DELL Technologies

Specification Sheet

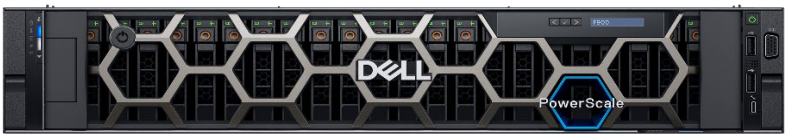
Dell PowerScale All-Flash

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

The PowerScale family comprises of PowerScale and Isilon scale-out file storage platforms configured with the PowerScale OneFS operating system. PowerScale OneFS provides the intelligence behind the highly scalable, high–performance modular storage solution that can grow with your business. A OneFS powered cluster can be built with a flexible choice of storage platforms including all-flash, hybrid and archive nodes. These solutions provide the 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 and modern applications. The PowerScale all-flash storage platforms include:

PowerScale F900



PowerScale F900 provides the maximum performance of 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.

Isilon F800 / Isilon F810

Isilon F800 offers massive performance and capacity. Each chassis houses 60 SSDs with a capacity choice of 1.6 TB, 3.2 TB, 3.84 TB, 7.68 TB or 15.36 TB per drive. This allows you to scale raw storage capacity from 96 TB to 924 TB in a single 4U chassis and up to 58 PB raw storage in a single 252 node cluster.

Isilon F810 provides massive performance and capacity along with inline data compression and deduplication capabilities to deliver extreme efficiency. Each F810 chassis houses 60 SSDs with a capacity choice of 3.84 TB, 7.68 TB or 15.36 TB per drive. This allows you to scale raw storage capacity from 230 TB to 924 TB in a 4U chassis and up to 58 PB of raw storage in a single 252 node cluster.

Embedded, integrated, or attached OEM versions are available for PowerScale all-flash nodes as either de-branded or re-branded solutions.

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 Drive (SED SSD) FIPS 140-2 compliant option	Yes (requires OneFS 9.3); QLC drives only available in SED Non-FIPS (requires 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 (SFP+/SFP28) 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]	859 Watts (@25°C)				
Typical thermal rating	2931 BTU/hr				

[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 SSD) FIPS 140-2 compliant option	Yes (requires OneFS 9.3); QLC drives only available in SED Non-FIPS (requires 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 (SFP+/SFP28) or Dual port 100G NIC supporting 40G or 100G connections (QSFP+/QSFP28)				
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]	467 Watts (@25°C) (Standard) 642 Watts (@25°C) (Prime)
Typical thermal rating	1593.5 BTU/hour (Standard) 2190 BTU/hour (Prime)

[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 (SFP+/SFP28) Dual port 100G NIC supporting 40G or 100G connections (QSFP+/QSFP28)			
Infrastructure networking (per node)	Dual port 25G NIC supporting 10G or 25G connections (SFP+/SFP28) 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]	239 Watts (@25°C)			
Typical thermal rating	815.5 BTU/hr			

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

CLUSTER ATTRIBUTES	F200	F600	F900
Number of nodes	3 to 252	3 to 252	3 to 252
Raw cluster capacity	11.4TB to 7.7 PB	46TB to 60 PB	138 TB to 186 PB
Rack units	3 to 252	3 to 252	6 to 504

Isilon F800 All-Flash Specifications

F800 ATTRIBUTES & OPTIONS	1.6 TB SSD	3.2 TB SSD	3.84 TB SSD	7.68 TB SSD	15.36 TB SSD
Raw chassis capacity	96 TB	192 TB	230 TB	460 TB	924 TB
SSD drives (2.5") per chassis	60				
Self-Encrypting drive (SED SSD) FIPS 140-2 compliant option	Yes				
Operating system	OneFS 8.1 or later except for self-encrypting drive options which require OneFS 8.1.0.1 or later				
Number of nodes per chassis	4				
ECC memory (per node)	256 GB				
Front-End networking (per node)	2 x 10GbE (SFP+) or 2 x 25GbE (SFP28) or 2 x 40GbE (QSFP+)				
Infrastructure networking (per node)	2 InfiniBand connections supporting QDR links or 2 x 40GbE (QSFP+)				
Max Power Consumption @ 200~240V (per chassis)[1]	1300 Watts (@25°C)				
Typical thermal rating	4,440 BTU/hr				

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

Isilon F810 All-Flash Specifications

F810 ATTRIBUTES & OPTIONS	3.84 TB SSD	7.68 TB SSD	15.36 TB SSD
Raw chassis capacity	230 TB	460 TB	924 TB
SSD drives (2.5") per chassis	60		
Self-Encrypting drive (SED SSD) FIPS 140-2 compliant option	Yes		
Operating system	OneFS 8.1.3 or later		
Number of nodes per chassis	4		
ECC memory (per node)	256 GB		
Front-End networking (per node)	2 x 10GbE (SFP+) or 2 x 25GbE (SFP28) or 2 x 40GbE (QSFP+)		
Infrastructure networking (per node)	2 X 40GbE (QSFP+)		
Max Power Consumption @ 200~240V (per chassis)[1]	1300 Watts (@25°C)		
Typical thermal rating	4,440 BTU/hour		

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

CLUSTER ATTRIBUTES	F800	F810
Number of chassis	1 to 63	
Number of nodes	4 to 252	
Raw cluster capacity	96 TB to 58 PB	230 TB to 58 PB

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.

PRODUCT ATTRIBUTES	
Data protection	FlexProtect file-level striping with support for N+1 through N+4 and mirroring data protection schemes.
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**, **F600 and F900**

Attribute	F200 and F600	F900
Class	Platinum	Platinum
Heat dissipation (maximum)	2902 BTU/hr	4100 BTU/hr
Frequency	50/60 Hz	50/60 Hz
Voltage	100-240V, 10 A – 5 A	100-240V, 12 A – 6.5 A

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

Power Supply: PowerScale **F800 and F810**: Dual-redundant, hot-swappable 1450W power supplies with power factor correction (PFC); rated for input voltage 180 – 265 VAC (optional rack mount step-up transformer for 90-130 VAC input regions)

Power factor and efficiency rate for **F800 and F810** PSU

System Load	Efficiency	PF
10%	89.74%	0.933
20%	94.28%	0.982

30%	95.02%	0.990
40%	95.19%	0.994
50%	95.11%	0.996
60%	94.77%	0.997
70%	94.50%	0.998
80%	94.13%	0.998
90%	93.66%	0.998
100%	92.93%	0.998

CFM – Volume of airflow; cubic feet/minute
F800 and F810: each node 70CFM, total chassis 280CFM (max)

OPERATING ENVIRONMENT	Compliant with ASHRAE A3 data center environment guidelines

DIMENSIONS / WEIGHT:

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)

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)

The following specifications apply to F800 and F810:

- Height: 7” (17.8 cm)
- Width: 17.6” (44.8 cm);
- Depth (front NEMA rail to rear 2.5” SSD cover ejector): 35.8” (91.0 cm);
- Depth (front of bezel to rear 2.5” SSD cover ejector): 37.6” (95.5 cm)

The following max weights per Chassis/node:

- F900: 61.95 lbs. (28.1 kg)
- F200, F600: 48.28 lbs (21.9 kg)
- F800, F810: 170 lbs. (77.1 kgs)

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.

PowerScale F200, F600 and F900 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.