



FASTTRAK
TX4660, TX8660, TX8668
USER MANUAL

Version 1.0

Copyright

© 2009 Promise Technology, Inc. All Rights Reserved.

Copyright by Promise Technology, Inc. (Promise Technology). No part of this manual may be reproduced or transmitted in any form without the expressed, written permission of Promise Technology.

Trademarks

Promise and the Promise logo are registered in U.S. Patent and Trademark Office. All other product names mentioned herein may be trademarks or registered trademarks of their respective companies.

Important data protection information

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

Notice

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

Promise Technology provides this publication “as is” without warranty of any kind, either express or implied, including, but not limited to implied warranties of merchantability or fitness for a particular purpose.

The published information in the manual is subject to change without notice. Promise Technology reserves the right to make changes in the product design, layout, and driver revisions without notification to its users.

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

Recommendations

The appearance in this manual of products made by other companies, including, but not limited to, software, servers, and physical (disk) drives, is for the purpose of illustration and explanation only. Promise Technology does not recommend, endorse, prefer, or support any product made by another manufacturer.

Contents

Chapter 1: Introduction	1
About This Manual	1
Product Overview	2
WebPAM Software	2
Operating System Support	3
Browser Support	3
Key Features and Benefits	3
Specifications	6
Chapter 2: Installation	7
Unpacking Your FastTrak Card	7
Installing the FastTrak Card	9
Connecting the TX4660 and TX8660	11
Installation in the Host PC	11
Installation in a Server	12
Using a SuperSwap Enclosure	13
Connecting the TX8668	14
Creating Your Logical Drive	17
Installing Software Drivers	21
Installing WebPAM	22
Operating System Support	22
Browser Support	22
Installation	22
This completes WebPAM installation.	29
Logging into WebPAM	29
Login Screen	30
Chapter 3: Installing Drivers	31
FastTrak Driver Diskette for Windows	32
USB Memory Stick for Windows	32
FastTrak Driver Medium for Linux	33
Windows Server 2008	34
New OS Installation	34
Existing System	35
Confirming Driver Installation	35
Windows Vista	36
New OS Installation	36
Existing System	37
Confirming Driver Installation	37

Chapter 3: Installing Drivers, cont.

Windows Server 2003	.38
New OS Installation	.38
Existing System	.39
Confirming Driver Installation	.39
Windows XP	.40
New OS Installation	.40
Existing System	.41
Confirming Driver Installation	.41
Windows 2000	.42
New OS Installation	.42
Existing System	.43
Confirming Driver Installation	.43
Red Hat Linux Enterprise 5.0	.44
New OS Installation	.44
Existing System	.44
SuSE Linux Enterprise Server 10.0	.45
New OS Installation	.45
Existing System	.45

Chapter 4: FastBuild™ Utility .47

Using the FastTrak BIOS	.47
Navigating the Main Menu	.49
Viewing Drive Assignments	.50
Viewing Logical Drives	.51
JBOD Disks	.52
Creating Logical Drives	.53
One Logical Drive	.53
Two Logical Drives	.56
Deleting a Logical Drive or JBOD Disk	.62
Logical Drives	.62
JBOD Disks	.63
Viewing the Controller Configuration	.65
Viewing and Switching HBA Mode	.66
Viewing HBA Mode	.66
Switching HBA Mode	.66
Responding to Logical Drive Problems	.67
Finding a Failed Disk Drive in FastBuild	.67

Chapter 5: WebPAM .....	.69
Logging into WebPAM .....	.69
Regular Connection .....	.69
Secure Connection .....	.70
Logging out of WebPAM .....	.71
Managing Users .....	.72
Adding a User .....	.72
Setting Event Notification .....	.73
Making User Settings .....	.76
Changing a User's Access Rights .....	.77
Deleting a User .....	.78
Viewing Host Management .....	.79
Making Utility Configuration Settings .....	.80
Viewing the FastTrak Card .....	.81
Managing the Controller .....	.82
Viewing Controller Information .....	.82
Making Controller Settings .....	.82
Viewing Scheduled Actions .....	.84
Deleting a Scheduled Action .....	.84
Locking the Controller .....	.85
Restoring Default Settings .....	.86
Managing Physical Drives .....	.87
Viewing Physical Drives .....	.87
Viewing Physical Drive Information .....	.88
Making Physical Drive Settings .....	.89
Running Media Patrol .....	.89
Checking the Bad Sector Log .....	.91
Locating a Physical Drive .....	.92
Managing Logical Drives .....	.94
Viewing All Logical Drives .....	.94
Creating a Logical Drive .....	.94
Creating a JBOD Disk .....	.98
Deleting a Logical Drive or JBOD Disk .....	.102
Viewing Logical Drive Information .....	.102
Making Logical Drive Settings .....	.103
Migrating a Logical Drive .....	.104
Rebuilding a Logical Drive .....	.107
Synchronizing a Logical Drive .....	.110
Viewing Logical Drive Initialization .....	.113
Activating a Logical Drive .....	.113
Responding to a Critical or Offline Logical Drive .....	.115

Chapter 5: WebPAM, cont.

Managing Enclosures	118
Viewing Enclosures	118
Viewing Enclosure Information	118
Managing Spare Drives	121
Viewing Spare Drives	121
Creating a Spare Drive	121
Deleting a Spare Drive	122

Chapter 6: Technology123

About FastTrak	123
FastTrak BIOS	123
Introduction to RAID	123
RAID 0 – Stripe	124
RAID 1 – Mirror	125
RAID 5 – Block Striping with Distributed Parity	126
RAID 10 – Stripe / Mirror	127
JBOD – Single Drive	128
SPAN – Concatenated Drives	129
Choosing a RAID Level	130
RAID 0	130
RAID 1	130
RAID 5	131
RAID 10	131
JBOD	131
SPAN	132
Other Logical Drive Features	132
Stripe Block Size	132
Initialization	132
Gigabyte Boundary	132
Hot Spare Drive	133
Cache Setting	133
Logical Drive Migration	133

Chapter 7: Support137

Frequently Asked Questions	137
Pre-Installation	137
Motherboard Issues	138
System CMOS Issues	138
Drive Issues	139
Operating System-Related Issues	141

Installation Issues	142
Post-Installation	143
Performance Tips	143
Contacting Technical Support	144
Limited Warranty	147
Return Product For Repair	149
Appendix A: Partition and Format	151
Appendix B: Upgrades	155
BIOS and Firmware Upgrade	155
Software Driver Upgrade	157
WebPAM Upgrade	160
Index.....	161

Chapter 1: Introduction

- About This Manual, below
- Product Overview (page 2)
- WebPAM Software (page 2)
- Operating System Support (page 3)
- Browser Support (page 3)
- Key Features and Benefits (page 3)
- Specifications (page 6)

Thank you for purchasing Promise Technology's FastTrak TX4660, TX8660, or TX8668 SATA/SAS RAID Controller card.

About This Manual

This *User Manual* describes how to setup, use and maintain your FastTrak TX4660, TX8660, or TX8668 SATA/SAS RAID Controller cards.

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

Also included are four levels of notices:



Note

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



Important

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



Caution

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



Warning

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

Product Overview

Promise originally designed the FastTrak TX4660, TX8660, or TX8668 as cost-effective, high performance RAID controller cards that add performance and/or reliability to PC desktops and/or servers using SATA and SAS drives.

- The FastTrak TX4660 has one internal SAS connector and supports up to four SAS or SATA physical drives.
- The FastTrak TX8660 has two internal SAS connectors and supports up to eight SAS or SATA physical drives.

The TX4660 and TX8660 cards support the following RAID levels:

- Stripe (RAID 0) – Identical drives can read and write data in parallel to increase performance.
- Mirror (RAID 1) – Mirror increases read performance through load balancing and elevator sorting while creating a complete backup of your files.
- Block Striping with Distributed Parity (RAID 5) – Organizes data and distributes parity across the physical drives to increase performance and provide fault tolerance to protect your data.
- Mirror/Stripe (RAID 10) – Combines RAID 0 and RAID 1 to increase performance by reading and writing data in parallel while protecting data with duplication.
- JBOD – A single, non-array drive. You can assign multiple drives as JBOD.
- SPAN – Concatenates the capacity of up to eight physical drives into one logical drive.

The TX8668 has two external SAS connectors and supports the Promise VessRAID external RAID subsystem.

WebPAM Software

The Web-based Promise Array Management (WebPAM) RAID management software offers local management and monitoring of FastTrak logical drives. Browser-based GUI provides email notification of all major events or alarms, memory cache management, logging for Windows servers, logical drive maintenance, rebuild, and access to all related components (server, controller, data channels, physical drives, and enclosure).

WebPAM also displays messages about critical events on the Host PC's monitor screen even if your browser is closed.

For information on using WebPAM, refer to "Chapter 5: WebPAM" on page 69.

Operating System Support

On the Host PC where you install the FastTrak controller and WebPAM, Promise Technology recommends:

- Windows Server 2008 (32 or 64 bit)
- Windows Vista (32 or 64 bit)
- Windows Server 2003 (32 or 64 bit)
- Windows XP Professional (32 or 64 bit)
- Windows Server 2000 (32 or 64 bit)
- Red Hat Enterprise Linux 4 Update 6 (32 or 64 bit)
- Red Hat Enterprise Linux 5 Update 2 (32 or 64 bit)
- SuSE Linux Enterprise Server 9 SP4 (32 or 64 bit)
- SuSE Linux Enterprise Server 10 SP2 (32 or 64 bit)
- Open Source Driver for Linux 2.6 kernel (32 or 64 bit)

Browser Support

On the Host PC where you install the FastTrak controller and WebPAM, you must have one of the following browsers:

- Internet Explorer 5.0 or later
- Firefox 2.0 or later
- Netscape Navigator 6.0 or later

If you do not have one of the above browsers, install the browser first and make it the default browser. Then install WebPAM.

Key Features and Benefits

The following information offers an overview of the major features of your new Promise FastTrak TX4660, TX8660, and TX8668.

Advanced Hardware Design	
Features	Benefits
Supports four-lane PCIe bus motherboards	Allows maximum data transfers of up to 10 Gb/s in both directions simultaneously to dramatically reduce the time to save and retrieve large files.
The TX series supports RAID 0, 1, 5, and 10	Provides dramatic increase in drive performance and/or fault tolerant options.

Advanced Hardware Design	
Features	Benefits
Supports Serial ATA Specification II	Burst data transfer rates up to 300 MB/s from Serial ATA drives to boost overall system performance.
Supports Serial Attached SCSI Specification	Burst data transfer rates up to 300 MB/s from SAS drives to boost overall system performance.
Independent data channels for SATA and SAS drives	Drives can multiply their data transfer performance when striped together and each drive uses a separate data channel.
Supports multiple LUNs, two per physical drive	TX4660 supports up to 8 logical drives. TX8660 supports up to 16 logical drives.
Supports online logical drive expansion	Add physical drives to the logical drive without affecting data availability.
Supports online logical drive migration	Change RAID level without affecting data availability.
Displays status and error checking messages during bootup	Notifies user of possible errors.
Supports S.M.A.R.T. monitoring and reporting	Polls status every 15 minutes, reports through WebPAM.
Employs the latest Promise PCI Express SATA/SAS ASIC technology	Fully supports Serial ATA specifications with 150 and 300 MB/sec timing and CRC error-checking at high speeds.
Mirror supports automatic background rebuilds	Fault tolerance can be restored automatically without rebooting.
DOS based flash upgrade of BIOS	Verifies proper file, option to backup existing file. Download files from Promise website.
Gigabyte Boundary	Allows easier interchangeability among physical drive vendors.
System reboot not required after create, delete, migrate or expand logical drive	System boot process continues without restarting.

Compatibility	
Features	Benefits
Complies with PCI Express Specification 1.0a	Provides highest level of hardware compatibility
Complies with SATA Specification 1.0a	Provides full compatibility with first generation SATA hard drives.
Complies with SATA II: Extensions to SATA 1.0a Specification	Provides enclosure and drive monitoring compatibility.
Complies with SAS Specification 1.1	Provides full compatibility with SAS hard drives.
Tested compatibility to coexist with motherboards that have integrated IDE controllers	Improves system performance and minimizes system conflicts for new and existing installations.
Features LBA support	Supports drives greater than 137 GB capacity.
Supports BIOS Boot Specification	All logical drives attached to the FastTrak card appear in the BBS-compliant motherboards BIOS boot list.
Compatible with Promise SuperSwap enclosures	Provides enclosure management including fan, temperature and voltages.

Specifications

- Port Counts and Connectors
TX4660: 4 internal, one SFF-8087 with SGPIO
TX8660: 8 internal, two SFF-8087 with SGPIO
TX8668: 8 external, two SFF-8088
- PCI Express x4 Slot
- I/O Processor: T8 ASIC PDC82830
- Memory: 512K Flash, 256K SRAM EEPROM
- Two GPIO support for global status LED and VPD
- Controller card dimensions (HxW): 68.8 x 159 mm (2.7 x 6.3 in)
- Operating temperature: 0°C to 50°C (32° to 122°F)
- Operating humidity: 5% to 95% non-condensing

Chapter 2: Installation

- Unpacking Your FastTrak Card (below)
- Installing the FastTrak Card (page 9)
- Connecting the TX4660 and TX8660 (page 11)
- Connecting the TX8668 (page 14)
- Creating Your Logical Drive (page 17)
- Installing Software Drivers (page 21)
- Installing WebPAM (page 22)

Unpacking Your FastTrak Card

When you receive the FastTrak TX Series SATA/SAS RAID Controller card, the package should contain the items listed below:

- FastTrak TX4660, TX8660, or TX8668 card
- SFF-8087-to-SAS fanout cable
TX4660, one; TX8660, two
- *Quick Start Guide*
- CD with Promise RAID Management (WebPAM) software, Windows and Linux drivers, and the *FastTrak TX4660, TX8660, TX8668 User Manual*

If any of the items are missing or appear to be damaged, please contact your dealer or distributor immediately.



Warning

The electronic components on the FastTrak TX4660, TX8660, and TX8668 cards are sensitive to damage from Electro-Static Discharge (ESD). Observe appropriate precautions at all times when handling the FastTrak card or its subassemblies.



Warning

Before installing the adapter into an existing system, backup any important or useful data. Failure to follow this accepted PC practice could result in data loss.



Important

To complete your installation, you need one or two data cables. The choice of cable depends on the FastTrak model and type of installation:

- SFF-8087-to-SATA fanout cable
- SFF-8087-to-SAS fanout cable
- SFF-8087-to-SFF-8087 SAS internal cable
- SFF-8088-to-SFF-8088 SAS external cable

See “Connecting the TX4660 and TX8660” on page 11.

The FastTrak TX4660 and TX8660 ship with SFF-8087-to-SAS fanout cables.

The other types of SAS cables are available from Promise.

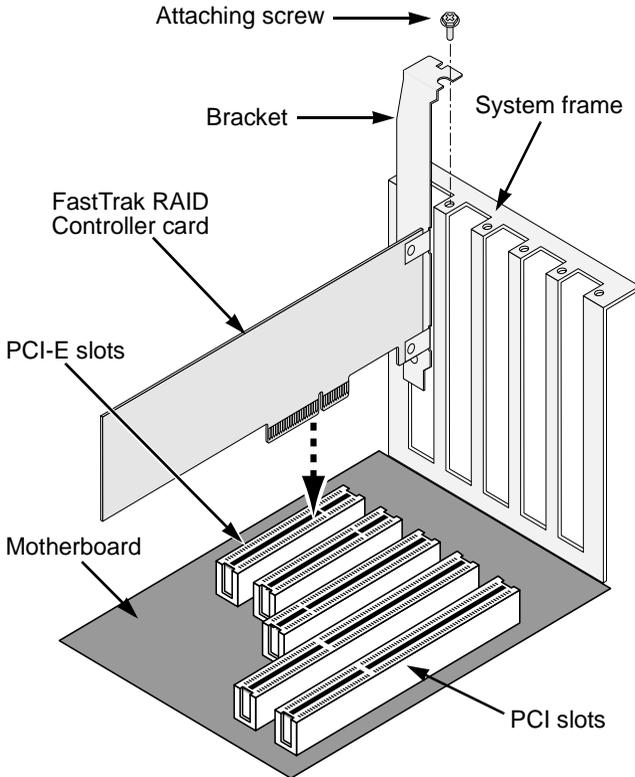


Note

The FastTrak TX4660, TX8660, and TX8668 cards are PCI-E Plug-n-Play (PnP) devices. No changes are necessary in the motherboard CMOS/BIOS Setup for resources or drive types in most applications.

Installing the FastTrak Card

The FastTrak TX4660, TX8660, or TX8668 card fits into any available PCI-E x4, x8, or x16 slot in your PC's motherboard.



1. Remove the cover of your system.
2. Install the FastTrak TX4660, TX8660, or TX8668 card into the open PCI-E slot.
3. Fasten the controller card bracket to the system's frame.
4. Optional. Attach your system case's 2- or 4-pin LED cable to the LED connector on the FastTrak card.

Figure 1. Connectors on the FastTrak TX4660 card

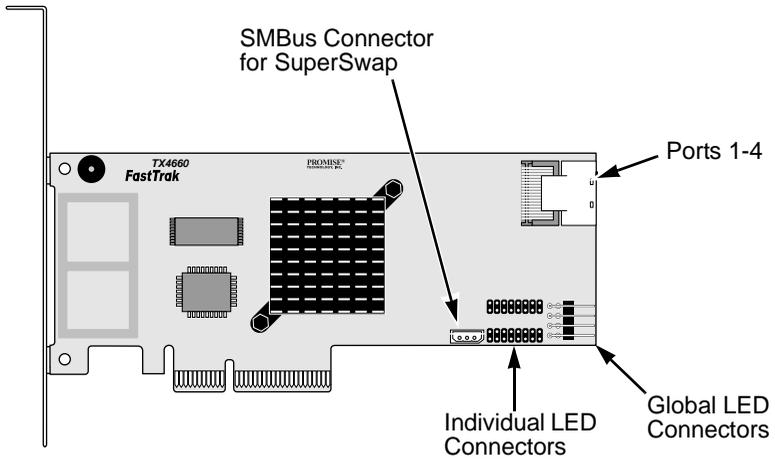
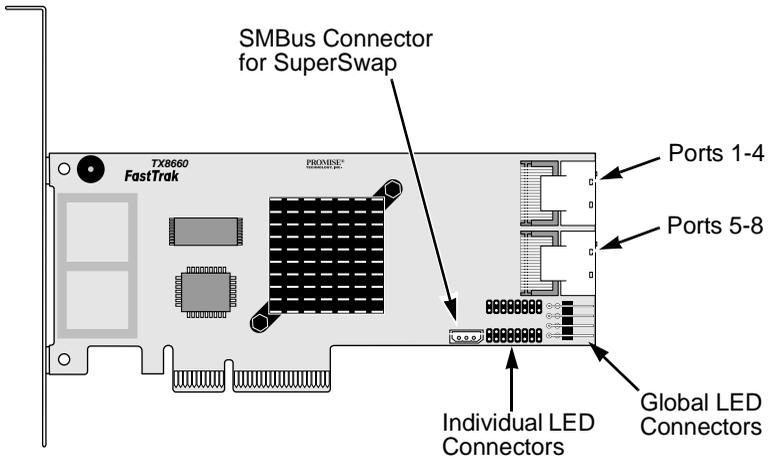


Figure 2. Connectors on the FastTrak TX8660 card



Connecting the TX4660 and TX8660

The FastTrak TX4660 and TX8660 cards support SATA 1.5Gb/s, SATA 3.0 Gb/s, and SAS disk drives. For optimal performance, install disk drives of the same model and capacity. The drives' matched performance allows the logical drive to function better as a single drive.

Level	Number of Drives
RAID 0	any number
RAID 1	2 only
RAID 5	3 or more
RAID 10	4 minimum + even number
JBOD	1 only
SPAN	any number

The table above shows the number of drives required for each RAID level and the RAID levels supported by the FastTrak TX4660 and TX8660 cards.

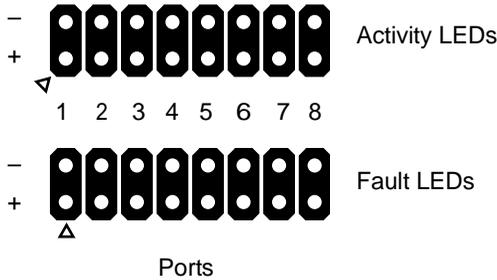
Installation in the Host PC

The FastTrak TX4660 and TX8660 cards have internal SAS Ports and are designed for installation in the Host PC.

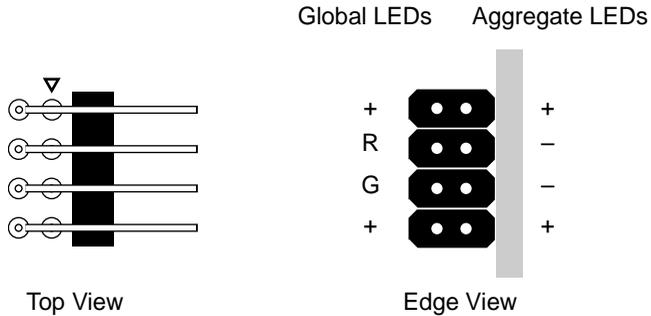
To connect the FastTrak card to your Host PC:

1. Install the disk drives into the open drive bays of your system.
2. Attach a SFF-8087-to-SATA or a SFF-8087-to-SAS fanout data cable to one of the Ports on the FastTrak card. See page 10, Figures 1 and 2.
3. Attach the SATA or SAS ends of the data cable to your SATA or SAS disk drives.
4. Attach your system's power supply cables to the disk drives.
5. Optional. To connect your LEDs, follow one of the following diagrams:

- Individual LEDs, TX4660 and TX8660.



- Aggregated or Global Activity LEDs.



Continue with “Creating Your Logical Drive” on page 17.

Installation in a Server

The FastTrak TX4660 and TX8660 cards have internal SAS Ports and are designed for installation in a server.

To connect the FastTrak card to your server:

1. Install the disk drives into the open drive bays of your system.
2. Attach a SFF-8087-to-SFF-8087 SAS data cable (not included) to one of the Ports on the FastTrak card. See page 10, Figures 1 and 2.
3. Attach the other end of the SAS data cable to the midplane connector in the server.

Refer to the server’s setup guide or user manual for more information.

Continue with “Creating Your Logical Drive” on page 17.

Using a SuperSwap Enclosure



Caution

Use of removable physical (disk) drive enclosures other than Promise Technology's SuperSwap is not supported and may result in performance loss or other undesired results.

The FastTrak TX4660 and TX8660 cards have internal SAS Ports and are designed to work with the SuperSwap enclosure.

For instructions on installing the SuperSwap enclosure and the disk drives, refer to the SuperSwap *Quick Start Guide* or *User Manual*.

To connect the FastTrak card using a SuperSwap enclosure:

1. Install the SuperSwap enclosure into your system.
2. Install the disk drives into your SuperSwap enclosure.
3. Do one of the following actions:
 - **SuperSwap 4600:** Connect a SFF-8087-to-SATA fanout data cable (not included) to one of the Port connectors on the FastTrak card.
Attach the No. 1 SATA connector to the Port 1 connector on the SuperSwap.
Connect the remaining SATA connectors to their matching Ports on the SuperSwap.
 - **SuperSwap 1600:** Connect a SFF-8087-to-SATA fanout data cable (not included) from one of the Port connectors on the FastTrak card.
Attach a SATA connector to the Interface connector on the SuperSwap.
Repeat this action for each SuperSwap enclosure in your system.
4. Attach one end of the three-wire management cable (included with SuperSwap) from the SMBus connector on the FastTrak card to the Management connector on the back of the SuperSwap.

The SuperSwap enclosure does not use the LED pins on the FastTrak card.

Continue with "Creating Your Logical Drive" on page 17.

Connecting the TX8668

The FastTrak TX8668 card has external SAS Ports that connect to a VessRAID external RAID subsystem. When connected to a VessRAID, the FastTrak TX8668 functions only as a SAS HBA card. The VessRAID performs all RAID management functions.

To connect the FastTrak card to a VessRAID subsystem:

1. Connect one of the SAS ports on the FastTrak card in the Host PC to one of the SAS IN ports (with a circle icon) on the VessRAID controller.
You can connect one or both FastTrak SAS ports to the VessRAID.
SFF-8088-to-SFF-8088 SAS cables are not included.
2. Connect the Management port on the VessRAID controller to your network switch.
A CAT-5 or CAT-6 Ethernet cable is not included.

Figure 3. Connectors on the FastTrak TX8668 card

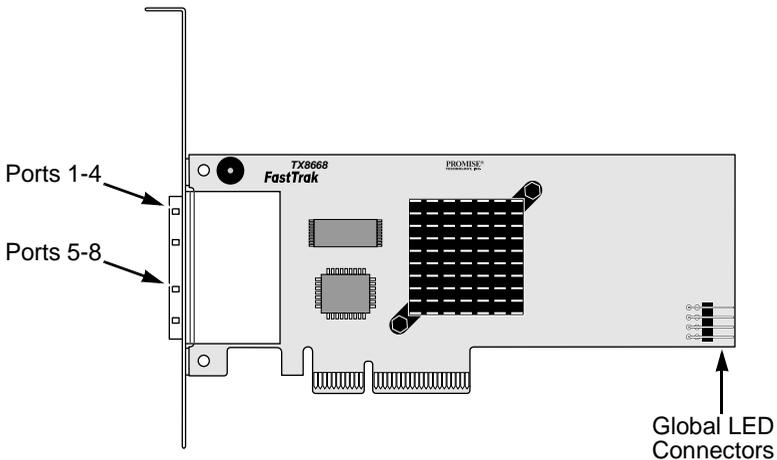
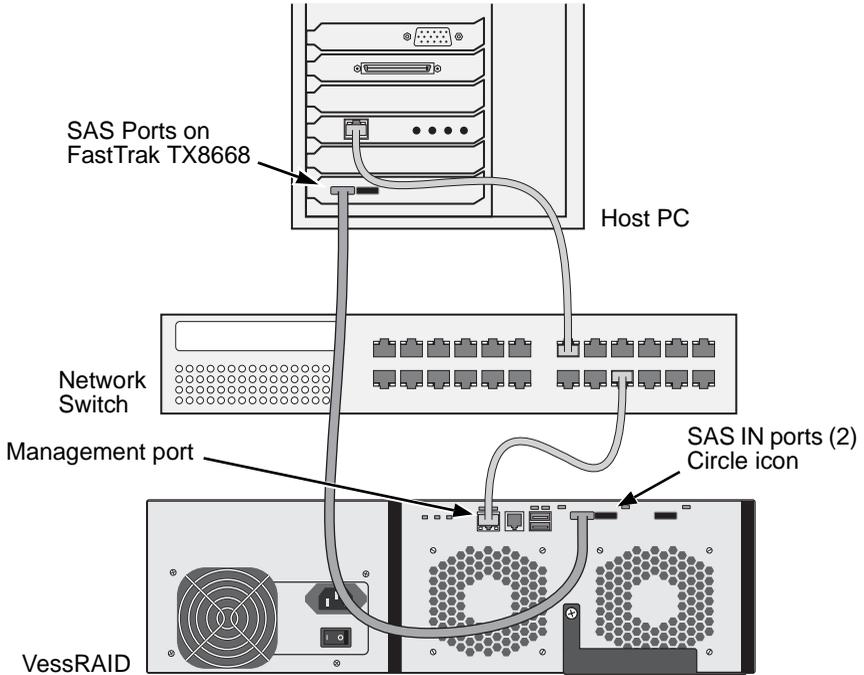


Figure 4. VessRAID data and network connections

Do not connect any LED pins from the FastTrak TX8668 card. The VessRAID has its own internal LED connections.

3. Set up the VessRAID subsystem following the instructions in the *VessRAID Quick Start Guide* or *Product Manual*.
4. Boot the VessRAID subsystem first. Wait 30 seconds and boot the Host PC. The FastTrak BIOS displays the following screen:

```
FastTrak TX8668 (tm) BIOS Version 2.9.0.xx  
(c) 2004-2009 Promise Technology, Inc. All rights reserved.
```

```
No Array is defined..
```

```
Press <Ctrl-F> to enter FastBuild (tm) Utility..
```

For logical drive creation and RAID management, use one of the embedded applications on the VessRAID:

- Command Line Interface (CLI)
- Command Line Utility (CLU)
- WebPAM PROe

Refer to the Online Help, *VessRAID Quick Start Guide*, or *VessRAID Product Manual* for more information.

This concludes the setup procedure for the FastTrak TX8668.

Creating Your Logical Drive



Caution

The FastBuild utility and WebPAM software do NOT support the VessRAID subsystem.

Use the embedded applications on the VessRAID. See page 16.

The following instructions apply to the FastTrak TX4660 and TX8660 cards. This task uses the onboard FastBuild BIOS utility to create a logical drive with directly attached disk drives.

For an explanation of the logical drive concepts, see Chapter 6.



Note

You can omit this step, proceed with the WebPAM installation on page 22, then create your logical drive using WebPAM. For more information, see Chapter 5.

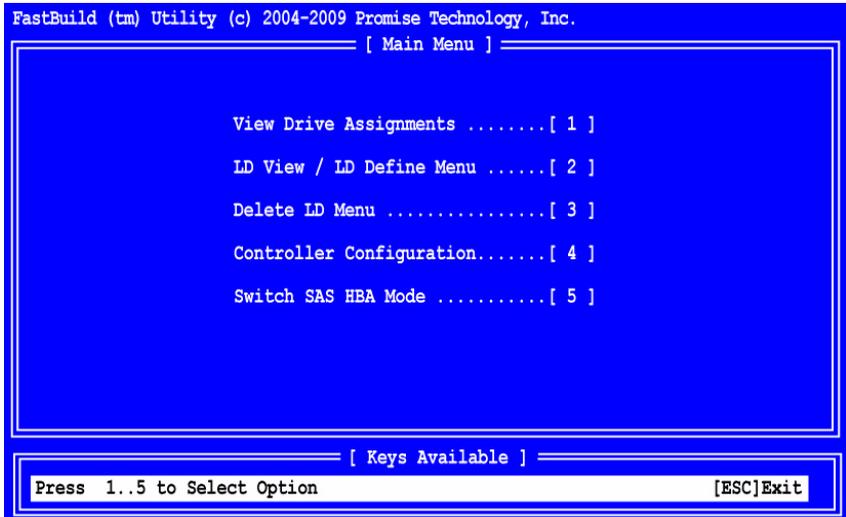
1. Boot your system. If this is the first time you have booted with the FastTrak card and drives installed, the FastTrak BIOS will display the following screen.

```
FastTrak TX8660 RAID HBA (tm) BIOS Version 2.9.0.xx
(c) 2004-2009 Promise Technology, Inc. All rights reserved.

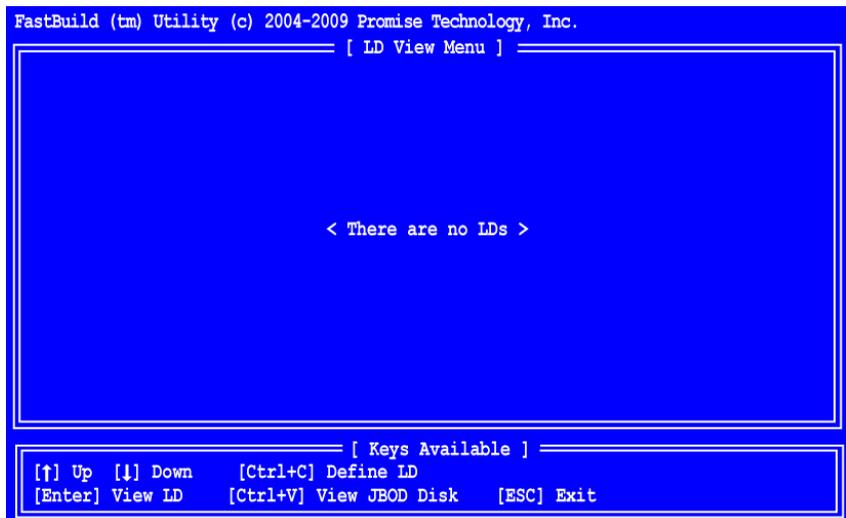
No Array is defined...

Press <Ctrl-F> to enter FastBuild (tm) Utility...
```

2. Press the Ctrl-F keys to display the FastBuild Utility Main Menu.



3. Press 2 on the Main Menu screen to display the LD View Menu.



4. Press Ctrl-C to access the Define LD Menu.
5. Choose the RAID level you want. In the Define LD Menu section, press the Spacebar to toggle through logical drive types:
 - RAID 0 (Stripe)
 - RAID 1 (Mirror)

- RAID 5 (Distributed Parity)
 - RAID 10 (Stripe/Mirror)
 - JBOD (Single Drive)
 - SPAN (Concatenated Drives)
6. Press the arrow keys to move to the next option. Option choices depend on the RAID Level you selected.
 - **Initialization – Full** initializes the entire logical drive for RAID 1, 5, and 10. **Fast** erases the Master Boot Record (MBR) of the physical drives. **None** leaves the physical drives untouched. Full or Fast are recommended.
 - **Gigabyte Boundary** – Enables replacement of a failed disk drive with a slightly smaller drive. ON is recommended. Applies to RAID but not to JBOD or SPAN.
 - **Stripe Block Size** – Set to 16 KB with no options. Applies to RAID 0, 5, and 10; but not to JBOD, SPAN, or RAID 1.
 7. Press the arrow keys to move to Disk Assignments. Press the spacebar to toggle between N and Y for each available drive. Y means this physical drive will be assigned to the logical drive.
Assign the appropriate number of physical drives to your logical drive.
 8. Press Ctrl-Y to save your logical drive configuration.

```
FastBuild (tm) Utility (c) 2004-2009 Promise Technology, Inc.
[ Define LD Menu ]
LD No      LD Name      RAID Mode  Drv
LD 01      Logical Drive 1  RAID 5     3
Stripe Block: 16 KB      Initialization: Fast
Gigabyte Boundary: ON

[ Drive Assignments ]
Port  Drive Model  Capabilities  Capacity (MB)  Assignment
01    MHT2060BS   SAS 3.0G     60012          Y
02    MHT2060BS   SAS 3.0G     60012          Y
03    MHT2060BS   SAS 3.0G     60012          Y
04    MHT2060BS   SAS 3.0G     60012          N

[ Keys Available ]
[↑] Up [↓] Down [Space] Change Option
[Ctrl+Y] Save [ESC] Exit
```

The LD name prompt appears.

```
Please press Ctrl-Y key to input the LD name
or press any key to exit.
If you do not input any LD name, the default
LD name will be used.
```

9. Press Ctrl-Y to open a name field.

If you press any key other than Ctrl-Y, a default name is used and the process goes to the next step.

Type a name for the logical drive and press Enter.

If you leave the field blank and press Enter, a default name is used.

```
Enter the LD name here:
```

If you chose Fast or Full Initialization in step 6, the Fast Init warning appears.

```
Fast Initialization Option has been selected.
It will erase the MBR data of the disks.
<Press Ctrl-Y Key if you are sure to erase it>
<Press any other key to ignore this option>
```

10. Press Ctrl-Y to accept Initialization.

If you press any key other than Ctrl-Y, the logical drive creation is cancelled.

If this is the first logical drive you have created using these selected disk drives, the Modify Array Capacity option appears.

```
Press Ctrl-Y to Modify Array Capacity or press any
other key to use maximum capacity...
```

Taking less than the full array capacity enables you to create a second logical drive using the same disk drives.

11. Press Ctrl-Y to open the capacity field.

If you press any key other than Ctrl-Y, the logical drive takes the full capacity of the disk drives.

Refer to the total available capacity under **Capacity (MB)** in the top right corner of the Define LD Menu.

The remaining capacity is applied to the second logical drive created using the same disk drives.

12. Type a number value for the Megabytes of capacity for your first logical drive and press Enter.

Enter array capacity (in MB) here:

Your new logical drive appears in the LD View Menu.

```
FastBuild (tm) Utility (c) 2004-2009 Promise Technology, Inc.
[ LD View Menu ]
+-----+-----+-----+-----+-----+
| LD No | RAID Mode | Drv | Capacity (MB) | Status |
+-----+-----+-----+-----+-----+
| LD 01 | RAID 5    | 3   | 59999         | Functional |
+-----+-----+-----+-----+-----+

[ Keys Available ]
[↑] Up [↓] Down [Ctrl+C] Define LD
[Enter] View LD [Ctrl+V] View JBOD Disk [ESC] Exit
```



Important

You must be partition and format your new logical drive before you can use it. Use the same method of partitioning and formatting a logical drive as you would any other fixed disk added to your computer system.

Installing Software Drivers

Drivers for Windows and Linux are included on the CD that came with your FastTrak card. Please download the latest drivers from the Promise [support website](#).

Windows systems usually recognize the FastTrak card, prompt you for the driver, and perform the driver installation automatically.

If you are installing the FastTrak card at the same time as your operating system or you prefer to read step-by-step directions, see “Chapter 3: Installing Drivers” on page 31.

Installing WebPAM

Complete installation instructions for the WebPAM RAID management software are included here. The FastTrak card and the driver for your OS must be installed on the Host PC before you can install WebPAM.

Operating System Support

On the Host PC where you install the FastTrak controller and WebPAM, Promise Technology recommends:

- Windows Vista Business, Enterprise, or Ultimate
- Windows Server 2008
- Windows Server 2003
- Windows XP Professional
- Windows 2000
- Red Hat Enterprise Linux 4 Update 6
- Red Hat Enterprise Linux 5 Update 2
- SuSE Linux Enterprise Server 9 SP4
- SuSE Linux Enterprise Server 10 SP2

WebPAM supports these operating systems. Choose one of them to take full advantage of all the features of WebPAM.

Browser Support

On the Host PC where you install the FastTrak card and WebPAM, you must have one of the following browsers:

- Internet Explorer
- Mozilla
- Firefox
- Netscape Navigator

If you do not have one of the above browsers, install the browser first and make it the default browser. Then install WebPAM.

Installation

Windows

Follow these steps to install WebPAM on your Windows-based PC or Server.

1. Boot up the PC/server and launch Windows.
If the computer is already running, exit all programs.
2. Insert the software CD into your CD-ROM drive.
3. Double-click the Install CD's icon to open it.
4. Double-click the Installer icon to launch it (right).

The first WebPAM installation dialog box appears. Go to "WebPAM Installation for Windows and Linux, continued" on page 24.



PromiseWebPAM

Linux

Follow these steps to install WebPAM on your Linux-based PC or Server.

1. Boot up the PC/server and launch the Linux GUI.
If the computer is already running, exit all programs.
2. Insert the software CD into your CD-ROM drive.
3. In the CD window, double-click the **webpam...bin** icon to begin installation (right).
4. When the Run or Display? dialog box appears, click *Run in Terminal*.



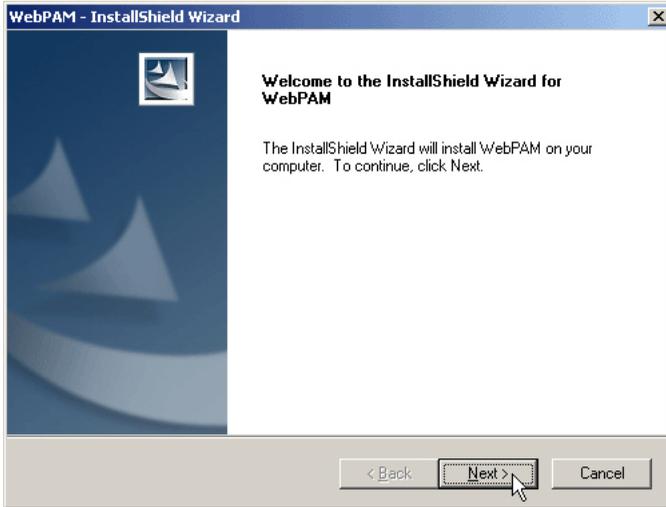
webpamxxxx.bin

After several moments, the Terminal window closes and the first WebPAM installation dialog box appears. Go to “WebPAM Installation for Windows and Linux, continued” on page 24.

WebPAM Installation for Windows and Linux, continued

The following screens are from a Windows installation. The Linux screens look different but they have the same choices and options.

5. When the Introduction screen appears, click the **Next** button

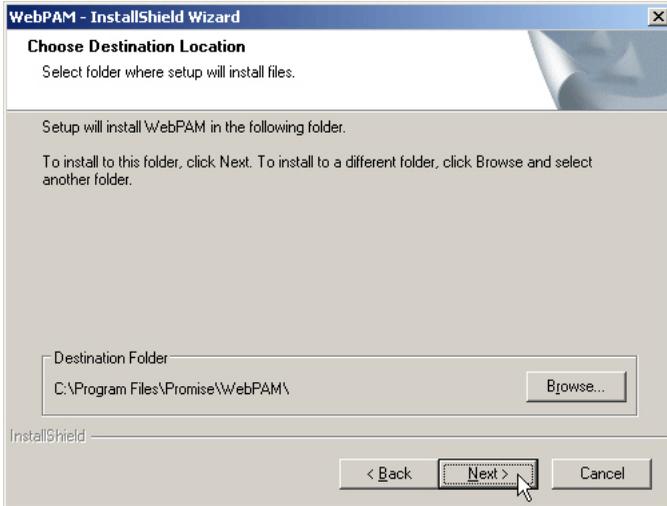


6. When the License Agreement appears, click the "I accept the terms of the license agreement" option. Then click the **Next** button.



- When the Choose Install Folder screen appears, make your selection of a folder for the WebPAM applications you are installing. The default folder is **C:\Program Files\Promise\WebPAM**. If you want a different folder, type its location or click the **Browse** button and select a new location.

If you change your mind and want the default location, click the **Back** button, then the **Next** button.



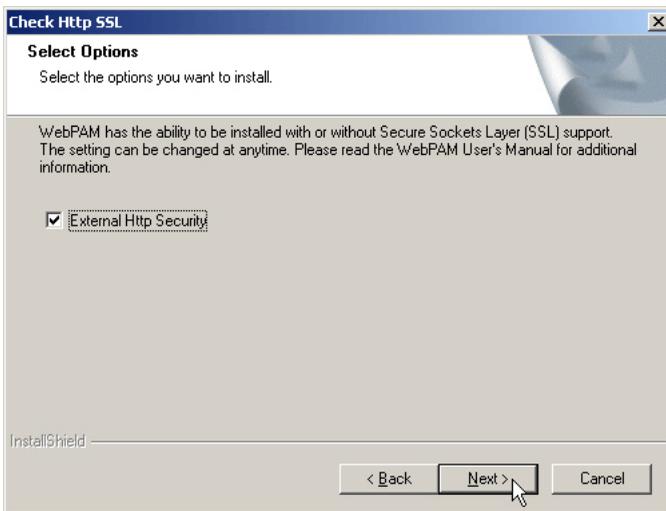
8. When the SSL Security Options screen appears (above), you can check External Security. An explanation follows.

External SSL Security – Applies security to all connections involving the Internet or outside your company firewall.

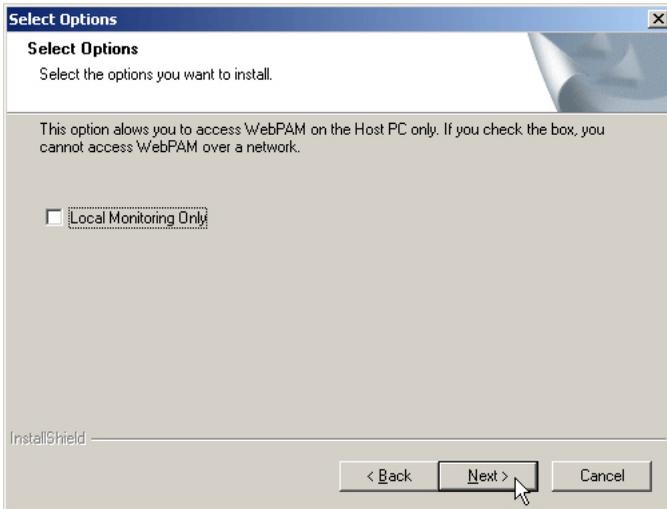
Security options are invisible to authorized users.

Promise Technology provides a default certificate for the server as well as for internal data communication. However, in some cases, it is better to install and verify your own certificate for the webserver. And, if possible, have your certificate verified by a certificate authority such as Verisign or Thwate. See your MIS Administrator for guidance.

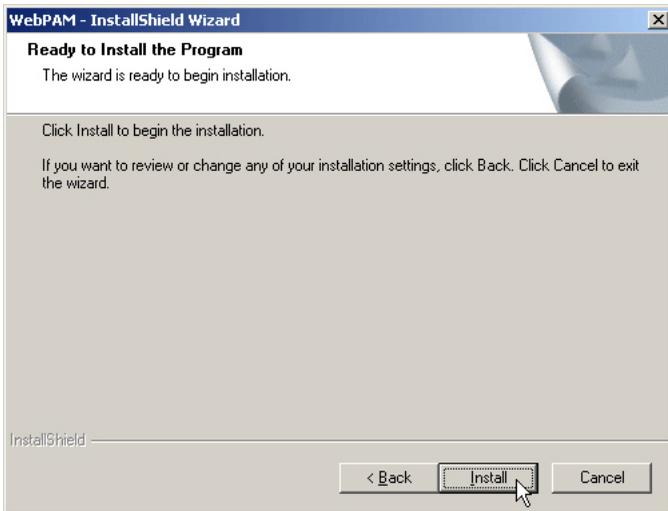
Click the **Next** button when you have made your choice.



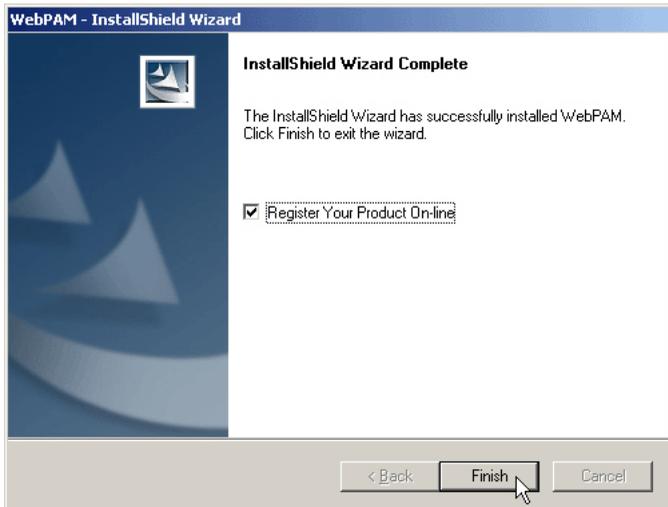
9. When the Select Options screen appears, you have the option of choosing *Local Monitoring Only*.
 - If you check this option, you can only log into WebPAM from the Host PC. You cannot log into WebPAM over a network.
 - If you do not check this option, you can log into WebPAM from the Host PC or over a network.
- To continue, click the **Next** button.



10. When the Ready to Install screen appears, click the **Install** button.



11. When the Install Complete screen appears, the installation process is finished. Click the **Finish** button to go to the Promise Registration website





Important

Registration of your FastTrak and WebPAM provides useful information that helps Promise Technologies to offer better products and support. Please take a few minutes to register. Thanks!

This completes WebPAM installation.

Logging into WebPAM

Double-click on the WebPAM icon on your desktop (right). Or,



1. Launch your Browser.
2. In the Browser address field, type in the IP address of the Host PC, as explained below.

If you did *not* choose the External Security option during WebPAM installation, use the *Regular* connection.

If you chose the External Security option during WebPAM installation, use the *Secure* connection.

Regular Connection

- WebPAM uses an HTTP connection http://
- Enter the Host PC's IP address 127.0.0.1 or localhost
- Enter the Port number :8080
- Add to launch WebPAM. /promise/

Together, your entry looks like this:

http://127.0.0.1:8080/promise/ or **https://localhost:8443/promise/**

Secure Connection

- WebPAM uses a secure HTTP connection https://
- Enter the Host PC's IP address 127.0.0.1 or localhost
- Enter the Port number :8443
- Add to launch WebPAM. /promise/

Together, your entry looks like this:

https://127.0.0.1:8443/promise/ or **https://localhost:8443/promise/**

Note that the IP address shown above applies to a log-in at the Host PC. When you log in over a network, you will enter the Host PC's actual IP address.

If you chose the Local Monitoring option during WebPAM installation (see page 27) you can only log into WebPAM from the Host PC. You cannot log into WebPAM over a network.

If you chose Local Monitoring but you need network access, reinstall WebPAM and be sure to uncheck the Local Monitoring Only box.

Login Screen

When the login screen appears:

1. Type **admin** in the Login ID field.
2. Type **admin** in the Password field.
5. Click the **Sign in** button.

The Login ID and Password are case sensitive.



For complete instructions on WebPAM, see “Chapter 5: WebPAM” on page 69.

Chapter 3: Installing Drivers

- FastTrak Driver Diskette for Windows (page 32)
- USB Memory Stick for Windows (page 32)
- FastTrak Driver Medium for Linux (page 33)
- Windows Server 2008
 - New OS Installation (page 34)
 - Existing System (page 35)
 - Confirming Driver Installation (page 35)
- Windows Vista
 - New OS Installation (page 36)
 - Existing System (page 37)
 - Confirming Driver Installation (page 37)
- Windows Server 2003
 - New OS Installation (page 38)
 - Existing System (page 39)
 - Confirming Driver Installation (page 39)
- Windows XP
 - New OS Installation (page 40)
 - Existing System (page 41)
 - Confirming Driver Installation (page 41)
- Windows 2000
 - New OS Installation (page 42)
 - Existing System (page 43)
 - Confirming Driver Installation (page 43)
- Red Hat Linux Enterprise 5.0
 - New OS Installation (page 44)
 - Existing System (page 44)
- SuSE Linux Enterprise Server 10.0
 - New OS Installation (page 45)
 - Existing System (page 45)

Following are driver installation procedures for the Windows operating systems that support the FastTrak TX Series SATA/SAS RAID Controller card. The FastTrak drivers for Windows and Linux are included on the CD.

Please download the latest drivers from the Promise website at http://www.promise.com/support/support_eng.asp

FastTrak Driver Diskette for Windows

If you have a Windows PC and plan to install your FastTrak driver from a diskette, follow this procedure. This procedure requires one write-enabled blank 3.5-inch diskette.

1. Place your blank diskette in the appropriate drive.
2. Insert the Promise CD into your CD-ROM drive.
The display screen should open automatically.
If the display screen does not open, click **MyComputer > CD Drive D:** and double-click the **Launch.exe** icon.
3. Click the **Windows Driver** button.
The Disk Copy Utility opens.
4. Click the **Create** button in the Utility.
A confirmation box appears.
5. Click the **Yes** button in the confirmation box.
The utility prepares your driver diskette.
When the utility is finished, it displays a message.
6. In the message, click the **OK** button, then click the **Exit** button to close the Promise CD.

USB Memory Stick for Windows

If you have a Windows PC and plan to install your FastTrak driver from a USB memory stick, follow this procedure. This procedure requires one write-enabled USB memory stick.

1. Attach your USB memory stick to the USB port.
2. Insert the Promise CD into your CD-ROM drive.
3. Click **MyComputer > CD Drive D:** go to the Windows Driver folder.
4. Manually copy the driver files to you USB memory stick.

FastTrak Driver Medium for Linux

For Linux, choose the medium that works for your system.

If your Linux PC does not have a floppy drive, copy the driver file to a CD or a USB stick, whichever your PC supports.

To prepare a driver diskette, CD, or USB stick for Linux:

1. Insert the software CD into your CD-ROM drive.
2. Click the **Driver** button.
3. Click the button for your OS:
 - **Driver for RedHat**
 - **Driver for SUSE**
4. Double-click the folder for your OS version.
5. Manually copy the driver **.tar.gz** file from the folder to your PC's hard drive.
6. Open a terminal window and untar the driver file. Below is an example:

```
tar zxvf RH-306010003.tar.gz
```
7. Insert a blank diskette, a writable CD, or attach a USB memory stick to your PC.
8. Copy the driver file to the diskette, CD, or USB stick.
Check the driver's ReadMe file for important information.

Windows Server 2008

The DriverDisk_T8_Storport.zip file contains the drivers for Windows Server 2008.

New OS Installation

The following details the installation of the FastTrak TX Series RAID Controller drivers while installing Windows Server 2008.

1. Start the installation: Boot from the CD-ROM.
2. When the “Where do you want to install Windows?” dialog box appears, click **Load Driver**.
3. Insert the FastTrak driver diskette into drive A: or attach a USB memory stick with the FastTrak driver to the USB port.
4. In the Load Driver dialog box, click the **Browse** button.
5. In the Browse for Folder dialog box, click the diskette or USB stick, then click the **OK** button.
6. In the “Select the driver to be installed” dialog box, highlight *Promise FastTrak TX [4660, 8660, 8668] (tm) Controller*, then click the **Next** button.
7. When the “Where do you want to install Windows?” dialog box appears again, in the list of Disks, highlight the Disk representing your logical drive (the Disk with unallocated space), then click the **Next** button.
8. Continue the Windows installation.

Existing System

After installing the FastTrak TX Series RAID Controller card and rebooting your system, Windows Server 2008 setup will show a “Found New Hardware” dialog box.

1. Choose the **Locate and install driver software** option and click the **Next** button.

The “Found New Hardware – RAID Controller” dialog box displays the message: “Allow Windows to search online for driver software for your RAID Controller?”

2. Choose the **Don’t search online** option.

The “Found New Hardware – RAID Controller” dialog box displays the message: “Insert the disc that came with your RAID Controller.”

3. Insert the driver diskette into the floppy drive and click the **Next** button.

Windows loads the driver and displays the “Found New Hardware” dialog box with message: “Windows has finished installing the driver software for this device *Promise SuperTrak EX SAS RAID Controller*.”

4. Click the **Close** button to finish driver installation.

Confirming Driver Installation

1. Right-click the My Computer icon and choose *Manage* from the popup menu.
2. From the left panel, choose *Device Manager*.
3. Click the + in front of Storage controllers. “Promise FastTrak TX [4660, 8660, 8668] (tm) Controller” and “Promise Raid Console” should appear.

Windows Vista

The DriverDisk_T8_Miniport.zip file contains the drivers for Windows Vista.

New OS Installation

The following details the installation of the FastTrak TX Series RAID Controller drivers while installing Windows Vista.

1. Start the installation: Boot from the DVD-ROM.
2. When the “Where do you want to install Windows?” dialog box appears, click **Load Driver**.
3. Insert the FastTrak driver diskette into drive A: or attach a USB memory stick with the FastTrak driver to the USB port.
4. In the Load Driver dialog box, click the **Browse** button.
5. In the Browse for Folder dialog box, click the diskette or USB stick, then click the **OK** button.
6. In the “Select the driver to be installed” dialog box, highlight *Promise FastTrak TX [4660, 8660, 8668] (tm) Controller*, then click the **Next** button.
7. When the “Where do you want to install Windows?” dialog box appears again, in the list of Disks, highlight the Disk representing your logical drive (the Disk with unallocated space), then click the **Next** button.
8. Continue the Windows installation.

Existing System

After installing the FastTrak TX Series RAID Controller card and rebooting your system, Windows Vista setup will show a “Found New Hardware” dialog box. Under Windows Vista, “RAID Controller” will be displayed.

1. Insert the FastTrak driver diskette into drive A: or attach a USB memory stick with the FastTrak driver to the USB port.
2. Choose *Install the software automatically* and press the Enter key.
3. Choose *Promise FastTrak TX [4660, 8660, 8668] (tm) Controller* from the list that appears on screen, and then press the Enter key.
4. If using a driver that has not been digitally signed by Microsoft, you will be asked if you want to continue the installation. Click **Continue anyway**.
5. When the New Hardware Wizard has finished installing the FastTrak driver, click **Finish**.

Confirming Driver Installation

1. Right-click the My Computer icon and choose *Manage* from the popup menu.
2. From the left panel, choose *Device Manager*.
3. Click the + in front of Storage controllers. “Promise FastTrak TX [4660, 8660, 8668] (tm) Controller” and “Promise Raid Console” should appear.

Windows Server 2003

The DriverDisk_T8_Miniport.zip file contains the drivers for Windows Server 2003.

New OS Installation

The following details the installation of the FastTrak TX Series RAID Controller drivers while installing Windows Server 2003.

1. Start the installation:
 - Floppy Install: Boot the computer with the Windows Server 2003 installation diskettes.
 - CD-ROM Install: Boot from the CD-ROM. Press F6 after the message "Press F6 if you need to install third party SCSI or RAID driver" appears.
2. When the Windows Server 2003 Setup window is generated, press S to specify an Additional Device(s).
3. Insert the FastTrak driver diskette into drive A: and press Enter.
4. Choose *Promise FastTrak TX [4660, 8660, 8668] (tm) Controller* from the list that appears on screen, and then press the Enter.
5. Press S to use the driver on the floppy disk and then press Enter to continue with installation.
6. The Windows Server 2003 Setup screen will appear again saying "Setup will load support for the following mass storage devices:" The list will include "Promise FastTrak TX [4660, 8660, 8668] (tm) Controller".
NOTE: If there are any additional devices to be installed, specify them now. When all devices are specified, continue to the next step.
7. From the Windows Server 2003 Setup screen, press the Enter. Setup will now load all device files and then continue the Windows Server 2003 installation.

Existing System

After installing the FastTrak TX Series RAID Controller card and rebooting your system, Windows Server 2003 setup will show a “Found New Hardware” dialog box. Under Windows 2003, “RAID Controller” will be displayed.

1. Insert the FastTrak driver diskette into the A:\ drive.
2. Choose *Install the software automatically* and press the Enter key.
3. Choose *Promise FastTrak TX [4660, 8660, 8668] (tm) Controller* from the list that appears on screen, and then press the Enter key.
4. If using a driver that has not been digitally signed by Microsoft, you will be asked if you want to continue the installation. Click **Continue anyway**.
5. When the New Hardware Wizard has finished installing the FastTrak driver, click **Finish**.

Confirming Driver Installation

1. Right-click the My Computer icon and choose *Manage* from the popup menu.
2. From the left panel, choose *Device Manager*.
3. Click the + in front of SCSI and RAID controllers. “Promise FastTrak TX [4660, 8660, 8668] (tm) Controller” and “Promise Raid Console” should appear.

Windows XP

The DriverDisk_T8_Miniport.zip file contains the drivers for Windows XP.

New OS Installation

The following details the installation of the FastTrak TX Series RAID Controller drivers while installing Windows XP.

1. Start the installation:
 - Floppy Install: Boot the computer with the Windows XP installation diskettes.
 - CD-ROM Install: Boot from the CD-ROM. Press F6 after the message "Press F6 if you need to install third party SCSI or RAID driver" appears.
2. When the Windows XP Setup window is generated, press S to specify an Additional Device(s).
3. Insert the FastTrak driver diskette into drive A: and press Enter.
4. Choose *Promise FastTrak TX [4660, 8660, 8668] (tm) Controller* from the list that appears on screen, and then press the Enter.
5. Press S to use the driver on the floppy disk and then press Enter to continue with installation.
6. The Windows XP Setup screen will appear again saying "Setup will load support for the following mass storage devices:" The list will include "Promise FastTrak TX [4660, 8660, 8668] (tm) Controller".
NOTE: If there are any additional devices to be installed, specify them now. When all devices are specified, continue to the next step.
7. From the Windows XP Setup screen, press the Enter. Setup will now load all device files and then continue the Windows XP installation.

Existing System

After installing the FastTrak TX Series RAID Controller card and rebooting your system, Windows XP setup will show a “Found New Hardware” dialog box.

1. Insert the FastTrak driver diskette into the A:\ drive.
2. Choose Install the software automatically and press the Enter key.
3. Choose *Promise FastTrak TX [4660, 8660, 8668] (tm) Controller* from the list that appears on screen, and then press the Enter key.
4. If using a driver that has not been digitally signed by Microsoft, you will be asked if you want to continue the installation. Click **Continue anyway**.
5. When the New Hardware Wizard has finished installing the FastTrak driver, click **Finish**.

Confirming Driver Installation

1. Right-click the My Computer icon and choose *Manage* from the popup menu.
2. From the left panel, choose *Device Manager*.
3. Click the + in front of SCSI and RAID controllers. “Promise FastTrak TX [4660, 8660, 8668] (tm) Controller” and “Promise Raid Console” should appear.

Windows 2000

The DriverDisk_T8_Miniport.zip file contains the drivers for Windows 2000.

New OS Installation

The following details the installation of the FastTrak TX Series RAID Controller drivers while installing Windows 2000.

1. Start the installation:
 - Floppy Install: Boot the computer with the Windows 2000 installation diskettes.
 - CD-ROM Install: Boot from the CD-ROM. Press F6 after the message "Press F6 if you need to install third party SCSI or RAID driver" appears.
2. When the Windows 2000 Setup window is generated, press S to specify an Additional Device(s).
3. Insert the FastTrak driver diskette into drive A: and press Enter.
4. Choose *Promise FastTrak TX [4660, 8660, 8668] (tm) Controller* from the list that appears on screen then press Enter.
5. The Windows 2000 Setup screen will appear again saying "Setup will load support for the following mass storage devices:" The list will include "Promise FastTrak TX [4660, 8660, 8668] (tm) Controller".
NOTE: If there are any additional devices to be installed, specify them now. When all devices are specified, continue to the next step.
6. From the Windows 2000 Setup screen, press Enter. Setup will now load all device files and then continue the Windows 2000 installation.

Existing System

After installing the FastTrak TX Series RAID Controller card and rebooting your system, Windows 2000 setup will show a “New Hardware Found” dialog box. Under Windows 2000, “PCI Mass Storage Controller” will be displayed.

1. Choose Add New Hardware Wizard from the list, and then press Enter.
2. Choose Add/Troubleshoot a device and click **Next**. The new hardware wizard will show device list
3. Choose Mass Storage controller and click **Next**. At the following screen click **Finish**.
4. Choose Display a list the known drivers for this device so that I can choose a specific driver then click **Next**.
5. When the Windows 2000 supported SCSI adapter drivers list appears, click **Have disk**.
6. Insert the FastTrak driver diskette in drive A:\.
7. Type A:\Win2000 in the text box. Click **OK**.
8. Choose *Promise FastTrak TX [4660, 8660, 8668] (tm) Controller* from the list that appears on screen, then click **Next**.
9. Click **Yes** to confirm continue the installation and copy the driver to system.
10. Remove the diskette and click **Finish** to restart the system.

Windows 2000 will then restart for the driver installation to take effect.

Confirming Driver Installation

1. Right-click the My Computer icon and choose *Manage* from the popup menu.
2. From the left panel, choose *Device Manager*.
3. Click the + in front of SCSI controllers. “Promise FastTrak TX [4660, 8660, 8668] (tm) Controller” and “Promise Raid Console” should appear.

Red Hat Linux Enterprise 5.0

New OS Installation

1. Start the RedHat Linux Installation by booting from the install CD.
At the “Welcome to Red Hat Linux...” installation screen, a prompt labeled **boot:** will appear at the bottom of the screen.
2. Type **linux dd acpi=off** and press Enter.
3. When the Installer asks, “Do you have a driver disk?” click **Yes**.
4. At the “Insert your driver disk and press OK to continue,” insert the driver diskette into the floppy drive and click **OK**.
5. Continue with the installation normally.



Note

On first installation mode, do not choose the *Virtualization* option. FastTrak does not support it.

Existing System

1. Insert FastTrak driver diskette into the floppy drive.
2. Log in as *root*.
3. Type **mount -r /dev/fd0 /media/floppy**.
4. Type **cd /media/floppy**
5. Type **sh ./install**.
6. When the installer asks, “You are installing a driver on an existing OS. Is it true (y/n)?” type **Y** and press Enter.
7. Type **cd; umount /media/floppy**.
8. Remove the FastTrak driver diskette.
9. Type **reboot** to restart the system.

SuSE Linux Enterprise Server 10.0

New OS Installation

1. Start the SuSE Linux Installation by booting from the install CD.
2. As the system boots, press F5 for the Driver Disk.
3. Move the cursor to the *Installation – ACPI Disabled* option, and press Enter.
4. When the installer displays, “Please insert the Driver Update floppy/CDROM,” insert the FastTrak driver disk, then press Enter.
5. When the Driver Update Menu pops up, click **OK**, then click **Back** to return to the installer.
6. Follow the on-screen prompts to complete the installation.

Existing System

1. Insert the FastTrak driver diskette into the floppy drive.
2. Log in as *root*.
3. Type **mount /dev/fd0 /media/floppy**.
4. Type **cd /media/floppy**
5. Type **./install**.
6. Type **cd; umount /media/floppy**.
7. Remove the FastTrak driver diskette.
8. Type **reboot** to restart the system.

Chapter 4: FastBuild™ Utility

- Using the FastTrak BIOS (below)
- Navigating the Main Menu (page 48)
- Viewing Drive Assignments (page 49)
- Viewing Logical Drives (page 50)
- Creating Logical Drives (page 52)
- Two Logical Drives (page 55)
- Deleting a Logical Drive or JBOD Disk (page 61)
- Viewing the Controller Configuration (page 64)
- Viewing and Switching HBA Mode (page 65)
- Responding to Logical Drive Problems (page 66)

Using the FastTrak BIOS

The FastTrak BIOS is a built-in component of the FastTrak TX Series SAS/SATA RAID Controller card.

When the FastTrak BIOS loads during bootup, it displays pertinent information about the RAID logical drives that it finds. At this point, press Ctrl-F to enter the FastBuild Utility.

```
FastTrak TX8660 RAID HBA (tm) BIOS Version 2.9.0.xx
(c) 2004-2009 Promise Technology, Inc. All rights reserved.

ID      Mode      LD Name                      LD Size  Status
-----
01      RAID 0    Logical Drive 1              58999 MB Functional
02      SPAN     Logical Drive 2              58944 MB Functional

Port    Model Name          Size      Types
-----
04      FUJITSU MHT2060BS  60011M   JBOD

Press <Ctrl-F> to enter FastBuild (tm) Utility...
```

The FastTrak TX4660 and TX8660 BIOS screen displays the following information for Logical Drives:

ID – An identification number assigned to each logical drive by the BIOS.

Mode – The RAID mode (level) of the logical drive

LD Name – The name of the logical drive

LD Size – The data capacity of the logical drive in MB (Megabytes).

Status – Shows one of three logical drive conditions:

Functional – The logical drive is fully operational, and no problems are present.

Critical – The logical drive is operational, but has lost its fault tolerance. For RAID 1, 5, or 10, the logical drive contains a failed drive. You must identify and replace the failed physical (disk) drive.

Offline – The logical drive is no longer operational and the FastBuild utility cannot rebuild it. You must identify and replace the failed drives. Then you can create a new logical drive and copy your data to it from your backup device.

The FastTrak BIOS screen displays the following information for JBOD Disks:

Port – SAS port to which the physical drive is connected.

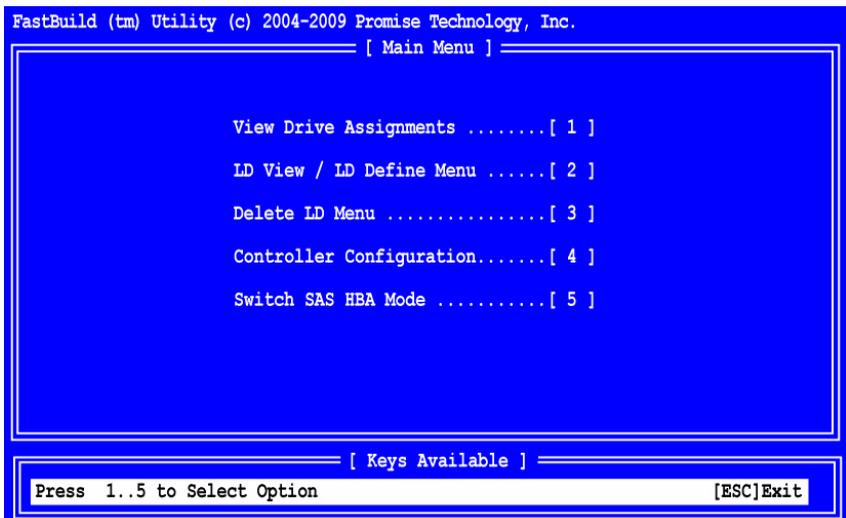
Model Name – Manufacturer name and model of the physical drive

Size – The data capacity of the physical drive in MB (Megabytes)

Types – Type of physical drive configuration: JBOD

Navigating the Main Menu

When the FastTrak BIOS displays on your computer screen, press Ctrl-F to enter the FastBuild Utility and display the Main Menu.



The Main Menu has five options:

- Press 1 to view physical drive assignments
- Press 2 to create a logical drive or view information about an existing logical drive.
- Press 3 to delete a logical drive.
- Press 4 to view and change controller configuration.
- Press 5 to change from RAID to SAS mode or from SAS to RAID mode.
- Press Esc (Escape) to exit the menu.

Viewing Drive Assignments

From the Main Menu screen, press 1 to see the View Drive Assignments screen.

```
FastBuild (tm) Utility (c) 2004-2009 Promise Technology, Inc.
[ View Drives Assignments ]
```

Port	Drive Model	Capabilities	Capacity (MB)	Assignment
01	ST380023AS	SATA 1.5G	60012	
	Extent 1		59945	Free
02	MHT2060BS	SATA 1.5G	60012	
	Extent 1		59945	LD 1-1
03	MHT2060BS	SATA 1.5G	60012	
	Extent 1		59945	LD 1-2
04	MHT2060BS	SATA 1.5G	60012	
	Extent 1		59945	LD 1-3

```
[ Keys Available ]
[↑] Up [↓] Down [paUp/PaDn] Switch Page
[ESC] Exit
```

The View Drive Assignments screen reports physical (disk) drive assignments and provides the following information:

Port – Shows the FastTrak SAS Port ID number to which each physical drive is attached.

Drive Model – Identifies the manufacturer, model, and model number (if applicable) of the physical drive.

Capabilities – Refers to the type of physical drive, SAS or SATA, and the drive's data rate in Gb/s.

Capacity (MB) – Reflects the capacity in MB (megabytes) of the physical drive. The effective capacity of the physical drive is slightly smaller than its maximum rated capacity.

Assignment – This field identifies the logical drive to which the physical drive belongs. LD 1-2 means logical drive 1, physical drive 2. JBOD also appears as LD on this screen.

Unassigned physical drives are labeled *Free*. Unassigned drives may also be used to create a new logical drive at any time.

Extent – Refers to the all or part of the physical drive's capacity allocated to a logical drive. If you create two logical drives using the same set of physical drives, each physical drive will display two Extents.

Viewing Logical Drives

From the Main Menu screen, press 2 to see the Logical Drive View Menu.

```
FastBuild (tm) Utility (c) 2004-2009 Promise Technology, Inc.
[ LD View Menu ]

LD No      RAID Mode    Drv      Capacity (MB)  Status
LD 01      RAID 5         3        59999          Functional
LD 02      RAID 5         3        59999          Functional

[ Keys Available ]
[↑] Up [↓] Down [Ctrl+C] Define LD
[Enter] View LD [Ctrl+V] View JBOD Disk [ESC] Exit
```

The Logical Drive View Menu provides the following information:

LD No – Logical drive number. Assigned in when the logical drive is created.

RAID Mode – RAID level of the logical drive.

Drv – Number of physical drives in the logical drive.

Capacity (MB) – Reflects the capacity in MB (megabytes) of the physical drive. The effective capacity of the physical drive is slightly smaller than its maximum rated capacity.

Status – Shows one of three logical drive conditions:

Functional – The logical drive is fully operational, and no problems are present.

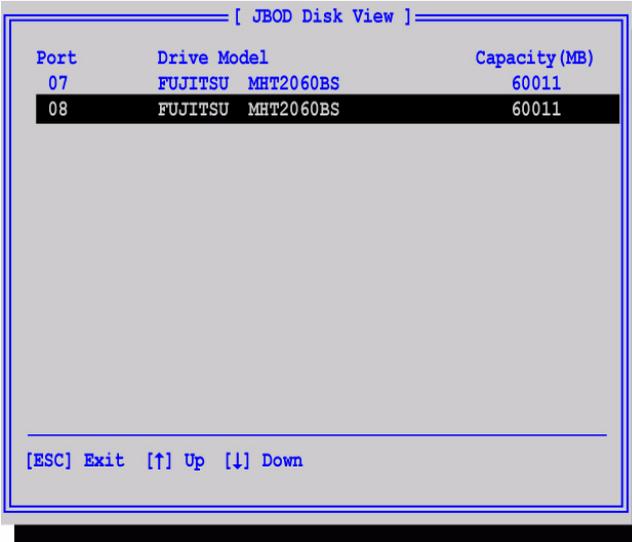
Critical – The logical drive is operational, but has lost its fault tolerance. For RAID 1, 5, or 10, the logical drive contains a failed drive. You must identify and replace the failed physical (disk) drive.

Offline – The logical drive is no longer operational and the FastBuild utility cannot rebuild it. You must identify and replace the failed drives. Then you can create a new logical drive and copy your data to it from your backup device.

JBOD Disks

To view JBOD disks:

1. From the Main Menu screen, press 2 to see the Logical Drive View Menu.
2. Press the Ctrl-V keys to see JBOD Disk View.



The screenshot shows a terminal window titled "[JBOD Disk View]". It displays a table with three columns: Port, Drive Model, and Capacity (MB). The table contains two rows of data. The second row is highlighted with a black background. At the bottom of the window, there are navigation instructions: "[ESC] Exit [↑] Up [↓] Down".

Port	Drive Model	Capacity (MB)
07	FUJITSU MHT2060BS	60011
08	FUJITSU MHT2060BS	60011

[ESC] Exit [↑] Up [↓] Down

JBOD Disk View provides the following information:

Port – Shows the FastTrak SAS Port ID number to which each physical drive is attached.

Drive Model – Identifies the manufacturer, model, and model number (if applicable) of the physical drive.

Capacity (MB) – Reflects the capacity in MB (megabytes) of the physical drive. The effective capacity of the physical drive is slightly smaller than its maximum rated capacity.

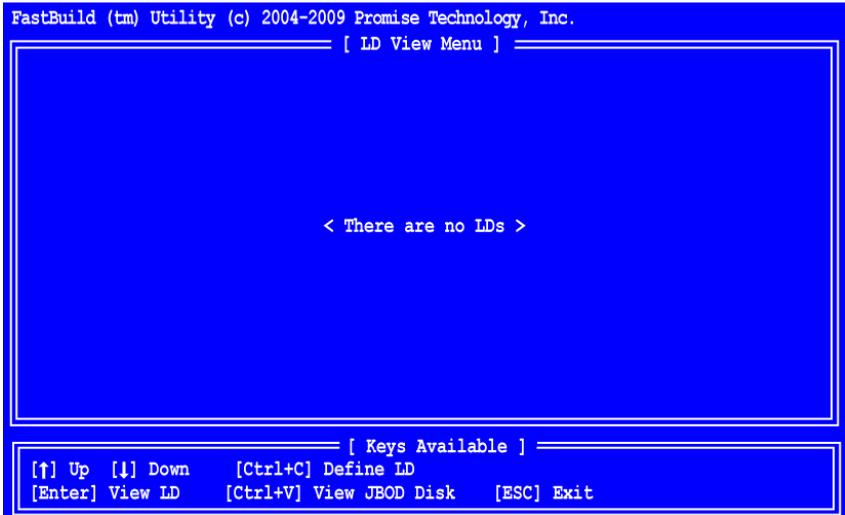
Creating Logical Drives

One Logical Drive

The following action creates one logical drive on a set of physical drives. You can also create two logical drives on the same set of physical drives. See “Two Logical Drives” on page 55.

To create one logical drive:

1. From the Main Menu screen, press 2 to display the LD View Menu.
2. Press Ctrl-C to access the Define LD Menu.



3. Choose the RAID Level you want. In the Define LD Menu section, press the Spacebar to toggle through logical drive types:
 - RAID 0 (Stripe)
 - RAID 1 (Mirror)
 - RAID 5 (Distributed Parity)
 - RAID 10 (Stripe/Mirror)
 - JBOD (Single Drive)
 - SPAN (Concatenated Drives)

4. Press the down arrow key to move to the next option. Option choices depend on the RAID Level you selected.
5. Press the arrow keys to move to the next option. Option choices depend on the RAID Level you selected.
 - **Initialization – Full** initializes the entire logical drive for RAID 1, 5, and 10. **Fast** erases the Master Boot Record (MBR) of the physical drives. **None** leaves the physical drives untouched. Full or Fast are recommended.
 - **Gigabyte Boundary** – Enables replacement of a failed disk drive with a slightly smaller drive. ON is recommended. Applies to RAID but not to JBOD or SPAN.
 - **Stripe Block Size** – Set to 16 KB with no options. Applies to RAID 0, 5, and 10; but not to JBOD, SPAN, or RAID 1.
6. Press the down arrow key to move to Disk Assignments. Press the spacebar to toggle between N and Y for each available drive. Y means this physical drive will be assigned to the logical drive.
Assign the appropriate number of physical drives to your logical drive.
7. Press Ctrl-Y to save your logical drive configuration.

```
FastBuild (tm) Utility (c) 2004-2009 Promise Technology, Inc.
===== [ Define LD Menu ] =====
LD No      LD Name      RAID Mode   Drv
LD 01      Logical Drive 1   RAID 5      3
Stripe Block: 16 KB      Initialization: Fast
Gigabyte Boundary: ON

===== [ Drive Assignments ] =====
Port  Drive Model  Capabilities  Capacity(MB)  Assignment
01    MHT2060BS   SAS 3.0G     60012         Y
02    MHT2060BS   SAS 3.0G     60012         Y
03    MHT2060BS   SAS 3.0G     60012         Y
04    MHT2060BS   SAS 3.0G     60012         N

===== [ Keys Available ] =====
[↑] Up [↓] Down [Space] Change Option
[Ctrl+Y] Save [ESC] Exit
```

The LD name prompt appears.

```
Please press Ctrl-Y key to input the LD name
or press any key to exit.
If you do not input any LD name, the default
LD name will be used.
```

8. Press Ctrl-Y to open a name field.

If you press any key other than Ctrl-Y, a default name is used and the process goes to the next step.

```
Enter the LD name here:
```

9. Type a name for the logical drive and press Enter.

If you leave the field blank and press Enter, a default name is used.

If you chose Fast or Full Initialization in step 5, the Fast Init warning appears.

```
Fast Initialization Option has been selected.
It will erase the MBR data of the disks.
<Press Ctrl-Y Key if you are sure to erase it>
<Press any other key to ignore this option>
```

10. Press Ctrl-Y to accept Initialization.

If you press any key other than Ctrl-Y, the logical drive creation is cancelled.

The Modify Array Capacity option appears.

```
Press Ctrl-Y to Modify Array Capacity or press any
other key to use maximum capacity...
```

This procedure creates only one logical drive, therefore skip this option.

11. Press any key other than Ctrl-Y.

Your new logical drive appears in the LD View Menu.

```
FastBuild (tm) Utility (c) 2004-2009 Promise Technology, Inc.
[ LD View Menu ]
+-----+-----+-----+-----+-----+
| LD No   | RAID Mode | Drv   | Capacity (MB) | Status   |
+-----+-----+-----+-----+-----+
| LD 01   | RAID 5    | 3     | 59999          | Functional |
+-----+-----+-----+-----+-----+
[ Keys Available ]
[↑] Up   [↓] Down   [Ctrl+C] Define LD
[Enter] View LD   [Ctrl+V] View JBOD Disk   [ESC] Exit
```

12. Press Esc to exit to the Main Menu. Press Esc again to exit the Utility.
13. Press Y to restart your computer.

You have successfully created a new RAID logical drive.

You must be partition and format your new logical drive before you can use it. See “Appendix A: Partition and Format” on page 151.

Two Logical Drives

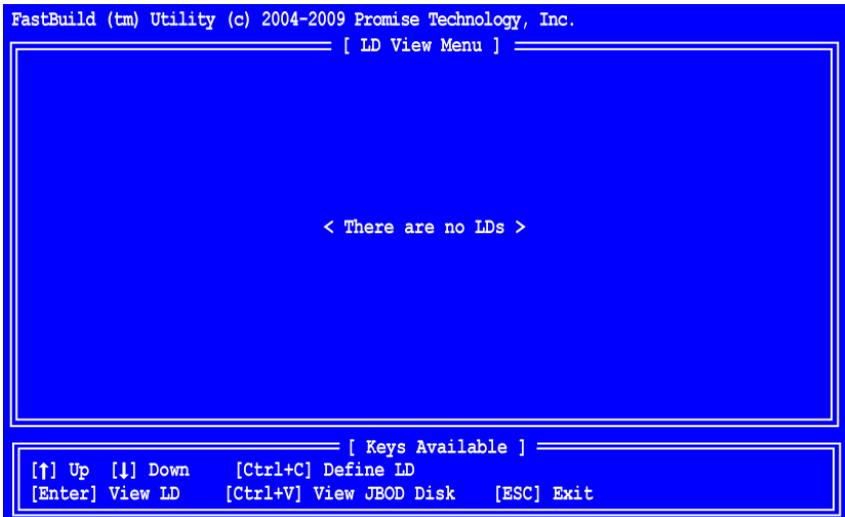
The following action creates two logical drives on the same set of physical drives. You can also create one logical drive on a set of physical drives. See “Creating Logical Drives” on page 52.

Logical Drive 1

To create the first logical drive:

1. From the Main Menu screen, press 2 to display the LD View Menu.

2. Press Ctrl-C to access the Define LD Menu.



3. Choose the RAID Level you want. In the Define LD Menu section, press the Spacebar to toggle through logical drive types:
 - RAID 0 (Stripe)
 - RAID 1 (Mirror)
 - RAID 5 (Distributed Parity)
 - RAID 10 (Stripe/Mirror)
 - JBOD (Single Drive)
 - SPAN (Concatenated Drives)
4. Press the down arrow key to move to the next option. Option choices depend on the RAID Level you selected.
 - **Initialization – Full** initializes the entire logical drive for RAID 1, 5, and 10. **Fast** erases the Master Boot Record (MBR) of the physical drives. **None** leaves the physical drives untouched. Full or Fast are recommended.
 - **Gigabyte Boundary** – Enables replacement of a failed disk drive with a slightly smaller drive. ON is recommended. Applies to RAID but not to JBOD or SPAN.
 - **Stripe Block Size** – Set to 16 KB with no options. Applies to RAID 0, 5, and 10; but not to JBOD, SPAN, or RAID 1.
5. Press the down arrow key to move to Disk Assignments. Press the spacebar to toggle between N and Y for each available drive. Y means this physical drive will be assigned to the logical drive.

Assign the appropriate number of physical drives to your logical drive.

6. Press Ctrl-Y to save your logical drive configuration.

The LD name prompt appears.

```
Please press Ctrl-Y key to input the LD name
or press any key to exit.
If you do not input any LD name, the default
LD name will be used.
```

7. Press Ctrl-Y to open a name field.

If you press any key other than Ctrl-Y, a default name is used and the process goes to the next step.

8. Type a name for the logical drive and press Enter.

If you leave the field blank and press Enter, a default name is used.

Enter the LD name here:

If you chose Fast or Full Initialization in step 4, the Fast Init warning appears.

```
Fast Initialization Option has been selected.
It will erase the MBR data of the disks.
<Press Ctrl-Y Key if you are sure to erase it>
<Press any other key to ignore this option>
```

9. Press Ctrl-Y to accept Initialization.

If you press any key other than Ctrl-Y, the logical drive creation is cancelled. The Modify Array Capacity option appears.

Taking less than the full array capacity enables you to create a second logical drive using the same disk drives.

10. Press Ctrl-Y to open the capacity field.

```
Press Ctrl-Y to Modify Array Capacity or press any
other key to use maximum capacity...
```

Refer to the total available capacity under **Capacity (MB)** in the top right corner of the Define LD Menu.

The remaining capacity is applied to the second logical drive created using the same disk drives.

11. Type a number value for the Megabytes of capacity for your first logical drive and press Enter.

Enter array capacity (in MB) here:

Your first logical drive appears in the LD View Menu.

```
FastBuild (tm) Utility (c) 2004-2009 Promise Technology, Inc.
[ LD View Menu ]
+-----+-----+-----+-----+-----+
| LD No | RAID Mode | Drv | Capacity (MB) | Status |
+-----+-----+-----+-----+-----+
| LD 01 | RAID 5    | 3   | 59999         | Functional |
+-----+-----+-----+-----+-----+
[ Keys Available ]
[↑] Up  [↓] Down  [Ctrl+C] Define LD
[Enter] View LD  [Ctrl+V] View JBOD Disk  [ESC] Exit
```

Logical Drive 2

To create the second logical drive:

1. Press Ctrl-C to access the Define LD Menu.
2. Choose the RAID Level you want. In the Define LD Menu section, press the Spacebar to toggle through logical drive types:
 - RAID 0 (Stripe)
 - RAID 1 (Mirror)
 - RAID 5 (Distributed Parity)
 - RAID 10 (Stripe/Mirror)
 - JBOD (Single Drive)
 - SPAN (Concatenated Drives)
3. Press the down arrow key to move to the next option. Option choices depend on the RAID Level you selected.
 - **Initialization – Full** initializes the entire logical drive for RAID 1, 5, and 10. **Fast** erases the Master Boot Record (MBR) of the physical drives.

None leaves the physical drives untouched. Full or Fast are recommended.

- **Gigabyte Boundary** – Enables replacement of a failed disk drive with a slightly smaller drive. ON is recommended. Applies to RAID but not to JBOD or SPAN.
 - **Stripe Block Size** – Set to 16 KB with no options. Applies to RAID 0, 5, and 10; but not to JBOD, SPAN, or RAID 1.
4. Press the down arrow key to move to Disk Assignments. Press the spacebar to toggle between N and Y for each available drive. Y means this physical drive will be assigned to the logical drive.
Assign the appropriate number of physical drives to your logical drive.
 5. Press Ctrl-Y to save your logical drive configuration.

```
FastBuild (tm) Utility (c) 2004-2009 Promise Technology, Inc.
----- [ Define LD Menu ] -----
LD No      LD Name      RAID Mode  Drv
LD 02      Logical Drive 2  RAID 5     3
Stripe Block: 16 KB      Initialization: Fast
Gigabyte Boundary: ON

----- [ Drive Assignments ] -----
Port  Drive Model  Capabilities  Capacity (MB)  Assignment
01    MHT2060BS   SAS 3.0G     60012          Y
02    MHT2060BS   SAS 3.0G     60012          Y
03    MHT2060BS   SAS 3.0G     60012          Y
04    MHT2060BS   SAS 3.0G     60012          N

----- [ Keys Available ] -----
[↑] Up  [↓] Down  [Space] Change Option
[Ctrl+Y] Save  [ESC] Exit
```

The LD name prompt appears.

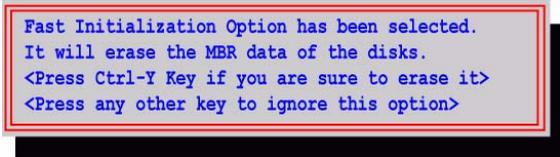
Please press Ctrl-Y key to input the LD name or press any key to exit.
If you do not input any LD name, the default LD name will be used.

6. Press Ctrl-Y to open a name field.
If you press any key other than Ctrl-Y, a default name is used and the process goes to the next step.
7. Type a name for the logical drive and press Enter.

If you leave the field blank and press Enter, a default name is used.

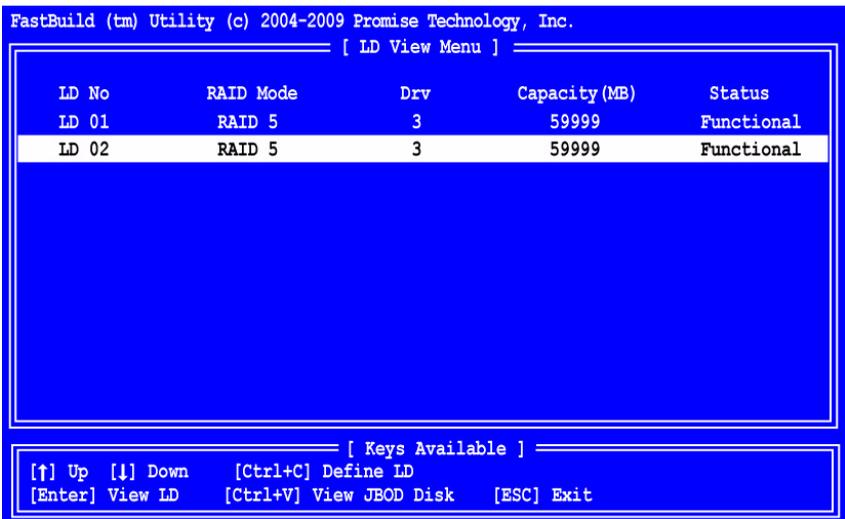


If you chose Fast or Full Initialization in step 3, the Fast Init warning appears.



8. Press Ctrl-Y to accept Initialization.

If you press any key other than Ctrl-Y, the logical drive creation is cancelled. The LD View Menu displays your second logical drive.



9. Press Esc to exit to the Main Menu. Press Esc again to exit the Utility.
10. Press Y to restart your computer.

You have successfully created a new RAID logical drives.

You must be partition and format your new logical drive before you can use it. See "Appendix A: Partition and Format" on page 151.

Deleting a Logical Drive or JBOD Disk



Caution

Deleting a logical drive results in the loss of all data saved on the logical drive. Back up any important data before you delete your logical drive.

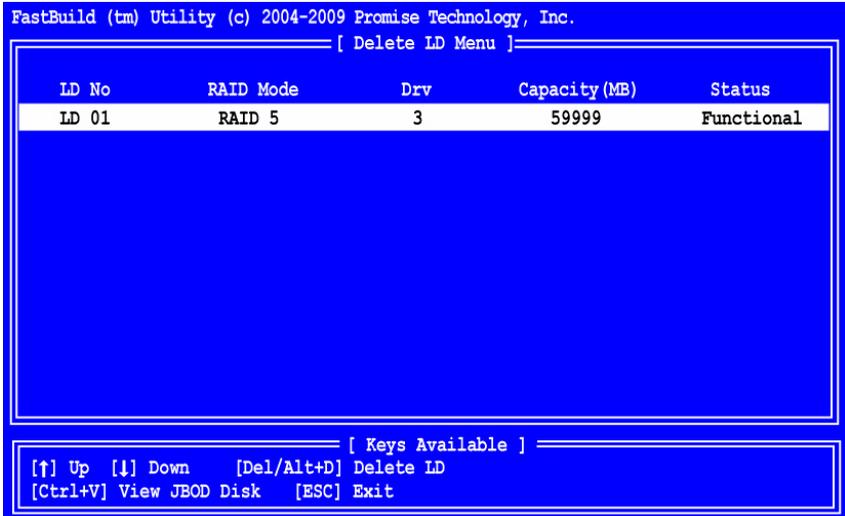
Logical Drives

To delete a logical drive:

1. From the Main Menu screen, press 3 to display the Delete LD Menu.

```
FastBuild (tm) Utility (c) 2004-2009 Promise Technology, Inc.
[ Delete LD Menu ]
+-----+
| LD No   RAID Mode   Drv   Capacity (MB)   Status |
| LD 01   RAID 5     3     59999           Functional |
| LD 02   RAID 5     3     59999           Functional |
+-----+
[ Keys Available ]
[↑] Up [↓] Down [Del/Alt+D] Delete LD
[Ctrl+V] View JBOD Disk [ESC] Exit
```

2. Highlight the logical drive you want to delete and press the Del key or the Alt-D keys.
3. Press Ctrl-Y to confirm deletion of the logical drive.
The logical drive disappears from the Delete LD Menu.



4. Press Esc to return to the Main Menu.

JBOD Disks

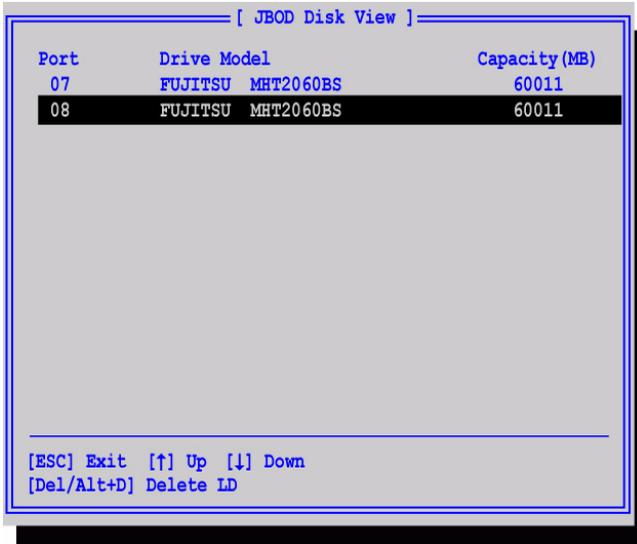


Caution

Deleting a JBOD disk results in the loss of all data saved on the JBOD disk. Back up any important data before you delete the JBOD disk.

To delete a JBOD disk:

1. From the Main Menu screen, press 3 to display the Delete LD Menu.
2. Press the Ctrl-V keys to display JBOD Disk View.
3. Highlight the JBOD disk you want to delete and press the Del key or the Alt-D keys.
4. Press Ctrl-Y to confirm deletion of the JBOD disk.

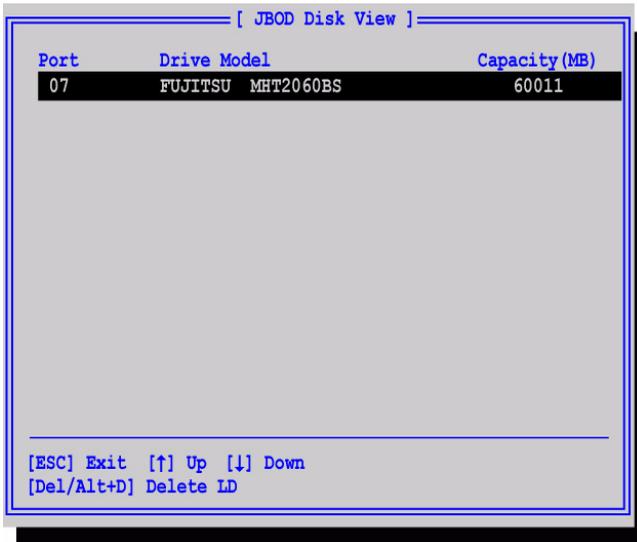


The screenshot shows a terminal window titled "[JBOD Disk View]". It contains a table with three columns: "Port", "Drive Model", and "Capacity (MB)". The table lists two drives: Port 07 and Port 08, both with the model "FUJITSU MHT2060BS" and a capacity of "60011". The row for Port 08 is highlighted with a black background. Below the table, there are control instructions: "[ESC] Exit [↑] Up [↓] Down" and "[Del/Alt+D] Delete LD".

Port	Drive Model	Capacity (MB)
07	FUJITSU MHT2060BS	60011
08	FUJITSU MHT2060BS	60011

[ESC] Exit [↑] Up [↓] Down
[Del/Alt+D] Delete LD

The JBOD disk disappears from JBOD Disk View.



The screenshot shows a terminal window titled "[JBOD Disk View]". It contains a table with three columns: "Port", "Drive Model", and "Capacity (MB)". The table lists one drive: Port 07, with the model "FUJITSU MHT2060BS" and a capacity of "60011". The row for Port 07 is highlighted with a black background. Below the table, there are control instructions: "[ESC] Exit [↑] Up [↓] Down" and "[Del/Alt+D] Delete LD".

Port	Drive Model	Capacity (MB)
07	FUJITSU MHT2060BS	60011

[ESC] Exit [↑] Up [↓] Down
[Del/Alt+D] Delete LD

5. Press Esc twice to return to the Main Menu.

Viewing the Controller Configuration

From the Main Menu screen, press 4 to display the Controller Configuration Options screen.

```
FastBuild (tm) Utility (c) 2004-2009 Promise Technology, Inc.
[ Controller Configuration ]
BIOS Version      : 2.9.0.00xx
Vendor Name       : PROMISE
Model Name        : FastTrak TX8660
Serial Number     : H25098765432101
Manufacture Date  : 05/01/2009
PCB Version       : A2
ASIC Version      : A1
HBA Mode          : RAID
Controller IRQ    : 11
INT1A PCI Device  : Bus 05 / Device 00 / Function 00

[ Keys Available ]
[ESC] Exit
```

The information about your FastTrak RAID Controller card might be helpful for troubleshooting purposes:

- BIOS version
- Vendor Name
- Model Name
- Serial Number
- Manufacture Date
- PCB Version
- ASIC Version
- HBA Mode
- System IRQ used by the FastTrak controller
- PCI Device configuration space

Press Esc to return to the Main Menu.

Viewing and Switching HBA Mode

The FastTrak TX4660 and TX8660 have two operational modes:

RAID Mode – The FastTrak card provides full RAID management. This is the default mode.

SAS Mode – The FastTrak card functions as a SAS HBA card. RAID management is disabled. Attached physical drives are treated as JBOD disks.

The FastTrak TX8668 has onboard RAID management capability but is currently configured to support the Promise VessRAID subsystem.



Cautions

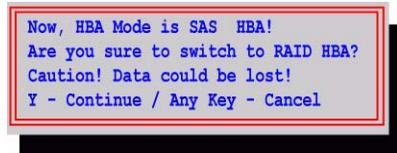
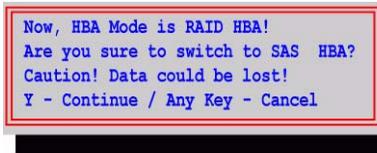
- Switching HBA modes can result in data loss.
- Logical drives are not recognized under SAS mode.
- Back up any important data before your change HBA modes.

Viewing HBA Mode

To view HBA mode:

1. From the Main Menu, the press last number in the list to display the HBA Mode screen.

The top line of the dialog box reports the current HBA Mode.



2. Press any key other than Y to return to the Main Menu.

Switching HBA Mode

To switch HBA mode:

1. From the Main Menu screen, press 5 to display the HBA Mode screen.
2. Press Y to switch from the current mode to the other mode.

A reboot message appears.

3. Press any key to reboot the Host PC.

After reboot, the FastTrak card runs in the alternative operational mode.

Responding to Logical Drive Problems

When you boot your system, the FastTrak BIOS screen informs you if there is a critical or offline logical drive.

RAID 1, 5, or 10 logical drives go *Critical* when one physical drive fails.

In some cases, the FastTrak controller can rebuild your logical drive automatically. If the status shows Rebuilding, allow rebuild to finish, then proceed with troubleshooting.

RAID 0 and SPAN logical drives go *Offline* when a physical drive fails.

Failed JBOD disks do not appear in the BIOS screen.

```
FastTrak TX8660 RAID HBA (tm) BIOS Version 2.9.0.xx
(c) 2004-2009 Promise Technology, Inc. All rights reserved.

ID      Mode      LD Name      LD Size      Status
-----
01      RAID 5      Logical Drive 1      58999 MB

Problem is detected with Array : 1
Critical Status:
A disk member of an array has failed or is not responding.
Please refer to your Promise User Manual for further details.

Press <Ctrl-F> to enter FastBuild (tm) Utility...
```

Choose one of the following applications to identify the failed drive:

- FastBuild Utility – See “Finding a Failed Disk Drive in FastBuild” below.
- WebPAM – Allow your PC to finish booting, then launch WebPAM.

See “Responding to a Critical or Offline Logical Drive” on page 115 for more information.

Finding a Failed Disk Drive in FastBuild

1. Check the Logical Drive Status.
 - If the Status shows *Rebuilding*, wait for the rebuild to finish.
 - If the Status shows *Critical* or *Offline*, proceed now.
2. Press Ctrl-F to enter the FastBuild Utility.
3. In the Main Menu, press 1 to display View Drive Assignments, then look for a physical drive that was present before but no longer appears.
The failed drive is attached to the missing channel.

4. Shut down your PC and replace the failed drive as soon as possible.

For RAID 1, 5, and 10 logical drives:

- If the logical drive was not rebuilt, rebuilding begins automatically when you boot your PC.
- If the logical drive is already rebuilt, the new physical drive shows Free or unassigned when you boot your PC.

For RAID 0 and SPAN logical drives, rebuilding is not available because these configurations have no redundancy. You can create a new logical drive but you must restore your data from a backup source.

For more information, see “Introduction to RAID” on page 123.

Chapter 5: WebPAM

- Logging into WebPAM (page 69)
- Logging out of WebPAM (page 71)
- Managing Users (page 72)
- Viewing Host Management (page 79)
- Making Utility Configuration Settings (page 80)
- Viewing the FastTrak Card (page 81)
- Managing the Controller (page 82)
- Managing Physical Drives (page 87)
- Managing Logical Drives (page 94)
- Managing Enclosures (page 118)

WebPAM is a RAID management software application. If you have not installed WebPAM on your PC, see “Installing WebPAM” on page 22.

Logging into WebPAM



Double-click the WebPAM icon on your desktop (right). Or,

1. Launch your Browser.
2. In the Browser address field, type in the IP address of the Host PC, as explained below.

If you did *not* choose the External Security option during WebPAM installation, use the *Regular* connection. See page 22.

If you chose the External Security option during WebPAM installation, use the *Secure* connection.

Regular Connection

- WebPAM uses an HTTP connection http://
- Enter the Host PC's IP address 127.0.0.1 or localhost
- Enter the Port number :8080
- Add to launch WebPAM /promise

Together, your entry looks like this:

http://127.0.0.1:8080/promise or **http://localhost:8080/promise**

Secure Connection

- WebPAM uses a secure HTTP connectionhttps://
- Enter the Host PC's IP address127.0.0.1 or localhost
- Enter the Port number:8443
- Add to launch WebPAM. /promise

Together, your entry looks like this:

https://127.0.0.1:8443/promise or **https://localhost:8443/promise**

Note that the IP address shown above applies to a log-in at the Host PC. When you log in over a network, you will enter the Host PC's actual IP address.



Note

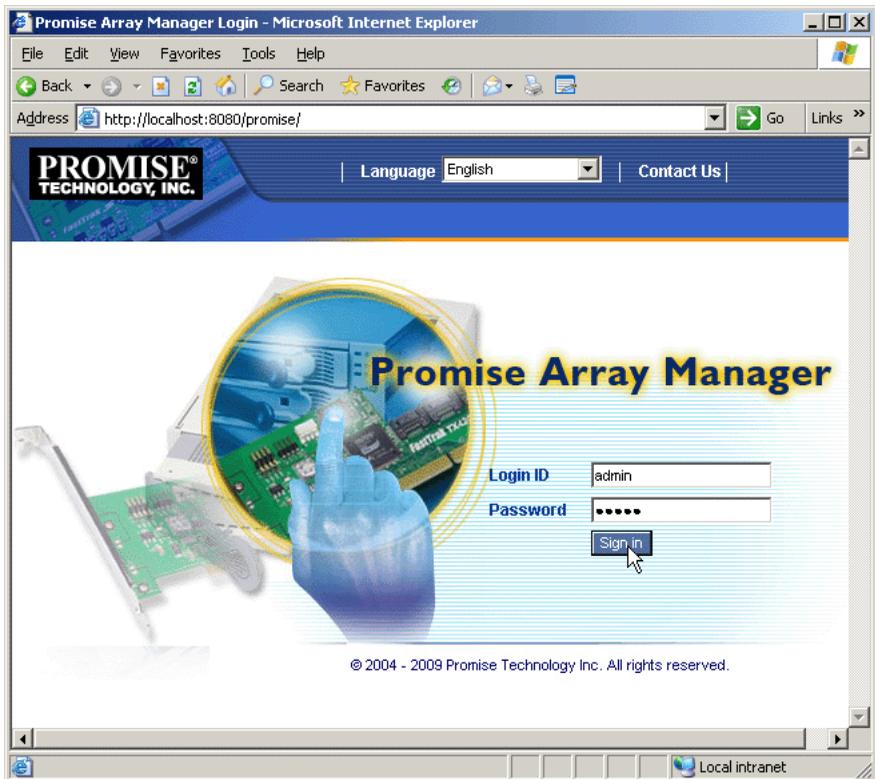
If you chose the *Local Monitoring Only* option during WebPAM installation, you can only log into WebPAM from the Host PC. You cannot log into WebPAM over a network.

When the login screen appears (above):

1. Type **admin** in the Login ID field.
2. Type **admin** in the Password field.
3. Click the **Sign in** button.

The Login ID and Password are case sensitive.

Figure 4. The WebPAM login screen



Logging out of WebPAM

There are two ways to log out of WebPAM:

- Close your browser window
- Click **Logout** on the WebPAM banner (below)



After logging out, you must enter your user name and password to log in again. Clicking **Logout** brings you back to the Login Screen.

Managing Users

- Adding a User (below)
- Setting Event Notification (page 73)
- Making User Settings (page 76)
- Changing a User's Access Rights (page 77)
- Deleting a User (page 78)

Adding a User

Only the Administrator can add users.

To add a user:

1. Under Administrative Tools in Tree View, click the User Management  icon.
2. Click the **Create** tab.



User Management Help

Information Settings **Events**

User Settings

User ID	sammy
Display Name	Samuel Adams <small>(0-20 character(s))</small>
*Password	••••••
New Password	•••••• <small>(4-8 character(s))</small>
Retype Password	••••••
Email	sadams@yourcompany.com
NETSEND IP	192.168.10.146

Host User Rights

Host Name	Creation Rights	Deletion Rights	Maintenance Rights	Notification Rights
tech-pubs-pc	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Submit Reset

3. Type a User ID into the User ID field.
The User ID is the User's login name.
4. Type the user's display name into the Display Name field.
The display name could be the User's actual name.
5. Type a password into the Password field.
Use up to 8 letters and numbers but no spaces or other characters.

6. Type the same password into the Retype Password field.
7. If you plan to set up Event Notification, type the user's email address in the Email field.
8. Under Host User Rights, check the boxes to select rights for this user.

Right	Meaning
Creation	Permission to create a logical drive and a spare drive
Deletion	Permission to delete a logical drive and a spare drive
Maintenance	Permission to migrate, rebuild and synchronize a logical drive; to run Media Patrol on a physical drive; make controller and physical drive settings
Notification	Permission to receive notification of events affecting the logical drive

9. Click the **Submit** button.

Setting Event Notification



Important

Event notification also requires:

- An email address for the recipient user. See page 76.
- Notification rights for the recipient user. See page 77.
- System event notification must be enabled. See page 80.

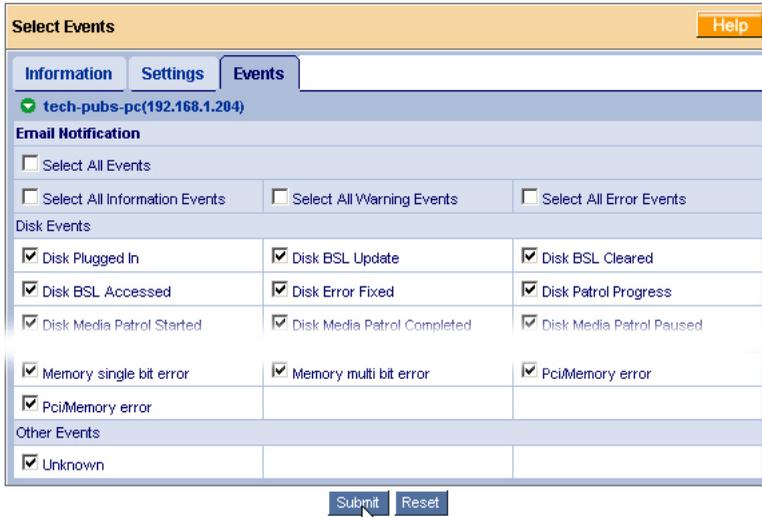
Users can set their own event notification or the Administrator can do it.

To set event notification:

1. Under Administrative Tools in Tree View, click the User Management  icon.



2. Click the **User ID** link.
The user's information displays.
3. Click the **Events** tab.



The image above was shortened to fit into the available space.

4. Check the boxes of the notification events that you want to have reported to you via email and popup messages.
To select events by their severity, check one of the four Select Events boxes at the top of the window. See the table on the next page.
5. Click the **Submit** button.

Event Notification Severity Levels

Error Events

Disk Setdown
 Disk NON ECC Error
 Disk S.M.A.R.T. Error
 Array Offline
 Synchronization Aborted with Error
 Redundancy Check Aborted with Error
 Redundancy Check Inconsistency Found
 Rebuild Aborted with Error

Error Events, continued

Rebuild Error Aborted Onstream
 Background Initialization Aborted with Error
 Migration Aborted with Error
 PCI System Error
 Memory Multi Bit Error
 PCI Memory Error
 Unknown (error)

Warning Events

Disk Unplugged
Disk Timeout
Task Error
Disk Media Patrol Aborted with Error
Bad Block Remapped
Disk Pre Fail
Array Critical
Array Degraded
Synchronization Requested
Redundancy Check Rejected
Enclosure Fan Error
Enclosure Voltage 3.3 Out Of Range

Information Events

Disk Plugged In
Disk BSL Update
Disk BSL Cleared
Disk BSL Accessed
Disk Error Fixed
Disk Patrol Progress
Disk Media Patrol Started
Disk Media Patrol Completed
Disk Media Patrol Paused
Disk Media Patrol Resumed
Disk Media Patrol Aborted
Array Online
Array Created
Array Deleted
Array Cache Mode Changed
Array Auto Cache Mode Changed
Synchronization Started
Synchronization Completed
Synchronization Paused
Synchronization Resumed
Synchronization Aborted
Synchronization Progress
Synchronization Inconsistency Fixed
Redundancy Check Started
Redundancy Check Completed

Warning Events, continued

Enclosure Voltage 5 Out Of Range
Enclosure Voltage 12 Out Of Range
Enclosure Temperature Above Threshold
Battery Temperature Out Of Range
Battery Temperature Unstable
Battery Voltage Out Of Range
Battery Voltage Unstable
Battery Communication Error
Battery Not Functioning
PCI Parity Error
Single Bit Memory Error

Information Events, continued

Redundancy Check Paused
Redundancy Check Resumed
Redundancy Check Aborted
Redundancy Check Progress
Rebuild Started
Rebuild Completed
Rebuild Paused
Rebuild Resumed
Rebuild Aborted
Rebuild Restarted
Rebuild Progress
Background Initialization Progress
Background Initialization Started
Background Initialization Completed
Background Initialization Paused
Background Initialization Resumed
Background Initialization Aborted
Migration Started
Migration Completed
Migration Paused
Migration Resumed
Migration Aborted
Migration Progress
Battery Becomes Normal
Battery Not Detected

Making User Settings

Users can make their own settings or the Administrator make them.

To make user settings:

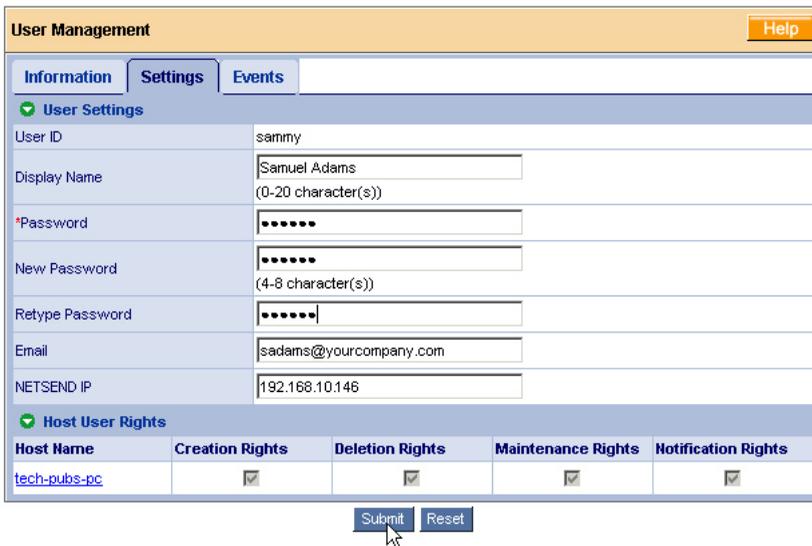
1. Under Administrative Tools in Tree View, click the User Management  icon.
2. Click the **User ID** link for the user whose settings you want to set.



The screenshot shows the 'User Management' interface with a 'Help' button in the top right. Below the title bar are tabs for 'Information', 'Create', and 'Delete'. A 'User List' section contains a table with the following data:

User ID	Display Name	Email
sammy	Samuel Adams	sadams@yourcompany.com
admin	Super user	

3. Click the **Settings** tab.



The screenshot shows the 'User Management' interface with the 'Settings' tab selected. The 'User Settings' section contains the following fields:

- User ID: sammy
- Display Name: Samuel Adams (0-20 character(s))
- *Password: [masked]
- New Password: [masked] (4-8 character(s))
- Retype Password: [masked]
- Email: sadams@yourcompany.com
- NETSEND IP: 192.168.10.146

Below the settings is the 'Host User Rights' section with a table:

Host Name	Creation Rights	Deletion Rights	Maintenance Rights	Notification Rights
tech-pubs-pc	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

At the bottom are 'Submit' and 'Reset' buttons.

4. Type the appropriate values in their respective fields.

- (Current) Password
- New Password
- Retype (the new) Password
- Email (address)
- Netsend IP address

- Click the **Submit** button.



Important

Windows Vista and Server 2008 do not support Messenger Service. To receive messages on those platforms, you must install a third-party tool.

Changing a User's Access Rights

Only the Administrator can change a user's access rights.

To change a user's access rights:

- Under Administrative Tools in Tree View, click the User Management  icon.
- Click the **User ID** link for the user whose access rights will change.

The screenshot shows the 'User Management' window with the 'Information' tab selected. Below the tabs are 'Create' and 'Delete' buttons. A 'User List' section contains a table with the following data:

User ID	Display Name	Email
sammy	Samuel Adams	sadams@yourcompany.com
admin	Super user	

- Click the **Settings** tab.

The screenshot shows the 'User Management' window with the 'Settings' tab selected. The 'User Settings' section displays the following information:

User ID	sammy
Display Name	Samuel Adams
Email	sadams@yourcompany.com
NETSEND IP	null

Below this is the 'Host User Rights' section with a table:

Host Name	Creation Rights	Deletion Rights	Maintenance Rights	Notification Rights
tech-pubs-pc	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Submit **Reset**

- Under Host User Rights, check the boxes to assign rights for this user.

Right	Meaning
Creation	Permission to create a logical drive and a spare drive
Deletion	Permission to delete a logical drive and a spare drive
Maintenance	Permission to migrate, rebuild and synchronize a logical drive; to run Media Patrol on a physical drive; make controller and physical drive settings
Notification	Permission to receive notification of events affecting the logical drive

Uncheck the boxes to remove rights for this user.

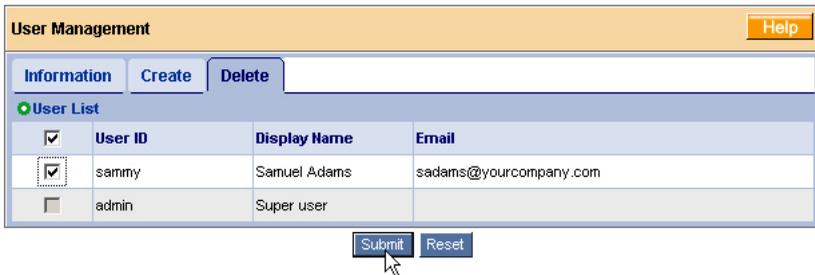
- Click the **Submit** button.

Deleting a User

Only the Administrator can delete users.

To delete a user:

- Under Administrative Tools in Tree View, click the User Management  icon.
- Click the **Delete** tab.



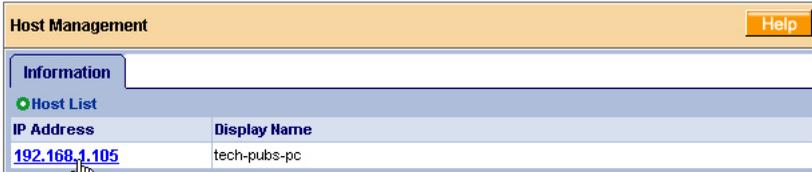
- Check the box to the left of the user you want to delete.
- Click the **Delete** button.
- In the Confirmation box, click the **OK** button.

Viewing Host Management

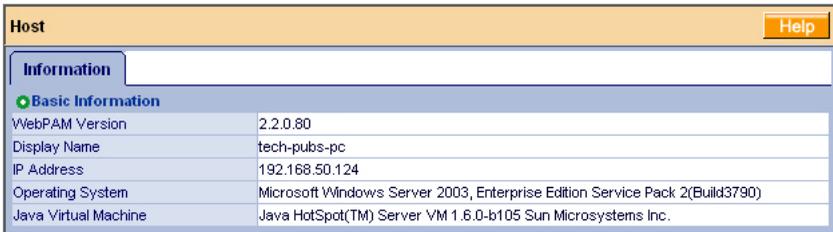
This function provides information only. There are no user settings.

To access Host Management:

1. Under Administrative Tools in Tree View, click the Host Management  icon.
2. Under Host List, click the **IP Address** link to the host you want to see.



The Host IP address is always 127.0.0.1. If you log in over a network, the actual IP address of the PC or server with the FastTrak card is shown.



The Information tab displays with information about the Host PC.

- **WebPAM Version** – The version number of the WebPAM software.
- **Display Name** – The display name of the Host PC. “localhost” is the default.
- **IP Address** – 127.0.0.1 is the IP address of the Host PC, accessed at the Host PC. Other addresses, such as 192.168.50.124, refer to a Host PC accessed over the network.
- **Operating System** – Manufacturer, model, version, service release and build information for the Host PC’s operating system.
- **Java Virtual Machine** – The version number of the private JVM used by WebPAM on the Host PC.

Making Utility Configuration Settings

To make utility configuration settings:

1. Under Administrative Tools in Tree View, click the Utility Configuration icon. 
2. Enter the Sender's address in the Email Sender field.
Be sure the sender has an account in your email system. See your IT administrator.
3. Enter your Email Server name and port number in the Email Server field.
4. If your Email Server supports ESMTP Authentication and you want to use this feature:
 - Check the ESMTP Authentication box.
 - Enter an ESMTP Username in the field provided.
 - Enter an ESMTP Password in the field provided.
5. Keep or change the Email Subject line.
6. Keep event frame refresh interval or choose a new inter from the Event Frame Refresh Time dropdown menu.
30 seconds is the default interval.
7. Choose the Enable or Disable option for System Event Notification.
Enable is the default and required to receive email notification.
8. Click the **Submit** button when you are done.

Utility Configuration
Help

Settings

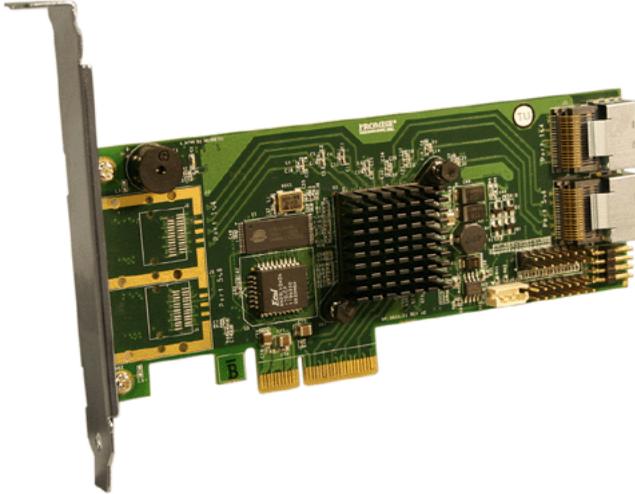
+ **Configuration**

Email Sender	<input type="text" value="RAIDmaster@yourcompany.com"/>	Email Sender Desc.
Email Server	<input type="text" value="mail.yourcompany.com"/> Port: <input type="text" value="25"/>	Email Server Desc.
	ESMTP Authentication <input checked="" type="checkbox"/>	
ESMTP Username	<input type="text" value="admin"/>	ESMTP Username Setting
ESMTP Password	<input type="password" value="•••••"/>	ESMTP Password Setting
Email Subject	<input type="text" value="Promise Controller Error"/>	Email Subject Desc.
Event Frame Refresh Time	<input type="text" value="30"/> secs	Event Frame Refresh Time Desc.
System Event Notification	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	System Event Notification

Submit
Reset

Viewing the FastTrak Card

The FastTrak–Information tab displays a photograph of the FastTrak TX Series Controller card installed in your system.



To display this screen in Management View, click the FastTrak  icon in Tree View.

If you have multiple FastTrak controller cards in the same system, they will appear under the FastTrak icon as Controller 1, Controller 2, and so on.

Managing the Controller

- Viewing Controller Information (below)
- Making Controller Settings (page 82)
- Viewing Scheduled Actions (page 84)
- Deleting a Scheduled Action (page 84)
- Locking the Controller (page 85)

Viewing Controller Information

The term Controller refers to the device that controls your RAID.

To access the controller, click the Controller  icon in Tree View.



The screenshot shows a window titled "Controller" with a "Help" button in the top right corner. Below the title bar are five tabs: "Information", "Settings", "Schedule", "Lock", and "Restore". The "Information" tab is selected and displays two sections: "Basic Information" and "Hardware Information".

Basic Information	
Product Name	FastTrak TX8660 RAID HBA
BIOS Version	2.9.0.12
Driver Version	1.2.0.130

Hardware Information	
Maximum Number of Port(s)	8
Maximum Physical Drive(s)	8
Maximum Logical Drive(s)	16

The Information tab displays with information about the controller.

- **Product Name** – The Promise product name for this controller.
- **BIOS Version** – Version number of the controller's BIOS.
- **Driver Version** – Version number of the controller's software driver.
- **Maximum Number of Ports** – The number of ports on the controller.
- **Maximum Physical Drives** – The maximum number of physical (disk) drives the controller can support.
- **Maximum Logical Drives** – The maximum number of logical drives (arrays) the controller can support.

Making Controller Settings

To make controller settings:

1. Click the Controller  icon in Tree View.
2. Click the **Settings** tab in Management View.

The controller settings display.

Controller		Help
Information	Settings	Schedule
Information	Settings	Lock
Information	Settings	Restore
View/Change Controller Parameter		
Rebuild Rate	<input type="radio"/> Low <input checked="" type="radio"/> Medium <input type="radio"/> High	
Migration/Expansion Rate	<input type="radio"/> Low <input checked="" type="radio"/> Medium <input type="radio"/> High	
Initialization Rate	<input type="radio"/> Low <input checked="" type="radio"/> Medium <input type="radio"/> High	
Synchronization Rate	<input type="radio"/> Low <input checked="" type="radio"/> Medium <input type="radio"/> High	
Automatic Rebuild Status	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	
Automatic Rebuild Policy	<input checked="" type="radio"/> Free & Spare <input type="radio"/> Spare	
Buzzer Status	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	
S.M.A.R.T. Status	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	
S.M.A.R.T. Check Polling Interval	120 Second(s)	
Submit Reset Default		

Click the Settings tab to access controller settings.

- **Rates** – Allocates system resources between the background process (such as Rebuild, Expansion/Migration, Initialization, and Synchronization) and the data read/write activity.

A *High* setting assigns most of the system resources to background processes. The process will finished sooner but read/write requests are handled slower.

A *Medium* setting tries to balance system resources between the background processes and data input/output activity.

A *Low* setting assigns most of the system resources to handling read/write requests. Read/write requests are handled at nearly normal speed while the background processes take longer.

- **Automatic Rebuild Status** – When enabled, a critical or degraded logical drive will rebuild itself automatically after you replace the failed physical drive. Automatic Rebuilding applies to RAID 1, 5, and 10 logical drives only. See “Rebuilding a Logical Drive” on page 107 for more information.
- **Automatic Rebuild Policy** – Directs WebPAM to use either a Free drive or a Spare drive, or only a Spare drive to rebuild a logical drive. See “Rebuilding a Logical Drive” on page 107 for more information.
- **Buzzer** – When enabled, the FastTrak controller’s buzzer will sound to report a problem.
- **S.M.A.R.T. Status** – SMART, an acronym for Self-Monitoring Analysis and Reporting Technology, is a feature of the physical drive software. When

enabled, the FastTrak controller polls the physical drives for SMART information and reports it to you.

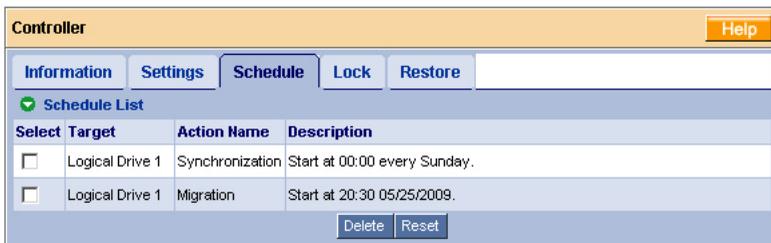
- **S.M.A.R.T. Check Polling Interval** – The FastTrak controller periodically polls the physical drives for SMART information and displays it in WebPAM. Choose an interval from the dropdown menu. The range is 0 to 120 seconds. A setting of 0 seconds disables the polling function.

Viewing Scheduled Actions

To view scheduled actions:

1. Click the Controller  icon in Tree View.
2. Click the **Schedule** tab.

The Schedule tab lists all scheduled background processes, such as Rebuild, Expansion/Migration, Initialization, Synchronization, and Media Patrol.



To begin or schedule a Migration, Rebuild, or Synchronization, click the Logical Drive  icon in Tree View then select the appropriate tab in Management View.

To begin or schedule a Media Patrol, click the Physical Drive  icon in Tree View then select the Media Patrol tab in Management View.

Deleting a Scheduled Action

To delete a scheduled action:

1. Click the Controller  icon in Tree View.
2. Select the **Schedule** tab in Management View.
3. Check the box to the left of the process you want to delete.

- Click the **Delete** button.



- In the Confirmation box, click the **OK** button.

Alternative method to delete a scheduled process:

- Go to its function tab under the Physical Drive  or Logical Drive  icon.
- Under Schedule, click the **Disable** option.

Locking the Controller



The Lock tab displays lock status and enables you to lock or unlock a subsystem controller. The locking mechanism isolates the controller during maintenance operations and other periods when you want to avoid interruption from other users trying to access the logical drives under this controller.

To lock the Controller on the Host PC:

- Click the Controller  icon in Tree View.
- Select the **Lock** tab in Management View.
- From the dropdown menu, select a period of time to hold the lock.
The lock time range is 1 to 30 minutes.
- Click the **Lock** button to set the lock.
The lock will release itself automatically at the end of the period you specified.

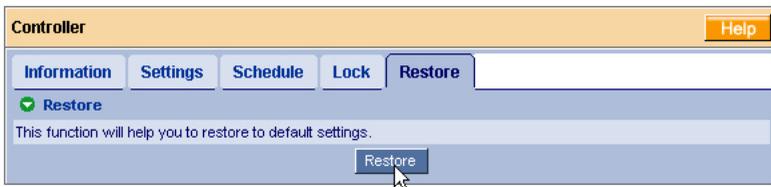
To release the lock before the scheduled time, click the **Unlock** button.

Restoring Default Settings

The Restore tab enables you to restore all of the controller's settings to their default values. Use this function for diagnosis and to clear any erroneous user settings.

To restore the default controller settings:

1. Click the Controller  icon in Tree View.
2. Click the **Restore** tab in Management View.
3. Click the **Restore** button.



All controller settings are restored to their default values.

Managing Physical Drives

- Viewing Physical Drives (below)
- Viewing Physical Drive Information (page 88)
- Making Physical Drive Settings (page 89)
- Running Media Patrol (page 89)
- Checking the Bad Sector Log (page 91)
- Locating a Physical Drive (page 92)

Viewing Physical Drives

From this window, you can view information about all of the physical drives attached to the FastTrak card, including their port numbers, capacity, status, and assignments.

To access Physical Drive View, click the Physical Drive View  icon in Tree View.

Physical Drive View Help

Information

Merge

✔ **Physical Drive Overview**

Drive Model	Port Number	Capacity	Status
ST380013AS	1	80.02 GB	Functional
FUJITSU MHT2060BS	2	60.01 GB	Functional
ST380013AS	3	80.02 GB	Functional
FUJITSU MHT2060BS	4	60.01 GB	Functional

✔ **Graphic View**

 Drive on Port 1 - 80.02 GB

Free
79.95 GB

 Drive on Port 2 - 60.01 GB

Assigned LD 1-01
59.94 GB

 Drive on Port 3 - 80.02 GB

Free
79.95 GB

 Drive on Port 4 - 60.01 GB

Assigned LD 1-02
59.94 GB

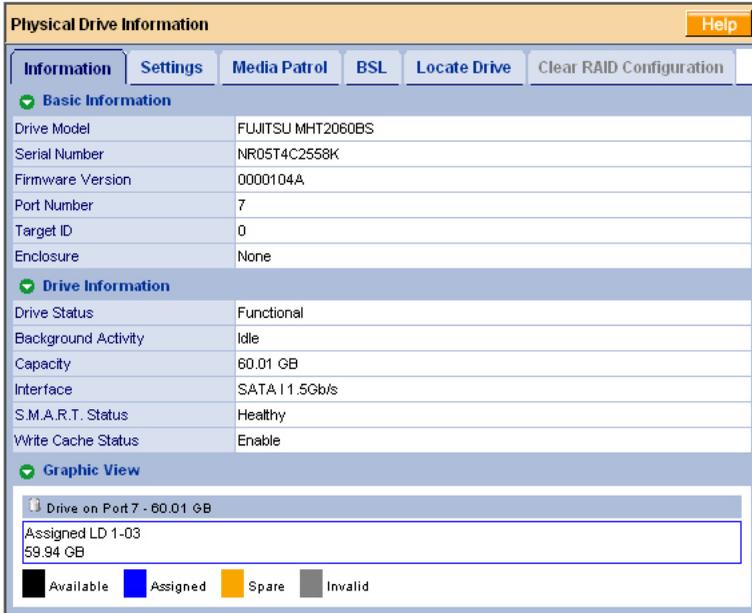
Available
 Assigned
 Spare
 Invalid

87

Viewing Physical Drive Information

To view information about a physical drive:

1. Click the Physical Drive View  icon in Tree View.
2. Click the Physical Drive  icon.



Physical Drive Information Help

Information Settings Media Patrol BSL Locate Drive Clear RAID Configuration

Basic Information

Drive Model	FUJITSU MHT2060BS
Serial Number	NR05T4C2558K
Firmware Version	0000104A
Port Number	7
Target ID	0
Enclosure	None

Drive Information

Drive Status	Functional
Background Activity	Idle
Capacity	60.01 GB
Interface	SATA I 1.5Gb/s
S.M.A.R.T. Status	Healthy
Write Cache Status	Enable

Graphic View

Drive on Port 7 - 60.01 GB

Assigned LD 1-03
59.94 GB

Available
 Assigned
 Spare
 Invalid

The information tab displays the following information:

- **Drive Model** – The physical (disk) drive manufacturer’s model name or number.
- **Serial Number** – The serial number of this physical drive.
- **Firmware Version** – Version of the firmware on this physical drive.
- **Port Number** – The FastTrak port to which this physical drive is attached.
- **Target ID** – The SCSI target number of this physical drive.
- **Enclosure** – The model of SuperSwap enclosure in which the physical drive is installed. If there is no SuperSwap enclosure, the field says None.
- **Drive Status** – The operational of this physical drive. Functional means normal. The alternative status is Offline.
- **Background Activity** – The current background activity affecting this physical drive. Idle means no activity. Others include Initializing and Rebuilding.

- **Capacity** – The data capacity of this physical drive in GB.
- **Interface** – Identifies whether the physical drive is SATA 1 1.5 Gb/s, SATA II 3.0 Gb/s or SAS.
- **S.M.A.R.T. Status** – SMART, an acronym for Self-Monitoring Analysis and Reporting Technology, is a feature of the physical drive's software. When this feature is supported, the drive will pass SMART information to the FastTrak controller when it polls the physical drives.
- **Write Cache Status** – Indicates whether the physical drive's write cache is Enabled or Disabled. You can change this status under the Settings tab (see below).

Making Physical Drive Settings

Physical Drive Settings allows you to enable or disable the Write Cache and Native Command Queuing (NCQ) on an individual physical drive. The options displayed are those features the physical drive supports.

To make physical drive settings:

1. Click the Physical Drive View  icon in Tree View.
2. Click the Physical Drive  icon.
3. Click the **Settings** tab in Management View.



The screenshot shows a web interface for 'Physical Drive Information'. It has a 'Help' button in the top right. Below the title bar are several tabs: 'Information', 'Settings' (which is selected), 'Media Patrol', 'BSL', 'Locate Drive', and 'Clear RAID Configuration'. Under the 'Settings' tab, there is a section titled 'View/Change Physical Drive Parameters' with a green checkmark icon. This section contains two rows of settings: 'Write Cache Enabled' with radio buttons for 'Enable' (selected) and 'Disable', and 'NCQ Enabled' with radio buttons for 'Enable' and 'Disable' (selected). At the bottom of this section are 'Submit' and 'Reset' buttons. A mouse cursor is pointing at the 'Submit' button.

4. Click the Write Cache **Enable** or **Disable** option.
5. Click the NCQ **Enable** or **Disable** option.
6. Click the **Submit** button.

Running Media Patrol

The Physical Drive–Media Patrol tab allows you to start Media Patrol on an individual physical (disk) drive. Media Patrol is a routine maintenance procedure that checks the magnetic media on each physical drive, sector by sector.

Media Patrol checks physical drives assigned to logical drives, spare drives and currently unassigned physical drives that were once part of a logical drive or a

spare. Media Patrol does not check new physical drives that have never been configured nor physical drives assigned as JBOD.

Unlike Synchronization and Redundancy Check (see page 110), Media Patrol is concerned with the condition of the media itself, not the data recorded on the media.

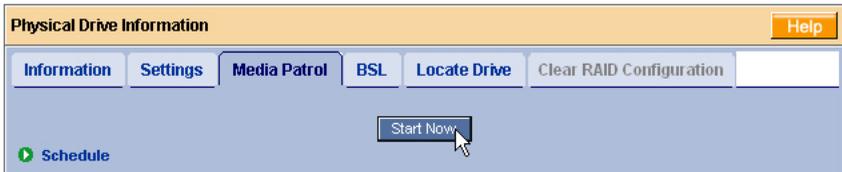
If Media Patrol encounters a suspect sector, it will attempt to regenerate the data and write to the suspect sector. If the write operation is successful, Media Patrol continues checking other sectors.

If the write operation fails, Media Patrol reports the error to your PC's system log and to the physical drive's Bad Sector Log (see page 91). This action triggers a BSL update message and an email message if you enabled that notification option (see page 73).

On Demand

To start Media Patrol:

1. Click the Physical Drive View  icon in Tree View.
2. Click the Physical Drive  icon.
3. Click the **Media Patrol** tab in Management View.



4. Click the **Start Now** button.

Scheduled

Scheduling allows you to perform the Media Patrol at a time when there is less demand on the RAID system.

To schedule Media Patrol:

1. Click the Physical Drive View  icon in Tree View.
2. Click the Physical Drive  icon.
3. Click the **Media Patrol** tab in Management View.

Physical Drive Information Help

Information Settings **Media Patrol** BSL Locate Drive Clear RAID Configuration

Start Now

Schedule

Disable **Enable**

By Day Start At 0 : 0

By Week Start At 4 : 30 Every Wednesday

By Month Start At 0 : 0 On the 1st

Example 10:30(hh:mm)

Schedule

4. Click the **Enable** option.
5. Click the **by Day, by Week** or **by Month** option.
From the dropdown menus, select a start time and a day of the Week or Month, if applicable.
Start time is based on a 24-hour clock.
6. Click the **Schedule** button.

Cancelling a Schedule

To cancel the scheduled Media Patrol operation:

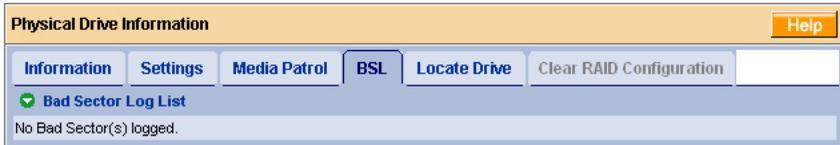
1. Click the Physical Drive View  icon in Tree View.
2. Click the Physical Drive  icon.
3. Click the Media Patrol tab in Management View.
4. Click the **Disable** option.

Checking the Bad Sector Log

On occasion, an error can arise with the media on a physical drive. WebPAM keeps track of bad sectors in order to inform you of the condition of individual physical drives.

To check a physical drive's bad sector log:

1. Click the Physical Drive View  icon in Tree View.
2. Click the Physical Drive  icon.
3. Click the **BSL** tab in Management View.



If any bad sectors are found, they are listed here. WebPAM informs you by popup and email messages when a bad sector error is logged. See page 73.

After 10 bad sectors have been discovered on a physical drive, WebPAM issues a warning to replace the drive.

After 20 bad sectors have been discovered:

- On fault-tolerant (RAID 1, 5, and 10) logical drives, the FastTrak controller will set down the physical drive (take it offline) and the logical drive will go critical.
Replace the physical drive and rebuild your logical drive. See “Responding to a Critical or Offline Logical Drive” on page 115.
- On non-fault-tolerant (RAID 0, SPAN and JBOD) logical drives, the physical drive remains online.
Backup your data, replace the physical drive, create a new logical drive, and copy your data to it.

See “Rebuilding a Logical Drive” on page 107 and “Responding to a Critical or Offline Logical Drive” on page 115.

See the *SuperSwap User Manual* for more information about replacing a physical drive.

Locating a Physical Drive

When it becomes necessary to access a physical drive installed in a SuperSwap enclosure, this function will help you identify the physical drive you want. To locate a physical drive:

1. Click the Physical Drive View  icon in Tree View.
2. Click the Physical Drive  icon.
3. Click the **Locate Drive** tab in Management View.
4. Click the **Locate Drive** button.



The Management Window will display the message “Identified started” and the Status LED for this physical drive will flash rapidly on the SuperSwap enclosure.

If you remove the physical drive, the Status LED stops blinking, the Activity LED goes dark and WebPAM will report that the physical drive was unplugged. When you replace the drive, the LEDs will return to normal operation.

If you do not remove the physical drive, click the **Located Release** button to stop the Status LED from blinking. For more information, see the *SuperSwap User Manual*.

Managing Logical Drives

- Viewing All Logical Drives (below)
- Creating a Logical Drive (page 94)
- Creating a JBOD Disk (page 98)
- Deleting a Logical Drive or JBOD Disk (page 102)
- Viewing Logical Drive Information (page 102)
- Making Logical Drive Settings (page 103)
- Migrating a Logical Drive (page 104)
- Rebuilding a Logical Drive (page 107)
- Synchronizing a Logical Drive (page 110)
- Viewing Logical Drive Initialization (page 113)
- Activating a Logical Drive (page 113)
- Responding to a Critical or Offline Logical Drive (page 115)

Viewing All Logical Drives

Logical Drive View provides a list of all logical drives currently on the Host PC. To access Logical Drive View, click the Logical Drive View  icon in Tree View.

From this screen, you can click the links to access information and functions of individual logical drives and use the Create and Delete features.

Logical Drive View Help					
Information		Create	Delete		
 Logical Drive Overview					
Assigned Name	RAID Level	Status	Background Activity	Capacity	
Logical Drive 1	RAID 1	Functional	Idle	58.99 GB	

Creating a Logical Drive

A logical drive is a collection of physical drives in a RAID.

To create a new logical drive:

1. Click the Logical Drive View  icon.
2. Click the **Create** tab.

The Select RAID Level screen appears.

Select RAID Level

Redundant Array of Independent Disks (RAID) combines multiple physical drives to form one logical drive.

RAID 0 - Data striped across one or more drives for increased performance but no data protection
 RAID 1 - Mirrored pairs of drives for data protection with increased read performance
 RAID 5 - Striped parity on 3 or more drives, ultimate data protection, capacity and performance balance
 RAID 10 - Data mirrored then striped across 4 or more drives, for double drive failure protection
 JBOD - Just a Bunch Of Drives: independent connected drives with no RAID interconnection
 SPAN - SPAN-Combines disk capacities into one large volume

<< Prev Next >>

- Click the option button beside the RAID level you want for your logical drive. WebPAM displays the RAID levels you can use with the available physical drives. See “Choosing a RAID Level” on page 130 for more information. Click the **Next** button to continue. The Select Drive Group screen appears.

Select Drive Group

Please select a free drive(s) or one logical drive that has free space.

Select one of the following groups:

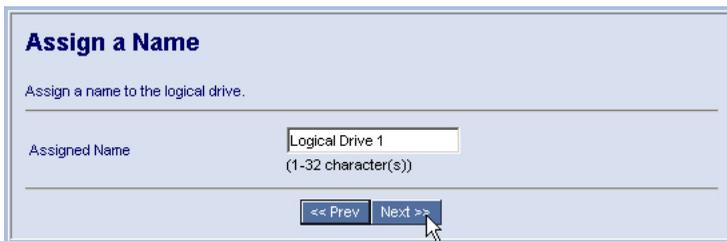
Free Drive(s)

<< Prev Next >>

- In the Select Drive Group screen, click the option button for one of the following:
 - Free Drives** – Select all Free (unassigned) physical drives.
 - Logical Drive** – If you previously created a logical drive but did not choose *Use Maximum Capacity* (see step 6) this option appears. Choose *Logical Drive* to use the unassigned portion of physical drives that belong to the existing logical drive.
- Click the **Next** button.
The Select Drives screen appears.



6. If you want to create a logical drive with unused capacity, enter the assigned (used) capacity in the Logical Drive Size field.
To use the maximum capacity, check the *Use Maximum Capacity* box.
7. Click the physical drives to select them.
Available drives have a black frame. Selected drives have a red frame.
8. Click the **Next** button.
The Assign a Name screen appears.



9. Enter a name for the logical drive in the field provided and click the **Next** button.
The Final Settings screen appears.

Final Settings

Confirm your choices. Make any changes here.

Name	Logical Drive 1
RAID Level	RAID 5
Logical Drive Size	Maximum Capacity
Stripe Block Size	16 KB
Write Cache	Write Through
Gigabyte Boundary	GigaByte Boundary
Initialization	Fast Initialization

<< Prev Finish

These features have only the default setting:

- **Stripe Block Size** – Set to 16 KB with no options.
 - **Write Cache** – Set to Write Through with no options.
10. Choose Gigabyte Boundary or None from the Gigabyte Boundary dropdown menu.

Gigabyte Boundary enables you to replace a failed physical drive with a slightly smaller physical drive. This option is available only when you have checked the *Use Maximum Capacity* box in step 6.

11. Choose an Initialization method from the Initialization dropdown menu:
 - **Fast Initialization** – Erases the reserve and master boot sectors physical drives being added to the logical drive.
 - **Full Initialization** – Erases all sectors of the physical drives being added to the logical drive. Available for RAID 1, 5, and 10.
 - **None** – No initialization. This choice is not recommended.
12. Click the **Finish** button.

If there are physical drives available, the Select RAID Level screen appears again, where you can create an additional logical drive.

Click the Logical Drive  icon to see all of the information about your new logical drive.

Logical Drive Information Help

Information
Settings
Migration
Rebuild
Synchronization
Initialization
Activation

✔ **Basic Information**

Assigned Name	Logical Drive 1
RAID Level	RAID 5
Sector Size	512 Bytes
Stripe Size	16 KB
Capacity	117.99 GB
Status	Functional
Background Activity	Idle

✔ **Graphic View**

Drive on Port 1 - 80.02 GB

Assigned LD 1-01 59.94 GB	Free 20.01 GB
---	---

Drive on Port 2 - 60.01 GB

Assigned LD 1-02 59.94 GB	
---	--

Drive on Port 3 - 80.02 GB

Assigned LD 1-03 59.94 GB	Free 20.01 GB
---	---

Available
 Assigned
 Assigned to Logical Drive 1
 Spare
 Invalid

Before you can use your new logical drive, you must partition and format the logical drive using your PC's operating system. See "Appendix A: Partition and Format" on page 151 for more information.

Creating a JBOD Disk

With FastTrak, a JBOD disk is one or more physical drives that function independently. There is no concatenation among multiple JBOD disks.

If you attach a physical drive that was initialized using Windows disk management, that drive will be automatically recognized as a JBOD by the FastTrak controller and WebPAM.

To create a new JBOD:

1. Click the Logical Drive View  icon.
2. Click the **Create** tab.

The Select RAID Level screen appears.

Select RAID Level

Redundant Array of Independent Disks (RAID) combines multiple physical drives to form one logical drive.

RAID 0 - Data striped across one or more drives for increased performance but no data protection

RAID 1 - Mirrored pairs of drives for data protection with increased read performance

RAID 5 - Striped parity on 3 or more drives, ultimate data protection, capacity and performance balance

RAID 10 - Data mirrored then striped across 4 or more drives, for double drive failure protection

JBOD - Just a Bunch Of Drives: independent connected drives with no RAID interconnection

SPAN - SPAN-Combines disk capacities into one large volume

<< Prev Next >>

3. Click the option button beside JBOD, then click the **Next** button.
The Select Drive Group screen appears.

Select Drive Group

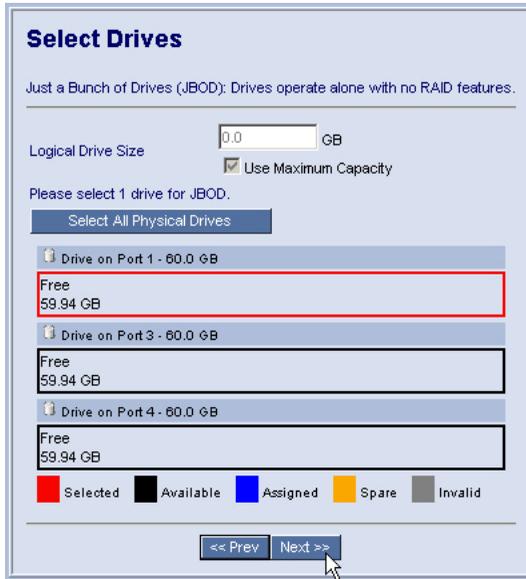
Please select a free drive(s) or one logical drive that has free space.

Select one of the following groups:

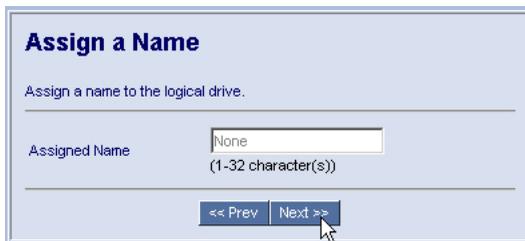
Free Drive(s)

<< Prev Next >>

4. Click the **Next** button to continue.
The Select Drives screen appears.



5. Click the physical drives to select them.
Available drives have a black frame. Selected drives have a red frame.
6. Click the **Next** button.
The Assign a Name screen appears.



7. Click the **Next** button to continue.
The Final Settings screen appears.

Final Settings

Confirm your choices. Make any changes here.

Name

RAID Level JBOD

Logical Drive Size Maximum Capacity

Stripe Block Size 16 KB

Write Cache Write Through

Gigabyte Boundary GigaByte Boundary

Initialization Fast Initialization

<< Prev Finish

8. Choose an Initialization method from the Initialization dropdown menu:
 - **Fast Initialization** – Erases the Master Boot Record (MBR) of the physical drives being added to the logical drive.
 - **None** – No initialization. This choice is not recommended.
9. Click the **Finish** button.

If there are physical drives available, the Select RAID Level screen appears again, where you can create an additional logical drive.

Click the Logical Drive  icon to see the information about your new JBOD.

Logical Drive Information Help

Information Settings Migration Rebuild Synchronization Initialization Activation

✓ **Basic Information**

Assigned Name	JBOD on port 01 (00)
RAID Level	JBOD
Capacity	60.01 GB
Status	Functional

✓ **Graphic View**

Drive on Port 1 - 60.01 GB

Assigned JBOD
60.01 GB

Available
 Assigned
 Assigned to JBOD on port 01 (00)
 Spare
 Invalid

Before you can use your new JBOD, you must partition and format the logical drive using your PC's operating system. See "Appendix A: Partition and Format" on page 151 for more information.

Deleting a Logical Drive or JBOD Disk

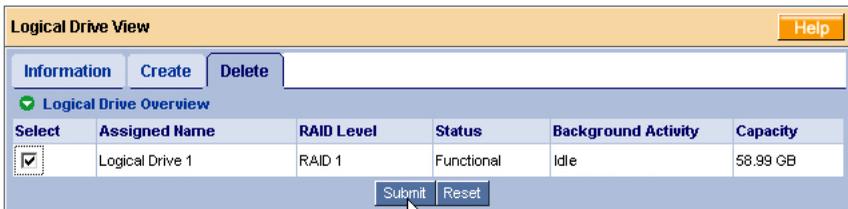


Warning

When you delete a logical drive or JBOD disk, you delete all data on the logical drive or JBOD disk. Be sure to backup any important data before you delete!

To delete a logical drive or JBOD:

1. Click the Logical Drive View  icon.
2. Select the **Delete** tab.



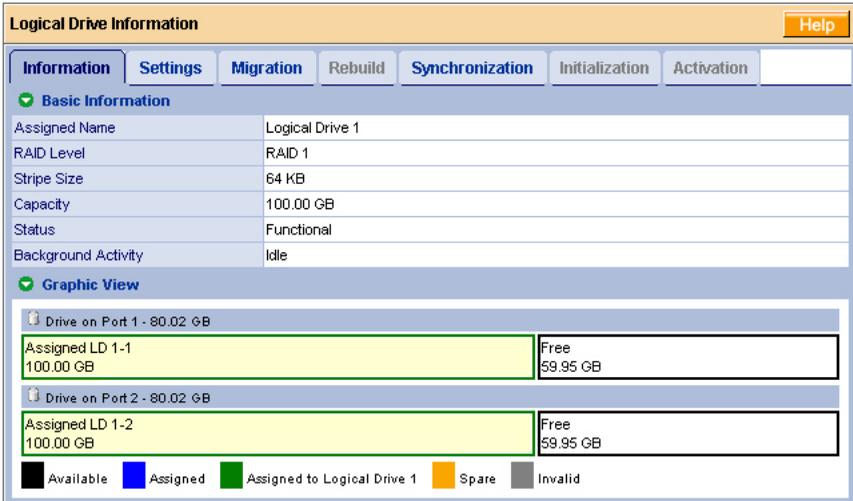
3. Check the box to the left of the logical drive you want to delete.
 4. Click the **Submit** button.
 5. In the Confirmation box, click the **OK** button.
 6. In the Warning box, click the **OK** button.
- The selected logical drive is deleted.

Viewing Logical Drive Information

Logical Drive View provides a list of all logical drives currently on the Host PC.

To view logical drive information:

1. Click the Logical Drive View  icon in Tree View.
2. Click the Logical Drive  icon of the logical drive you want to see.



Logical Drive Information Help

Information Settings Migration Rebuild Synchronization Initialization Activation

Basic Information

Assigned Name	Logical Drive 1
RAID Level	RAID 1
Stripe Size	64 KB
Capacity	100.00 GB
Status	Functional
Background Activity	Idle

Graphic View

Drive on Port 1 - 80.02 GB

Assigned LD 1-1 100.00 GB	Free 59.95 GB
------------------------------	------------------

Drive on Port 2 - 80.02 GB

Assigned LD 1-2 100.00 GB	Free 59.95 GB
------------------------------	------------------

Available Assigned Assigned to Logical Drive 1 Spare Invalid

From this screen, you can click the links to access the Settings, Migration, Rebuild, Synchronization, Initialization and Activation features. The features that apply to this logical drive have blue tabs. Features that do not apply have grayed tabs.

Making Logical Drive Settings

Logical Drive Settings allows you to assign or change the name of a logical drive. To make logical drive settings:

1. Click the Logical Drive View  icon in Tree View.
2. Click the Logical Drive  icon of the logical drive you want to see.
3. Click the **Settings** tab in Management View.



Logical Drive Information Help

Information Settings Migration Rebuild Synchronization Initialization Activation

View/Change Logical Drive Parameters

Assigned Name

4. Enter a name in the Assigned Name field, as desired.
5. Click the **Submit** button.

Migrating a Logical Drive

To *migrate* a logical drive is to:

- Change its RAID level
- Add one or more physical drives
- Both of the above actions

To migrate a logical drive, its operational status must be *Functional*. The migration takes place on the logical drive without disturbing the existing data. While the logical drive is migrating, you can access the data as before. When migration is complete, your logical drive will have a different RAID level, a larger capacity, or both.

For more information, see “Logical Drive Migration” on page 133.

You can set up a Migration to:

- Begin immediately (on demand).
- Begin at the time and date you specify. See page 105.



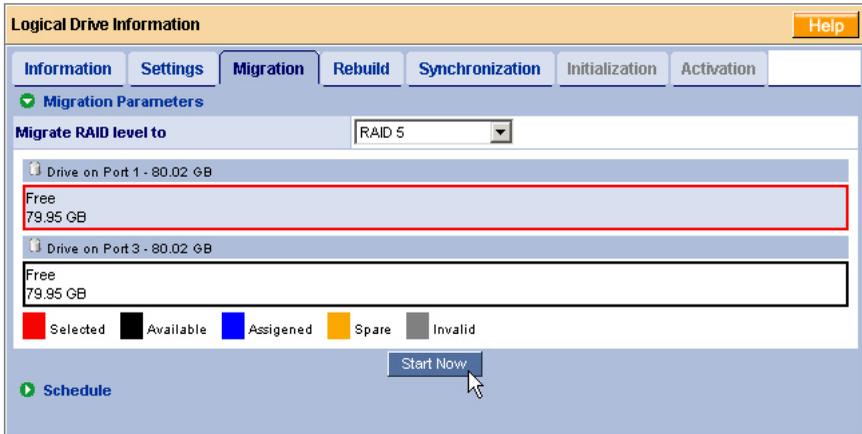
Caution

Before you begin logical drive Migration, back up your important data.

On Demand

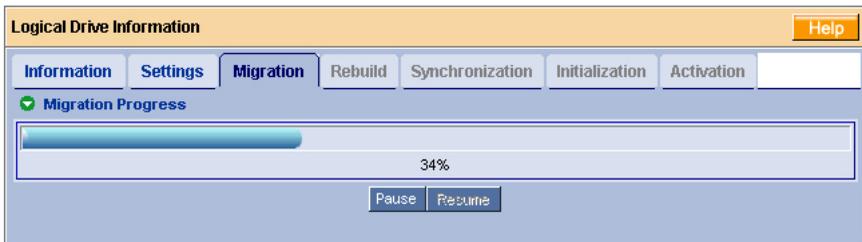
To migrate a logical drive:

1. Click the Logical Drive View  icon in Tree View.
2. Click the Logical Drive  icon of the logical drive you want to migrate.
3. Click the **Migration** tab in Management View.



4. Click the free physical drive to select it.
Available drives have a black frame. Selected drives have a red frame.
5. Click the **Start Now** button.
6. Click the **OK** button in the confirmation box.

You can monitor Migration progress on the Logical Drive Migration tab.



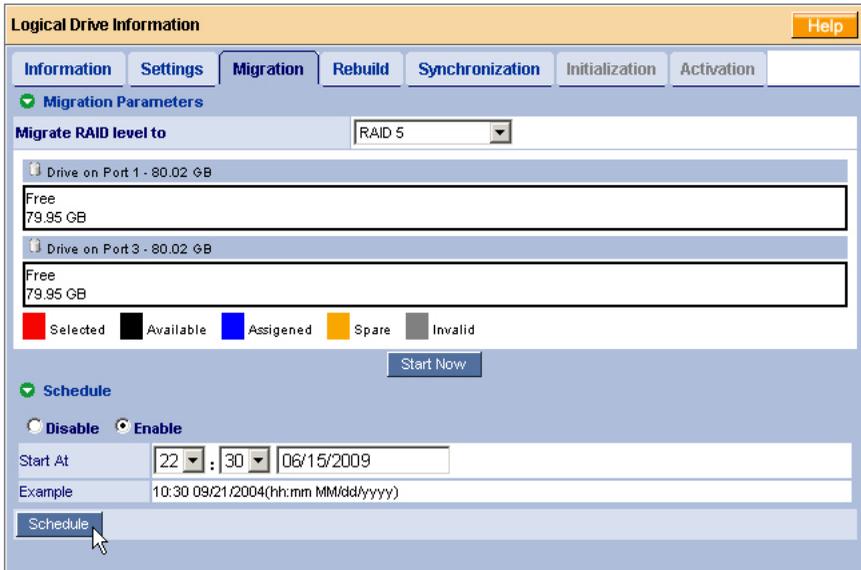
Click the respective buttons to pause and resume the Migration.

Scheduled

Scheduling allows you to perform the Migration at a time when there is less demand on the RAID system.

To schedule a Migration:

1. Click the Logical Drive View  icon in Tree View.
2. Click the Logical Drive  icon of the logical drive you want to migrate or expand.
3. Click the **Migration** tab in Management View.



4. Click the free physical drive to select it.
Available drives have a black frame. Selected drives have a red frame.
5. Click the **Enable** option.
6. From the dropdown menus, select a start time.
Start time is based on a 24-hour clock.
7. Click the **Start At** field to display a popup calendar.
8. Click the start date in the calendar or enter a date manually.
9. Click the **Schedule** button.

Canceling a Schedule

To cancel the scheduled Migration:

1. Click the Logical Drive View  icon in Tree View.
2. Click the Logical Drive  icon.
3. Click the **Migration** tab in Management View.
4. Click the **Disable** option.

Rebuilding a Logical Drive

Rebuilding refers to the process of repairing a logical drive by reconstructing the data on a failed or removed physical drive. This feature applies to RAID 1, 5, and 10 logical drives. It does not apply to RAID 0 or JBOD.

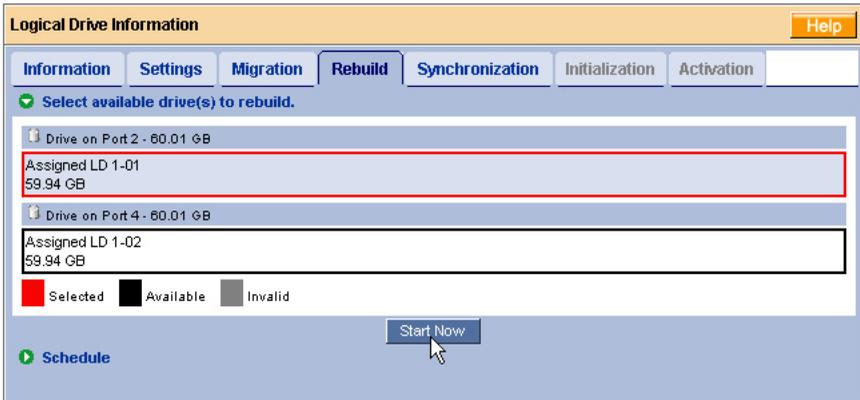
You can set up a Rebuild to:

- Begin immediately (on demand).
- Begin at the time and date you specify. See page 108.
- Begin automatically when you replace the failed physical drive. See page 109.
- Begin automatically using a hot spare drive. See page 109.
- Begin automatically using a free drive. See page 110.

On Demand

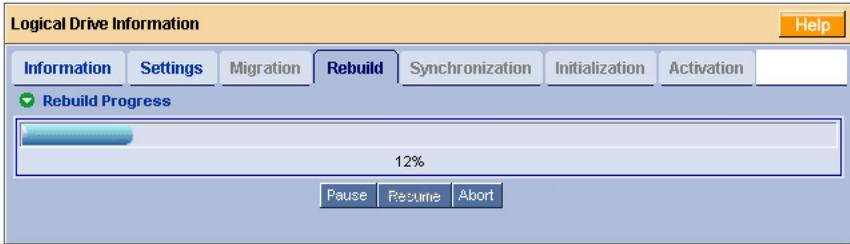
To rebuild a logical drive:

1. Click the Logical Drive View  icon in Tree View.
2. Click the Logical Drive  icon of the logical drive you want to rebuild.
3. Click the **Rebuild** tab in Management View.



4. Select the physical drive to use in the rebuild.
Available drives have a black frame. Selected drives have a red frame.
5. Click the **Start Now** button.

You can monitor Rebuild progress on the Logical Drive Rebuild tab.



Click the respective buttons to pause and resume the Rebuild.

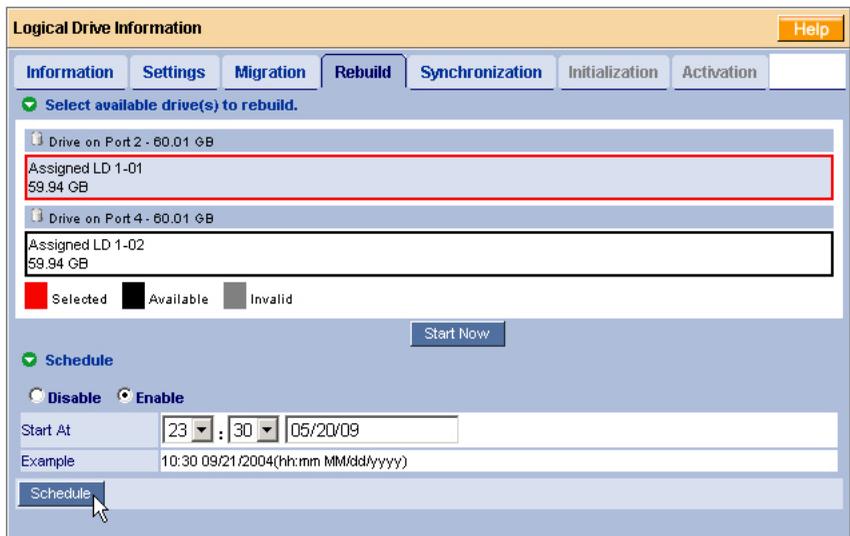
Click the **Abort** button to stop the Rebuild. After an abort, click the **Restart** button to start the Rebuild from the beginning (zero percent).

Scheduled

Scheduling allows you to perform the Rebuild at a time when there is less demand on the RAID system.

To schedule a Rebuild:

1. Click the Logical Drive View  icon in Tree View.
2. Click the Logical Drive  icon of the logical drive you want to rebuild.
3. Click the **Rebuild** tab in Management View.



4. Select the physical drive you want to rebuild.
Available drives have a black frame. Selected drives have a red frame.

5. Click the **Enable** option.
6. From the dropdown menus, select a start time.
Start time is based on a 24-hour clock.
7. Click the **Start At** field to display a popup calendar.
8. Click the start date in the calendar or enter a date manually.
9. Click the **Schedule** button.

Cancelling a Schedule

To cancel the scheduled Rebuild:

1. Click the Logical Drive View  icon in Tree View.
2. Click the Logical Drive  icon.
3. Click the **Rebuild** tab in Management View.
4. Click the **Disable** option.

Automatically After Drive Replacement

Automatic rebuilding after you replace the failed drive is possible under the following conditions:

- The logical drive is a RAID 1, 5, or 10.
See “Creating a Logical Drive” on page 94.
- The replacement drive has adequate capacity.
- Automatic Rebuild Status is Enabled.
See “Making Controller Settings” on page 82.

WebPAM will report the automatic rebuild in its user interface, as well as via popup messages, and via email, depending on your settings (see page 73).

Automatically using a Hot Spare Drive

Automatic rebuilding using a hot spare drive is possible under the following conditions:

- The logical drive is a RAID 1 or a three-drive RAID 5.
See “Creating a Logical Drive” on page 94.
- You have a hot spare drive with adequate capacity.
See “Creating a Spare Drive” on page 121.
- Automatic Rebuild Status is Enabled.
See “Making Controller Settings” on page 82.

WebPAM will report the automatic rebuild in its user interface, as well as via popup messages, and via email, depending on your settings (see page 73).

You can replace the failed physical drive at your convenience.

Automatically using a Free Drive

Automatic rebuilding using a free (unassigned) physical drive is possible under the following conditions:

- The logical drive is a RAID 1 or a three-drive RAID 5.
See “Creating a Logical Drive” on page 94.
- There is a free (unassigned) physical drive with adequate capacity.
- Automatic Rebuild Status is Enabled.
See “Making Controller Settings” on page 82.
- Automatic Rebuild Policy is set to Free & Spare.
See “Making Controller Settings” on page 82.

WebPAM will report the automatic rebuild in its user interface, as well as via popup messages, and via email, depending on your settings (see page 73).

You can replace the failed physical drive at your convenience.

Synchronizing a Logical Drive

Synchronization refers to an automated process of checking and correcting data and parity. Unlike a Rebuild, Synchronization is a maintenance operation.

Redundancy Check is an automated process of checking data and parity but it only reports and does not correct, any inconsistencies that it finds.

Synchronization and Redundancy Check apply to RAID 1, 5, and 10 logical drives. When an logical drive is first created and you choose *Full Initialization*, the same action as Synchronization takes place.

You can set up a Synchronization or Redundancy Check to:

- Begin immediately (on demand).
- Begin at the time and date you specify. See page 111.

On Demand

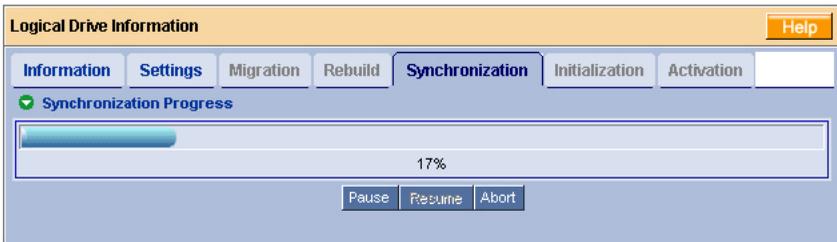
To Synchronize or Redundancy Check a logical drive:

1. Click the Logical Drive View  icon in Tree View.
2. Click the Logical Drive  icon of the logical drive you want to synchronize.
3. Click the **Synchronization** tab in Management View.



4. From the Policy dropdown menu, choose:
 - *Fix* if you want Synchronization
 - *Redundancy Check* if you do not want to correct inconsistencies
5. Click the **Start Now** button.

You can monitor Synchronization or Redundancy Check progress on the Synchronization tab.



Click the respective buttons to pause, resume, or abort the Synchronization or Redundancy Check.

Scheduled

Scheduling allows you to perform the Synchronization or Redundancy Check at a time when there is less demand on the RAID system.

Synchronization and Redundancy Check are recurring operations. For this reason, there is no date setting.

To schedule a Synchronization or Redundancy Check:

1. Click the Logical Drive View  icon in Tree View.
2. Click the Logical Drive  icon of the logical drive you want to synchronize.

3. Click the **Synchronization** tab in Management View.

Logical Drive Information Help

Information Settings Migration Rebuild **Synchronization** Initialization Activation

An automated process of checking data and parity.

Policy: Fix Start Now

Schedule

Disable **Enable**

By Day Start At 0 : 0

By Week Start At 2 : 0 Every Sunday

By Month Start At 0 : 0 On the 1st

Example 10:30(hh:mm)

Schedule

4. From the Policy dropdown menu, choose:
 - *Fix* if you want Synchronization
 - *Redundancy Check* if you do not want to correct inconsistencies
5. Click the **Enable** option.
6. Click the **by Day, by Week** or **by Month** option.
7. From the dropdown menus, select a start time and a day of the Week or Month, if applicable.
Start time is based on a 24-hour clock.
8. Click the **Schedule** button.

Canceling a Schedule

To cancel a scheduled Synchronization or Redundancy Check:

1. Click the Logical Drive View  icon in Tree View.
2. Click the Logical Drive  icon.
3. Click the **Synchronization** tab in Management View.
4. Click the **Disable** option.

Viewing Logical Drive Initialization

When logical drive is first created, you can choose one of three methods for initialization:

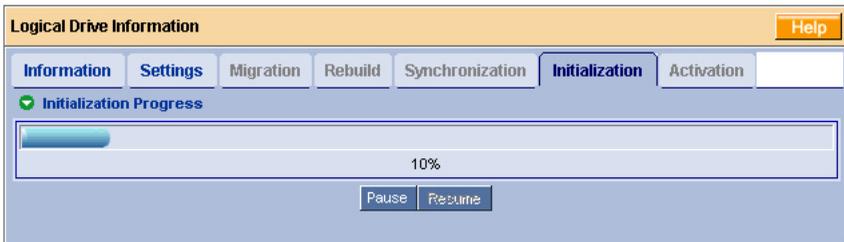
- **Fast Initialization** – Erases the reserve and master boot sectors of the physical drives being added to the logical drive.
- **Full Initialization** – Erases all sectors of the physical drives being added to the logical drive. Available for RAID 1, 5, and 10.
- **None** – No initialization. This choice is not recommended.

When you choose *Full Initialization*, the process takes some time, depending on the size of the physical drives selected for the logical drive. The Initialization tab enables you to view the initialization progress on your logical drive.

To view Initialization progress:

1. Click the Logical Drive View  icon in Tree View.
2. Click the Logical Drive  icon.
3. Click the **Initialization** tab in Management View.

You can monitor Initialization progress on the Initialization tab.



Click the respective buttons to pause and resume the Initialization.

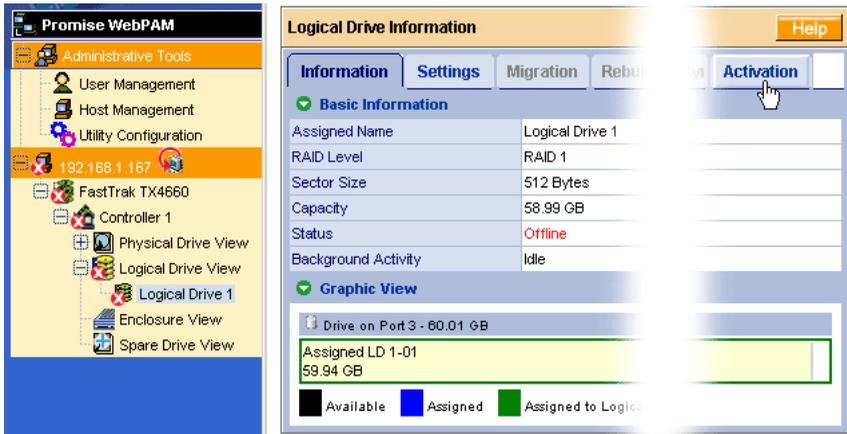
To abort an Initialization, you must delete the logical drive. See “Deleting a Logical Drive or JBOD Disk” on page 102.

Activating a Logical Drive

This feature enables you to convert a RAID 1 logical drive from *offline* to *critical* status, so you can rebuild the logical drive and access your data. This condition occurs when a single physical (disk) drive from a RAID 1 logical drive is connected to the FastTrak Controller card.

This feature does not apply to an offline RAID 0, 5, or 10 logical drive or to JBOD.

In the example below, icons of a white X within a red circle appear over the FastTrak, Controller, Logical Drive View, and Logical Drive icons. In Management View, the status is shown as *Offline*.



The picture above was shortened to fit on the page.

To activate an offline RAID 1 logical drive:

1. Click the Logical Drive View  icon in Tree View.
2. Click the Logical Drive  icon of the offline logical drive.
3. Click the **Activation** tab in Management View.



4. Click the **Activation** button.

The logical drive converts to *Critical* status. You can now rebuild the logical drive. See “Rebuilding a Logical Drive” on page 107.

Responding to a Critical or Offline Logical Drive

When a Physical Drive Fails in a RAID 0 or SPAN Logical Drive

A non-fault tolerant logical drive—RAID 0 or SPAN—goes offline when a physical (disk) drive is removed or fails. Since the logical drive is not fault tolerant, the data stored in the logical drive is no longer accessible.

If one physical drive fails, all of the data on the RAID 0 logical drive is lost. You must replace the failed drive. If the logical drive had more than one physical drive, delete the logical drive and re-create it. Then restore the data from a backup source.

When a Physical Drive Fails in a RAID 1, 5, or 10 Logical Drive

A RAID 1, 5, or 10 logical drive goes critical when a physical (disk) drive is removed or fails. Due to the fault tolerance of the logical drive, the data is still available and online. However, once the logical drive goes critical, it has lost its fault tolerance and performance may be adversely affected.

The following will occur when a physical drive fails or goes offline:

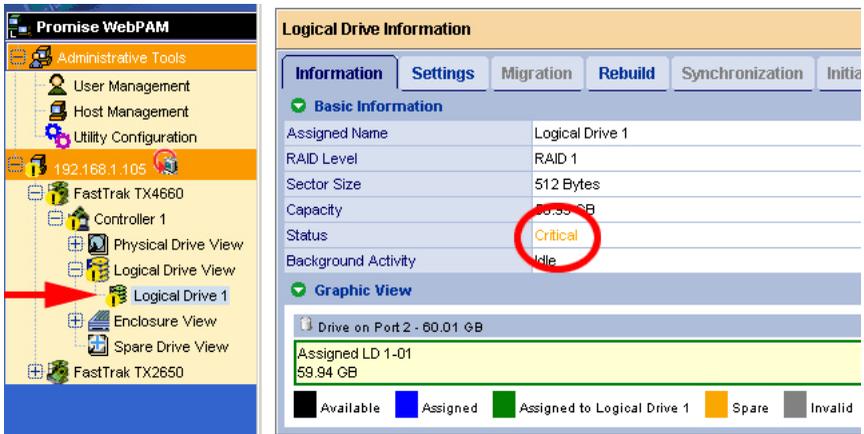
- The FastTrak Controller's audible alarm sounds (if the alarm is enabled).
- The SuperSwap Status LED changes from green to red.
- WebPAM displays a message in the upper right corner of the Host PC's monitor screen. This message appears even when your browser is closed.



- WebPAM displays a popup message.



- WebPAM sends you an email message (if Event Notification is enabled).
- WebPAM reports the condition in Tree View and Management View.



In the example above, amber ! icons appear over the FastTrak, Controller, Logical Drive View, and Logical Drive icons. Click the Logical Drive View  or Logical Drive  icons to verify the condition of the logical drive.

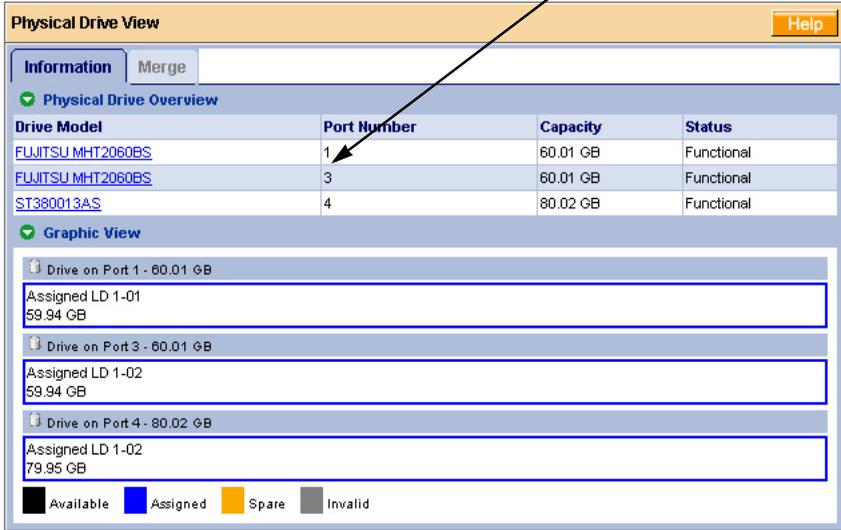
In this example, the Status is *Critical* and Background activity is *Idle*. This combination indicates that there is no automatic rebuild, so you must take action to restore the logical drive:

1. Identify the failed physical drive.
2. Replace the failed physical drive.
3. Rebuild your logical drive.

Identify the Failed Physical Drive

Click the Physical Drive View  icon in the WebPAM user interface. Look for a missing physical drive. A drive that used to be present but is suddenly absent is the failed physical drive.

No drive on Port 2



Physical Drive View Help

Information Merge

✓ Physical Drive Overview

Drive Model	Port Number	Capacity	Status
FUJITSU MHT2060BS	1	60.01 GB	Functional
FUJITSU MHT2060BS	3	60.01 GB	Functional
ST380013AS	4	80.02 GB	Functional
	2		

✓ Graphic View

Drive on Port 1 - 60.01 GB

Assigned LD 1-01
59.94 GB

Drive on Port 3 - 60.01 GB

Assigned LD 1-02
59.94 GB

Drive on Port 4 - 80.02 GB

Assigned LD 1-02
79.95 GB

Available
 Assigned
 Spare
 Invalid

In this example, there were four physical drives connected to the FastTrak Controller. Notice that there is no drive reported on Port 2. The failed drive is connected to Port 2.

Replace the Failed Physical Drive

Replace the failed physical drive with a new one of equal or greater capacity. Then rebuild the logical drive. See “Installing the FastTrak Card” on page 9 and the *SuperSwap User Manual* for more information about replacing a physical drive.

Rebuild Your Logical Drive

See “Rebuilding a Logical Drive” on page 107 for instructions and more information.

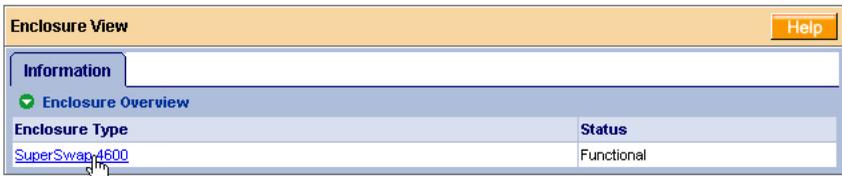
Managing Enclosures

- Viewing Enclosures (page 118)
- Viewing Enclosure Information (page 118)

Viewing Enclosures

The FastTrak TX4660 and TX8660 Controller cards are designed to work with Promise SuperSwap enclosures. Enclosure View provides a list of all enclosures currently installed in the Host PC.

To view a list of your enclosures, click the Enclosure View  icon in Tree View.



Viewing Enclosure Information

To access information about an Enclosure:

1. Click the Enclosure View  icon in Tree View.
2. Click the Enclosure  icon.

Enclosure Information		Help
Information		
 Basic Information		
Enclosure Type	SuperSwap 4600	
Fan Speed (RPM) (normal range >= 2500 RPM)	Fan1 - 6780 RPM Fan2 - 6848 RPM	
Temperature (°C/°F) (normal range <= 48°C/118.4°F)	28.00°C / 82.40°F 29.00°C / 84.20°F	
Power Status 12V (11.04V <= normal range <= 12.96V)	12.02V	
Power Status 5V (4.75V <= normal range <= 5.25V)	5.07V	

The information tab displays the following information:

- **Enclosure Type** – The manufacturer’s model name or number.
- **Fan Speed** – The RPM of the enclosure’s cooling fans.
- **Temperature** – The internal temperature of the enclosure. Each reading reflects a separate measurement.
- **Power Status** – The voltages supplied by the enclosure’s 12V and 5V systems.

The Fan, Temperature and Power icons change color when an error is indicated, as shown below.



Fan Error



Temperature Error



Power Error

	LEDs		
State	 Status	 Activity	 Enclosure
Green	Physical drive is present and ready	Physical drive is present and ready	Normal status
Blinking	n/a	Read/write activity	n/a
Amber	Physical drive: <ul style="list-style-type: none"> • is spinning up • is critical • is rebuilding • reports a SMART error 	n/a	1 incident (see below) Enclosure is critical but still functional Attention required
Red	Physical drive: <ul style="list-style-type: none"> • is offline • is not installed 	n/a	2 or more incidents (see below)
Dark	Power is off	Physical drive: <ul style="list-style-type: none"> • has failed • is not installed 	Physical drives are spinning up
An incident refers to one occurrence of out-of-range voltage, temperature or fan speed. Any incident requires immediate attention.			

For more information on Enclosures, replacing physical drives and other repair operations, refer to the *SuperSwap User Manual*.

Managing Spare Drives

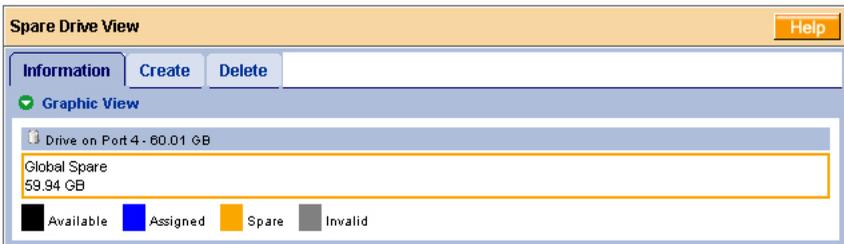
- Viewing Spare Drives (page 121)
- Creating a Spare Drive (page 121)
- Deleting a Spare Drive (page 122)

A spare drive is a physical drive designated to function as a hot spare drive. A hot spare drive replaces a failed physical drive automatically.

See “Making Controller Settings” on page 82 and “Rebuilding a Logical Drive” on page 107 for more information.

Viewing Spare Drives

Spare Drive View provides a list of all spare drives currently assigned. To access Spare Drive View, click the Spare Drive View  icon in Tree View.



From this screen, you can use the Create and Delete features.

Creating a Spare Drive



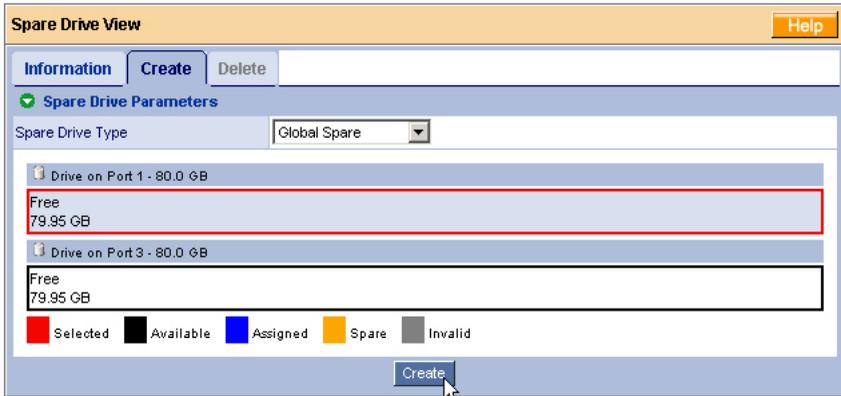
Important

The spare drive must be of equal or greater capacity than the largest physical drive in your logical drive.

To create a spare drive:

1. Click the Spare Drive View  icon.
2. Click the **Create** tab.

The Spare Drive View screen appears.



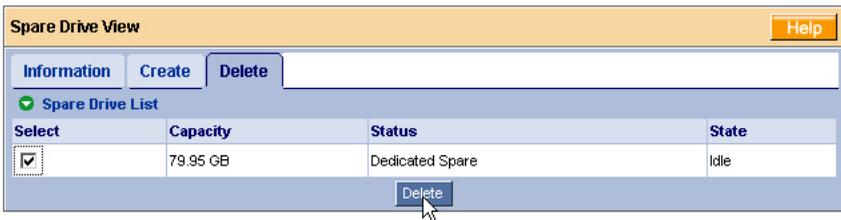
Spare Drive Type has only the default Global Spare setting.

3. Click a physical drive to select it.
Available drives have a black frame. Selected drives have a red frame.
4. Click the **Create** button.
The Spare Drive is created. Click on the Information tab to see it.

Deleting a Spare Drive

To delete a spare drive:

1. Click the Spare Drive View  icon.
2. Click the **Delete** tab.



3. Check the box to the left of the spare drive you want to delete.
4. Click the **Submit** button.
5. In the Confirmation box, click the **OK** button.
The spare drive is deleted.

Chapter 6: Technology

- About FastTrak, below
 - Introduction to RAID, below
 - Choosing a RAID Level (page 130)
 - Other Logical Drive Features (page 132)
-

About FastTrak

FastTrak TX Series SATA/SAS RAID controller cards feature concurrent data channel operation and onboard BIOS. The channels on the FastTrak card support concurrent operation that allows for overlapped I/O under multi-tasking operating systems and sharing the workload between multiple drives.

FastTrak BIOS

The FastTrak card contains a BIOS code that extends the standard disk service routine provided through Int13. The BIOS is bootable for DOS and other operating systems that rely on the system BIOS for drive operation. When the FastTrak BIOS appears during bootup, press Ctrl-F to enter the FastBuild utility to select from menu settings.

Introduction to RAID

RAID (Redundant Array of Independent Disks) allows multiple hard drives to be combined together into a logical drive. The operating system sees the logical drive as a single storage device, and treats it as such. The RAID software and/or controller handle all of the individual drives on its own. The benefits of a RAID can include:

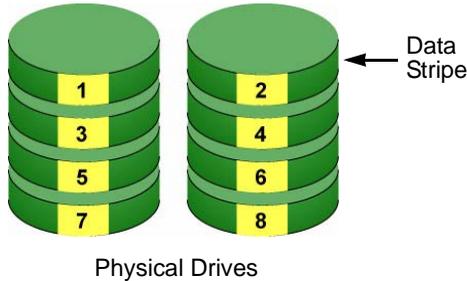
- Higher data transfer rates for increased server performance
- Increased overall storage capacity for a single drive designation (such as, C, D, E, etc.)
- Data redundancy/fault tolerance for ensuring continuous system operation in the event of a hard drive failure

Different types of logical drives use different organizational models and have varying benefits. Also see Choosing RAID Level on page 130. The following outline breaks down the properties for each type of RAID logical drive:

RAID 0 – Stripe

When a logical drive is striped, the read and write blocks of data are interleaved between the sectors of multiple physical drives. Performance is increased, since the workload is balanced between drives or “members” that form the logical drive. Identical drives are recommended for performance as well as data storage efficiency.

Figure 1. RAID 0 Stripe interleaves data across multiple drives



The logical drive's data capacity equals the capacity of the smallest physical drive times the number of physical drives. For example, one 100 GB and three 120 GB drives will form a 400 GB (4 x 100 GB) logical drive instead of 460 GB.

If physical drives of different capacities are used, there will also be unused capacity on the larger drives.

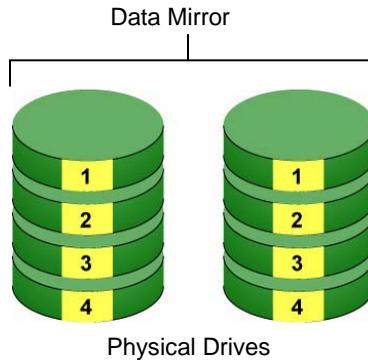
A RAID 0 logical drive requires one or more physical drives.

RAID 1 – Mirror

When a logical drive is mirrored, identical data is written to a pair of physical drives, while reads are performed in parallel. The reads are performed using elevator seek and load balancing techniques where the workload is distributed in the most efficient manner. Whichever drive is not busy and is positioned closer to the data will be accessed first.

With RAID 1, if one physical drive fails or has errors, the other mirrored physical drive continues to function. Moreover, if a spare physical drive is present, the spare drive will be used as the replacement drive and data will begin to be mirrored to it from the remaining good drive.

Figure 2. RAID 1 Mirrors identical data to two drives



The logical drive's data capacity equals the smaller physical drive. For example, a 100 GB physical drive and a 120 GB physical drive have a combined capacity of 100 GB in a mirrored logical drive.

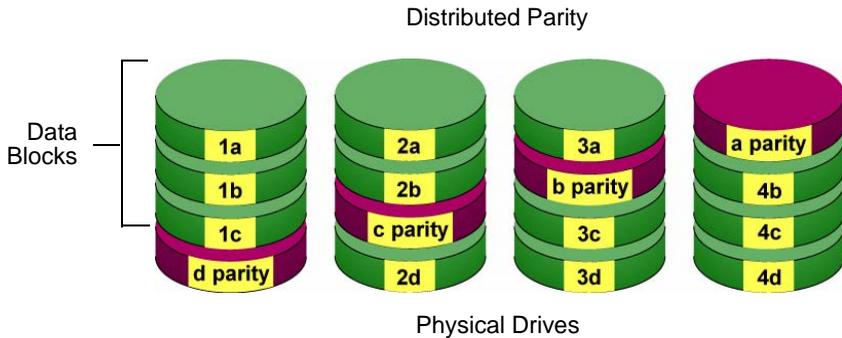
If physical drives of different capacities are used, there will be unused capacity on the larger drive.

A RAID 1 logical drive requires two physical drives.

RAID 5 – Block Striping with Distributed Parity

RAID 5 organizes block data and parity data across the physical drives. Generally, RAID Level 5 tends to exhibit lower random write performance due to the heavy workload of parity recalculation for each I/O. RAID 5 is generally considered to be the most versatile RAID level. It works well for file, database, application and web servers.

Figure 3. RAID 5 Stripes all drives with data and parity information



The capacity of a RAID 5 logical drive is the smallest physical drive size multiplied by the number of physical drives, less one. Hence, a RAID 5 logical drive with four 100 GB physical drives will have a capacity of 300 GB. A logical drive with two 120 GB physical drives and one 100 GB physical drive will have a capacity of 200 GB.

RAID 5 is generally considered to be the most versatile RAID level.

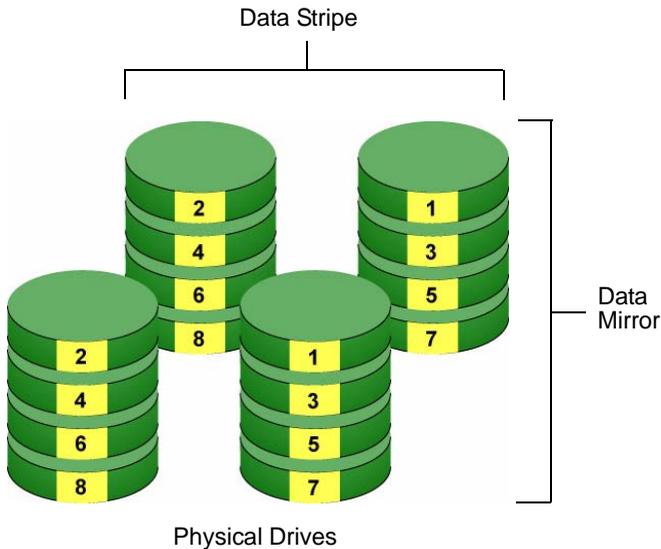
A RAID 5 logical drive requires 3 to 8 physical drives.

RAID 10 – Stripe / Mirror

Stripe/Mirror combines both of the RAID 0 and RAID 1 logical drive types. It can increase performance by reading and writing data in parallel while protecting data with duplication.

At least four physical drives are needed for RAID 10 to be installed. With a four-disk-drive logical drive, one drive pair is mirrored together then striped over a second drive pair.

Figure 4. RAID 10 takes a striped pair of drives and mirrors them over two additional drives



The data capacity RAID 10 logical drive equals the capacity of the smallest physical drive times the number of physical drives, divided by two.

In some cases, RAID 10 offers double fault tolerance, depending on which physical drives fail.

A RAID 10 logical drive requires an even number of physical drives and a minimum of four.

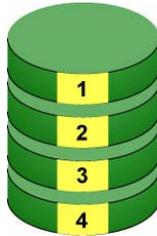
JBOD – Single Drive

An alternative to RAID, JBOD capacity is equal to the size of the physical drive itself.

JBOD appears in the User Interface as one individual drive.

There are no performance or fault-tolerance features. When one disk fails, all data on that disk is lost. The other disks are unaffected.

Figure 5. JBOD appears in the User Interface as one individual drive



Physical Drive

Any number of physical drives can be set to JBOD.

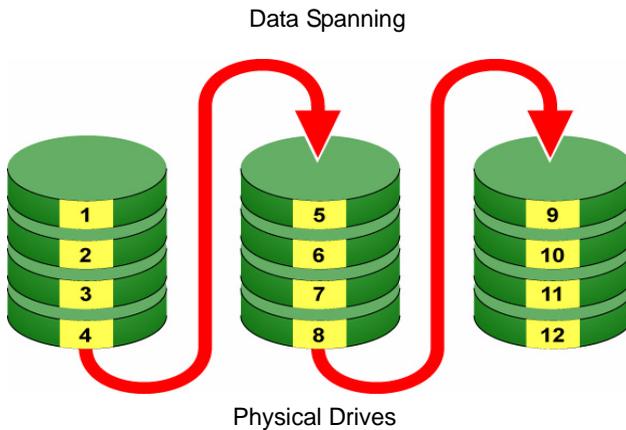
SPAN – Concatenated Drives

An alternative to RAID, Spanning or Concatenating capacity is equal to the cumulative size of the physical drives that are joined together.

SPAN appears in the User Interface as one individual drive.

There are no performance or fault-tolerance features. When one disk fails, the span or concatenation is broken, possibly complicating data recovery from the other disks.

Figure 6. SPAN appears in the User Interface as one individual drive.



The advantage to a SPAN is the ability to connect multiple small disk drives into a single large drive without any wasted disk space and a minimum of management.

A SPAN logical drive requires one or more physical drives.

A single-drive SPAN has no advantage over an individual disk drive. However, you can add more drives to the SPAN as your requirements increase.

Choosing a RAID Level

There are several issues to consider when choosing the RAID Level for your FastTrak logical drive. The following discussion summarizes some advantages, disadvantages and applications for each choice.

RAID 0

Advantages	Disadvantages
Implements a striped disk logical drive, the data is broken down into blocks and each block is written to a separate physical drive I/O performance is greatly improved by spreading the I/O load across many channels and drives No parity calculation overhead is involved	Not a true RAID because it is not fault-tolerant The failure of just one drive will result in all data in an logical drive being lost Should not be used in mission critical environments

Recommended Applications for RAID 0:

- Image Editing
- Pre-Press Applications
- Any application requiring high bandwidth

RAID 1

Advantages	Disadvantages
Simplest RAID storage subsystem design Can increase read performance by processing data requests in parallel since the same data resides on two different drives	Very high disk overhead - uses only 50% of total capacity

Recommended Applications for RAID 1:

- Accounting
- Financial
- Payroll
- Any application requiring very high availability

RAID 5

Advantages	Disadvantages
High Read data transaction rate Medium Write data transaction rate Good aggregate transfer rate	Disk failure has a medium impact on throughput

Recommended Applications for RAID 5:

- File and Application servers
- WWW, E-mail, and News servers
- Intranet servers
- Most versatile RAID level

RAID 10

Advantages	Disadvantages
Implemented as a mirrored logical drive whose segments are RAID 0 logical drives High I/O rates are achieved thanks to multiple stripe segments	Very high disk overhead - uses only 50% of total capacity

Recommended Applications for RAID 10:

- Imaging applications
- Database servers
- General fileserver

JBOD

Advantages	Disadvantages
Enables you to manage a large number of physical drives from a single controller The failure of one drive cannot cause data loss on other physical drives	An alternative to RAID without any RAID advantages Do not be use in mission critical environments

Recommended Applications for JBOD:

- Any application requiring multiple physical drives but where read/write speed or fault-tolerance are not important
- Applications were low-cost operation critical

SPAN

Advantages	Disadvantages
Enables you to access the capacity of multiple physical drives as a single drive Uses full physical drive capacity	An alternative to RAID without any RAID advantages Do not be use in mission critical environments

Recommended Applications for SPAN:

- Any application requiring multiple physical drives but where read/write speed or fault-tolerance are not important
- Applications were low-cost operation critical

Other Logical Drive Features

Stripe Block Size

Stripe Block size is set to 16 KB for the FastTrak TX Series RAID controller card.

Initialization

Fast Initialization erases the Master Boot Record of the logical drive being created. Choose this option when one or more physical drives has been used in a previous logical drive.

Full Initialization performs two actions. First, it erases the Master Boot Record of the logical drive being created. Second, it synchronizes the physical drives and creates redundant data for RAID 1 and RAID 10 logical drives, or parity data for RAID 5 logical drives. Choose this option when one or more physical drives has been used in a previous logical drive and you want to remove all data stored on the drives.

Both initialization options are available in the FastBuild utility and in WebPAM.

Gigabyte Boundary

This feature is designed for fault-tolerant logical drives (RAID 1, 5, and 10). Gigabyte Boundary affects a replacement physical drive used in a logical drive. Normally, when an physical drive fails, the replacement drive must be the same capacity or larger. However, the Gigabyte Boundary feature permits the installation of a replacement drive that is slightly smaller (within 1 gigabyte) than the remaining working drive. For example, the remaining working drives can be 80.5 GB and the replacement drive can be 80.3 GB, since all are rounded down to 80.0 GB. This permits the smaller drive to be used.

Without Gigabyte Boundary, the FastTrak controller will not permit the use of a replacement physical drive that is slightly smaller than the remaining working drive(s).

Hot Spare Drive

Any extra drive that is not assigned to an array is designated *Free* in the View Drive Assignments screen in the FastBuild utility.

To serve as a hot spare drive, you must designate the free drive as a spare using the WebPAM software.

The spare drive automatically replaces a failed drive in the disk array as soon as the failure is detected. The FastTrak Controller rebuilds the data onto the spare drive in the background, that is, while your input/output operations continue.

At a later time, you can physically remove the failed drive and install a replacement drive that functions as the new spare drive.

Cache Setting

The cache is set to *Write Through* for the FastTrak TX Series RAID controller card.

Logical Drive Migration

To *migrate* a logical drive is to:

- Change its RAID level
- Add one or more physical drives
- Both of the above actions

You must use the WebPAM software to perform a migration. See "Migrating a Logical Drive" on page 104.

To migrate a logical drive, its operational status must be *Functional*.

The FastTrak TX Series supports the following logical drive migration source and target configurations:

RAID 0

A RAID 0 source logical drive can migrate to the following target logical drives:

Target	Requirements
RAID 0	Add physical drives.
RAID 1	2 physical drives only. Only a single-drive RAID 0 can migrate to RAID 1 by adding 1 physical drive.
RAID 5	3 physical drives minimum, 8 maximum. RAID 0 must have less than 8 physical drives.
RAID 10	4 physical drives minimum. Even number of physical drives.
SPAN	One drive only.

RAID 1

A RAID 1 Source logical drive can migrate to the following Target logical drives:

Target	Requirements
RAID 0	None.
RAID 5	Add physical drives. 3 minimum, 8 maximum.
RAID 10	4 physical drives minimum. Even number of physical drives.

RAID 5

A RAID 5 Source logical drive can migrate to the following Target logical drives:

Target	Requirements
RAID 0	None.
RAID 5	Add physical drives. 8 maximum.

RAID 10

A RAID 10 Source logical drive can migrate to the following Target logical drives:

Target	Requirements
RAID 0	None.
RAID 5	3 physical drives minimum, 8 maximum. RAID 10 must have less than 8 physical drives.
RAID 10	Add physical drives. Even number of physical drives.

SPAN

A SPAN Source logical drive can migrate to the following Target logical drives:

Target	Requirements
RAID 0	One drive only.
SPAN	Add physical drives.



Important

- The Target logical drive may require more physical drives than the Source logical drive
- If the Target logical drive requires an EVEN number of physical drives but the Source logical drive has an ODD number, ADD a physical drive as part of the migration process
- You cannot reduce the number of physical drives in your logical drive, even if the Target logical drive requires fewer physical drives than the Source logical drive
- RAID 1 (mirror) works with two physical drives only
- You cannot migrate a logical drive when it is Critical or performing activities such as Synchronizing and Rebuilding
- Logical drive migration is not possible to or from JBOD

Ranges of Logical Drive Expansion

The Windows 2000 and Windows XP 32-bit operating systems support a 10-byte LBA format. As a result, these OSes can only recognize 4 billion addresses. Your logical drive is limited to 2 TB of data, even if there is more space available on your physical drives.

This limitation does not apply to Windows XP 64-bit, 2003 and 2008 Server, Vista, and Linux OSes with the 2.6 kernel.

You can direct WebPAM to expand a logical drive beyond the maximum expansion size. When the expansion is finished:

- WebPAM will show the logical drive in the desired size.
- Your operating system might show the logical drive 2 TB.
- Additional capacity might appear as unpartitioned and unformatted.

At this point, you can format the unpartitioned/unformatted capacity as a *second* logical drive.

Chapter 7: Support

- Frequently Asked Questions
 - Pre-Installation, below
 - Motherboard Issues (page 138)
 - System CMOS Issues (page 138)
 - Drive Issues (page 139)
 - Operating System-Related Issues (page 141)
 - Installation Issues (page 142)
 - Post-Installation (page 143)
 - Performance Tips (page 143)
 - Contact Technical Support, page 144
 - Limited Warranty, page 147
 - Return Product for Repair, page 149
-

Frequently Asked Questions

This section lists frequently asked questions and other issues with the FastTrak TX Series SATA/SAS RAID Controller card.

Pre-Installation

(Speed, Device Types, Capacity, Cabling)

What kind of hard drives can I use for a FastTrak logical drive?

You can use any Serial ATA (SATA) or Serial Attached SCSI (SAS) physical (disk) drives to create logical drives on the FastTrak TX Series RAID Controller card. Use matching drives for multiple-logical drives to maximize capacity usage as well as performance.

Will ACPI work with physical drives on the FastTrak?

ACPI works on Windows but not on Linux.

Can I use ATAPI devices on the FastTrak?

No. The FastTrak TX Series does not support ATAPI devices.

How can I change the resources that the FastTrak Controller uses?

The FastTrak TX Series is fully PnP. This means all the resources that it uses are given to it by the PnP BIOS on the motherboard. The FastTrak TX Series RAID Controller does support IRQ sharing, but this will not work unless ALL the

concerned devices support the feature. If your motherboard allows you to control the assignment of these resources, you may be able to remedy the problem by:

- Changing the IRQ assignments to the PCI slots in the motherboard BIOS during boot up.
- Reset the configuration data in your CMOS. This is usually an option in the PnP section of your CMOS.
- Otherwise, switch the FastTrak card to a different PCI slot.

Motherboard Issues

Freeing additional IRQ resources

Since the FastTrak card supports PCI Interrupt sharing, it is possible to use IRQs already assigned to another PCI card. Interrupt Sharing is not supported with onboard IDE controllers. If the onboard IDE controller(s) are not used, you may disable the controllers to free IRQ 14 and/or 15.

Configuring PCI IRQ resources

Setting the IRQ for a particular PCI slot will be different depending on the motherboard BIOS. This setting is usually made in the PCI Configuration and/or Plug and Play (PnP) section of the motherboard BIOS setup.

Consult your motherboard manual for information that is specific to your motherboard.

System CMOS Issues

Set motherboard CMOS Boot sequence to boot to FastTrak Controller

On some Motherboard BIOS, it is necessary to set the Boot sequence to SCSI, A:, C: since the FastTrak card is identified as a SCSI card.

Motherboard CMOS displays C: or D: drive failure during startup

See the Drive-Related Errors section.

Using an onboard IDE card with FastTrak Controller

If an onboard IDE controller is installed with hard disks, enable support in the Motherboard Standard CMOS Setup for the drives. Note that the onboard IDE hard drives will then be the bootable hard disk unless the system BIOS has a boot sequence setting with the option to specify booting to a different device.

Drive Issues

Can I add a drive to a FastTrak logical drive via hot-swap and dynamically adjust the logical drive size?

Yes. The FastTrak TX Series supports dynamically adjustable RAID size and RAID level. See “Migrating a Logical Drive” on page 104.

Do the physical drives on the FastTrak have to be the same size?

The physical drives connected to the FastTrak TX Series do not have to be the same size. If the sizes differ, the FastTrak controller will truncate the bigger drive so the drives match. The resulting difference in drive space is unusable, so avoid using physical drives of significantly different capacities.

I already have a logical drive on an older FastTrak controller. Can I move the physical drives to my new FastTrak TX Series?

Yes, provided your logical drive was built using SATA physical drives. All FastTrak controllers read the physical drives the same way so you can move them from one controller to another.

Can I take a physical drive used in a FastTrak logical drive and access it directly with a different controller, such as the one integrated on the motherboard?

Only Single-drive RAID 0 and RAID 1 logical drive configurations allow a physical drive to be accessed individually on another controller. Multiple-drive RAID 0 physical drives will not work.

If I have a problem with one of the physical drives on the FastTrak Controller, how can I low-level format it to correct the problem?

Do NOT do this. Low-level formatting is unnecessary and generally does not correct problems commonly experienced. If you think the physical drive is faulty, run the drive manufacturer’s diagnostic utility on it.

Errors such as bad sectors or ECC/CRC failure are best remedied by replacing the physical drive. For this reason, do NOT low-level format the drives attached to the FastTrak controller.

Do I have to install disk management software on my logical in order to access the full storage capacity?

No! Disk management software will only complicate things. The logical drive should be fully addressable by your OS as it is. Some OSes have varying limits on the sizes of partitions and logical drives that can be defined. See “Ranges of Logical Drive Expansion” on page 135 and consult your OS documentation about partitioning larger logical drives.

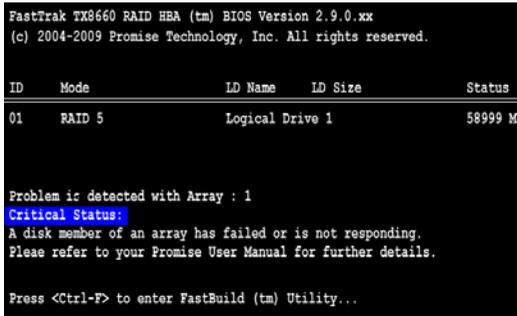
What system BIOS setup settings do I use for the drives on the FastTrak?

None. The drives on the FastTrak TX Series are supported by the FastTrak BIOS and/or OS drivers, not by your system BIOS.

How do I partition and format my FastTrak logical drive?

You can partition and format your logical drive using any file system you want. See "Appendix A: Partition and Format" on page 151.

Critical logical drive status error reported during boot



```
FastTrak TX8660 RAID HBA (tm) BIOS Version 2.9.0.xx
(c) 2004-2009 Promise Technology, Inc. All rights reserved.

ID      Mode      LD Name      LD Size      Status
-----
01      RAID 5      Logical Drive 1      58999 MB

Problem is detected with Array : 1
Critical Status:
A disk member of an array has failed or is not responding.
Please refer to your Promise User Manual for further details.

Press <Ctrl-F> to enter FastBuild (tm) Utility...
```

If a critical status error message appears on the FastTrak TX4660 or TX8660 BIOS startup screen for a RAID 1, 5, or 10 logical drive, a physical drive has failed or is not responding. See "Responding to a Critical or Offline Logical Drive" on page 115.

Physical drives cannot be formed into a logical drive

Physical drives must support SATA or SAS and be free of media defects in order to be added to a logical drive. Promise recommends using new identical physical drives for each logical drive. Also, re-check the data and power cabling and connections.

System CMOS displays C: or D: drive failure during Startup

Do not reference C: or D: in the Motherboard Standard CMOS for drives attached to the FastTrak TX Series RAID Controller. Only enter drive information in the Motherboard CMOS for drives attached to the onboard IDE controller.

The logical drive constantly goes critical or offline during reboot.

This condition may occur when the *Master Boot Record (MBR)* of one of the drives has become corrupt or bad. Removing (erasing) the MBR will remedy any issue related directly to a bad MBR.



Warning

Before removing the MBR of the drive(s), backup any existing data. Removal of the MBR of any physical drive permanently deletes all existing data on the drive.

To erase the MBR, follow these steps:

1. Backup any important data from the logical drive.
2. Note the logical drive information, including which drives are used, the number of physical drives, RAID Level, etc.
3. Delete the logical drive.
4. Create a new logical drive using the specifications from the previous logical drive.
5. During the logical drive creation process:
 - In FastBuild, set the Fast Init feature to ON
 - In WebPAM, choose Fast or Full Initialization
6. Partition and format the logical drive using your PC's operating system. See "Appendix A: Partition and Format" on page 151.

Unable to partition or format logical drive

See "The logical drive constantly goes critical or offline during reboot," above.

Cannot rebuild RAID 1, 5, or 10 logical drive

See "The logical drive constantly goes critical or offline during reboot," above.

Fatal errors or data corruption are constantly reported when reading or writing to the logical drive

See "The logical drive constantly goes critical or offline during reboot," above.

Operating System-Related Issues

The FastTrak driver does not appear in Device Manager

The Windows Device Manager may show the FastTrak controller under Other Devices or SCSI and RAID Controllers instead of the Hard Disk

Controllers. Look under Other Devices to see if it lists a PCI Card or RAID Controller. If so, highlight this listing and click the Properties button then click the Driver tab.

Depending on your version of Windows, choose either Change Driver or Update Driver. Follow the on-screen prompts to complete installation of the driver. If Windows asks if you want to test if the device can be removed safely, click CANCEL. Reboot the system to complete installation of the driver.

“Inaccessible Boot Device” message appears during floppyless installation of Windows

You did not press the F6 key at the appropriate time. Reboot the system and press the F6 key when the message “Press F6 if you need to install third party SCSI or RAID driver” appears in Windows.

“No Hard Drives Found” message appears during CD-ROM installation of Windows

You did not press the F6 key at the appropriate time. Reboot the system and press the F6 key when the message “Press F6 if you need to install third party SCSI or RAID driver” appears in Windows.

Installation Issues

How can I change the system boot sequence in order to boot from the FastTrak logical drive?

The boot sequence is controlled by the system BIOS. The system BIOS recognizes the FastTrak TX Series RAID Controller and its logical drives as SCSI devices. This arrangement allows you to set the boot sequence in your BIOS setup utility to boot from SCSI first, rather than IDE.

If there are multiple SCSI add-in controllers in the system, then the boot sequence among is determined by their PCI slot priority. PCI slot #1 will be first, slot #2 second, etc. If you want to boot from the logical drive, put the FastTrak Controller in the PCI slot where it will be accessed before the other SCSI controllers.

How can I change the boot sequence between a PCI SCSI card and the FastTrak logical drive?

Since all PCI and PCIe devices are PnP, it is difficult to determine which device is addressed first. Some newer motherboard BIOSes have advanced options that identify devices and allow you to select which device will be assigned resources first. Otherwise you may have to physically switch the device cards among the PCI and PCIe slots so that the boot device is in the highest priority slot number, as described in the previous answer.

Post-Installation

Why can't I see the physical drives on the FastTrak Controller card under FDISK?

You have not created a logical drive or JBOD yet. If no logical drive or JBOD has been created, the OS will not recognize physical drive(s) attached to the FastTrak card.

Why can't I log into WebPAM over the network?

Verify that you have the correct IP address for the Host PC where the FastTrak card is installed.

If you checked the *Local Monitoring Only* option when you installed WebPAM, you can only access WebPAM from the Host PC. To obtain network access, reinstall WebPAM and be sure you UNcheck the *Local Monitoring Only* option. See "Installing WebPAM" on page 22.

Performance Tips

Here are some tips that may optimize performance in a RAID 0 striped logical drive. If you are using an audio/video-editing card, we also recommend reviewing your A/V card's documentation for additional information.

Use FastTrak array as D: or other non-bootable drive in a striped logical drive.

For audio/video editing, keep the original system boot drive on the standard IDE controller as C: drive. Partitioning software will see the logical drive as one physical drive, D: or later. This action will prevent file fragmentation and provide better accessibility to the logical drive.

Re-Configure PCI Latency Setting

The PCI Latency setting appears in some Motherboard BIOS. The setting governs how much time is allocated to service each PCI slot. Promise recommends a value of 64. An optimal value will vary from system to system.

Contacting Technical Support

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

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

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

Technical Support Services

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

United States

E-mail Support	e-Support On-Line
Fax Support	+1 408 228-1097 Attn: Technical Support
Phone Support	+1 408 228-1400 option 4
If you wish to write us for support:	Promise Technology, Inc. 580 Cottonwood Drive Milpitas, CA 95035, USA

The Netherlands

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

Germany

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

Italy

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

Taiwan

E-mail Support	e-Support On-Line
Fax Support	+886 3 578 2390 Attn: Technical Support
Phone Support	+886 3 578 2395 (ext. 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	e-Support On-Line
Fax Support	+86 10 8857 8015 Attn: Technical Support
Phone Support	+86 10 8857 8085 or 8095
If you wish to write us for support:	Promise Technology China – Beijing Room 1205, Tower C Webok Time Center, No.17 South Zhong Guan Cun Street Hai Dian District, Beijing 100081, China

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

Limited Warranty

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

- a) all components for a period of three (3) years;
- b) will conform to Promise’s specifications;
- c) will be free from defects in material and workmanship under normal use and service.

This warranty:

- a) applies only to products which are new and in cartons on the date of purchase;
- b) is not transferable;
- c) is valid only when accompanied by a copy of the original purchase invoice.
- d) Is not valid on spare parts, fans, and power supplies

This warranty shall not apply to defects resulting from:

- a) improper or inadequate maintenance, or unauthorized modification(s), performed by the end user;
- b) operation outside the environmental specifications for the product;
- c) accident, misuse, negligence, misapplication, abuse, natural or personal disaster, or maintenance by anyone other than a Promise or a Promise-authorized service center.

Disclaimer of other warranties

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

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

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

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

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

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

- a) replace the product with a conforming unit of the same or superior product;
- b) repair the product.

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

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

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

Your Responsibilities

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

Return Product For Repair

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

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

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



Important

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

Return **ONLY** the specific product covered by the warranty (do not ship cables, manuals, diskettes, etc.), with a copy of your proof of purchase to:

USA and Canada: Promise Technology, Inc.
 Customer Service Dept.
 Attn.: RMA # _____
 47654 Kato Road
 Fremont, CA 94538

Other Countries: Return the product to your dealer
 or retailer.
 Contact them for instructions
 before shipping the product.

You must follow the packaging guidelines for returning products:

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

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

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

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

Appendix A: Partition and Format

In order for your operating system to recognize and work with the physical (disk) drives attached to your FastTrak TX Series SATA/SAS RAID controller card, your logical drive must be partitioned and formatted.

- If your drives were previously partitioned and formatted they are ready to use and you can skip this procedure
- If your drives have not been partitioned and formatted, you must do that job before you can use them

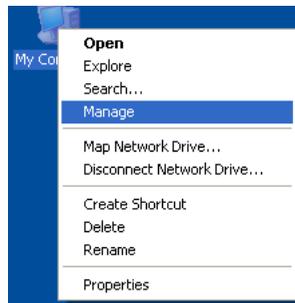
The actions of partitioning and formatting create a file structure on the physical drives with which your operating system can work. In the example below, we show how this is done in Windows. A similar procedure is required for Linux PCs. However, partitioning and formatting in Linux is not automated, therefore please refer to your system documentation for the exact procedure.



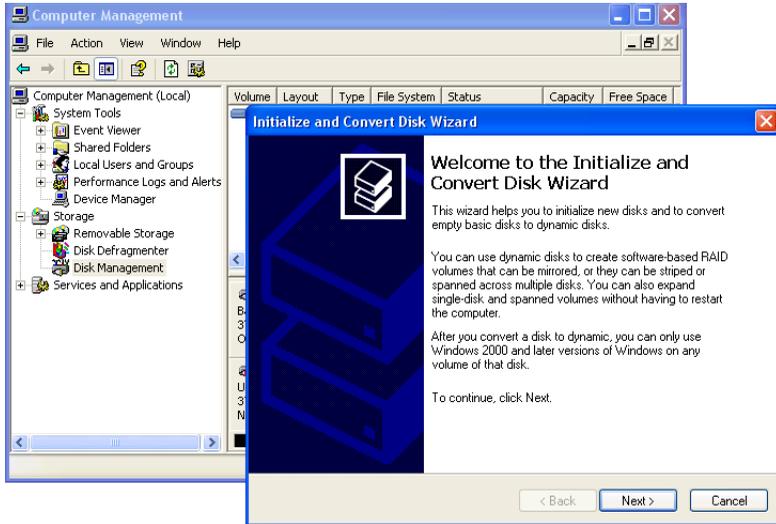
Note

If you plan to boot your computer from this logical drive, you partition and format the logical drive when you install the OS.

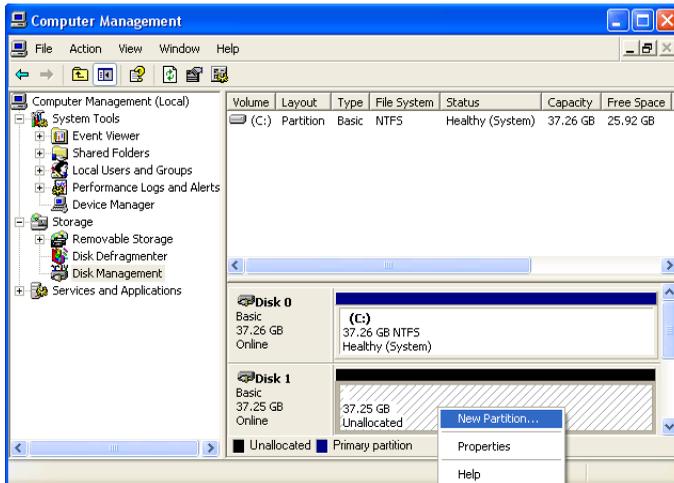
The instructions here are for non-bootable logical drives used for data storage only.



1. From the desktop, right-click the My Computer icon and select *Manage* from the popup menu. The Computer Management window opens.
2. From the left menu, click Disk Management. The Disk Management window opens with your new logical drive identified as Disk 1. The Initialize Wizard appears automatically.



3. Click the **Next** button to start the Wizard.
4. In the following windows, select Disk 1 to Initialize. Do not select any disks to Convert. Click the **Finish** button to Initialize the logical drive.

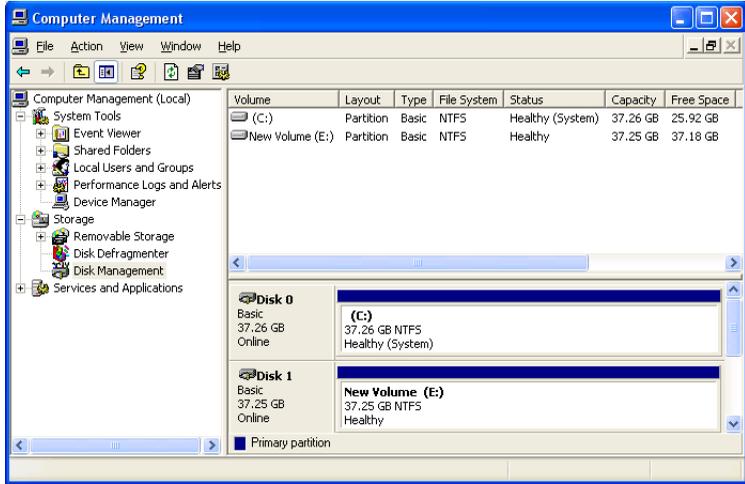


5. Right-click the Unallocated portion of Disk 1 and select *New Partition...* from the popup menu. The New Partition Wizard appears.

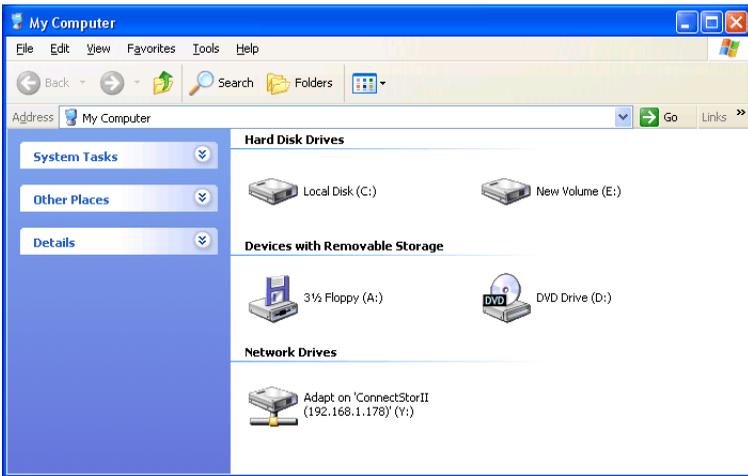


6. Click the **Next** button to start the wizard.
7. In the following windows, do the following actions. Click **Next** to move to the next window.
 - Select Primary Partition
 - Specify the maximum available partition size in MB
 - Assign the available drive letter of your choice
 - Choose Format this partition with the following settings
 - File system: NTFS
 - Allocation unit size: Default
 - Volume label: Enter your choice of name
 - Do not check “Perform a quick format” or “Enable file and folder compression”
8. Review your selections and click **Finish**. The New Partition Wizard will disappear while partitioning and formatting begin.

This process will take some time. The Disk Management window displays the progress.



When formatting is complete, your logical drive will appear as a hard drive in the Disk Management window (above) and the My Computer window (below).



Appendix B: Upgrades

This appendix covers the following topics:

- BIOS and Firmware Upgrade (page 155)
 - Software Driver Upgrade (page 157)
 - WebPAM Upgrade (page 160)
-

BIOS and Firmware Upgrade

Follow this procedure to upgrade the BIOS and Firmware on your FastTrak TX Series Controller card.

The FastTrak card must be properly installed in your PC or server in order to perform the upgrade. See “Installing the FastTrak Card” on page 9 for more information.

Step 1: Preparation

To perform this procedure, you need one of the following items:

- A DOS-bootable diskette and a blank DOS formatted diskette
- A USB memory stick

Step 2: Download BIOS File

1. Go to the Promise website www.promise.com/support.
2. Click **Downloads**.
3. Click the Select Product popup menu and choose **FastTrak TX4660**, **TX8660**, or **TX8668** depending on which FastTrak controller you have.
4. Click the Select Category popup menu and choose **BIOS**.
5. Click the **GO** button.

The list of current BIOS options displays. Be sure you select the appropriate BIOS for your system.

6. Click BIOS you want.
7. In the File Download dialog box, click the **Save** button.
8. In the Save As dialog box, direct the file to save to a convenient location on your PC.
9. Unzip the file and copy the contents to the DOS-bootable diskette or USB memory stick.
10. Label this diskette or USB stick *FastTrak Upgrade*.

Use the upgrade diskette or USB stick to install the BIOS and firmware upgrade package to the FastTrak controller. Go to step 3.

Step 3: Install the BIOS Package

If your PC does not have a floppy drive, you must adjust the following procedure as necessary to update the firmware using a USB memory stick.



Cautions

- Before you begin, back up any important or useful data.
 - Do NOT skip any steps in the procedure.
 - Do NOT power off your PC during the procedure.
-

1. Boot your PC from the DOS-bootable diskette.
2. When the A:\> prompt appears, remove the DOS-bootable diskette and insert the FastTrak Upgrade diskette.
3. At the A:\> prompt, type **dir** and press Enter to list the names of the files on the upgrade diskette.
The BIOS upgrade files contain the model number of the FastTrak controller, (4660, 8660, or 8668) for which they are designed, and the letters *.bin*. Note the name of the BIOS upgrade file for your FastTrak.
4. Type corresponding line at the A:\> prompt:
 - TX4660, type **pflasht3 /f 4660_sr5.bin** and press Enter
 - TX8660, type **pflasht3 /f 8660_sr5.bin** and press Enter
 - TX8668, type **pflasht3 /f 8668_sas.bin** and press EnterNote that the BIOS upgrade file names shown above, such as **4660_sr5.bin**, are examples only. Your BIOS upgrade file might have a different name. Type the actual name of the BIOS upgrade file on the diskette.
5. When the A:\> prompt appears, remove the upgrade diskette.
6. Reboot your PC normally.
This completes BIOS upgrade procedure.

Software Driver Upgrade

Follow this procedure to upgrade the FastTrak software drivers on your PC or server.

Step 1: Preparation

To perform this procedure, you need one of the following items:

- A blank DOS formatted diskette
- A USB memory stick (Windows only)

Step 2: Download Driver Files

1. Go to the Promise website www.promise.com/support.
2. Click **Downloads**.
3. Click the Select Product popup menu and choose **FastTrak TX4660**, **TX8660**, or **TX8668** depending on which FastTrak controller you have.
4. Click the Select Category popup menu and choose **Driver**.
5. Click the **GO** button.

The list of current drivers displays. Promise provides 32-bit and 64-bit versions of its drivers. Be sure you choose the appropriate driver for your system.

6. Click the driver you want.
7. In the File Download dialog box, click the **Save** button.
8. In the Save As dialog box, direct the driver to save to a convenient location on your PC.
9. Copy the files to the blank, formatted diskette.

For Windows driver files: Unzip the downloaded driver package and copy the files to the diskette or memory stick.

For Linux driver files, do one of the following actions:

- On a Windows PC – Type **rawrite.exe** to extract the driver image file to the blank diskette.
- On a Linux PC – Type **dd if=<imageFileName> of=<floppyDeviceName> bs=10k** to extract the driver image file to the blank diskette.

Where <imageFileName> is the driver image file name and <floppyDeviceName> is the device name, such as /dev/ fd0.

10. Label the diskette or memory stick *FastTrak Driver*.

Use the FastTrak Driver diskette or memory stick to upgrade to the latest software driver. Go to step 3, below.

Step 3: Install the Software Drivers

Windows Vista, Server 2008 and 2003, XP, and 2000

1. Do one of the following actions:
 - Insert the FastTrak Driver diskette in the A: drive.
 - Attach the FastTrak Driver memory stick to your USB port.
2. In the Start Menu, go to Settings > Control Panel. Double-click the System icon. click the Hardware tab. click the **Device Manager** button.
3. At the Device Manager, click the **+** icon to the left of SCSI and RAID Controllers to expand the list.
On Windows Vista click the **+** icon to the left of Storage controllers to expand the list.
4. Right-click **Promise FastTrak TX [4660, 8660, 8668] (tm) Controller** and choose **Update Driver...**
5. In the Hardware Update Wizard, choose *No*, not this time and click **Next**.
6. In the Hardware Update Wizard, choose *Install from a list or specific location (Advanced)* and click **Next**.
7. Under Please choose your search and installation options, choose *Don't search. I will choose the driver to install* and click **Next**.
8. Under Select the device driver you want to install, click **Have Disk...**
9. Under Install from Disk, type **A:** for the diskette or the appropriate letter for the USB memory stick and click **OK**.
10. Under Select the device driver you want to install, click **Next**.
If a warning about Digital Signature appears, click **Continue Anyway**.
11. Under Completing the Hardware Update Wizard, click **Finish**.
12. Click **Yes** to restart your PC.
13. Remove the FastTrak Driver diskette or memory stick.

Red Hat Enterprise Linux 5

1. Insert FastTrak Driver diskette into the floppy drive.
2. Log in as *root*.
3. Run **mount -r /dev/fd0 /media/floppy**.
4. Run **cd /media/floppy**.
5. Run **sh ./install**.
6. When the installer asks, "You are installing a driver on an existing OS. Is it true (y/n)?" type **Y** and press Enter.
7. Run **cd; umount /media/floppy**.
8. Remove the FastTrak Driver diskette.

9. Run **reboot** to restart the system.

SuSE Linux Server 10

1. Insert FastTrak Driver diskette into the floppy drive.
2. Log in as *root*.
3. Run **mount /dev/fd0 /media/floppy**.
4. Run **cd /media/floppy**.
5. Run **./install**.
6. Run **cd; umount /media/floppy**.
7. Remove the FastTrak Driver diskette.
8. Run **reboot** to restart the system.

WebPAM Upgrade

Follow this procedure to upgrade the WebPAM software on your PC or server.

Step 1: Download the WebPAM File

1. Go to the Promise website http://www.promise.com/support/support_eng.asp
2. Click **Downloads**.
3. Click the Select Product popup menu and choose **FastTrak TX4660, TX8660, or TX8668** depending on which FastTrak controller you have.
4. Click the Select Category popup menu and choose **Utility**.
5. Click the **GO** button.

The list of the current WebPAM software displays. Promise provides versions of WebPAM software for Windows and Linux. Be sure you select the appropriate version for your system.

6. Click the WebPAM version you want.
7. In the File Download dialog box, click the **Save** button.
8. In the Save As dialog box, direct the software to save to a convenient location on your PC.
9. Unzip the downloaded WebPAM package.

The result is a single installer file. Go to step 2, below.

Step 2: Install WebPAM

You can install the latest version of WebPAM over an existing installation. The installer deletes the previous version and then installs the new one. See "Installing WebPAM" on page 22 for installation instructions.

Index

Numerics

2TB limitation 135

A

About This Manual 1

access rights, WebPAM 77

activating logical drives 113

Auto Rebuild settings 83

B

bad sector log 91

BIOS version number 82

browser support for WebPAM 3, 22

buzzer

setting 83

sounds 115

C

cache settings 133

CD, software drivers 21, 31

circle-icon port 14

CMOS/BIOS setup 8

Compatibility 5

connections

LED 12

TX4660 11

TX8660 11

TX8668 14

VessRAID 15

contact technical support 144

contents of package 7

controller

BIOS version 82

driver version 82

information 82

lock/unlock 85

resources 65

settings 82

create

JBOD disks 53, 98

logical drives 53, 94

spare drives 121

users 72

critical logical drives 115

D

default settings, restore 86

delete

JBOD 102

JBOD disks 63

logical drive 62, 102

scheduled actions 84

spare drive 122

user 78

disk drives, see physical drives 11

driver version number 82

drivers

Red Hat Linux 44

SuSE Linux 45

upgrading 158

Windows 2000 42

Windows Server 2003 38

Windows Server 2008 34

Windows Vista 36

Windows XP 40

E

email

message 115

system settings 80

user settings 76

enclosure

information 118

LEDs 120

view 118

ESMTP settings 80

- event frame setting 80
- event notification settings 73, 80
- expansion
 - cancel schedule 106
 - delete schedule 84
 - rate 83
 - set schedule 105
 - start 104
 - view schedule 84
- extent, physical drive 50

F

- FAQs 137
- Fast Init 19
- FastBuild 123
 - creating JBOD disks 53
 - creating logical drives 18, 53
 - deleting a logical drive or JBOD disk 62
 - enter the utility 47, 49
 - find a failed disk drive 67
 - logical drive problems 67
 - main menu 18, 49
 - open the utility 17
 - switch HBA mode 66
 - view controller resources 65
 - view drive assignments 50
 - view HBA mode 66
 - view logical drives 51
- FastTrak
 - information 81
 - returning for repair 149
 - software drivers on CD 21, 31
- FastTrak BIOS 123
 - screen 15, 17, 47

G

- Gigabyte Boundary 19, 54, 57, 59

H

- Hardware Design 3
- HBA mode 66
- Host Management 79
- Host PC
 - display name 79
 - installation in 11
 - IP address 79
 - OS information 79
- host user rights 78

I

- information
 - controller 82
 - enclosure 118
 - FastTrak 81
 - logical drives 102
 - physical drives 50, 88
- initialization
 - delete schedule 84
 - options 53, 57, 59, 97, 101, 113
 - rate 83
 - view progress 113
 - view schedule 84
- installation
 - driver diskette or USB stick for Windows 32
 - driver medium for Linux 33
 - in a server 12
 - in Host PC 11
 - Red Hat Linux driver 44
 - SuperSwap enclosure 13
 - SuSE Linux driver 45
 - Windows 2000 driver 42
 - Windows Server 2003 driver 38
 - Windows Server 2008 driver 34

installation, cont.

- Windows Vista driver 36
- Windows XP driver 40
- with VessRAID 14

J

Java Virtual Machine 79

JBOD disks

- create 53, 98
- delete 63, 102
- view 52

L

LEDs

- connections 12
- enclosure 120
- SuperSwap 93

Linux

- driver diskette, CD, or USB stick 33

locate physical drive 92

lock controller 85

log into WebPAM 29, 69

log out of WebPAM 71

logical drives

- 2TB limitation 135
- activate 113
- cache settings 133
- create 53, 94
- critical 115
- delete 62, 102
- expansion 104, 133
- hot spare drive 133
- information 102
- migration 104, 133
- offline 115
- partition and format 151
- problems 67
- rebuild 107
- settings 103

logical drives, cont.

- status 48, 51, 94, 102
- synchronize 110
- view 51, 94

M

master boot record 53, 101

Media Patrol

- cancel schedule 91
- delete schedule 84
- set schedule 90
- start 90
- view schedule 84

migration

- cancel schedule 106
- delete schedule 84
- rate 83
- set schedule 105
- start 104
- view schedule 84

O

offline logical drives 115

OS support for WebPAM 3, 22

P

package contents 7

partition and format 151

PCI-E slots 9

physical drives

- bad sector log 91
- extents 50
- find a failed drive 67, 117
- information 50, 88
- locate 92
- Media Patrol 89
- NCQ 89
- operational status 88
- settings 89
- SMART status 89

- physical drives, cont.
 - supported 11
 - view 87
 - view assignments 50
 - write cache 89
- popup message 115
- port, circle icon 14
- Product Overview 2

R

RAID

- introduction to 123

- RAID HBA mode 66

- RAID level 18, 53, 56, 58, 94

RAID Levels

- choosing 130

JBOD

- applications 131
- description 128

RAID 0

- applications 130
- description 124

RAID 1

- applications 130
- description 125

RAID 10

- applications 131
- description 127

RAID 5

- applications 131
- description 126

SPAN

- applications 132
- description 129

rebuild

- cancel schedule 109
- delete schedule 84
- rate 83
- set schedule 108
- start 107
- view schedule 84

- returning product for repair 149

S

- SAS data cables 8, 12, 14

- SAS HBA mode 14, 66

- SATA fanout cable 11, 13

schedule

- expansion 105

- Media Patrol 90

- migration 105

- rebuild 108

- synchronization 111

- server, installation in 12

settings

- Auto Rebuild 83

- buzzer 83

- cache 133

- controller 82

- display name 76

- email sender 80

- email server 80

- ESMTP 80

- event frame 80

- event notification 80

- expansion rate 83

- initialization rate 83

- logical drives 103

- migration rate 83

- NCQ 89

- Netsend IP 76

- password 76

- physical drives 89

- rebuild rate 83

- restore default 86

- SMART polling 84

- SMART enable 83

- synchronization rate 83

- user 76

- user email 76

- utility configuration 80

- write cache 89

SMART

- enable 83
- physical drive status 89
- polling interval 84

SMBus connector 10, 13

software drivers on CD 21, 31

spare drives

- add 121
- delete 122
- view list 121

Specifications 6

status

- Auto Rebuild 83
- logical drives 48, 51, 94, 102
- physical drive operation 88
- physical drive write cache 89
- SMART 89

stripe block size 19, 54, 57, 59, 97

Stripe Block Size, choices 132

SuperSwap enclosure 13, 88, 93, 115, 118

SuperSwap LEDs 93

synchronization

- cancel schedule 112
- delete schedule 84
- rate 83
- set schedule 111
- start 110
- view schedule 84

T

technical support 144

TX4660 connections 11

TX8660 connections 11

TX8668 connections 14

U

unlock controller 85

upgrades

BIOS and firmware 155

software driver 157

WebPAM software 160

user

- add to WebPAM 72
- delete from WebPAM 78
- display name 76
- email address 76
- host user rights 78
- password 76

utility configuration settings 80

V

VessRAID

- connections 15
- subsystem 14, 16

view

- controller information 82
- controller resources 65
- drive assignments 50
- enclosures 118
- expansion schedule 84
- initialization progress 113
- initialization schedule 84
- JBOD disks 52
- logical drives 51, 94
- Media Patrol schedule 84
- migration schedule 84
- physical drives 87
- rebuild schedule 84
- scheduled actions 84
- spare drives 121
- synchronization schedule 84

W

warranty 147

WebPAM

- activate a logical drive 113
- add users 72
- browser support 3, 22
- change access rights 77
- controller settings 82
- create JBOD disks 98
- create logical drives 94
- critical and offline logical drives 115
- default password 30
- delete a logical drive or JBOD disk 102
- delete scheduled actions 84
- delete user 78
- description 2
- email message 115
- enclosure icons 119
- event notification 73
- expand a logical drive 104
- find a failed disk drive 117
- installation
 - Linux 23
 - Windows 22
- Local Monitoring option 27

WebPAM, cont.

- lock the controller 85
 - logical drive initialization 113
 - logical drive settings 103
 - login 29, 69
 - logout 71
 - managing enclosures 118
 - migrate a logical drive 104
 - OS support 3, 22
 - popup message 115
 - rebuild a logical drive 107
 - restore default settings 86
 - Security option 26
 - synchronize a logical drive 110
 - upgrade the software 160
 - user settings 76
 - version number 79
 - view controller information 82
 - view logical drives 94
 - view scheduled actions 84
- Windows driver diskette or USB stick 32
- Write Cache 97