



# Dell Compellent FS8600 NAS Appliance

Enhance your storage capabilities with the Dell™ Compellent™ FS8600 scale-out NAS and enable an intelligent and agile future for your business.

## Scale out or scale up to meet your workload needs

The FS8600 NAS appliance offers a flexible solution for capacity- and performance-intensive file workloads. Based on the Dell Fluid File System (FluidFS) version 6, its scale-out architecture supports up to 4PB in a single file system and over 20PB in a global namespace, plus linear performance expansion up to 494,000 file opens with SPEC SFS 2008 and 11.9 GB/sec max throughput.<sup>1</sup>

The FS8600 can help you keep pace with constantly growing file storage needs. As they grow and evolve, the FS8600 scales both storage capacity and performance non-disruptively and independent of one another within a single file system preventing an expensive platform rip-and-replace. Plus, as the FS8600 system scales, load-balancing continues to optimize performance.

## Manage your data efficiently while controlling costs

As a leading primary storage solution with policy-driven, variable block data reduction, the FS8600 can decrease the capacity needed to store common enterprise data sets by 48%.<sup>2</sup> The linear performance of the FS8600 NAS appliance keeps CAPEX remarkably low, enabling it to address performance-intensive file workloads cost-effectively. The FS8600 with FluidFS has better file OPS performance, and delivers the best price-performance profile among major NAS vendors. To further enhance performance, the FS8600 leverages the strengths of the Dell SC Series platforms such as:

- Automated tiering to keep frequently accessed data on high-performance drives, and move passive data to lower cost, capacity-optimized drives
- Thin provisioning to provide on-demand allocation of blocks
- Optimization for solid-state drives
- Unified block and file management through Dell Storage Manager (DSM)

## Keep your data protected with built-in reliability and security features

The inherent resilience of the FS8600 gives you another layer of data protection without adding complexity.

- Active-active controller pairs provide immediate failover without introducing idle resources
- Redirect-on-write file-level snapshots require only one I/O per write, avoiding the performance degradation of the traditional copy-on-write approach
- Integration with file system auditing software such as Varonis DatAdvantage
- Multitenancy, with support for multiple security domains
- Features such as VMware consistent snapshots, replication throttling, virtual appliance cloning and two-way NDMP backup help enable deploying a secure file sharing solution
- Award-winning Dell Copilot Support provides complete coverage for your end-to-end storage solution

Delivers best-in-class performance with industry-low total cost of ownership

Features	Dell FS8600 with FluidFS v6
<b>Cluster scalability</b>	Up to 4 FS8600 appliances (8 controllers) and up to 8 Storage Center systems in a single NAS cluster
<b>File system capacity</b>	Up to 4PB usable file capacity per NAS cluster (requires 2 or more Storage Centers to reach max capacity) and 20PB capacity using FluidFS global namespace with discrete FS8600 systems
<b>8Gb Fibre Channel configuration options</b>	Front-end and interconnect traffic (2 options): 1GbE: 2 Intel® 1GbE quad-port NICs per controller, CAT6 only, RJ-45; 10GbE: 2 Intel 10GbE dual-port NICs per controller, Twinax or fiber-optic, SFP+ standards Back-end: 1 QLogic dual-port FC HBA per controller, SFP+ standards Fibre Channel switch is required; direct connect to the SAN is not supported
<b>10Gb iSCSI configuration options</b>	Front-end: 1 Intel 10GbE dual-port NIC per controller, Twinax or fiber-optic, SFP+ standards Back-end and interconnect: 1 Intel 10GbE dual-port NIC per controller, Twinax or fiber-optic, SFP+ standards Ethernet switch is required; direct connect to the SAN is not supported; upgrades from FC to iSCSI or vice versa is not supported
<b>Storage arrays supported</b>	SC9000, SC8000, SC7020, SC5020, SC4020, SCv2080 controllers; SCOS 6.5.3 or newer
<b>Management</b>	Dell Storage Manager (DSM), FluidFS CLI, PowerShell and REST APIs, SNMP, MMC
<b>NFS v3 file protocol support</b>	NFS over UDP and TCP, Kerberos 5 security options, UTF8 and ASCII support, NLM
<b>NFS v4, v4.1 file protocol support</b>	v4: core features Kerberos 5 security options, UTF8 and ASCII support, pseudo file system, locking, share modes and access control lists (ACLs) v4.1: core features Kerberos 5 security options (pNFS not supported)
<b>SMB file protocol support</b>	SMB 1.0, 2.0, 2.1, 3.0, 3.1.1, SMB BranchCache, SMB sparse files, persistent file handles, continuous availability, SMB signing and encryption (MD5, HMAC-SHA-256, SMB 3 AES), large MTU, file leases and oplocks
<b>Network protocols</b>	Full support for client IPv6 and IPv4 connections, including load balancing mechanism, LACP
<b>NAS volumes</b>	Max NAS volumes per NAS cluster: 1,024; max NAS volume size: as large as the file system
<b>Shares/exports</b>	Max number of SMB shares per cluster: 1,024; max number of NFS mounts/exports per cluster: 1,024
<b>Concurrent active SMB connections</b>	Max for single appliance: 30,000; max for a 4-appliance cluster: 120,000 ("active" defined as clients engaging in I/O in the last 15 minutes)
<b>User authentication</b>	For SMB clients: Kerberos 5 and NTLM v2 on Microsoft Active Directory Server; for NFS v4, 4.1 clients: Kerberos 5 Multitenancy support for different Active Directory forests per tenant
<b>Directory and name services</b>	Windows SMB and NFS clients: Microsoft® Active Directory® 2003, 2003R2, 2008, 2008R2, 2012, 2012R2, 2016; Linux/UNIX clients: NIS, LDAP, DNS
<b>Quotas</b>	Quotas at User, Group and Directory level. Max user/group quota rules per volume or cluster: 1024. Max directories with a quota limit: 1024
<b>Local users</b>	Max number of local users per cluster: 100; Max number of local groups per cluster: 100
<b>Files and directories</b>	Max file size: 128TB; Max number of files per appliance: unlimited; Max number of files per 4-appliance cluster: unlimited; max file name length: 255 bytes; Max number of files in a directory: 1 million; Max directory depth: 255; Max number of directories per appliance: 32 billion; Max number of directories per 4-appliance cluster: 128 billion
<b>Snapshots and clones</b>	Redirect-on-write snapshots and thin NAS volume read/write clones; Max number of snapshots per NAS volume: 10,000; Max number of snapshots per cluster: 100,000; Max number of snapshot policies per system: 1,024
<b>Replication</b>	Asynchronous to peer FS8600 clusters; max number of replication partners (or destinations): 100; max number of replication policies per FS8600 cluster: 1,024; max number of simultaneous volume replications: 10 outgoing, 100 incoming; max volumes enabled for replication: 1,024, support for 1:N and cascading replication
<b>NDMP backup</b>	Remote or three-way NDMP over Ethernet ports; direct or two-way NDMP over Fibre Channel ports Refer to FluidFS v5 support matrix for a list of supported backup vendors
<b>Antivirus</b>	Supported for SMB shares via ICAP protocol. Refer to FluidFS support matrix for a list of supported Anti-virus vendors
<b>Auditing</b>	Auditing using SACLs and third party auditing software. Refer to FluidFS support matrix for details.
<b>Thin provisioning</b>	Thin provisioning at file, file system or NAS volume level to oversubscribe the file system capacity visible to users
<b>Data reduction</b>	Post-process policy-based variable block (128KB +/- 64KB) data deduplication and LZPS compression-configured per NAS volume
<b>CPU per controller</b>	Dual Intel Xeon® E5620 4-core, 12MB L3, 80W, 2.4GHz
<b>Memory</b>	48GB DDR3 1066MT/s per 10Gb controller (96GB per appliance) 24GB DDR3 1066MT/s per 1Gb controller (48GB per appliance)
<b>Power supply</b>	Primary: 2 power supplies per appliance; backup: 1 battery per controller, 2 batteries per appliance
<b>Input voltage</b>	90-264 VAC
<b>Output wattage</b>	717W
<b>Heat dissipation</b>	2446 BTU/hr
<b>Line frequency</b>	47-63 Hz
<b>Current</b>	10.5Amp at 90 VAC steady state, 5.2Amp at 180 VAC steady state
<b>Dimensions</b>	Form factor: 2U; W: 44.63 cm (17.6 in) (does not include rack flange); D: 81.30 cm (32.0 in) (includes bezel and controllers installed); H: 8.64 cm (3.4 in); weight: 69.5 lb

<sup>1</sup> SPECSfs2008\_nfs.v3 and Dell testing with SC Series SC8000 and FS8600 4-appliance cluster

<sup>2</sup> Based on May 2013 internal Dell analysis of the FS8600 NAS appliance with Fluid Data Reduction, using real-world home share environment comprised of Office files (21%), .GZ (19%) and .flat (19%) files, among others

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