![NetApp logo]

Datasheet

NetApp FAS6200 Series

Performance, availability, and scale for the enterprise

1 http://www.netapp.com/us/company/news/news-rel-20111102-42509.html
2 Based on $/SPC-1 IOPS as reported by NetApp and competing platforms on the SPC-1 benchmark: http://www.storageperformance.org/results/benchmark_results_spc1/#comparison

The Challenge

Companies today are using an increasingly complex set of business applications to drive operations and deliver goods and services to customers. To keep these processes up and running at maximum performance while providing the flexibility to accommodate new technologies, IT leaders need a fundamentally new approach to designing storage infrastructure. A highly available platform is needed that transparently scales performance and capacity so business operations get the resources they need without constant reconfiguration and disruption.

The Solution

The NetApp® FAS6200 series is designed to deliver on this need, providing leading availability, performance, scalability, and value so that storage becomes a strategic resource for operating your business more effectively and generating revenue more quickly.

The NetApp FAS6200 offers proven SAN performance, superior flash integration, and leading scale-out capabilities to meet a broad range of performance needs while seamlessly scaling to a best-in-class capacity of over 65PB. With clustered Data ONTAP®, you can achieve nondisruptive operations, combating unplanned downtime as well as eliminating planned downtime for system

maintenance, upgrade cycles, and data rebalancing. To help manage growth, industry-leading storage efficiency technologies—including deduplication, compression, and space-efficient cloning—combine to reduce capacity consumption and improve return on storage investments.

To maximize availability, the FAS6200 series includes Tier 1 high-availability (HA) capabilities as well as advanced risk identification and service analytics that accelerate fault isolation and resolution, minimizing potential downtime and accelerating return to service. When these are coupled with industry-leading NetApp data protection capabilities, you can design a powerful solution that meets even the most demanding service-level objectives.

Powering an Agile Data Infrastructure

The FAS6200 series delivers enterprise-class storage with the availability, scale, performance, and agility to drive your most demanding SAN and NAS workloads. The FAS6200 series combined with clustered Data ONTAP forms the foundation of an agile data infrastructure that is:

• **Intelligent.** Virtual Storage Tier technologies adapt automatically to enhance performance, while advanced storage efficiency dramatically reduces your storage footprint.

The FAS6200 series enables you to build an agile data infrastructure that delivers intelligent management, immortal availability, and infinite scaling.

Figure 1) NetApp FAS6200 controller.

- **Immortal.** A reliable architecture protects hardware availability, non-disruptive operations (NDO) eliminate planned downtime, and NetApp Integrated Data Protection software prevents data loss due to user errors or disasters.
- **Infinite.** Storage infrastructure scales out to almost unlimited capacity, encompassing multiple media types and SAN and NAS protocols.

The FAS6200 series and clustered Data ONTAP create a new paradigm for the delivery of storage services. Advanced data management delivers an innovative set of tools to streamline operations and eliminate sources of disruption so data is always available even as you scale to multiple petabytes.

Each model is designed to offer enterprise performance that can scale to deliver many gigabytes per second and hundreds of thousands of IOPS to satisfy the most demanding workload challenges. All models also offer extensive high-bandwidth connectivity options for 10GbE, 8Gb FC, and 6Gb SAS and support a range of disk shelves and media that let you optimize for capacity, density, or performance.

Unparalleled Reliability, Availability, and Serviceability
The FAS6200 series is designed to meet the most demanding availability requirements. All models deliver 99.999% availability based on field measurements.

NetApp uses a comprehensive approach to protect your data that combines innovative software with highly reliable hardware. Advanced hardware features, including alternate control path (ACP), persistent NVRAM

write logs, and an integrated service processor, provide the utmost reliability and protect your hardware investment. Nondisruptive maintenance, data migration, upgrade, and other operations eliminate the need for planned downtime.

Integrated data protection technologies provide near-instant backup and recovery to protect against data loss and offer best-in-class integration with enterprise backup vendors and leading applications to create a robust solution. When maximum uptime is a must, MetroCluster™ delivers transparent failover spanning distances up to 100km for applications that require continuous data availability.

At NetApp, we use big data analytics to identify patterns in billions of rows of log data gathered from thousands of deployed NetApp systems. Continuously updated risk signatures allow you to identify and proactively address issues that could affect the availability or efficiency of your operations.

Advanced service analytics extend risk detection beyond the boundaries of storage to include networks, servers, and virtual machines. End-to-end visibility of service paths allows you to make sure of adherence to defined processes and policies and identify vulnerabilities, even when they span across the stack.

Designed for Flash
All FAS6200 systems are designed to optimally support flash. The NetApp Virtual Storage Tier includes flash-specific software designed to get the most out of flash resources, resulting in a more powerful hybrid storage system with up to 16TB of flash per HA pair and tight integration with server caching

products. Hot data is automatically cached in flash, accelerating your applications while reducing overall storage footprint.

The NetApp flash portfolio lets you target flash to meet specific performance needs:

- **Flash Cache**™ accelerates read performance for all workloads on a storage system.
- **Flash Pool**™ accelerates random reads and writes for specific workloads.
- **Flash Accel**™ extends NetApp caching to include flash installed in your servers.

Infinite Capacity and Industry-Leading Storage Efficiency
Scaling to more than 65PB in clusters and offering significantly more drive capacity than competitors, the FAS6200 series lets you consolidate storage and provides maximum flexibility for growth. Clustered Data ONTAP scales up to 6 nodes for SAN and 24 nodes for NAS under a single system image—all managed from a single console. Because cluster nodes need not be identical, you can create an easy-to-manage cluster with multiple types of controllers and media to address a wide range of storage requirements and flexibly migrate data as needs change.

The FAS6200 series delivers the legendary and industry-leading NetApp storage efficiency portfolio to maximize value with:

- Space-efficient disk failure protection with RAID-DP®
- Data deduplication and compression
- Space-efficient Snapshot™ technology
- FlexClone® virtual cloning
- Thin provisioning and replication

FAS6200 SERIES TECHNICAL SPECIFICATIONS

All data in this table applies to active-active dual controller configurations.

	FAS6290	FAS6250	FAS6220
Maximum raw capacity	5760TB	5760TB	4800TB
Maximum disk drives	1440	1440	1200
Controller form factor	Dual enclosure HA; 2 controllers in two 6U chassis, total of 12U	Dual enclosure HA; 2 controllers in two 6U chassis, total of 12U	Single enclosure HA; 2 controllers in single 6U chassis
Memory	192GB	144GB	96GB
Flash for Virtual Storage Tier			
Maximum Flash Cache	16TB	6TB	3TB
Maximum Flash Pool	12TB	12TB	4TB
Combined total	16TB	12TB	4TB
PCIe expansion slots	24	24	8
Onboard I/O: 10GbE	8	8	8
Onboard I/O: 8Gb FC	8–32	8–32	8–16
Onboard I/O: 6Gb SAS	0–24	0–24	0–8
Storage networking supported	FC, FCoE, iSCSI, NFS, CIFS/SMB, HTTP, FTP		
OS version	Data ONTAP 8.1.2 GA and Data ONTAP 8.0.5		

Supported configurations	Highly available controller configurations
	   Active-active controller with controller failover and multipath HA storage
	   Active-active controller with stretch (nonswitch) and fabric-attached MetroCluster
	V-Series
	Clusters of HA pairs (see clustered Data ONTAP support table)		

Disk shelves supported	DS2246 (2U; 24 drives, 2.5" SFF) DS4246 (4U; 24 drives, 3.5" LFF) DS4486 (4U; 48 drives, 3.5" LFF) DS4243 (4U; 24 drives, 3.5" LFF)		
	DS14 shelves (mk2, mk2-AT, mk4) are supported for upgrades		
Operating systems supported	Windows® 2000, Windows Server® 2003, Windows Server 2008, Windows XP, Linux®, Sun Solaris, AIX, HP-UX, Mac® OS, VMware®, ESX®		

CLUSTERED DATA ONTAP SUPPORT

Cluster nodes	NAS: Up to 24 cluster nodes SAN: Up to 6 cluster nodes Cluster nodes = single storage controllers All cluster nodes are configured in HA pairs		
Cluster data communication interconnect	Dual 10GbE		
Cluster capacity	Up to 69PB		
Storage protocols	FC, FCoE, iSCSI, NFS, CIFS/SMB		
Optional software	Refer to FAS6200 series software tables		

FAS6200 SERIES SOFTWARE

Data ONTAP Essentials

The following software is included with every FAS/V6200 system, delivering unmatched value through greater flexibility, availability, and automation:

Capability	Product/Feature	Description
OnCommand™ management software	System Manager	Windows OS–based management tool for single system deployment
	OnCommand Unified Manager	Deploy, automate, provision, protect, monitor, and manage all your NetApp storage from a single console
	Workflow Automation	Efficiently automate storage processes so that best practices for storage management are always applied
High availability	MultiPath I/O	Load balancing and multipath capabilities for failover
	SyncMirror®	Maintains two local online copies of data; protects against all types of hardware outages
	MetroCluster	Combines array-based clustering with synchronous mirroring; provides continuous availability at a low cost
Storage efficiency	Deduplication	Transparently removes duplicate data at the block level for all storage tiers
	Thin provisioning	Enables on-demand storage provisioning to achieve maximum utilization across multiple applications
	FlexVol®	Enables virtual volumes that you can manage and move independently from physical storage
Data protection	RAID-DP	Safeguards your data from double disk failure, with no performance penalty
	Snapshot	Enables quick point-in-time copies of file systems or LUNs; NetApp Snapshot uniquely carries no performance penalty
	Open Systems SnapVault®	Snapshot replication for backup of DAS connected to Windows or UNIX® servers; maintains online archive of backup copies
Secure mult-tenancy	MultiStore®	Secure partitioning of network and storage resources enables consolidation of multiple domains on a single system
Performance	FlexCache®	Enables NetApp systems to be used as caches
	FlexShare®	Automatically allocates storage resources to higher priority workloads
Storage protocols	Included SAN or NAS protocol	One SAN or NAS protocol of your choice (iSCSI, FC, NFS, CIFS) is included with your system

Extended-Value Software:

Affordable, easy to buy add-on software modules are available to enhance base system functionality. These software products can be purchased individually or together through the NetApp Complete Bundle or the Premium Bundle for clustered Data ONTAP.

Capability	Product/Feature	Description
Application Integration	SnapManager® Suite	Enables application aware and virtual machine–aware backup, recovery, and cloning (for Oracle®, Exchange, SharePoint®, SQL Server®, SAP®, virtual infrastructure, and Hyper-V™)
System recovery	SnapRestore®	Restore LUNs and file systems from previously backed-up Snapshot copies in seconds, irrespective of size or number of files
Disaster Recovery	SnapMirror®	Synchronous and asynchronous data replication software that delivers simple, efficient, and flexible disaster recovery for business-critical applications
Virtual cloning	FlexClone	Instantly create transparent virtual copies of production databases or virtual machines, without the need for additional storage capacity or compromising performance
Disk-to-disk backup	SnapVault	Disk-to-disk replication software for complete backups and online archives to primary or secondary storage in minutes instead of hours or days
Storage protocols	Optional SAN and NAS protocols	Native support for all key SAN/NAS protocols (iSCSI, FC, NFS, CIFS) makes NetApp systems ideal for consolidating your mixed IT environment; one protocol of your choice is included standard with your system—others can be added as desired
Extended Value software bundles	Complete Bundle	All of the Extended Value software above, together in a single bundle for all-inclusive convenience.
	Premium Bundle	For clustered Data ONTAP deployments, includes the Extended Value software described earlier in a single convenient bundle (excludes SnapVault and OnCommand Balance)

FAS6200 SERIES QUICK CHECKLIST FOR ORDERING

Models	FAS6290 FAS6250 FAS6220
Flash Cache	1TB and 512GB modules
Flash Pool	Full shelf: DS2246 with 200GB SSD works in combination with HDDs in other shelves Mixed shelf: DS4246 allows combination of HDD and SSD
I/O options	Configurable onboard ports (FC or SAS) Optional NICs and HBAs
Disk shelves	DS2246 (24 drives: 2.5" SFF; high-performance HDD/SSD) DS4243 (24 drives: 3.5" LFF; high-capacity HDD/high-performance HDD) DS4246 (24 drives: 3.5" LFF; high-capacity HDD/SSD, mixed Flash Pool configs) DS4486 (48 drives: 3.5" LFF, high-capacity HDD)
Storage protocols	FC, FCoE, iSCSI, NFS, CIFS/SMB
Optional software	Refer to FAS6200 series software tables
Professional Services	Storage System Installation Service, RDS+ Implementation Services, Storage Controller Upgrade Service, Assessment Services, Consulting Services, Deployment/Implementation Services, Managed Services, Solution Suites
Support	SupportEdge Services

Professional Services
Modular offerings customized for you

NetApp Professional Services can assist you in any and every phase of the storage lifecycle. Whether you need help planning your next-generation storage system, need an extra set of hands for a major storage deployment, or want to upgrade your existing infrastructure, NetApp Professional Services personnel have the skills and expertise. NetApp offers a complete portfolio of services. In summary, NetApp Professional Services offerings include:

- **Solution suites.** These customized solutions are designed to address your business-level challenges holistically.
- **Assessment Services.** Enlist NetApp to identify and document business, storage, and infrastructure requirements and receive recommendations for improvements.

- **Consulting Services.** Reduce the complexity of your networked storage implementation when you enlist our experts to design, document, and implement a range of applications and solutions.
- **Deployment/Implementation Services.** Reduce risk as we prepare your site, install and connect systems, set up your software, and perform complete verification.
- **Managed Services.** Have NetApp experts on site to perform storage management services so you can focus on core business initiatives.

Global Support
SupportEdge Services

NetApp Global Support delivers the highest availability for your enterprise data environment and helps you optimize your storage investments. Let NetApp mitigate support issues and drive operational best practices. NetApp's innovative, proactive support means you'll have fewer and less-severe support cases. But if a problem arises,

our award-winning technical centers and field support staff—delivering in over 100 countries—won't rest until it's solved.

As an industry leader in innovation, NetApp Global Support provides tools and technology to enable business continuity. AutoSupport™, NetApp's suite of automation tools, is delivered as a service to help you proactively manage your systems and quickly resolve issues. AutoSupport functions as a "virtual staff" to protect critical data, save time, and reduce impact on your IT resources.

About NetApp

NetApp creates innovative storage and data management solutions that deliver outstanding cost efficiency and accelerate business breakthroughs. Discover our passion for helping companies around the world go further, faster at *www.netapp.com*.

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