



# *PerfectPath*®

*Multi-Path Input/Output Software  
for VTrak E-Class Subsystems*

## *PRODUCT MANUAL*

Version 2.1

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# Chapter 1: Introduction

- About This Manual (page 1)
- Overview (page 2)
- When to Use PerfectPath (page 2)
- Multiple Data Paths and the Operating System (page 4)

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Thank you for using Promise Technology's PerfectPath software.

## About This Manual

This *Product Manual* describes how to install, use, and maintain your PerfectPath multi-path software.

This manual includes a full table of contents, 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

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

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### Important

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

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### Caution

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

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### Warning

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

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## Overview

PerfectPath is a multi-path software designed for use with Promise VTrak E-Class RAID subsystem products and includes:

- **GUI** – Graphic user interface—PerfectPath View— for easy monitoring and settings.
- **DSM** – Device-Specific Module driver.
- **Events Service** – Notification service posts events to the application log.

PerfectPath supports Fibre Channel and Serial Attached SCSI (SAS) technologies.

PerfectPath runs on Windows 2003 Server and Longhorn Server operating systems, on both x86 and x64 platforms.

## When to Use PerfectPath

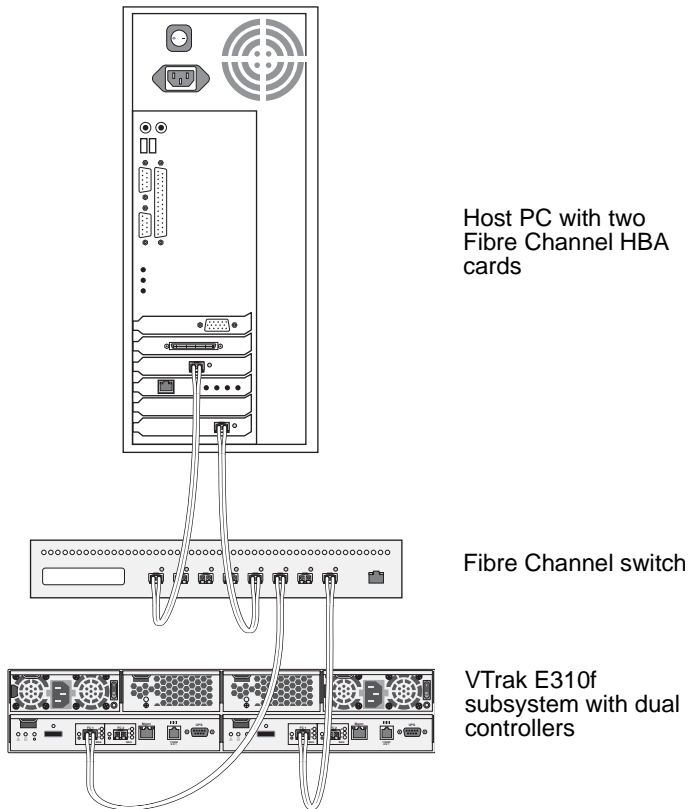
PerfectPath is designed to represent LUNs to your Host PC's operating system as a single entity, even though your fabric, network, or direct attached storage provides multiple paths between the Host and Subsystem.

Multiple data paths provide the advantage of having no single point of failure. If one path fails, the other paths can take up the load while your data remains available. Multiple data paths also enable load sharing and balancing for improved performance. These functions happen automatically as a result of having the PerfectPath software on the Host PC.

Data paths fail as the result of component failures, including:

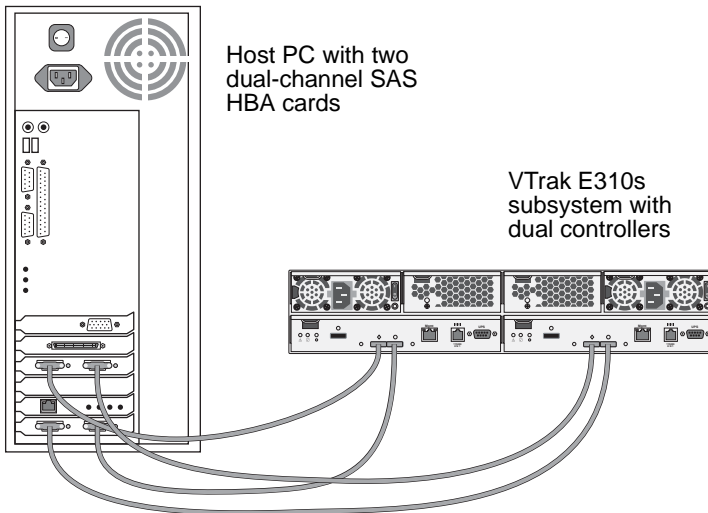
- Cables
- RAID Controllers
- Switches
- HBA cards

Two examples of multiple data paths are shown in Figures 1 and 2. In these examples, four data paths exist between the LUN on the logical drive in the subsystem and the Host PC.

**Figure 1. Four-path Fibre Channel configuration**

In the example above, two Fibre Channel adapter cards are installed in the Host PC. The adapter cards connect to a Fibre Channel switch, which is also connected to a VTrak E310f Fibre Channel subsystem with dual RAID controllers. Each RAID controller has two data ports, only one port is used in this arrangement. Each LUN or logical drive on the VTrak can be accessed through any of the four paths.

**Figure 2. Four-path SAS Direct Attached Storage configuration**



In the example above, there are two dual-channel SAS adapter cards installed in the Host PC. The adapter cards connect to a VTrak E310s SAS subsystem, with dual RAID controllers. Each RAID controller has two data ports, providing a total of four data paths. Each LUN or logical drive on the VTrak can be accessed through any of the four paths.

## ***Multiple Data Paths and the Operating System***

When there are multiple data paths from the VTrak subsystem to the Host PC, the PC's operating system views the LUNs on each path as separate drives. Using the four-path examples shown above, each logical drive or LUN on the subsystem appears four times in Windows Disk Management, as shown in Figure 3.

With PerfectPath installed, the same LUN still has four data paths to the Host PC. However, the PerfectPath software combines the four paths so that only one drive appears in Windows Disk Management, as shown in Figure 4.

Storage subsystems rarely, if ever, are set up with a single LUN. For example, you might set up your system with 32 LUNs. To calculate the number of instances, multiply the number of LUNs time the number of paths, you find the number of LUNs that appears in your operating system. In this case,  $32 \times 4 = 128$ . 128 disks in the Disk Manager is very difficult to manage. With PerfectPath, each LUN only appears once, so you only have to manage 32 instances.



**Figure 3. A single LUN with four data paths appears as four drives**

Volume	Layout	Type	File System	Status	Capacity	Free Space	% Free	Fault
(C:)	Partition	Basic	NTFS	Healthy (System)	9.77 GB	6.95 GB	71 %	No
(E:)	Partition	Basic	NTFS	Healthy (Boot)	9.77 GB	5.24 GB	53 %	No

<b>Disk 0</b> Basic 37.25 GB Online	(C:) 9.77 GB NTFS Healthy (System)	(E:) 9.77 GB NTFS Healthy (Boot)	17.71 GB Free space
<b>Disk 1</b> Unknown 200 GB Not Initialized	200 GB Unallocated		
<b>Disk 2</b> Unknown 200 GB Not Initialized	200 GB Unallocated		
<b>Disk 3</b> Unknown 200 GB Not Initialized	200 GB Unallocated		
<b>Disk 4</b> Unknown 200 GB Not Initialized	200 GB Unallocated		

**Figure 4. With PerfectPath, a single LUN appears as a single drive**

Volume	Layout	Type	File System	Status	Capacity	Free Space	% Free	Fault
(C:)	Partition	Basic	NTFS	Healthy (System)	9.77 GB	6.95 GB	71 %	No
(E:)	Partition	Basic	NTFS	Healthy (Boot)	9.77 GB	5.24 GB	53 %	No

<b>Disk 0</b> Basic 37.25 GB Online	(C:) 9.77 GB NTFS Healthy (System)	(E:) 9.77 GB NTFS Healthy (Boot)
<b>Disk 1</b> Unknown 200 GB Not Initialized	200 GB Unallocated	

By reducing the number of instances of each LUN to only one, management of LUNs is much easier under Windows Disk Management.

The benefit of PerfectPath is that PerfectPath manages how the Host PC accesses specific LUNs through different paths simultaneously, making management easier for the user while providing data path redundancy.



# Chapter 2: Installation

- Installing PerfectPath (page 7)
  - Verifying Installation (page 8)
- 

## Installing PerfectPath



### Important

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Before you install PerfectPath:

- Install your Fibre Channel or SAS HBA cards and their device drivers.
  - Close all computer and storage management applications, including Computer Management, Device Manager, Disk Management, and the Registry Editor.
  - You must have Microsoft .NET Framework v2.0 or later installed on your system.
- 



### Note

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If you have a complex configuration, such as multiple HBAs connected with multiple LUNs and paths to your PC, installation can take a long time. You can choose to temporarily disconnect your storage, install PerfectPath, then reconnect your storage to reduce installation time.

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To install the PerfectPath software:

1. Download the PerfectPath installer file from the Promise website at [www.promise.com/support](http://www.promise.com/support) and save the installer file to your Windows desktop.
2. Double-click the **PerfectPath.exe** installer file to start the installer.
3. In the Welcome screen, click the **Next** button.
4. In the License Agreement screen, click the “I accept the terms of this license agreement” option, then click the **Next** button.
5. In the Close All Disk Management Applications screen, click the **Next** button.
6. In the Ready to Install the Program screen, click the **Install** button.
7. Optional. If the installer displays a Security Alert message about an unsigned driver, click the **Yes** button to continue installation.

The software files install onto the system drive in the “Program Files\Promise\PerfectPath” folder. There is no optional install location.

8. In the Install Completed screen, click the **Finish** button.
-

9. In the Restart message box, click the **Yes** button to restart your PC.



### Important

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Save the PerfectPath installer file in case you need to repair your PerfectPath software in the future. See “Repairing PerfectPath” on page 28.

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## Verifying Installation

Before you can verify PerfectPath installation:

- Your Host PC must have multiple data-path connections to the VTrak subsystem.
- The VTrak must be fully booted.
- The VTrak must have at least one logical drive.

See Chapter 2 of the *VTrak Product Manual* for information about making data connections. See Chapters 4 or 5 for information about creating RAID arrays and logical drives.

You can verify Perfect Path installation on the Host PC in one of three ways:

- Start Menu
- Services List
- Device Manager

## Start Menu

To verify PerfectPath installation in the Start menu:

From the Start menu, choose *Programs > PerfectPath > PerfectPath View*.

The PerfectPath View software starts.

## Services List

To verify PerfectPath installation in the Services list:

1. From the Windows desktop, right click the **My Computer** icon and choose *Manage* from the dropdown menu.
2. In the Computer Management tree, click the + icon beside Services and Applications.
3. Click the **Services** icon.
4. In the Services window, look for the *PerfectPath Events Service*.

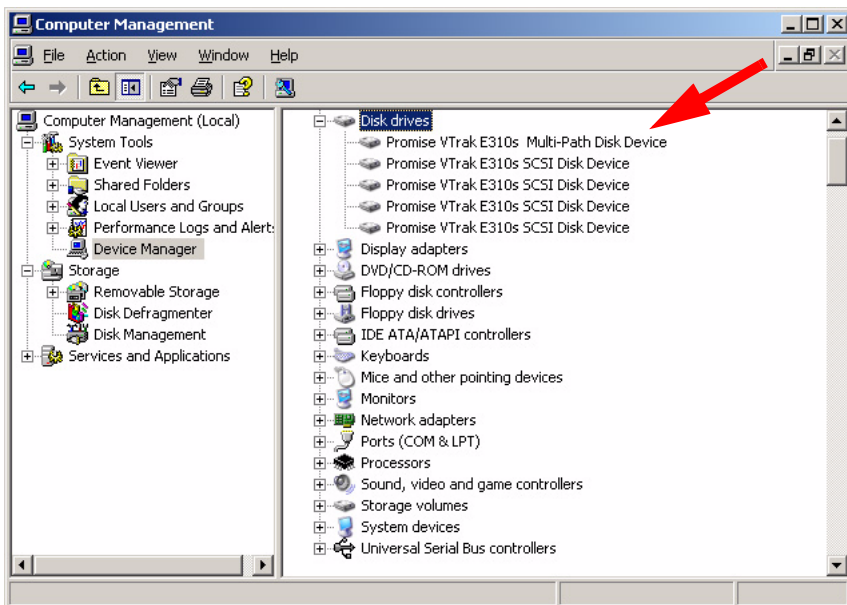
If the PerfectPath Events Service is present, PerfectPath has been installed. The Service should be Started and set to Automatic on the Local System.

## Device Manager

To verify PerfectPath installation in the Device Manager:

1. From the Windows desktop, right click the **My Computer** icon and choose *Manage* from the dropdown menu.
2. In the Computer Management tree, click the **Device Manager** icon.
3. In the Computer Management window, click **Disk drives**.
4. Under Disk drives, look for “Promise VTrak Multi-Path Disk Device” at the top of the Disk drives list. See Figure 1.

**Figure 1. Look for “Promise VTrak Multi-Path Disk Device”**



When properly installed, the PerfectPath DSM driver displays one “Multi-Path Disk Device” for each LUN on the VTrak. In the example above, there is one LUN and four data paths.

Note that the individual paths for each LUN are also displayed on the screen, below the Multi-Path Disk Device. If there are multiple LUNs, all of the Multi-Path Disk Devices are displayed at the top of the list.

Note also that Individual LUNs are shown as SCSI Disk Devices, even though the actual data connection is over Fibre Channel or SAS.



# Chapter 3: Management

- Running Perfect Path View (page 11)
  - Monitoring Your LUNs and Paths (page 13)
  - Features and Settings (page 19)
- 

## Running Perfect Path View

Running PerfectPath View includes these functions:

- Starting PerfectPath View (page 11)
- Quitting PerfectPath View (page 12)

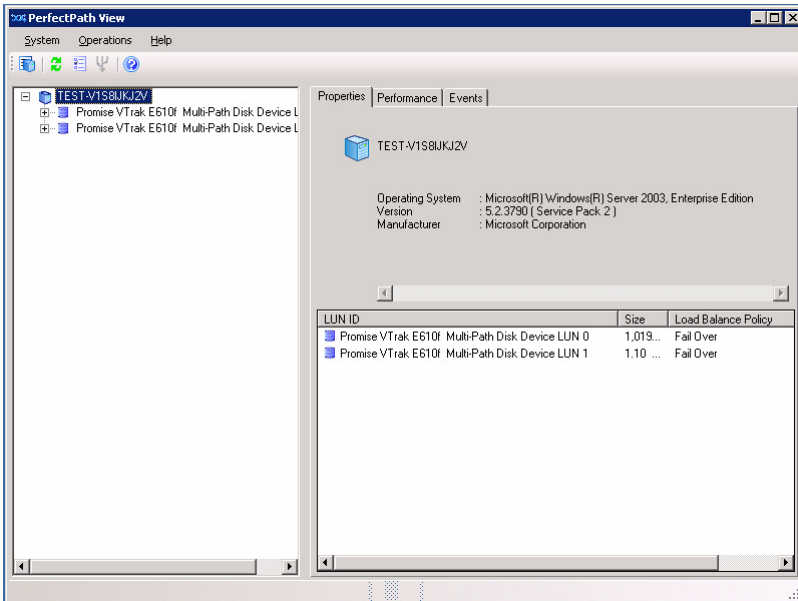
## Starting PerfectPath View

To start PerfectPath View:

From the Start menu, choose *Programs > PerfectPath > PerfectPath View*.


The PerfectPath View window opens. See Figure 1.

**Figure 1. PerfectPath View window**



## Quitting PerfectPath View

To quit the PerfectPath View application, do one of the following actions:

- From the System menu, choose *Exit*.
- Click the Close  icon on the PerfectPath View window.



## Monitoring Your LUNs and Paths

Monitoring your LUNs and Paths includes these functions:

- Viewing LUN Properties (page 13)
- Viewing Path Properties (page 15)
- Viewing LUN Performance Statistics (page 16)
- Clearing Path Statistics (page 17)
- Viewing Path Performance Statistics (page 17)
- Viewing Events (page 18)

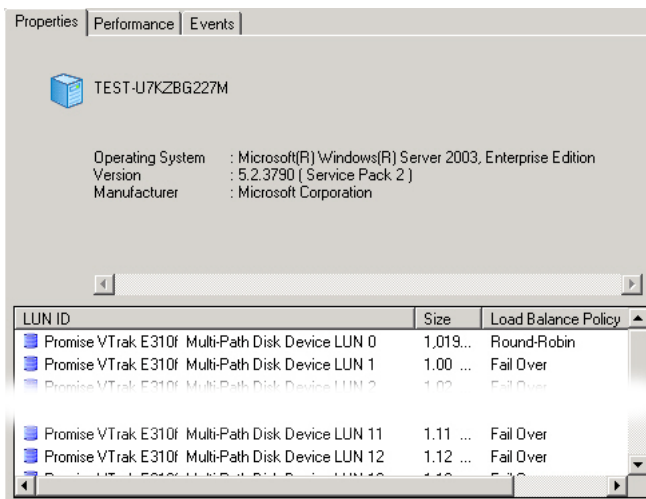
## Viewing LUN Properties

To view a list of all LUNs:

1. Click a Server  in Tree View.
2. Click the **Properties** tab.

The Properties tab reports:

- **System** – Name, OS type, and version
- **LUNs** – Name, size, serial number, and load balance policy



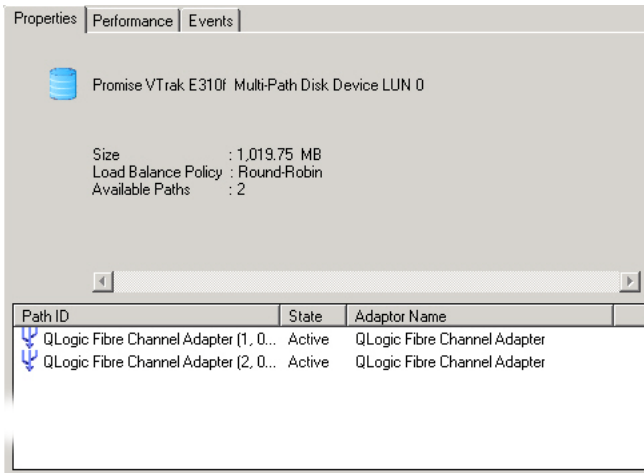
Move the scroll bar or expand the window to see all of the reported information.

To view a single LUN and all of its Paths:

1. Click the LUN  in Tree View.
2. Click the **Properties** tab.

The Properties tab reports:

- **LUNs** – Name, size, and load balance policy
- **Paths** – Path ID, state, and adaptor name



Move the scroll bar or expand the window to see all of the reported information.

See also:

- “Load Balance Policy” on page 20
- “Refreshing the Objects” on page 24

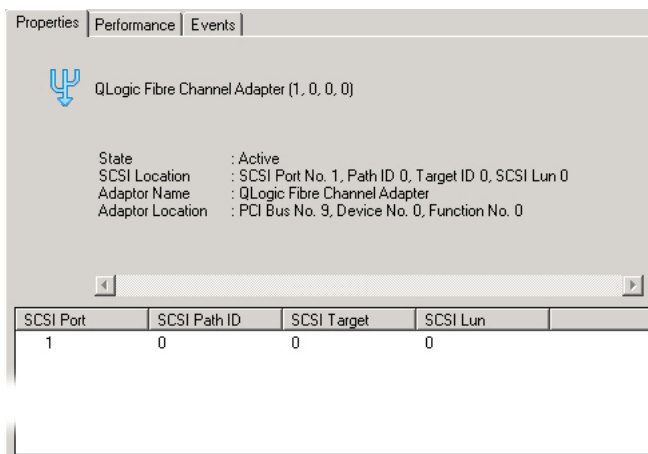
## Viewing Path Properties

To view Path properties:

1. Click a Path  in Tree View.
2. Click the **Properties** tab.

The Properties tab reports:

- SCSI Port number
- SCSI Path ID
- SCSI Target
- SCSI LUN



See also:

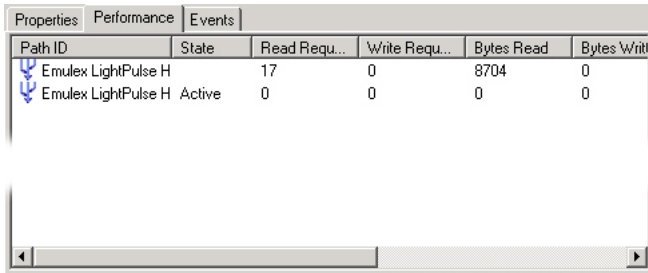
- “Load Balance Policy” on page 20
- “Refreshing the Objects” on page 24

## Viewing LUN Performance Statistics

To view performance statistics for a LUN:

1. Click a LUN  in Tree View.
2. Click the **Performance** tab.

The Performance tab reports the state and cumulative counts for each path to that LUN.



Path ID	State	Read Reque...	Write Reque...	Bytes Read	Bytes Writ
Emulex LightPulse H		17	0	8704	0
Emulex LightPulse H	Active	0	0	0	0

Move the scroll bar or expand the window to see all of the reported statistics.

The Performance tab reports the following data for each path:

- Path ID
- State (Active or not)
- Read Requests
- Write Requests
- Bytes Read
- Bytes Written
- Non-IO Requests
- Queue Depth
- Retries Count
- Failure Count

An **Active** state indicates this path is available to handle I/O requests.

If **Active** does not appear, the path is designated as Standby.

**Active** and **Standby** states are determined by Load Balance Policy.


See also:

- “Clearing Path Statistics” on page 17
- “Load Balance Policy” on page 20

## Clearing Path Statistics

You can Clear Path Statistics for all paths as needed for monitoring and diagnostic purposes.

To clear the statistics for ALL paths, do one of the following actions:


- From the Operations menu, choose *Clear Path Statistics*.
- In the Tree, right-click on the LUN  icon, and choose *Clear Path Statistics* from the popup menu.

## Viewing Path Performance Statistics

To view performance statistics for a Path:

1. Click a Path  in Tree View.
2. Click the **Performance** tab.

The Performance tab reports the state and cumulative counts for a specific path.

Properties Performance Events						
Path ID	State	Read Requ...	Write Requ...	Bytes Read	Bytes Writt	
 Emulex LightPulse H		17	0	8704	0	

Move the scroll bar or expand the window to see all of the reported statistics.

The Performance tab reports the following data for each path:

- |                         |                   |
|-------------------------|-------------------|
| • Path ID               | • Bytes Written   |
| • State (Active or not) | • Non-IO Requests |
| • Read Requests         | • Queue Depth     |
| • Write Requests        | • Retries Count   |
| • Bytes Read            | • Failure Count   |

An **Active** state indicates this path is available to handle I/O requests.

If **Active** does not appear, the path is designated as Standby.

**Active** and **Standby** states are determined by Load Balance Policy.

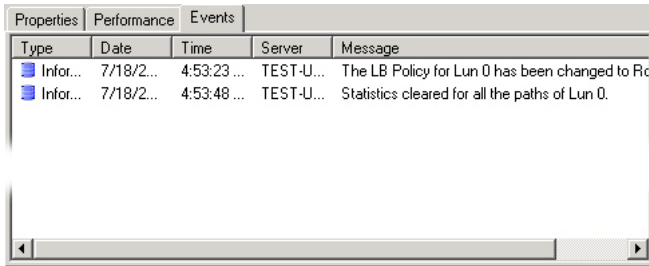
See also:

- “Clearing Path Statistics” on page 17
- “Load Balance Policy” on page 20

## Viewing Events

Click the **Events** tab to view MPIO related events. The data includes:

- Type – Error, Warning, and Information
- Time
- Date
- Server
- Message



The screenshot shows a software window with three tabs: 'Properties', 'Performance', and 'Events'. The 'Events' tab is selected, displaying a table with the following columns: 'Type', 'Date', 'Time', 'Server', and 'Message'. There are two rows of event data visible.

Type	Date	Time	Server	Message
Infor...	7/18/2...	4:53:23 ...	TEST-U...	The LB Policy for Lun 0 has been changed to Rc
Infor...	7/18/2...	4:53:48 ...	TEST-U...	Statistics cleared for all the paths of Lun 0.

Move the scroll bar or expand the window to see all of the reported information.

Use this information to verify that settings changes took place and diagnose problems.

See also:

- “Automatic Load Balancing for Failover Policy” on page 19.
- “Load Balance Policy” on page 20.
- “Path Verification” on page 21.
- “PDO Removal” on page 22.
- “Refreshing the Objects” on page 24.

## Features and Settings

Features and Settings include the following functions:

- Automatic Load Balancing for Failover Policy (page 19)
- Load Balance Policy (page 20)
- Path Verification (page 21)
- PDO Removal (page 22)
- Performance Tab Refresh Rate (page 23)
- Round Robin Count (page 23)
- Refreshing the Objects (page 24)
- Viewing System Information (page 25)
- Saving System Information (page 25)

### Automatic Load Balancing for Failover Policy

The Promise MPIO solution can load balance the paths for your LUNs with load balance policy set to *Failover*.

With Automatic Load Balancing enabled, the LUNs set to Failover policy are automatically redistributed among all available paths when:

- A path fails
- A failed path comes back online
- A new path is added

Automatic Load Balancing, when enabled, provides optimal data throughput for LUNs set to Failover policy.

Note that Automatic Load Balancing has NO effect upon LUNs set to Round Robin, Round Robin with Subset, or Least Queue Depth.

#### Enabling Automatic Load Balancing

To enable automatic load balancing:

From the Operations menu, choose *Auto Load Balance*.

When you see a checkmark beside Auto Load Balance in the Operations menu, this feature is enabled.

See also:

- “Viewing LUN Properties” on page 13.
- “Viewing LUN Performance Statistics” on page 16.
- “Load Balance Policy” on page 20.

## Load Balance Policy




Load Balance Policy is a method of equalizing the I/O traffic over each path by systematically dividing the load among multiple paths.

- **Failover Policy** – No load balancing. With Automatic Load Balancing disabled, the first path discovered is the primary path. I/Os follow the active path until it fails, then they change to next available path. Each LUN uses only one active path.  
See “Automatic Load Balancing for Failover Policy” on page 19.
- **Round Robin Policy** – I/Os follow all active paths, changing paths at the specified I/O count. You can set the I/O count in the General tab of the Advanced Settings dialog box.
- **Round Robin with Subset Policy** – One or more paths are designated as standby. I/Os follow all active paths, changing at the specified I/O count. You can set the I/O count in the General tab of the Advanced Settings dialog box.
- **Least Queue Depth Policy** – I/Os follow the path with the least number of requests queued.

Note that you can enable Automatic Load Balancing for LUNs with policy set to Failover. See “Automatic Load Balancing for Failover Policy” on page 19.

### Changing Load Balance Policy Settings

To change load balance policy settings:

1. Do one of the following actions:
  - From the Operations menu, choose *Change Load Balance Policy*.
  - In Tree View, highlight a LUN  and click the Change Load Balance Policy  icon.
  - In Tree View, right-click a LUN  and choose *Change Load Balance Policy* from the popup menu.

The Change Load Policy dialog box appears with the Load Balance Policy tab displayed.
2. Click the option button for one of the Load Policies.
  - Failover Policy
  - Round Robin Policy
  - Round Robin with Subset Policy
  - Least Queue Depth Policy
3. Click the **Next** button.

The Path Selection tab displays.



4. Take the action appropriate for your policy selection.
  - For Round Robin and Least Queue Depth, no action is required. Skip to step 5.
  - For Failover, move the path you want to be active to the **Primary Path Selected** pane.  
Move all other paths to the **Path Available** pane.
  - For Round Robin with Subset, move the paths you want to be active to the **Primary Path Selected** pane.  
Move the paths you want as standby to the **Path Available** pane.  
You can have all paths in the Subset.
5. Click the **Next** button.  
The Summary tab displays the current and selected (new) policy.
6. Click the **Finish** button to apply your settings.  
The new settings take effect immediately.

See also:

- “Round Robin Count” on page 23.
- “Refreshing the Objects” on page 24.

## Path Verification


Path verification monitors any failed paths and automatically verifies them if they become available again.

There are two Path Verification Settings:

- Enable / disable
- Verification period in seconds

### Changing Path Verification Settings

To make path verification settings:

1. Do one of the following actions:
  - Click the Advanced Settings  icon.
  - From the Operations menu, choose *Advanced Settings*.

The Advanced Settings dialog box appears with the MPIO Parameters tab displayed.
2. Check the **Enable Path Verification** box to enable path verification.  
Uncheck to disable.
3. Click the arrows or type a new value in the **Path Verification Period** field to change the interval.  
30 seconds is the default value.

4. Click the **Apply** button.
5. Click the **OK** button in the confirmation box.  
The new setting takes effect immediately.

See also:

- “Load Balance Policy” on page 20.
- “PDO Removal” on page 22.
- “Refreshing the Objects” on page 24.


## PDO Removal

PDO removal refers to the action of deleting a multipath input/output (MPIO) disk from the Windows Device Manager after all paths to a physical device object (PDO) have failed.

PDO removal interval refers to the period of time in seconds between the moment all paths to a PDO are disconnected and the MPIO disk disappears from the Device Manager.

### Changing PDO Removal Settings

To change PDO removal settings:

1. Do one of the following actions:
  - Click the Advanced Settings  icon.
  - From the Operations menu, choose *Advanced Settings*.

The Advanced Settings dialog box appears with the MPIO Parameters tab displayed.
2. Click the arrows or type a new value in the **PDO Remove Period** field to change the interval.  
120 seconds is the Promise-recommended default value.
3. Click the **Apply** button.
4. Click the **OK** button in the confirmation box.  
The new setting takes effect immediately.

See also “Path Verification” on page 21.


## Performance Tab Refresh Rate

Refresh Rate refers to the number of seconds between refreshes of the data reported on the Performance tab.

### Changing Refresh Rate Settings

To change the refresh rate on the Performance tab:

1. Do one of the following actions:

- Click the Advanced Settings  icon.
- From the Operations menu, choose *Advanced Settings*.

The Advanced Settings dialog box appears with the MPIO Parameters tab displayed.

2. Click the **General** tab.
3. Under Refresh Rate, click the arrows or type a new value in the **Seconds** field to change the interval.  
5 seconds is the default value.
4. Click the **Apply** button.

The new setting takes effect immediately.

See also:

- “Viewing LUN Performance Statistics” on page 16.
- “Viewing Path Performance Statistics” on page 17.


## Round Robin Count

When you set your path Load Balance Policy to Round Robin, the I/Os follow all active paths, changing paths at the specified I/O count. You can set the I/O count in the General tab of the Advanced Settings dialog box.

### Changing the Round Robin Count

To change Round Robin Count settings:

1. Do one of the following actions:

- Click the Advanced Settings  icon.
- From the Operations menu, choose *Advanced Settings*.

The Advanced Settings dialog box appears with the MPIO Parameters tab displayed.

2. Click the **General** tab.
3. Under Round Robin Count, click the arrows or type a new value in the I/Os per Path field to change the count.  
10 I/Os is the default value.

4. Click the **Apply** button.

The new setting takes effect immediately.


See also:

- “Load Balance Policy” on page 20.
- “Viewing LUN Performance Statistics” on page 16.
- “Viewing Path Performance Statistics” on page 17.

## Refreshing the Objects

Use this function after making an addition or deletion to your LUNs or paths.

To refresh the objects, do one of the following actions:

- From the Operations menu, choose *Refresh*.
- Click the Refresh  icon.

PerfectPath automatically displays all reported changes. However, some actions are not reported.


The Refresh action enables you to see the latest information.

See also:

- “Automatic Load Balancing for Failover Policy” on page 19.
- “Load Balance Policy” on page 20.
- “Path Verification” on page 21.
- “PDO Removal” on page 22.

## Viewing System Information

To view System information and settings, do one of the following actions:

- From the System menu, choose *System Information*.
- Click the System Information  icon.

The System Information dialog box displays.

System information supplies information about the Host PC or Server, including:


- |                    |                    |
|--------------------|--------------------|
| • Host Name        | • MPIO Version     |
| • Operating System | • MPDEV File       |
| • OS Version       | • MPDEV Version    |
| • OS Manufacturer  | • MPSPFLTR File    |
| • IP Address       | • MPSPFLTR Version |
| • Storport File    | • DSM File         |
| • Storport Version | • DSM Version      |
| • MPIO File        |                    |

**Note:** File information includes the file name and location of the installed file in the server's file system.

## Saving System Information

To save the current System information and settings data to a text file:

1. Do one of the following actions:

- From the System menu, choose *System Information*.
- Click the System Information  icon.

The System Information dialog box displays.

2. From the System Information dialog box, click the **Save** button.
3. In the Save As dialog box, navigate to the folder where you want to save the file.
4. Type a **file name** into the File name field.  
Append the file name with a **.txt** suffix.
5. Click the **Save** button.
6. Click the **OK** button in the confirmation box.

Your information and settings data are saved to a text file in the folder you designated.



# Chapter 4: Maintenance

- Troubleshooting (page 27)
  - Updating PerfectPath (page 28)
  - Repairing PerfectPath (page 28)
  - Removing PerfectPath (page 29)
- 

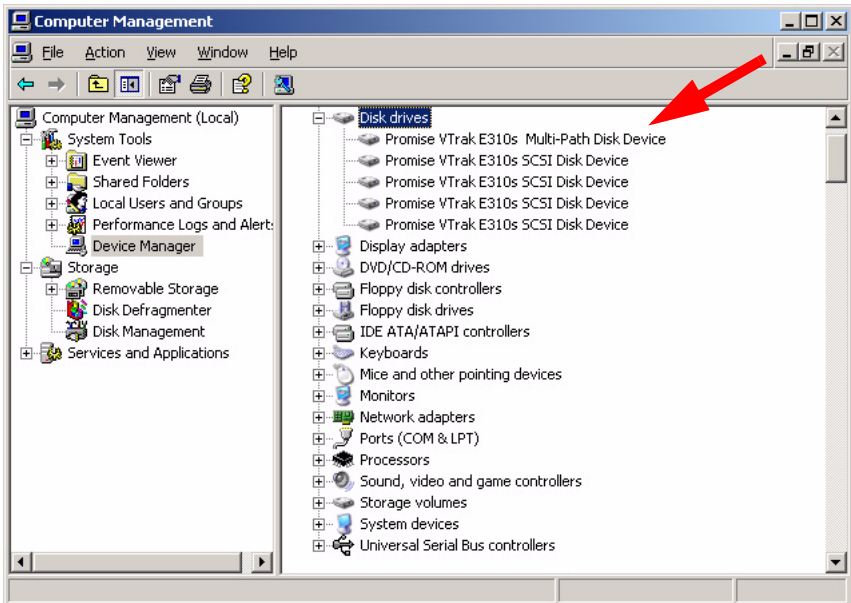
## Troubleshooting

If you see no LUNs in the PerfectPath GUI, or no Multi-Path Disk Devices under Disk drives (see Figure 1), do the following actions:

- Verify that there is at least one logical drive on the VTrak
- Check your HBA cards and driver installation
- Check your data connections

Make any needed corrections and reboot your Host PC as needed.

**Figure 1. Look for “Promise VTrak Multi-Path Disk Device”**



## ***Updating PerfectPath***

To update your PerfectPath software to the latest version:

1. Download the new PerfectPath installation file from the Promise website at [www.promise.com/support](http://www.promise.com/support) and save the installation file to your Windows desktop.
2. Manually remove the current PerfectPath installation.  
See “Removing PerfectPath” on page 29.
3. Install the new PerfectPath software.  
See “Installing PerfectPath” on page 7.

## ***Repairing PerfectPath***

To implement this procedure, you must use the same *PerfectPath.exe* installer file that you used to install the PerfectPath software onto your PC.

The installer’s version number is part of its file name. However, there is no corresponding number in the PerfectPath software.

To repair the PerfectPath software:

1. Double-click the **PerfectPath.exe** file to start the installer.
2. In the Welcome screen, click the **Next** button.
3. In the Program Maintenance screen, choose the **Repair** option, then click the **Next** button.
4. In the Ready to Repair the Program screen, click the **Install** button.
5. In the Install Completed screen, click the **Finish** button.
6. In the Restart message box, click the **Yes** button to restart your PC.



## Removing PerfectPath

### Preferred Method

To remove the PerfectPath software:

1. From the Start menu, choose *Programs > PerfectPath > Uninstall PerfectPath*.
2. In the Welcome screen, click the **Next** button.
3. In the Program Maintenance screen, choose the **Remove** option, then click the **Next** button.
4. In the Remove the Program screen, click the **Remove** button.
5. In the Completed screen, click the **Finish** button.
6. In the Restart message box, click the **Yes** button to restart your PC.

### Alternate Method 1

To remove the PerfectPath software:

1. In the **Start** menu, choose **Settings**, then choose **Control Panel**.
2. In the Control Panel window, double-click the **Add or Remove Programs** icon.
3. In the Add or Remove Programs window, click **Perfect Path**, then click the **Remove** button.
4. In the Confirmation box, click the **Yes** button.
5. In the Restart message box, click the **Yes** button to restart your PC.

### Alternate Method 2

To use this procedure, the *PerfectPath.exe* installer file must be the same version number as the PerfectPath software installed on your PC.

To remove the PerfectPath software:

1. Double-click the **PerfectPath.exe** file to start the installer.
2. In the Welcome screen, click the **Next** button.
3. In the Program Maintenance screen, choose the **Remove** option, then click the **Next** button.
4. In the Remove the Program screen, click the **Remove** button.
5. In the Completed screen, click the **Finish** button.
6. In the Restart message box, click the **Yes** button to restart your PC.



# Chapter 5: Support

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## ***Contacting Technical Support***

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

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

- VTrak E-Class subsystem
  - Model and serial numbers
  - Firmware and software version numbers
  - RAID levels, LUNs, LUN mapping, LUN affinity, and any other information about your configuration
- Fibre Channel or SAS HBA card
  - Model and serial numbers
  - Firmware, BIOS, and driver version numbers
- PerfectPath Software
  - Software version number
  - LUNs, paths, load balance policies, settings and any other information about your configuration
- Fibre Channel switch and topology, if applicable
- A description of the problem or situation

## **Technical Support Services**

Promise Online™ Web Site	<a href="http://www.promise.com/support/support_eng.asp">http://www.promise.com/support/ support_eng.asp</a> . (technical documents, drivers, utilities, etc.)
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## United States

E-mail Support	<a href="#">e-Support On-Line</a>
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

## The Netherlands

E-mail Support	<a href="#">e-Support On-Line</a>
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	<a href="#">e-Support On-Line</a>
Fax Technical Support	+49 (0) 2 31 56 76 48 - 29 Attn: Technical Support
Phone Technical Support	+49 (0) 2 31 56 76 48 - 10
If you wish to write us for support:	Promise Technology Germany Europaplatz 9 44269 Dortmund, Germany

## Italy

E-mail Support	<a href="#">e-Support On-Line</a>
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

## Taiwan

E-mail Support	<a href="#">e-Support On-Line</a>
Fax Support	+886 3 578 2390 Attn: Technical Support
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 Hsin-Chu 30075, Taiwan (R.O.C.)

## China

E-mail Support	<a href="#">e-Support On-Line</a>
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 C Webok Time Center, No.17 South Zhong Guan Cun Street Hai Dian District, Beijing 100081, China

