



# ***VTRAK S3000***

## ***Quick Start Guide***

Version 1.0

## VTrak S3000 Task List

- Task 1: Unpacking the Boxes (below)
- Task 2: Mounting the Appliance in a Rack (page 4)
- Task 3: Configuring the VTrak Appliance (page 8)
- Task 4: Mounting the Subsystem in a Rack (page 23)
- Task 5: Installing Disk Drives in the Subsystem (page 26)
- Task 6: Making Data Connections (page 28)
- Task 7: Making Management Connections (page 34)
- Task 8: Setting-up Serial Cable Connections (page 37)
- Task 9: Powering-on the Subsystem (page 38)
- Task 10: Setting-up the Subsystem (page 40)
- Task 11: Configuring Storage on the Subsystem (page 46)
- Task 12: Setting-up Basic Storage (page 54)
- Task 13: Setting-up High Availability (page 62)
- Contacting Technical Support (page 68)

---

Thank you for your purchase of the VTrak S3000 storage solution. This Quick Start Guide is designed to help you unpack, install, connect, configure, and run your VTrak S3000 system.

If you are adding VTrak RAID subsystems or JBOD enclosures to your VTrak S3000 system, follow the Task List in this document. The Task Lists in other Quick Start Guides do not cover VTrak S3000.

For complete information about your VTrak S3000 appliance, see the *VTrak S3000 User Manual* on the software DVD.

Please see the software DVD for a complete set of user documents.

### ***Task 1: Unpacking the Box***

The VTrak S3000 appliance box contains the following items:

- VTrak appliance
- Bezel
- Left and right mounting rails for the appliance
- 1.5 m (4.9 ft) Power cords, 2 each
- Accessory box
- Printed software license key
- DVD with software install files and user documentation



### **Warning**

---

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

---



### **Important**

---

To run the PROMISE Management Console, your PC must have the latest version of Java Runtime Environment (JRE).

---

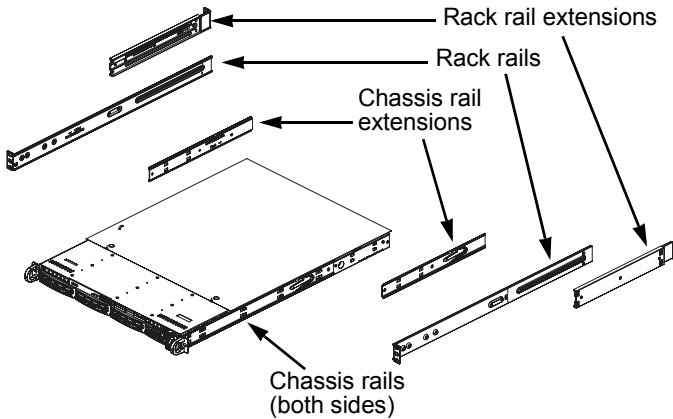
## ***Task 2: Mounting the Appliance in a Rack***

### **Identifying the Sections of the Rack Rails**

The chassis package includes two rack rail assemblies in the rack mounting kit. Each assembly consists of two sections:

- A pair of two-piece chassis rails that attach to the chassis
- A pair of two-piece rack rails that attach to the rack

**Figure 1. Appliance rack mount components**



### **Inner Chassis Rails**

The chassis rails come in two sections:

- Chassis rails – Attached to the chassis at the factory
- Chassis rail extensions – You attach them to the chassis rails

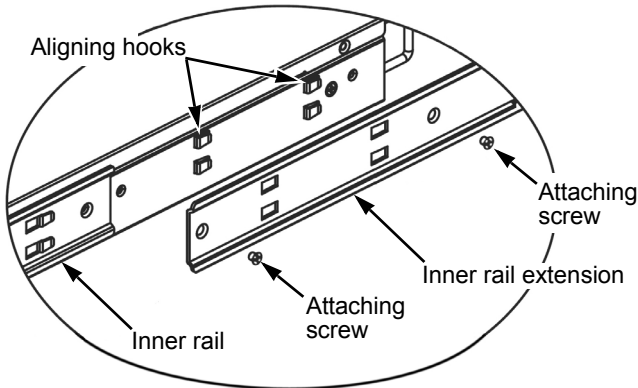
### **Installing the Chassis Rail Extensions**

1. Place the chassis rail extensions on the side of the chassis aligning the hooks on the chassis with the holes on the rail extensions.

The inner rail extension faces “outward” the same as the inner rail.

2. Slide the rail extension toward the front of the chassis.
3. Secure the chassis with two attaching screws as shown in the diagram. Use the screws supplied with the rack mount kit. See page 5, Figure 2.
4. Repeat steps 1 through 3 for the other chassis rail extension.

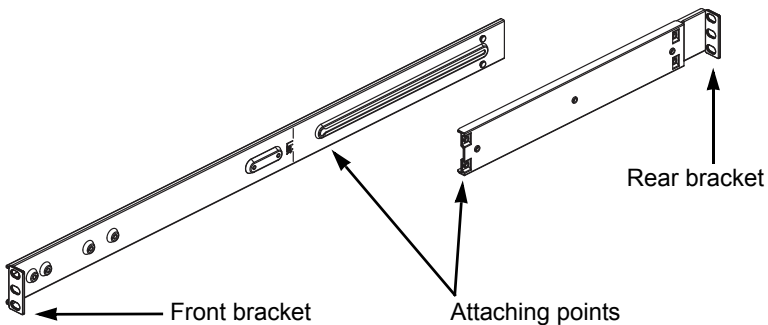
**Figure 2. Assembling the chassis rails**



## Installing the Rack Rails into the Rack

1. Attach the longer section of the rack rail to the shorter section of the rack rail.  
Align the pins with the slides. Both brackets of the rack rail must face the same direction in order to secure to the rack.
2. Adjust the length of the two sections of the rack rail so that they fit snugly in the rack. See Figure 3.
  - The *longer* section of the rack rail attaches to the *front* rack post.
  - The *shorter* section of the rack rail attaches to the *rear* rack post

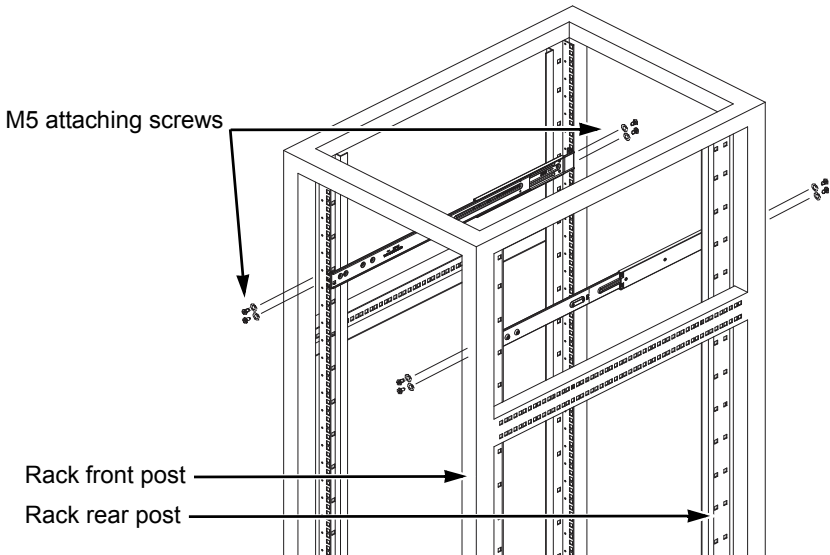
**Figure 3. Assembling the rack rails**



3. Secure the rail brackets to the rack posts.  
Use the M5 screws included with the rackmount kit. See page 6, Figure 4.

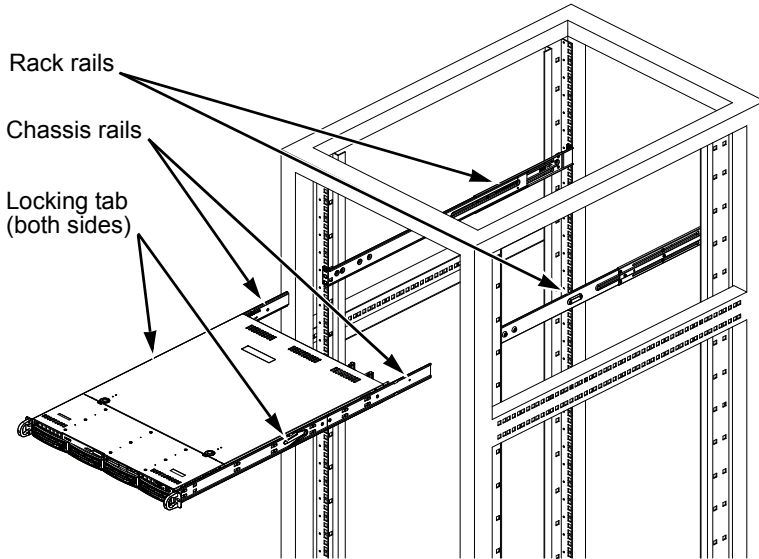
4. Repeat steps 1 through 3 for the remaining rack rail.

**Figure 4. Installing the rack rails**



5. Pick up the appliance and line-up the chassis rails on the rear of the appliance with the front rack rails.  
See page 7, Figure 5.
6. Slide the appliance into the rack.  
If needed, press the locking tabs on the chassis rail to slide the appliance into position.  
When you have pushed the appliance all the way into the rack, the locking tabs make a “click” sound.

**Figure 5. Appliance rack mount assembly diagram**



## Task 3: Configuring the VTrak Appliance

VTrak appliance configuration is done through the PROMISE Management Console over a network connection. This process takes about 15 minutes.

When you add the VTrak appliance to your network, be sure the Host PC, where you plan to run the Management Console, can connect with the VTrak appliance over the network.

Before you begin configuration, obtain four *dedicated* IP addresses from your Network Administrator:

- Ethernet port 0 (eth0)
- IPMI LAN
- Heartbeat
- Health Monitor

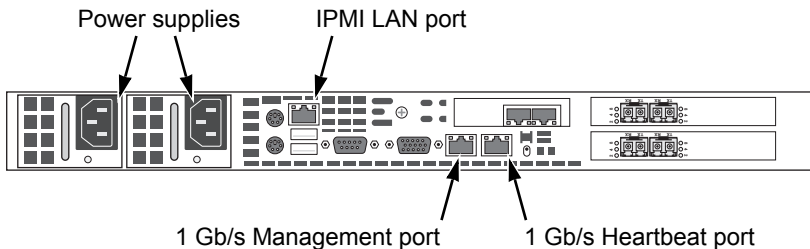
## Making Power and Network Connections

To make power and network connections on the appliance:

1. Plug the power cords into power supplies.
2. Attach at least one active LAN cable to one of the network ports.
3. Attach an active LAN cable to the IPMI port.

See Figure 6 for an example.

**Figure 6. VTrak appliance setup connections**



## Accessing the Power Button

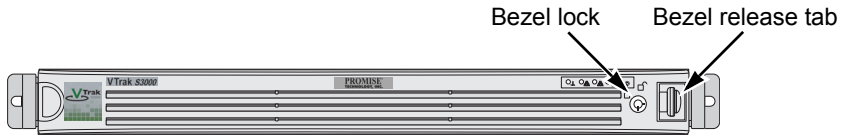
To access the power button and boot the VTrak appliance:

1. Unlock the bezel.
2. Push the bezel release tab to the left to release the bezel. See Figure 7.
3. Remove the bezel and set it aside.
4. Press the power button to boot the VTrak appliance.

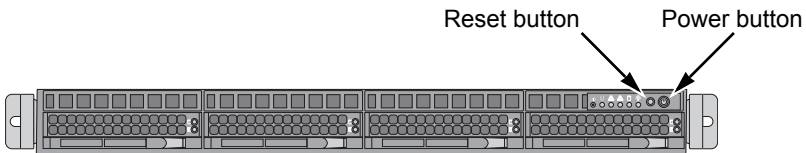
See Figure 8.



**Figure 7. Removing the bezel from the VTrak appliance**



**Figure 8. VTrak appliance power and reset buttons**



As the appliance boots, the GRUB screen shows a choice of kernels.

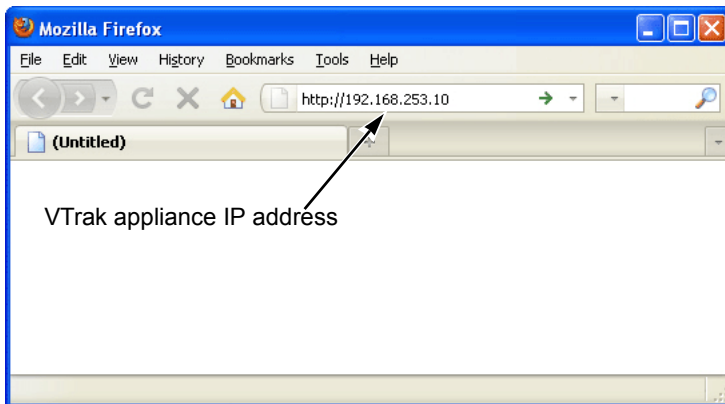
5. Choose **Promise VTrak S3000 2.6.18-128.el5**.
6. When the login appears, type **root** for the user name and **password1** for the password.

## Logging into the Management Console

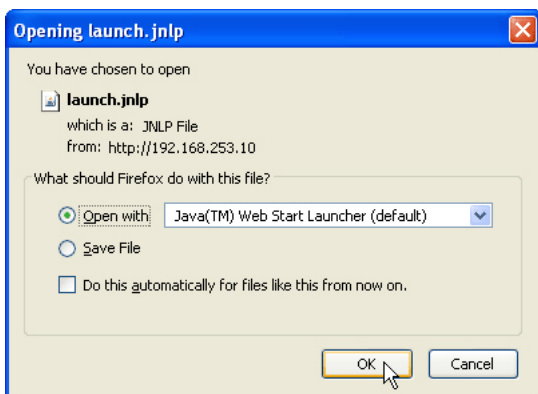
The PROMISE Management Console is your interface with the software running on the VTrak appliance. To run the Management Console, your PC must have the latest version of JRE installed. You make the initial connection to the Management Console through your network browser.

To log into the Management Console:

1. Launch your network browser.
2. In the browser's address field, type **http://192.168.253.10** and press Enter.



The *Opening launch.jnlp* dialog box appears.



3. In the Opening launch.jnlp dialog box, choose the **Open with** option, choose **Java Web Start Launcher** from the dropdown menu, and click the **OK** button.

JRE launches on your PC.

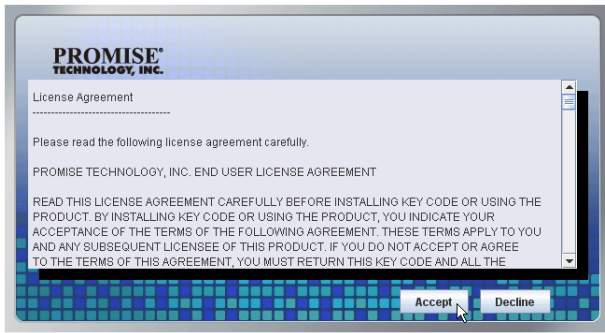
If a *Warning – Security* dialog box appears, click the **Run** button to continue.

The Management Console splash screen appears.



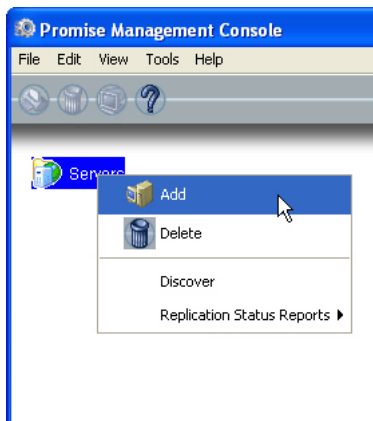
The first time you log into the Management Console, the End User License Agreement appears.

4. Review the agreement, then click the **Accept** button to continue. You *must* accept the agreement to run the Management Console. The agreement only appears the first time you log in.



After the Management Console opens, you can close your browser.

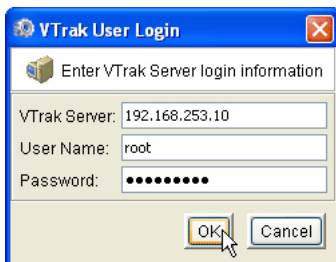
5. Right-click **Servers** at the top of the Tree and choose **Add**.



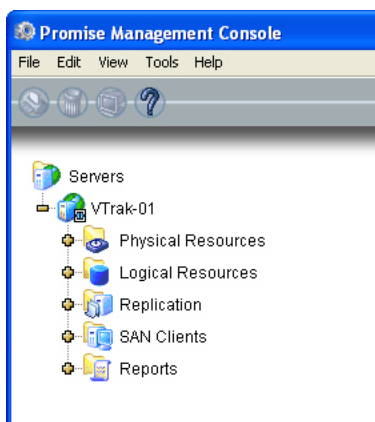
The *VTrak User Login* dialog box appears.

6. In the dialog box, enter the following information in the fields provided,
  - IP address. The default is 192.168.253.10.
  - User name. The default is **root**.
  - Password. The default is **password1**.

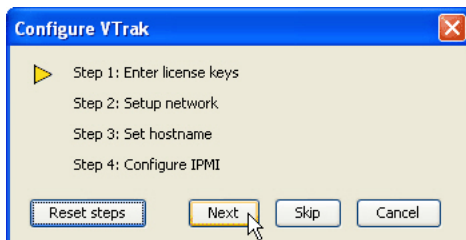
7. Click the **OK** button.



8. The VTrak appliance is added to the Tree in the Management Console.



The first time you connect to a VTrak appliance, the *Configure VTrak* dialog box appears.



9. In the dialog box, click the **Next** button to begin configuration.

## Step 1: Entering License Keycodes



### Caution

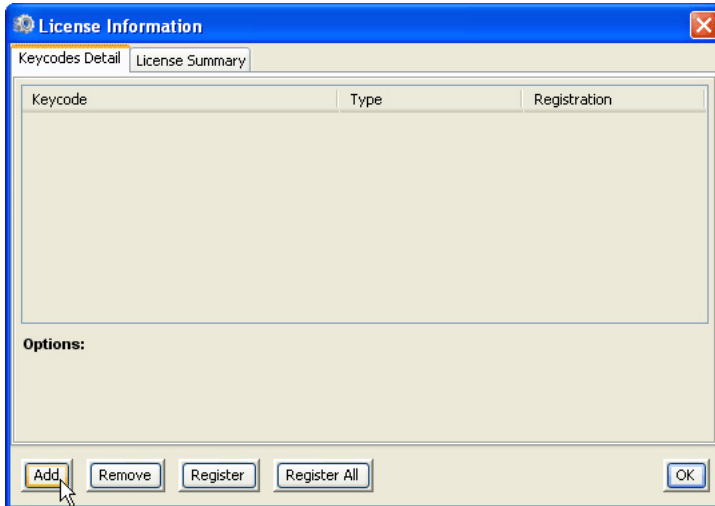
Before you continue, be sure that no RAID subsystems are connected, through network or fabric, to the VTrak appliance.

Keycodes are used to enable functions on the VTrak appliance. Each VTrak appliance comes with a set of printed keycodes.

If your VTrak appliance has a connection to the Internet, the keycodes are registered with a PROMISE-approved license server automatically.

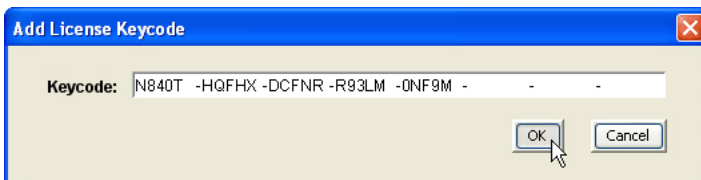
When you click the **Next** button in the *Configure VTrak* dialog box, the *License Information* dialog box appears.

1. In the dialog box, click the **Add** button.



The *Add License Keycode* dialog box appears.

2. In the dialog box, enter or copy-and-paste the keycode for your configuration and click the **OK** button.



The *License Information* dialog box displays your keycode and the options or features this license enables.

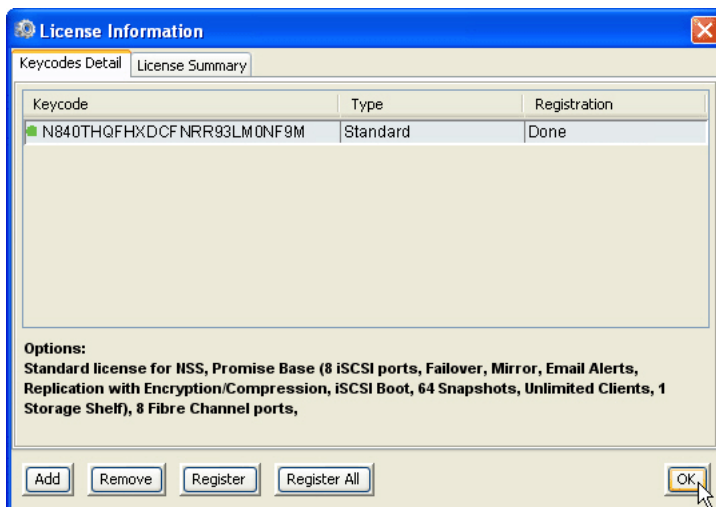
The Basic license enables:

- 8 iSCSI ports
- Failover
- Mirror
- Email Alerts
- Replication with Encryption/Compression
- iSCSI boot
- 128 Snapshots
- Unlimited Clients
- 1 Storage Shelf

The license shown below also enables eight (8) Fibre Channel ports.

The term *Storage Shelf* means that the appliance is enabled to work with one VTrak RAID subsystem. You can enable additional RAID subsystems or JBOD enclosures by adding shelf keys.

The keycode sample shown here is for demonstration purposes only. It is not a valid keycode and cannot enable a license.



3. Check the registration status of the license key.

- If the icon left of the license keycode is *green* and it says *Done* under Registration, the license was registered automatically. Click the **OK** button.

The *VTrak Configure* dialog box appears, ready for Step 2.

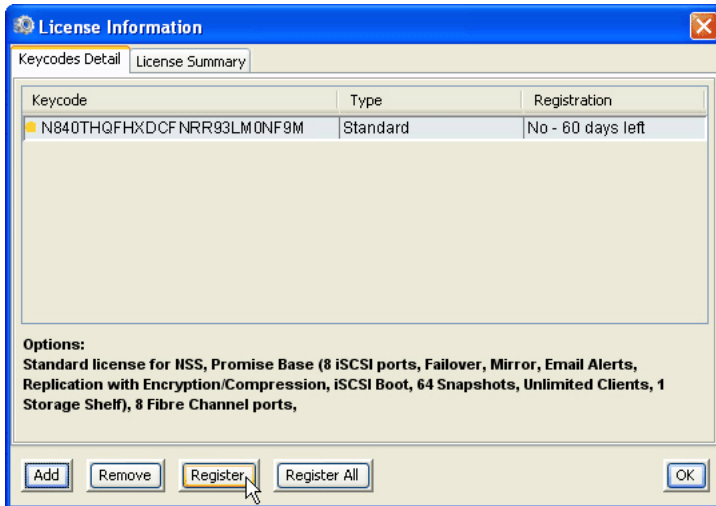
- If the icon left of the license keycode is *yellow*, and it says *No - 60 days left* under Registration, you might be required to register the license manually.

See “Manual License Registration” below.

## Manual License Registration

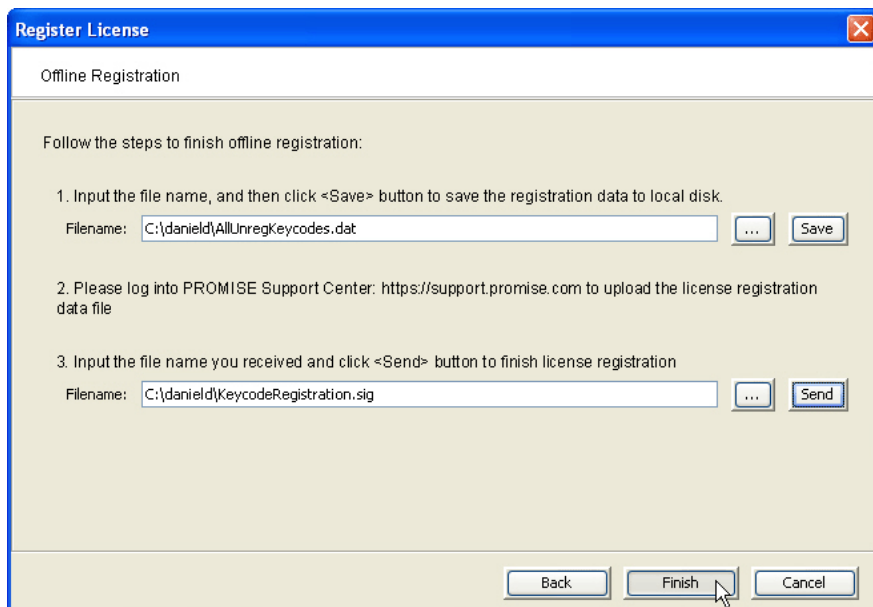
This action is for license keys that do not register automatically. Your VTrak must have a connection to the Internet for registration.

1. In the License Information dialog box, click the **Register** button.  
If you have multiple license keys, click the **Register All** button.



The *Register License* wizard opens.

2. Click the **Next** button to continue.
3. Choose the registration option and click the **Next** button,
  - **Online** – The wizard attempts to register your license automatically over the Internet.  
 If registration is successful, you return to the *License Information* dialog box and the license key shows *Done* under Registration.  
 If registration is not successful, you can try again later. Or choose the Offline option.
  - **Offline** – The wizard generates a data (.dat) file that you must upload to PROMISE Support Center.  
 If you choose Offline, the *Offline Registration* dialog box appears.



4. In the dialog box, click the ... button, navigate to a location to save the data file, click the **Open** button, then click the **Save** button.
5. In your browser, log into the PROMISE Support Center.  
**<https://support.promise.com>**
6. Upload the data file.  
 PROMISE Support returns a signature (.sig) file.
7. In the *Offline Registration* dialog box, click the ... button, navigate to the signature file, click the **Open** button, then click the **Send** button.  
 The Send button applies the signature file to your license.
8. Click the **Finish** button to exit the wizard and return to the *License Information* dialog box.  
 If the operation succeeded, the icon left of the license keycode is *green* and it says *Done* under Registration.
9. In the dialog box, click the **OK** button.  
 The *VTrak Configure* dialog box appears, ready for Step 2.

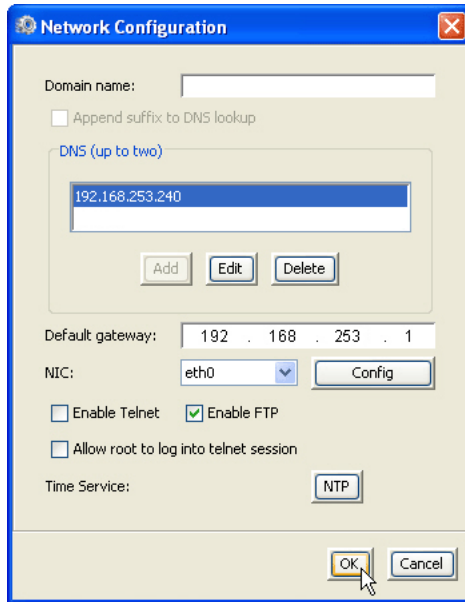


## Step 2: Setting up the Network

When you click the **Next** button in the *Configure VTrak* dialog box, the *Network Configuration* dialog box appears. Several settings are made here:

- Domain name – See page 17.
- DNS server – See page 18.
- Default gateway – See page 18.
- NIC settings – See page 18.
- Telnet – See page 19.
- FTP – See page 19.
- NTP – See page 19.
- Finalize settings – page 19.

You can accept all default settings or make the required changes.

The image shows a 'Network Configuration' dialog box with a blue title bar and a close button. It contains several sections: 'Domain name' with a text input field; an unchecked checkbox for 'Append suffix to DNS lookup'; a 'DNS (up to two)' section with a list box containing '192.168.253.240' and buttons for 'Add', 'Edit', and 'Delete'; 'Default gateway' with a dotted input field showing '192 . 168 . 253 . 1'; 'NIC' with a dropdown menu set to 'eth0' and a 'Config' button; checkboxes for 'Enable Telnet' (unchecked), 'Enable FTP' (checked), and 'Allow root to log into telnet session' (unchecked); and 'Time Service' with an 'NTP' button. At the bottom right are 'OK' and 'Cancel' buttons, with a mouse cursor clicking the 'OK' button.

### Adding a Domain Name

A domain name is optional. Appending the domain name is also optional.

To add a domain name:

1. In the *Network Configuration* dialog box, enter a domain name in the field provided.

2. If you entered a domain name and you want to append the suffix to the DNS server, check the **Append suffix to DNS lookup** box.

## Adding a DNS Server

If your network has Domain Name Server (DNS) and you want VTrak to work with it, enter the DNS IP address here. You can have up to two DNS servers.

To add a new DNS:

1. Highlight one of the DNS servers and click the **Delete** button.  
Click the **Yes** button to confirm.
2. Click the **Add** button and enter the IP address for a DNS server.
3. In the DNS (up to two) dialog box, enter the IP address of your DNS server and click the **OK** button.

You return to the *Network Configuration* dialog box where the new DNS appears in the list.

## Specifying a Gateway

If your network has a gateway and you want VTrak to work with it, enter the Gateway IP address in the Default gateway field.

## Changing NIC Settings

An FC appliance (server) has four network ports, *eth0* through *eth3*. An iSCSI appliance has up to eight network ports, *eth0* through *eth7*. On all appliances, *eth0* is the management port. The default IP addresses are:

<i>eth0</i> – 192.168.253.10	<i>eth4</i> – 10.0.0.6
<i>eth1</i> – 10.0.0.3	<i>eth5</i> – 10.0.0.7
<i>eth2</i> – 10.0.0.4	<i>eth6</i> – 10.0.0.8
<i>eth3</i> – 10.0.0.5	<i>eth7</i> – 10.0.0.9

Obtain network setting information from your Network Administrator.



---

### Caution

Network port *eth0* is the management port.

In step 3 below, do NOT click the **Delete** button for network port *eth0*.

---



---

### Important

An IP address conflict among network ports *eth1* through *eth3* prevents a High Availability configuration, even when those ports are not connected.

---

To change NIC (network) port settings:

1. Choose a NIC port from the dropdown menu and click the **Config** button.  
The *IP Address Configuration* dialog box appears.
2. In the dialog box, choose a protocol,
  - **DHCP** – Automatic configuration by a DHCP server. Not recommended.
  - **Static** – Manual configuration. Recommended.
3. If you chose Static configuration, enter your IP address and subnet mask settings.
  - **Add** – Click the **Add** button and enter the IP address and subnet mask.
  - **Edit** – Highlight an IP address or subnet mask and click the **Edit** button to modify them.
  - **Delete** – Highlight an IP address or subnet mask and click the **Delete** button to delete them.
4. Accept the default Maximum Transmission Unit (MTU or frame) or enter a new value.  
1500 is the default and recommended value. 9000 (a jumbo frame) is the maximum value.
5. When you are done making network settings, click the **OK** button.  
You return to the *Network Configuration* dialog box.

## Making Telnet Settings

Telnet is enabled by default. In most cases, Telnet is not appropriate for VTrak because the protocol is not secure and difficult to use.

The recommended setting is to uncheck the **Telnet** box to disable Telnet.

If you want to use Telnet, see the *VTrak S3000 User Manual* on the software DVD.

## Making FTP Settings

FTP is enabled by default. FTP is used to flash firmware updates.

The recommended setting is to leave FTP box checked to enable FTP.

## Configuring NTP Servers

The VTrak appliance has three default NTP servers. If you want to change the NTP server configuration, see the *VTrak S3000 User Manual* on the software DVD after the VTrak appliance is configured.

## Finalizing Settings

When you are done making network settings, click the **OK** button.

The *Configure VTrak* dialog box appears, ready for Step 3.

## Step 3: Hostname



### Caution

---

If you plan to change the hostname, do so before you connect to your storage devices.

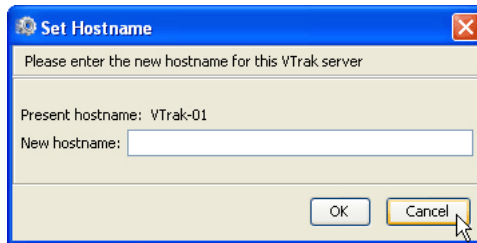
If your storage is set up already and you change the hostname, you must reconfigure your storage to recognize the new hostname.

---

When you click the **Next** button in the *Configure VTrak* dialog box, the *Warning* dialog box appears. At this phase of the system setup, you have no storage configured. Therefore, the warning does not apply.

1. In the dialog box, click the **OK** button to continue.

The *Set Hostname* dialog box appears.



2. In the dialog box, do one of the following actions:
  - Click the **Cancel** button to accept the Present (default) hostname.
  - Enter a new hostname for the VTrak appliance and click the **OK** button.

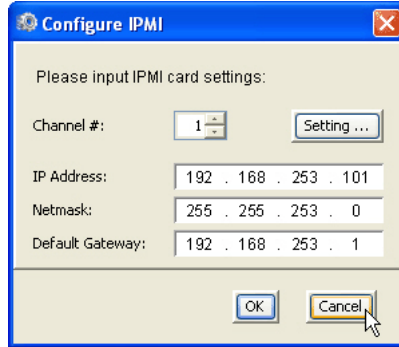
When you click the **OK** button, the network server automatically restarts. That action drops your connection. Wait two to three minutes, then try to log in. If you cannot log in, wait another minute and try again.

To see the new hostname as the Present hostname in the *Set Hostname* dialog box, you must reboot the appliance.

When you log in, the *Configure VTrak* dialog box appears, ready for Step 4.

## Step 4: IPMI Configuration

When you click the **Next** button in the *Configure VTrak* dialog box, the Configure IPMI dialog box appears. There is only one channel, channel #1. The default IPMI address is 192.168.253.101.



In the dialog box, do any of the following actions:

- Click the **Cancel** button to accept the default settings.
- Click the **Setting...** button to view the default settings.
- Make new IPMI settings.

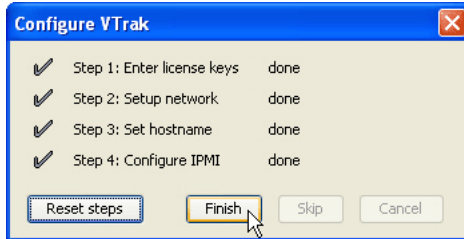
To make new IPMI settings:

1. Enter all three settings, even if your setting is the same as the default.
  - IP Address
  - Subnet Mask
  - Default Gateway IP address
2. Click the **OK** button.

The *Configure VTrak* dialog box appears, ready to finalize.

## Finalizing Configuration

When the *Configure VTrak* dialog box appears, you have a chance to review and change your settings.



- If any step shows *skipped*, or you want to review or change a previous setting, click the **Repeat steps** button.

When you click the **Repeat steps** button, the configuration returns to Step 1 and goes through each step sequentially.

- If all four steps show *done* and you are satisfied with your settings, click the **Finish** button.

To quit the Management Console, choose **File > Exit**.

For more information about the Management Console, see the *VTrak S3000 User Manual* on the software DVD.



---

### Note

If you have any unregistered licenses, when log into the VTrak appliance, the Console Login dialog box appears.

Click the **OK** button to close the dialog box.

In the Tree, right-click the VTrak appliance and choose **License** from the popup menu. Highlight the unregistered license and click the **Register** button.

---

If you have an unregistered license:

1. Click the **OK** button to close the Console Login dialog box.
2. In the Tree, right-click the VTrak appliance (server) and choose **License** from the popup menu.  
The License Information dialog box appears.
3. In the License Information, highlight the unregistered license and click the **Register** button.

For more information, see “Manual License Registration” on page 15.

## ***Task 4: Mounting the Subsystem in a Rack***



### **Cautions**

---

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



### **Note**

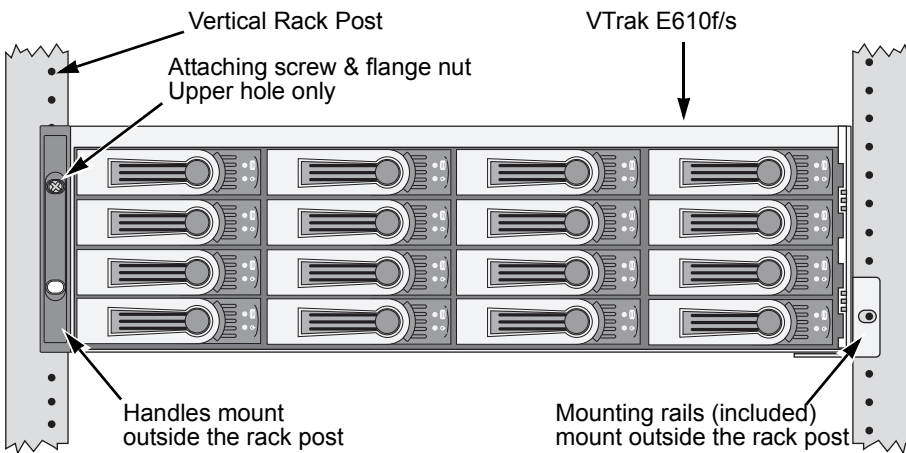
---

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

---

The VTrak subsystem installs into your rack using the supplied mounting rails. You can also use your existing rails.

**Figure 9. VTrak subsystem mounted in a rack with the supplied rails**

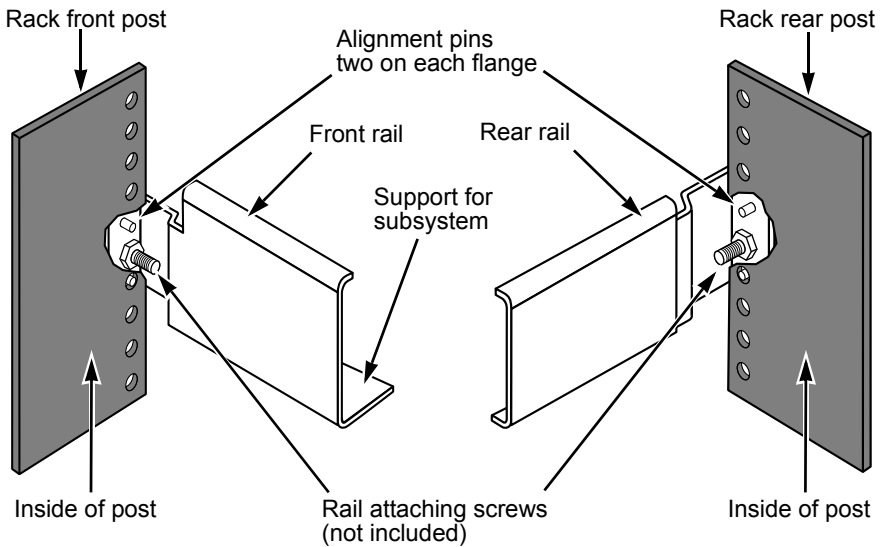


To install the VTrak subsystem into a rack with the supplied mounting rails:

1. Check the fit of the mounting rails in your rack system.  
See page 25, Figure 10.
2. Adjust the length of the mounting rails as needed.  
The rear rail slides inside the front rail. The rail halves are riveted together and use no adjustment screws.
3. Attach the mounting rail assemblies to the outside of the rack posts, using the attaching screws and flange nuts from your rack system.  
Be sure the front rail support is on the bottom facing inward.  
The alignment pins fit into the rack holes above and below the attaching screws.  
Use the attaching screws and flange nuts from your rack system. Tighten the screws and flange nuts according to your rack system instructions.
4. Place the VTrak subsystem onto the rails.
5. Secure the VTrak subsystem to the rack.  
One screw each side, in the upper hole only. Use the attaching screws and flange nuts from your rack system. Tighten the screws and flange nuts according to your rack system instructions.



**Figure 10. Subsystem rack mount assembly diagram**



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

## Task 5: Installing Disk Drives in the Subsystem

The VTrak appliance ships with physical drives already installed in the chassis. VTrak RAID subsystems and JBOD enclosures ship without physical drives.

For optimal performance, use physical drives of the same model and capacity. when you create an array. The physical drives' matched performance allows the logical drive to function better.

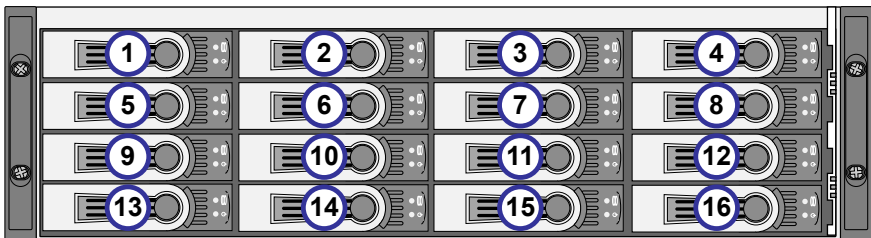
The table below shows the number of subsystem drives required for each RAID level.

Level	Number of Drives		Level	Number of Drives
RAID 0	1 or more		RAID 6	4 to 32
RAID 1	2 only		RAID 10	4 or more*
RAID 1E	2 or more		RAID 50	6 or more
RAID 5	3 to 32		RAID 60	8 or more
* Must be an even number of drives.				

### Drive Slot Numbering

The diagram below shows how VTrak's drive slots are numbered. Slot numbering is reflected in the WebPAM PROe and CLU user interfaces.

**Figure 11. VTrak subsystem drive slot numbering**



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



### Caution

---

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

---



### Important

---

If your subsystem has SATA disk drives, an AAMUX adapter is installed in the carrier with each drive.

Your VTrak subsystem has dual RAID controllers. But SATA drives have only one data channel. The AAMUX adapter provides a second data channel so both RAID controllers can access the SATA drive.

Replacement AAMUX adapters are available from PROMISE Technology.

SAS disk drives have two data channels and do not require AAMUX adapters.

---

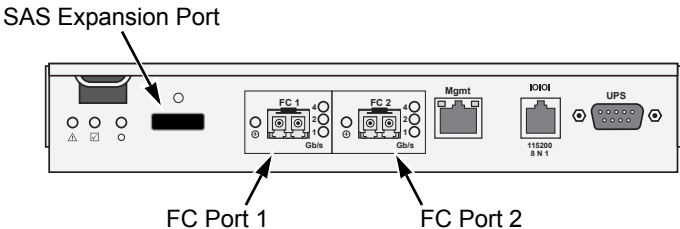
## Task 6: Making Data Connections

### Connecting the RAID Subsystem

The VTrak RAID subsystem connects to the VTrak appliance using a Fibre Channel (FC) or a SAS data connection.

#### Fibre Channel Interface

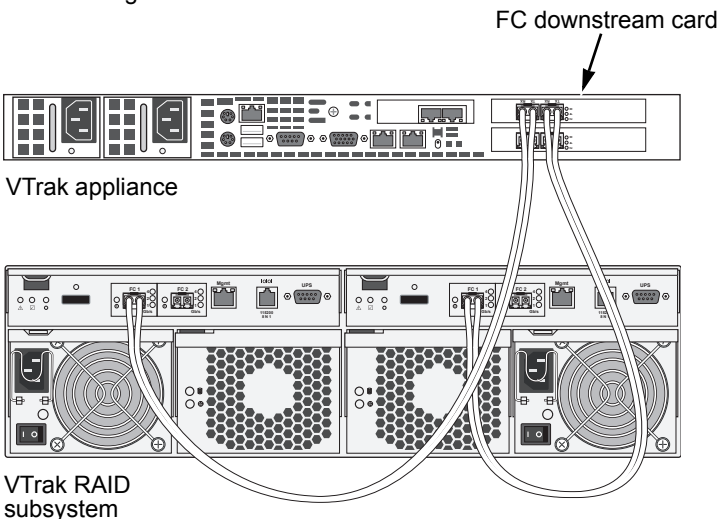
The VTrak FC subsystem uses four (4) 8-Gb SFP+ transceivers, two per RAID controller on its two FC ports.



To connect the FC subsystem:

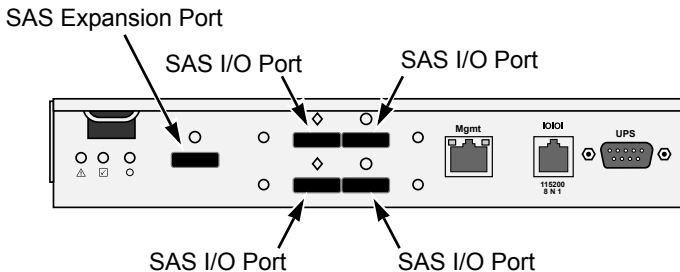
1. Connect one of the FC ports on the *left* RAID controller to one of the *downstream* FC ports on the HBA card in the VTrak appliance.
2. Connect one of the FC ports on the *right* RAID controller to one of the *downstream* FC ports on the HBA card in the VTrak appliance.

See the diagram below.



## SAS Interface

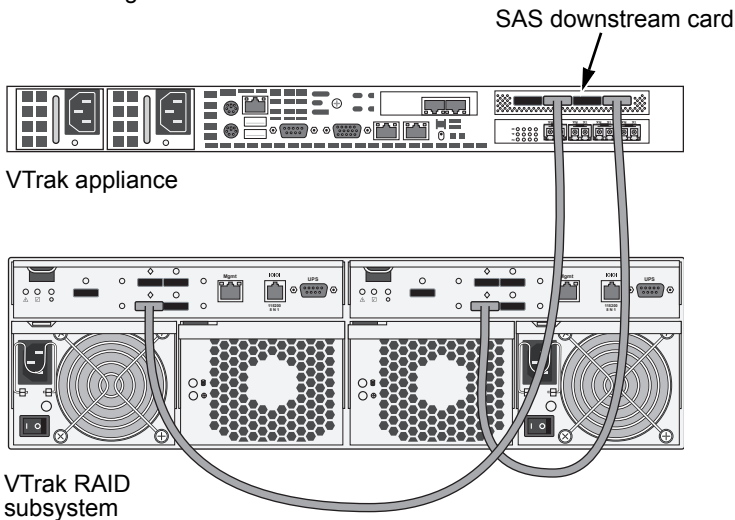
The VTrak SAS subsystem has two SAS IN ports and two SAS OUT ports on each RAID controller. The connection requires two (2) SAS SFF-8088 to SFF-8088 cables, available from PROMISE.



To connect the SAS subsystem:

1. Connect one of the SAS I/O ports on the *left* RAID controller to one of the *downstream* SAS ports on the HBA card in the VTrak appliance.
2. Connect one of the SAS I/O ports on the *right* RAID controller to one of the *downstream* SAS ports on the HBA card in the VTrak appliance.

See the diagram below.

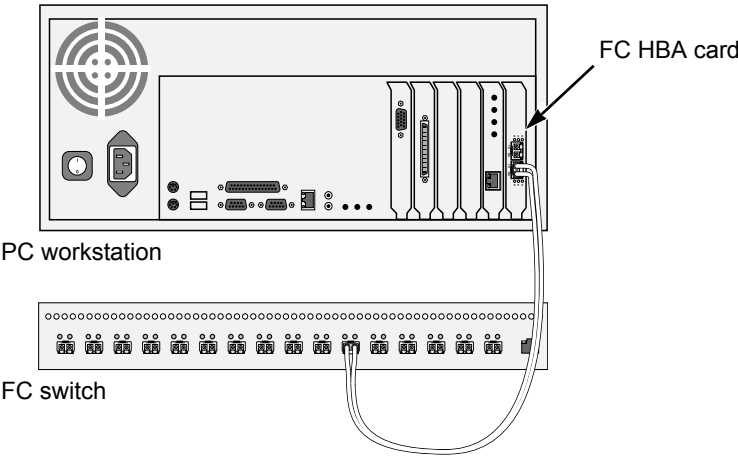


# Connecting the PC Workstation

To connect the PC workstation:

Connect the FC HBA card in the PC workstation to the FC switch.

See the diagram, below.



# Connecting the VTrak Appliance

Upstream connections to VTrak appliance are either:

- Fibre Channel Interface (page 31)
- iSCSI Interface (page 32)

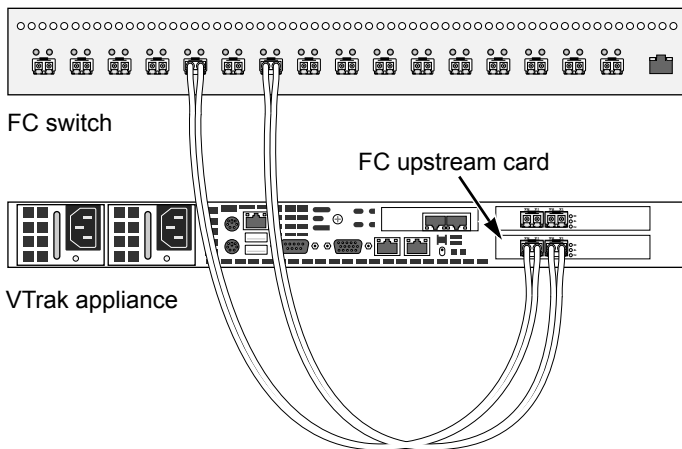
## Fibre Channel Interface

A Fibre Channel (FC) upstream configuration is commonly used in VMware, Microsoft Exchange, and Microsoft SQL environments.

To connect the VTrak appliance:

Connect one or both *upstream* FC ports on the VTrak appliance to the FC switch.

See the diagram, below.



## iSCSI Interface

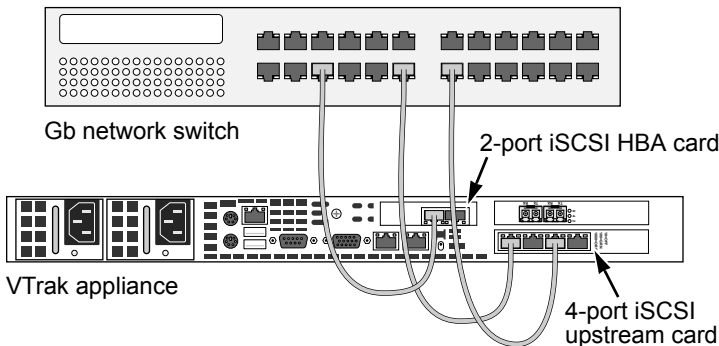
An iSCSI upstream configuration is commonly used in Linux, Apache, MySQL, PHP or Python (LAMP) environments. The iSCSI data connection is totally separate from the network management connection, described on page 36.

Be sure that your network switch matches speed of the iSCSI HBA card in the VTrak appliance. Whenever possible, iSCSI data should have a dedicated network.

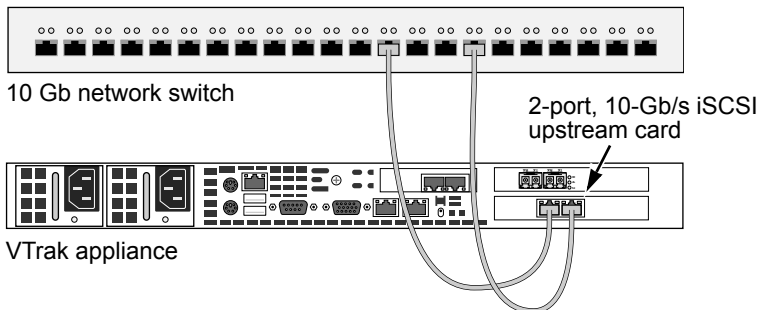
If you connect multiple network ports, you can implement IP bonding (port aggregation) for a higher bandwidth data connection. For more information, see Chapter 17 of the *VTrak S3000 User Manual*.

To connect the VTrak appliance:

- **Gigabit iSCSI** – Connect one or more upstream data ports in the VTrak appliance to your network switch. Six (6) 1-Gb/s data ports are available. See the diagram, below.



- **10 Gigabit iSCSI** – Connect one or both upstream data ports in the VTrak appliance to your network switch. There two 10-Gb/s data ports. The 1-Gb/s iSCSI HBA card is not used. See the diagram, below





## SAS Expansion Connections (Optional)

You can expand the storage capacity of the VTrak RAID subsystem by adding VTrak JBOD enclosures. Connecting a pair of subsystems requires two (2) SAS SFF-8088 to SFF-8088 cables, available from PROMISE.

A VTrak RAID subsystem supports up to four (4) VTrak JBOD enclosures.

To connect the VTrak RAID subsystem to a VTrak JBOD enclosure:

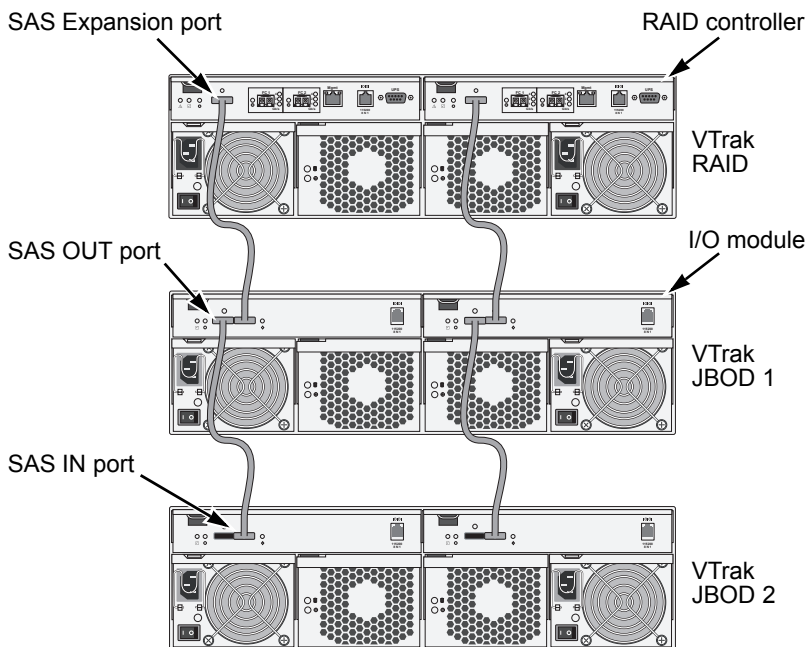
1. Connect a SAS cable from the Expansion port on the *left* RAID controller to the SAS IN port on the *left* I/O module.
2. Connect a SAS cable from the Expansion port on the *right* RAID controller to the SAS IN port on the *right* I/O module.

See the diagram below.

To connect one VTrak JBOD enclosure to another VTrak JBOD enclosure:

1. Connect a SAS cable from the SAS OUT port on *left* I/O module to the SAS IN port on the *left* I/O module.
2. Connect a SAS cable from the SAS OUT port on *right* I/O module to the SAS IN port on the *right* I/O module.

See the diagram below.



## Task 7: Making Management Connections

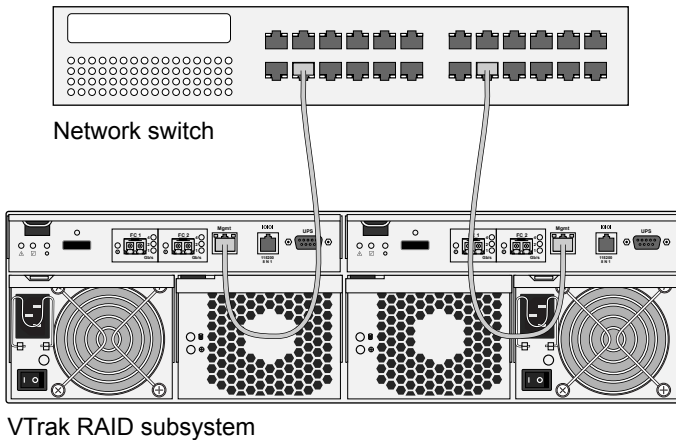
### Connecting the RAID Subsystem

The management connection is the same for Fiber Channel and SAS VTrak subsystems.

To connect the RAID subsystem:

1. Connect the Management port on the *left* RAID controller to your network switch.
2. Connect the Management port on the *right* RAID controller to your network switch.

See the diagram, below.



#### Note

If you are adding a VTrak JBOD enclosure, the JBOD is managed by the RAID controller on the RAID subsystem, though the SAS connection.

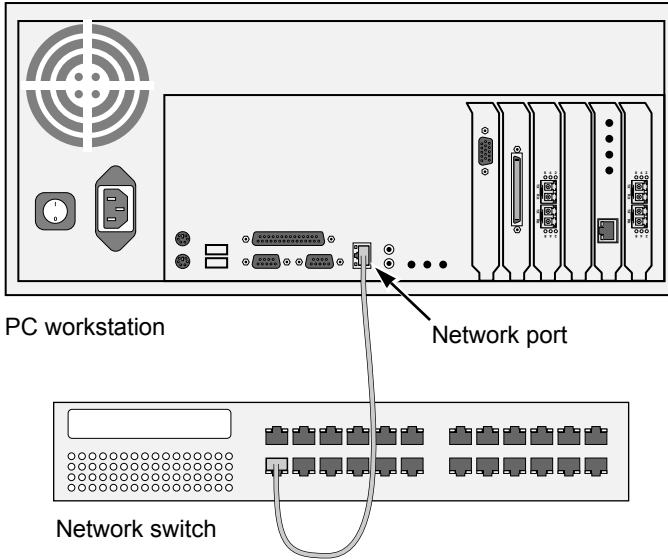
There is no management connection to JBOD enclosures.

## Connecting the PC Workstation

To connect the PC workstation:

Connect the network port on the PC to your network switch.

See the diagram, below.



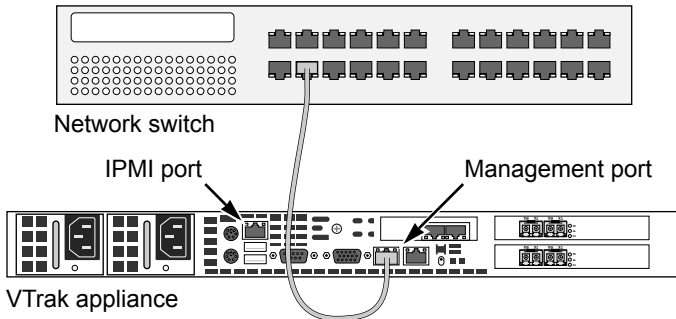
## Connecting the VTrak Appliance

The network management connection is totally separate from the iSCSI data connection, described on page 32.

To connect the VTrak appliance:

1. Connect one of the network ports on the VTrak appliance to the network switch.
2. Optional. Connect the other network port on the VTrak appliance to the network switch.

See the diagram, below.



---

### Important

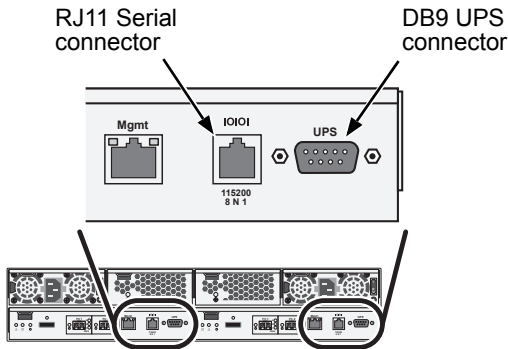
If you are using Intelligent Platform Management Interface (IPMI), connect to the dedicated IPMI port, rather than one of the network ports. For more information, see the *Embedded BMC IPMI User Guide* included with the VTrak appliance documentation.

---

## Task 8: Setting-up Serial Cable Connections

Serial communication enables the Command Line Interface (CLI) and Command Line Utility (CLU) on your PC to monitor to control the VTrak. The VTrak package includes one RJ11-to-DB9 serial data cable for each controller. All VTrak models have the same serial connection.

**Figure 12. Serial and UPS connectors are located on the controller**



To set up a serial cable connection:

1. Attach the RJ11 end of the serial data cable to the RJ11 serial connector on one of the controllers.
2. Attach the DB9 end of the serial data cable to a serial port on the Host PC or server.

### Optional UPS Serial Connection

If your deployment plan calls for one or more UPS units and management via serial communication, connect the UPS control cable to the DB9 connector on the VTrak controller. See Figure 12.

When your subsystem is running, see “Making UPS Settings” in the *VTrak E-Class Product Manual* on the software DVD to complete the UPS management setup.

## Task 9: Powering-on the Subsystem

Plug the power cords and turn on the switches on both power supplies.



### Important

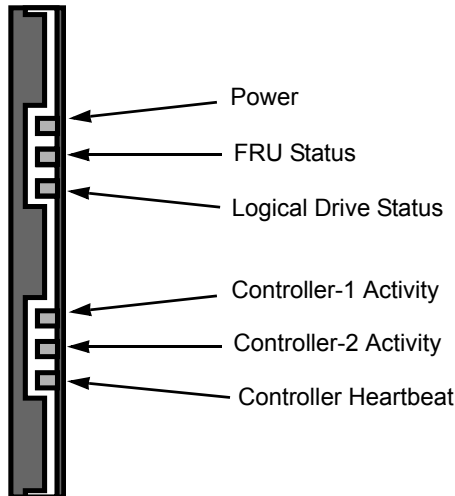
---

Always power on the JBOD enclosures first. Then power on the RAID subsystem.

---

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

**Figure 13. VTrak front panel LED display**

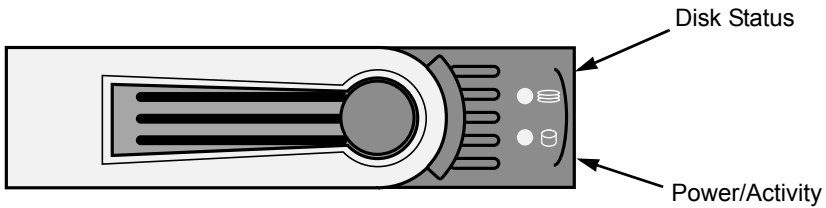


When boot-up is finished and the VTrak is functioning normally:

- Controller LED blinks green once per second for five seconds, goes dark for ten seconds, then blinks green once per second for five seconds again.
- Power, FRU and Logical Drive LEDs display green continuously.
- Controller LEDs flash green if there is activity on that controller.

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

**Figure 14. VTrak disk drive carrier LEDs**



After a few moments the Power/Activity LED should display Green. If there is no disk drive in the carrier, the Power/Activity LED remain dark.

The Power/Activity LED flashes during drive activity.

The Disk Status LED displays Green when a drive is present and configured.

## **Task 10: Setting-up the Subsystem**

Setting up the subsystem consists of the following actions:

- Setting up the Serial Connection (below)
- Choosing DHCP or a Static IP Address (page 40)
- VTrak Default IP Addresses (page 41)
- Setting up VTrak with the CLI (page 41)
- Setting up VTrak with the CLU (page 43)

### **Setting up the Serial Connection**

VTrak has a Command Line Interface (CLI) to manage all of its functions, including customization. A subset of the CLI is the Command Line Utility (CLU), a user-level interface that manages your VTrak via your PC's terminal emulation program, such as Microsoft HyperTerminal. This procedure uses the serial cable connection you made. See "Task 8: Setting-up Serial Cable Connections" on page 37.

1. Change your terminal emulation program settings to match the following specifications:
  - Bits per second: 115200
  - Data bits: 8
  - Parity: None
  - Stop bits: 1
  - Flow control: none
2. Start your PC's terminal VT100 or ANSI emulation program.
3. Press Enter once to launch the CLI.
4. At the Login prompt, type **administrator** and press Enter.
5. At the Password prompt, type **password** and press Enter.

At this point, you are in the CLI. You can continue using the CLI to make network settings or you can switch to the CLU. Go to:

  - Setting up VTrak with the CLI (page 41)
  - Setting up VTrak with the CLU (page 43)

### **Choosing DHCP or a Static IP Address**

When you set up your VTrak, you have the option of:

- Enabling DHCP and letting your DHCP server assign the IP address to the VTrak's virtual management port.
- Specifying a static IP address for the VTrak's virtual management port.



If you choose to enable DHCP, have your Network Administrator dedicate an IP address for the VTrak, linked to the VTrak's MAC address. This action prevents the DHCP server from assigning a new IP address when the VTrak restarts, with the result that users can no longer log in.

To access the MAC address for VTrak's virtual management port:

- In the CLI, type **net -v** and press Enter.
- In the CLU Main Menu, highlight *Network Management* and press Enter. Then highlight *Virtual* and press Enter.

## VTrak Default IP Addresses

VTrak uses virtual and physical IP addresses. This arrangement enables you to access a VTrak with two RAID controllers over your network using a single IP address.

### Virtual Management Port

The default virtual management port IP address is set to 10.0.0.1.

Use the virtual management port IP address to log into the VTrak over your network. See "Logging into WebPAM PROe" on page 46.

### Physical Management Ports

The default physical management port IP addresses are set to:

- Controller 1 – 10.0.0.2
- Controller 2 – 10.0.0.3

Use the physical management port IP address only when a controller is in *maintenance mode*. See the *VTrak E-Class Product Manual* on the software DVD for more information.

## Setting up VTrak with the CLI

To set the system date and time, type the following string and press Enter.

```
administrator@cli> date -a mod -d 2010/06/25 -t 14:50:05
```

In the above example, the date and time are included as examples only. Your values will be different. Use yyyy/mm/dd for the date and a 24-hour clock for the time.

### Making Virtual Port Settings

1. To make the Virtual Management Port network settings *manually*, type the following string and press Enter.

```
administrator@cli> net -a mod -t mgmt -s camers  
primaryipmask=255.255.255.0, gateway=192.168.10.1"
```

The settings above are included as an example. Your values will be different.

To make the Virtual Management Port network settings *automatically*, type the following string, then press Enter.

```
administrator@cli> net -a mod -t mgmt -s "dhcp=enable"
```

Note that the IP address described above belongs to the VTrak subsystem, not to an individual RAID controller. Use this IP address to log into the VTrak over your network.

2. To verify the settings, type **net** and press Enter.

```
administrator@cli> net
```

```
=====
CId  Port Type  IP           Mask          Gateway       Link
=====
Virtual    Mgmt 192.168.10.85 255.255.255.0 192.168.10.1 Up
```

## Making Maintenance Mode Settings

Each RAID controller has an IP addresses for access when the controller goes into *maintenance mode*. Maintenance mode is only for remedial action in the event of a problem with one of the controllers. See the *VTrak E-Class Product Manual* on the software DVD for more information.

1. To make the Maintenance Mode Network settings *manually*, type the following string and press Enter.

You must set each controller separately.

```
administrator@cli> net -a mod -t mgmt -m -c 1 -s
"primaryip=192.168.10.101, primaryipmask=255.255.255.0,
gateway=192.168.10.1"
```

```
administrator@cli> net -a mod -t mgmt -m -c 2 -s
"primaryip=192.168.10.102, primaryipmask=255.255.255.0,
gateway=192.168.10.1"
```

The settings above are included as an example. Your values will be different.

To make the Maintenance Mode Network settings *automatically*, type the following strings and press Enter.

You must set each controller separately.

```
administrator@cli> net -a mod -t mgmt -m -c 1 -s "dhcp=enable"
```

```
administrator@cli> net -a mod -t mgmt -m -c 2 -s "dhcp=enable"
```

Note that the network settings above belong to individual RAID controllers. Use these IP addresses only for remedial action when the subsystem is in maintenance mode.

- To verify the maintenance mode settings, type **net -m** and press Enter.

administrator@cli> **net -m**

```
-----
CtrlId: 1                      Port: 1
Type: Management Ethernet      IPType: IPv4
IP: 192.168.10.101            IPMask: 255.255.255.0
MAC: 00:01:55:AE:02:AE        DNS: 0.0.0.0
Gateway: 192.168.10.1         DHCP: Disabled
```

This completes the Management port setup. Go to “Task 11: Configuring Storage on the Subsystem” on page 46.

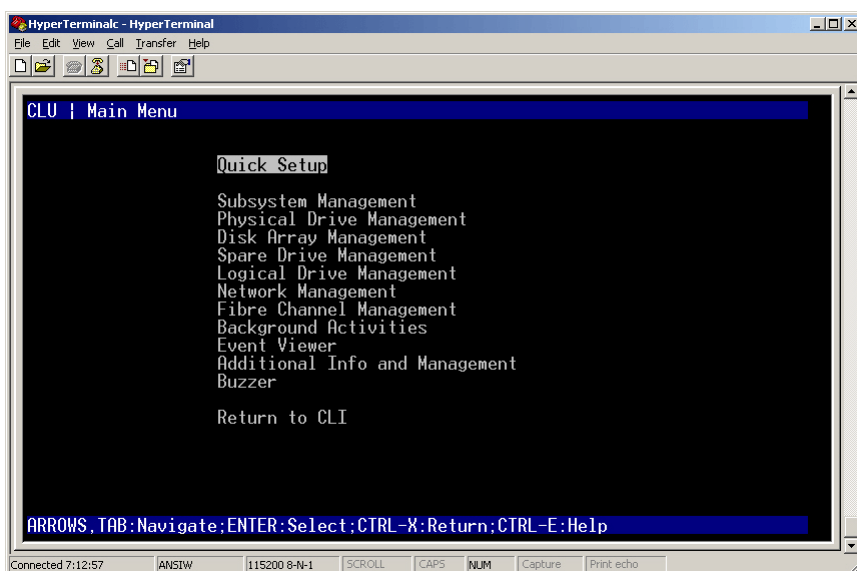
To see the full set of CLI commands, at the admin@cli> prompt, type **help** and press Enter.

## Setting up VTrak with the CLU

- At the administrator@cli> prompt, type **menu** and press Enter.

The CLU main menu appears.

**Figure 15. CLU main menu**



- With *Quick Setup* highlighted, press Enter.

The first Quick Setup screen enables you to make Date and Time settings.

## Setting system date and time

1. Press the arrow keys to highlight *System Date*.
2. Press the backspace key to erase the current date.
3. Type the new date.
4. Follow the same procedure to set the System Time.
5. Press Ctrl-A to save these settings and move to the Management Port configuration screen.

## Making Management (Virtual) Port Settings Manually

To make Management Port settings manually:

1. Press the arrow keys to highlight *IP Address*.
2. Press the backspace key to erase the current IP Address.
3. Type the new IP Address.
4. Follow the same procedure to specify the Subnet Mask, Gateway IP Address and DNS server IP Address.  
If you do not have a DNS server, skip the DNS server IP address.
5. Press Ctrl-A to save your settings.

## Making Management (Virtual) Port Settings Automatically

To make Management Port settings automatically:

1. Press the arrow keys to highlight *DHCP*.
2. Press the spacebar to toggle to *Enable*.
3. Press Ctrl-A to save these settings.

## Viewing Management (Virtual) Port Settings

To view the current IP address and network settings when using DHCP:

1. Press the arrow keys to highlight *DHCP*.
2. Press the spacebar to toggle to *Disable*.  
The current Management Port settings are displayed.
3. Press the spacebar to toggle DHCP back to *Enable*.
4. Press Ctrl-A to save these settings and move to the RAID configuration screen.

## Making Controller Maintenance Mode Settings

Each RAID controller has an IP addresses for access when the controller goes into *maintenance mode*. Maintenance mode is only for remedial action in the event of a problem with the controller. See the *VTrak E-Class Product Manual* on the software DVD for more information.

### **Making Automatic Settings**

1. From the CLU Main Menu, highlight *Network Management* and press Enter.
2. Highlight *Maintenance Mode Network Configuration* and press Enter.
3. Highlight the controller you want and press Enter.
4. Highlight *DHCP* and press the spacebar to toggle to *Enabled*.
5. Press Ctrl-A to save your settings.

### **Making Manual Settings**

1. From the CLU Main Menu, highlight *Network Management* and press Enter.
2. Highlight *Maintenance Mode Network Configuration* and press Enter.
3. Highlight the controller you want and press Enter.
4. Highlight *DHCP* and press the spacebar to toggle to *Disabled*.
5. Highlight each of the following and press the backspace key to erase the current value, then type the new value.
  - IP Address
  - Subnet Mask
  - Default Gateway IP Address
  - DNS server IP Address
6. Press Ctrl-A to save your settings.

### **Exiting the CLU**

1. Highlight *Skip the Step and Finish* and press Enter.
2. Highlight *Return to CLI* and press Enter.

This completes the Management Port setup. Go to “Task 11: Configuring Storage on the Subsystem” on page 46.

## ***Task 11: Configuring Storage on the Subsystem***

Setting up your subsystem with WebPAM PROe consists of the following actions:

- Logging into WebPAM PROe (below)
- Choosing a Language (page 48)
- Making Subsystem Settings (page 48)
- Restarting the Subsystem (page 48)
- Making Controller Settings (page 49)
- Making Background Activity Settings (page 49)
- Making Global Physical Drive Settings (page 50)
- Making Individual Physical Drive Settings (page 50)
- Configuring your Logical Drives (page 50)
- Logging out of WebPAM PROe (page 53)

### **Logging into WebPAM PROe**

1. Launch your Browser.
2. In the Browser address field, type in the virtual IP address of the VTrak subsystem.

Use the virtual IP address you set in the CLI (page 41) or CLU (page 43).

Note that the IP address shown below is only an example. The IP address you type into your browser will be different.

#### **Regular Connection**

- WebPAM PROe uses an HTTP connection. . . . . `http://`
- Enter the VTrak's IP address. . . . . `192.168.10.85`

Together, your entry looks like this:

**`http://192.168.10.85`**

#### **Secure Connection**

- WebPAM PROe uses a secure HTTP connection. . . . . `https://`
- Enter the VTrak's IP address. . . . . `192.168.10.85`

Together, your entry looks like this:

**`https://192.168.10.85`**



#### **Note**

---

Whether you choose a regular or a secure connection, your login to WebPAM PROe and your user password are always secure.

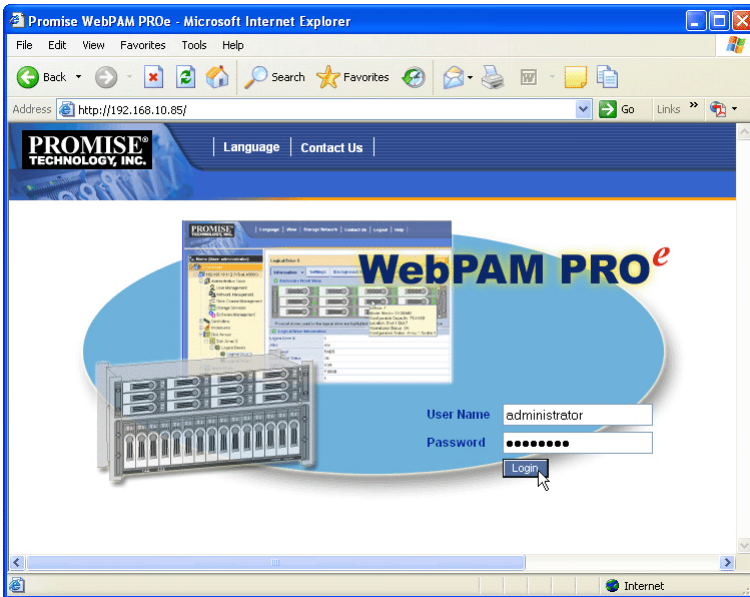
---

3. When the log-in screen appears:
  - Type **administrator** in the User Name field.
  - Type **password** in the Password field.
  - Click the **Login** button.

The User Name and Password are case sensitive.

4. Click the **Login** button.

**Figure 16. WebPAM PROe log-in screen**



After sign-in, the WebPAM PROe opening screen appears. If there are any unconfigured physical drives in the enclosure, an Array Configuration menu also appears. See page 51, Figure 19.



### Note

Make a Bookmark (Firefox) or set a Favorite (Internet Explorer) of the Login Screen so you can access it easily next time.

## Choosing a Language

WebPAM PROe displays in English, German, French, Italian, Japanese, Korean, Traditional Chinese, and Simplified Chinese.


1. Click **Language** on the WebPAM PROe Header.  
The language list appears in the Header.
2. Click the language you prefer.  
The WebPAM PROe user interface displays in the chosen language.

**Figure 17. Clicking “Language” on the WebPAM PROe Header**



## Making Subsystem Settings

To make the recommended settings to the subsystem:

1. Click the Subsystem  icon in Tree View.
2. Click the **Settings** tab in Management View.
3. In the Redundancy Type dropdown menu, choose **Active-Active**.
4. Check the **Cache Mirroring** box to enable.
5. Click the **Submit** button.
6. Restart the subsystem.  
See “Restarting the Subsystem, below.

## Restarting the Subsystem





### Note

---

You are not required to restart the JBOD enclosures when you restart the RAID subsystem.

---

To restart the RAID subsystem:

1. Click the Subsystem  icon in Tree View.
2. Click the Administrative Tools  icon.
3. Click the **Shutdown** link in Management View.
4. On the Shutdown or Restart tab, choose **Restart** from the Option menu.
5. Click the **Submit** button.
6. In the confirmation box, type the word **confirm** in the field provided and click the **OK** button.



When the controller shuts down, your WebPAM PROe connection is lost.




7. Wait about two minutes.
8. In your browser, click **Logout** in the Header, then log into WebPAM PROe once again.

If you cannot log in, wait 30 seconds and try again.

## Making Controller Settings

Your subsystem has two controllers. Settings you make to one controller are automatically applied to the other controller.

To make the recommended controller settings:

1. Click the Subsystem  icon in Tree View.
2. Click the Controllers  icon.
3. Click the Controller  icon.
4. Click the **Settings** tab in Management View.
5. Make the following settings:
  - UNcheck the **Enable LUN Affinity** box to disable.
  - UNcheck the **Enable SMART Log** box to disable.
  - Check the **Adaptive Writeback Cache** box to enable.
  - UNcheck the **Host Cache Flushing** box to disable.
  - UNcheck the **Forced Read Ahead [cache]** box to disable.




Leave the other settings at their default values.

6. Click the **Submit** button.

The changes take effect immediately.

## Making Background Activity Settings

To make the recommended background activity settings:

1. Click the Subsystem  icon in Tree View.
2. Click the Controllers  icon.
3. Click the Controller  icon.
4. From the dropdown menu on the **Background Activities** tab, choose **Settings**.

5. Check the **Enable Auto Rebuild** box to enable.





Leave the other settings at their default values.

6. Click the **Submit** button.

The changes take effect immediately.






## Making Global Physical Drive Settings

To make the recommended physical drive settings:

1. Click the Subsystem  icon in Tree View.
2. Click the Enclosures  icon.
3. Click the Enclosure  icon of the Head Unit.
4. Click the Physical Drives  icon.
5. Click the **Global Settings** tab in Management View.
6. Check the boxes to enable:
  - Enable Write Cache
  - Enable Read Look Ahead Cache
7. In the Medium Error Threshold field, type **64**.
8. Click the **Submit** button.

## Making Individual Physical Drive Settings

To make the recommended physical drive settings:

1. Click the Subsystem  icon in Tree View.
2. Click the Enclosures  icon.
3. Click the Enclosure  icon of the Head Unit.
4. Click the Physical Drives  icon.
5. Click a Physical Drive  icon.
6. From the dropdown menu on the **SMART Log** tab, choose **Settings**. Management View.
7. UNcheck the **SMART** box to disable:
8. Click the **Submit** button.
9. Repeat these steps for all of your physical drives.

## Configuring your Logical Drives



---

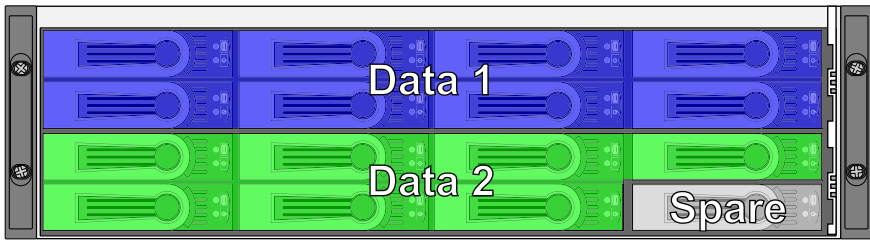
### Note

---

For an explanation of disk array and logical drive parameters, see the *VTrak E-Class Product Manual* on the software DVD.

---

On a newly activated VTrak subsystem, there are no disk arrays or logical drives. You must create them. The recommended configuration looks like this:

**Figure 18. Recommended logical drive configurations**

VTrak RAID subsystem or JBOD enclosure

You create disk arrays one at a time. You can create multiple logical drives at the same time on the same disk array.



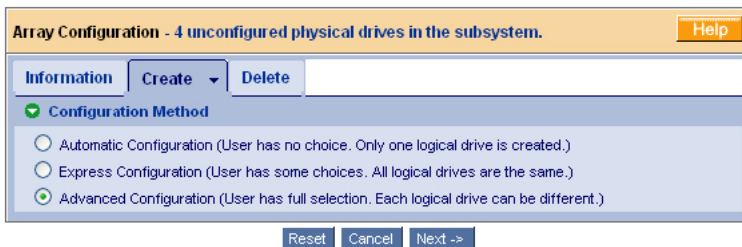
### Important

If you plan to set up High Availability (HA), create one logical drive of at least 12 GB capacity to serve as a dedicated LUN.

See “Task 13: Setting-up High Availability” on page 62.

To create your disk arrays and logical drives:

1. Click the Disk Arrays  icon, then click the **Create** tab.  
The Array Configuration menu appears.

**Figure 19. The Array Configuration menu**

2. Choose the **Advanced** option and click the **Next** button.  
The *Step 1 – Disk Array Creation* screen displays.

### Step 1 – Disk Array Creation

1. Enter a name for the disk array in the field provided.

For recommended names, see page 51, Figure 18.

Maximum of 31 characters; letters, numbers, space between characters, and underline.

2. Check the boxes to enable Media Patrol, PDM, or Power Management.
3. Choose the Physical Drives Type from the dropdown menu.
  - **HDD** – Hard Disk Drives
  - **SSD** – Solid State Drive

You cannot mix HDDs and SSDs in the same array.

4. Highlight physical drives you want in the disk array from the Available list and press the >> button to move them to the Selected list.

You can also double-click them to move them.

For the recommended number of drives, see page 51, Figure 18.



---

**Note**

---

If you have more physical drives than the eight (8) that come with the system, you can use them to create additional disk arrays and logical drives.

---

5. When you are done, click the **Next** button.

## Step 2 – Logical Drive Creation

1. Enter an alias for the logical drive in the field provided.  
For recommended aliases, see page 51, Figure 18.
2. From the RAID Level dropdown menu,
  - For all logical drives choose **RAID 5**
  - RAID levels are based on the number of physical drives chosen for each disk array. See page 51, Figure 18.
3. Leave the logical drive size at the default **maximum** value.
4. For the following items, accept the default values in the dropdown menu:
  - Stripe size – **64 KB** is the default.
  - Sector size – **512 B** is the default.
  - Read (cache) Policy – **Read Ahead** is the default.
  - Write (cache) Policy – **Write Back** is the default.
  - Preferred Controller ID – **Automatic** is the default.
5. Click the **Update** button.  
A new logical drive is displayed under New Logical Drives.
6. Click the **Next** button.

## Step 3 – Summary

The Summary lists the disk array and logical drive information you specified.

To proceed with disk array and logical drive creation, click the **Submit** button.



### Important



---

- You must partition and format your logical drives to work with your operating system.
  - Make the two DATA logical drives **Service-Enabled**.  
For more information, see Chapter 5 of the *VTrak S3000 User Manual* on the software DVD.
- 

## Creating Spare Drives

Create two global spare drives in the RAID subsystem.

To create a spare drive:

1. Click the Subsystem  icon in Tree View.
2. Click the Spare Drives  icon.
3. Click the **Create** tab in Management View.
4. Choose the **Global** spare type.
5. Check the **Revertible** box.
6. In the Physical drives field, highlight the physical drive you want to assign as a spare drive in the Available list and press the >> button to move the drive to the Selected list.  
You can also double-click drives to move them.
7. Click the **Update** button.  
Your choices are displayed under New Hot Spare Drives.
8. Click the **Submit** button.

## Logging out of WebPAM PROe

There are two ways to log out of WebPAM PROe:

- Close your browser window
- Click **Logout** on the WebPAM PROe banner

**Figure 20. Clicking “Logout” on the WebPAM PROe banner**



Clicking **Logout** brings you back to the Login Screen. See page 47.

After logging out, you must enter your user name and password in order to log in again.

## Task 12: Setting-up Basic Storage

Use the PROMISE Management Console to set up your storage. The word *storage* refers to a LUN or logical drive on your VTrak RAID subsystem or JBOD enclosure.

For basic storage, there are five steps.

1. Discover the storage.
2. Virtualize the storage.
3. Create a logical resource.
4. Create a SAN client, either Fibre Channel or iSCSI.
5. Assign storage to the SAN client.



### Before You Begin


Before you begin setting up your storage, verify that:

- You are logged into the Management Console. See “Logging into the Management Console” on page 9.
- There is at least one logical drive on the VTrak subsystem. See “Configuring your Logical Drives” on page 50.

### Discovering the Storage




To discover the storage:

In the Tree, expand a SCSI  adapter or Fibre Channel  adapter to discover your LUN.



If the LUN does not appear, right-click the Physical Adapters  icon and choose **Rescan** from the popup menu.

### Virtualizing the Storage

To virtualize the storage:

1. In the Tree, under Physical Devices , SCSI Devices  or Fibre Channel Devices , right-click a LUN and choose **Properties** from the popup menu.  
The *Disk Preparation* dialog box opens.
2. In the dialog box, choose **Reserve for Virtual Device** from the dropdown menu and click the **OK** button.  
The *Warning (data loss)* dialog box opens.
3. In the dialog box, type **yes** in the field provided and click the **OK** button.  
The *Success* dialog box opens.

4. In the dialog box, click the **OK** button.

The device icon changes from no letter  to V .

## Creating a Logical Resource

To create a logical resource:

1. In the Tree, under Logical Resources , click **SAN Resources** and choose **New** from the popup menu.

The *Create SAN Resources* wizard opens.

2. In the wizard, click the **Next** button.

The *Select SAN Resource* dialog box opens.

3. In the dialog box, click the **Virtual Device** option and click the **Next** button.

The *Select Physical Resources for the Virtual Device(s)* dialog box opens.

4. In the dialog box, check the **Virtual Device** or **Devices** you want and click the **Next** button.

The *Thin Provisioning Option* dialog box opens.

See Chapter 5 of the *VTrak S3000 Server User Manual* for more information about Thin Provisioning.

5. In the dialog box, enter the resource size in MB you want in Full Disk Size field.

The range of available disk sizes is shown. Click the **Next** button to continue.

The *Select Creation Method* dialog box opens.

6. In the dialog box, choose a creation method:

- **Custom** – For advanced users
- **Express** – Required for Thin Provisioning
- **Batch** – For creating multiple SAN resources of the same size

If you chose Express, enter the *initial* disk size in MB into the Size to Allocate field. The range is 10 MB to 99% capacity of the *full* disk size.

Click the **Next** button to continue.

7. The next dialog box depends on your choice of creation method.

### Custom

If you chose Custom, the *Select a Physical Device* dialog box opens.

Click the Device you want to use and click the **Next** button.

### Express

If you chose Express, the Enter the SAN Resource Name dialog box opens.

Enter a name for your SAN resource in the field provided.

## Batch

If you chose Batch, the *Specify Batch Mode Information* dialog box opens.

- Accept the default a SAN Resource Prefix or enter a new one in the field provided.
- Enter a Resource Size in MB if the field provided.
- Enter the Starting Number and the Number of (SAN) Resources in the fields provided.
- From the list, click the Device you want to use and click the **Next** button.

The *SAN Resource Name* dialog box opens.

8. In the dialog box, enter a name for the SAN resource in the field provided and click the **Next** button.



The *Create the SAN Resource* dialog box opens.

9. In the dialog box, verify the information and click the **Finish** button.
10. In the success message, click
  - **Yes** – Assign SAN clients now.
  - **No** – Assign SAN clients later.

## Enabling a FC Target Mode


You must enable FC target mode on the appliance (server) before you can create an FC SAN client.

To enable FC target mode:

1. In the Tree, right-click the VTrak server  icon and choose **Options > Enable FC Target Mode** from the popup menu.
2. In the Tree, go to **Server > Physical Resources > Physical Adapters**.
3. Right-click the Fibre Channel  adapter to be used for the UPstream connection and choose **Enable FC Target Mode** from the popup menu.

## Creating a FC SAN Client

To create a Fibre Channel SAN client:

1. In the Tree, right-click SAN Clients  icon and choose **Add** from the popup menu.

The *Add Client* wizard opens.

Click the **Next** button to continue.

The *Select Client Protocols* dialog box opens.
2. In the dialog box, check the Fibre Channel protocol used to connect your clients' PCs to the VTrak appliance.



Click the **Next** button to continue.

Either the *Set Client Fibre Channel Properties* or the *Set Client iSCSI Properties* dialog box opens.

3. In the dialog box, click **Add** button.

The *Add Initiator WWPN* dialog box opens.

4. In the dialog box, enter your initiator WWPN and click the **OK** button to continue.

The *Set Client Properties* dialog box opens with the initiator WWPN in the list.

5. The next step depends on your choice of action.

- To add another WWPN, click the **Add** button.
- To choose the WWPNs you want to use, check the box beside each one.
- To continue, click the **Next** button.

The *Enter the Generic Client Name* dialog box opens.

6. In the dialog box,

- Enter a client name into the field provided.
- Choose the **Client Type** from the dropdown menu.
- Check **Is Clustered** box if you plan to assign the same storage to multiple clients.
- If the Client PC is running, click the **Find** button to discover it. If the PC is found, its IP address is input automatically.
- If the Client PC is offline, enter the IP address manually.

Click the **Next** button to continue.

The *Fibre Channel Options* dialog box opens.

7. In the dialog box, click the **Next** button to continue.

VTrak does not support VSA.



The *Select Persistent Reservation Option* dialog box opens.

8. In the dialog box, uncheck the box to disable the **Persistent Reservation** feature, and click the **Next** button.

Persistent Reservation applies to clustering applications.


The *Add the Client* dialog box appears.

9. In the dialog box, verify the information and click the **Finish** button.

The new client  appears in the Tree under SAN Clients .

## Creating an iSCSI SAN Client

To create an iSCSI SAN client:

1. In the Tree, right-click the VTrak server  icon and choose **Options > Enable iSCSI** from the popup menu.

2. In the Tree, right-click SAN Clients  and choose **Add** from the popup menu.

The *Add Client* wizard opens.

Click the **Next** button to continue.

The *Select Client Protocols* dialog box opens.

3. In the dialog box, check the iSCSI protocol used to connect your clients' PCs to the VTrak appliance.

Leave the **Create default iSCSI target** box checked.

Click the **Next** button to continue.

The *Select Target IP* dialog box opens.

4. In the IP Address list, check the box next to the IP address of the iSCSI targets you want to add.

Click the **Next** button to continue.

The *Set Client's Initiator* dialog box opens.

5. In the dialog box, check the box next to the Initiator Name of the iSCSI clients you want.

Choose any iSCSI initiator with a green icon.

A yellow icon means that initiator is already assigned to a different client.

Click the **Next** button to continue.

The *Set iSCSI User Access* dialog box opens.

6. In the dialog box, choose an option,
  - Allow unauthenticated access
  - Select servers who can authenticate for the client

With the Select servers option, choose,

- Default CHAP secret
- Mutual CHAP secret

If you chose the *default* secret, enter a CHAP secret of 12 to 16 characters in the field provided.

Enter the CHAP again in the Confirm field.

If you chose *mutual* secret enter a CHAP secret and a Mutual CHAP secret of 12 to 16 characters each in the fields provided.

Enter the CHAP secret and Mutual CHAP secret again in the Confirm fields.

Click the **Next** button to continue.

The *Enter the Generic Client Name* dialog box opens.

7. In the dialog box,

- Accept the default client name or enter a new one.
- From the *Client Type* dropdown menu, choose the client's operating system.
- Check **Is Clustered** box if you plan to assign the same storage to multiple clients.
- Click the **Find** button to automatically load the client's IP address. Or enter it manually.

Click the **Next** button to continue.

The *Select Persistent Reservation Option* dialog box opens.



8. In the dialog box,

- Leave the **Persistent Reservation** box checked if you plan to assign the same storage to multiple clients.
- Uncheck the **Persistent Reservation** box if you do NOT plan to assign the same storage to multiple clients.

Click the **Next** button to continue.



The *Verify Client Information* dialog box appears.

9. In the dialog box, verify the information and click the **Finish** button.

The new client  appears in the Tree under SAN Clients .

## Assigning Storage to an FC Client

To assign storage to an FC client:

1. In the Tree, under SAN Clients , right-click a Fibre Channel client , and choose **Assign** from popup menu.

The *Assign a Client* wizard opens.

Click the **Next** button to continue.

The *Select SAN Resource(s)* dialog box opens.

2. In the dialog box, check the box by storage you want to use.

If the SAN resource you are assigning is in a group, and you want to assign all resources in the group to this client, check the **Assign all the group members** box.

Click the **Next** button to continue.

The *Select a WWPN Port Mapping Type* dialog box opens.

3. In the dialog box, choose the appropriate mapping type for your system.
  - **One to One** – You do not use multipathing.
  - **All to All** – You use multipathing, such as *PerfectPath* on Windows.

Click the **Next** button to continue.

The *Select Initiator* dialog box opens.

4. In the dialog box, click the Initiator WWPN you want to use.  
You can only choose one. Click the **Next** button to continue.

The *Select Target* dialog box opens.

5. In the dialog box, click the Target WWPN you want to use.  
You can only choose one. Click the **Next** button to continue.

The *Select LUN numbers for the resources* dialog box opens.

6. In the dialog box, choose a **Starting LUN** from the menu.  
The default LUN number is 0 (zero).



### Important

---



If you checked **Is Clustered** when you created the SAN client, be careful that you do NOT assign the same LUN to different SAN resources.

---

Click the **Next** button to continue.



The *Assign SAN Resource(s) to the SAN Client* dialog box opens.

7. In the dialog box, verify the information and click the **Finish** button.  
A success message displays.
8. In the message, click the **OK** button.

The new SAN resource  appears in the Tree under the SAN client  to which you assigned it.



## Assigning Storage to an iSCSI Client

To assign storage to an iSCSI client:

1. On the client system, in the Microsoft iSCSI Initiator, add the IP address of the target subsystem.
2. In the Management Console, in the Tree under SAN Clients , right-click an iSCSI client , and choose **Create Target** from popup menu.

Click the **Next** button to continue.

The *Create iSCSI Target* dialog box opens.

3. In the dialog box, enter the Target Name in the field provided.  
Check the boxes of the Target IP addresses you want to use.  
From the *Access Mode* dropdown menu, choose a level of user access.  
Click the **Next** button to continue.  
The *Select virtual drives for LUNs in the Target* dialog box opens.
4. In the dialog box, check the boxes corresponding to the Resources you want to use.  
Check the *Assign all the group members* to client box, as desired.  
Click the **Next** button to continue.  
The *Assign LUN to Target* dialog box opens.
5. In the dialog box, choose a **Starting LUN** from the menu.  
The default LUN number is 0 (zero).  
Click the **Next** button to continue.  
The *Verify iSCSI Target Properties* dialog box opens.
6. In the dialog box, verify the information and click the **Finish** button.  
A success message displays.
7. In the message, click the **OK** button.  
The new SAN resource  appears in the Tree under the SAN client  to which you assigned it.
8. On the client system, in the Microsoft iSCSI Initiator target pane, choose the target and log in.
9. Under Computer Management, click **Disk Management** and verify that the target storage appears among the Disks.  
If the target storage is not visible under Disk Management, from the *Action* menu, choose **Rescan Disks**.

## Partitioning and Formatting the Storage

The logical drive must be partitioned and formatted to work with the SAN client's operating system. On a Windows client, you might have to do a disk rescan. Under **Computer Management**, right-click **Disk Management** and choose **Rescan Disks** in the popup menu.

When you initialize the disk, choose:

- **MBR** – Up to 2 TB of storage
- **GPT** – Over 2 TB of storage

## Task 13: Setting-up High Availability

High Availability (HA) refers to establishing redundant paths between the VTrak S3000 appliance (server) and the client. HA also builds fault tolerance and scalability into the storage solution.

Use the PROMISE Management Console to set up your HA storage. There are four steps.




1. Virtualize the Quorum.
2. Enable a configuration repository.
3. Configure network connections.
4. Set-up a Failover.

### Before You Begin

Before you begin setting up high availability, be sure that you have a dedicated LUN of at least 12 GB on VTrak subsystem. See “Configuring your Logical Drives” on page 50.

### Virtualizing the Quorum

To virtualize the quorum:

1. In the Tree, under Physical Devices , SCSI or Fibre Channel Devices , right-click the dedicated LUN  and choose **Properties** from the popup menu.

The *Disk Preparation* dialog box opens



2. In the dialog box, choose **Reserve for Virtual Device** from the dropdown menu and click the **OK** button.

The *Warning (data loss)* dialog box opens.

3. In the dialog box, type **yes** in the field provided and click the **OK** button.

The success dialog box opens.


4. In the dialog box, click the **OK** button.

The device icon changes from no letter  to V .

### Enabling a Configuration Repository

The configuration repository maintains a continuously updated version of your storage system configuration.

To enable a configuration repository:

1. In the Tree, right-click a VTrak server  icon and choose **Options > Enable Configuration Repository** from the popup menu.

The *Enable Configuration Repository* wizard opens.

Click the **Next** button to continue.

The *Select Physical Resource(s) for the Virtual Device(s)* dialog box opens.


2. In the dialog box, check the physical devices you prepared in the previous steps, and click the **Next** button.



The *Select a Physical Device* dialog box opens.

3. In the dialog box, click the device you want and click the **Next** button.

The *Create a Configuration Repository* dialog box opens.

4. In the dialog box, verify your choice and click the **Finish** button.

On the VTrak server  icon General tab, Configuration Repository Status shows *Online*.

The device icon changes from V  to Q/V  to indicating this is the quorum device that contains the configuration repository.



---

### Important

When changes are done on one appliance (server), perform a Rescan on the other appliance before continuing.


---

## Configuring Network Connections

You must create an IP address alias for Health Monitoring. Health Monitoring tells each primary appliance (server) about the other appliance's condition and when to assume a secondary function because its failover pair is offline.

You can use the same NIC (network) port chosen during setup. See "Changing NIC Settings" on page 18. But you must create and use a separate IP address for Health Monitoring.

To configure the network for failover:

1. In the Tree, right-click a VTrak server  icon and choose **System Maintenance > Configure Network** from the popup menu.

The *Network Configuration* dialog box opens.


2. In the dialog box, click the **Config** button.

The *IP Address Configuration* dialog box opens.

3. In the dialog box, click the **Add** button.

The *Interfaces* dialog box opens.

4. In the dialog box, enter a new IP address and the subnet mask, then click the **OK** button.

- The *IP Address Configuration* dialog box opens.
5. In the dialog box, click the **OK** button.  
The *Network Configuration* dialog box opens.
  6. In the dialog box, click the **OK** button.  
The network service restarts. Your connection to the appliance is lost.
  7. To log in again, right-click the VTrak server  icon and choose **Connect** from the popup menu.

## Setting Up a Failover



### Note

---


In this procedure, you must verify the secondary standby WWPNs for both adapters in both VTrak appliances (servers) simultaneously.

To make the process easier and to minimize the chance of error, open a *second* Management Console.

In the Tree, click the SCSI or Fiber Channel Adapter. Then look for the Adapter's WWPN on the General tab

---

To set-up a failover:

1. In the Tree, right-click a VTrak server  icon and choose **Failover > Failover Setup Wizard** from the popup menu.  
The *Failover Setup* wizard opens.  
Click the **Next** button to continue.  
The *Option Settings for the primary server* dialog box opens. It tells you which upstream protocol is currently available for failover.
2. In the dialog box, click the **OK** button.  
The *Failover Setup* wizard opens again.  
Click the **Next** button to continue.  
The *Rescan Physical Devices* dialog box opens.
3. In the dialog box, click the **Yes** button to perform the rescan.  
The *Select the secondary server* dialog box opens.
4. In the dialog box, click the VTrak appliance you want.  
Check the **Mutual Failover** box.  
A mutual failover is a configuration with two primary servers where each primary server is the also secondary server for the other.



The wizard automatically creates a configuration repository on the secondary server.

Click the **Next** button to continue.

The *Users List* opens.

5. In the Users List, examine the user names for both VTrak appliances.
  - If all names are identical, click the **OK** button.
  - If any names are different, click the **Cancel** button and modify the user accounts as necessary.

If you clicked the **OK** button, the *Select Failover Subnets* dialog box opens.

6. In the dialog box, check the box beside the subnet for your servers.

The subnet should match the IP addresses of both VTrak appliances in the first three octets. For example, if your VTrak appliances use IP addresses 192.168.250.160 and 192.168.250.170, then the subnet is 192.168.250.0.

Click the **Next** button to continue.

The *Enter the IP addresses of the Servers* dialog box opens.

7. In the dialog box, complete the IP addresses of your VTrak appliances.

Clients use these IP addresses to access the VTrak appliances.

Click the **Next** button to continue.

The *Enter the Health Monitoring IP addresses of the servers* dialog box opens.



8. In the dialog box, complete the Health Monitoring IP addresses of your VTrak appliances.

Enter the IP addresses from “Configuring Network Connections” on page 63.

Click the **Next** button to continue.

The *Set WWPN Ports* dialog box opens.

9. In the dialog box, choose the secondary standby WWPN from the dropdown menu. As noted above, open the second Management Console now to verify the WWPNs.

For a mutual failover, each iSCSI  or Fibre Channel  adapter in one VTrak appliance must know a corresponding secondary standby WWPN of an adapter in the other VTrak appliance. Refer to the **General** tab of each adapter to view its WWPN.



---

### Caution

---

The four secondary standby WWNN dialog boxes look virtually identical. Be careful to click the **Next** button *one time only* as you move through the dialog boxes and make your settings.

---

You must choose secondary standby WWPNS for:

- VTrak S3000-01 adapter 1
- VTrak S3000-01 adapter 2
- VTrak S3000-02 adapter 1
- VTrak S3000-02 adapter 2

Choose the secondary standby WWPNS for the first adapter and click the **Next** button.

Repeat the action until all four secondary standby WWPNS are chosen.

Click the **Next** button to continue.

The *Configure Power Control Option* dialog box for the *first* VTrak appliance opens.

10. In the dialog box, choose **IPMI** from the dropdown menu and click the **Next** button.

The *Configure Power Control Option* dialog box for the *second* VTrak appliance opens.

11. In the dialog box, choose **IPMI** from the dropdown menu and click the **Next** button.

The *Confirm the Failover Configuration* dialog box opens.


12. In the dialog box, check your settings and click the **Finish** button to configure your failover.

## Saving the Server Configuration

There are two methods to save VTrak appliance (server) configuration:


- **Manual** – Saves the \*.config file to a place you choose
- **Automatic** – Saves the \*.config file to the Repository

To save the server configuration manually:

1. In the Tree, click the VTrak server  icon to select it.
2. From the File menu, choose **Save Configuration**.
3. In the Save dialog box, navigate to the place where you want to save the configuration file and click the **Save** button.

The \*.config file is saved as you directed.

To enable a Configuration Repository in which to save the server configuration automatically:

1. In the Tree, right-click the VTrak server  icon and choose **Options > Enable Repository**.

The *Enable Configuration Repository* wizard launches.

Click the **Next** button to continue.

The *Select Physical Resources* dialog box opens.

2. In the dialog box, check the boxes beside the resource you want to use and click the **Next** button.

The *Select a Physical Device* dialog box opens.

3. In the dialog box, highlight the device you want to use and click the **Next** button.

The *Create the Configuration Repository* dialog box opens.

4. In the dialog box, verify your choice and click the **Finish** button.

The Configuration Repository is created on the device you chose.

## Contacting Technical Support

For assistance or more information:

- Go to the PROMISE Support Website at [http://www.promise.com/support/support\\_eng.asp](http://www.promise.com/support/support_eng.asp)
- Go to PROMISE Online Support at [e-Support On-Line](#)
- Contact the nearest PROMISE Technical Support Office

United States	
Fax Support	+1 408 228 1100 Attn: Technical Support
Phone Support	+1 408 228 1400 option 4
The Netherlands	
Fax Support	+31 0 40 256 9463 Attn: Technical Support
Phone Support	+31 0 40 235 2600
Germany	
Fax Support	+49 0 2 31 56 76 48 29 Attn: Technical Support
Phone Support	+49 0 2 31 56 76 48 10
Italy	
Fax Support	+39 0 6 367 124 00 Attn: Technical Support
Phone Support	+39 0 6 367 126 26
Taiwan	
Fax Support	+886 3 578 2390 Attn: Technical Support
Phone Support	+886 3 578 2395 ext. 8822 or 8823
Beijing, China	
Fax Support	+86 10 8857 8015 Attn: Technical Support
Phone Support	+86 10 8857 8085 or 8095
Shanghai, China	
Fax Support	+86 21 6249 4627 Attn: Technical Support
Phone Support	+86 21 6249 4192, 4193, or 4199