Dell PowerScale All-Flash

The PowerScale All-Flash storage nodes help to accelerate demanding file workloads with extreme performance and efficiency.

The PowerScale family comprises of scale-out file storage platforms configured with the OneFS operating system. OneFS provides the intelligence behind the highly scalable, high–performance modular storage solution that can grow with your business. A PowerScale OneFS cluster can be built with a flexible choice of storage platforms including all-flash, hybrid and archive nodes. These solutions provide performance, choice, efficiency, flexibility, scalability, security, and protection for you to store massive amounts of unstructured data within a cluster.

The PowerScale all-flash nodes co-exist seamlessly in the same cluster with your existing PowerScale or Isilon nodes to drive your traditional workloads and even the most modern applications like Generative AI. The PowerScale all-flash storage platforms include:

PowerScale F910

PowerScale F910 is the latest in our next-generation all-flash nodes lineup and provides massive AI-ready performance with the ultimate capacity in a highly dense 2U configuration. Each node hosts 24 NVMe SSDs. F910 allows you to scale raw storage from 92 TB to 736 TB per node and up to 186 PB of raw capacity per cluster. The F910 includes in-line compression and deduplication to maximize efficiency. The minimum number of PowerScale nodes per cluster is three while the maximum cluster size is 252 nodes. The F910 is best suited for high-capacity workloads within demanding verticals like media and entertainment, high frequency trading, healthcare and accelerating phases of the AI lifecycle for Generative AI applications.

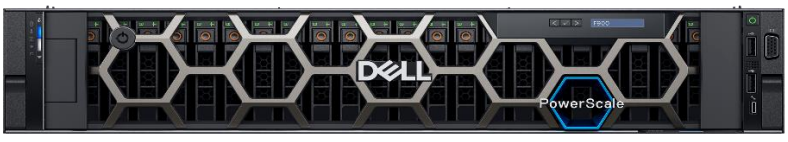
PowerScale F710

Our next-generation **PowerScale F710**, leveraging PowerEdge R660, delivers high performance and improved density in a 1U platform with up to 10 all-flash NVMe SSD drives per node. The F710 allows you to scale raw storage from 38 TB to 614 TB per node and up to 154 PB of raw capacity per cluster. The F710 includes in-line compression and deduplication. The minimum number of PowerScale nodes per cluster is three while the maximum cluster size is 252 nodes. The F710 is best suited for Generative AI and AI workloads, as well as high performing vertical workloads like, media and entertainment, healthcare and life sciences, high frequency trading, and EDA workloads – and is the world's first ethernet-based storage appliance certified with NVIDIA DGX SuperPOD.

PowerScale F210

PowerScale F210 is also part of our next-generation all-NVMe lineup. It delivers significant performance gains over the previous generation in a cost-effective 1U form factor with up to 4 NVME all-flash SSD drives per node. The F210 offers a 15TB QLC option and allows you to scale raw storage from 8 TB to 61 TB per node and up to 15 PB of raw capacity per cluster. It also includes in-line compression and deduplication. The minimum number of PowerScale nodes per cluster is three while the maximum cluster size is 252 nodes. The F210 is best suited for customer beginning their AI and Analytics journey, and other high-demanding workloads that require a balance of performance and capacity.

PowerScale F900



PowerScale F900 provides great performance with all-NVMe drives in a cost-effective configuration to address the storage needs of demanding workloads. Each node is 2U in height and hosts 24 NVMe SSDs. F900 supports TLC or QLC drives for maximum performance. It allows you to scale raw storage from 46 TB to 736 TB per node and up to 186 PB of raw

capacity per cluster. The F900 includes in-line compression and deduplication. The minimum number of PowerScale nodes per cluster is three while the maximum cluster size is 252 nodes. The F900 is best suited for media and entertainment 8K, genomics, algorithmic trading, artificial intelligence, machine learning and HPC workloads.

PowerScale F600

PowerScale F600 includes NVMe drives to provide larger capacity with massive performance in a cost-effective compact form factor to power demanding workloads. The F600 supports TLC or QLC drives for maximum performance. Each node allows you to scale raw storage capacity from 15.36 TB to 245 TB and up to 60 PB of raw capacity per cluster. Inline data compression and deduplication is included. The minimum number of PowerScale nodes per cluster is three and the maximum cluster size is 252 nodes. The F600 comes in two different CPU configurations. The F600 is best suited for M&E studios, hospitals and financial service organizations that need performance and capacity for demanding workloads.

PowerScale F200

PowerScale F200 delivers the performance of flash storage in a cost-effective form factor to address the needs of a wide variety of workloads. Each node allows you to scale raw storage capacity from 3.84 TB to 30.72 TB and up to 7.7 PB of raw capacity per cluster. The F200 includes in-line compression and deduplication. The minimum number of PowerScale nodes per cluster is three while the maximum cluster size is 252 nodes. The F200 is best suited for remote offices, small M&E workloads, small hospitals, retail outlets, IoT, factory floor and other similar deployment scenarios.

PowerScale F910 All-NVMe Specifications

F910 ATTRIBUTES & OPTIONS	3.84 TB SSD	7.68 TB SSD	15.36 TB SSD	30.7 TB SSD
Raw node capacity	92 TB	184 TB	368 TB	736.8 TB
NVMe SSD drives (2.5") per node	24			
Self-Encrypting Drives (SED)	Yes (requires OneFS 9.8)			
Operating system	PowerScale OneFS 9.8 or later			
ECC memory (per node)	512 GB			
Front-end networking (per node)	Dual port 25G NIC supporting 10G or 25G connections Dual port 100G NIC supporting 40G or 100G connections Dual port 200G Ethernet NIC Dual port 200G InfiniBand NIC (HDR)			
Infrastructure networking (per node)	Dual port 100G NIC supporting 40G or 100G connections Dual port 200G Ethernet NIC Dual port 200G InfiniBand NIC (HDR)			
Max Power Consumption @ 200~240V (per node)[1]	877 Watts (@25°C), 913 Watts (@35°C)			
Typical thermal rating	2992 BTU/hr (@25°C), 3115 BTU/hr (@35°C)			

[1]Values at <25° C are reflective of more steady state maximum values during normal operations

PowerScale F710 All-NVMe Specifications

F710 ATTRIBUTES & OPTIONS	3.84 TB SSD	7.68 TB SSD	15.36 TB SSD	30.72 TB SSD	61.4 TB SSD
Raw node capacity	38 TB	77 TB	154 TB	307 TB	614 TB
NVMe SSD drives (2.5") per node	10				
Self-Encrypting Drive (SED)	Yes (requires OneFS 9.7)				
Operating system	Yes (requires OneFS 9.7)				
ECC memory (per node)	512 GB				
Front-end networking (per node)	Dual port 25G NIC supporting 10G or 25G connections Dual port 100G NIC supporting 40G or 100G connections Dual port 200G Ethernet NIC Dual port 200G InfiniBand NIC (HDR)				
Infrastructure networking (per node)	Dual port 100G NIC supporting 40G or 100G connections Dual port 200G Ethernet NIC Dual port 200G InfiniBand NIC (HDR)				
Max Power Consumption @ 200~240V (per node)[1]	769 Watts (@25°C), 887 Watts (@35°C)				
Typical thermal rating	2622 BTU/hr (@25°C), 3025 BTU/hr (@35°C)				

[1]Values at <25° C are reflective of more steady state maximum values during normal operation

PowerScale F210 All-NVMe Specifications

F210 ATTRIBUTES & OPTIONS	1.92 TB SSD	3.84 TB SSD	7.68 TB SSD	15.36 TB SSD
Raw node capacity	7.7 TB	15 TB	31 TB	61 TB
SSD drives (2.5") per node	4			
Self-Encrypting drive (SED SSD) FIPS 140-2 compliant option	Yes (requires OneFS 9.7)			
Operating system	Yes (requires OneFS 9.7)			
ECC memory (per node)	128 GB			
Front-end networking (per node)	Dual port 25G NIC supporting 10G or 25G connections (SFP+/SFP28) Dual port 100G NIC supporting 40G or 100G connections			
Infrastructure networking (per node)	Dual port 25G NIC supporting 10G or 25G connections Dual port 100G NIC supporting 40G or 100G connections Dual port 200G InfiniBand NIC (HDR)			
Max Power Consumption @ 200~240V (per node)[1]	286 Watts (@25°C), 309 Watts (@35°C)			
Typical thermal rating	975 BTU/hr (@25°C), 1054 BTU/hr (@35°C)			

Values at <25° C are reflective of more steady state maximum values during normal operation

PowerScale F900 All-NVMe Specifications

F900 ATTRIBUTES & OPTIONS	1.92 TB SSD	3.84 TB SSD	7.68 TB SSD	15.36 TB SSD (TLC, QLC)	30.7 TB SSD (QLC)
Raw node capacity	46 TB	92 TB	184 TB	368 TB	736.8 TB
NVMe SSD drives (2.5") per node	24				
Self-Encrypting Drives (SED)	Yes (requires OneFS 9.3); QLC SED drives require OneFS 9.4.0.8				
Operating system	PowerScale OneFS 9.2 or later; QLC drives require OneFS 9.4				
ECC memory (per node)	736 GB				
Front-end networking (per node)	Dual port 25G NIC supporting 10G or 25G connections Dual port 100G NIC supporting 40G or 100G connections				
Infrastructure networking (per node)	2 InfiniBand connections with QDR links or Dual port 100G NIC supporting 40G or 100G connections (QSFP+/QSFP28)				
Max Power Consumption @ 200~240V (per node)[1]	816 Watts (@25°C), 921 Watts (35°C)				
Typical thermal rating	2783 BTU/hr (@25°C), 3141 BTU/hr (@35°C)				

[1]Values at <25° C are reflective of more steady state maximum values during normal operations

PowerScale F600 All-NVMe Specifications

F600 ATTRIBUTES & OPTIONS	1.92 TB SSD	3.84 TB SSD	7.68 TB SSD	15.36 TB SSD (TLC, QLC)	30.7 TB SSD (QLC)
Raw node capacity	15.36 TB	30.72 TB	61.44 TB	122 TB	245 TB
NVMe SSD drives (2.5") per node	8				
Self-Encrypting Drive (SED)	Yes (requires OneFS 9.3); QLC SED drives require OneFS 9.4.0.8				
Operating system	PowerScale OneFS 9.0 or later; QLC drives require OneFS 9.4				
ECC memory (per node)	128, 192, 384 or 736 GB				
Front-end networking (per node)	Dual port 25G NIC supporting 10G or 25G connections Dual port 100G NIC supporting 40G or 100G connections				
Infrastructure networking (per node)	2 InfiniBand connections with QDR links or Dual port 100G NIC supporting 40G or 100G connections (QSFP+/QSFP28)				
Max Power Consumption @ 200~240V (per node)[1]	615 Watts (@25°C), 693 Watts (@35°C)				
Typical thermal rating	2097 BTU/hr (@25°C), 2363 BTU/hr (@35°C)				

[1]Values at <25° C are reflective of more steady state maximum values during normal operation

PowerScale F200 All-Flash Specifications

F200 ATTRIBUTES & OPTIONS	960 GB SSD	1.92 TB SSD	3.84 TB SSD	7.68 TB SSD
Raw node capacity	3.84 TB	7.68 TB	15.36 TB	30.72 TB
SSD drives (2.5") per node	4			
Self-Encrypting drive (SED SSD) FIPS 140-2 compliant option	Yes			
Operating system	PowerScale OneFS 9.0 or later			
ECC memory (per node)	48 GB or 96 GB			
Front-end networking (per node)	Dual port 25G NIC supporting 10G or 25G connections Dual port 100G NIC supporting 40G or 100G connections			
Infrastructure networking (per node)	Dual port 25G NIC supporting 10G or 25G connections Dual port 100G NIC supporting 40G or 100G connections (QSFP+/QSFP28) requires OneFS 9.5 or later			
Max Power Consumption @ 200~240V (per node)[1]	165 Watts (@25°C), 178 Watts(@35°C)			
Typical thermal rating	563 BTU/hr (@25°C), 607 BTU/hr (@35°C)			

Values at <25° C are reflective of more steady state maximum values during normal operation

CLUSTER ATTRIBUTES	Number of nodes	Raw cluster capacity	Rack units
F910	3 to 252	276 TB 186 PB	3 to 252
F710	3 to 252	115 TB 154 PB*	3 to 252
F210	3 to 252	23 TB to 15 PB	3 to 252
F900	3 to 252	138 TB to 186 PB	6 to 504
F600	3 to 252	46TB to 60 PB	3 to 252
F200	3 to 252	11.4TB to 7.7 PB	3 to 252

*Cluster scalability limitations for the 61TB SSDs apply

PowerScale Attributes

PRODUCT ATTRIBUTES	
Scale-out architecture	Distributed fully symmetric clustered architecture that combines modular storage with OneFS operating system in a single volume, single namespace, and single filesystem.
Modular design	1U or 2U rack mountable PowerScale with 3 nodes minimum. Four self-contained Isilon nodes include server, software, HDDs and SSDs in a 4U rack-mountable chassis. All nodes can be integrated into existing PowerScale and Isilon clusters with backend Ethernet or InfiniBand connectivity,
Scalability	A cluster can scale up to 252 nodes. The minimum number of all-flash nodes per cluster is three for PowerScale and four for Isilon. Add nodes to scale performance and capacity. A single cluster can deliver up to 186PB raw capacity.
High availability	No-single-point-of-failure. Self-healing design protects against disk or node failure; includes back-end intra-cluster failover.
Operating system	PowerScale OneFS distributed file system creates a cluster with a single file system and single global namespace. It is fully journaled, fully distributed, and has a globally coherent write/read cache.
Data protection	FlexProtect file-level striping with support for N+1 through N+4 and mirroring data protection schemes.

PRODUCT ATTRIBUTES

NDMP Backup	Supports two-way NDMP backups for effective data protection.
Data retention	SmartLock policy-based retention and protection against accidental deletion.
Security	File system audit capability and STIG hardening to improve security and control of your storage infrastructure and address regulatory compliance requirements. PowerScale Cyber Protection powered by Superna Ransomware Defender can be included.
Efficiency	SmartDedupe data deduplication option, which can reduce storage requirements by up to 35 percent. Inline data reduction and compression.
Automated storage tiering	Policy-based automated tiering options including SmartPools and CloudPools software to optimize storage resources and lower costs.
Network protocol support	NFSv3, NFSv4, NFSoRDMA, NFS Kerberized sessions (UDP or TCP), SMB1 (CIFS), SMB2, SMB3, SMB3-CA, Multichannel, HTTP, FTP, NDMP, SNMP, LDAP, HDFS, S3, ADS, NIS reads/writes.
Data replication	SyncIQ fast and flexible one-to-many file-based asynchronous replication between clusters. SmartSync provides efficient file to file and file to object data movement.

ENVIRONMENTAL SPECIFICATIONS – POWER

Power factor is a measure of how effectively you are using electricity. The power factor of an AC electrical power system is defined as the ratio of the real power absorbed by the load to the apparent power flowing in the circuit and is a dimensionless number in the closed interval of −1 to 1. A power factor of less than one indicates the voltage and current are not in phase, reducing the instantaneous product of the two.

For max power consumption information during unexpected environmental conditions, please refer to the “Site Preparation and Planning Guide”.

POWER SUPPLY: Key Specifications and Efficiency for PowerScale **F200**, **F210, F600, F710, F900, and F910**

Attribute	F200 and F600	F710 and F210	F900	F910
Class	Platinum	Platinum	Platinum	Platinum
Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Voltage	100-240V, 10 A – 5 A	100-240V, F210: 9.2 A – 4.7A, F710: 12 A – 8A	100-240V, 12 A – 6.5 A	100-240V, 12 A – 8A

Operating Environment: 10°C to 35°C (50°F to 95°F) with no direct sunlight on the equipment
For additional information about environmental measurements for specific system configurations, see Dell.com/environmental_datasheets

OPERATING ENVIRONMENT

Compliant with ASHRAE A3 data center environment guidelines

DIMENSIONS / WEIGHT:

The following specifications apply to F910:

- Height: 86.8 mm (3.41 inches)
- Width: 482 mm (18.97 inches)
- Depth: 772.13 mm (30.39 inches) with bezel
- Weight: 72.2 lbs. (32.75 kg)

The following specifications apply to F210 and F710

- Height: 42.8mm (1.68”)
- Width: 482mm (18.97")
- Depth: 822.88mm (32.39”) with bezel

- Weight: F210 - 44.8 lbs (20.3 kg), F710 - 49.6 lbs (22.5 kg)

The following specifications apply to F900:

- Height: 86.8mm (3.42”)
- Width: 434mm (17.08")
- Depth: 737.5mm (29.04”) (end of the power supply latches)
- Weight: 61.95 lbs. (28.1 kg)

The following specifications apply to F200 and F600

- Height: 42.8mm (1.68”)
- Width: 434mm (17.08")
- Depth: 808.5mm (31.83”) (end of the power supply latches)
- Weight: 48.28 lbs (21.9 kg)

MINIMUM SERVICE CLEARANCES	Front: 40” (88.9 cm), rear: 42” (106.7 cm)

Safety and EMI Compliance

Statement of Compliance

This Information Technology Equipment is compliant with the electromagnetic compatibility and product safety regulations/standards required by the countries in which the product is sold. Compliance is based on FCC part 15, CISPR22/CISPR24 and EN55022/EN55024 standards, including applicable international variations. Compliant Class A products are marketed for use in business, industrial, and commercial environments. Product Safety compliance is based on IEC 60950-1 and EN 60951-1 standards, including applicable national deviations.

This Information Technology Equipment is in compliance with EU RoHS Directive 2011/65/EU.

The individual devices used in this product are approved under a unique regulatory model identifier that is affixed to each individual device rating label, which may differ from any marketing or product family name in this datasheet.

The PowerScale F200, F600, F900, F210, F710, and F910 nodes are Energy Star compliant.

For additional information see http://support.dell.com under the Safety & EMI Compliance Information tab.

Take the next step

Contact your Dell sales representative or authorized reseller to learn more about how PowerScale scale-out NAS storage can benefit your organization.

Learn more about Dell Technologies Storage

Contact a Dell Expert

View more resources

Join the conversation with #DellStorage