PROMISE® TECHNOLOGY, INC.

It's All About Your Data

VTrak® E310s

V Trak

High Availability and Performance with Maximum Expandability and Scalability for Enterprise and Nearline Applications

With an eye on enterprise features at a price that even a small to medium businesses can afford, the Promise VTrak E-Class fundamentally changes storage economics from purchase and set up to operation and upgrades. The flexibility to use Serial Attached SCSI (SAS) and Serial ATA (SATA) drives and the open architecture of the VTrak E-Class lets businesses use the components that are best suited to their application needs. All of the systems in the E-Class series also share the same firmware for ease of qualification. Promise's WebPAM® PROe provides an OS independent, centralized GUI for comprehensive data management. Promise stands behind all of its VTrak products with a 24x7 technical support, 3 year limited warranty and an advanced replacement program.

Intelligent Design Delivers Scalability and Upgradeability

Four 3Gb SAS (Serial Attached SCSI) x4 host interface ports per controller provide highly reliable, high-performance, price-conscious primary storage solution for first deployments as well as customers upgrading from a traditional Ultra SCSI 320 storage solution. Choose the E-Class system that fits your requirements today with the confidence that you have the flexibility to change the host interface simply by changing the controllers and also increase your available storage by adding JBOD systems from our VTrak J-Class and scale to meet your future needs. In addition, one of the key advantages of the SAS technology implemented in the VTrak E-Class and J-Class is the ability to connect either SAS or SATA drive with the same interface. This simplifies data management by allowing businesses to easily expand SAS storage as their critical business transactions increase and migrate less-accessed data to SATA storage. Sharing most common FRUs between products also eliminates spare parts SKUs and simplifies field replacement. In addition, with the VTrak E310s there are four SAS ports that will allow you to connect or cascade multiple E310s units without the added cost of a SAS switch

No Single Point of Failure

With the VTrak E310s Promise has dramatically narrowed the gap between simple fault tolerance and *No Single Point of Failure*. The E310s incorporates an intelligent, enterprise-level, cable-less system design which includes fully redundant, hot-swappable controllers, power and cooling units, which are all field replaceable. All system components are constantly monitored to ensure continuous operation in case of disk failure or a controller, power supply, or cooling unit malfunction. Dual active-active, failover/failback RAID controllers provide redundant data paths to further help ensure availability.

Comprehensive Data Management

The VTrak E310s features an embedded management software, WebPAM PROe, that eliminates the need to install additional software on the network. All VTrak systems in your network can be configured and monitored through a single, easy-to-manage web-based graphic user interface. The software works through the VTrak system's Ethernet port — locally, across a LAN, or across an internet connection — to configure and monitor one or multiple VTrak system(s) and provide error reporting through pop-up messages, event logging, or email notification. In the event of a controller failure, Promise's management software will also seamlessly failover and failback. The VTrak family also simplifies integration with third-party management applications using industry-standard SNMP and CIM protocols.

VTrak E310s Highlights

:: Supports failover/failback RAID controllers for high availability

:: 12 hot-swappable drive bays in a robust 2U chassis

:: Flexibility to use SAS and SATA 3Gb/s drives simultaneously

:: Four 3Gb/s SAS x4 host ports for performance and connectivity

:: Data protection with RAID 0/ 1/ 1E / 10/ 5/ 6 / 50 /60 with multiple global or dedicated hot-spare drives support

:: JBOD expansion — up to 4 VTrak J-Class JBOD systems

:: Redundant, hot-swappable power and cooling modules

:: Embedded web-based management GUI via Ethernet and Command Line Interface/Utility via RJ-11 Serial Port

:: LUN Mapping and Masking enable SANs and large clusters configurations

:: PerfectRAID® and Predictive Data Migration® technology for robust error handling and recovery
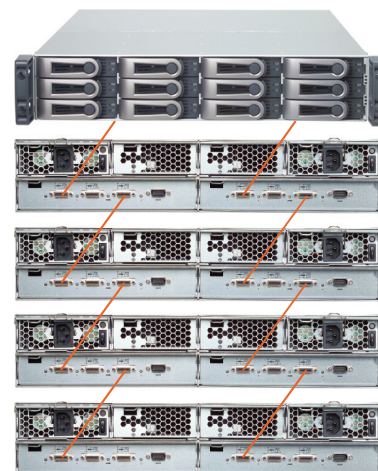
Cascade up to four J-Class JBOD Systems

Free 24 x 7 Support • 3 Year Limited Warranty

VTrak E310s Specifications

System and Controller Features

Controllers	Dual Controller Configuration (E310s- Dual) / Single Controller Configuration, Upgradeable (E310s - Single) Automatic Failover/Failback RAID Controllers; Active/Active with LUN Affinity* or Active/Standby
Drive Support	Up to twelve 3.5" x 1" hard drives: SAS 3Gb/s, SATA II 3Gb/s and 1.5Gb/s -- direct connect in single I/O controller configuration or uses the Promise SATA MUX Adapter in dual I/O controller configuration; Staggered physical drive spin-up Supports any mix of SAS 3Gb/s, SATA II 3Gb/s and 1.5Gb/s drives simultaneously in the same system; Direct SATA LED support
External I/O Ports (per controller)	Four 3Gb/s SAS x4 host ports; One external 3Gb/s SAS x4 port for JBOD expansion (up to 4 VTrak J-Class JBOD Systems) Supports Mini-SAS Connector (SFF-8088)
Data Cache	Mirror and Shared 512MB predictive data cache (max. to 2GB); Automatic write cache destaging; 72-hour battery backup (for 512MB)
Command Queue Depth	512 commands per VTrak controller

Operational Features

RAID Levels	RAID 0, 1, 1E, 5, 6, 10, 50, 60 – Any combination of these RAID levels can exist at the same time
RAID Flexibility	Configurable RAID stripe size: 64K, 128K, 256K, 512K and 1MB stripe size per disk Background task priority tuning: adjustment of minimum I/O reserved for server use during all background tasks
Hot spares	Multiple global or dedicated hot-spare drives with revert options
Max Logical Drives per subsystem	256 in any combination of RAID levels and array types
Max Logical Drives per array	32 logical drives (LUNs); Supports LUN Carving by allowing an array to be divided into multiple logical drives; RAID level, stripe size, sector size and cache policy can be configured per LUN. Supports out of order logical drive deletion and re-creation out of order logical drive deletion and re-creation
Max LUNs per Target ID	Up to 256
LUN Masking and Mapping	Supports up to 128 initiators based on SAS WWPN
Disk data formats	Supports Disk Data Format (DDF) for industry wide standardization and drive roaming between VTrak systems
Background Activities	Media Patrol; Background synchronizing; Foreground initialization; Rebuild; Redundancy Check; SMART condition polling; OCE (Online Capacity Expansion); RLM (RAID Level Migration); Priority Control, Rate Control and watermarking per BGA in Disk and NVRAM
RAID Robustness	Physical Drive Error Recovery: PDM (Predictive Data Migration): Replace un-healthy disk member in array, and keep array on normal status during the data transition between healthy PD and replaced PD, Bad Sector Re-mapping, Media Patrol, SMART, Intelligent error recovery mechanisms for erroneous RAID members, RAID 5/6 inconsistent data Prevent (Write Hole Table), Data Content Error Prevention (Read/Write Check Table) NVRAM event logging
SCSI Commands	Supports extensive SCSI command set equivalent to SCSI/FC hard disk drives; Variable sector size (512Byte to 4KB) to break OS 2TB limitation; 16Byte CDB support for 64-bit LBA address

System Software and Management

Supported Operating Systems	Windows 2000, Windows 2003, Linux (Red Hat, SuSE)
Multi-Path I/O support	PerfectPath™ Manager – based on Microsoft MPIO architecture. (Windows only)
Management Tools	Operating System independent; Localized in multiple languages; SSL Security support; WebPAM PROe, Web based GUI, via Ethernet port; Command Line Interface and Utility via Serial Port or Ethernet (Telnet); Auto, Express and Advanced configuration support for novice and skilled users. Seamless software failover and failback on management Ethernet port
Management Interfaces/Protocols	Embedded Web server and mgmt support – No host agent is needed; Ethernet, RJ-11 Serial Port; CIM/WBEM, SNMP, SSL, SLP, Telnet
Event Notification	Email, NETSEND, audible (buzzer), and visible (LEDs) alarms

Mechanical Specifications

Voltage	100-240 Vac Auto-Ranging
Current (Maximum)/Frenquency	8 A @ 100 Vac; 4 A @ 240 Vac (current rating with two power cords); 50-60 Hz
Power Supply	Dual 400W, hot swap and redundant with PFC, N+1 designt swap and redundant
Power Consumption	157.8 Watts (under load w/o HDD) / 468 Watts (under load with SAS HDD)
Operating Temperature	5°~40°C (-40°~60°C non operational)
Relative Humidity	Maximum 95%
Vibration	Random, 0.21 grms, 5-500Hz, 30Mins, X, Y, Z axis
Dimensions (H x W x D)	8.8 x 44.4 x 56.1 cm (3.5 x 17.5 x 22.1 in)
Weight	Net weight (system only): 26 kg (57 lbs) without drives, 32 kg (71 lbs) with 12 drives** Gross weight (including carton): 29 kg (64 lbs) without drives
Safety	CE, FCC Class A, VCCI, C-Tick , cUL, TUV, CB, BSMI

Warranty and Support

Warranty	Three years complete system limited warranty
Support	24 x 7 email and phone support (English only); 24 x 7 access to Promise support site – drivers, firmware, compatibility Advanced replacements program

* Allows users to balance the LUNs on two controllers and distribute the controller resources evenly to handle the I/O load
** Assume each HDD is 0.5 kg
Check www.promise.com for the latest operating system, HBA, and hard disk drive compatibility
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About Promise

With a long history of innovation, Promise Technology develops and manufactures sophisticated RAID solutions recognized worldwide, ranging from a complete line of RAID controller cards to SAS/SATA RAID subsystems. Catering to enterprise, mid-range and entry-level data protection needs, Promise products are distinguished by their common RAID code, unified management interface and unparalleled support. Known as the originator of SATA/ATA RAID products, Promise's comprehensive product base includes high available (HA) standalone RAID subsystems with standards-based management interfaces, host-based (internal) RAID controllers, NAS appliances for SOHO, and SATA ASICs integrated into an extensive list of industry-leading motherboards. Headquartered in Milpitas, Calif., Promise has operations throughout Asia and Europe. For more information, visit Promise Technology's website at
http://www.promise.com

P/N: G6130V31F000000-2 06/23/2008