

## IBM System Storage N5000 series Gateways for SAN Storage Environments



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### Highlights

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- **Heterogeneous unified storage environment**—Designed to provide unified storage access for multiprotocol, multivendor storage environments
- **Storage consolidation**—Designed to enable organizations to consolidate UNIX®, Linux®, Windows® and Web workloads with existing SAN storage, thereby helping to increase storage utilization
- **Utilizing existing SAN infrastructure**—Designed to integrate into existing SAN storage environments, helping to optimize investment protection and ROI
- **Data management**—Designed to provide advanced data management solutions that maximize availability and can help to significantly reduce operational cost
- **Comprehensive software suite**—Designed to provide robust system management, copy services, virtualization technologies and disaster recovery and backup capabilities across all SAN resources

### The challenge: Improving storage utilization and access

As enterprise storage requirements evolved from direct-attached to networked storage, many enterprises made significant investments in multiple storage architectures—DAS, SAN and NAS—to support the different access methods required by business solutions. The result was often inefficient and underutilized storage environments. A critical IT management challenge is to optimize the use of existing storage to improve efficiency and return on investment (ROI), yet continue to support different access methods for different business solutions throughout the enterprise.

File-level usage and distributed enterprise usage of the SAN environment are ways to improve access and use of storage resources. Many enterprises, however, are not ready to replace their existing storage systems with new, unified ones. Instead, companies with

extensive SAN storage networks are looking for ways to broaden the use of their infrastructures and achieve a greater ROI by provisioning SAN capacity for new business solutions requiring FCP, iSCSI or NAS data access and remote access.

### The solution: IBM System Storage N5000 Gateway

The IBM System Storage™ N5000 Gateway is a network-based solution designed to provide heterogeneous access to Fibre Channel attached storage arrays. The Gateway can help you make the most of the dynamic provisioning capabilities of Data ONTAP® software across your existing Fibre Channel SAN infrastructure to support an expanded set of business applications. The IBM N5000 Gateway is based on the Data ONTAP microkernel operating system, which is designed to unify block and file storage networking paradigms under a common architecture. The N5000 Gateway features a comprehensive suite of advanced data management capabilities to help you consolidate, protect and recover mission-critical data for enterprise applications and users.

The N5000 Gateway is designed to deliver terabytes of managed capacity to help address access requirements

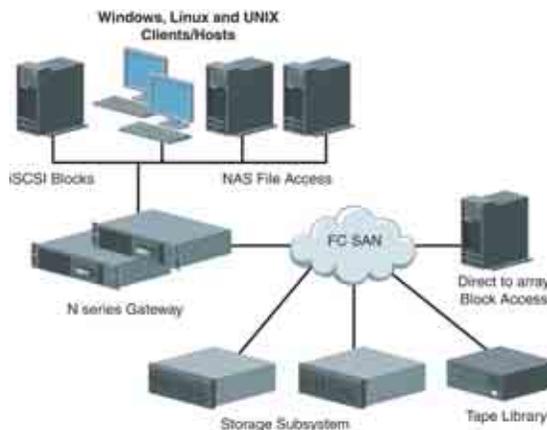


Figure 1) IBM System Storage N5000 Gateway  
Designed to improve consolidation by extending SAN functionality with data access and data management functionality.

for enterprises of all sizes. N5000 Gateway systems can be configured for simultaneous active/active access with secure failover across two independent systems in a cluster. SAN and NAS consolidation is now a possibility, using multiple N5000 Gateway systems and SAN storage systems configured in a scalable SAN infrastructure.

The N5000 Gateway also supports a wide range of products, including the IBM System Storage DS8000™ series and DS4000™ series, EMC, Hitachi, Fujitsu and HP StorageWorks XP series. These enterprise-class and modular storage systems support diverse business applications across the enterprise and provide highly scalable solutions. Customers with these storage subsystems in their SAN environments can now take advantage of

the N5000 Gateway capabilities to dramatically improve business efficiency and reduce data management complexity.

### Bridging LAN and SAN

The N5000 Gateway can be an effective solution to help you increase efficiency and access to existing SAN storage. It can serve as a powerful addition to an existing or planned SAN installation as it acts as the gateway between Fibre Channel and IP networks. It enables IP clients to be interconnected directly with many Fibre Channel attached storage devices. In addition, it is designed to help reduce the amount of direct Fibre Channel connections to servers and clients that require SAN access, resulting in potential cost savings.

### **Consolidating storage to help increase utilization**

The N5000 Gateway is designed to enable new business solutions that require NAS or SAN access to utilize SAN storage. The consolidation of storage enables improved utilization and greater flexibility in planning storage growth. You can use the N5000 Gateway to help you enhance existing SAN solutions through the creation of a consolidated storage infrastructure designed for a broad range of enterprise workloads and offers you the flexibility to select and easily provision the optimal data access approach for current and future storage needs. The solution is also designed to facilitate your sharing of files by supporting simultaneous access among heterogeneous clients and servers throughout the enterprise while consolidating servers by eliminating the need for stand-alone or SAN-attached file servers.

### **Helping to improve investment protection by leveraging existing infrastructure**

The N5000 Gateway is designed to integrate into mission-critical, enterprise-class SAN infrastructures. This enables you to deliver NAS or file I/O as well as block I/O, while dramatically increasing utilization of your infrastructure. Companies can gain the

advantages of enterprise Fibre Channel storage connectivity without the costs of physically connecting each host to the SAN infrastructure. This can help you optimize storage usage and preserve future scalability.

### **Helping to reduce TCO through proven data management**

IBM N5000 Gateway solutions are based on Data ONTAP, a highly optimized, scalable and flexible operating system that can integrate into UNIX, Linux, Windows, and Web environments. Data ONTAP is designed to deliver multiprotocol access, scalable performance, and flexible data management capabilities while helping you achieve low management complexity and total cost of ownership.

### **Supporting business continuance through high system availability**

The N5000 Gateway is a good value for those wishing to extend the reach of their SANs. The Gateway incorporates a variety of reliability and availability features designed to support high-demand operations. It houses hot-swappable, redundant power supplies and fans, and supports multipath failover protection and host dual pathing between the unit and its SAN-attached storage device. In addition, the clustering feature between two gateway controllers is designed to help reduce system downtime.

### **Helping to increase storage utilization by providing a unified storage architecture**

N5000 Gateways unify storage and provide heterogeneous access to SAN resources. The N5000 Gateway supports transport-independent data access using standard network protocols such as CIFS, NFS, HTTP, FTP, iSCSI and FCP, and is intended to provide cost-effective heterogeneous data sharing without compromising security, compatibility or performance using SecureShare® cross-protocol locking.

Storage consolidation using MultiStore® software enables multi-domain server and storage consolidation with simplified tiered management by logically partitioning the network and N series Gateway storage resources.

N5000 Gateways can help optimize system throughput by using SnapMover® software, which provides a no-copy data migration solution for workload distribution among N series Gateway systems sharing a RAID array, with no or minimal user disruption.

N5000 Gateways are designed to optimize resource utilization by using FlexClone® software to enable near-instant no-copy cloning of flexible volumes for fast multiple-version data replication with substantial storage space savings.

### **Storage consolidation using**

**MultiStore software**—Enables multi-domain server and storage consolidation with simplified tiered management by logically partitioning the network and N series Gateway storage resources.

### **Optimized system throughput using**

**SnapMover software**—Provides a no-copy data migration solution for workload distribution among N series Gateway systems sharing a RAID array, with no or minimal user disruption.

### **Optimized resource utilization using**

**FlexClone software**—Enables near-instant no-copy cloning of flexible volumes for fast multiple-version data replication with substantial storage space savings.

### **Enhancing enterprise data availability**

The N5000 Gateway, combined with Clustered Failover software, is designed to support continuous access to data by automatically failing over to an additional Gateway appliance. Clustered Failover software can help provide protection against unplanned system outages.

**SyncMirror® software**—Provides increased protection against multiple storage component failures by

synchronously replicating mission-critical application data in a local data center environment.

**MetroCluster software**—Provides a highly available business continuance solution that enables the customer to quickly and easily resume mission-critical operation at a remote site within a campus or metropolitan area with no data loss and minimal downtime.

### **Helping to improve data protection**

**Snapshot™ technology**—Enables near-instant, transparent on-disk backup by storing multiple read-only versions of each data volume. The Snapshot function uses minimal processing overhead, requires minimal disk space, and causes no disruption of service.

**SnapRestore® software**—Allows any system to revert to a specified point in time for instant file system or file recovery. Terabytes can be recovered in minutes rather than hours, without going to tape.

**SnapMirror® software**—Provides transport-independent synchronous, semi-synchronous and asynchronous remote heterogeneous replication at high speeds over a LAN, WAN, MAN or SAN for use across a range of

solutions, including disaster recovery, replication, backup or testing on a non-production system.

**SnapVault® software**—Enhances data protection by frequently backing up changed data from multiple IBM N series storage systems or other storage platforms to a common Snapshot file on a central online repository, thereby enabling faster tapeless restores and lowering the cost of data protection.

### **SnapLock® Enterprise software**—

Provides non-rewritable data permanence storage that enables compliance with government records retention and business records keeping best practices.

### **Helping to reduce enterprise data management complexity**

**SnapDrive® software**—Provides host based provisioning, Snapshot consistency and dynamic volume management for simplifying SAN management.

**SnapManager® software**—Provides a comprehensive data management solution for hosting and automating near-instantaneous hot backups and near-online restoration of Microsoft® Exchange and Microsoft SQL environments.

**Single mailbox recovery software—**

Single mailbox recovery functionality, along with SnapManager for Exchange, enables near-instant, accurate, cost-effective backups and the ability to recover Microsoft Exchange data at any level of granularity—storage group, database, folder, single mailbox or single message.

**Easy to deploy—**

The N5000 Gateway is designed to integrate into existing UNIX, Linux and Windows environments by utilizing standard naming and

authentication services, including native support for Microsoft Active Directory® and Kerberos authentication.

**Easy to manage and administer—**

N5000 Gateways with FilerView® technology offer a remote administration solution for open storage networks. FilerView software can help IT administrators use Web browsers to access consistent, easy-to-use graphical user interfaces for administration tasks. For added security, the SecureAdmin™

software option offers strong encryption for command-line and HTTP-based administration and management sessions.

Operations Manager provides a simple, centralized administration tool that enables comprehensive management of the IBM N series enterprise storage and content delivery infrastructure. With a rich set of capabilities, Operations Manager enables an organization to rapidly deploy, provision and manage a complete enterprise storage network.

**Specifications**

	<b>N5300 2869-G10</b>	<b>N5300 2869-G20</b>	<b>N5600 2868-G10</b>	<b>N5600 2868-G20</b>
Machine type model				
Controller configuration	Single	Dual (active/active)	Single	Dual (active/active)
Processors speed and type (Note 1)	2.4 GHz AMD™ Single-core 64-bit Opteron	2.4 GHz AMD Single-core 64-bit Opteron	1.8 GHz AMD Dual-core 64-bit Opteron	1.8 GHz AMD Dual-core 64-bit Opteron
Number of processors	2	4	2	4
Random access memory	4 GB	8 GB	8 GB	16 GB

**Standard integrated I/O ports**

Fibre Channel ports (speed)	4 (4 Gbps)	8 (4 Gbps)	4 (4 Gbps)	8 (4 Gbps)
Ethernet ports (speed)	4 (1 GbE)	8 (1 GbE)	4 (1 GbE)	8 (1 GbE)

**Storage scalability**

Maximum raw capacity	336 TB	336 TB	504 TB	504 TB
Maximum volume size	16 TB	16 TB	16 TB	16 TB
Maximum number of volumes/LUNs	336	336	504	504

**I/O scalability**

PCI-Express (PCI-e) expansion slots	3	6	3	6
PCI-x expansion slots	0	0	0	0
Maximum number FC ports	16	32	16	32
Maximum number of Ethernet ports	16	32	16	32
Maximum optional adapters	3	6	3	6

<b>Specifications</b>				
	<b>N5200</b>	<b>N5200</b>	<b>N5500</b>	<b>N5500</b>
	<b>2864-G10</b>	<b>2864-G20</b>	<b>2865-G10</b>	<b>2865-G20</b>
Machine type model	Single	Dual (active/active)	Single	Dual (active/active)
Controller configuration	Intel® 2.8 GHz Xeon®	Intel 2.8 GHz Xeon	Intel 2.8 GHz Xeon	Intel 2.8 GHz Xeon
Processors speed and type (Note 1)	1	2	2	4
Number of processors	2 GB	4 GB	4 GB	8 GB
Random access memory	<b>Standard integrated I/O ports</b>			
Fibre Channel ports (speed)	4 (2 Gbps)	8 (2 Gbps)	4 (2 Gbps)	8 (2 Gbps)
Ethernet ports (speed)	4 (1 GbE)	8 (1 GbE)	4 (1 GbE)	8 (1 GbE)
<b>Storage scalability</b>				
Maximum raw capacity	84 TB	84 TB	168 TB	168 TB
Maximum volume size	16 TB	16 TB	16 TB	16 TB
Maximum number of volumes/LUNs	168	168	336	336
<b>I/O Scalability</b>				
PCI-Express (PCI-e) expansion slots	0	0	0	0
PCI-x expansion slots	3	6	3	6
Maximum number FC ports	16	32	16	32
Maximum number of Ethernet ports	12	24	12	24
Maximum number of optional adapters	3	6	3	6

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## Software

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<b>Operating system</b>	Data ONTAP
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<b>Operating systems supported</b>	Windows 2000, Windows Server® 2003, Windows XP, Linux, Sun™ Solaris™, IBM AIX®, HP-UX, Mac OS, VMware ESX
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### Software features

#### Standard

Snapshot; Fast Boot; NIS; DNS; FilerView; FlexVol®; FlexShare™; Disk Sanitization; SecureAdmin; Network Data Management Protocol (NDMP)

#### Licensed

CIFS; NFS; HTTP; FTP; iSCSI; FCP; FlexClone; MultiStore; Clustered Failover; SnapMirror; SyncMirror; SnapRestore; Single Mailbox Recovery; SnapVault; SnapMover; NearStore®; SnapValidator®; SnapLock; LockVault™; MetroCluster

#### Manageability Software

##### *Application Suite*

SnapManager for Microsoft Exchange; SnapManager for Microsoft SQL Server™; SnapManager for Microsoft Office SharePoint®; SnapManager for Oracle®; SnapManager for SAP®

##### *Server Suite*

SnapDrive

##### *Data Suite*

Protection Manager; VFM® (Virtual File Manager) – Enterprise Edition; Virtual File Manager – Migration Edition

##### *Storage Suite*

File Storage Resource Manager; Operations Manager

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See [ibm.com/storage/network/n5000/gateway/features.html](http://ibm.com/storage/network/n5000/gateway/features.html) for an overview of the N5000 series software features, functions and benefits

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## Storage subsystem specifications

<b>Storage interface/data rate</b>	PCI-Based Fibre Channel Fabric and Fibre Channel-Arbitrated Loop (FC-AL)/1 to 2 Gbps. 4 Gbps available on V6030 and V6070.
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<b>Storage arrays supported</b>	<a href="http://ibm.com/storage/nas">ibm.com/storage/nas</a> —refer to System Storage N5000 Gateway Interoperability Matrix
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### Storage array SAN connectivity

SAN vendor support	<a href="http://ibm.com/storage/nas">ibm.com/storage/nas</a> —refer to System Storage N5000 Gateway Interoperability Matrix
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## For more information

Contact your IBM representative or IBM Business Partner or visit:

[ibm.com/storage/network/](http://ibm.com/storage/network/)

For N5000 series Gateway technical specifications and optional adapter cards available, please visit:

[ibm.com/storage/network/n5000/gateway](http://ibm.com/storage/network/n5000/gateway)

For N5000 series interoperability and tape drive support visit:

[ibm.com/systems/storage/nas/interophome.html](http://ibm.com/systems/storage/nas/interophome.html)

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