HARDWARE

NETWORK APPLIANCE™ FABRIC-ATTACHED STORAGE SYSTEMS

Network Appliance provides the industry's broadest compatible family of flexible, manageable storage systems, which provide maximum data availability and data protection.

KEY FEATURES

Reliable
Exceptionally high application-level availability

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

Versatile
One integrated architecture for both SAN and NAS

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

Fast, reliable access to an ever-increasing volume of business information is essential to the 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 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, 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 needs, from remote office applications to the largest corporate data center applications. 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; and the FAS200 series, for remote offices of large enterprises as well as primary storage for small and medium enterprises.

INDUSTRY-LEADING ENTERPRISE STORAGE CONSOLIDATION

NetApp FAS systems 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 applications, e-mail, enterprise content management, technical applications, 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®, UNIX®, and Linux® operating systems. This enables FAS systems to serve as a single standard architecture to span both SAN and NAS environments and 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.

Figure 1) FAS6070 system.

COMPREHENSIVE SUPPORT FOR FIBRE CHANNEL SAN

NetApp FAS storage systems undergo rigorous testing with switches, directors, and adapters from industry-leading Fibre Channel equipment providers as well as application software that relies on FC SAN-based storage. NetApp also supports 4Gb Fibre Channel connectivity to maximize FC SAN throughput and storage system performance.

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.

Data ONTAP 7G dramatically simplifies common storage provisioning and management operations. LUNs and volumes created and configured using FlexVol® technology can be dynamically expanded or contracted with a single command. Host-based NetApp SnapDrive® extends this flexible storage provisioning capability to databases and applications. FlexVol also enables thin provisioning, which avoids the cost of over-provisioning and the time-consuming reconfiguration typical with other storage solutions.

Another Data ONTAP 7G feature, FlexClone™, 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 designs 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 double-parity RAID-DP™ (the NetApp high-performance implementation of RAID 6) provides superior data protection with negligible impact on 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-level 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 that enterprises require for 24x7 operation.

STORAGE SYSTEMS FOR EVERY ENTERPRISE

The NetApp FAS product line offers a wide range of versatile, tiered-storage systems with enterprise-class reliability and scalability, delivering unmatched management simplicity and application integration for high availability. NetApp FAS systems are ideal building blocks of networked storage for open systems, providing the data availability and data access required to keep business operations online and productive.

NETAPP FAS6000 SERIES SYSTEMS

The FAS6000 series is the flagship of the FAS product line, delivering the performance, scalability, and resiliency required to consolidate data for the largest application environments. FAS6000 systems provide consistent high performance, whether handling the aggregated workloads of many servers or serving a single, high-capacity application, making them superb storage solutions for business applications, 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 FAS6000 series scales to over 1,000 disk drives with support for tiered storage using FC and SATA disk drives. I/O connectivity scales up to 48 FC ports or 48 Ethernet ports, including support for both 4Gb FC SAN and 10 Gigabit Ethernet.

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. The compact, modular design delivers integrated FC SAN, IP SAN (iSCSI), and NAS storage with scalability to over 500 disk drives. The FAS3000 series supports both FC and SATA disk drives for tiered storage. FAS3000 systems support as many as 32 FC ports or 32 Ethernet ports, including support for both 4Gb FC and 10 Gigabit Ethernet.

NETAPP FAS200 SERIES SYSTEMS

The FAS200 series provides departmental and remote office storage for distributed enterprise deployment and is an ideal system for primary storage in small and medium-sized enterprises. FAS200 systems offer the same integrated block- and file-level data access and data protection capabilities as the FAS6000 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.

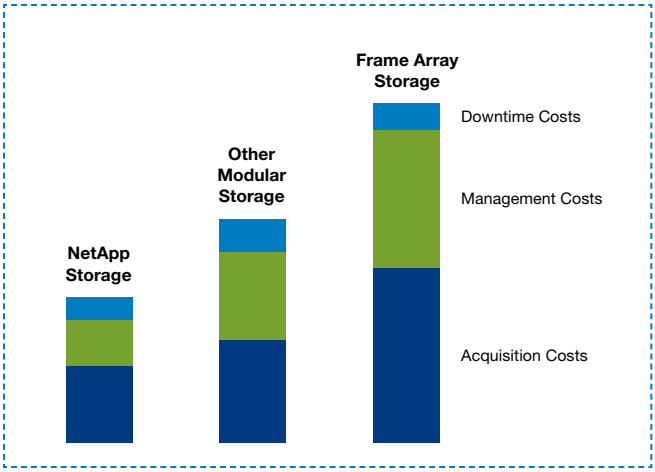

Figure 2) Proven lower TCO.

Studies by Mercer Management Consulting show that the cost of ownership for NetApp storage systems is substantially lower than that of alternative storage from major vendors. Read the full reports at *www.netapp.com/tco.*

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 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.

COMPREHENSIVE SERVICES

NetApp Global Services provides the comprehensive support and services required in the enterprise data center.

NetApp ConsultingEdge provides a complete yet flexible set of consulting services to help you plan, implement, and optimize storage solutions.

NetApp SupportEdge Premium offers a hybrid approach to support, combining expert on-site resources with innovative remote capabilities. SupportEdge Premium includes hardware and software installation, system monitoring, proactive notification, immediate reactive support, remote diagnostics, and a blend of remote and on-site repair. Quarterly storage availability audits and a software subscription plan are also included.

ABOUT NETWORK APPLIANCE

Network Appliance is a world leader in unified storage solutions for today's data-intensive enterprise. Since its inception in 1992, Network Appliance has delivered technology, product, and partner firsts that simplify data management. Information about Network Appliance solutions and services is available at *www.netapp.com*.

Figure 3) FAS3040 system.

Figure 4) FAS200 system.

Table 1) Software overview.

SOFTWARE/FEATURE	FUNCTION	BENEFIT
Veritas CommandCentral™ Storage	A Symantec® product that provides a centralized operational console for delivering storage management services in large-scale, heterogeneous SAN environments.	Efficient management of heterogeneous SAN storage resources with improved performance and availability
Operations Manager (formerly DFM)	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
Protection Manager	Backup and replication management software for NetApp disk-to-disk environment	Improves productivity through automation of data protection tasks; delivers higher assurance of data protection than with manual execution of tasks by reducing human errors
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
SyncMirror®	Maintains two online copies of data with RAID-DP protection on each side of the mirror	Protects against all types of hardware outages, including triple disk failure
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

NetApp®

www.netapp.com