

**Novell**

**NetDevice NAS**

**Reviewers Guide**

## Quick Profile

**Product:** NOVELL® NETDEVICE™ NAS

**Summary:** Novell® NetDevice™ NAS is a snap-in, hardware-independent, scalable, network-attached storage software solution that easily integrates into any network. Any network client including Novell™, Windows™, UNIX™, Linux™ and Web-based clients can access storage directly. Directory-based security is included (Novell eDirectory™) for file access and authentication. Installation and setup are quick and easy and all management can be handled through a common Web browser or through traditional Novell management tools like ConsoleOne.

Novell NetDevice NAS provides hardware independence for IT managers, allowing them to convert any standard computer system to a storage subsystem, and even re-deploy existing systems as storage. NetDevice is particularly beneficial in existing Novell environments where it leverages NDS as a management and security mechanism. NetDevice NAS provides secure and instant storage, simplifying the way you add and manage additional resources in branch offices, departments and workgroups. And, NetDevice NAS seamlessly integrates in mixed networks because it has been developed to industry standard file protocols and namespaces.

**Announce date:** July 18, 2001

**Availability:** September 26, 2001

**Key Benefits:**

**Hardware Independence** – *Maximize existing hardware relationships – even re-deploy current systems*

- Select your own hardware platform
- Stay within company purchasing standards
- Get volume discounts from existing hardware vendors
- Leverage your existing hardware support contract
- Add storage without purchasing disks at inflated prices
- Re-deploy existing hardware

**Leverage the Novell Environment** – *The only NAS appliance that fully utilizes the strength of Novell NDS eDirectory*

- Manage user accounts for a fleet of NAS appliances from one location
- Merges easily into your NDS tree
- Manage all users through NDS regardless of the client access method
- Create granular access control lists at the file level
- Policy based management of users, groups, containers, with support for rights inheritance
- Content distribution through ZENworks™ for Servers

**Instant Storage** – *Simplify the way you add and manage additional storage*

- State of the art imaging process allows for 15 minute deployment
- Easily expand systems by scanning for new storage
- Manage the appliance from anywhere using simple web-based

management

- Manage user access to file systems with the power of NDS eDirectory
- Simplified software updates through Softchip technology

**Secure Assets** – *Secure and protect digital assets in branch offices, departments, and workgroups*

- Secure authentication from any client
- Encrypted file access and management
- Granular access control lists

**Industry Standard Protocols** – *Accelerate your network using industry standard file protocols and namespaces*

- Broad file access support, including NCP, Common Internet File System (CIFS), NFS, HTTP, FTP, WebDAV\*, and AppleTalk File Protocol\* (AFP)
- Broad namespace support, including NDS, Windows Domain Controller, Windows Workgroup, Network Information Services (NIS), and LDAP\*

\*Not included in the initial release

**Pricing:**

Novell NetDevice NAS suggested retail pricing starts at \$1,799.

**Licensing:**

Novell NetDevice NAS can be licensed by the gigabyte or per NetDevice NAS footprint with unlimited gigabytes.

**Availability:**

- Novell Authorized Resellers and Solution Providers
- Through Novell Direct Sales
- Novell Web Site - <http://shop.novell.com/>

**For Additional Information:**

[www.novell.com/products/netdevice](http://www.novell.com/products/netdevice)

# Installation Requirements

## Hardware Prerequisites

- 600 MHz Intel compatible PC/Server (can be multiprocessor) with bootable CD-ROM drive and floppy drive
- Novell NetWare certified PCI or built-into-motherboard network card
- 384 MB RAM
- 9 GB storage minimum (make sure that SCSI drives are initialized or RAID logical drives are defined and initialized)
- Standard PC keyboard, SVGA monitor

## Software Prerequisites

Novell NetDevice software is located on the Novell NetDevice NAS CD. No other software is required. The following information must be available:

- An IP address for the appliance's network adapter card
- The subnet mask for the IP address
- A DNS server address (optional)
- A default gateway address on the same subnet as the IP address
- An existing Novell eDirectory 8.5.1 SP2a or later tree if you want to merge the appliance with an existing tree (optional)

## Administration

- A workstation running Internet Explorer 5.5 with Java Virtual Machine loaded (The workstation must have access to the subnet that the appliance is on.)
- For console-based administration from the Novell NetDevice NAS console, attached monitor and keyboard are required
- Any standard telnet client

## Overview

IT departments and analysts agree that rapidly expanding storage needs are a major issue for today's companies. In companies large and small, data storage requirements double every 9 to 12 months and the cost of managing new storage is pegged at three to four times the price of the storage itself (source: Gartner Group). Increased computing power, the increase in bandwidth, a higher demand for access to Web content, high concentrations of video, music and graphic files--each contribute to the demand for more networked storage.

To alleviate these demands Novell has developed NetDevice NAS--a directory-enabled storage solution that secures large amounts of critical network information, making it available to authorized users, anywhere, anytime. Novell NetDevice NAS fits into any Novell, Windows, Unix, or Linux environment to provide hardware-independent add-on storage that is ideally suited for branch offices and workgroups where little or no IT support is available. Novell NetDevice NAS is the only "soft appliance" solution that allows organizations to deploy remote storage space using hardware from their vendor of choice or leverage their hardware investment by re-deploying a solution using existing equipment.

NetDevice NAS is unique as the only software-based storage appliance solution available. Standard hardware with common storage subsystems from any major vendor can be configured to seamlessly integrate into existing environments. Simply load the Novell NetDevice NAS CD into a bootable CD ROM drive on any certified hardware system to convert it to network attached storage.

Key benefits include:

**Hardware Independence** – *Maximize existing hardware relationships – even re-deploy current systems*

- Select your own hardware platform
- Stay within company purchasing standards
- Get volume discounts from existing hardware vendors
- Leverage your existing hardware support contract
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NetDevice NAS makes it so easy to store so much more.

## Storage Market Facts

Storage is a massive challenge for today's eBusinesses. IDC reports that a \$1.833 billion NAS market for the year 2000 will grow at a rate of 63% annually to more than \$12.8 billion by 2004. With corporate data storage requirements doubling every 9 to 12 months and the cost of managing new storage at three to four times the price of the storage itself (source: Gartner Group), IT managers are seeking more effective ways for storage provisioning and management. Novell's NetDevice NAS helps companies tame the storage beast.

This rapid growth in demand for storage is an issue for companies both large and small. Increased computing power, the increase in bandwidth, a higher demand for access to Web content, high concentrations of video, music and graphic files--all of these are factors that generate storage problems for users in all organizations. In larger companies, the trend is moving away from server-attached storage to more scalable NAS and SAN solutions.

A major storage issue is management--management of storage devices and management of user access. There are often separate pools of storage located on different servers in different physical locations--managing storage to be available where it is needed can be an intensive logistics exercise. In addition, there are often multiple user pools, different access control lists (ACLs), and different name spaces or file types (all on separate servers) making coordination a nightmare. IDC estimates that for every terabyte of storage deployed, one full-time employee must manage it--whether it is consumed or not.

The availability of an easy-to-manage, snap-in, directory-enabled storage solution eliminates the bulk of storage problems for organizations of all types. When a storage need arises, just drop in a new storage module. Novell NetDevice NAS provides a scalable, manageable storage solution that effectively addresses storage issues for enterprise companies with premium benefits for branch offices and workgroups.

NetDevice NAS integrates with existing systems, is easy to manage, simple to configure, and can be implemented at less cost than other solutions--often on existing hardware. In short, NetDevice NAS solves the storage problem. "With Novell's storage appliance, we have the ability to dramatically increase our storage capacity at a much lower cost than we could have otherwise," said Mark Clarridge, computer protection program manager for Ames Laboratory US Department of Energy. "We can almost instantly install a server when and where it's needed with native file access for our heterogeneous computing environment. The browser-based management utility offers administrators independence from traditional platform-specific utilities."

## Who Uses NetDevice NAS?

NetDevice NAS is valuable for organizations of all types and sizes. It is particularly suited for branch offices and workgroups where little or no IT support is available. Consider the following remote/branch office scenario. An office of 10-12 people are networked with a common server that provides network printing, storage, and houses several Web-based applications that are used by everyone including outside partners. One Web application allows customers to upload media files that can be shared with other partners/customers. Since the availability of these files is integral to the success of the business, it is important that file uploads be accommodated and that access is continuous.

Assuming storage space on the main server will soon be depleted, a NetDevice NAS can be plugged in which significantly expands the available storage space. With a simple change in IP address or directory location, the uploaded files can be redirected to the new storage device. The main server was never downed; access control lists were easily extended to include the new configuration; management effort was minimized; and the life of the existing solution is significantly extended.

Branch or remote offices that are part of larger networks can also benefit from seamlessly integrated storage. Access control lists (ACLs) administered through eDirectory over wide area connections provide local and remote users with access to additional storage. NetDevice NAS units can be used to house growing databases, archives, additional Web content, multimedia files, etc. at the branch office and still be administered centrally.

Enterprise organizations can "drop-in" NAS devices to compliment an existing storage area network (SAN). Using eDirectory, storage subsystems can be grouped for management and access and using other solutions from Novell such as ZENWorks, data and software can automatically be distributed to other locations such as remote or branch offices.

NetDevice NAS requires no "rip and replace" or retrofitting to integrate with mixed Novell environments. Files stored on NAS can be accessed through existing Novell clients using NCP and can co-exist with NetWare 3 and NetWare 4. In fact, NetDevice can be a critical part of a company's migration strategy with the ability to transfer files from older file systems to a newer one that is eDirectory enabled.

While NetDevice integrates extremely well into existing Novell environments, it also provides unmatched value for non-Novell and mixed environments using Windows, UNIX, Linux and soon Macintosh. There is no requirement for any other NetWare servers in a network configuration. Access control for files can be handled through CIFS (Windows NT), NFS (UNIX/Linux), HTTP, WebDAV or AFP (Macintosh). Or, administrators can use the instance of eDirectory included with NetDevice NAS as a global directory to manage access control for other systems.

Organization Type	Environment	NetDevice NAS Implementation
Branch Office	Little (if any) IT support; may need updated data from central office stored	NetDevice NAS installed at branch offices provides additional volumes for local storage. Networked with central office, files

	locally; need for integrated access control; need for additional local storage.	can be transferred back and forth. Using eDirectory, access can be controlled locally or from the central office. Information can be synchronized (either way) at regular intervals (price lists, inventory levels, project status, etc.)
Small Business	Single or minimal servers, often tasked with multiple services; same requirements for additional storage; minimal IT support; need for integrated access control.	Storage appliance added to increase capacity for any purpose. Plug in, turn on and extra storage is available for archive, housing applications, user space, etc. Simple installation by integrator or employee. Re-purpose existing hardware as storage to save costs.
Department/Work group	Frequent need for storage to accommodate special projects (databases, Web content, multimedia files, etc.) or new mergers and acquisitions.	Use as incremental storage--drop in NAS modules whenever disk usage exceeds acceptable maximums. Integrates with existing systems and management.
Enterprise	Wide spectrum of storage needs including: archive, special projects, additional department/workgroup storage, eBusiness storage for partner-customer-supplier information, remote/branch offices, personal use, etc.	Multiple situations for implementation--incremental storage to compliment SANs, provision remote/branch offices, accommodate eBusiness partners/customers/suppliers, etc. All resources are managed centrally for access even though they may be physically distributed throughout the enterprise.

## What can I do with NetDevice?

With NetDevice NAS, extra storage is like notepads--you have several of them laying around. They are handy to store information and when you need one, you pick it up and use it--with NetDevice, you plug it in and turn it on. The uses for extra plug-in storage are unlimited but here are a few possibilities:

Activity	Example
Archiving/Backup	With the falling price of disk space, online storage of self-contained devices can be less expensive than tape or cartridge backups and much easier to automate.
Application Storage	Rather than have application content for several applications on one server, this content can be spread across several separate storage devices. This decreases the chances of high growth application content crowding out other application data. All database content can be contained on one device, e-mail content on another, Web application content on another, etc.
Multimedia Repositories	With the increase in available bandwidth, local multimedia collections of music, video and graphics are exploding. NetDevice NAS is an excellent snap-in solution to provide extra storage space for departments or individuals.
Personal Storage	Personal libraries of applications, games, multimedia, and specialized content can easily fill gigabytes of space. NetDevice NAS is the easy answer to providing mass storage for power users.
Storage Upgrades	The most common use for NetDevice NAS is in simple expansion of storage space without the need to install additional hard drives or servers. As data needs gradually increase, drop in NetDevice NAS to accommodate growth of e-mail, databases, document libraries, etc.
Branch Office Update	Place NetDevice NAS at branch offices to synchronize data from central office or vice versa. Keep global information updated and available locally for faster access. Also use NetDevice NAS for add-on local storage in the branch office.

## Benefits

In many environments where IT administrators are constantly working to tame the storage beast, the value of NetDevice NAS is obvious. The overriding benefits are convenience and cost with other advantages as follows:

<b>Scalability</b>	Incrementally add to existing infrastructures to enable unlimited scaling. Snap-in storage whenever and wherever it is needed, while still retaining tight access control and manageability.
<b>Reduce Costs</b>	By providing scalable storage to any network client, wired or wireless, and delivering centralized control of enterprise storage, the Novell NetDevice NAS reduces storage management costs. Staff training requirements are reduced as IT is working with familiar hardware. In many cases existing hardware can be redeployed as high performing NAS appliances at minimal expense.
<b>Reliability</b>	Reliability benefits exist on several levels. Inexpensive storage can be used as backup and archive for data retrieval in the event of failure or disaster. NetDevice NAS is also built on NetWare/eDirectory technology, which has proven reliable with mission critical applications in many of the world's largest enterprises.
<b>Integration</b>	NetDevice NAS integrates seamlessly into existing, mixed environments including NT, UNIX, Linux, NetWare and Macintosh allowing clients or files from these systems to operate transparently. NetDevice also integrates with existing Novell eDirectory implementations allowing storage appliances to be managed and controlled using the same interface and policies as other network resources.
<b>Hardware Independence</b>	NetDevice NAS is the only soft-appliance solution that allows organizations to deploy network attached storage space using hardware from their vendor of choice--Compaq or Dell shops for example, are not required to introduce 'alien' hardware into their environment. This lets organization operate within existing purchasing policies and leverage contracts with established hardware suppliers. IT can also leverage existing hardware investments by re-deploying a NetDevice NAS storage appliance using existing equipment.
<b>Instant Storage</b>	Simplifies the addition and management of extra storage. NetDevice NAS is modular, snap-in, pre-configured and can be online in 20 minutes.
<b>Storage Consolidation</b>	Aggregate multiple, disparate storage repositories into a single, or a fewer number of storage devices. Advantages include less hardware, simplified management, fewer security risks--all contributing to lower costs.
<b>Secure Assets</b>	Storage access is securely protected with encrypted transmissions using RSA and SSL. Strong authentication through eDirectory is required for file access. Novell security is proven reliable for mission-critical data worldwide.

<b>Branch Office Productivity</b>	Provide branch offices access to all required information without performance barriers. Volumes of data can be made available in remote offices for data mining, research, and application operations.
<b>Simplified Purchasing</b>	Buy incrementally as needs arise from existing hardware suppliers. Storage is snap-in, self contained, and fully pre-configured for simple, additive procurement.
<b>Accessibility</b>	Access data in any standard file format, anytime, from any place using the client and protocol of choice.

## NetDevice Features

Novell NetDevice NAS includes an extensive list of features for storage and storage management. As a turnkey software appliance, NetDevice NAS provides far more functionality than any other solution in its class. A summary list of features is as follows:

Feature	Benefit
<b>Scalability</b>	
1 GB to 8 TB	NetDevice NAS accommodates storage needs from a few gigabytes to 8 terabytes on a single volume.
High Performance	NetDevice provides access, management and security for any scale of operation. Modular nature and eDirectory management enable additive scaling without adverse impact. Manage an entire fleet of NetDevice NAS appliances as easily as you manage a few.
Incremental Add	NetDevice NAS is built using the high performance NetWare kernel technology that excels in processing network data packets. Storage access performance is equal to NCP for NetWare. Add disks and grow volumes without taking devices offline. eDirectory also accommodates incremental adds with minimal impact on management. NAS storage automatically inherits same access policies as other devices in the tree.
<b>Fault Tolerance</b>	
Diskless Boot	In the event of power failure or disaster, NetDevice automatically resumes services when power is restored.
Journaling File System	File system is protected with scanning and cleanup in the event of failure and recovery. Even the largest file systems mount in a matter of seconds.
Redundancy	Depending on the hardware used, redundant power supplies and fans with Redundant Arrays of Inexpensive Disks (RAID) may be implemented.
Hot-swappable Hard Disks	If hardware supports, NetDevice NAS allows hot-swappable hard disks for RAID and easy disk replacement
Disk Mirroring	NAS works with any hardware subsystem configuration including mirroring.
<b>Authentication</b>	
Windows NT	Authenticate using Windows Domain Controllers (NT)
Windows Workgroups	Set up user level authentication with password through Windows file sharing
UNIX Network Information Services (NIS)	Authenticate using Linux/UNIX NIS
Novell eDirectory	Use eDirectory included with NetDevice NAS or seamlessly integrate with existing LDAP directory for authentication
<b>Access Control</b>	
Access Control Lists	Access control lists (ACLs) controlled using any of the following protocols:

	<ul style="list-style-type: none"> <li>• User Level</li> <li>• NT/CIFS</li> <li>• NFS</li> <li>• HTTP</li> <li>• WebDAV</li> <li>• NCP</li> <li>• AFP</li> </ul>
<b>Utilities</b>	
Backup	The NetDevice NAS appliance can be backed up using solutions from all major SMS compliant backup vendors such as Veritas, Computer Associates, Legato, etc.
<b>Management</b>	
Browser-based	Manage NetDevice NAS completely from any browser-based workstation. Add users/groups, modify configurations, start/stop/reset server, and more. Accessible from any point on the Internet
Telnet - Text-based Console	If needed, all configuration options are available through command line interface at the appliance console.
FTP	FTP a configuration file to the server and apply the settings
Volume Disk Quotas	Manage expanding storage with volume disk quotas
User Disk Quotas	Control space available to users through user disk quotas
Directory Disk Quotas	Control the amount of disk space that can be consumed under a directory
Remote Management/Monitoring	Manage remotely through eDirectory and Web interfaces
Soft Chip Updates	Subscribe to periodic, Internet-based software updates. Ensures that latest features and upgrades are always available
Template Configuration	Export your NAS configuration to a text file to create a template that can be used to automatically configure other NetDevice NAS deployments
SNMP Support	Monitor and log server events using standard SNMP console or reporting
<b>Security</b>	
Secure Management Port	Encrypted management sessions using SSL, access is through specified port
ACLs	Access controlled through granular ACLs and encrypted data access methods
Encrypted Data Storage	Data encrypted using strong RSA data encryption
Encrypted Data Access	Transmitted data also encrypted
Access Logs	Access logs generated to track activity levels and monitor possible intrusion
<b>Compatibility</b>	
NCP Support	NetWare Core Protocol support integrates seamlessly with existing Novell environments
Novell eDirectory	NetDevice NAS merges seamlessly into existing directory trees

## How NetDevice NAS Works

The NetDevice NAS concept is simple. It is a single function device built using core software components taken from the industry's leading network services solution--NetWare. While NetWare is a full-function, comprehensive network infrastructure complete with operating system, services and applications, NetDevice NAS takes a few key NetWare components and streamlines them to provide a powerful storage solution then adds to it the simplified management and deployment expected in an appliance.

The key components included with NetDevice NAS include:

- NetWare 5.1 kernel OS - NetWare's long term success is due to the fact that the operating system is high performance with excellent levels of reliability. As a foundation for NetDevice, NetWare provides high performance with minimal hardware requirements and incorporates all of the file control mechanisms and packet level security that is required for a secure storage system.
- Novell eDirectory - eDirectory provides a framework for management and access control. eDirectory functionality is included with NetDevice so that it can provide complete directory services if needed -or- integrate with an existing directory. eDirectory accommodates access control for multiple file systems and access from various clients.
- NSS File System - Novell Storage System (NSS) is a powerful, high-performance storage and access system that holds billions of files on a single volume.
- Native File Protocols - NCP, CIFS, NFS, HTTP, HTTPS, AFP, WebDAV all have native access to the file system for transparent access to storage regardless of the client platform.

Deploying NetDevice NAS is simple. Place the NetDevice NAS CD into a bootable CD ROM drive of a certified system. When the system boots from the NetDevice NAS CD it will automatically be imaged with the NetDevice NAS soft appliance software. Hardware such as disk controllers and network cards will automatically be detected and configured. After the imaging process completes, simply login to the system, assign it appropriate IP addresses and turn on the file access protocols desired. Optionally, the entire configuration can be automated by inserting a floppy into the system during the imaging process, containing the complete configuration information including IP addresses, protocols, shares, etc., that allows the system to configure itself.

Novell is working with key hardware partners such as Compaq, Dell, IBM, HP and other vendors to certify popular systems to run Novell NetDevice NAS. To see up-to-date information on certified systems go to <http://developer.novell.com/nss> and search for Novell NetDevice NAS-certified hardware.

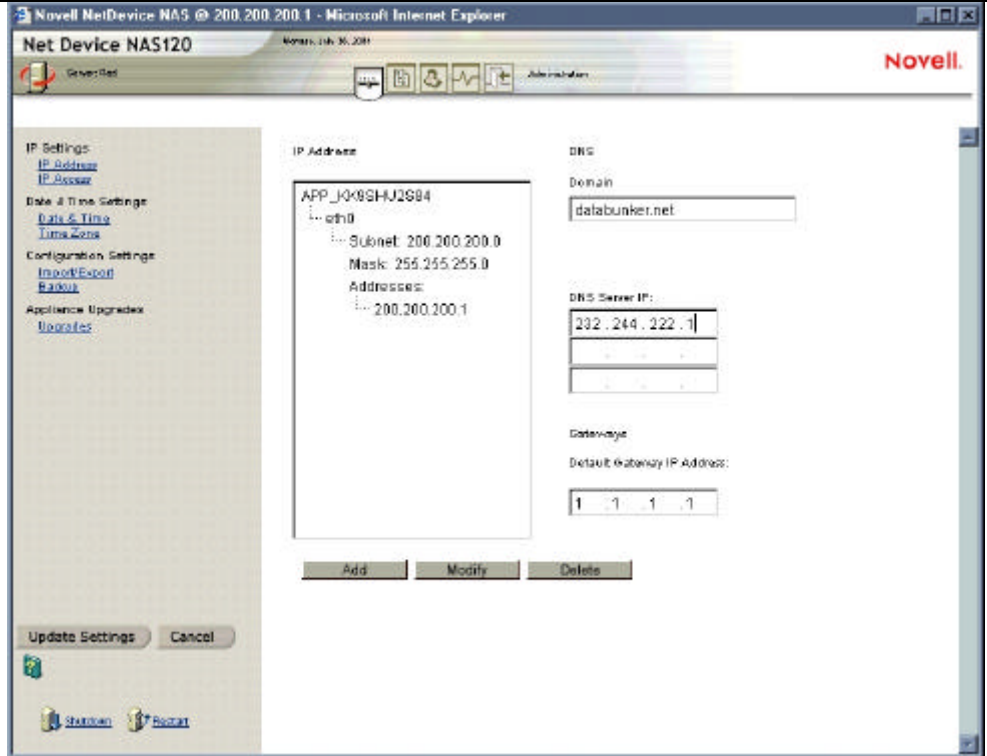
## Installation Hints

Deploying a scalable storage system into an existing environment is a breeze with Novell NetDevice NAS. NetDevice is hardware-independent meaning all that is required is a minimally configured set of hardware with CPU, CD-ROM drive, hard drive and network adapter. During the installation process, a boot image is automatically created on the hard drive and all NetDevice software is copied from the install CD. NetDevice software is initiated and available for management and administration from any connected standard Web browser. All operations, management, monitoring, and user access can be controlled from either a Web browser or a command-line interface on the device console.

Here's how a sample install would be performed along with several of the management options available once NetDevice is operational:

Installation Step	Description
<b>Set up Hardware</b>	Assemble hardware required (see minimum configurations in "Requirements" section) for instance of NetDevice including: CPU, hard drive, CD-ROM, and network adapter. For initial installations a keyboard and monitor are helpful.
<b>Install NetDevice Install CD</b>	Insert the NetDevice Install CD in the CD-ROM drive. Make sure that BIOS is set with the CD-ROM as the first boot device or one of the boot devices.
<b>Install NetDevice Image</b>	Power up the target storage server. The NetDevice Install will create a DOS boot partition, automatically identify and load drivers for the disk drive and network adapter, and then copy a configured image of the software to the storage server's hard drive.
<b>Log In</b>	Once the install is complete, the console prompt will appear on the screen. <b>NAS</b> > To login for the first time, enter: > <b>login supervisor</b> <return> At the password prompt, enter <return> (the default is no password).
<b>Set IP Addresses</b>	To set the IP addresses for the first time, type in <b>SETUP</b> <return> A dialog will appear asking for IP Address, Subnet Mask, and Gateway. Enter these addresses based on your IP addressing scheme. To complete the setup process, type in <b>COMMIT</b> <return> to save changes. From this point, it will be much easier to use the browser interface to manage NetDevice.
<b>Access NetDevice Manager</b>	To access NetDevice Manager from a browser, enter the IP address you selected for the device, complete with the following added at the beginning and the end: <a href="https://###.###.###.###:2222">HTTPS://###.###.###.###:2222</a> <b>NOTE:</b> The "S" is required in the HTTPS header and the port number, 2222, is also required. Without these additions to the address, the management port will not be located for access.

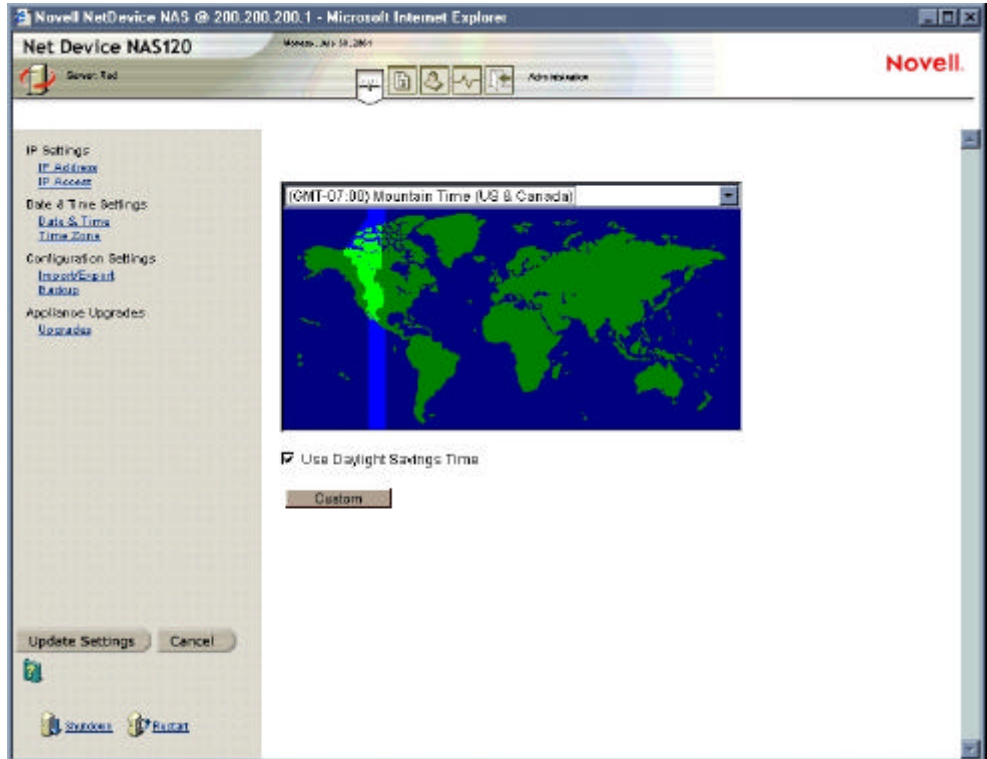
### Modify IP Settings



If desired, IP settings can be changed or modified to include domain names, DNS servers or gateways.

### Set Date and Time

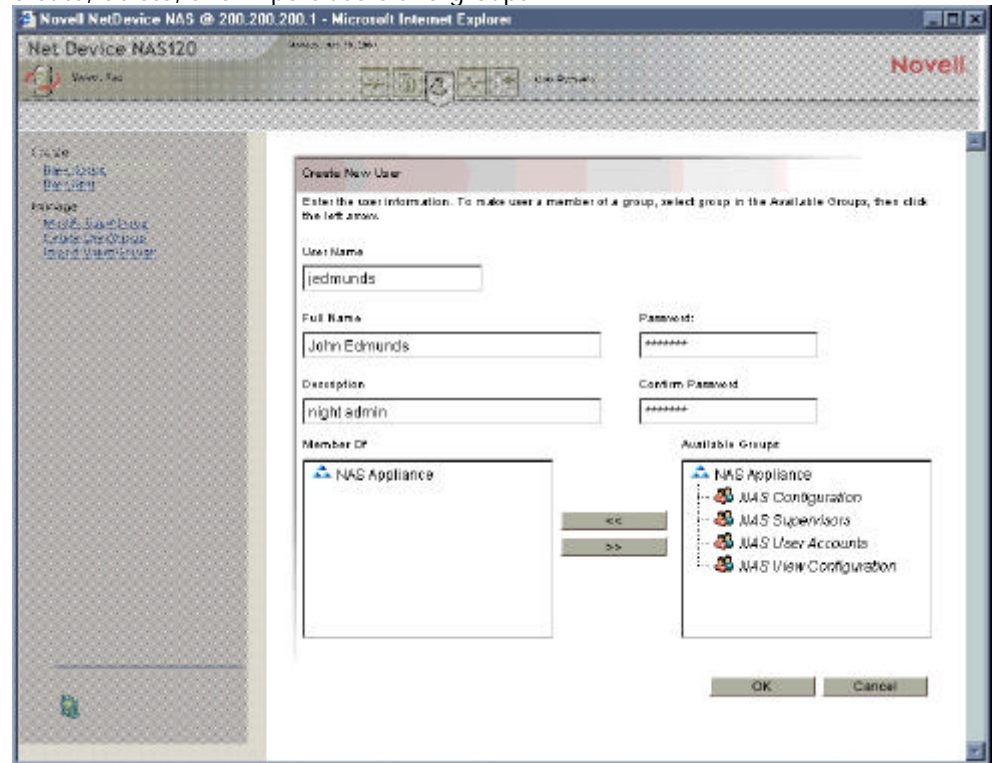
NetDevice can be configured to obtain time from other servers in the network. The date, time and time zone can also be set.



### Create/Manager Users

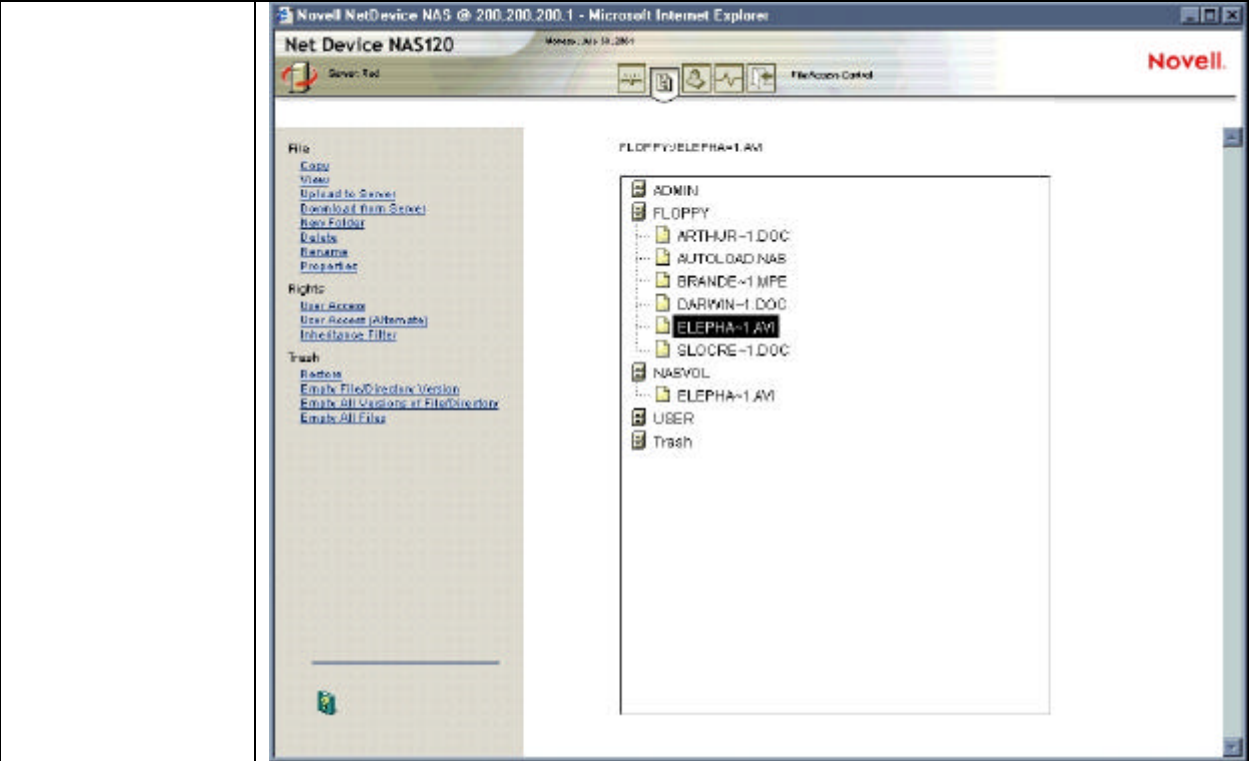
NetDevice can obtain user information from an existing eDirectory on the network -or- users and groups can be authorized for access to storage resources using the

instance of eDirectory that ships with NetDevice. Users and groups can be managed through the User Accounts option. This option allows administrators to create, delete, and import users and groups.



**Manage Files**

The NetDevice interface allows you to transfer, delete, and rename files on the NAS device. All storage volumes configured on the device will be available including the floppy drive. The default name for the volume that was created on the hard drive is NASVOL.



**Monitoring and Diagnostics**

Several monitoring and diagnostic functions are available for viewing through the browser. Statistics are available for memory, CPU utilization, adapters, and IP trouble shooting.

**Other**

A complete set of commands are available at the NetDevice console for administration. To see a complete list, type in HELP at the console prompt (>). Some of the more common commands are:

- copy - copies files
- delete - deletes files
- dir - produces a directory list of files
- identity - displays configuration information
- login - login as a particular user
- logout - logs off so no unauthorized access is permitted
- mkdir - creates a directory
- ping - sends a query to another IP device and listens for response
- rename - rename a file or directory
- restart - shuts down and restarts the NetDevice
- setup - initiates setup query for IP address information
- stats - provides a menu for selected device statistics
- shutdown - shuts down NetDevice

## Comparative Information

At this point, Novell NetDevice is the only NAS appliance in its class for the following reasons:

- It is the only product that supports not only the Novell eDirectory environment, but also Windows, UNIX, Linux, and Web-based clients.
- NetDevice NAS is also the first "soft appliance" storage solution allowing customers to deploy the appliance throughout an entire organization on the hardware of their choice--hardware independence.

## About Novell

### **About Novell**

Novell, Inc. (NASDAQ: NOVL), is a leader in eBusiness solutions and Net services software designed to secure and power the networked world. Novell and its subsidiary, Cambridge Technology Partners, help organizations solve complex business challenges, simplify their systems and processes, and capture new opportunities with one Net solutions. Novell provides worldwide channel, consulting, education and developer programs to support its offerings.

For information on Novell's complete range of products and services, contact Novell's Customer Response Center at (888) 321-4CRC (4272), or visit Novell's Web site at <http://www.novell.com>. Information on eBusiness and e-integration solutions from Cambridge Technology Partners can be accessed at <http://www.ctp.com>. Press may access Novell announcements and company information on the World Wide Web at <http://www.novell.com/pressroom>.

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## Glossary

**eDirectory** - Novell's latest generation directory service designed to accommodate eBusinesses and the Internet.

**HTML** - HyperText Markup Language, the document format used on the World Wide Web.

**Identity** - Identities include all of the information that define an individual's profile. This information at a minimum includes user ID and password. It can be extended to include address and contact information as well as a comprehensive collection of access rights and authorities.

**LDAP** - Lightweight Directory Access Protocol, a standards based protocol used to access directory information. LDAP is a simplified version of the DAP protocol, which is used to gain access to X.500 directories.

**NAS** - Network Attached Storage, a specialized, network attached server that provides storage space.

**NDS** - Novell Directory Service, the industry's first true directory service introduced in 1993.

**Policies** - the enforcement of rules and regulations associated with activities, events, and processes.

**Policy Engine** - The NDS enabled mechanism that enforces established rules and regulations.

**Replica** - Replicas are 'copies' of a directory or portions of a directory. Replicas are strategically distributed reduce latency in directory access and lookup.

**SAN** - Storage Area Network, a high-speed networking architecture used to connect processors and I/O subsystems together.

**SSP** - Storage Service Provider, a hosted service that provides data storage services on a pay per use basis.

**SSL** - Secure Socket Layer is the leading security protocol on the Internet. It enables the establishment of a secure connection between the browser and a Web server through the use of public and secret keys.

**XML** - Extensible Markup Language, an open standard for describing data and defining data elements on a Web page and business-to-business documents.