

# PS Series

## Intelligent iSCSI Storage Arrays



Storage management is at the center of an increasingly complex IT problem. Applications are continually demanding more from their storage systems. As their capacity, availability, backup, and disaster recovery needs intensify so does the expectation of the servers and storage products that support them. As a result, IT professionals need a storage solution that integrates a full complement of high-end management capabilities, including data protection and operates with a “set it and forget it” intelligence that can be trusted. A fully-redundant storage system that expands transparently and ensures consistent data availability regardless of the server configuration, operating system, or application.

The EqualLogic PS Series of iSCSI storage arrays offers a fundamental change in SAN implementation. Built on the company’s patented peer storage architecture, these solutions offer enterprise-quality performance and reliability, intelligent automation, and seamless virtualization of a single pool of storage for simplified storage management. The PS Series combines an intelligent, automated management framework and a comprehensive set of enterprise data services with a fully redundant, hot-swappable hardware architecture that support all major operating systems. EqualLogic’s PS Series of storage arrays deliver a modular and affordable solution that can be deployed in increments for small and medium businesses, while being cost-effective for large enterprises to scale to hundreds of terabytes.

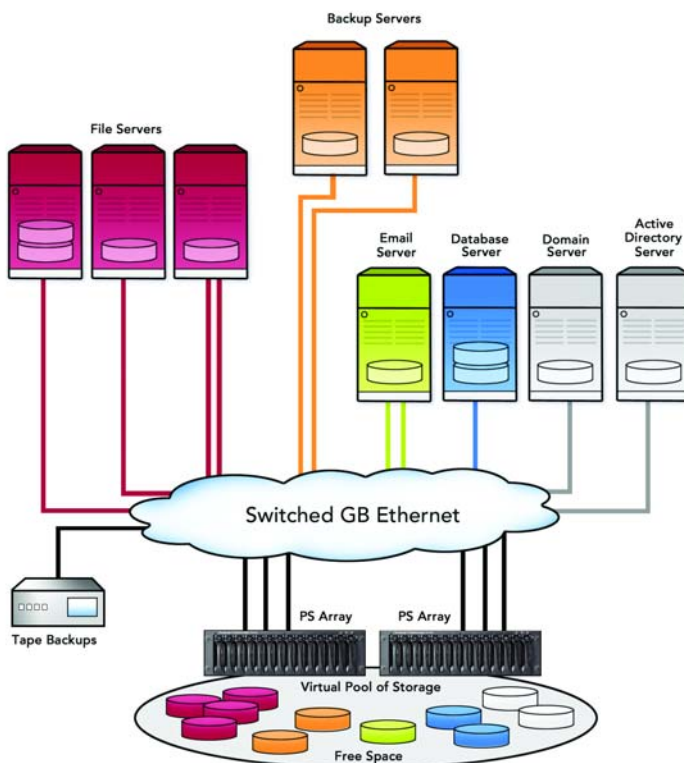
## Complete Solution with Unprecedented Ease of Use

Whether you are moving from direct-attached storage (DAS), consolidating your storage environment, or streamlining your backup and recovery, the EqualLogic PS Series is a family of proven, high-performance, self-managing storage arrays designed to meet the requirements of any SAN and NAS environment. The PS Series of storage arrays are completely interoperable and upgradeable with scaling from a single terabyte up to 100TB without disruption of application or data availability.

Each PS Series storage array comes complete with all of the hardware and software required for a robust, self-managing shared storage solution. EqualLogic's peer storage architecture allows administrators to focus their attention on servers and applications while PS arrays manage the complexity of the underlying storage hardware. The automated intelligence manages the complexity of load balancing and optimizing disks, RAID sets, cache, and network ports. The PS Series is iSCSI-based, enabling organizations to leverage in-house IP networking expertise to setup, configure and provision the EqualLogic SAN in under 20 minutes. The result is enterprise performance, scalability, and reliability – all within an intelligent, automated management framework that eliminates tedious administrative tasks while enabling effortless best-practice storage management.

## Modular Design with Enterprise Reliability

The EqualLogic PS Series arrays have a modular design that lets you purchase only the storage you need, when you need it – preventing both underutilization and overprovisioning. Its peer storage architecture uses industry standard protocols, disks drives, and network interfaces to provide low connection costs and high performance access to data across heterogeneous environments.



**Grouping multiple PS arrays increases capacity and load balancing automatically and linearly - without increasing management complexity**

Designed to meet and exceed the rugged requirements of the data center, EqualLogic engineered fault tolerance into every aspect of the PS Series hardware design. All components are fully redundant and hot swappable with optional dual controller, standard dual fan trays, and standard dual power supplies. The hot-swappable controller module features high-performance dual-core 64-bit processors with a high-speed HyperTransport™ I/O bus and twin 64-bit DDR channels. Each control module is equipped with 1 GB of high speed battery-backed DRAM. Each disk drive is interconnected with its own independent, hot-swappable serial channel and mechanically with an inertial dampening chassis that eliminates drive vibrations.

Self tuning controller caches are battery-backed and mirrored across controllers for ultimate protection without compromising performance. Enterprise-class RAID protection governs completely hot-swappable disk drives, including RAID 10/50 support, hot-sparing, automatic rebuilds, accelerated rebuild times, advanced stripe integrity algorithms, set expansion, geometry transformation and patent-pending predictive media-error detection and correction.

The redundancy of PS array design eliminates any single point of failure with a net result of a greater than 99.999% availability.

## Self-Managing Storage with Seamless Scaling

Array-integrated intelligence enables you to quickly and easily expand your storage capacity without affecting data availability. Start with a single PS50E, PS100E, PS100X, or PS200E storage array. When your storage, performance, and network requirements grow, add more members to increase capacity, performance, and network bandwidth automatically and linearly. Configuring one or more EqualLogic PS Series arrays as a PS Group enables you to manage the arrays as a single system with a shared pool of storage. EqualLogic peer storage technology automates all of the key functions needed to configure, manage, and scale storage, eliminating much of the complexity of storage administration. Each group member is automatically configured and participates in balancing the load, distributing data, and tracking host access to data. No user intervention is required. As a result, storage management stays simple, regardless of scale.

## Enterprise Data Services without Additional Cost

The PS Series has built-in storage features once relegated to top-tier data centers, enabling best practices storage for every sized organization. EqualLogic's PS Series arrays include enterprise software features such as automatic load balancing, automatic snapshot management, automatic replication, volume cloning, volume management, storage virtualization, and multi-path input/output with no additional licensing fees or host-based software to implement.

## PS Group Manager

PS Series arrays are managed from a single "pane of glass" through the PS Group Manager. This web-based GUI can be invoked from any browser eliminating the need for a dedicated management workstation or server, allowing administrators to remotely manage any aspect of their EqualLogic iSCSI SAN. In addition to the web interface, PS arrays can be optionally managed via a scriptable command line interface (CLI) over SSH and telnet. Email notifications, syslog support, and complete SNMP monitoring and traps are all standard.

## Volume Snapshot

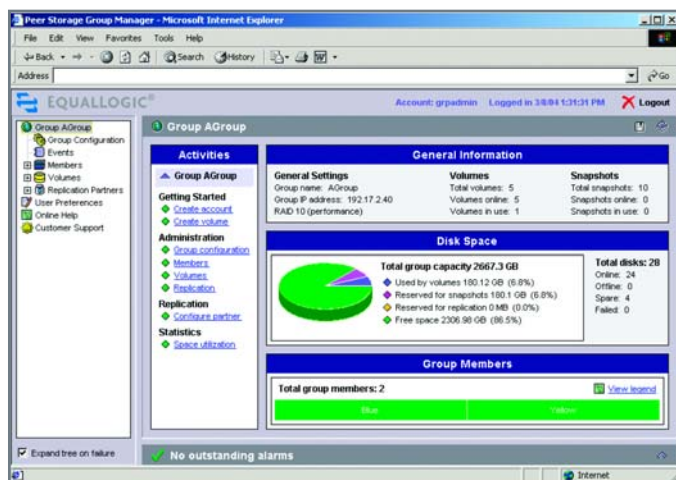
PS arrays provide space-efficient snapshots that raise the bar with a set of capabilities that exceed all other products in this class. The PS array supports up to 512 snapshots per volume, thousands per array, and read-only as well as read-write snapshots. PS arrays implement the safest form of snapshot recovery – data is never discarded unintentionally – providing administrators with the flexibility to implement true enterprise IT storage.

## Auto-stat Disk Monitoring System

EqualLogic's Auto-Stat Disk Monitoring (ADMS) continually monitors the health of disk drives within a single PS array or across a PS Group of arrays to ensure optimization of data availability. ADMS automatically scans the disk drives in the background to proactively detect media anomalies and correct them. Combined with the automatic sparing and spare utilization, this provides enhanced protection and ensure optimal performance of all disks.

## Multi-path I/O

EqualLogic's multi-path I/O provides high availability and performance load balancing across multiple network ports (HBAs and/or NICs) for Microsoft Windows Server 2000 and 2003 platforms. By leveraging the ease and economics of Ethernet, multi-path I/O removes all single points of failure between the server and the storage.



A single "pane of glass" GUI delivers simplified storage management across a single or group of PS arrays

## **Auto-Snapshot Manager for Windows**

With EqualLogic's Auto-Snapshot Manager for Windows, administrators can safely snapshot and restore their Microsoft® Windows® Server 2003 applications and integrate with advanced third-party backup software modules using the Microsoft VSS interface.

## **Auto-Replication**

The ultimate in data protection and disaster tolerance, EqualLogic's Auto-Replication replicates remotely data from one PS Group to another over a standard IP network across any distance. Auto-Replication offers geographic isolation – a critical component in any true disaster recovery plan – without any of the traditional complexity. Administrators can quickly and easily configure volumes for replication, letting the PS arrays manage the complexity of the underlying hardware resources. A catalog of recovery points is maintained at each disaster recovery site providing multiple points of recovery to choose from in the event of a disaster – a choice that offers protection from "cascading" failures such as software viruses. Auto-Replication is completely array-based, freeing IT administrators from the arduous task of managing host-based software and the economic burden of host software licenses.

## **Flexibility with Low Cost of Ownership**

The PS Series from EqualLogic represents an advancement in storage economics, from purchase and set up to operation and upgrades. This family of intelligent iSCSI storage arrays gives IT professionals what they need – reliable, self-managing scalable storage that can respond nimbly to user and application demands. To meet the wide range of requirements, the PS Series offers six configurations to better match application requirements with performance and cost.

### **PS50E**

An unmatched entry point into an enterprise SAN, the PS50E provides an affordable option for organizations requiring a tactical storage solution with an eye towards future strategic growth.

### **PS100E**

The PS100E delivers up to 300 MB/sec and 60,000 IOPS providing organizations of all sizes a proven storage solution for database, email, print & file and Web services applications.

### **PS100X**

Equipped with 14 -10,000 RPM disk drives, the PS100X delivers up to 30% more random IOs for high performance storage suitable for the intense I/O workloads of enterprise transactional databases.

### **PS200E**

With 5.6 TB of capacity within a 3U enclosure, the PS200E is an enterprise SAN serving up best-in-class performance providing both primary and secondary storage for database, email, print & file and Web services applications.

### **PS800E**

The PS800E offers 22.4 TB of capacity, up to 1200 MB/sec, 240,000 IOPS within a standard 12U form factor for data intensive environments including data warehousing, life sciences, large databases, streaming media, and geophysical applications.

### **PS1600E**

The PS1600E offers 44.8 TB of capacity, up to 2400 MB/sec, 480,000 IOPS within a standard 24U form factor for applications that require capacity without compromising performance such as data warehousing, life sciences, large databases, streaming media, and geophysical applications.



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