The RAID System:

- Combines hard disk drives to a powerful storage array
- De facto standard in server
- Creates redundancy for HDDs
- Increases data availability
- Decreases data loss

The Host Bus Adapter:

- Connects SATA HDD's to the PC or Server
- Capacity expansion, managed by the operating system
- Makes it possible to use a Software-RAID tool over the operating system

The RAID Controller:

- PC-card for a PCI or PCI-e system bus
- Supports SAS / SATA HDD's
- Supports HotSwap and HotSpare
- Easy to configure via Promise Array Management (PAM)
- Also configurable via CLI (Command Line Interface)
- Compatible with Promise's SAS/SATA Drive Enclosures (SuperSwap)

Hardware IOP RAID 5/6 Controller:

- High data availability through RAID 5/6
- Single / double parity
- Proven Perfect RAID Engine
- Online Capacity Expansion (OCE)
- RAID Level Migration
- Predictive Data Migration
- High Performance
- Own CPU
- Own internal Cache
- Developed for i.e. Server-Applications, Databases, Disk to Disk Backup, Video Streaming
- Awarded by Intel Corp. with the Technical Innovation Award (TIA)

RAID 0/1 and Software RAID 5 Controller:

- RAID 1 & RAID 5 for high data availability
- Easy to use
- Cost effective solution
- Designed for PCs and Entry Level Server

Promise Technology:

- Market leader in SAS/SATA RAID
- Originator of ATA and SATA RAID Technology
- A global company
- ISO certified
- Developer and manufacturer of SAS and SATA RAID Storage Systems
- Developer and manufacturer of SAS and SATA RAID Controllers
- SATA Host Bus Adapter
- 3 year product warranty

6 Gb/s and 3 Gb/s SAS / SATA RAID Controller from Promise Technology

Entry level and high performance RAID controller cards for storage expansion in PC- and server systems
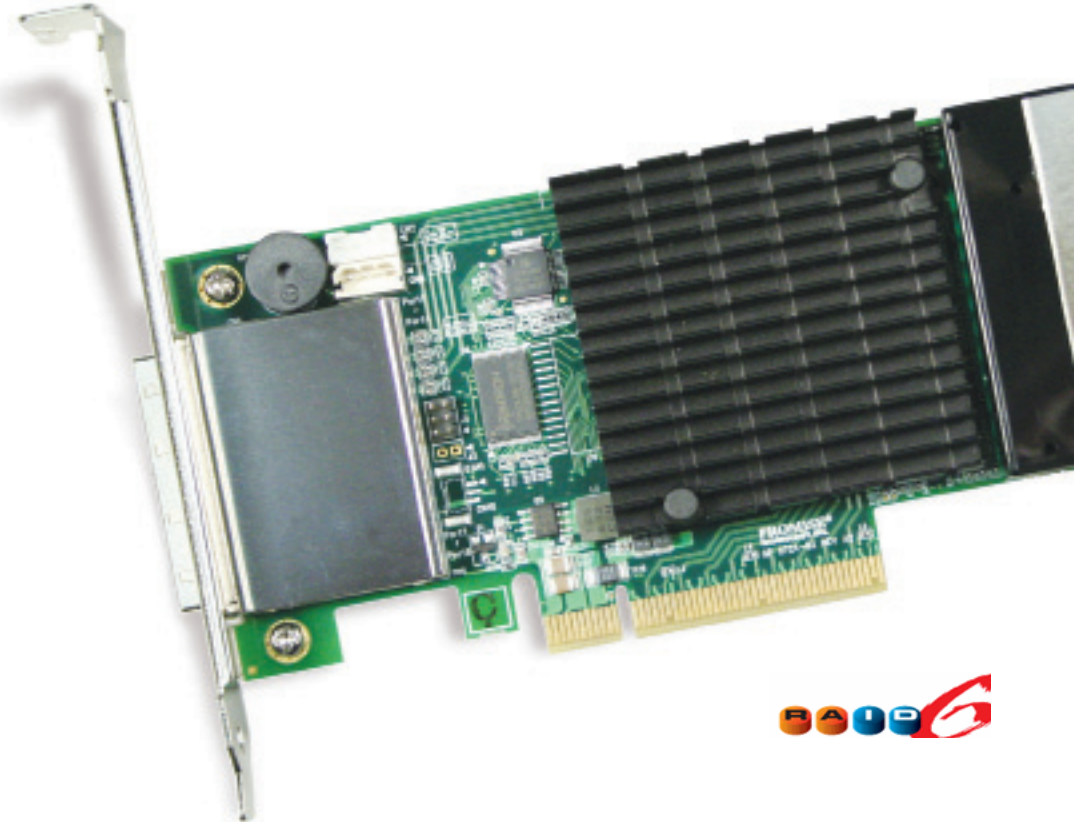
Hardware IOP RAID Controller for 6Gb/s and 3Gb/s HDDs
SuperTrak product line
An own IOP processor onboard of the RAID controller offload the centralized CPU of a server system with needed calculation of RAID parities and I/O processes. Up to 116 hard disk drives per port can be managed with SuperTrak RAID controllers by given a huge capacity, a high performance and a high data availability. RAID level 0, 1, 5, 6, 10, 50, 60* are supported.
* depent on controller model

Software RAID Controller
FastTrak product line
This board is optimized for entry level server and standard PC workstation environment. Up to 4 SAS or SATA hard disk drives can be connected to this RAID controller while RAID 0, 1, 5, 10 are securing data availbility over disk arrays.

Host Bus Adapter
SATA300 product line
HBA is a board which will be mounted into a PC or Server into the PCI bus of the motherboard. Managed by the OS a Host Bus Adapter is offering up to 4 ATA or SATA Interfaces for connection of up to 4 SATA or ATA hard disk drives.

Drive Enclosures
SuperSwap product line
Drive enclosures connected to Promise's RAID controller are designed for the easy exchange of a hard disk drive while offering drive carriers which can be hot swapped. Up to 4 SAS or SATA hard disk drives can be mounted into SuperSwap enclosures.
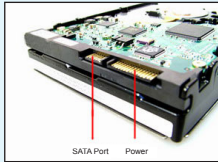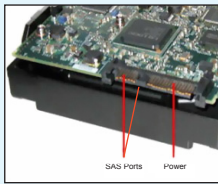
Serial Attached SCSI   SERIAL ATA   RoHS 2002/95/EC

SAS/SATA Interface:

Backside of a SAS or SATA hard disk drive

SAS/SATA Port 1
Power
SAS Port 2
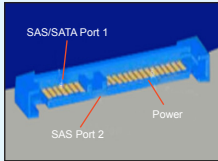
Backside of a SATA hard disk drive

SATA Port   Power

Backside of a SAS hard disk drive

SAS Ports   Power

SATA internal Point to Point (SFF8448) connector:
SATA data cables are used for the point- to-point connection between a RAID controller and SAS or SATA hard disk drives. For the connection to Promise's SuperSwaps SATA intern cables are required.

SASx4 internal SFF8087 connector:
SFF8087 to SFF8087 internal SASx4 cables are used mainly for the connection between a RAID controller and server chassis backplanes. A single backplane needs one cable; dual backplanes needs two cables.

SASx4 external SFF8088 connector: (MiniSAS)
The MiniSAS to MiniSAS (SFF8088 to SFF8088) cable is the most used external interface for the interconnection of storage systems as well as to the host.
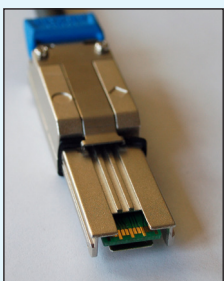
SuperTrak 6Gb/s and 3Gb/s IOP RAID Controller
♦ IOP Processor onbard
♦ supports up to 116 hard disk drives per port
♦ up to 512 MB RAM
♦ BBU optional for SuperTrak EX
  (SuperTrak TX does not need BBU)
♦ supports server chassis with active backplanes
♦ PCI-Express x8 system interface
♦ SAS tape drive support (SuperTrak TX)
♦ Predictive Data Migration included (SuperTrak EX)
Applications:
Databases, video editing, data silos, data centers, ERP, CRM, ECM, DMS, virtualization environment

| Product SuperTrak	RAID Level	SAS/ SATA	SASx4 ports	Channels SAS/ SATA	SFF 8088 ext.	SFF 8087 int.	Form-factor	Cache Memory	Supports
EX8768	1,5,6,10, 50,60	**6 Gb/s**	2 ext.	8	2	1	Low Profile	512 MB	external JBODs
EX8760T	1,5,6,10, 50,60	**6 Gb/s**	2 int.	8	-	2	Low Profile	512 MB	8 x HDD internal active backplane
EX8658	1,5,6,10, 50,60	3 Gb/s	2 ext.	8	2	-	Low Profile	512 MB	external JBODs
EX8654	1,5,6,10, 50,60	3 Gb/s	1 ext. 1 int.	8	1	1	Low Profile	512 MB	external JBODs 4 x HDD internal active backplane
EX8650	1,5,6,10, 50,60	3 Gb/s	2 int.	8	-	2	Low Profile	256 MB	8 x HDD internal active backplane
EX4650	1,5,6,10, 50,60	3 Gb/s	1 int.	4	-	1	Low Profile	128 MB	4 x HDD internal active backplane
TX8650	0, 1, 10, JBOD	3 Gb/s	2 int.	8	-	2	Low Profile	-	8 x HDD internal active backplane SAS tape drive
TX8658	0, 1, 10, JBOD	3 Gb/s	2 ext.	8	2	-	Low Profile	-	external JBODs SAS tape drive
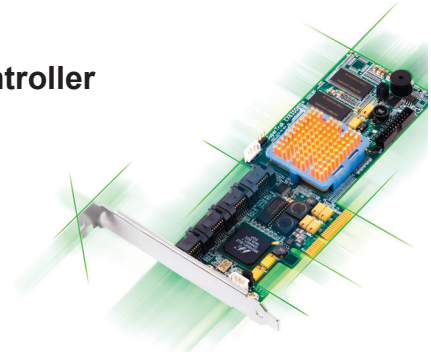
FastTrak Software RAID Controller
♦ PCI-e x4, PCI-e x1 or PCI interface
♦ RAID 0,1, or software RAID 5
♦ low profile form factor
♦ supports all main operating systems
Applications:
Entry level server, POS system, business PC, SOHO server

Product	RAID Level	Channels up to 3 Gb/s	External Interfaces	Interface
FastTrak TX8668	for VessRAID / no RAID	8 for VessRAID	2 ext. (SFF8088)	PCI-e x4
FastTrak TX8660	RAID 5 and 0,1,10, JBOD	8 SAS/SATA	2 int. (SFF8087)	PCI-e x4
FastTrak TX4660	RAID 5 and 0,1,10, JBOD	4 SAS/SATA	1 int. (SFF8087)	PCI-e x4
FastTrak TX4650	RAID 5 and 0,1,10, JBOD	4 SAS/SATA	4 HDDs (SFF8448)	PCI-e x1
FastTrak TX2650	RAID 0,1, JBOD	2 SAS/SATA	2 HDDs (SFF8448)	PCI-e x1
FastTrak TX4310	RAID 5 and 0,1,10, JBOD	4 SATA	4 HDDs (SFF8448)	PCI
FastTrak TX2300	RAID 0,1, JBOD	2 SATA	2 HDDs (SFF8448)	PCI
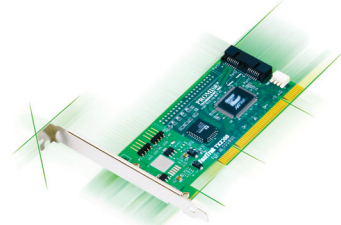
# Host Bus Adapter, non RAID
♦ supported by all main operating systems
♦ supports eSATA as external SATA interface
♦ low profile form factor
♦ PCI interface
Applications:
Extension of LINUX/UNIX NAS server, WIN server or PC

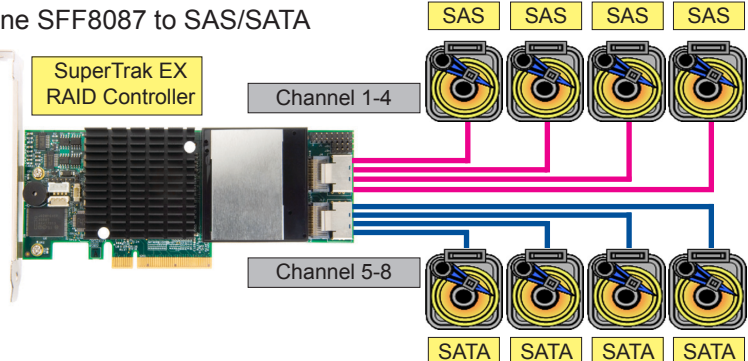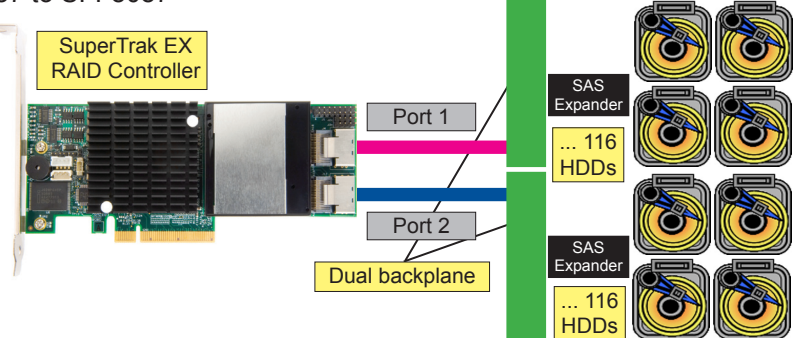| Product	FormFactor	Interfaces intern	Interfaces extern	Channels/No of HDDs	Interface
SATA300 TX4302	Low Profile	2 SATA	2 eSATA	4 SATA up to 3 Gb/s	PCI
SATA300 TX4	Low Profile	4 SATA	no	4 SATA up to 3 Gb/s	PCI
SATA300 TX2plus	Low Profile	2 SATA, 1 ATA	no	2 SATA up to 3 Gb/s, 2 ATA	PCI
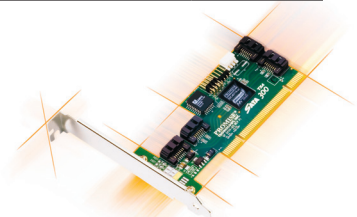
SAS/SATA Point-to-Point:
Cable: SATA Point-to-Point

FastTrak TX RAID Controller

SAS SAS SATA SATA

Channel 1-4
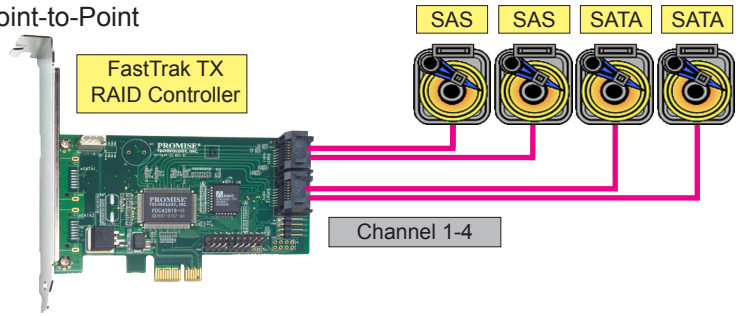
SAS/SATA Point-to-Point:
Cable: MultiLane SFF8087 to SAS/SATA

SuperTrak EX RAID Controller

SAS SAS SAS SAS

Channel 1-4

Channel 5-8

SATA SATA SATA SATA

SAS/SATA Multilane to Backplane:
Cable: SFF8087 to SFF8087

SuperTrak EX RAID Controller

Port 1

Port 2

Dual backplane

SAS Expander
... 116 HDDs

SAS Expander
... 116 HDDs

SAS/SATA Intern/Extern:
Cable int.: SFF8087 to SFF8087
Cable ext.: MiniSAS to MiniSAS, SFF8088 to SFF8088

SAS Expander in VTrak JClass

SAS x4

... 116 HDDs

SAS x4

SAS x4

3 x VTrak J310s 12bay JBOD
or 3 x VessJBOD1840 16bay JBOD

SuperTrak EX RAID Controller

Port 2

Port 1

Single backplane

SAS Expander
... 116 HDDs
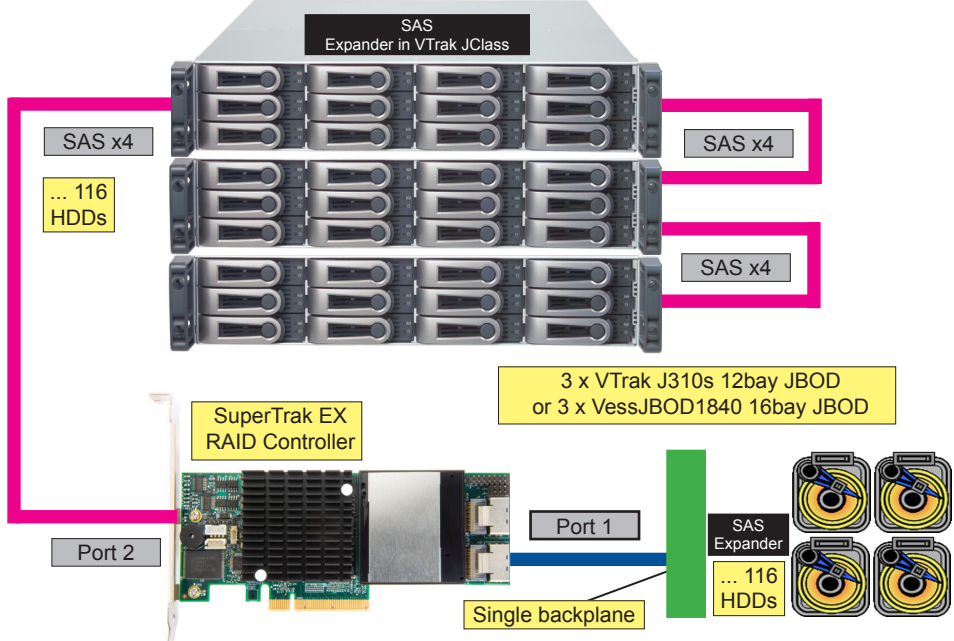
PerfectRAID:
PerfectRAID is a Promise's patented RAID data protection technology, a suite of data protection and redundancy features built into every Promise RAID product. PerfectRAID incorporates robust data handling and error management features including write hole prevention, read and write checks, full SMART support and multi-dead drive prevention. PerfectRAID features are also carefully matched with Promise's resilient RAID Engine Core to deliver substantial data protection. On top of the core protection techniques, the Promise RAID Controller takes advantage of advanced PerfectRAID features including Bad Block Remapping and Media Patrol. These features scan the system's drive media to ensure that even bad physical drives do not impact.

HotSwap
All RAID Controllers from Promise Technology support Hot Swap; that means a HDD can be exchanged while the system is active.

HotSpare
During a HDD fallout the spare HDD will automatically be activated and integrated in the RAID array on the spot of the defect HDD.

OCE - Online Capacity Expansion
While adding a HDD at a later time, the Online Capacity Expansion will add the HDD to the RAID array and hereby enlarging the net capacity. All this is executed while the system is running.

RAID Level Migration
With all controllers from Promise Technology you have the possibility to change an existing RAID array into a new one without loss of data while the system is running.
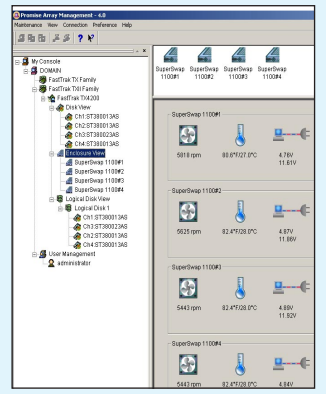
Promise Array Manager:
The management of the whole RAID system will be done by a powerful software tool named Promise Array Manager (PAM).

♦ RAID arrays and level
♦ Logical and physical status of all HDDs
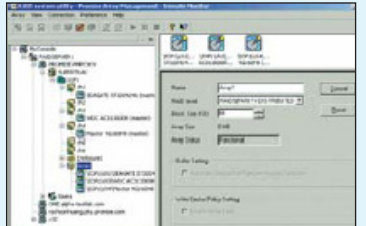
♦ HotSpare
♦ Alerts (e.g. email)
♦ Temperature, fans and voltages with combination of SuperSwap enclosures

SuperSwap Disk Enclosures
- simplified Hot Swap for SATA or SAS Drives

Hot Swap is an essential feature for the RAID storage sytem. SuperSwap in conjunction with FastTrak or SuperTrak RAID controller makes the storage system complete.

Product	Interfaces	HDD	Sensoric	HotSwap	Form
SuperSwap 4600 Color: beige or charcoal	SATA 3,0 Gb/s Serial SCSI (SAS) + int. Management	up to 4 x SATA or 4 x SAS up to 3 Gb/s	Fan, Voltage, Temperature	yes	5 1/4" 3 x HH
SuperSwap 1600 Color: beige or charcoal	SATA 3,0 Gb/s Serial SCSI (SAS) + int. Management	1 x SATA or 1 x SAS up to 3 Gb/s	Fan, Voltage, Temperature	yes	5 1/4" 1 x HH

Battery Backup Units (BBU) for SuperTrak RAID controller

BBUs hold data in the controller cache with minimum 72 hours after a power failure.

BBU III Plus
for SuperTrak EX 4650/865x/16650
for SuperTrak EX8760T/8768

NOTE;
SuperTrak TX RAID controllers supports
RAID 0, 1, 10 and do not need a BBU!

Promise Technology
22 years of Technology Innovation

SAS- and SATA RAID are the core techniques hold at Promise Technology who is the originator of ATA RAID and worldwide leader in SATA RAID with over 16 million controllers shipped. Using Serial ATA and Serial Attached SCSI (SAS) technology to design and manufacture fast, reliable cost-effective data protection, Promise is the preferred choice for SATA host bus adapters, RAID controllers and SAS/SATA external storage systems. Promise Technology maintains ongoing product development relationships with leading storage and server manufacturers. Headquartered in Milpitas, CA, the company is ISO-9001:2000 and ISO-14001:2004 certified and has offices and operations throughout Asia and Europe to support local business partners and customers. For further information, visit: www.promise.com.

Promise Technology - Awarded Innovation!

For years Promise Technology got awards for excellent innovations at RAID controller. The latest one was from Intel Corp. at the Intel Development Forum. Out of more than 15 other vendors in the storage market the TIA-Award (Technology Innovation Award) was given to Promise Technology for the new SuperTrak EX RAID controller and its RAID 6 solution.

Promise Technology - Contact us!

You reach us through:

♦ Worldwide hotline telephone support
♦ E-support via internet

Please refer to our website www.promise.com for up-to-date information.