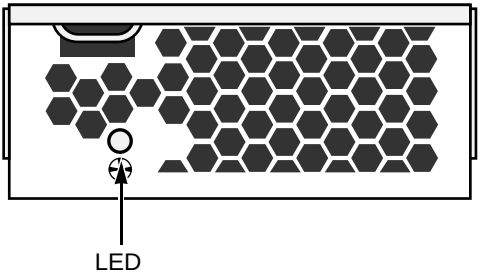

Figure 5. VTrak J300s Cooling Unit LED

LEDs	State			
	Dark	**Steady Green**	**Amber**	**Red**
Connectors	Link Down	Link Up	n/a	n/a
I/O Module Status	Off	Ready	n/a	Starting up*
Serial Port	Link Down	Link Up	n/a	n/a
Power Supply	Off	OK	Fan too slow	Fan or Power Supply failed
Cooling Unit	Off	OK	Fan too slow	Fan failed
"n/a" means this state does not apply to this LED. * Turns green 2 to 3 seconds after startup.				

CLI Command Set

The CLI has the following set of commands:

cable – Specifies the length of cable for optimal signal quality.

enclosure – Displays full information on the J300s enclosure and all its components, expander addresses and SAS addresses.

help – Use alone or with a command, such as **help enclosure**, **enclosure -help** or **enclosure -h**.

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

route – Displays addresses of components through a downstream (expansion) connection.

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

vpdr – Displays vital product data on field replaceable units.

? – Use alone or with a command, such as **? enclosure** or **enclosure -?**

Note

Commands are case-sensitive. Disable the Caps Lock on your keyboard.

Cable Command

The Cable command displays the current cable length settings for the two Host ports and the Expansion port. The I/O module supports cables from 1 to 5 meters in length.

To view current settings, at the cli>prompt type **cable** and press Enter.

```
cli>cable

CN#1 Cable Length = 1 - 2 meters
CN#2 Cable Length = 1 - 2 meters
CN#3 Cable Length = 1 - 2 meters
```

CN#1, CN#2 and CN#3 are the external SAS connectors on the I/O module. See “Set Up Data Cable Connections” on page 12.

To change the settings, enter the **cable mod** command, the connector number and cable length. You can specify a cable length from 1 to 5 meters but there are only two actual settings, 1 - 2 meters and 3 - 5 meters.

For example, to set the Expansion connector for a 3-meter cable, at the cli> prompt, **type Cable -a mod -s “cn3=3”** and press Enter.

To verify the setting change, at the cli>prompt type **cable** and press Enter.

```
cli>cable

CN#1 Cable Length = 1 - 2 meters
CN#2 Cable Length = 1 - 2 meters
CN#3 Cable Length = 3 - 5 meters
```

Note the cable length change for CN3.

Enclosure Command

The Enclosure command displays information about the J300s enclosure, including:

- Time since power-up
- Enclosure type
- I/O module information
- PSU (power supply) status and fan speeds
- Blower status and fan speeds
- Temperature sensor readings
- Temperature threshold settings
- Voltage sensor readings
- Expander SAS addresses
- Attached SAS addresses

The CLI reports information for the I/O module to which it is connected and for the rest of the components in the J300s enclosure.

Under SAS specifications, both I/O modules are active at the same time. For management purposes, the default primary I/O module role is *Active*. If a second I/O module is present, its role is *Standby*. See the arrow below for I/O Module Role in the display. Also see “Set Up Data Cable Connections” on page 12.

In a J300s unit with two I/O modules, if the primary I/O module fails or is removed, the remaining I/O module becomes the default primary I/O module and assumes the Active role. If the other I/O module is repaired or replaced, it becomes the secondary I/O module and assumes the Standby role.

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

```
cli> enclosure

 ---------------------------------------------------------------------------------------

Time Since Power Up: 1 hour 46 minutes 36 seconds
Enclosure: J300S-12Bay
I/O Module ID: 1                Max Num Of I/O Modules: 2
FwVersion: 1.00.0000.00         I/O Module Role: Active  <--
MaxNumOfHDSlots: 12             MaxNumOfPSUs: 2
MaxNumOfFans: 4                 MaxNumOfBlowers: 2
MaxNumOfTempSensors: 8          MaxNumOfVoltageSensors: 5

=============================================

PSU     Status              Fan1Speed       Fan2Speed

=============================================

1       Operational         14735 rpm       15037 rpm
2       Operational         15340 rpm       14361 rpm

=============================================
```

```
Blower  Status              Speed
=========================================

1       Operational         4017 rpm
2       Operational         4066 rpm
=========================================

ID   Location     Temp Reading  ID   Location    Temp Reading
=========================================

1.   Backplane    32C/89F   2.   Backplane    32C/89F
3.   Backplane    31C/87F   4.   Backplane    30C/86F
5.   I/O Module1  40C/104F  6.   I/O Module1  30C/86F
7.   I/O Module2  36C/96F   8.   I/O Module2  28C/82F

Controller Temp Threshold: 61C/141F (critical) 51C/123F (warning)

Backplane Temp Threshold : 71C/159F (critical) 61C/141F (warning)
=========================================

VoltageSensor    Voltage
=========================================

1                3.3V
2                5.2V
3                5.2V
4                12.5V
5                1.2V

Expander SAS Address:
SAS Base Addr:50 00 15 5D 21 AB 02 00
SSP SAS Addr: 50 00 15 5D 21 AB 02 3E
SMP SAS Addr: 50 00 15 5D 21 AB 02 3F

Attached SAS Address:
D01 SAS Addr: 50 00 15 E0 11 4E 5E B2
D02 SAS Addr: 50 00 15 E0 11 4E 80 C2
D03 SAS Addr: 50 00 15 E0 11 4C 22 02
D04 SAS Addr: 50 00 15 E0 11 4D E2 22
D05 SAS Addr: 50 00 15 E0 11 4D 8F B2
D06 SAS Addr: 50 00 15 E0 11 4D D0 62
D07 SAS Addr: 50 00 15 E0 11 4D DE E2
D08 SAS Addr: 50 00 15 E0 11 4D 8E F2
D09 SAS Addr: 50 00 15 E0 11 4C 97 62
D10 SAS Addr: 50 00 15 E0 11 4C 36 62
D11 SAS Addr: No Device Attached
```

```
D12 SAS Addr: No Device Attached
CN1 SAS Addr: 50 06 05 B0 00 01 69 64
CN2 SAS Addr: No Device Attached
CN3 SAS Addr: 50 00 15 5D 21 AA 12 3F
```

Help Command

The J300s CLI uses the standard Unix online help system.

For general help, at the CLI> prompt type **help** and press Enter.

For help with a specific function, type the name of the function and help or -h. For example:

- At the cli> prompt, type **cable -h** and press Enter.
- At the cli> prompt, type **cable -help** and press Enter.
- At the cli> prompt, type **help cable** and press Enter.

Link Command

The Link command displays information about the J300s links, including:

- Link Status
- Link Counter

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

Link Status:

	Port	Type	Rate	Init	Dev	Link	PRdy
P 0	D01	SAS	3.0G	OK	End	----	Rdy
P 1	D02	SAS	3.0G	OK	End	----	Rdy
P 2	D03	SAS	3.0G	OK	End	----	Rdy
P 3	D04	SAS	3.0G	OK	End	----	Rdy
P 4	D05	SAS	3.0G	OK	End	----	Rdy
P 5	D06	SAS	3.0G	OK	End	----	Rdy
P 6	D07	SAS	3.0G	OK	End	----	Rdy
P 7	D08	SAS	3.0G	OK	End	----	Rdy
P 8	D09	SAS	3.0G	OK	End	----	Rdy
P 9	D10	SAS	3.0G	OK	End	----	Rdy
P10	D11	----	----	----	----	----	----
P11	D12	----	----	----	----	----	----
P12	CN1	SAS	3.0G	OK	End	----	Rdy
P13	CN1	SAS	3.0G	OK	End	----	Rdy
P14	CN1	SAS	3.0G	OK	End	----	Rdy
P15	CN1	SAS	3.0G	OK	End	----	Rdy
P16	CN2	----	----	----	----	----	----
P17	CN2	----	----	----	----	----	----

```
P18    CN2    ----    ----    ----    ----    ----    ----
P19    CN2    ----    ----    ----    ----    ----    ----
P20    CN3    SAS     3.0G    OK      Exp     ----    Rdy
P21    CN3    SAS     3.0G    OK      Exp     ----    Rdy
P22    CN3    SAS     3.0G    OK      Exp     ----    Rdy
P23    CN3    SAS     3.0G    OK      Exp     ----    Rdy

Port:Port Id      Type:SAS          Rate:Rate 3G
Init:Init Passed  Dev:Device Type   Link:Link Connected
PRdy:Phy Ready
```

The following items are reported in the table above:

- Link number – The links are Phys, numbered P0 through P23
- Port number – Each disk drive slot has a Phy. Each connector has 4 Phys.

  D01 though D12 are disk drive slot numbers. See “Drive Numbering” on page 11.

  CN1, CN2 and CN3 are the external SAS connectors on the I/O module. See “Set Up Data Cable Connections” on page 12.
- Drive Type – SAS
- Data Rate – 3.0 Gb/s
- 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, it will display CONN
- Phy Ready Status – If the port is ready, it will display Rdy

  Link Counter:

```
      InDW      DsEr      DwLo      PhRe      CoVi      PRBS      PhCh
P 0   ----------  ----------  ----------  ----------  ----------  ----------  0x01
P 1   ----------  ----------  ----------  ----------  ----------  ----------  0x01
P 2   ----------  ----------  ----------  ----------  ----------  ----------  0x01
P 3   ----------  ----------  ----------  ----------  ----------  ----------  0x01
P 4   ----------  ----------  ----------  ----------  ----------  ----------  0x01
P 5   ----------  ----------  ----------  ----------  ----------  ----------  0x0B
P 6   ----------  ----------  ----------  ----------  ----------  ----------  0x01
P 7   ----------  ----------  ----------  ----------  ----------  ----------  0x01
P 8   ----------  ----------  ----------  ----------  ----------  ----------  0x01
P 9   ----------  ----------  ----------  ----------  ----------  ----------  0x01
P10   ----------  ----------  ----------  ----------  ----------  ----------  ----------
P11   ----------  ----------  ----------  ----------  ----------  ----------  ----------
P12   ----------  ----------  ----------  ----------  ----------  ----------  0x01
P13   0x0F       0x0E       0x01       ----------  0x06       0x0C       0x02
P14   ----------  ----------  ----------  ----------  ----------  ----------  0x01
```

```
P15  ---------- ---------- ---------- ---------- ---------- ---------- 0x01
P16  ---------- ---------- ---------- ---------- ---------- ---------- ----------
P17  ---------- ---------- ---------- ---------- ---------- ---------- ----------
P18  ---------- ---------- ---------- ---------- ---------- ---------- ----------
P19  ---------- ---------- ---------- ---------- ---------- ---------- ----------
P20  ---------- ---------- ---------- ---------- ---------- ---------- 0x01
P21  0x0D       0x0F       0x03       ---------- 0x0C       0x06       0x01
P22  ---------- ---------- ---------- ---------- ---------- ---------- 0x01
P23  ---------- ---------- ---------- ---------- ---------- ---------- 0x01

InDW:Invalid Dword Count DsEr:Disparity Err Count
DwLo:Dword Sync Loss Count
PhRe:Phy Reset Problem Count  CoVi:Code Violations Cnt
PRBS:PRBS Error Count
PhCh:Phy Change Count
```

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

- Link number – Links are Phys, numbered P0 through P23
- Invalid D-word Count
- Disparity Error Count
- Phy Reset Problem Count
- Code Violation Count
- Pseudo-Random Bit-Stream Error Count
- Phy Change Count

If the count is zero, the counter shows dashes (----------). The fact that errors occur does not necessarily indicate a problem or that the J300s unit is malfunctioning.

An individual error count incrementing at intervals of less than six minutes indicates a possible problem and requires further investigation.

To clear the link error count, at the cli> prompt, type **link -a clear** and press Enter.

Route Command

Use this command to show the SAS addresses of the devices in your domain.

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

```
Routing Table Mapping:
Entry# SAS Address          PortID   CnID   NextEntry   NextValid
-------------------------------------------------------------------------------
0083   500000E01122C533     0x10     CN3    ----        0
0121   500000E01122C4A3     0x10     CN3    ----        0
```

0226	500000E01122C513	0x10	CN3	----	0
0244	500000E011246263	0x10	CN3	----	0
0358	500000E011231F43	0x10	CN3	----	0
0466	500000E0112770B3	0x10	CN3	----	0
0488	500000E01122C0F3	0x10	CN3	----	0
0519	500000E01122C493	0x10	CN3	----	0
0731	500000E01122C5B3	0x10	CN3	----	0
0751	500000E01122C5C3	0x10	CN3	----	0
0851	500000E01122C583	0x10	CN3	----	0
0864	5000155D21AB433E	0x10	CN3	----	0
0945	500000E0112313C3	0x10	CN3	----	0

The route command displays SAS addresses that are attached to one of the external ports on the J300s unit. Six items are reported:

- Entry Number – Arbitrary numbers, listed in sequence
- SAS Address – Of the disk drive or other component
- Port ID – Phy numbers, shown in hexadecimal
- Connector ID – One of three external SAS ports on the J300s unit
- Next Entry – The next entry number for the same SAS address
- Next Valid – 1 means there is another one. 0 means this is the last one

This device is connected to the J300s unit through connector CN3. See page 12 for a diagram of connectors on the I/O module.

If you type **route** at the cli> prompt and press Enter, then see the following message:

```
No SAS Routing Entry Exists
```

...it indicates that your domain is not set up or no devices are connected.

Uptime Command

The uptime command informs you of the elapsed period of time since the J300s unit was powered on.

To display uptime, at the cli> prompt, type **uptime** and press Enter.

```
cli>uptime

System has been running 1 hour 46 minutes 35 seconds
```

VPDR Command

The vpdr command displays vital product data on the major components of the J300s unit. There are six components that report vital product information.

- 1 – Controller (I/O module)
- 2 – Power Supply 1
- 3 – Cooling Unit 1
- 4 – Power Supply 2
- 5 – Cooling Unit 2
- 6 – Backplane

Specify the component by its number. For example, to display vital product data for the controller (I/O module), at the at the cli> prompt, type **vpdr -i 1** and press Enter.

```
cli>vpdr -i 1

Board ID     : 1
OEM Name     : IOC
OEM Model    : J300S
Mfg Part     : IOC-J300S-01
Mfg SN       : S0026
Mfg Rev      : A2R4
Mfg Date     : 2005:08:18
WWN          : 20 00 00 01 55 D2 1A A1
```

? Command

The VTrak CLI uses the standard Unix online help system.

For the command usage of a particular function, type the name of the function followed by **?**. For example, at the cli> prompt, type **cable -?** and press Enter.

For help with a particular function, type **?** followed by the name. For example, at the cli> prompt, type **? cable** and press Enter.

The result of typing **?** followed by the name is the same as typing **help** followed by the name.

Chapter 4: Support

Frequently Asked Questions

What kind of disk drives can I use with J300s?

The J300s supports 3.5-inch Serial Attached SCSI (SAS) disk drives.

How can I tell when the J300s unit has fully booted?

When the J300s unit is fully booted up, the Power and FRU LEDs will light up green. If a disk array is present, the Logical Drive LED will light up green also. The heartbeat LED blinks green once every 3 seconds if one I/O module is installed, or twice every 3 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 *Active*, you are connected to the default primary I/O module. If the Role is *StandBy*, you are connected to the default secondary.

What happens if a disk drive fails?

The LEDs on the disk carrier for the failed drive will turn red or go off. See page 20. Also, if you run the **enclosure** command in the CLI, the failed drive will not appear in the SAS address list. See page 24. In addition, the behavior of the disk drive could be affected by the SAS HBA card in the Host PC.

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

Yes. Disk drives are hot-swappable on the J300s unit.

Can the J300s run using just one power supply?

Yes, it is possible to run J300s unit on a single power supply. Most J300s units ship with two power supplies. On those units, the J300s unit will continue running if one of the power supply fails. But deliberately leaving one power supply off negates this advantage.

In addition, leaving one power supply off reduces air flow through the J300s enclosure and can contribute to overheating. Always switch on both power supplies if your J300s unit has two.

J300s units that ship with a single power supply have an auxiliary cooling unit installed in the place of the second power supply to provide a comparable level of air circulation inside the enclosure.

Contact 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.

Important

Promise offers 24x7 live technical support (in English only) for registered owners of VTrak products. To register, point your browser to:
http://www.promise.com/support/warranty/warranty_eng_pdchoose.asp

If you decide to 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 model(s), SAS/SATA/ATA/ATAPI drives & devices, and other controllers.

Technical Support Services

Promise Online™ Web Site	http://www.promise.com (technical documents, drivers, utilities, etc.)

United States

E-mail Support	support@promise.com
Fax Support	(408) 228-1097 Attn: Technical Support
Phone Support	(408) 228-1400 option 4
If you wish to write us for support:	Promise Technology, Inc. 580 Cottonwood Drive Milpitas, CA 95035, USA

Europe, Africa, Middle East

E-mail Support	support@promise-emea.com
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	support-de@promise-emea.com
Fax Technical Support	+49 (0) 2 31 56 76 48 - 29 Attn: Technical Support
Phone Technical Support	+49 (0) 2 31 56 76 48 - 0
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Fax Support	0039 06 367 12400 Attn: Technical Support
Phone Support	0039 06 367 12626
If you wish to write us for support:	Promise Technology Italy Piazza del Popolo 18 00187 Roma, Italia

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Phone Support	+886 3 578 2395 (ext. 8811)
If you wish to write us for support:	Promise Technology, Inc. 2F, No. 30, Industry E. Rd. IX Science-based Industrial Park Hsinchu, Taiwan, R.O.C.

China

E-mail Support	support-china@promise.com
Fax Support	+86-10-8857-8015 Attn: Technical Support
Phone Support	+86-10-8857-8085/8095
If you wish to write us for support:	Promise Technology China Room 1205, Tower 3 Webok Time Center, No.17 South Zhong Guan Cun Street Hai Dian District, Beijing 100081, China

Limited Warranty

Promise Technology, Inc. (“Promise”) warrants that for three (3) years from the time of the delivery of the product to the original end user:

a) the product will conform to Promise’s specifications;

b) the product 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, fans, and power supplies

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 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.), with a copy of your proof of purchase to:

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 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: Second I/O Module

- Purpose (below)
- Installation (below)

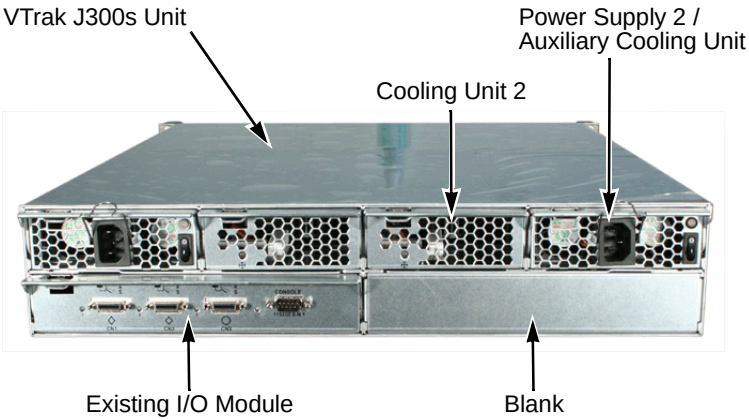
Purpose

The VTrak J300s unit ships with one or two I/O modules. If your J300s 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.

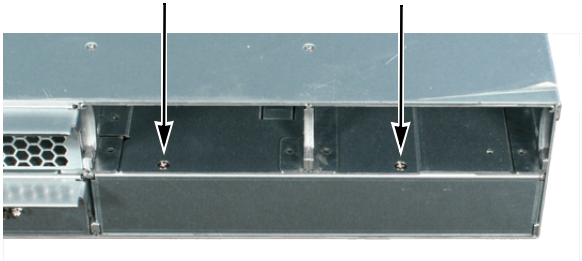
Installation

To install a second I/O module in a VTrak J300s unit:

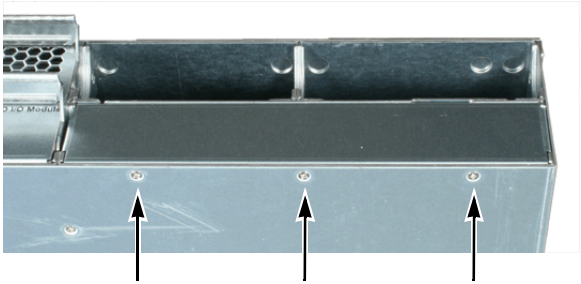
1. Power down the J300s unit.



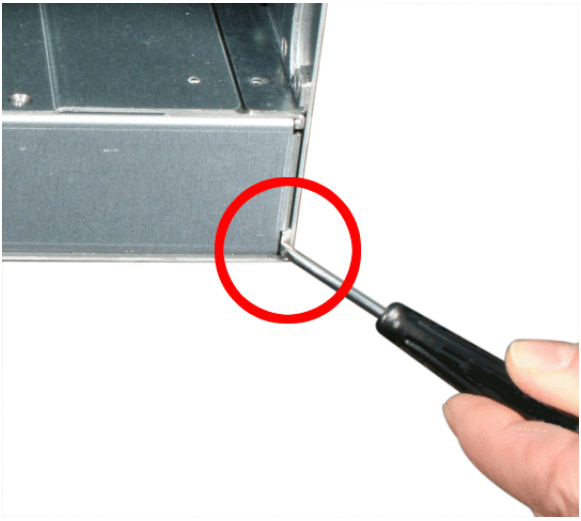
2. Remove Cooling Unit 2.
3. If your J300s unit has a Power Supply on the right side, disconnect the power cord.
4. Remove Power Supply 2 or the Auxiliary Cooling Unit.



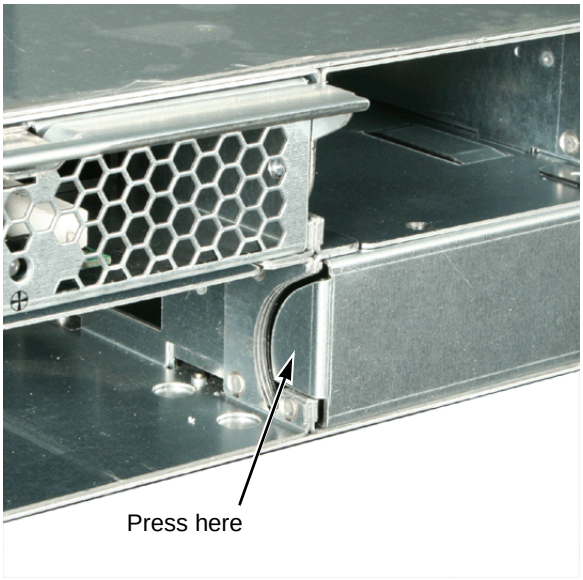
5. Remove the two screws holding the blank from the top, inside the open slots of the J300s unit (see above).



6. Remove the three screws holding the blank from the bottom of the J300s unit (see above).



7. Insert a small screwdriver into the gap in the lower right corner of the J300s unit and gently pry the blank out of the housing (see above).



Or, remove the existing I/O module, then press on side of the blank to push it out of the slot (see above). Replace the existing I/O module.

You can discard the blank and the five screws. They are not used with the second I/O module.

8. Install the second I/O module into the open slot (see above).

   Push the I/O module all the way in, then raise the handle until it locks the I/O module into place.

9. Install Power Supply 2 or the Auxiliary Cooling Unit into its slot.
10. If your J300s unit has a Power Supply on the right side, reconnect the power cord.
11. Install Cooling Unit 2 into its slot.
12. Connect your data cables to the second I/O module.

    See page 12 for more information.
13. Optional. Connect your serial cable to the second I/O module.

    See page 16 for more information.
14. Power up the J300 unit.

To verify proper installation and function, run the enclosure command in the CLI. Because the new I/O module is installed in the right slot, it will automatically take the *Standby* role in the CLI screen. See page 24 for more information.

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