VIOLIN SYSTEMS

Violin Flash Storage Platform for Primary Storage

Highlights

Economic Benefits

- Drive server and storage consolidation to new heights
- Optimize CPU investments across multiple mixed workloads
- Reduce CAPEX for additional servers and storage arrays
- Decrease power, cooling, and facilities OPEX by up to 90%
- Eliminate need for data locality management software

Operational Benefits

- Provide consistent service for better customer SLA scores Reduce server and storage count
- Reduce facilities requirements
- Reduce management expense through simplified data tiers
- Manage your storage with easy-to-use GUI-based tools
- Eliminate overprovisioning

Concerto OS 7™

Transform your primary storage and data center economics with Violin's Flash Storage Platform™. Upgrade your primary storage with the enterprise data services, consistent performance, simplicity, and manageability needed to consolidate your data center and reduce CAPEX and OPEX.

Historically, achieving high throughput and lower latency meant overprovisioning hardware or using software to mitigate, but not fully eliminate performance issues. These workarounds have high CAPEX and OPEX costs and still don't meet the requirements for cost-effective primary storage in 21st century businesses. It's clear that a new approach is needed that can support growth, improve efficiency and manageability, and deliver consistent and predictable service levels without breaking the IT budget.

The Violin Memory Difference: Flash Storage Platform

To meet this challenge, Violin offers a fundamentally different approach, the Flash Storage Platform (FSP), which enables you to efficiently deploy enterprise-class all-flash primary storage and achieve very favorable CAPEX and OPEX scenarios. The FSP is a set of capabilities developed from a vertically integrated design of software, firmware, and hardware that enable the transition of primary storage from legacy solutions to all-flash.

The FSP has several characteristics that separate it from legacy or even flash-based solutions. These include:

- Intended use as a Primary Storage platform
- Available at the same cost as legacy enterprise storage solutions
- Comprehensive enterprise-class data protection and data reduction services
- Raw flash management and resiliency that is not based on commodity SSDs
- Vertically integrated design of software, firmware, and hardware
- Single-pane enterprise-wide management
- Granular control of all data services
- Simplification and consolidation of complex storage environments into two tiers

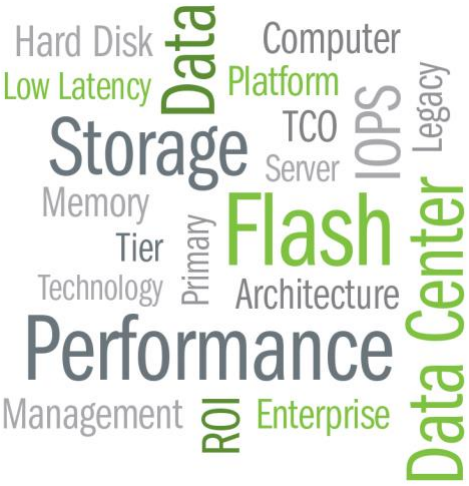
Complex

Tier	Workload	Storage Solutions	Key Metrics
0	High Frequency Trading, In-Memory Compute, Indexing	Niche Flash, High Performance Disk Array	Ultra Low Latency, Response Time
1	VDI, DB Logs, Online Transactions	Flash Array, Disk Array	Low Latency, High IOPS, $/Transaction
2	Content Repository	Disk Arrays, DAS, NAS	Mixed Use, Read Intensive, $/IOPS, TCO
3+	Archival	Commodity Appliance	High Capacity, Response Times, TCO

Simple

Violin Flash Storage Platforms	
Tier 0, 1, and 2	**7300, 7700 = Primary Storage**
Tier 3+	Archival

Violin Systems | 2560 N. First Street, Suite 300, San Jose, CA 95131 USA | Tel: 1-650-396-1500 • Fax: 1-650-396-1543 | www.violinsystems.com



Flash Storage Platform Economics

The performance gap between today's servers and legacy disk-based storage has created a culture of workarounds in the data center. For example, to get incremental benefit in performance, disk drives are short-stroked even though most of the capacity goes to waste. Layers of caching in the server or in the storage controller attempt to mitigate poor disk performance. Other techniques include overprovisioning storage, manipulating RAID stripes, even overprovisioning network capacity all in the hope of reducing latency, even just a bit.

The FSP enhances system performance and reduces TCO in multiple ways. With the cost of a FSP comparable with legacy storage, it is now a prudent financial option to place all active data on a FSP. In addition, enhanced system performance typically drives efficiencies elsewhere in the data center. For example, fewer servers may be required since their utilization is higher as they are not waiting for I/O to complete. This in turn reduces software license expense. Further, since overprovisioning is eliminated, less storage capacity is required. Finally, improved system performance means human and networking resources can also be optimized.

Violin's Symphony flash management console provides a single portal for managing petabytes of storage across hundreds of Flash Storage Platforms and All Flash Arrays. Symphony revolutionizes the storage management experience with granular, real-time, SLA-based health monitoring, customizable dashboards and comprehensive reporting, all under centralized management and administration. Simplify your storage and its management with FSP.

Operational Advantages of the Flash Storage Platform

Removing crude legacy storage workarounds delivers CAPEX and OPEX savings as wasted resources are eliminated along with associated management expense. Additional OPEX savings are realized through simplification of complex infrastructures and facilities expense reductions of up to 90% for power, cooling, and floor space.

At the same time, you can reclaim IT resources that were managing inefficient storage for new IT projects that can drive revenue growth. Reclaimed floor space and power can be put to other more productive uses or delay/eliminate data center build outs for future needs. Instead of managing multiple tiers of storage, you can manage two tiers, with active data cost-effectively delivered by fewer data centers, devices, and software licenses. This can yield reduced support effort, and get IT back to moving the business forward, instead of running hard to stay in place. When the true cost of legacy storage is calculated, the move to a FSP in an All Flash Data Center becomes an economic imperative.

Drive Your Business Success with the Flash Storage Platform

Cost savings aren't the only benefit. Customers can uncover new business opportunities through the improved performance and simplicity of their Violin all-flash solutions. In one case, a major telecom wasn't billing for all content it was providing. The latency of the legacy solution couldn't keep up with the revenue opportunity. Once a Violin all-flash solution was deployed, the full economic potential of the services already being provided was realized.

With Violin's Flash Storage Platform, you get continuous availability and reduced risk to operations through vertically integrated software, firmware, and hardware resiliency that delivers enterprise-class all-flash storage at a price point that enables you to upgrade your primary storage to all-flash at the same cost as legacy disk solutions. With Violin's unique Flash Storage Platforms, you can run your primary storage, and your Business in a Flash.

To learn more about how Violin's Flash Storage Platform can transform your data center economics, please contact your Violin Memory representative or visit us at http://www.violin-memory.com

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