

VTrak[®] E310f

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

Dual 4Gb Fibre Channel (FC) host interface ports per controller provide connectivity into widely deployed Fibre Channel storage networks, perfect for supplementing existing storage networks and for building new application storage systems. 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.

No Single Point of Failure

With the VTrak E310f, Promise has dramatically narrowed the gap between simple fault tolerance and *No Single Point of Failure*. The E310f 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.

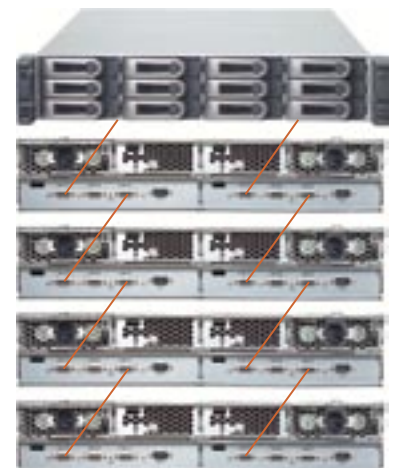
Comprehensive Data Management

The VTrak E310f 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 E310f 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
- :: Dual 4Gb FC host interface ports per controller 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-II 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

VTrak E310f Specifications

System and Controller Features	
Controllers	Dual Controller Configuration (E310f- Dual) / Single Controller Configuration, Upgradeable (E310f - 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)	Dual 4Gb Fibre Channel host port - Backwards compatible with 2Gb and 1Gb FC HBAs; One external 3Gb/s SAS x4 ports for JBOD expansion (up to 4 VTrak J-Class JBOD Systems)
Data Cache	Mirrored and Shared 512MB predictive data cache (max. to 2GB - must be purchased through Promise); 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 FC 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 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,
Event Notification	Email, NETSEND; audible (buzzer), and visible (LEDs) alarms
Mechanical Specifications	
Voltage	100-240 Vac Auto-Ranging
Current (Maximum)	8 A @ 100 Vac; 4 A @ 200 Vac (current rating with two power cords)
Frequency	50-60 Hz
Power Supply	Dual 400W, hot swap and redundant with PFC, N+1 design swap and redundant
Power Consumption	141.68 Watts (under load w/o HDD) / 452.68 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 22.1in)
Weight	Net weight (system only): 26 kg (57 lbs) without drives, 32 kg (71 lbs) with 12 drives** Gross weight (including carton): 29kg (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

* 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 0.5kg
 Check www.promise.com for the latest operating system, HBA, and hard disk drive compatibility
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About Promise

Promise Technology, with a track record of over 18 years of storage products development and over 10 years experience in supplying high quality RAID storage products, is highly recognized as a premier high quality and dominant RAID storage supplier in the industry with a comprehensive storage product line offering including Serial Attached SCSI (SAS) and Serial ATA (SATA) PCIe RAID HBAs, rack mount storage systems with FC/SAS/iSCSI and SCSI SAN and DAS storage network connectivity, NAS systems for SOHO and SATA ASICs.
www.promise.com



Serial Attached SCSI



P/N: 00000000000000 01/08/2006

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