

Silicon Storage for the Enterprise Data Center

The Violin 3210 is the industry's most scalable and highest performing Flash memory array. It enables the lowest latency and highest IOPS storage infrastructure. Built from the ground up to deliver sustained performance and reliability with Flash and integrated RAID, *it delivers dramatically better performance at lower cost than traditional storage systems with Flash SSDs and RAID.*

Compelling Flash Performance

Violin Flash memory appliances eliminate the seek-bound limitations of disk storage and delivers significant application performance benefits over performance storage systems with hundreds of hard drives (HDDs) or Flash SSDs. Using a massively parallel architecture with distributed garbage collection in hardware, the Violin 3210 with SLC NAND Flash delivers sustained DRAM-like performance that is 50 times faster than a similar size HDD array:

- 1.4 GB/s bandwidth
- 350K Random Read IOPS
- Over 220K Sustained Random Write IOPS (4K block with RAID)
- Low latency Flash RAID
 - Reads: 80 μ sec
 - Writes: 25 μ sec
 - Non-blocking Erases
- 10-25x application performance
- 90% reduction in IOPS cost & power
- Power-safe writes without batteries



When the active data of large-scale and high performance applications is assigned to Violin memory appliances, dramatic application acceleration and much higher CPU utilization is achieved. This enables the Virtualized Data Center by supporting high performance random I/O without the need for large DRAM server footprints or thousands of spinning HDDs.

Unmatched Scalability & Reliability

The Violin 3210 is populated with 84 x 128GB Violin Intelligent Memory Modules (VIMMs) based on SLC flash memory devices. Violin Switched Memory (VXM) technology and Violin's Flash RAID provide the system with its industry-leading scalability, data reliability and efficiency:

- Density: 10.5TB SLC Flash
- Useable Capacity: 8TB with RAID
- Hot swappable VIMMs with 4+1P RAID and 4 spares
- System power: <120W per Useable TByte
- Endurance: >8TB Writes per Hour for 5 Years

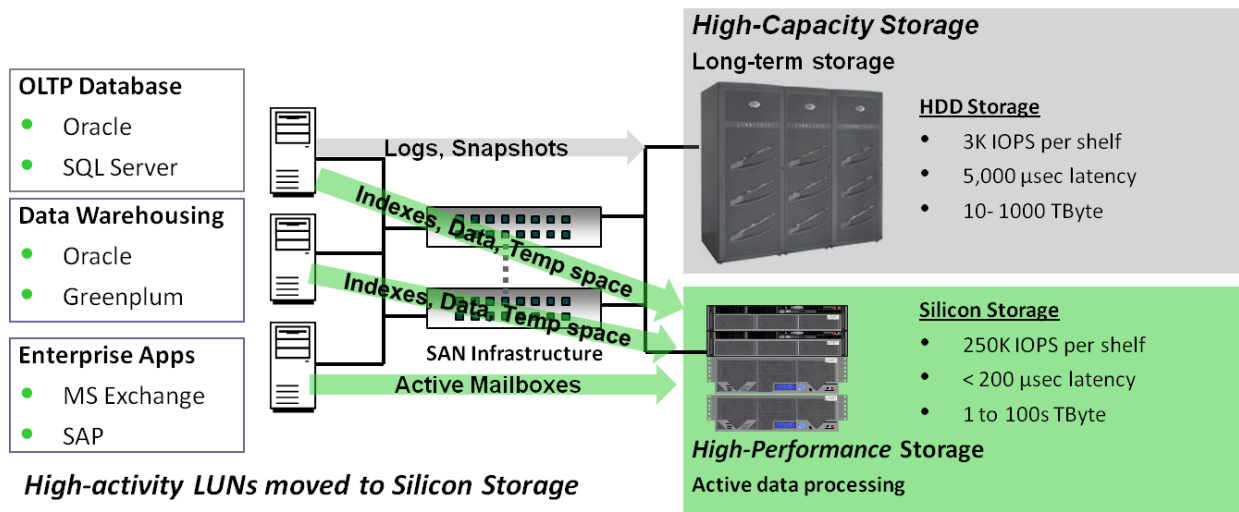
With its higher density and integrated RAID, the Violin 3210 has a 50% lower TCO than competitive servers or performance storage systems with SSDs and RAID 1.



Flexible SAN & Server Connectivity

The Violin 3210 can be directly attached via low latency PCI-Express or SAN attached with Fiber Channel & Ethernet interfaces via a 1U or 2U Network Head that provides LUN management functions.

Direct Attachment: PCIe Interfaces <ul style="list-style-type: none"> • Single/Dual PCIe x4 Interfaces • Single PCIe x8 Interface • SCSI and Block Device Driver modes • Linux: 32 bit and 64 bit • Solaris, OpenSolaris (x86) • Microsoft: 32 bit and 64bit 	LAN/SAN Attachment: Network Head <ul style="list-style-type: none"> • 2-10 8Gb Fiber Channel • 2-10 4Gb Fiber Channel • 2-4 10Gb Ethernet (iSCSI or FCoE) • LUN Management: Masking, Snapshots • Network Heads: Solaris, FalconStor, OpenFiler • Network Head Performance: 400K IOPS
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Reliability and Data Integrity <ul style="list-style-type: none"> • 24 Bit Error Correction per 4K block (ECC) • RAID over multiple VIMMs (4+1P) • Additional 128 bit integrity check over 4K block • Uncorrectable Error Rate (SLC Goal): < 1 in 10³⁰ • VIMM MTBF: > 1 Million Hours (114 Years) • VIMM hot-swap with 4 spares • Redundant hot swap fan trays, power , PCIe 	Management <ul style="list-style-type: none"> • 1 – 1024 LUNs • Detailed Flash statistics • 1 Console Interface via DB-9 male DTE port • 10/100 Ethernet Management Port • Syslog—Alarm/Event Logging • Telnet, SSH, CLI—Command Line Interface • SNMP, Web – Q3 ‘10
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Physical Dimensions <ul style="list-style-type: none"> • Height: 3U (5.25"/133.4mm) • Width: 17.5" (420mm) • Depth: 28.4" (725mm) • Cable Mgmt.: 6" (150mm) • Weight: 75 lbs (35kg) 	Power <ul style="list-style-type: none"> • Dual AC inputs • 90 – 264V auto • 100W per TB • 960W max. • 800W Typical 	Environmental <ul style="list-style-type: none"> • Operating Temperature (ambient): 5°C to 35°C • Operating Humidity: 5 to 85% (non-condensing) 	Regulatory <ul style="list-style-type: none"> • Emissions: FCC Part B Class A • Safety: UL • Environment: RoHS • General: CE Mark
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Information subject to change without notice

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