



EqualLogic FS7610 NAS Appliance

Enhance your enterprise storage capabilities with scale-out unified storage

Improve productivity and streamline your IT infrastructure by storing block and file data on a single scale-out storage platform. The unique architecture behind the Dell Storage PS Series arrays and the Dell EqualLogic FS7610 NAS appliance helps you expand storage capacity and system performance non-disruptively as your needs evolve over time.

Scale-out unified storage optimized for midrange deployments

Unstructured file data is a large part of IT storage environments, and it's growing faster and faster. Whether it's for documents, images or file-based workflows, the amount of capacity required for file data continues to increase with no end in sight. But just adding disks to support that mountain of file data won't help.

The EqualLogic FS7610 is a key component of the Dell storage architecture, which puts the right information in the right place at the right time — for the right cost. The FS7610 supports 10Gb Ethernet with either SPF+ or BASE-T connectivity to the SAN and client network.

Unlike many unified storage solutions that only scale in capacity, the FS7610 NAS appliance with PS Series arrays can scale capacity and performance independently. To expand capacity, simply add more PS Series arrays — the FS7610 supports all new and existing PS Series arrays. To improve front-end file performance, two FS7610 NAS appliances can be joined in the same PS Series storage pool, while still providing a single namespace.

Next generation architecture provides an alternative to traditional file shares

The FS7610 appliance uses Dell Fluid File System (FluidFS), a scale-out distributed file system implemented across Dell Storage product lines. FluidFS is designed to optimize file access performance and is built on proven hardware. Capacity can easily be expanded across the entire storage backend, all within a single namespace. Administration is easy and unified for file and block protocols. A core technology of Dell Storage architecture, FluidFS is a high-performance, enterprise-class file system that does not have strict limits on file system size and share size inherent in other NAS solutions. With FluidFS v4, the capacity needed to store common enterprise data can be dramatically decreased. Savings of up to 48%¹ are possible through policy-driven, variable-block deduplication and LZPS compression of the data. In addition, deduped data can be rehydrated on read, and thin provisioning technology enables efficient storage space allocation. These features are available to existing customers as part of the FluidFS v4 upgrade; no extra hardware or licensing fees are required.

With the FS7610, a PS Series group can serve up to 509TB of usable capacity for file storage, all within a single namespace. To help improve storage flexibility and utilization, the FS7610 features a virtualization layer that lets you expand NAS storage dynamically without any downtime.

Dell's NAS appliance provides a number of features including a highly available dual controller architecture in a single, 2U NAS appliance. This platform simplifies installation with less required cabling, enhances performance with a PCIe backplane for inter-controller communications, and improves dependability with cache mirroring and fully redundant hot-swappable primary components.

Advanced features, EqualLogic family values

In addition to block storage management, NAS deployment and management functionality are fully integrated into PS Series Group Manager, including administration, monitoring and maintenance operations. PS Series Group Manager automates the initial setup and configuration of your FS7610 appliance, simplifying the process of creating volumes and shares. An FS7610 NAS appliance can be configured and added to a PS Series group quickly and efficiently.

In addition to a range of data protection features for block storage, the FS7610 NAS appliance includes advanced file data protection features such as snapshots, replication, NAS container cloning, NDMP backup and CIFS antivirus integration. End users can restore previous versions of files either from a snapshot directory, or through the familiar Previous Versions dialog box in Windows Explorer without IT assistance. To keep data on CIFS shares virus free, appliances can be integrated with qualified anti-virus solutions, tested and supported by the FS7610 NAS appliance. In addition, access-based enumeration ensures that users can only view the files and folders to which they have access when browsing content on the NAS share.² FluidFS v4 incorporates data management enhancements such as automated home shares and directory quotas. Also, FluidFS v4 includes protocol support for SMB 3.0, NFS v4 ACLs and NFS v4.1.

As with all PS Series products, the FS7610 NAS appliance's full feature set, software licensing and future firmware enhancements are included in the base price. This provides licensing simplicity, access to a comprehensive set of product features and ongoing value after initial purchase.

| Feature | EqualLogic FS7610 with FluidFS v4 |
|-----------------------------------|---|
| Cluster scalability | Up to two FS7610 appliances (four controllers) in a single NAS cluster |
| File system capacity | Up to 509TB |
| 10GbE configuration options | Two Intel 10GbE dual-port NICs per controller, copper or optical, SFP+ or 10GBASE-T standards Client connectivity over Ethernet, SAN connectivity over iSCSI Ethernet switch is required; direct connect to the SAN is not supported |
| Storage arrays supported | Any PS Series group running version 7.0 or later firmware |
| Management | PS Series Group Manager |
| NFS file protocol support | NFSv4.x and NFSv4 ACLs (for implementation detail, refer to the FluidFS support matrix) |
| SMB file protocol support | SMB 3.0 (for implementation detail, refer to the FluidFS support matrix) |
| NAS volumes | Max NAS volumes per NAS cluster: 1,024; max NAS volume size: as large as the file system/namespace |
| Shares/exports | Max number of SMB shares per cluster: 1,024; max number of NFS mounts/exports per cluster: 1,024 |
| Multi-client subnet support | Configure multiple client networks and VLANs to present NFS exports or CIFS shares |
| Concurrent active SMB connections | Max for single appliance: 5,000; max for a two-appliance cluster: 10,000 ("active" defined as clients engaging in I/O in the last 15 minutes) |
| User authentication | For SMB clients: Kerberos v5 and NTLM v2 on Microsoft Active Directory Server; for NFS v4 clients: Kerberos 5 on AD and SASL support for encryption |
| Directory services | Windows SMB and NFS clients: Microsoft® Active Directory® 2003, 2003R2, 2008, 2008R2, 2012, 2012R2; Linux/UNIX clients: NIS and secured LDAP |
| Quotas | User and group quota rules per container: 1,000; max user quotas per cluster: 1,000 |
| Local users | Max local users per cluster: 100; max local groups per cluster: 100 |
| Directories | Max number of directories per cluster: 10 billion; max directory name length: 255 bytes |
| Files | Max file size: 16TB; max number of files per cluster: 10 billion; max file name length: 255 bytes |
| Snapshots | Redirect-on-write snapshots; max number of snapshots per container/cluster: 1,024/10,000; max number of snapshot policies per container/cluster: 512/1,024 |
| Replication | Asynchronous to peer FS7610 appliances, like-to-like cluster sizes only (client network speeds and array configurations can vary); max number of replication partners (or destinations): 100; max number of replication policies per cluster: 512; max number of simultaneous volume replications: 10 outgoing, 100 incoming; max containers enabled for replication: 256 |
| NDMP backup | Remote or three-way NDMP over Ethernet ports Certified with Dell Quest NetVault® Backup 9.10, CommVault® Simpana® 9.10, IBM® Tivoli® Storage Manager 6.3, Symantec™ NetBackup™ 7.0 and 7.5, Symantec Backup Exec™ 2012, 2014, EMC Networker 8.x |
| ICAP antivirus | Certified with Symantec ScanEngine 5.2 and Protection 7.0, 7.5, McAfee® Virus Scan® Enterprise 8.8 and Enterprise for Storage 1.1.0, Sophos Endpoint Security and Control 10.2, 10.3, TrendMicro™ InterScan Web Security Suite 3.1 |
| Data reduction | Post-process policy-based variable block (128KB +/- 64KB) data deduplication and LZPS compression per NAS volume |
| Memory | 24GB DDR3 1066MT/s per controller (48GB per appliance) |
| Power supply | Primary: two power supplies per appliance; backup: one battery per controller, two batteries per appliance |
| Input voltage | 90-264 VAC; auto-ranging; this system is also designed to be connected to IT power systems with a phase to phase voltage not exceeding 230V |
| Output wattage | 717W |
| Heat dissipation | 2446 BTU/hr |
| Line frequency | 47-63 Hz |
| Current | 10.5Amp at 90 VAC steady state, 5.2Amp at 180 VAC steady state |
| Dimensions | Form factor: 2U; width: 44.63 cm (17.6 in) (does not include rack flange); depth: 81.30 cm (32.0 in) (includes bezel and controllers installed); height: 8.64 cm (3.4 in); weight max configuration: 30.5 kg (67 lb) |

¹ 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 .flate (19%) files, among others.

End-to-end technology solutions

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