



# VIOLIN Extreme Performance Storage Platform

Continuously Breaking Boundaries to Accelerate Enterprise Applications, Reduce Costs and Enable New innovation

## HIGHLIGHTS

- **Consistent Low-Latency for Highest Application Performance**

- OLTP Database Applications
- Real-Time Analytics
- Oracle, SQL Server Apps
- Virtual Server & Desktops
- Machine Learning, AI

- **Reduce Infrastructure Costs by 40% and Higher**

- Less I/O
- Fewer Cores, Cheaper Cores
- Server Reduction
- Less Power & Cooling
- Fewer Application Licenses
- Less to Manage

- **Enterprise Data Services** ensure system and data continuity, protection, efficiency & scale

- **NVMe over FC** providing greater scaling, lower IO latency, less CPU

The Violin Systems Extreme Performance Storage, XVS™ 8, delivers consistent-high-performance with enterprise-class data services to help customers maximize both application performance while significantly reducing IT infrastructure costs.

Offering enterprise data services with low latency and high IOPS, XVS enables businesses to improve their operational efficiency to meet today's and tomorrow's business demands. With immediate access to information needed to achieve higher revenue and increase customer satisfaction, Violin's uncompromising approach enables data-driven organizations to deploy critical applications that support operations across the enterprise in order to quickly grow their success and extend their market leadership. That's why Violin is trusted by some of the largest companies in the world.

### ACCELERATE

#### Applications and Time-to-Insight

From Transactional Oracle and SQL, Server-based applications to Real-Time Analytics and ERP applications Violin customers have experienced 1000x increase in performance, 300% faster data integrity reports and reduced the server and software infrastructure costs by 40% and higher. Violin is the expert in delivering extremely low-latency storage solutions for latency-sensitive applications and with the demand for higher performance fueled by workloads including real-time fraud analytics of transactional data, as well as AI and machine learning and many more, Violin continues to innovate breaking boundaries while ensuring data is always available, supported by enterprise-class data services.

### CREATE

#### New Application Experiences, New Revenue from Your Data

Breaking boundaries enable innovation! Violin continuously breaks boundaries in price-performance resulting in our customers gaining competitive advantages while reducing cost. A trading application customer generating \$1M per second had their application improve by 4 seconds, netting an additional millions of dollars, a tangible return-on-investment. With the dramatic improvements in application performance so does the dramatic improvement in the experience of the applications end-users, leading to improved customer satisfaction. So now with performance and price boundaries taken off the table, a new breed of applications and services are now possible.

### TRANSFORM

#### Data Center Economics, Save Money

It is generally thought that high performance equates to a high price; just like a performance car that traditionally has had a high price tag. Not true for Violin Systems, with Violin not only are the products affordable, but the Violin extreme performance also enables a significant reduction in servers and cores, expensive software and a dramatic cost savings and cost avoidance. By deploying Violin Extreme Performance Platforms our customers have reduced operational expenses by ~70% while improving performance, clearly breaking boundaries in real-world application deployments.

## CONSISTENT EXTREME PERFORMANCE WITH BREAKTHROUGH ECONOMICS

Violin continually sets new standards for performance storage within enterprise data center SAN environments. XVS delivers 5X lower storage latency compared to other all flash storage solutions while simultaneously surpassing their IOPS performance.

### THE KEY TO CONSISTENT LOW LATENCY – VIOLIN FLASH FABRIC ARCHITECTURE™

Violin’s unique flash ecosystem, the Flash Fabric Architecture (FFA), is woven from multiple layers of innovative technologies. At the system’s core lies a resilient, highly available mesh of thousands of flash dies that work in concert to continuously optimize performance, latency, availability, and longevity.

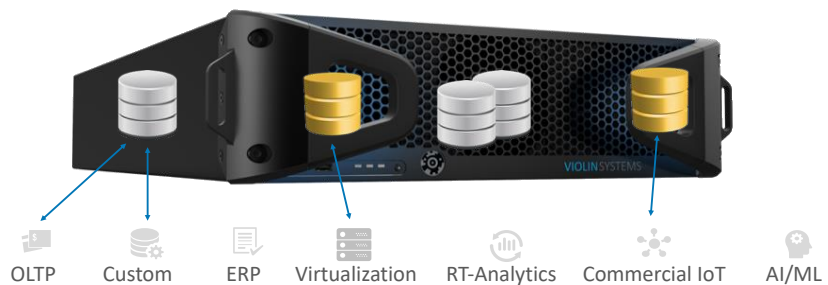
Violin performance advantage saves customers money, with less IO, less processors, and fewer application licenses such as VMWare, Oracle, SQL, and of course reduced power & cooling at the rack level.

- **Spike-free and predictable latency**
- **Consistent performance** that enables multiple workloads for data center consolidation
- **Enterprise Reliability** as all active components of the FFA are hot-swappable for reliability, availability and serviceability (RAS).

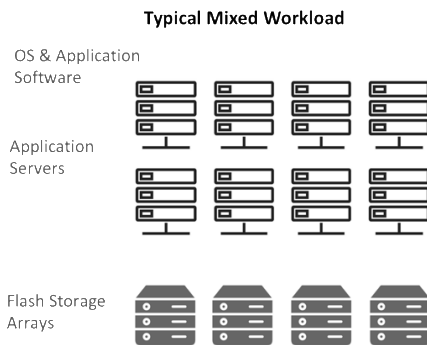
### SINGLE PLATFORM WITH SELECTABLE EFFICIENCIES

Applications typically have different service level requirements including performance, data availability, data efficiency and more.

With Violin low latency, you can consolidate more business-critical applications and databases per server CPU core without compromising service levels. With 10x lower transactional latency compared with legacy storage systems, Violin accelerates business critical workloads while delivering transformative data center economics. Combined with embedded enterprise data services and storage management software, XVS offers the best combination of extreme all flash storage performance, low Total Cost of Ownership (TCO), and high Return on Investment (ROI).

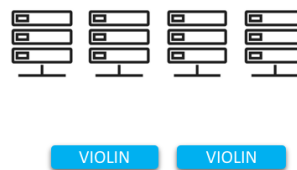


### TYPICAL ECONOMIC TRANSFORMATION



- High millisecond latency
- Volume of arrays to achieve performance
- High price cores & multiple servers needed

**Higher Application Performance  
Lower Cost Infrastructure**



- Low micro second latency
- Consistent performance
- Selectable data efficiencies

**Increased Profits**

- Decreased Transaction Times
- Supply Chain Acceleration
- Faster Insight
- Increased Customer SAT

**Costs Reduction**

- Less Applications licenses
- Less Infrastructure (Server, Network)
- Less Virtualization
- Less Complexity

## ENTERPRISE DATA SERVICES

Data Services are paramount for an enterprise-class storage. Resiliency, availability, flexibility, security and efficiency are table-stakes especially when data must be available to applications at all times, even during failure. In addition, functions of replication, snapshots, data reduction are required.

### Concerto OS

At the core of Violin’s architecture is ‘Consistent Performance’ enveloped and supported by powerful data services, we call this software Concerto OS. Concerto OS platform drives the XVS System, and Transparent LUN Mirroring. Powered by Violin Data Protection, Data reduction and FFA engines, Concerto OS delivers consistent low latency and high IOPS, making the XVS the right choice for primary storage. XVS is a complete flash storage solution, designed from scratch, to deliver the best performance, storage efficiency, data redundancy and value. It is the first all flash storage solution that can store data at the same effective cost as enterprise disk arrays while providing the performance to be primary storage.

Concerto OS delivers consistent low latency with high IOPS with new levels of functionality and ease-of-use through enterprise class data services. It provides application consistent snapshots, CDP and replication, granular block level dedupe and the best management in storage.



### Business Continuity

- Remote asynchronous replication
- WAN Optimized Replication
- Automated App DR management

### Data Protection

- Snapshots (crash consistent)
- Consistency Groups (snaps & replication)
- Backup app integration
- Transparent LUN mirroring
- Encryption

### Data Scaling

- Selective data reduction
- Online expansion of capacity
- Online LUN expansion
- Scale-up to over 907 TB effective

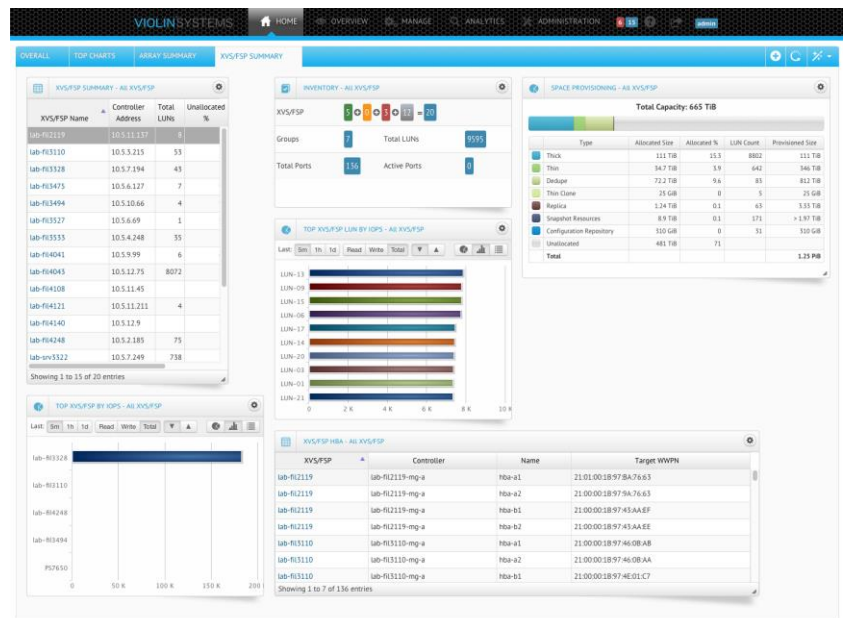
### Data Efficiency

- Snapshots
- Thin Provisioning
- Thin Clones
- Symphony Management

## Simple & Powerful Management @ Any Scale

The Violin’s Symphony management console is a single portal for managing petabytes of storage across hundreds of Violin Platforms with ease.

- Performance, Capacity, Health and Data Services
- Personalized Dashboards
- Custom/Automated Reporting
- SLA-based Proactive Health Monitoring



## PREDICTIVE ANALYTICS

Running ad-hoc reports, drilling down on numbers to analyze how your storage and applications are operating used to be a common way that many storage administrators worked. Now with machine learning and advanced analytics your storage system can work for you. In addition to the advanced capabilities of Violin Symphony described above, Violin now provides insight into past & present statistics for predictive future tuning through cloud-based predictive analytics.

### Continuous Learning

The Violin analytics engine is always learning and adjusting to your changing workloads, answering management questions such as How is this LUN performing? Can it take more load? At this rate, when do I need to provision more space? How is dedupe working for this workload? Are there any events I need to watch out for? And much more.



### A Touch of Augmented Reality (AR)

With a new mobile application that works on any iOS or Android mobile device, the authorized storage administrator can simply walk up to the new XVS and scan the systems unique QR code and immediately see useful information including performance rates, efficiency statistics, temperature and more. All XVS arrays stream their telemetry to the Violin cloud system that is constantly updating in real-time and integrated into the familiar Symphony dashboard, So very simple.

## XVS 8 PRODUCT SPECIFICATIONS

CONSISTENT PERFORMANCE	
Performance *	As Low as 50µs Latency 400µs Latency @ 1M IOPS   1ms Latency @ 2M IOPS Dedupe LUN - 340,000 IOPS @ 1ms
Bandwidth (max)	8 GB/sec
CAPACITY	
Usable (max)	25 TB to 151 TB
Effective (max)**	150 TB to 907 TB
CONNECTIVITY	
Hosts	NVMe Ready - 8x32 Gb Fibre Channel or 8x10 GbE iSCSI
Replication	2x10 GbE
Management	2x 10/100/1000 Mbts/sec auto-sensing Ethernet ports (RJ-45)   1x Serial console port (RS-232)
PHYSICAL	
Dimensions	3RU - 5.12" x 17.5" x 28"
Weight	80 lb. / 36.3 kg - 93 lb. / 42.2 kg
Power ** & Cooling **	1100W - 1800W   3780 BTU/hr. - 6140 BTU/hr.
ENVIRONMENTAL	
Temperature	Operating 10 to 35 °C (50 to 95 °F)   Non-Operating 40 to 70 °C (-40 to 158 °F)
Humidity	Operating 8 to 90% (non-condensing)   Non-Operating 5 to 95% (non-condensing)

\*4K, 100% Read. 50µs with NVMe over FC

\*\* Typical for Fibre Channel configurations. Calculated per efficiencies with 4:1 dedupe and 2:1 compression.