Leading Performance with Enterprise Reliability

Virident *tach*IO*n* PCIe SSD

SYSTEM HIGHLIGHTS

Sustained, predictable random IOPS–Best in the Industry; 100x faster than Enterprise HDDs

Enterprise–grade reliability–advanced ECC; dynamic, global wear leveling

Field serviceability–replacable Flash Modules

Industry leading lifetimes–24 years at 5T writes/day; extend investment with replaceable modules

HDD–like capacities–300B–800GB; upgrade option

Custom design–in opportunities for OEMs

Overview

- Virident's *tach*IO*n* Drive utilizes an innovative hardware–software architecture for high performance sustained random IOPS
- *tach*IO*n* delivers best–in–class performance and enterprise reliability, and low power together with plug–and–play ease of use.
- Databases, business analytics, simulation, visualization, virtualization and high–performance computing all see immediate benefits.

Sustained Performance

- *tach*IO*n* delivers sustained, predictable performance at low latencies over the lifetime of the product and at the highest usable capacities.
- *tach*IO*n* allows users to leverage the scaling in CPU cores per server by providing matching IO performance scaling.
- Innovative software solutions eliminate perfor mance issues typically seen in real– world workloads, delivering 300,000 4KB 75:25 read/write random IOPS per second, sustained indefinitely.

Enterprise–Grade Reliability and Lifetime

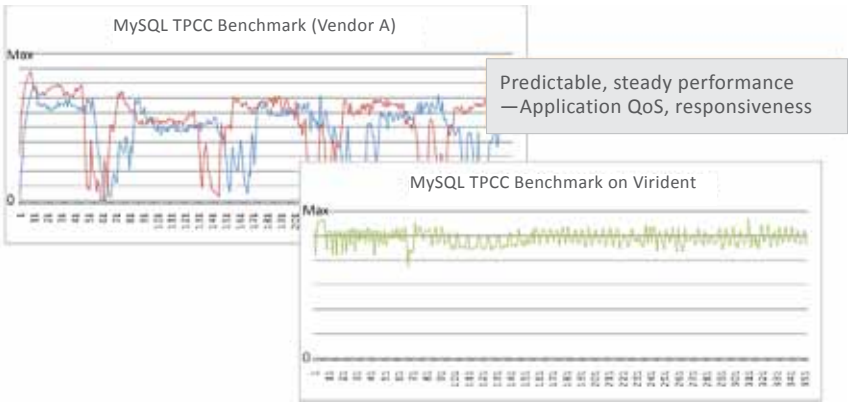
- Combined with Virident's unique management software layer, *tach*IO*n* is a true enterprise–class solution.
- Management software employs global and dynamic wear leveling, optimizing flash memory usage across the entire card, thus extending the Flash Lifetimes.
- Virident delivers the best lifetimes–24 years, at 5TB writes per day–in the industry even under aggressive workloads.
- Advanced error correction significantly enhances reliability of the underlying hardware, minimizing uncorrectable bit errors to less than one in 10–17 bits.

Field Serviceability

- Individual flash modules enhance ROI by allowing onsite module replacement.
- Virident's *tach*IO*n* drive allows users to field upgrade the storage capability without the need to replace the entire card.
- Extended warranties to 5 years with no Flash write restrictions are available

Deployment Ease

- *tach*IO*n* is available in capacities from 300GB up to 800GB storage per low–profile half–length and half–height PCIe card.
- It can be installed and ready to use in industry standard x86–based servers in a matter of minutes.



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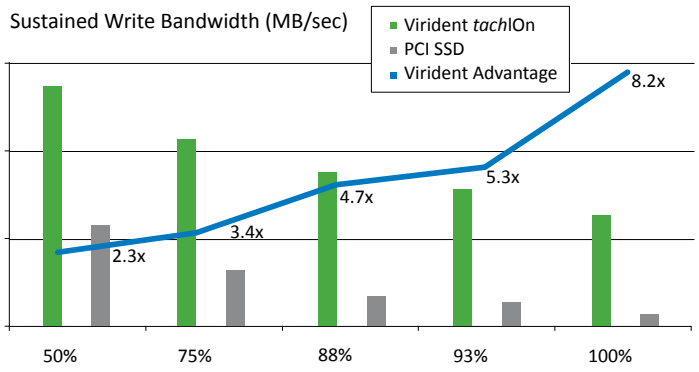
I/O and Server Performance Gap

The growth in servers, storage and networking devices in the datacenter pushes the envelope in space, power, cooling and management. Storage performance of hard drives has not kept pace with compute or networking performance. The result is an imbalance of computing resources resulting in I/O bottlenecks, underutilized servers, storage over–provisioning, and excessive costs.

*tach*IO*n* is the perfect solution to these problems. It delivers industry–leading sustained performance, bridging the performance gap and resulting in a balanced system solution for performance–starved workloads.

Sustained Write Bandwidth Benchmark

The following benchmark chart is a test of the Write Bandwidth versus Drive Utilization (% filled). Each data point on the X–axis shows a comparison of write bandwidth. For example, when the drives are 50% utilized, *tach*IO*n* delivers write bandwidth 2.3x of the best competitive alternative. When the drives are 100% utilized, *tach*IO*n* delivers sustained write bandwidth 8.2x that of the competitive product.



System Specifications

*tach*IOn Drive Specifacations	
Capacity	300, 400, 600, 800
NAND Flash	SLC
Peak Read Performance	1.44 GB/s
Peak Read Performance	1.20 GB/s
Sustained Read/Write Performance	300,000 IOPS (4KB block size), 75:25 R:W
Data Reliability	Advanced, end-to-end error correction Global and Local wear-leveling
Additional Data Protection & Data Availability	On-board, hardware-supported, flash-aware RAID (across replaceable Flash modules)
Lifetime	24 years (@ 5 TB writes per day)
Enterprise Class Reliability	UBER < 10^{-17}
Standards and Connectivity	
PCI Express 2.0	Single slot, low profile, half height, half length
Connectivity	PCI Express electromechanical spec 2.0
Power	PCI Express power spec 2.0
Block Device	Standard block device
File Systems	EXT3, EXT4, XFS, OCFS, VxFS, Lustre, GPFS, NTFS
Manageability	Command line interfaces, Standard Linux utilities
Platform Support	Linux: RHEL 5, SLES 10-SP3/11, CentOS, Debian, Ubuntu, Windows: 64-Bit Microsoft Server 2008 R2
Environmental Specifications	
Operating Temperature*	O°C/32°F to 50°C/122°F
Non-operating Temperature	-40°C/-40°F to 70°C/158°F
Airflow (LFM)	300
Humidity	5% to 95% (relative, non-condensing)
Weight (oz)	5 to 7

Agency Certification	
US & Canada	• UL 60950-1 & CSA C22.2 • FCC Part 15 Subpart B Sections 15.107 & 15.109/ANSI C63.4 (2003) • ICES-003 Version 4, Class B • Radiated & Conducted Emissions Class B • EN 55022, Class B • EN 55024 Immunity
Europe	• 2004/108/EC EMC Directive CE • IEC 61000 Class B Mark • CISPR 22, Class B
Japan	VCCI - V-3, Class B
RoHS	RoHS - EU Directive 2002/95/EC

**Temperature derated 1°C per 100 ft elevation above sea level*

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