



HARDWARE

NETWORK APPLIANCE™ FABRIC-ATTACHED STORAGE SYSTEMS

Network Appliance provides the industry's most flexible, manageable, and scalable storage systems, which provide maximum data availability and data protection.

KEY FEATURES

Reliable

Continuous data availability meeting the needs of business- and mission-critical applications

Fast

High throughput and fast response times demanded by transaction processing, database, and technical applications

Versatile

One integrated architecture providing concurrent block and file serving over Fibre Channel and Ethernet networks

Scalable

Nondisruptive capacity expansion and quick performance upgrades from entry-level to high-end configurations

Simple

Easily installed, configured, managed, and maintained

THE CHALLENGE: MANAGING DATA FOR MAXIMUM BUSINESS ADVANTAGE

Continuous and ready access to an ever-increasing volume of business information has become essential to competitiveness and success of enterprises of all sizes. Assuring that high-value data and content are available whenever and wherever needed enables faster decisions and higher productivity by managers, employees, and partners and better engagement with customers, clients, and prospects.

Efficient and effective data management is a core component of providing around-the-clock and around-the-world information availability. Key aspects of data management are consolidating data used by multiple applications and many users on network storage systems; managing data stored across the enterprise, whether it be in data centers or at remote locations; assuring data availability to sustain business operations even when a hardware problem, human error, or disaster occurs; and protecting and securing data against loss, unauthorized access, and noncompliant modification.

THE SOLUTION: NETWORK APPLIANCE FABRIC-ATTACHED STORAGE SYSTEMS

Network Appliance fabric-attached storage (FAS) systems simplify data management, thereby enabling enterprise customers to reduce costs and complexity, minimize

risks, and control change. The breadth of the FAS product line provides storage solutions for a broad range of environments, from large corporate data centers to remote offices. The FAS product line features the high-end FAS6000 series, for large-scale data consolidation and high-performance applications; the midrange FAS3000 series, providing exceptional price-performance value for both SAN and NAS; and the FAS200 series, for remote location storage within geographically distributed enterprises.

INDUSTRY-LEADING ENTERPRISE STORAGE CONSOLIDATION

NetApp FAS series are the most versatile systems in the industry for storage consolidation. They deliver simultaneous access for files and block-level application data and concurrent connection to Fibre Channel (FC) and IP networks. FAS systems are designed to consolidate and serve data for a wide variety of applications, including business application suites, e-mail, enterprise content management, technical applications, file shares, home directories, and Web content.

FAS systems provide data access over FC and iSCSI storage area networks (SANs) and support CIFS, NFS, and HTTP file access protocols for network-attached storage (NAS). They provide scalable, high-availability storage for Windows®,



Figure 1) FAS6070 system.

UNIX®, and Linux® operating systems. This enables consolidation of data from many different applications and system environments onto a single system, resulting in reduced acquisition and operational costs and increased return on investment (ROI). In addition, FAS systems support both FC and SATA disk drives, in either homogeneous or mixed storage configurations, providing a spectrum of tiered storage options.

SIMPLIFIED STORAGE PROVISIONING

All FAS systems run the NetApp Data ONTAP® operating system, which is optimized for fast, efficient, and reliable data access and retention and dramatically simplifies common storage provisioning and management operations. With FlexVol™ technology, LUNs and volumes are created and configured, and they can be automatically expanded or contracted with a single command. With host-based NetApp SnapDrive™, this flexible storage provisioning capability is extended to databases and applications. The benefits are high-capacity utilization and very flexible provisioning, avoiding the costs of over-provisioning and the time-consuming reconfiguration typical with other storage solutions.

The powerful provisioning capability of FlexVol is enhanced with FlexClone™, which instantaneously creates cloned LUNs or volumes without requiring additional storage. FlexClone can dramatically improve the effectiveness and productivity of application and database development and predeployment testing.

RESILIENT STORAGE FOR HIGH APPLICATION AVAILABILITY

FAS hardware design and the Data ONTAP operating system are tightly integrated to provide resilient system operation and high data availability. FAS systems incorporate redundant and hot-swappable components, and patented RAID-DP™ double-parity technology provides better data protection than RAID1+0 mirroring, at much lower cost and with negligible impact to performance.

NetApp Snapshot™ technology provides up to 250 data-in-place, point-in-time images per LUN or file system, available for near-instantaneous file-level or full data set recovery, and the minimal performance overhead makes it uniquely suited for protecting production data. Host-based SnapManager® software integrates Snapshot management with applications, assuring consistent backup images and application recovery in minutes. SnapMirror® utilizes Snapshot to provide incremental block-level synchronous and asynchronous replication; SnapVault® uses it for block-level incremental backups to another system. Together, these SnapSuite™ products help deliver the high application-level availability enterprises require for 24x7 operation.

THE BOTTOM LINE

The NetApp FAS product line offers a wide range of versatile, tiered-storage systems with enterprise-class reliability and scalability, delivering unmatched provisioning simplicity and application integration for high availability. The benefits are low total cost of ownership (TCO) and high ROI: in short, exceptional storage value.

NETAPP FAS6000 SERIES SYSTEMS

The FAS6000 series is the flagship of the FAS product line, delivering the performance, scalability, and resiliency required of storage used to consolidate data for very large application environments. FAS6000 systems provide consistent, high performance whether handling the aggregated workloads of many servers or serving a single, high-demand application, making them superb storage solutions for business application suites, online transaction processing, databases, and large-scale e-mail, as well as for a variety of technical applications such as electronics and aerospace design, seismic processing, and computer graphics imaging.

The top-of-the-line FAS6070 supports up to 1,008 disk drives, and the FAS6030 scales to 840 drives, offering hundreds of terabytes of capacity per system. Both models have extensive onboard Fibre Channel (FC) and Gigabit Ethernet connectivity, which can be augmented using embedded PCI Express (PCIe) and PCI-X expansion slots, and integrated remote LAN management.

NETAPP FAS980

The FAS980 is also an excellent storage consolidation solution for large business applications and file serving. It scales to 672 disk drives and 100TB.

Storage Systems for Every Enterprise

NetApp storage is deployed in the largest data centers, in small departments, and everywhere in between. NetApp FAS systems are key building blocks for open networked storage environments in enterprises around the world, providing the data availability and data access required to keep business operations online and productive.



Figure 2) FAS3050 system.

NETAPP FAS3000 SERIES SYSTEMS

The FAS3000 series addresses the core requirements of the midrange enterprise storage market, delivering a superb blend of price, performance, and scalability—and exceptional storage value—for database applications, e-mail, and large-scale file sharing. Its compact, modular design delivers integrated FC SAN, IP SAN (iSCSI), and NAS storage with a maximum capacity of 168TB in only two 42U high cabinets. The FAS3020 and FAS3050 support both FC and SATA disk drives and include onboard FC and Gigabit Ethernet connections, PCI-X expansion slots, and remote LAN management.

NETAPP FAS200 SERIES SYSTEMS

The FAS200 series provides departmental and remote office storage for distributed enterprise deployment. In addition, the FAS270 is a storage consolidation platform for small to medium-sized data centers. FAS200 systems offer the same integrated block- and file-level data access and data protection capabilities as the FAS900 and

FAS3000 series, packaged to meet the needs of smaller installations. The FAS270 scales to 56 disk drives and 16TB, and the FAS250 squeezes up to 4TB in a single 3U enclosure. Both are easily upgraded to larger FAS systems.

NETAPP SOFTWARE

Data ONTAP Software Simplifies Data Management

All NetApp FAS systems run the Data ONTAP operating system, which simplifies data management and optimizes storage utilization with a patented file-system technology and features that enable flexible storage provisioning, superior scalability, and concurrent block and file access. Data ONTAP software integrates seamlessly into UNIX, Windows, and Web environments and provides the foundation for enterprise-wide storage and data infrastructures supporting mission-critical business applications.



Figure 3) FAS200 system.

SOFTWARE/FEATURE	FUNCTION	BENEFIT
DataFabric® Operations Manager	Manages multiple NetApp systems from a single administrative console	Faster deployment and consolidated management of multiple NetApp systems
Data ONTAP	NetApp storage operating system providing full-featured and unified data management for both block and file serving environments	Single architecture and user interface simplify data management and reduce costs for SAN and NAS deployment
FlexCache	Caches NFS volumes for accelerated file access in remote offices and for server compute farms	Improves performance, response times, and data availability
FlexClone™	Instantaneously creates LUN and volume clones without requiring additional storage	Accelerated test and development and storage capacity savings
FlexShare™	Prioritizes storage resource allocation to highest value workloads on a heavily loaded system	Assures best performance is provided to designated high-priority applications
FlexVol	Creates flexibly sized LUNs and volumes across a large pool of disks and one or more RAID groups	Fast, simple, and flexible storage provisioning and high-capacity utilization
LockVault™	Creates WORM-protected archives for unstructured files by combining SnapLock® and SnapVault	Regulatory compliance solution for spreadsheets, presentations, and other unstructured application data
MetroCluster	An integrated high-availability/disaster recovery solution for campus and metro-area deployments	Assures high data availability when a site failure occurs
MultiStore®	Securely partitions a storage system into multiple virtual storage appliances	Enables secure consolidation of multiple domains and file servers
SnapDrive	Provides host-based data management of NetApp storage from Windows, UNIX, and Linux servers	Simplifies host-consistent Snapshot copy creation and automates error-free restores
SnapLock®	Write-protects structured application data files within a volume to provide WORM disk storage	Provides storage enabling compliance with government records retention regulations
SnapManager	Provides host-based data management of NetApp storage for databases and business applications	Simplifies application-consistent Snapshot copies, automates error-free data restores, and enables application-aware disaster recovery
SnapMirror	Enables automatic, incremental data replication between systems: synchronous or asynchronous	Provides flexible, space- and network-efficient site-to-site mirroring for disaster recovery and data distribution
SnapMover®	Enables rapid reassignment of disks between controllers within a system without disruption	Enables fast, nondisruptive load balancing within an active-active controller system
SnapRestore®	Rapidly restores single files, directories, or entire LUNs and volumes from any Snapshot backup	Enables near-instantaneous recovery of files, databases, and complete volumes
Snapshot	Makes incremental, data-in-place, point-in-time copies of a LUN or volume with minimal performance impact	Enables frequent, nondisruptive, space-efficient and quickly restorable backups
SnapValidator™	Maximizes data integrity for Oracle® Databases	Enhances Oracle Database resiliency in compliance with Oracle HARD initiative
SnapVault	Exports Snapshot copies to another NetApp system, providing an incremental block-level backup solution	Enables cost-effective, long-term retention of rapidly restorable disk-based backups
VFM™ (Virtual File Manager)	Virtualizes multiple Windows and UNIX file servers into a single logical pool of storage (namespace)	Provides automated, nondisruptive capacity expansion, data replication, and data management across heterogeneous file server environments

