Unify NAS, FC SAN, and IP SAN under a common architecture

IBM System Storage N5000 Gateway for SAN Storage Environments

Highlights

- ***Heterogeneous environment—Designed to provide a suite of advanced functions for multiprotocol, multivendor storage environments.***
- ***Storage consolidation—Designed to enable organizations to consolidate UNIX®, Windows®, and Web workloads with existing SAN storage, thereby helping to increase storage utilization.***
- ***Use of existing SAN infrastructure—Designed to integrate into existing SAN storage environments, helping to optimize investment protection and ROI.***

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 under-utilized storage environments. A critical IT management challenge is to optimize the usage 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 usage 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 return on investment by provisioning SAN capacity for new business solutions that require NAS-shared 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 leverage 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 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.

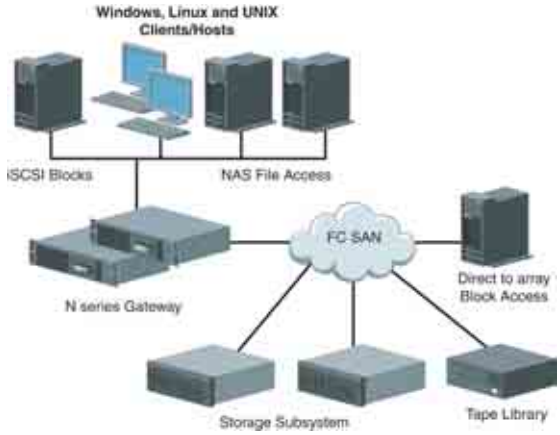

Figure 1) IBM System Storage N5000 Gateway
Designed to improve consolidation by extending SAN functionality with data access and data management functionality.

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 allows IP clients to be directly interconnected 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 can help you improve utilization and provide 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. Gateway features allow you to select and provision data access 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.

Helping to improve investment protection by leveraging existing infrastructure

The N5000 Gateway is designed to integrate into mission-critical, enterprise-class SAN infrastructures. This allows you to leverage your SAN and storage investments by providing new SAN capacity while helping to reduce connectivity requirements. You may 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, 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 filers is designed to help reduce system downtime.

Helping to increase storage utilization

The N5000 Gateway supports transport-independent data access using standard network protocols such as CIFS, NFS, HTTP, FTP, iSCSI, and FCP. Combined with SecureShare® cross-protocol locking functionality, the Gateway is designed to provide cost-effective heterogeneous data sharing that can help you avoid compromising security, compatibility or performance.

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.

In addition, the Gateway offers equivalent data protection and disaster recovery features and copy services that are also available in N series appliance models.

Helping to reduce enterprise data management complexity

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 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.

IBM System Storage N5000 Gateway at a glance

Operating system	Data ONTAP 7.1
Standard software features	FlexVol™, Snapshot™, Fast Boot, e-mail alerts, NIS, DNS, SNMP, FilerView, NDMP, LDAP, AutoSupport
Network protocol support	NFS V2/V3/V4 over UDP or TCP, PCNFSD V1/V2 for (PC) NFS client authentication, Microsoft CIFS, VLD, FTP, HTTP 1.0, HTTP 1.1 Virtual Hosts
SAN protocol support	iSCSI; Fibre Channel Protocol (FCP) fabric-attached and direct-attached configurations
Optional licensed functions	NFS, CIFS, HTTP, Fibre Channel Protocol (FCP), FlexClone™, MultiStore®, Clustered Failover (CFO), SnapMirror®, SnapRestore®, SnapVault®, SyncMirror®, SnapValidator™, SnapDrive® for Windows, SnapDrive for UNIX, Single Mailbox Recovery for Exchange, SnapManager® for Exchange, SnapManager for SQL, SnapManager for Oracle, DataFabric® Manager, MetroCluster, SnapLock® Enterprise, LockVault™ Enterprise
Hardware features	Four full-duplex 10/100/1000 Base-T Ethernet ports onboard, Four 2 Gbps Fibre Channel ports onboard, built-in LVD SCSI Port, diagnostic LED/LCD, Compact Flash Dual redundant hot-plug integrated cooling fans and auto-ranging power supplies, 19" rack-mount enclosure
RAID support	Dependent on attached storage subsystem
Disk storage expansion units supported	Refer to the IBM System Storage N series Gateway Interoperability Matrix at: www-03.ibm.com/servers/storage/nas/interophome.html

Specifications

	N5200	N5200	N5500	N5500
IBM machine types – models	2864-G10	2864-G20	2865-G10	2865-G20
Storage configuration	Single storage controller	Dual (active/active) storage controllers	Single storage controller	Dual (active/active) storage controllers
ECC memory	2GB	4GB	4GB	8GB
Nonvolatile memory	512MB	1GB	512MB	1GB
Integrated I/O				
Onboard 10/100/1000 Ethernet ports	4	8	4	8
Onboard 2 Gbps Fibre Channel ports (configurable as storage-attached initiator or host-attached target)	4	8	4	8
Max. raw storage capacity	50TB	50TB	84TB	84TB
Max. number of – Logical Units (LUNs) on back-end disk storage array	168	168	336	336
Maximum LUN size on back-end disk storage array	500GB	500GB	500GB	500GB
Max. volume size: 1TB=1,048,576,000,000 bytes.	16TB	16TB	16TB	16TB

I/O expandability

	N5200-G10 Single storage controller	N5200-G20 Dual storage controller active/active configuration	N5500-G10 Single storage controller	N5500-G20 Dual storage controller active/active configuration
PCI-X expansion slots	3	6	3	6
Maximum number of optional adapters • Dual-port FC HBA for disk (only for A20 models) • Dual-port GbE iSCSI TOE (copper) • Dual-port GbE iSCSI TOE (fibre) • Single dual-channel SCSI LVD for tape • Dual-port MetroCluster HBA • Dual-port 4Gbps FC HBA • Dual-port GbE (copper)	3	6	3	6
Max dual-port 2 Gbps FC disk adapters	3	6	3	6

Environmental specifications

	Dual storage controller Active/active configuration (2864-G20 and 2865-G20)	Single storage controller (2864-G10 and 2865-G10)
AC power / max. current	88 to 246/19 to 6.4A	88 to 246VAC/9.5 to 3.2A
Thermal rating	1706 Btu/hr	853 Btu/hr
Weight (max.)	68 kg (150 lb)	34 kg (75 lb)
Height	26 cm (10.6") 6U EIA	13 cm (5.12") 3U EIA
Width	44.9 cm (17.7")	
Depth	61 cm (24") without cable management tray 76.2 cm (30") with cable management tray	
Operating temperature maximum range	10°C to 40°C (50°F to 104°F)	
Recommended operating temperature range	20°C to 25°C (68°F to 77°F)	
Non-operating temperature range	-40°C to 65°C (-40°F to 149°F)	
Non-operating relative humidity	5% to 95% relative humidity non-condensing	
Recommended operating temperature relative humidity range	40% to 55% non-condensing	
Operating acoustic noise	56.4 dBA @ 1m at 23°C, 5.64 bels @ 23°C	
Min. cabinet clearances	25.4 cm (10") in front, 30.5 cm (12") in rear	
Min. service clearances	76.2 cm (30") in front, 76.2 cm (30") in rear	
Maximum altitude	3050 m (10,000 ft.)	

Regulations

Filer safety	EN 60950:2002, CE, CSA 60950 and NRTL (UL) CB (all national deviations), EN60825-1:1994, IRAM, GOST-R
Disk shelf safety	UL/C-UL; CE
Emissions	FCC Class A, EN 55022:1998, EN 61000-3-2, EN 61000-3-3, CE, BSMI, AS/NZ 3548, VCCI
Immunity	EN 55024:1998

N5000 series tape drive support (refer to interoperability matrix on IBM website)

N5000 series supported backup methods

Disk-based backup	SnapVault, SnapMirror
Host-based backup	NDMP/NFS/CIFS/iSCSI
GbE-attached tape support	**ibm.com**/storage/nas, refer to System Storage N series interoperability matrix
Direct-attached tape support	**ibm.com**/storage/nas, refer to System Storage N series interoperability matrix
SAN-attached tape support	**ibm.com**/storage/nas, refer to System Storage N series interoperability matrix
iSCSI initiator, IP fabric and host-attached support	**ibm.com**/storage/nas, refer to System Storage N series interoperability matrix

For more information

Contact your IBM representative or IBM Business Partner or visit:

ibm.com/storage/nas/

IBM Systems and Technology Group
5600 Cottle Road
San Jose, CA 95193
U.S.A.

Produced in the United States
August 2006

This document could include technical inaccuracies or typographical errors. IBM may make changes, improvements or alterations to the products, programs and services described in this document, including termination of such products, programs and services, at any time and without notice. Any statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only. The information contained in this document is current as of the initial date of publication only and is subject to change without notice. IBM shall have no responsibility to update such information.

IBM is not responsible for the performance or interoperability of any non-IBM products discussed herein. Performance data for IBM and non-IBM products and services contained in this document was derived under specific operating and environmental conditions. The actual results obtained by any party implementing such products or services will depend on a large number of factors specific to such party's operating environment and may vary significantly. IBM makes no representation that these results can be expected or obtained in any implementation of any such products or services.

MB, GB and TB equal 1,000,000, 1,000,000,000 and 1,000,000,000,000 bytes, respectively, where referring to storage capacity. Actual storage capacity will vary based upon many factors and may be less than stated. Some numbers given for storage capacities give capacity in native mode followed by capacity using data compression technology.

THE INFORMATION IN THIS DOCUMENT IS PROVIDED "AS-IS" WITHOUT ANY WARRANTY, EITHER EXPRESSED OR IMPLIED. IBM EXPRESSLY DISCLAIMS ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NONINFRINGEMENT. IBM products are warranted according to the terms and conditions of the agreements (e.g., IBM Customer Agreement, Statement of Limited Warranty, International Program License Agreement, etc.) under which they are provided.

References in this document to IBM products, programs or services do not imply that IBM intends to make such products, programs or services available in all countries in which IBM operates or does business. Any reference to an IBM program or product in this document is not intended to state or imply that only that program may be used. Any functionally equivalent program or product that does not infringe IBM's intellectual property rights may be used instead. It is the user's responsibility to evaluate and verify the operation of any non-IBM product, program or service.

TSD01526-USEN-01