



DakotaNAS, featuring the latest in Microsoft® NAS technology, is a flexible, and scalable Network Attached Storage Engine for direct attached storage systems or Fibre Channel and iSCSI SANs. Featuring Microsoft Windows® Storage Server™ 2003 R2 with the new integrated Mangement Supplement, DakotaNAS provides seamless interoperability, solid reliability and simple-to-manage file sharing resources for Windows, UNIX, Linux, Macintosh and Web clients at a low total cost of ownership. Built on industry standard hardware and software, DakotaNAS is an open system platform that supports standard storage systems and SANs.

Performance

DakotaNAS is built on a powerful server-class Dual-Core Xeon platform with a dual independent bus architecture and up to 16 GB of memory. Featuring the latest in Fibre Channel and iSCSI storage connectivity, DakotaNAS provides high performance file sharing resources for Direct Attached Storage systems and/or SANs. In addition to the dual Gigabit Ethernet connections with Intel I/O Acceleration technology and jumbo frame support, optional TCP/IP Offload Engines enhance performance and accelerate Ethernet throughput to near wire speed. DakotaNAS runs a NAS optimized version of Windows Server 2003 R2 and is 15-20% faster than a general purpose Windows Server 2003 R2 in file serving.

Scalable Networking Pack

Microsoft's Scalable Networking Pack can help optimize server performance and maximize network throughput via the following ways:

- Reduces CPU overhead related to network packet processing
- Dynamically load balances inbound network processing across multiple processors
- Helps support more users and process requests faster

Scalable Network Accelerators

DakotaNAS models with Scalable Network Accelerators provide 40% faster throughput and support 50% more users with the same response time. This is achieved by utilizing the TCP Chimney Offload feature of Microsoft's Scalable network Pack to free the system CPU of the burden of network packet processing.

Reliability and Data Availability

DakotaNAS is integrated with best-of-breed components and is based on Windows Server™ 2003 R2, a robust operating system that provides high reliability and data protection. Redundant hot swap power supplies and mirrored operating system drives ensure high availability in the event of component failure. A mature journaling file system enables easy, dependable file system recovery in the event of unscheduled downtime and a system file protection feature keeps the OS safe from damage or removal. Windows Storage Server 2003 R2 is a dedicated file and print server and has all functionality unrelated to file serving removed, increasing reliability and lowering CPU overhead. The Distributed File System (DFS) solution provides simplified, fault-tolerant access to files and WAN-friendly replication. The DakotaNAS Enterprise Edition, with cluster support, provides high availability and disaster tolerance for mission-critical file sharing environments.

Multi-Protocol Connectivity

Because DakotaNAS is powered by Windows Server 2003, it is designed to exist in heterogeneous network environments and transfer data using industry standard file sharing protocols (SMB/CIFS, NFS, AFP, FTP and HTTP) over industry standard network protocols. Therefore, clients can share storage resources, regardless of their operating environment. Cross platform connectivity provides common storage resources and increased user productivity.



APPLIANCE FEATURES

- Windows Storage Server 2003 R2
- SCSI, SAS, Fibre Channel, or iSCSI Connectivity
- Scalable Networking Pack
- Unified Share & Storage Management
- Share & Storage Provisioning Wizards
- File Server Resource Manager
- Storage Manager for SANs
- Print Manager Console
- Quota Management
- File Policy Management
- Single Instance Storage
- Indexing Service
- DFS Replication
- Volume Shadow Copy Services (VSS)
- Shadow Copies for Shared Folders
- Windows Sharepoint® Services
- Multi-Protocol Client Support
- No Client Licenses
- Enterprise-Class Security
- SAN Connectivity
- iSCSI Initiator Support
- iSCSI Target Option
- Redundant Hot Swap Components
- Anti-Virus Support



Security

DakotaNAS features the tight enterprise-level security of Windows Server 2003 R2. Full Active Directory Services™ support enables DakotaNAS to integrate seamlessly into a Windows enterprise network. Other authentication features include NT Domain Authentication (PDC) and Unix Network Information Services (NIS). DakotaNAS also integrates completely into Distributed File System (DFS) environments.

Manageability

The Windows Storage Server 2003 MMC-based management console enables administrators to perform the majority of storage management tasks from a central location. The Unified Share and Storage Management snap-in provides wizard-based provisioning of volumes and shared folders, as well as the ability to configure quotas, file screening, Single Instance Storage, and indexing. DakotaNAS can be managed remotely via a web browser from Windows and non-Windows clients. A keyboard, mouse, and monitor (or KVM) is supported for local management.

File Server Resource Manager

File Server Resource Manager provides a suite of tools for administrators to understand, control, and manage the quantity and type of data stored on their servers. File Server Resource Manager enables you to place quotas on folders and volumes, actively screen files, and generate comprehensive storage reports.

Unified Share and Storage Management

With the Share and Storage Management snap-in, you can easily set up and manage shared folders and storage. Share and Storage Management provides the following:

- **MMC-based management** of shared folders and storage.
- **Provision Storage Wizard** for creating and configuring storage, including creating a LUN and formatting a volume.
- **Provision a Shared Folder Wizard** for creating and configuring shared folders that can be accessed using either the server message block (SMB) or NFS protocol.

This makes it possible to complete most of the administrative tasks required to create and manage shared folders and volumes, configure Single Instance Storage (SIS), configure quotas, configure file screening, and enable indexing from a single management point.

Storage Management for SANs

Storage Manager for SANs helps you create and manage logical unit numbers (LUNs) on fibre channel and iSCSI disk drive subsystems in your storage area network (SAN). Storage Manager for SANs can be used on storage subsystems that support Virtual Disk Service (VDS). Use Storage Manager for SANs to create and assign LUNs, manage connections between LUNs and the servers in your SAN, and set the security properties for iSCSI storage subsystems.

Single Instance Storage

Single Instance Storage (SIS) recovers disk space by reducing the amount of redundant data stored on a volume by identifying identical files, storing only a single copy of the file in the SIS common store and replacing the files with pointers to the file in the SIS common store.

iSCSI Software Target Option

Microsoft iSCSI Software Target enables you to implement an iSCSI SAN with storage provisioning and management capabilities. Managed via the Integrated Management Console, administrator's can create and manage iSCSI targets and iSCSI virtual disks, as well as schedule, export, and locally mount snapshots for use in backup and recovery operations. Wizards are provided to facilitate these features.

- **Virtual Disk Storage.** Disks created using iSCSI Software Target are iSCSI virtual disks, which are files in the virtual hard disk (VHD) format. These virtual disks offer flexible and effective storage. They are dynamically extendable to provide extra capacity on demand, enable efficient storage utilization, and minimize the downtime required to create and install new disks.
- **Snapshots.** To facilitate backup and recovery operations, you can schedule and create snapshots of iSCSI virtual disks. Snapshots can be scheduled to be created automatically without stopping programs and can be mounted locally or exported to facilitate backup and recovery operations.
- **Hardware Providers.** To support advanced management of iSCSI virtual disks and snapshots, you can install the Virtual Disk Service (VDS) and Virtual Shadow Copy Service (VSS) hardware providers, provided with system.
- **Security.** The Microsoft iSCSI Software Target supports security protocols and configuration such as: iSNS integration; IPv6; IPsec; CHAP authentication.

Distributed File System (DFS)

The Distributed File System (DFS) solution in Windows Storage Server 2003 R2 provides simplified, fault-tolerant access to files and WAN-friendly replication. Distributed File System consists of two technologies:

- **DFS Namespaces.** Formerly known as Distributed File System, DFS Namespaces allows administrators to group shared folders located on different servers and present them to users as a virtual tree of folders known as a namespace. A namespace provides numerous benefits, including increased availability of data, load sharing, and simplified data migration.
- **DFS Replication.** The successor to File Replication service (FRS), DFS Replication is a new state-based, multimaster replication engine that supports scheduling and bandwidth throttling. DFS Replication uses a new compression algorithm known as Remote Differential Compression (RDC). RDC is a protocol that can be used to efficiently update files over a limited-bandwidth network. RDC detects insertions, removals, re-arrangements of data in files, enabling DFS Replication to replicate only the deltas (changes) when files are updated.

For more information on DFS, visit: <http://www.microsoft.com/windowsserver2003/technologies/storage/dfs/default.mspx>



Indexing Service

Indexing Service extracts the information from a set of documents and organizes it in a way that makes it quick and easy to access that information through the Search function for computers running Microsoft Windows 2000 or Microsoft Windows XP. This information can include text from within a document (its contents), and the characteristics and parameters of the document (its properties), such as the author's name. Once the index is created you can query the index for documents that contain key words, phrases, or properties.

Volume Shadow Copy Service (VSS)

System administrators can use point-in-time shadow copy technologies to make up to 512 snapshots per volume (of which 64 are reserved for Shadow Copies for Shared Folders) using applications that have a VSS requestor. These shadow copy backups are available for rapid restores should the need arise. Unlike tape backups which can take hours to restore, these shadow copy backups can be restored in minutes. The end user can also benefit from point in time imaging technologies, using the Shadow Copies for Shared Folders (SCSF) feature. SCSF enables users to restore accidentally deleted or overwritten files or entire folders without the need for IT intervention. A maximum of 64 SCSF per volume can be created.

Windows SharePoint® Services

Microsoft Windows SharePoint Services is a powerful Web-based team collaboration environment that is included in Windows Storage Server 2003 R2. Windows SharePoint Services provides an integrated portfolio of collaboration and communication services designed to connect people, information, processes, and system both within and beyond the organizational firewalls.

Print Management

Print Management is an updated Microsoft Management Console snap-in that you can use to view and manage printers and print servers in your organization. You can use Print Management to manage all network printers on print servers running Windows 2000 Server, Windows Server 2003, Windows Storage Server 2003, Windows Server 2003 R2, or Windows Storage Server 2003 R2.

Disk-to-Disk-to-Tape (D2D2T) Backup

DakotaNAS can be configured as a powerful and versatile network disk-based Backup Appliance. Data can be backed up to RAID protected hard disks, greatly accelerating the backup process and providing for near-instant data restores, then transferred to tape for off-site or long-term archive. DakotaNAS supports Windows Server 2003 compatible backup applications and agents.

Configuration and Scalability

DakotaNAS is available in 1U or 2U models with SCSI, Fibre Channel, or iSCSI storage connectivity ports, providing the flexibility you need to fit your current and future storage requirements. Redundant hot swap power supplies, mirrored operating system drives, and external SCSI port(s) are standard on all models.

Fibre Channel SAN Connectivity

DakotaNAS supports Flexible Volume Mounting, enabling proper auto-mounting behavior for LUNs and volumes. With auto-mounting disabled, DakotaNAS mounts only volumes and LUNs that an administrator explicitly directs it to mount. This behavior helps prevent data corruption incidents.

iSCSI SAN Connectivity

Support for Microsoft's iSCSI software initiator or third party iSCSI HBAs enables DakotaNAS to easily integrate with IP targets and IP SANs.

Antivirus Support

Windows Storage Server 2003 R2 is built upon the Windows Server family of operating systems, therefore you can benefit from the increased security provided by existing antivirus software from a variety of supported Microsoft partners. For more information on Microsoft's antivirus partners, see <http://www.microsoft.com/security/partners/antivirus.asp>

Total Cost of Ownership

DakotaNAS enables you to reduce your total cost of ownership by ensuring fast deployment, seamless network interoperability, high uptime, low administration and no client license costs. .

SPECIFICATIONS

Pre-Installed Software

■ Microsoft Windows Storage Server 2003 R2

Windows 2003 R2 NAS Optimized Operating System

■ Microsoft Services for Network File System

Services for Network File System is a set of services that integrates with Windows Server 2003 to allow UNIX-based NFS clients to access resources on Windows Storage Servers without having to explicitly sign on to the Windows domain.

■ Integrated Management Supplement

The Integrated Management Supplement includes:

- Remote Management from non-Windows Clients
- New Management Console
- New Unified Share and Storage Management Snap-In that simplifies management of:
 - SMB and NFS share provisioning
 - Share and storage provisioning
 - Unified overview of storage and shares
 - Volume actions: extend, format, delete, & properties
 - Share actions: stop sharing & properties

■ Microsoft Backup

Microsoft Backup enables administrators to backup files to a local tape drive.

■ Microsoft iSCSI Software Target (Option)

Microsoft iSCSI Software Target option enables you to implement an iSCSI SAN with storage provisioning and management capabilities. Managed via the Microsoft Management Console, administrator's can create and manage iSCSI targets and iSCSI virtual disks, as well as schedule, export, and locally mount snapshots for use in backup and recovery operations. Wizards are provided to facilitate these features.

■ Double-Take® (Option)

Double-Take's data replication technology combines continuous real-time backup and automatic failover capabilities for disaster recovery, high availability, and centralized backup. Double-Take is required for replication of Microsoft iSCSI Software Targets.

For more information about Windows Storage Server 2003 R2 visit:

<http://www.microsoft.com/windowsserversystem/wss2003/default.msp>



File System

- Journaling File System
- Distributed File System (DFS) Support
- Encrypting File System (EFS)
- Single-Instance Storage (SIS)

Management

- Windows Remote Desktop via Web Browser
- Local via Keyboard & Mouse
- File Server Resource Manager
- Unified Share & Storage Management
- Storage Manager for SANs
- Dynamic Volume Manager
- Shadow Copies for Shared Folders
- SNMP Support
- System and Security Logs
- Health Monitoring, Messaging & Diagnostics
- IPMI 2.0 Support

Network Protocols

- TCP/IP & AppleTalk

File Sharing Protocols

- CIFS/SMB, NFS v2/v3, AFP, HTTP 1.1

Automatic IP Address Assignment

- Supports DHCP, BOOTP, & RARP

NIC Teaming Options

- Link Aggregation
- Load Balancing
- Failover

Security Features

- File Level Access Control Lists
- Local User/Group Database
- Microsoft Active Directory Services (ADS)
- Microsoft NT Domain Controller (PDC)
- Unix Network Information Services (NIS)
- Supports Kerberos Version 5.0
- Supports NTLM v2 Authentication
- RAID Protected OS

CONFIGURATION OPTIONS

Internal Storage Options

- SATA 3 GB/s DRIVE CAPACITIES**
80, 250 500, & 750 GB (7200 RPM)
- SAS DRIVE CAPACITIES**
36, 73, 146, & 300 GB (15K RPM)

PCI Expansion Slot Options

- NETWORK ADAPTERS**
1, 2 & 4 Port Gigabit Copper Server Adapters
1 & 2 Port Gigabit Fiber Server Adapters
- ACCELERATORS**
1, 2 & 4 Port Alacritech Scalable Network Accelerators
1 & 2 Port Alacritech iSCSI Scalable Network Accelerators
- HBAs**
1 & 2 Port QLogic iSCSI HBAs
2 Port Silverback Systems iSCSI HBA
1 & 2 Channel U160/320 SCSI HBA
1, 2 & 4 Port 2 Gb FC HBA
1 & 2 Port 4 Gb FC HBA
- RAID CONTROLLERS**
2 Channel U320 SCSI
4 Port SAS

DakotaNAS Operating System Versions	Standard x32	Standard x64	Enterprise x32	Enterprise x64
MAX MEMORY	4 GB	32 GB	64 GB*	2 TB*
DISK DRIVES	Any	Any	Any	Any
DEVICE INTERFACE	Yes	Yes	Yes	Yes
FILE SERVER MANAGEMENT (FSM)	Yes	Yes	Yes	Yes
PRINT MANAGEMENT CONSOLE	Yes	Yes	Yes	Yes
MICROSOFT SERVICES FOR NETWORK FILE SYSTEM (NFS)	Yes	Yes	Yes	Yes
INDEXING SERVICE	Yes	Yes	Yes	Yes
UNIFIED SHARE AND STORAGE MANAGEMENT	Yes	Yes	Yes	Yes
FILE SERVER RESOURCE MANAGER (FSRM)	Yes	Yes	Yes	Yes
DISTRIBUTED FILE SYSTEMS (DFS) MANAGEMENT	Yes	Yes	Yes	Yes
DISTRIBUTED FILE SYSTEMS (DFS) REPLICATION	Yes	Yes	Yes	Yes
DISTRIBUTED FILE SYSTEMS (DFS) REPLICATION DIAGNOSTICS AND CONFIGURATION TOOLS	Yes	Yes	Yes	Yes
STORAGE MANAGER FOR STORAGE AREA NETWORKS (SAN)	Yes	Yes	Yes	Yes
SINGLE INSTANCE STORAGE (SIS)	Yes	Yes	Yes	Yes
WINDOWS SHAREPOINT SERVICES	Yes	Yes	Yes	Yes
MICROSOFT CLUSTER SUPPORT	No	No	Yes	Yes

*DakotaNAS only supports up to 32 GB

Warranty & Support

- Three Year Advance Replacement Warranty
- Toll Free Technical Support
- 8 x 5 and 24 x 7 On-Site Support Available



STORAGE

www.amsstorage.com

Model Specs

Features	DNR120-SA	DNR2200-SA	DNR2200-SAS
PROCESSOR	1 Dual-Core Xeon, 2.0 GHz, 1333 MHz FSB (Up to 2), Upgradeable to 3.0 GHz		1 Dual-Core Xeon 3.0 GHz, 1333 MHz FSB (Up to 2)
MEMORY	1 GB		
O/S VERSION	Windows Storage Server 2003 R2 Standard x32; Upgradeable to Enterprise and 64-bit		
DEDICATED MIRRORRED O/S DRIVES	2 – 80 GB SATA	2 – 80 GB SATA	2 – 73 GB SAS
DISK DRIVE INTERFACE	SATA 3 Gb/s or SAS 3 GB/s		
HOT SWAP HDD	Yes		
DATA DRIVES	0	Up to 3	Up to 3
EXTERNAL SAS	N/A	Optional 4x Port	Optional 4x Port
EXTERNAL SCSI		Option	
INTEGRATED LAN	2 – 10/100/1000 with Intel I/O Acceleration Technology		
PCI EXPANSION SLOTS	1 – LP PCI Express x8	2 – 64 Bit FH PCI-X; 2 – LP PCI Express x8	2 – 64 Bit FH PCI-X; 2 – LP PCI Express x8
USB PORTS	2 – USB 2.0		
FLOPPY DRIVE	1.44 MB		
CD/DVD	DVD-ROM/CD-RW		
COOLING FANS	5	6	6
POWER SUPPLY	Single 600 Watt	750 Watt Redundant Hot Swap	750 Watt Redundant Hot Swap
AMBIENT TEMPERATURE	Operating (system): +10°C to +35°C; non-operating/storage (system): -40°C to +70°C ambient		
RELATIVE HUMIDITY	Non-operating: 95%, non-condensing at +30°C		
REGULATORY COMPLIANCE	UL / FCC – cURus; UL/Industry Canada – cURus/ICES		
DIMENSIONS (H x W x D (IN.))	1.703 x 16.93 x 27.25	3.44 x 16.93 x 27.95	3.44 x 16.93 x 27.95

Available Options & Upgrades	DNR120-SA	DNR2200-SA	DNR2200-SAS
DUAL CPU UPGRADE	Yes	Yes	Yes
CPU SPEED UPGRADE	Yes	Yes	N/A
MEMORY UPGRADE	Yes	Yes	Yes
OPERATING SYSTEM UPGRADE TO x64	Factory Upgrade	Factory Upgrade	Factory Upgrade
OPERATING SYSTEM UPGRADE TO ENTERPRISE	Factory Upgrade	Factory Upgrade	Factory Upgrade
INTERNAL DRIVES	250, 500, & 750 GB (7200 RPM) SATA	250, 500, & 750 GB (7200 RPM) SATA	73, 146, & 300 GB (15K RPM) SAS
ALACRITECH SCALABLE NETWORK ACCELERATORS	Yes	Yes	Yes
iSCSI HBAS	Yes	Yes	Yes
FIBRE CHANNEL HBAS	Yes	Yes	Yes
ULTRA320 SCSI HBAS	Yes	Yes	Yes

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