Quantum

F-SERIES NVMe STORAGE

DATASHEET

FEATURES & BENEFITS

Orders of Magnitude Faster than Traditional Flash Storage
NVMe is much faster than traditional flash storage, provides extremely low latency and instant response times for workloads that require a large amount of parallel access.

Reduce Infrastructure Costs and Complexity
Quantum F-Series provides predictable, low-latency access via Fibre Channel or Ethernet, so users can achieve SAN performance with a less expensive Ethernet infrastructure.

Meets Performance Requirements in Less Rack Space
Users that have had to use a large number of HDDs or SSDs to meet their performance requirements can gain back racks of data center space.

Easily Integrates into a StorNext® File Storage Cluster
Enables workstations, applications, and server nodes to access content in file format and provides broad and deep integration with the entire media production ecosystem.

The fastest storage servers for editing, rendering, and processing of video content and other large unstructured data sets.

The Quantum F-Series is a line of high-performance storage servers designed for studio editing, rendering, and other performance-intensive workloads for large unstructured data sets.

F-Series uses NVMe flash drives for ultra-fast reads and writes, enabling it to support massive amounts of parallel processing. Further adding to its high-performance characteristics, F-Series uses the latest RDMA networking technology to provide direct and efficient access between workstations and the NVMe storage devices. The software at the core of the F-Series supports high availability, with an intuitive user interface and cloud-based monitoring to track health and provide analytics on the storage array, making it a preferred choice for production environments and other mission-critical deployments.

Relative to traditional SSD and HDD storage arrays, the Quantum F-Series is orders of magnitude faster, enables users to move from Fibre Channel SAN infrastructures to Ethernet infrastructures without giving up performance, and helps organizations gain back racks of data center space.

Unlike other NVMe storage servers, the Quantum F-Series was designed specifically for video and video-like data sets, so it can easily handle the performance requirements of ultra-high-def content, high-resolution images, and other forms of unstructured data.

LEARN MORE:
www.quantum.com/f-series

QUANTUM F-SERIES NVMe STORAGE

QUANTUM F-SERIES PRODUCT OVERVIEW

The Quantum F-Series product line consists of two different systems, the F1000 and F2000.

The F1000 is a performance-optimized 1U single-node server with 10 NVMe drives and is available in two capacity points (raw):

- 76.8 TB (10 x 7.68 TB)
- 153.6 TB (10 x 15.36 TB)

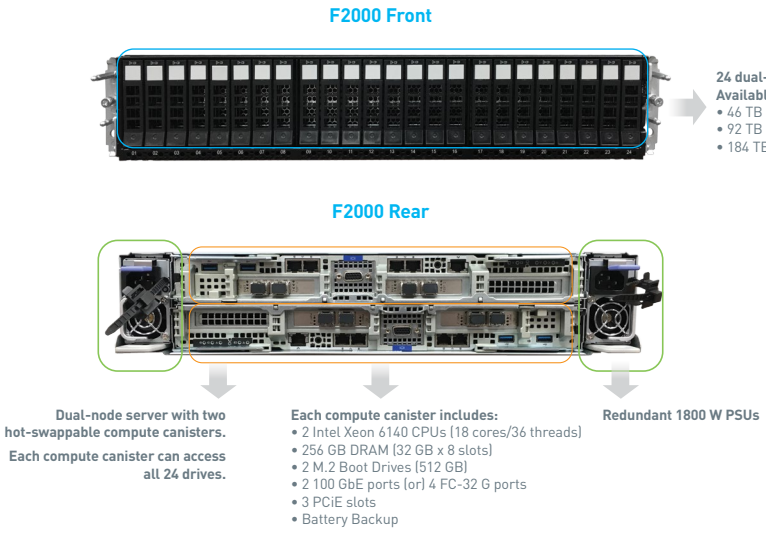
The F2000 is a highly available, highly performant storage server—purpose built for NVMe and with no single point of failure.

The F2000 is a 2U dual-node server with two hot-swappable compute canisters and up to 24 dual-ported NVMe drives. Each compute canister can access all 24 NVMe drives, and each compute canister includes processing power, memory, and connectivity specifically designed for the highest performance and availability.

The F2000 appliance holds up to 24 dual-ported NVMe drives and is available in three capacity points (raw):

- 46.1 TB (24 x 1.92 TB)
- 92.2 TB (24 x 3.84 TB)
- 184.3 TB (24 x 7.68 TB)

A detailed specification table for both products is provided at the end of this datasheet.

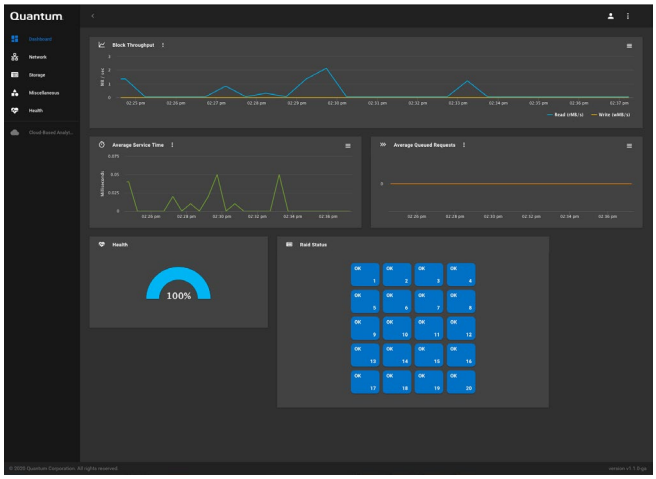


Quantum F-Series Software: Powered by the Quantum Cloud Storage Platform

The Quantum Cloud Storage Platform is the software that powers the Quantum F-Series. Quantum's Cloud Storage Platform is a software-defined storage platform that was designed specifically for video and other large unstructured data sets.

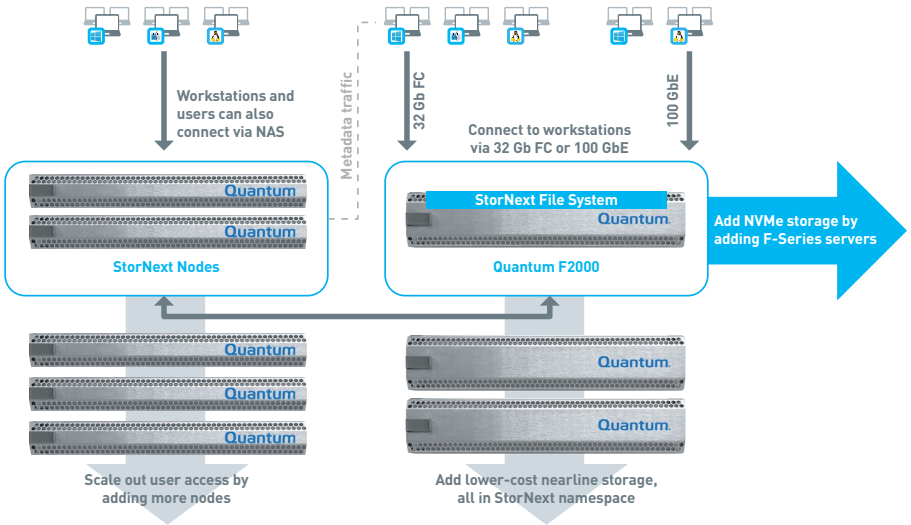
The Quantum Cloud Storage Platform is:

- **Software-defined:** Run on bare metal, in a VM, or in the cloud. No hardware dependence.
- **Highly available:** With capabilities that include active/active clustering, failover, and different forms of data protection.
- **Tuned for low latency and fast streaming performance:** Because the Quantum Cloud Storage Platform was built for video and video-like data, we've stripped out the data services that don't apply to video, making the architecture more efficient and maximizing streaming performance to the storage.



Further adding technical capability to the F-Series, the device is managed by an intuitive GUI that can control a wide-array of storage operations such as health monitoring of multiple system components, creating RAID sets, and configuring storage networks. And with the added benefit of being able to remotely monitor systems with Cloud-Based Analytics software, it's easier to deploy and maintain storage environments that are built on F-Series.

QUANTUM F-SERIES USE CASE



With the F-Series in a StorNext shared storage environment, users access data directly from the storage—either on the SAN or on an IP network—without the bottlenecks associated with current storage and networking technologies. The result? Dramatically lower, and predictable, latencies for anyone working in UHD and high-frame-rate content.

As shown in the figure, workstations and applications are able to access the NVMe storage directly via 32 Gb Fibre Channel, or via 100 GbE using RDMA.

In addition, users can connect into the NVMe storage using CIFS/NFS, in which case the clients access the storage through StorNext server nodes.

Users can add more NVMe storage by adding more F-Series storage servers and can scale out access to more users by adding additional StorNext file system nodes.

In addition, users can build out nearline storage with less-expensive SSD or HDD storage, all within the StorNext shared storage environments.

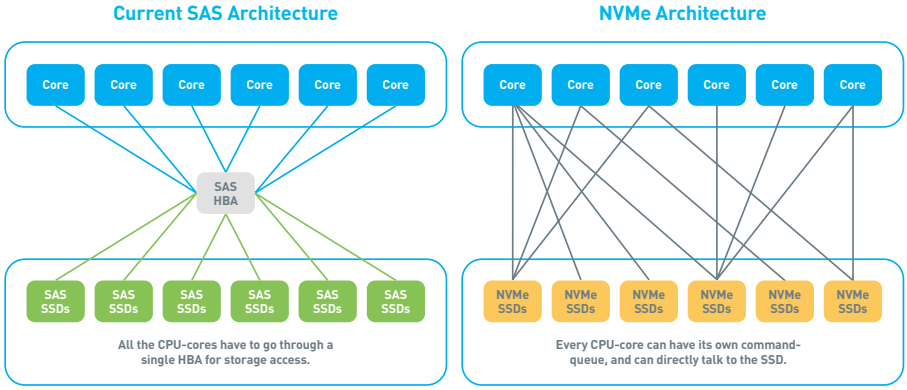
QUANTUM F-SERIES BENEFITS

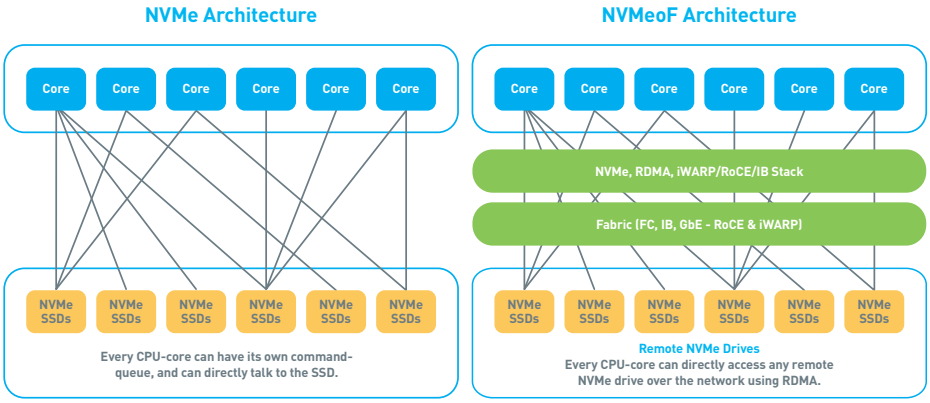
Lighting-Fast Performance

With the ability to support massive 1000+ node render farms without data contention, support playout to multiple digital intermediaries from a single volume, or work effortlessly with uncompressed 8K content, Quantum F-Series supports all these workflows and more. It does this by taking advantage of NVMe performance and parallelism.

Designed for the Future

The Quantum F-Series uses NVMe, which inherently provides direct access to storage, and massive parallelism to unlock the true performance of flash.





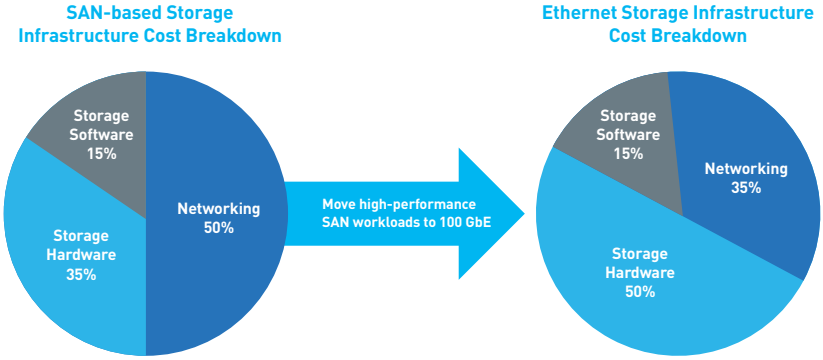
But the Quantum F-Series also supports RDMA protocols—another networking technology that reduces network overhead, and provides direct client access to storage.

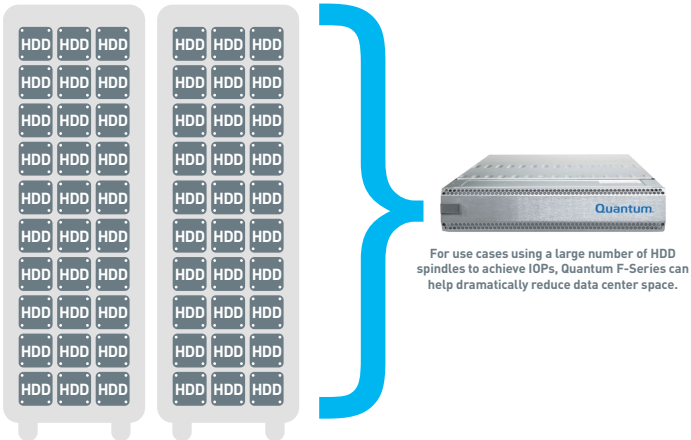
For users moving to IP-based workflows and infrastructures, the combination of these technologies will enable users to future-proof their infrastructure and accelerate their workflows in the process.

Finally, the F-Series is NVMeoF ready. So, as more applications start to leverage the NVMeoF protocol, the F-Series is built to take advantage of those future enhancements.

Reduce Infrastructure Costs

A majority of today's most demanding video workflows involving high-resolution, high-frame-rate content are still operating on SAN-based storage architectures. And although there are benefits of Fibre Channel, the infrastructure is costly to buy—and just as expensive to maintain. By leveraging the power of 100 GbE networking, cutting-edge RDMA protocols, and direct access to storage enabled by NVMe, Quantum F-Series can become the bridge to help your organization move to a more cost-effective network architecture that still provides all the performance your users require.





Gain Back Racks of Data Center Space

Because F-Series is able to offer extremely high levels of performance in such a dense form factor, organizations no longer need to overprovision their storage to achieve the performance required by certain applications. Not only does this offer savings by needing to purchase less infrastructure for the same amount of performance, but organizations can also reduce the data center space required to house these solutions, further reducing infrastructure costs.

TECHNICAL SPECIFICATIONS

Specification	F1000	F2000
Form-Factor	1U rack-mounted chassis	2U rack-mounted chassis
Controllers	Single controller with redundant components	Dual redundant active/active hot swappable controllers
Drives	10 NVMe U.2 SSD	24 NVMe U.2 SSD
NVMe Drive Options	15.36 TB 7.68 TB	7.68 TB 3.84 TB 1.92 TB
Total Raw Capacity	153.6 TB 76.8 TB	184.3 TB 92.16 TB 46.08 TB
Total Usable Capacity	76.8 TB 38.4 TB	153.6 TB 76.8 TB 38.4 TB
Connectivity (Ethernet Model)	2x Dual Port 100 Gb Ethernet (total of 4 ports per system)	1x Dual Port 100 Gb Ethernet per controller (total of 4 ports per system)
Connectivity (Fibre Channel Model)	2x Quad Port 32 Gb Fibre Channel (total of 8 ports per system)	1x Quad Port 32 Gb Fibre Channel per controller (total of 8 ports per system)
Onboard I/O	2x 10GBASE-T per system	2x 10GBASE-T per controller (total of 4 ports per system)
Management	Integrated IPMI 2.0 + KVM with dedicated LAN	Integrated IPMI 2.0 + KVM with dedicated LAN
Physical Dimensions	Height 1.7" (43 mm) Width 17.2" (437 mm) Depth 23.5" (597 mm) Weight Net Weight: 20 lbs (9.1 kg) Gross Weight: 33 lbs (15.0 kg)	Height 3.45" (88 mm) Width 17.58" (446 mm) Depth 32.93" (836 mm) Weight Net Weight: 86.0 lbs (39.1 kg) Gross Weight: 92.6 lbs (42.1 kg)
Power Supplies	750 W Redundant Power Supplies	1800 W Redundant Power Supplies
Power Supply Input	100 - 140 Vac / 8 - 6 A / 50-60 Hz 200 - 240 Vac / 4.5 - 3.8 A / 50-60 Hz 200 - 240 Vdc / 4.5 - 3.8 A (CCC Only)	200 - 240 Vac
Power Supply Certification	Platinum	Platinum
Operating Temperature	10 °C to 30 °C (50 °F to 86 °F)	10 °C to 30 °C (50 °F to 86 °F)
Non-Operating Temperature	-40 °C to 70 °C (-40 °F to 158 °F)	-40 °C to 70 °C (-40 °F to 158 °F)
Operating Relative Humidity	8% to 90% (non-condensing)	8% to 85% (non-condensing)
Non-Operating Relative Humidity	5% to 95% (non-condensing)	5% to 90% (non-condensing)

Quantum

Quantum technology and services help customers capture, create, and share digital content—and preserve and protect it for decades at the lowest cost. Quantum's platforms provide the fastest performance for high-resolution video, images, and industrial IoT, with solutions built for every stage of the data lifecycle, from high-performance ingest to real-time collaboration and analysis and low-cost archiving. Every day the world's leading entertainment companies, sports franchises, research scientists, government agencies, enterprises, and cloud providers are making the world happier, safer, and smarter on Quantum. See how at **www.quantum.com**.

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