



# Dynamic Virtual Storage

The Dell™ EqualLogic™ PS Series



# Simplifying IT

The Dell™ EqualLogic™ PS Series is fundamentally changing the way enterprises think about purchasing and managing storage.

Built on breakthrough virtualized peer storage architecture, the EqualLogic PS Series simplifies the deployment and administration of consolidated storage environments.

Its all-inclusive feature set streamlines purchasing. Its intelligent software delivers rapid SAN deployment, easy storage management and comprehensive data protection. The system's dynamic virtualization enables enterprise-class performance and reliability and seamless pay-as-you-grow expansion.

This simplicity yields important benefits: success and satisfaction for our users, which is supported by the fact that 98% of our customers would recommend the PS Series<sup>1</sup>.

<sup>1</sup>Source: Yankee Group, EqualLogic Customer Satisfaction Survey, March 2009.

<sup>2</sup>Source: "Dell EqualLogic TCO Analysis", July 2009, The Enterprise Strategy Group, Inc.

## The Dell Difference:

### Ease of use

- Intelligent, automated management helps minimize tedious administrative tasks
- From box to operating SAN in minutes
- Monitor petabytes of storage across dozens of SANs from a single console

### Enterprise performance

- Exceptional performance for both sequential and transactional applications with linear scalability as arrays are added
- Automated, real-time load balancing across drives, RAID sets, connections, cache and controllers for optimized performance and resource utilization
- Pooling capability enables appropriate service levels for individual applications

### Reliability

- Fault tolerant, fully redundant dual controller
- Designed for 99.999% availability
- Enterprise-class RAID protection
- Full hardware redundancy — hot swappable controllers, fans, power supplies, disks

### Scalability

- Modular design allows growth when needed
- Online expansion between hardware generations
- Linear scalability — scale capacity and performance together
- Manage a growing pool of storage from one single user interface
- Thin provisioning to increase space efficiency for optimal capacity utilization
- Expand overall group capacity by mixing pools of 6000 and 6500 arrays

### Affordability

- All-inclusive enterprise features and functionality with no additional software licenses to purchase
- Easy connection via iSCSI
- Automated features help to eliminate highly specialized administrative costs
- Adopt 10GbE and run both 1GbE and 10GbE in the same environment without de-valuing legacy equipment
- EqualLogic SANs have the lowest TCO of common storage array architectures—fully 1/3 to 1/2 the total cost of competitors over a five year period<sup>2</sup>

### Enterprise efficiency

- Addition of 10GbE supports high-performance, high-bandwidth applications such as data warehouses and streaming media
- Maximize your IT investments with an end-to-end unified fabric data center encompassing servers, EqualLogic storage and Networking
- Enterprise level virtualized storage that matches virtualized server environments
- Support for multi-tiered application designs with automated tiering included in hybrid models (6000XVS & 6010XVS)

# The EqualLogic PS Series iSCSI SANs

The Dell EqualLogic PS Series is a family of virtualized iSCSI storage arrays that combine intelligence and automation with fault tolerance to provide simplified administration, rapid deployment, enterprise performance and reliability, and seamless scalability. The PS Series high performance storage arrays deliver a range of capacity points from 400 GB to 48 TB in either a 3U or 4U chassis. PS Series arrays can be combined to create a virtualized SAN that scales up to 768 TB under a single management interface.

## Exceptional ease of use

The PS Series intelligent storage arrays are designed to provide rapid deployment, simple management and seamless expansion. All PS Series storage arrays include SAN configuration features and capabilities that sense network topology, automatically build RAID sets, and conduct system health checks to help ensure that all components are fully functional. PS Series arrays are designed to be deployed, configured, and serving storage in less than one hour.

## Modular design with enterprise reliability

EqualLogic PS Series arrays are based on a virtualized, modular storage architecture that enables IT managers to purchase only the storage they need, when they need it — preventing both underutilization and over-provisioning. Using innovative data movement technology, all EqualLogic PS Series arrays in a SAN work together to automatically manage data, load balance across all resources, and expand to meet growing storage needs.

The Dell EqualLogic PS Series is designed to meet and exceed the rugged requirements of the data center. Each array comes standard with fault tolerance capabilities through fully redundant and hot-swappable components — dual-controllers, multiple fan trays and power supplies, and disk drives with hot spares.

## Enterprise data services without additional cost

The PS Series has built-in storage features once relegated to top-tier data centers, enabling best practice storage for every size organization. Unlike traditional storage arrays, the EqualLogic PS Series arrays include a comprehensive set of enterprise data services and software features with no additional software licensing fees.

Easy-to-use virtualization integration tools for Microsoft® and VMware® environments help deliver advanced data protection, high availability and performance, and simple management of application and virtual machines.

## Simply put:

“The Dell EqualLogic architecture allows us to easily and seamlessly expand our pool of storage as we grow our virtual server environment in the future. So far, we have deployed 76 TB of raw storage across six EqualLogic arrays.”

Jonathan Chu-Yang, IT architect, Cadence;  
January 2010

## Flexibility with low cost of ownership

EqualLogic PS Series arrays represent a breakthrough in storage economics, from purchase and setup to operation and upgrades. In addition to the extensive included software, the PS Series scales easily, on-demand — and online — allowing storage growth without costly application disruptions or lengthy service engagements. As a result, EqualLogic arrays provide exceptional flexibility at a low total cost of ownership.

Whether consolidating direct-attached storage (DAS), migrating from an existing SAN or NAS system, improving data protection, or simply adding capacity, the EqualLogic PS Series deploys flexibly to address enterprise storage needs. As business needs change, an EqualLogic SAN can easily adapt. Its virtualized architecture allows simple redeployment of arrays, tiered storage, thin provisioning, online volume movement and much more, all without extra cost and cumbersome processes. In order to optimize enterprise efficiency, capacity and performance the Dell EqualLogic PS Series support a unified data center fabric extending from servers, to storage and networks with 10GbE connectivity and automated tiering on hybrid storage arrays.

# PS Series iSCSI Storage Arrays

PS6000 Series: Virtualized arrays designed for the Enterprise Data Center  
 PS4000 Series: Virtualized arrays designed for branch office and SMB needs

Feature	PS6000E	PS6500E	PS6000X	PS6500X	PS6000XV	PS6000XVS	PS6000S	PS6010E	PS6010X	PS6010XV	PS6010X	PS6010XVS	PS6010S	PS6010X	PS6510X	PS6510E	PS4000E	PS4000X	PS4000XV
Array capacity	2, 4, 8, 16 or 32 TB	24, or 96 TB	28.8 TB	48-10,000 RPM SAS Drives	4.8, 7.2 or 9.6 TB	4.4 TB	400, 800 GB or 1.6 TB	4, 8, 16 or 32 TB	4.8 or 9.6 TB	4.8 or 9.6 TB	800 GB or 1.6 TB	4.4 TB	8 or 16 GB or 1.6 TB	4.8 or 9.6 TB	28.8 TB	4.8 or 9.6 TB	2*, 4, 8, 16 or 32 TB	7.2, or 9.6 TB	4.8 or 9.6 TB
Disk drives	8 or 16-7200 RPM SATA Drives	48-7200 RPM SATA Drives	48-10,000 RPM SAS Drives	48-10,000 RPM SAS Drives	16-15,000 RPM SAS and 8 Solid State Disk (SSD) Drives	16-8/15,000 RPM SAS and 8 Solid State Disk (SSD) Drives	8 or 16 SSD Drives	8 or 16-7200 RPM SATA Drives	8 or 16-10,000 RPM SAS Drives	8 or 16-15,000 RPM SAS Drives	8 or 16-100 GB SSD Drives	16-8/15,000 RPM SAS and 8 SSD Drives	8 or 16-100 GB SSD Drives	8 or 16-10,000 RPM SAS Drives	48-10,000 RPM SAS Drives	48-7200 RPM SATA Drives	8 or 16-7200 RPM SATA Drives	16-10,000 RPM SAS Drives	16-15,000 RPM SAS Drives
Drive capacities	250 GB, 500 GB, 1 or 2 TB	500 GB, 1 or 2 TB	600 GB	600 GB	400 GB, 450 GB or 600 GB	450 GB/SAS and 100 GB/SSD	50 or 100 GB	500 GB, 1 or 2 TB	600 GB	600 GB	100 GB	450 GB SAS and 100 GB SSD	50 or 100 GB	600 GB	600 GB	1 or 2 TB	250 GB, 500 GB, 1 or 2TB	450 GB or 600 GB	300 GB, 450 GB or 600 GB
Network connectivity	4 Ethernet/iSCSI Ports per Controller																		
Chassis	2 controllers/array; Two 10 Gb Ethernet/iSCSI Ports per Controller																		
Memory	3U	4U	4U	4U	3U	3U	3U	3U	3U	3U	3U	3U	3U	3U	4U	4U	3U	3U	3U
Maximum Number of Arrays Per PS Series Group	16 PS Series arrays, including up to 2 PS4000 arrays																		

\* Please contact Dell Sales Rep for details.

## Enterprise Data Services

All-inclusive with no separate licenses on all PS Series arrays

Data Protection, Availability & Recovery	Auto-Replication, Multi-Site   Instant Volume Restore   Multi-Path I/O1   Multi-Volume, Writeable Snapshots   Snapshot and Auto-Replication Scheduler   Volume Cloning   Thin Clones   Volume Consistency Sets
Storage virtualization	Non-Disruptive Array Addition and Removal   Automatic Load Balancing   Automatic or Manual Storage Tiering   Complete SAN Virtualization   Online Data and Volume Movement   RAID Load Balancing   Storage Pools   Thin Provisioning   Full Copy   Block Zeroing and Hardware Assisted Locking
Server Management & Protection Integration	Auto-Snapshot Manager/Microsoft® Edition1   Auto-Snapshot Manager/Vmware® Edition1   Automatic MPIO Connection Management   Microsoft® VSS and VDS Providers   Smart Copy for Microsoft® Hyper-V™, Exchange®, SQL Server®, Windows® File Systems and Vmware® VMFS   Vmware® Site Recovery Manager Adapter
Management	PS Group Manager   SAN HeadQuarters Multi-Group Monitoring   Rapid Provisioning   Remote Setup Wizard   Roles-Based Administration   Volume Management
Maintenance	Auto-Stat-Disk-Monitoring System   E-mail Home   Enclosure Monitoring System   Detailed Historical Performance Monitoring

<sup>1</sup>Qualified for Microsoft® Windows Server® 2003, Windows Server® 2008, including Hyper-V, Windows Server® 2008 R2, including Hyper-V, VMware® Linux® and Sun™ Solaris™ Operating Systems

<sup>2</sup>Qualified for Microsoft® Windows Server® 2003, Windows Server® 2008, including Hyper-V™ and Windows Server® 2008 R2 including Hyper-V™

<sup>3</sup>Qualified for VMware® ESX 3, 3.5, 4 and 4.1 and ESXi 3.5, 4 and 4.1



Simplify your storage at [Dell.com/PSSeries](http://Dell.com/PSSeries)