Novell
NetWare® 6.5

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February 28, 2005

NOVELL REMOTE MANAGER
ADMINISTRATION GUIDE FOR NETWARE®

Novell®

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Contents

About This Guide

This guide describes how to access and use Novell® Remote Manager. It is intended for network administrators and includes the following information:

Documentation Updates

The latest version of *NetWare 6.5 Novell Remote Manager for NetWare Administration Guide* is available at the Novell documentation Web site (http://www.novell.com/documentation/lg/nw65/remotemgr/data/a7hjvxo.html).

Documentation Conventions

In this documentation, a greater-than symbol (>) is used to separate actions within a step and items in a cross-reference path.

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When a single pathname can be written with a backslash for some platforms or a forward slash for other platforms, the pathname is presented with a backslash. Users of platforms that require a forward slash, such as Linux* and UNIX*, should use forward slashes as required by your software.

User Comments

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please use the User Comment feature at the bottom of each page of the online documentation, or go to www.novell.com/documentation/feedback.html and enter your comments there.

1 Overview for Novell Remote Manager for NetWare

Novell® Remote Manager for NetWare® (portal.nlm) is a browser-based utility that you can use to manage one or more NetWare servers from a remote location.

Novell Remote Manager provides all the functionality of Monitor, along with some functionality of other utilities available at the server console; however, Novell Remote Manager makes this functionality available from a Web browser. You can use Novell Remote Manager to monitor your server's health, change the configuration of your server, or perform diagnostic and debugging tasks.

The advantages of using Novell Remote Manager rather than Monitor or RConsolej for server management are:

- It accesses information much more quickly than other remote management tools.
- It is installed by default on all NetWare servers and requires no special configuration for most operations.
- It does not require a special client.
- It provides a graphical interface that makes interpreting diagnostic information much more comprehensible and easier to manage.
- It provides added functionality that is not available in the other management utilities.

This section explains the following:

Benefits of Using Novell Remote Manager for NetWare

For many organizations, it's not often that a technician is physically located at the server when it needs attention. Servers are frequently placed in remote or distributed locations and, in the case of service providers, at many different companies. The ability to centrally monitor, diagnose, and repair (or avoid) server problems is a significant advantage. It is also a major benefit to be able to provide technical service from any location in the world across the Internet.

Novell Remote Manager provides IT staff and service providers the ability to monitor and control a complete selection of server controls and functions through a standard Web browser.

Begin Refresh | Page Refresh Rate 10 seconds

Mail Notification Configuration Threshold Configuration Statistic Trend Graphs

Server Health Table

Include	Notify	Info	Description	Status	Current	Peak	Max
☑	☐	ⓘ	Work To Do Response Time	●	0	0	0
☑	☐	ⓘ	Allocated Server Processes	●	10	10 *	750
☑	☐	ⓘ	Available Server Processes	●	9	7 *	750
☑	☐	ⓘ	Abended Thread Count	●	0	N/A	N/A
☑	☐	ⓘ	CPU Utilization-0	●	1	100	100
☑	☐	ⓘ	Failed Logins Per Hour	●	0	0	N/A
☑	☐	ⓘ	Connection Usage	●	15	17	N/A
☑	☐	ⓘ	Available Memory	●	319MB	248MB *	511MB
☑	☐	ⓘ	Available Logical Space	●	2,507MB	2,497MB *	3,072MB
☑	☐	ⓘ	Virtual Memory Performance	●	N/A	N/A	N/A
☑	☐	ⓘ	Cache Performance	●	N/A	N/A	N/A
☑	☐	ⓘ	DS Status	●	LOADED/OPEN	N/A	N/A
☑	☐	ⓘ	DS Thread Usage	●	0	0	375
☑	☐	ⓘ	Packet Receive Buffers	●	2000	2000 *	10000
☑	☐	ⓘ	Available ECB's	●	1974	1963 *	10000
☑	☐	ⓘ	LAN Traffic	●	6	2742	N/A
☑	☐	ⓘ	Vol Sys Available Disk Space	●	2,022MB	1,934MB *	3,934MB
☑	☐	ⓘ	Available Disk Space	●	2,759MB	2,759MB *	3,170MB
☑	☐	ⓘ	Available Directory Entries	●	14,584	14,584 *	30,968
☑	☐	ⓘ	Disk Throughput	●	2	3144	N/A
☑	☐	ⓘ	Support Pack Status	●	Not Needed	N/A	N/A
☑	☐	ⓘ	Timesync Status	●	LOADED/IN SYNC	N/A	N/A
☑	☐	ⓘ	Licensing Information	●	3	3	N/A

*Low Value

The management power and flexibility now available simplifies network administration and allows fewer staff to effectively manage more resources. With Novell Remote Manager you can:

- Securely access and manage a NetWare server from any location. With proper login credentials and Internet access, administrators can control servers from any location.

- Group servers for collective management, allowing you to manage multiple servers through the same interface and application.

- Quickly locate and assess problems. An intuitive graphical user interface provides a control dashboard with indicators for server health and status.

- Manage servers comprehensively. Novell Remote Manager provides complete control for managing NetWare servers, volumes, and applications.

While using Novell Remote Manager, you can perform the following major tasks:

- Monitor and manage your server's health:

  - Monitoring the health status of one or more servers.

  - Building a group of servers that you can perform group operations on.

  - Accessing Novell eDirectory™ health and troubleshooting tools.

  - Accessing server and configuration logs.

- Configure your server:

  - Managing disk partitions.

  - Accessing any server console screen.

- Viewing information about all hardware adapters, hardware resources, and processor data.
- Uploading and replacing NLM™ programs, LAN drivers, or disk drivers.
- Monitoring system disk space and memory resources.
- Accessing files on volumes and DOS partitions.
- Managing server connections.
- Configuring Set parameters.
- Setting schedules for running console commands.
- Shutting down, restarting, or resetting a server.
- Troubleshoot server problems:
  - Finding CPU hogs.
  - Running and viewing inventory reports for one or more servers.
  - Finding high memory users.
  - Tracing abend sources.
  - Locating server process hogs.
  - Finding disk space hogs.
  - Seeing who is using an open file.

When you have other products and utilities installed and loaded on the server, you can perform additional tasks such as the following:

- Managing and monitoring Novell Cluster Services™
- Monitoring IPP print service health
- Managing IP Addresses
- Monitoring Novell licenses

Other Management Utilities

Novell Remote Manager does not replace other management utilities that are available in NetWare. For an understanding of which utilities are best used for the task you need to perform, see *NetWare 6.5 Administration Overview*.

What's Next

Use the following information to help you access and use Novell Remote Manager.

For Information About	See the Section
What's new in Novell Remote Manager	"What's New" on page 15
Accessing and understanding the layout of Novell Remote Manager	"Accessing Novell Remote Manager for NetWare" on page 21

For Information About	See the Section
Configuring Novell Remote Manager	"Changing the Configuration Views and Settings" on page 27
Using Novell Remote Manager to monitor and manage your NetWare servers	◆ "Diagnosing Server Problems" on page 37 ◆ "Managing Servers" on page 51 ◆ "Managing Applications" on page 87 ◆ "Managing Novell eDirectory" on page 99 ◆ "Managing Server Hardware" on page 95 ◆ "Using Group and Group Operations" on page 101
Using Novell Remote Manager to troubleshoot specific problems on NetWare servers	"Troubleshooting Specific Problems" on page 115

2 What's New

This section includes the features that were updated in Novell® Remote Manager since its release in NetWare® 6.0, including:

- NetWare 6.5 Support Pack 3 Release (page 15)
- NetWare 6.5 Support Pack 2 Release (page 16)
- NetWare 6.5 Support Pack 1 Release (page 16)
- Initial NetWare 6.5 Release (page 18)

NetWare 6.5 Support Pack 3 Release

The following features have been added or changed in NetWare 6.5 Support Pack 3:

Area of Service	Functionality	For More Information, see
Manage Server, Volumes	Create a logical volume to store core dumps.	"Creating a Logical Volume for Saving Core Dumps" on page 63.
Manage Server, Connections	Select and clear multiple specific connections.	"Clearing Specific Connections" on page 75.
Configure icon, Novell Remote Manager Configuration Options	Allow the administrator to give the SDEBUG account additional access to the server.	"Controlling the Debug Account" on page 30
Server Management, View Memory Config	Changed complete memory chart and graph to show complete memory usage and mapping.	"Viewing Memory Configurations" on page 81
Use Group Operations	Changed procedures for building, saving, changing, and selecting groups.	Chapter 10, "Using Group and Group Operations," on page 101
Overall	Name of the utility changed to Novell Remote Manager.	Not applicable

NetWare 6.5 Support Pack 2 Release

The following features have been added or changed in NetWare 6.5 Support Pack 2:

Area of Service	Functionality	For More Information, see
Configure icon, Novell Remote Manager Configuration Options	Removed SEDebug user's ability to clear connections.	"Controlling the Debug Account" on page 30
Diagnose Server, Health Monitor	Added Logical Address Space usage as a key health indicator that can be tracked, notified about, set monitor thresholds for, and review trends.	"Monitoring Overall Server Health or the Health of a Specific Item" on page 37
Manage Server, Volumes	Added ability to find and delete empty subdirectories View and perform actions on all devices that are registered as a local device with a FAT partition that has media loaded	"Searching for and Deleting Empty Subdirectories" on page 53. "Accessing the Server's Local Partitions and Performing Actions on Them" on page 57.
Manage Server, Partition Disks	Added support for encrypted NSS volume creation	"Creating a Volume and Mounting a Volume" on page 67
Manage Server, Connections	Added the ability to identify unlicensed connections the same as Monitor does.	"Viewing Connection Information" on page 73.
Server Management, View Memory Config	Added Logical Address Space usage chart and graph. Added the Tune Logical Address Space link. This is a tool that evaluates whether memory parameters need to change to optimize server memory usage and provides the path to make the changes.	"Viewing Memory Configurations" on page 81
Manage Applications, NetWare Registry	Locate a key or value in the NetWare registry.	"Viewing and Managing the NetWare Registry" on page 91

NetWare 6.5 Support Pack 1 Release

The following features have been added or changed in NetWare 6.5 Support Pack 1:

Area of Service	Functionality	For More Information, see
Access	Contextless login	"Changing the Default eDirectory Login Contexts Option" on page 34

Area of Service	Functionality	For More Information, see
Diagnose Server, Health Monitor	Server reports are sent as an attachment rather than in the body of the e-mail message.	"Configuring E-Mail Notification for Server Health Status" on page 42
	Disk Space for the volume sys: entry that shows statistics separate from the rest of the server volumes.	"Monitoring Overall Server Health or the Health of a Specific Item" on page 37
	The following health checks to the default health monitor:	
	◆ DS Status	
	◆ DS Thread Usage	
	◆ LAN Traffic	
	◆ Cache Performance	
	◆ Virtual Memory Performance	
	◆ Connection Usage	
	◆ Disk Throughput	
Diagnose Server, Report / Logs	View and edit the files that you normally edit for changing the configuration of the server from the Reports/Log files page under the Configuration File Management heading.	"Changing Server Configuration Files" on page 49
Manage Server, Volumes	When a USB storage device is plugged or unplugged at the server, the information is displayed on the Volume Management page without unloading and reloading Novell Remote Manager.	"Accessing and Managing Server Volumes and Partitions" on page 51
	The layout and efficiency of the Volume Information displayed on this page is more compact and easier to use.	"Viewing Details of Directories or Files and Performing Specific Actions on Them" on page 52
	You can edit text files on local partitions. When you save files, you can save them with an ANSI or UTF-8 encoding.	"Monitoring Disk Space Usage" on page 60
	For volume disk space usage, you can sort the disk space usage information by clicking the headings on the disk space usage table.	"Salvaging Deleted Files" on page 62
	Specify user space restrictions.	
	Salvage deleted files.	
Manage Server, Console Screens	Access each dynamic server screen as well as each HTML screen.	"Running the Server Console Screens from the Dynamic Java Applet Pages" on page 70
Manage Server, Connections	Sort connections from least to most active	"Viewing Connection Information" on page 73
	Connection information includes licensed and peak license connections	
	Clear connections and view security equivalences	

Area of Service	Functionality	For More Information, see
Manage Applications, List Modules	Modules with an asterisk have no dependent modules	"Viewing and Managing Loaded NLM Programs" on page 87
	Search path information reflects search order	"Viewing the Search Path for Loading Modules or .Ncf Files" on page 89
Manage Hardware, Connections	Hardware information including node address, driver name, version and date, hardware settings, and board name	"Viewing Hardware Resource Information" on page 97

Initial NetWare 6.5 Release

In this release, we updated the interface for Novell Remote Manager to make it look and work like other utilities in NetWare 6.5.

The following features have been added or changed in this release:

Area of Service	Functionality	For More Information, see
General	Access other network and server management tools. If iManager is installed, configured, and running on the server, you can access it quickly by clicking the iManager icon in the Header frame. The Welcome to NetWare 6.5 Administration page has links to other management tools accessible from a browser. You can access this page by clicking the Admin Welcome page icon in the header frame.	"Understanding the Layout of Novell Remote Manager" on page 23.
Access	Allow limited access to your server for debugging by enabling a special debug user. Add a custom disclaimer or a text screen to be displayed and approved by the user before logging in to Novell Remote Manager. Log in to Novell Remote Manager using extended characters. Previous versions used the browser interface for the login. In NetWare 6.5, the login use an .html form that allows the use of extended characters.	"Controlling the Debug Account" on page 30 "Setting Up a Customized Disclaimer or Text Screen" on page 21
Configuring Novell Remote Manager	Change the rollover size of server health logs and HTTP logs and alarms or errors that are logged.	"Viewing the HTTP Log and Changing the HTTP Logging Controls" on page 32.

Area of Service	Functionality	For More Information, see
Diagnose Server, Health Monitor	Track failed logins in Server Health. Restore the default threshold values for the all operations listed or access a specific operation and restore the default values for the specific operation. Configure a trigger to delay the time before the health status changes the traffic light for the overall health monitor. Compare server up time. For servers running clusters, you can also track the volume up time.	"Monitoring Overall Server Health or the Health of a Specific Item" on page 37. "Configuring Health Thresholds" on page 40. "Server Durations Report" on page 110.
Diagnose Server, Reports/Logs	Run a trustee report for a volume	"Security Report" on page 46
Manage Server, Volumes	◆ Inventory volumes, directories, or subdirectories. ◆ Rename or delete files on the server's DOS partition. ◆ Modify dates and times on files or directories. ◆ Edit simple text files. ◆ Perform file searches at volume or subdirectory levels and perform additional file management functions. ◆ Perform text searches in subdirectories as well as current directories.	"Inventorying Volumes or Directories" on page 53. "Viewing Details of Directories or Files and Performing Specific Actions on Them" on page 52. "Searching for Files" on page 56. "Searching for Text in Files" on page 57.
Manage Server, Console Screens	Access all server screens including the Server GUI (X Server -- Graphical Console) is added.	"Accessing and Running the Server Console Screens" on page 69
Manage Server, Connections	Sort connection information by station, connection name, NCP™ requests, or login time.	"Sorting Connection Information" on page 74.
Manage Server, Schedule Tasks	Set active or inactive status on a scheduled task.	"Scheduling Tasks to Run at the Server" on page 78.
Manage Server, View Memory Config	The View Memory Config page now shows the physical and virtual memory usage, actual and peak usage statistics, and the pie chart matches the statistics shown. If the server has more than 4 GB of memory, you can also view a usage chart for Extended Memory.	"Viewing Memory Configurations" on page 81
Manage Applications, NetWare Registry	Remove Set parameters with no owner from the NetWare registry.	"Viewing and Managing the NetWare Registry" on page 91

Area of Service	Functionality	For More Information, see
Manage Applications, SLP	View Service Location Protocol (SLP) settings and reports. Rather than using the Display SLP commands at the server to view and manage your SLP configuration, you can view and manage it using the links on the Service Location Protocol page.	"Viewing SLP Information" on page 92
Manage Hardware, USB Devices	View USB and SMBIOS hardware information without touching the hardware.	"Viewing USB Device Information" on page 97 "Viewing SMBIOS Information" on page 97
Manage Hardware, Disk/LAN Adapters	Configure multiple network boards for the same SCSI disk channel. This allows the hardware to fail over to an additional network board in cases where a board fails.	"Viewing Storage and Network Adapter Information" on page 95
Manage eDirectory, Access Tree Walker	Locate and select a Novell eDirectory™ object by browsing to add the object as a Trustee rather than knowing and entering the object's full distinguished name in the User Name field	"Viewing and Changing Trustee Assignments and Inherited Rights Filters" on page 62
Use Group Operations, Configure or Select Group	Configure NetWare server groups and perform similar operations on them from one location or run reports to collect data from multiple servers. Compare server up time. For servers running clusters, you can also track the volume up time.	"Building and Configuring a Monitoring Group" on page 103 "Server Durations Report" on page 110.

3 Accessing Novell Remote Manager for NetWare

This section includes the following information:

System Requirements

- ❑ NetWare® 5.1 or later
- ❑ Mozilla* Firefox* 1.0, Microsoft* Internet Explorer 6 or later, NetWare Server browser, or Safari* 1.2 (limited functionality) (font text set at medium or smaller)
- ❑ The portal and httpstk NLM™ programs loaded on the server.

  These files are loaded by default in the autoexec.ncf file during all NetWare installations.

Setting Up a Customized Disclaimer or Text Screen

If you want users to view information specific to your company or server before they log in to Novell® Remote Manager, you can set up a custom disclaimer page or text screen that they are required to view before logging in to Novell Remote Manager.

To add a customized disclaimer or text screen:

1 Access the sys:\login\prtltxt.htm file.

2 Change the template text to a message of your choosing.

3 Rename the file to prtldisc.htm.

If you implement the custom disclaimer or text screen (sys:login\prtltxt.htm) for the Novell Remote Manager login, it does not display correctly in the server browser.

Logging In to Novell Remote Manager for NetWare

1 Open a Web browser at your workstation.

2 Point the browser to the URL of the server you want to manage by entering the following in the address (URL) field:

http://*server's_TCP/IP_address*:8008 or *other_configured_port_number*

For example:

http://172.16.123.11:8008

The default alternate port number is 8008. If you have changed this value on the Configuration page, make sure you specify the same value for the port number here.

If you have Domain Name Services (DNS) installed on your network for server name-to-IP address resolution, you can also enter the server's DNS name instead of the IP address.

If you want to access Novell Remote Manager from the outside of a firewall and the server's private address is unreachable except through Network Address Translation (NAT) or by proxy, do the following:

   ◆ Ensure that DNS is configured on your server.

   ◆ Change the load line for loading the httpstk.nlm to the following in the autoexec.ncf file:

   ```
   load httpstk.nlm /hostids:1 /SSL /keyfile:"SSL CertificateIP"
   ```

3 Accept the SSL certificate.

IMPORTANT: You must have SSL 2.0 and SSL 3.0 (where available) enabled in your browser. Otherwise, the browser displays an error indicating that the page cannot be displayed.

4 When the login dialog box appears, provide the required information.

To have access to all pages necessary to manage your server remotely, log in as a user with the Supervisor right to the Server object, usually user Admin or a user with rights equivalent to user Admin.

If the Set Bindery Context = line has been removed from the autoexec.ncf file or the default eDirectory context has not been changed, enter the full context of the user you are logging in as.

If you log in as a user without the Supervisor right to the Server object, you will see only pages that display the volumes, directories, and files that you have access to. You can view files (where you have read access) and upload files into directories where you have write access. You cannot see or do any of the management functions with the exception of being able to set a Simple Password for NFAP on the NFAP Simple Password Management page (if this is set up on the server). You can access this page by clicking the User Tools icon in the header frame and then clicking the NFAP Security link in the navigation frame.

After logging in, your session for Novell Remote Manager remains open until you close all your browser windows at that workstation.

Logging Out of Novell Remote Manager for NetWare

To log out of Novell Remote Manager, close all your browser windows at the workstation you logged in from.

Configuring the Server GUI for Access by Multiple Workstations

Accessing and running the Server GUI screens from the Console Screens link in Novell Remote Manager from more than one workstation requires you to configure the server GUI environment. The default configuration allows access from at least one workstation at a time.

To configure the Server GUI console for access through the Novell Remote Manager for more than one workstation:

1 At the GUI screen on the server console, click Novell > Settings > GUI Environment.

2 At the XSetup screen, click Advanced.

3 Select the Enable Remote GUI Session Access check box.

4 (Optional) Move the Maximum Simultaneous Viewers slider to a number greater than one.

   NOTE: You need to do this only if you want more than one workstation to access this screen at the same time.

5 Click Apply, then click OK.

6 Click OK to restart the GUI.

Understanding the Layout of Novell Remote Manager

The Web pages for Novell Remote Manager have three main frames: the header frame (top), the navigation frame (left), and the main content frame (right).
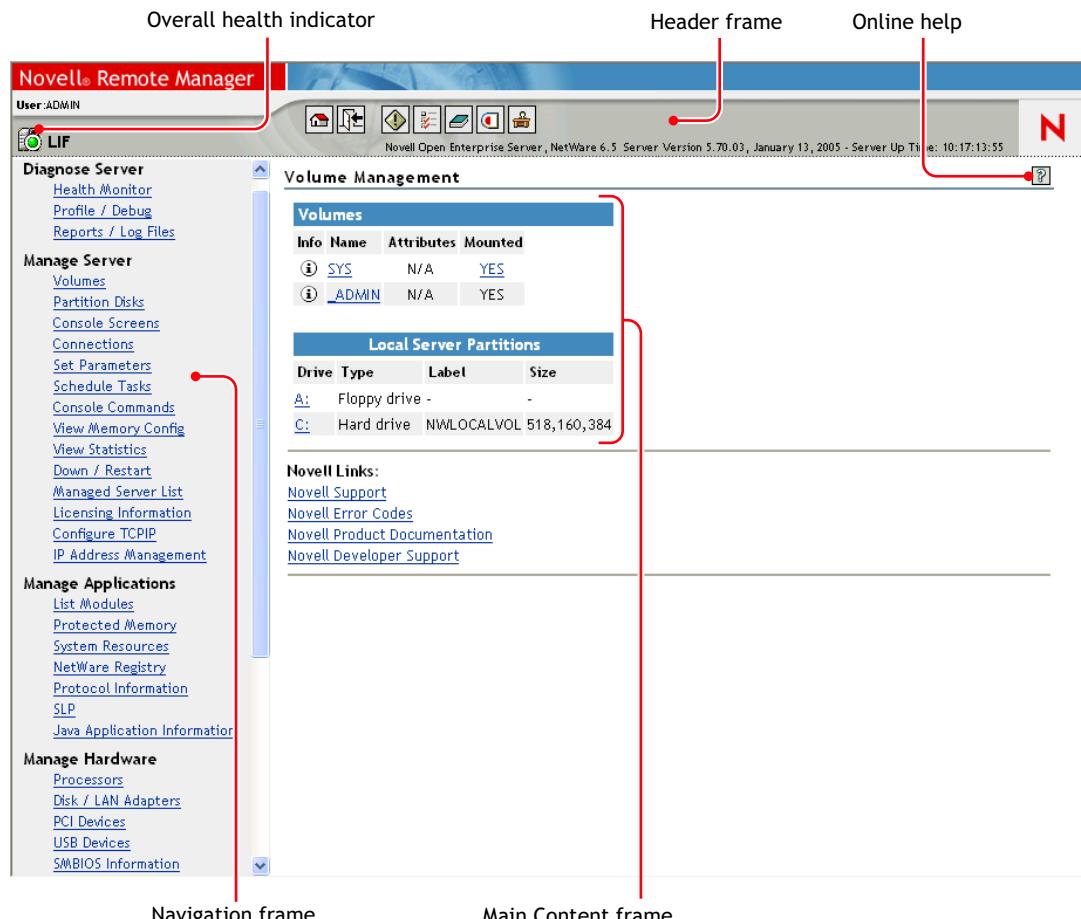
Header Frame

Contains general information about the server as well as links to the Volumes, Health Monitor, Configuration, Report/Log pages, and an Exit link to close the browser window. The Volumes page is considered the Home page.

The general information about the server includes:

- Server's overall health status: green (good), yellow (suspect), red (bad) or white with black X (no connection)
- Server's name
- Name of the user you are logged in to Novell Remote Manager as
- Version of NetWare running on the server and the amount of time the server has been running.

If iManager is installed, configured, and running on the server, you can access it quickly by clicking the iManager icon .

The Welcome to NetWare 6.5 Administration page has links to other management tools accessible from a browser. You can access this page by clicking the Admin Welcome Page icon .

Navigation Frame

Lists general tasks that you can do using Novell Remote Manager as well as links to specific pages for performing those tasks.The links in the navigation frame change depending on the NLM programs that are loaded on the server.

Main Content Frame

The information in this frame changes depending on which link you click in the header or navigation frame.

Overall Health Indicator

Shows the overall health for the server as determined by the selections on the Health Monitoring page. Clicking the Overall Server Health icon also takes you to the Health Monitoring page where you can view or configure the specifics of the server's health.

Online Help

When a Help icon appears in the upper right corner of a page in the main content frame, you can view help for the page that is displayed.

Accessing Online Help

Online help, which provides detailed information and instructions for using Novell Remote Manager features, is available for most management tasks and settings.

To access the online help, click the help icon on the upper-right portion of the page or next to the specific item link.

Accessing Novell Web Pages

Novell Links on the home page (Volume page) provide quick access to the following:

- Novell Support Web page (http://support.novell.com) links directly to the Novell support Web site, where you can get current server patch kits or updates, or locate troubleshooting information. You can also access this link by clicking the word *Novell* in the upper right portion of the header frame.

- Novell Error Codes documentation Web page (http://www.novell.com/documentation/lg/nwec/docui/index.html) links directly to the information about Novell Error Codes, including what they mean and possible causes and actions for them.

- Novell Product Documentation Web page (http://www.novell.com/documentation) links directly to the product documentation for any shipping Novell product.

- Novell Developer Support Web page (http://developer.novell.com/support) links directly to the Novell developer support Web site where you can find tips and suggestions beyond the basics for managing, troubleshooting, and diagnosing your server.

Customizing the Home Page

You can add text, graphics, and custom links to the home (Volumes) page for Novell Remote Manager by creating an HTML file named prtlannc.htm and placing it in the server's sys:\login directory. Any information in this file appears at the bottom of the home page.

Because this file is included in the HTML code that generates the front page, do *not* include the <body> and </body> tags.

This information is displayed only if you are logged in as a user with the Supervisor right to the Server object, usually user Admin or equivalent.

4 Changing the Configuration Views and Settings

Different options on the Novell® Remote Manager Configuration Options page let you manage some of the things you want exposed or hidden from view when you are using Novell Remote Manager.

This section discusses the following tasks:

- Changing Novell Remote Manager Configuration Options (page 29)
- Viewing the Health Log and Changing the Health Logging Controls (page 31)
- Viewing the HTTP Log and Changing the HTTP Logging Controls (page 32)
- Managing the HTTP Interface (page 33)
- Restarting Novell Remote Manager or the HTTP Interface (page 36)

To access the Novell Remote Manager Configuration Options page:

1 Log in to the server as a user with the Supervisor right to the Server object.

2 Click the Configure icon in the header frame.

Novell Remote Manager Configuration Options

View Hidden Set Parameters	YES
View Hidden Console Commands	YES
View Hidden Files or Folders	NO
View System Files or Folders	NO
Enable Accessibility Options	NO
Restart Novell Remote Manager (PORTAL.NLM)	RESTART

Enable Emergency account (SADMIN user) and set password.
Disable Emergency account (SADMIN user) and clear password.
Enable Debug account (SDEBUG user) and set password.
Disable Debug account (SDEBUG user) and clear password.

Novell Remote Manager Health Logging Controls

View Current Server Health Log	View
Reset Current Server Health Log File	Reset
Log health alerts to Log File	YES
Server Health Log File Rollover Size (in megabytes)	8 Apply Reset

HTTP Logging Controls

	Turn Debug Screen ON
	Turn Logger ON
View Current HTTP Log File	View
Reset Current HTTP Log File	Reset
Log Only Errors to Log File	YES
HTTP Log File Rollover Size (in megabytes)	8 Apply Reset

HTTP Interface Management

HTTP IP Address and Port Setup
Mail Notification Configuration

Change Default eDirectory Login Contexts	Apply Reset

To use the new settings below, HTTPSTK must be restarted.

Change Minimum Startup Threads	32 Apply Reset
Change TCP Keep Alive (in seconds)	300 Apply Reset

Access IP Address Access Control Page

Restart NetWare HTTP Interface Module (HTTPSTK.NLM)	RESTART

Changing Novell Remote Manager Configuration Options

The Novell Remote Manager Configuration options include:

- Viewing Hidden Set Parameters, Hidden Console Commands, Hidden Files or Folders, or System Files or Folders (page 29)
- Enabling or Disabling Accessibility Options (page 29)
- Controlling the Emergency Account (page 30)
- Controlling the Debug Account (page 30)

Viewing Hidden Set Parameters, Hidden Console Commands, Hidden Files or Folders, or System Files or Folders

Under the Novell Remote Manager Configuration Options heading, you will see the following options:

- View Hidden Set Parameters
- View Hidden Console Commands
- View Hidden Files or Folders
- View System Files or Folders

These options let you control whether hidden Set parameters, console commands, files or folders or system files and folders appear in the lists on Web pages for Novell Remote Manager or on the System Console screen when executing the applicable command. The default for all of these settings is No.

To change the visibility of these items, click the No or Yes button next to the applicable control.

Viewing hidden parameters or system files and folders can be especially helpful when you are comparing the configuration of two similar servers. Viewing hidden console commands can help you discover undocumented commands.

You can change a hidden Set parameter or use console command using Novell Remote Manager or using server console commands, whether or not the parameter is visible in the list.

Enabling or Disabling Accessibility Options

This option lets you control whether your browser's pages refresh or reload manually or automatically; the option also allows you to display the server's overall health status with text as well as color.

Enabling the accessibility options does the following:

- Removes the Refresh button or link from all pages.
- Disables refreshing the server's overall health status.
- Displays the server's overall health with color and with a text description of good, suspect, or bad.

  If you have lost connection with the server, a Page Not Found error is displayed.

  The status information on a specific page or the server's overall health does not change until you manually reload or refresh the overall browser view or the specific status page.

To enable or disable this option, click the Yes or No button next to the option Enable Accessibility Options.

To change the browser display after changing the accessibility options, refresh or reload the Web page in the browser.

Whether the accessibility options are enabled or disabled, you can be notified of a change in the server's health status through e-mail notification.

You must set all other accessibility options using the options available in your Web browser.

Controlling the Emergency Account

If the server is in a state where Novell eDirectory™ is not functioning correctly, you can log in to the server with an Emergency account (SAdmin user) and do all the necessary diagnostic and debugging tasks that do not require eDirectory.

When you have completed the necessary debugging tasks, you can then disable the account and clear the password.

To enable the account and set the password, click the Enable Emergency Account (SADMIN user) and Set Password link.

To disable the account and clear the password, click the Disable Emergency Account (SADMIN user) and Clear Password link.

Controlling the Debug Account

If you need assistance in debugging your server, you can enable and set the password for the SDebug User object to let the person debugging your system log in to your server as this user rather than as user Admin or as a user with equivalent rights.

The SDebug user has all the rights necessary to look at your system but cannot make unwanted changes to your system or view confidential or sensitive information.

IMPORTANT: This user is not enabled by default.

When first enabled, this user *cannot* perform the following tasks:

- Partition disk operations.
- Access the server console (but the user does have access to the console logs).
- Clear connections.
- Schedule tasks.
- Load new modules.
- Access eDirectory through the tree walker to create users, groups, or assign trustees.
- Change the password for the Debug account.

When the person has completed the necessary debugging tasks, you can then disable the account and clear the password. To use the debug account after it has been disabled, you must enable the user again.

To enable the account and set the password, click the Enable Debug Account (SDEBUG user) and Set Password link.

To disable the account and clear the password, click the Disable Debug Account (SDEBUG user) and Clear Password link.

If desired, you can configure the specific tasks that you give the Debug user access to perform:

1 Click Configure Additional SDEBUG User Access.

2 On the Configure Additional SDEBUG User Access page, click the No or Yes button next to the applicable task you want to enable or disable.

The following options are available:

- Access local server partitions including drive C:
- Access the NRM configuration page
- Clear connections from the Connections page
- Change SET parameters value
- Configure mail notification for server health
- Configure threshold settings in Health Monitor
- Deactivate storage devices
- Down or restart the server
- Load or unload modules from the List Modules page
- Modify protected memory address spaces
- Modify settings on the Swap File Information page
- Mount and dismount NetWare® volumes
- Stop or Start processors from the Processor Information page
- View open files on the Volume Information page

The additional access options apply whether the account is enable or not.

Viewing the Health Log and Changing the Health Logging Controls

The Server Health log lets you view all the changes to the health status of the server. Using this log in combination with the health statistics and trend reports can be useful in diagnosing server problems.

The file is located in the sys:system directory on the server.

To	Do This
View the current Server Health log	Click the View button next to View Current Server Health Log option.
Clear the log	Click the Reset button for the Reset Current Server Health Log File option.
Change whether alerts are sent to the log or not	Toggle the Log Health Alerts to Log File options setting by clicking Yes or No.
Change the size of the log from the default size of 8 MB	Type the new value in the Server Health Log File Rollover Size field and click Apply.

Viewing the HTTP Log and Changing the HTTP Logging Controls

When instructed by Novell Technical Services℠, you can click the Turn Debug Screen On button to help debug a problem with the httpstk module. When you click this button, you should also click the Turn Logger On button.

The debug console screen journals debug information for the HTTP stack running on the server. This log shows every connection to your server and shows which pages are accessed, along with a time stamp. You can view information on every instance of any request from a workstation. By clicking this button, you turn on the HTTP logging function.

The log file contains the following information: an entry number; the date and time stamp in Greenwich Mean Time (GMT); host name; the program making the call; the level of the call (whether it's done by the server or by users); and a description of the entry itself with information including the IP address of the source machine making the request, messages, status, etc.

A plain text file of the log resides at sys:\httplog.txt; however, the information is much easier to understand when viewed using the View Current HTTP Log File option because it is formatted as a table. Also, this file is not viewable while the logging is turned on unless you view it in Novell Remote Manager.

To view the file in its raw form, logging must be turned off so the file is no longer open.

To	Do This
View detailed information about the access to your server that was made using the HTTP command	Click the View button for the View Current HTTP Log File option. **NOTE:** If logging has been turned off, clicking this button turns it on.
Clear the current log and begin a new one.	Click the Reset Current HTTP Log File option Log File option. **TIP:** Restarting the log is useful if you have made a configuration change to your server and want to begin a new logging session.
Change whether only errors or all requests are logged to the file.	Toggle the Log Only Errors to Log File option setting by clicking Yes or No. Yes logs error only. No logs all requests. **TIP:** When logging only errors to the file, it takes much longer to fill the file to its maximum size; however, casual access to the server is not tracked.

To	Do This
Change the size of the log from the default size of 8 MB	Type the new value in the HTTP Log File Rollover Size (in Megabytes) field and click Apply. **IMPORTANT:** Nothing is written to this file unless logging is turned on. ◆ If the available space on volume sys: is limited, you can limit the log file to a smaller size. ◆ If you want to gather more information in the log file over a longer period of time, you can increase the rollover size. ◆ When the file is full, the file is deleted and restarted. Automatic rollover guarantees that if logging is on, the log file always reflects the most recent activity on the server.

Managing the HTTP Interface

These options control the ports and IP address that httpstk.nlm listens on, and the keep-alive parameters, startup threads, and workstations that can access the server through Novell Remote Manager.

This section includes instructions for the following tasks:

◆ Changing the HTTP IP Address and Port Setup Options (page 33)

◆ Changing the Mail Notification Configuration Options (page 34)

◆ Changing the Default eDirectory Login Contexts Option (page 34)

◆ Changing the Change Minimum Startup Threads Option (page 35)

◆ Changing the TCP Keep Alive (in Seconds) Default Option (page 35)

◆ Changing User Access Using the IP Address Access Control Page (page 35)

Changing the HTTP IP Address and Port Setup Options

This option lets you adjust and control the ports and IP address and security settings that HTTP tries to accept requests on. These changes integrate with the IP Address Management functionality.

1 Click the HTTP IP Address and Port Setup link.

2 Click the applicable action you want to perform.

After clicking the Close Port button, click OK.

If you click the Open Port button, do these additional steps:

2a Select the IP address that you want the port opened for, then click Next.

2b Type the port number you want to open, then click Next.

2c (Optional) If you want users to be required to log in before accessing this port, select the Enable SSL check box, then click Next and OK.

3 Click Done.

Another way to make Novell Remote Manager respond on multiple IP addresses is to enter the following command at the System Console prompt:

httpbind *ip address or server's DNS name* /keyfile:"*SSL certificate name for the specified server*"

For example:

```
httpbind 192.168.1.2 /keyfile:"SSL CertificateIP"
```

Make sure there are no spaces between the parameter keyfile: and the Certificate name string.

TIP: TIP: Using the HTTP IP Address and Port Setup Options on the Config page can prevent syntax errors.

Changing the Mail Notification Configuration Options

The Mail Notification Configuration link lets you access the Mail Notification Configuration page. From this page, you can specify a primary mail server, an alternate mail server, up to eight users in the notification list, and a Mail From identification.

You can control which items to be notified about and when you receive notification on the Health Monitor page.

To access the Mail Notification Configuration page, click the Mail Notification Configuration link.

To change any of the options, type the applicable text this the option field, then click Save.

You can also synchronize these settings with other servers in the same group using Group Operations. For more information, see "E-mail Notification Settings for Novell Remote Manager" on page 109.

Changing the Default eDirectory Login Contexts Option

This Default eDirectory Login Contexts option controls whether users must specify a context when they log into Novell Remote Manager. If the context is specified here, then users do not need to enter a context.

This setting is saved to the NetWare Registry and takes affect immediately without restarting Novell Remote Manager. Any bindery contexts that are set in the autoexec.ncf file are recognized before the contexts specified here.

To change the default from root, where users must specify their contexts each time they log in, enter one or more contexts for the users that will be accessing Novell Remote Manager. Separate each context specified with a semicolon (;). For example, novell; novell.sales; novell.mkrt.

This field is limited to 1000 characters. You might want to change the context for only a limited number of users.

You can also synchronize these settings with other servers in the same group using Group Operations. For more information, see "eDirectory Context for Users Logging in to Novell Remote Manager" on page 109.

Changing the Change Minimum Startup Threads Option

This option lets you change from the default setting to any other number.

At least one thread is required and other threads are created as needed. These initial work threads are built between the server and browser-based clients. Thus, initial communication begins with two listener threads and 32 work threads.

If 32 work threads are used up, httpstk.nlm automatically creates additional threads if needed. Each thread allocates a small piece of system memory when it is started.

If memory is low on your server, you can set this number to 4 and let more threads be created as needed.

To change the values, specify the new value in the field and click Apply. To use this setting, restart httpstk.nlm. See "Restarting Novell Remote Manager or the HTTP Interface" on page 36.

Changing the TCP Keep Alive (in Seconds) Default Option

This option lets you change the access time from the default value of 300, which corresponds to 5 minutes and is the standard TCP timeout time. You should only need to change this value in cases where it would be useful to change.

To change the values, specify the new value in the field and click Apply.

To use the new setting, restart httpstk.nlm. See "Restarting Novell Remote Manager or the HTTP Interface" on page 36.

Changing User Access Using the IP Address Access Control Page

From the IP Address Access Control page, you can limit access to Novell Remote Manager.

To access this page, click the IP Address Access Control Page link.

You can specify IP addresses for workstations or specify a subnet and subnet mask for ranges of workstations that you want to give access from. Restricting access to specific IP addresses or specific subnets can assist you in securing remote access to your server from Novell Remote Manager.

For example, if you have static IP addresses (which you could easily assign to the administrator's workstation), use the Allow Access Only from the Following IP Addresses option to control administration access. Only those workstations with a matching IP address can access Novell Remote Manager.

If you want a little more flexibility in your IP address assignments, such as all IP addresses within a subnet mask range, use the Allow Access Only from the Following IP Subnets option. With this setting, the IP subnet mask and the IP address are compared with a logical AND statement. If the IP address matches the subnet specified, you can access Novell Remote Manager; if the IP address does not match the subnet, you won't have access.

This approach works well if you are using DHCP to dynamically allocate IP addresses. In this scenario, you might not get the same address every time you call for an IP address. But because the allocated IP address falls within the subnet mask range, you can access Novell Remote Manager. However, so will all other workstations that fall within the subnet mask range.

To prevent people on the Internet or users of other subnets from accessing Novell Remote Manager, set up your subnet mask so that only Information Services (IS) workstations can use the specified subnet mask.

Restarting Novell Remote Manager or the HTTP Interface

After you have made changes to the server that require portal.nlm or httpstk.nlm to be restarted, or after you have loaded a newer version of these NLM programs on the server, click the applicable Restart button to unload and reload the module.

A message appears asking if you are sure you want to restart the module, which temporarily disables this utility. While the reset is taking place, a page appears stating that the reset is taking place. When the reset is complete, the page refreshes to the Configuration page with the changed settings if you haven't changed the port settings.

If you have changed the port settings, remember to use the new numbers when accessing Novell Remote Manager.

IMPORTANT: Unloading portal.nlm or httpstk.nlm on the Configuration Options page is the preferred method for unloading and reloading these NLM programs rather than unloading and reloading from the System Console screen. The functionality provided with this feature keeps track of the plug-in modules that have dependencies with these NLM programs and unloads and reloads all the required modules.

If you just unload portal.nlm or httpstk.nlm at the server console, you might run into issues with module dependencies (such as timesync, libc, tcpstats, and nwusage) that have been established, and the NLM might not unload. If you successfully unload the modules, the dependent plug-in modules must be loaded manually after portal.nlm.

5 **Diagnosing Server Problems**

Novell® Remote Manager includes several tools to assist you in monitoring the health and status of your server. When you are familiar with the normal health and status of your server, diagnosing problems with your server becomes easier.

Performing the following tasks will help you to become familiar with the health and status of your servers:

- Monitoring Server Health (page 37)
- Profiling CPU Utilization and Accessing Additional Debug Options (page 43)
- Generating, Viewing, and Sending Server Reports (page 45)
- Viewing and Managing Server Logs (page 48)
- Changing Server Configuration Files (page 49)

Procedures for troubleshooting specific problems are in Troubleshooting Specific Problems (page 115).

Monitoring Server Health

Monitoring the health of your server can help prevent it from getting to a state in which your users cannot access the server or the data on it. Monitoring your server's health involves the following tasks:

- Monitoring Overall Server Health or the Health of a Specific Item (page 37)
- Configuring Health Thresholds (page 40)
- Viewing Statistics Trend Graphs (page 41)
- Configuring E-Mail Notification for Server Health Status (page 42)
- Troubleshooting a Suspect or Bad Health Status (page 42)

Monitoring Overall Server Health or the Health of a Specific Item

Using Novell Remote Manager, you can monitor the server's overall health and the health of specific item.

The server's overall health is indicated by the color of the circle displayed next to the Server icon in the header frame for Novell Remote Manager. The following table lists and explains each health status that might be displayed.

Icon	Server Health Status	Explanation
	Good	All parameters included in the server's health configuration list are good.
	Suspect	The status of one or more of the parameters included in the server's health configuration list is suspect or has a minor problem.
	Bad	The status of one or more of the parameters included in the server's health configuration list is bad or has a critical problem.
	Lost connection	The connection to the server from Novell Remote Manager has been lost.

The server's overall health is determined by items that are selected in the Include list on the detailed Health Monitoring page. By default, all items are checked.

Therefore, if you have a server that has specific parameters that you know will cause a suspect or bad status and you want to be notified if other parameters have changed, you can remove the suspect or bad parameters from the Include and Notify lists by deselecting them and clicking Apply Settings.

If the status of any item that is selected in the Include list changes to yellow (suspect) or red (bad), the health status indicator light on the header frame changes to indicate there is a problem. If more than one item changes, the worst status indicates the server's overall status. When the status for all items returns to green (good), then the health light indicator changes back to green (good).

The server's health status, reported by the health status indicator, is updated every five seconds, but the graphic refreshes only if the status changes.

You can also view the changes of status in the Server Health Log. For more information, see "Viewing and Managing Server Logs" on page 48.

The Health Monitoring page shows the health status (green, good; yellow, suspect; or red, bad) for all known components of the system, as well as current, peak, and maximum values. When an item is not selected in the Include column, it is not included when determining the overall server health and the values for Status, Current, Peak, and Max are not displayed.

Begin Refresh   Page Refresh Rate 10 seconds ▾

[↰↱] Mail Notification Configuration   [✎] Threshold Configuration   [🔍] Statistic Trend Graphs

Server Health Table							
Include	**Notify**	**Info**	**Description**	**Status**	**Current**	**Peak**	**Max**
☑	☐	ⓘ	Work To Do Response Time	🟢	0	0	0
☑	☐	ⓘ	Allocated Server Processes	🟢	10	10 *	750
☑	☐	ⓘ	Available Server Processes	🟢	9	7 *	750
☑	☐	ⓘ	Abended Thread Count	🟢	0	N/A	N/A
☑	☐	ⓘ	CPU Utilization-0	🟢	1	100	100
☑	☐	ⓘ	Failed Logins Per Hour	🟢	0	0	N/A
☑	☐	ⓘ	Connection Usage	🟢	15	17	N/A
☑	☐	ⓘ	Available Memory	🟢	319MB	248MB *	511MB
☑	☐	ⓘ	Available Logical Space	🟢	2,507MB	2,497MB *	3,072MB
☑	☐	ⓘ	Virtual Memory Performance	🟢	N/A	N/A	N/A
☑	☐	ⓘ	Cache Performance	🟢	N/A	N/A	N/A
☑	☐	ⓘ	DS Status	🟢	LOADED/OPEN	N/A	N/A
☑	☐	ⓘ	DS Thread Usage	🟢	0	0	375
☑	☐	ⓘ	Packet Receive Buffers	🟢	2000	2000 *	10000
☑	☐	ⓘ	Available ECB's	🟢	1974	1963 *	10000
☑	☐	ⓘ	LAN Traffic	🟢	6	2742	N/A
☑	☐	ⓘ	Vol Sys Available Disk Space	🟢	2,022MB	1,934MB *	3,934MB
☑	☐	ⓘ	Available Disk Space	🟢	2,759MB	2,759MB *	3,170MB
☑	☐	ⓘ	Available Directory Entries	🟢	14,584	14,584 *	30,968
☑	☐	ⓘ	Disk Throughput	🟢	2	3144	N/A
☑	☐	ⓘ	Support Pack Status	🟢	Not Needed	N/A	N/A
☑	☐	ⓘ	Timesync Status	🟢	LOADED/IN SYNC	N/A	N/A
☑	☐	ⓘ	Licensing Information	🟢	3	3	N/A

*Low Value

The following items are key indicators of your server's health:

- Work To Do Response Time

- Allocated Server Processes

- Available Server Processes

- Abended Thread Count (if the server has abended and recovered automatically)

- CPU Utilization (for each processor, if there is more than one)

- Failed Logins Per Hour

- Connection Usage

- Available Memory

- Available Logical Space

- Virtual Memory Performance

- Cache Performance

- DS Status

- DS Thread Usage

- Packet Receive Buffers

- ◆ Available ECBs

- ◆ LAN Traffic

- ◆ Vol Sys Available Disk Space

- ◆ Available Disk Space for all volumes except sys:

- ◆ Available Directory Entries

- ◆ Disk Throughput

- ◆ Support Pack Status

  The status will always be green on the Support Pack Status item until Novell is able to provide Support Packs in a format that is consumable by this application. When that occurs, the options provided by this status and the information page explaining how to consume this information will be updated.

You can change the thresholds for the Suspect and Critical values of these indicators individually or restore the defaults for all these parameters at one time. See "Configuring Health Thresholds" on page 40.

Additional items are tracked on the Health Monitoring page and are displayed depending on the NLM™ programs that are loaded on the server.

To access the Health Monitoring page, click one of the following links:

- ◆ Overall server health status indicator

- ◆ Health Monitor icon in the header frame

- ◆ Health Monitor link in the navigation frame

Configuring Health Thresholds

If you have a server that runs differently than normal, you can configure the suspect and critical threshold values for Health Thresholds to something other than the default or change the amount of time before the trigger occurs. After changing setting, you can also restore all settings to the default values. For procedures, see

- ◆ Changing Criteria for Suspect or Critical Health Indicators (page 40)

- ◆ Changing Suspect or Critical Status Indicator Triggers (page 41)

- ◆ Restoring Settings (page 41)

Changing Criteria for Suspect or Critical Health Indicators

To change the criteria for the suspect (yellow/suspect) and critical (red/bad), status indicators for a specific operation:

1 On the Health Monitoring page, click Threshold Configuration, then click the Description name link for the item you want to change.

2 Specify the new Suspect or Critical value, then click OK.

3 (Optional) If you want to change both the values back to the default setting, click Restore Default Values, then click OK.

Changing Suspect or Critical Status Indicator Triggers

To change the amount of time before a status change for the suspect (yellow/suspect) and critical (red/bad) status indicators for a specific operation:

1 On the Health Monitoring page, click Threshold Configuration, then click the Description name link for the item you want to change.

2 Specify the new Suspect or Critical trigger delay value, then click OK.

3 (Optional) If you want to change both the values back to the default setting, click Restore Default Values, then click OK.

Restoring Settings

To restore all the settings to the default values after changing them, click Health Monitor > Threshold Configuration > Restore All Defaults.

Viewing Statistics Trend Graphs

The Statistics Trend Graphs let you select and create specific server statistics trend graphs for the statistics and duration listed. The graphs can cover from the last minute up to the total time the system has been up, depending on the duration you select.

After changing the server configuration or hardware, you can reset the data you gather.

All the graph data is saved to files in sys:system with a .tdf extension. These files use minimal disk space compared to the value they provide.

For information about the trends you notice and actions to take, see the online help.

To	Do This
View the health statistics trends for your server	Access the Statistic Trend Graph page by clicking the Health Monitor or View Statics link in the navigation frame and then clicking the Statistics Trend Graphs link on either of these pages.
Determine which graphs you want to view and the duration for the trend	Use the Statistic Trend Graph page.
View one or more graphs	Select the check box for each statistic and duration you want to view, then click Draw Selected Graphs. A graph is drawn for each check box you select. If you select durations of an hour or more, an average as well as a maximum value for each statistic is shown. The maximum value is always the top line of a graph. If you select durations of a week or a month, each graph also has links to display statistics for specific days or weeks depending on the duration you first selected. The All Data column shows data for each statistic since portal.nlm was started on your server or the Reset button was clicked for a specific item. If the server is shut down, the statistics are still tracked and recorded as 0.

To	Do This
Clear all the check boxes and start determining what you want to view again	Click the Reset button at the bottom of the selection table.
Reset the data for a specific statistic	Click the Reset button at the end of the row for that statistic.
Reset the data for all statistics	Click the Reset button for each of the statistics.
Draw your own customized graph	View the raw data for the graph by clicking the View Hourly Raw Data link, then copy and paste the numbers into a spreadsheet/graphing application.

Configuring E-Mail Notification for Server Health Status

Rather than manually checking the status, you can configure Novell Remote Manager to send an e-mail to notify you when the server's health status changes to any value other than green (good).

1 Select the Notify check box for that item on the Health Monitoring page.

If you want to receive an abend log by e-mail when the server has abended, click the Notify check box for the Abended Thread Count item on the Health Monitoring page.

2 Click the Mail Notification Configuration link on the Health Monitoring page.

3 Provide the required information on the Mail Notification Configuration page, then click Save.

A primary server and at least one user on the notification list is required.

4 Reload the httpstk NLM program on the Novell Remote Manager Configuration page.

4a Click the Configure link in the header frame.

4b Click the Restart link for restarting httpstk.

If you want to configure the same information on several servers, create a group using the Group Operation procedures and then run the Synchronize E-mail Settings operation. For more information, see "Building and Configuring a Monitoring Group" on page 103 and "Performing Synchronizing Operations on Server Groups" on page 108.

Troubleshooting a Suspect or Bad Health Status

When the health status of an item changes from good to a suspect or bad state, you can look at the specific item and click the ⓘ Info icon for suggested remedies.

1 Access the Health Monitoring page.

2 Look for the specific health item that has changed status.

3 View the information for the item that has changed by clicking the ⓘ Info icon for the item.

This information outlines the specific health criteria (thresholds) for green, yellow, red or statuses in that component. It also provides suggestions in some cases for what might be going wrong in that component if a yellow or red indicator is displayed.

4 Perform the recommended or appropriate action for the health item that has changed.

You can also use the Server Health Log to track the status of each health item that changes. For more information, see "Viewing and Managing Server Logs" on page 48.

Profiling CPU Utilization and Accessing Additional Debug Options

The Profiling and Debug Information page lets you view information about active and suspended threads, their states, the owning NetWare® Loadable Module™ (NLM) programs, and execution times.

This information can help you identify processes that might be running abnormally on a server, such as processes that use too much CPU time. Processes that run abnormally might cause the server to abend. Sometimes you can temporarily resolve high-utilization problems on the server by identifying the offending thread and its parent NLM, and then unloading and reloading the NLM.

To access the Profiling and Debug Information page, click the Profile / Debug link in the navigation frame.

From this page, you can do the following tasks:

- Viewing CPU Execution Profile Data by Thread (page 43)
- Viewing CPU Execution Profile Data by NLM (page 44)
- Viewing Detailed Thread Information (page 44)
- Performing Additional Debug Operations (page 44)

Viewing CPU Execution Profile Data by Thread

When you access the Profiling and Debug Information page, the Execution Profile Data by Thread table is the default view displayed.

The Thread Name column shows the name of the thread being executed.

Thread ID and Thread State detailed information is provided mostly to assist code developers in identifying and debugging problems with their code. At the administration level, this information is usually helpful in identifying problems with a specific NLM or with threads causing the server to hang or run slow.

If the thread was suspended by Abend Recovery, then the information includes details about the thread state at the time it was suspended.

To	Do This
Get more information about a specific thread	Click the thread-name link for that thread
Get information about the NLM program that owns the thread	Click the NLM program name
Profile where a thread is spending its time running	Click the Execution Time link for that thread. This will list the nearest symbols and might help identify the component that is using an unusually high volume of CPU cycles.

Viewing CPU Execution Profile Data by NLM

In the CPU Execution Profile Data by NLM view, you can see a 1/2-second profile of the server operating system as it is executing, the place where it is executing, and the NLM programs that the processor is spending its time in.

If the server is idle, the main NLM programs listed will be lsl.nlm and server.nlm.

The percentage values shown in these tables are a detail of the overall sever's CPU utilization. If Processor 0 utilization is at 10 percent, the information on this page shows the breakdown of that 10 percent utilization.

To	Do This
View CPU Execution Profile Data by NLM	Click the Profile CPU Execution by NLM link on the Profiling and Debug Information page.
See where the processor is spending time within a specific NLM program	Click the link in the Execution Time column for that NLM. For more information about the NLM program, click the name for the program.

Viewing Detailed Thread Information

This information is usually helpful in identifying problems with a specific NLM or with threads causing the server to hang or run slow.

To	Do This
View a list of all the threads in the system	Click the Thread Information link on the Profiling and Debug Information page
Get more information about a specific thread	Click the thread-name link for that thread

Performing Additional Debug Operations

If you are developing modules to run on NetWare and you want to access additional debug options, click the Additional Debug Options link on the Profiling and Debug Information page.

On the Additional Debug Options page, you can do the following tasks at the specific location while the server is still running:

- Profile processor execution
- Profile calls to a specific procedure
- Disassemble code
- Dump memory
- Dump stack information
- Profile processor misaligned memory references
- Profile processor branch taken or not taken mispredictions
- Profile processor partial register still clocks
- Profile processor L2 cache misses

* Profile processor divides
* Profile processor multiplies

Generating, Viewing, and Sending Server Reports

From the Reports File Logs page, you can generate, view, and send several server reports that can be helpful in managing and troubleshooting problems on your server. These reports are

Configuration Report

Generating the server configuration report is especially helpful when you want to compare the configuration of two different servers or have a record of your server setting before making any changes.

This report can also be used by Novell Technical Services℠ to help you diagnose problems with your server that might be caused by running outdated NLM programs. When you view the report, you can also print and save the report for your network documentation.

This report contains the following information:

* The contents of all .ncf, .bat, .cfg, .bat, and abend.log files
* A file listing of the boot directory contents (usually c:\)
* A file listing of sys:system directory contents
* A list of Set parameters (including Hidden parameters) and current settings
* A list of all the modules currently running on the server
* A list of LAN driver configurations
* Storage device configuration information
* Volume statistics for volumes sys: and _admin

The following table lists the actions to generate, view, send, save, or print the Server Configuration report.

To	Do This
Generate and view a Server Configuration report	Click Reports/Log Files in the navigation frame and then click View Config Report on the Reports/Log Files page.
Send this report to someone from the Reports / Log Files page	Specify the person's e-mail address in the e-mail address field, then click Send Config Report. Prerequisites for sending a report via e-mail are: 1. Set up an e-mail server. 2. Complete the required information on the Mail Notification Configuration page. 3. Restart httpstk.nlm on the Configuration Options page.

To	Do This
Access the Mail Notification Configuration Page	Click the Configure icon [icon] in the navigation frame and the Access Mail Notification Configuration Page link on the Novell Remote Manager Configuration Options page.
Print or save this report	View the report on the Report / Log Files page, then print or save the results using your browser's features.

Security Report

Generating the server security report is helpful when you want to track potential security risks on a server. This report shows only the information that the logged-in user is allowed to view; to receive a report with the most helpful information, run it when you are logged in to the server as user Admin or a user with rights equivalent to Admin.

From this report, a user with the same rights as user Admin can track the following:

- Trustee assignments for each volume

  Granting a user privileges at the root directory of a volume gives that user privileges to the entire volume unless those rights are specifically revoked at a lower level. You should be especially cautious about granting the Access Control right in a root directory. Users with the Access Control right can grant themselves all other rights in any subdirectory on the volume. You can improve network security by granting each user privileges only to the specific directories he or she uses.

- Trustee assignments for each common folder on volume sys:

  Users or objects should have only limited access, such as Read and File Scan rights, to common directories on volume sys: such as public and login.

- Security information for each protocol loaded on the server

  For example, for the IP protocol, you see the IP addresses for the server, the DNS name, and a list of open ports on the server and NLM programs that use those ports.

  NetWare Core Protocol™ (NCP™) information shows the protocols bound to the server and the addresses they use as well as connection information for each connection to the server.

  Common Internet File System (CIFS) information shows the server name, where authentication is, the name of the workgroups, and whether Oplocks or ASync has been disabled.The security report also shows Share Points on the server and session information for each connected workstation.

- A list of users that have security equivalence to user Admin

  As the number of users with rights equivalent to user Admin increases, your security risks multiply. Any time a user with rights equivalent to user Admin is unattended, anyone can gain access to the server.

- A list of users and a list of several parameters related to security that you can track (such as password required, uniqueness, minimum length and expiration information, and grace login limit and remaining settings)

  A secure network is hard to maintain if an object has a password that is easy to guess.

  To enforce good security on your network, you should require your users to have a password that is unique, that exceeds five characters, and that expires at least every 60 days or less.

You can achieve additional security by setting a grace login limit.

The following table lists the actions to generate, view, send, save, or print the Security report.

To	Do This
Generate and view a NetWare Server Security report	Click Reports/Log Files in the navigation frame, then click View Security Report on the Reports/Log Files page.
Send the NetWare Server Security report to someone from the Reports / Log Files page	Specify the person's e-mail address in the e-mail address field, then click Send Security Report. Prerequisites for sending a report via e-mail are: 1. Set up an e-mail server. 2. Complete the required information on the Mail Notification Configuration page. To access the Mail Notification Configuration page, click the Configure icon in the header frame and click the Mail Notification Configuration link on the Novell Remote Manager Configuration Options page. 3. Restart httpstk.nlm on the Configuration Options page.
Print or save the NetWare Server Security report	View the report on the Reports/Log Files page, then print or save the results using your browser's features.

Inventory Report

Generating a server inventory report lets you view important information about the server's volumes, directories, or subdirectories and lets you view graphs, profiles, reports, and key statistics about each of these items, including space usage trends. With a few clicks, you get available space trend graphs, profiles for file types, last accessed, last modified, creation time, file size, server (or volume) up times, and links to specific reports for each of these.

You can also customize the scan to look for specific file information.

Generating this report can take a while, so the file is automatically saved on the server so you can generate the report and view it later. Each graph is time-stamped so you know when the report was last run.

The following table lists the actions to generate, view, send, save, or print the Inventory report.

To	Do This
Generate and view a NetWare Server Inventory report	Click Reports/Log Files in the navigation frame, then click View Inventory Report on the Reports/Log Files page

To	Do This
Send the NetWare Server Inventory report to someone from the Reports/ Log Files page	Specify the person's e-mail address in the e-mail address field, then click Send Inventory Report. Prerequisites for sending a report via e-mail are: 1. Set up an e-mail server. 2. Complete the required information on the Mail Notification Configuration page. To access the Mail Notification Configuration page, click the Configure icon ⬚ in the header frame and click the Mail Notification Configuration link on the Novell Remote Manager Configuration Options page. 3. Restart httpstk.nlm on the Configuration Options page.
Generate reports for more than one server	See "Building and Configuring a Monitoring Group" on page 103 and "Generating and Viewing Server Comparison Reports" on page 110.
Print or save the NetWare Server Inventory report	View the report on the Reports/Log Files page, then print or save the results using your browser's features.

Viewing and Managing Server Logs

Several logs are accessible from the Reports/Log Files page. Each of these logs is started automatically when you start your server.

The following table describes these logs and what you can use them for.

Log	Use to
Server Personal Log Book at sys:system/ nrmusers.log	Enter and track changes made to the server or to log any other information you desire in order to track server performance or history.
System Error log file at sys:system/sys$log.err	View alert messages and other system operation information that is sent to the System Console and Logger screens.
Abend log file at sys:system/abend.log	View information about all abends that have occurred on the server.
Server Health log file at sys:system/health.log	View all changes in the health status of the server. Using this log combined with several of the health statistics and trend reports can be useful in diagnosing server problems.

The following table describes the steps necessary to perform the desired actions listed for any of these logs.

To	Do This
Clear a log and start recording new information in any of these logs	Click the Clear link next to the log that you want to restart.
Print or save any of these reports	View the report on the Reports/Log Files page, and then print or save the results using your browser's features.

Changing Server Configuration Files

You might frequently need to change a server configuration file such as autoexec.ncf or startup.ncf. You can easily access and edit these files from the Reports/Log Files page. Under the Configuration File Management heading, locate these files and edit them according to your needs.

If you want to add other files to this access point, edit the nrmcfgs.txt file in the sys:\login directory, and then restart portal.nlm. By default, the nrmcfgs.txt file is also in the list of files to edit.

6 Managing Servers

This sections lists the tasks that you can perform using the links under the Managing Servers heading in the Navigation frame.

Accessing and Managing Server Volumes and Partitions

The Volume Management page is the home page for Novell® Remote Manager.

You can access this page by clicking the Home icon (Volumes) link in the header frame or the Volumes link under Manage Server in the navigation frame.

The Volume Management page provides a list of the server's volumes and access to the server's DOS partitions. For procedures that you can do from this page, see the following sections:

Browsing the Server's File System

Using Novell Remote Manager, you can view the file system on volumes or DOS partitions; browse directories and files; view and change attributes of volumes, directories, and files; delete, create, or rename directories; and delete or rename files.

Viewing or changing attributes on a Novell Storage Services (NSS) volume is not supported. However, you can view or change attributes of directories or files on an NSS volume.

The file size column for a directory lists the size of all files in that directory and any subdirectories.

The following table describes the actions you need to take to accomplish these tasks from the Volume Management page.

To	Do This
Browse a volume or partition	Click the link for the volume or DOS partition under the Name column.
Move down the directory tree	Click the directory name.
Move up the directory tree	Click the double dots link.
View or download a file	Browse to the filename and click it.

Mounting and Dismounting Volumes

You can mount and dismount volumes by clicking the link in the Mounted status column for a given volume on the Volume Management page. You are asked to confirm your choice before the volume dismounts.

You can also click the Mount Volume or Dismount Volume link displayed next to the volume on the Server Disk Partition Operations page.

If you choose to dismount volume sys:, the icons used by Novell Remote Manager (which reside in sys:\login) might not display correctly. When you remount volume sys: and reload the page, the icons display correctly again.

Viewing Details of Directories or Files and Performing Specific Actions on Them

Viewing the details of directories or files not only give you information about them but you can also perform tasks associated with them.

To view the details about a directory, delete a directory and its contents, rename the directory, or create a subdirectory:

1 Click Volumes.

2 On the Volume Management page, click the volume name link, browse to the directory, then click the Folder icon 🗂 to left of the directory name.

3 On the information page that is displayed, view the information or specify the information required for the applicable task (if required), then click the applicable button for the task you want to perform.

From this information page, you can perform the following tasks:

- ◆ Changing File or Directory Access Rights Attributes (page 56)
- ◆ Downloading a File from the Server to a Local Workstation (page 56)
- ◆ Inventorying Volumes or Directories (page 53)
- ◆ Searching for Files (page 56)
- ◆ Searching for Text in Files (page 57)
- ◆ Viewing, Setting, Changing, or Removing Directory Space Restrictions (page 54)

Inventorying Volumes or Directories

With this feature, you can inventory volumes, directories, or subdirectories as well as view graphs, profiles, reports, and key statistics about each of these items, including space usage trends. With a few clicks, you get available space trend graphs; profiles for file types; last accessed, last modified, creation time, and file size; and links to specific reports for each of these. You can also customize the scan to look for specific file information or scan for empty directories.

Generating this report can take a while, so the file is saved on the server so you can generate the report and view it later.

Generating an Inventory Report

To generate an inventory report for a volume or directory:

1 Click Volumes.

2 Browse to the volume name or directory you want inventory by clicking the volume or directory name link.

3 Click the Inventory link at the top of the page.

TIP: If you are viewing the Volume Information page, you can generate the same report by clicking the Volume Inventory Report link on this page.

Generating a Customized Report

After generating an inventory report for a volume or directory, you can create a customized scan to report more specific information.

1 Click Volumes.

2 Browse to the volume name or directory you want to inventory, then click the *volume name* or *directory name* link.

3 Click the Inventory link at the top of the page.

4 In the generated report, click the Custom Report or Custom Directory Tree Scan link.

5 Type the specific search criteria in each of the fields provided, and select the applicable check boxes.

6 Click Start Scan.

Searching for and Deleting Empty Subdirectories

After generating an inventory report for a volume or directory, you can scan for empty subdirectories then delete them.

1 Click Volumes.

2 Browse to the volume name or directory you want to inventory, then click the *volume name* or *directory name* link.

3 Click the Inventory link at the top of the page.

4 In the generated report, scroll to the bottom of the report.

5 Click the Scan for Empty Subdirectories button.

6 Select the applicable check box for the action you want to perform.

- The Check All button

- The Uncheck All button

- The specific check boxes for the files you want to delete

7 Click the Delete Checked Subdirectories button.

Viewing Details about Directories and Performing Actions on Them

1 On the Volume Management page, click the volume name link that the directory resides on.

2 From the directory listing, click the Folder Information icon to the left of the directory or subdirectory you want to view or change.

3 On the information page that is displayed, view the information or specify the information required for the applicable task, then click the applicable button (Delete Directory and Its Contents, Rename Directory, Create Subdirectory) for the task you want to perform.

Viewing, Setting, Changing, or Removing Directory Space Restrictions

In environments such as a university, where you have set up a common work area and you want to limit the space that users or files in a directory or subdirectory can use, setting a Directory Space Quota can be useful.

In order to set or change this restriction, you must enable the User Space Restrictions and Directory Quotas attributes when you create it. If this is not done when you create it, you cannot set or change these attributes later using Novell Remote Manager.

TIP: You can change User Space Restrictions and Directory Quotas attributes on existing volumes using iManager.

Setting or Changing a Directory Space Quota for a Directory or Subdirectory

1 On the Volume Management page, click the volume name link that the directory resides on.

2 From the directory listing, click the Folder Information icon to the left of the directory or subdirectory you want to change.

3 Under the Directory Entry Information, click the link for the File Space Limit setting.

4 In the field next to the Set Space Restriction button, specify the value for the size (in kilobytes) that you want to set the restriction to, then click the Set Space Restriction button.

The maximum space available is shown.

Removing the Disk Space Restrictions

1 On the Volume Management page, click the volume name link that the directory resides on.

2 From the directory listing, click the Folder Information icon to the left of the directory or subdirectory you want to change.

3 Under the Directory Entry Information, click the link for the File Space Limit setting.

4 Click the No Quota button.

Viewing Details about Files and Performing Actions on Them

This section covers the following tasks:

Viewing the Details about a File or Editing, Deleting, or Renaming a File

1 Click Volumes.

2 On the Volume Management page, click the volume, browse the directories to the file, then click the File icon 🔍 to the left of the filename.

3 On the information page that is displayed, view the information or specify the information required for the applicable task, then click the applicable button (Edit File, Delete File, Rename File) for the task you want to perform.

The Edit File button is available only on simple text files or files with the extensions listed in the sys:login\nrmedit.txt file.

If you want to save the file with an ANSI or UTF-8 encoding, select the appropriate option and click OK.

Modifying the Date and Time for a Directory or File

When you upload a file using Novell Remote Manager, the file date and time are recorded as the date and time that the file was uploaded. You can modify this date and time back to the file's original date and time. To do so,

1 Click Volumes.

2 Click the applicable server volume or local partition drive.

3 Click the Folder or File information icon to the left of the directory or filename. If the file is on a DOS partition, click the Date and Time link in the file listing.

4 Click the Date and Time link.

5 Modify the items that you want to change, then click OK.

If the file is a Novell executable file, select the check box for restoring the original date. If desired, you can further modify the date and time and save the new settings.

Viewing Individual Files

If your browser is set up to recognize a certain file extension (for example, .txt), you can browse to and click a file of that type to view it directly in Novell Remote Manager. Otherwise, you can download any file to your local machine by clicking the filename and then saving it to a local workstation and opening it there. (This also applies to the files on the server's DOS partition.)

Changing File or Directory Access Rights Attributes

Your Novell eDirectory™ rights govern your access to directories and files on NSS or NetWare® partitions. These rights also regulate your ability to copy files to and from any given directory. To access the server's DOS partition, change, or upload files to the server, you must have Supervisor right to the Server object.

When you browse through files and directories on the server's DOS partition, be aware that setting the Shareable attribute on a DOS file does not have any effect unless SHARE is loaded in DOS.

To view or change attributes of a directory or file:

1 Click Volumes.

2 Click the volume name link.

3 Browse to the directory or file you want to view or change the attributes of. View the attributes in the Attribute column.

4 To change the attributes, click the directory or file link under the Attributes column.

5 Select or deselect the check box for the attribute you want to set, then click OK.

Uploading a File to the Server

If you have rights to write to the current directory that you are viewing via Novell Remote Manager, you can use the Upload button to copy a file from your local machine or any other mapped drive to that directory. You can upload only one file at a time. The file's date and time are changed when performing this task.

For instructions on changing the file date and time after an upload, see the procedure for Modifying Directories or Files Date and Time under "Viewing Details of Directories or Files and Performing Specific Actions on Them" on page 52.

Downloading a File from the Server to a Local Workstation

When you are browsing the server's file system via Novell Remote Manager, you can download any file to your local machine by clicking the filename and then saving the file to your local workstation. (This also applies to the files on the server's DOS partition.)

1 Click the Volumes link in the navigation frame.

2 On the Volume Management page, browse to or search for the file that you want to download.

3 Right-click the filename link.

4 Save the target file to your local workstation.

Searching for Files

You can search for files at the volume or subdirectory level.This feature is especially helpful when searching for files that are mentioned in documents where no search path was given or an incorrect path was specified. It is also helpful when searching for file types that you want to remove or change the location of.

1 Click the Volumes link in the navigation frame.

2 On the Volume Management page, browse to the volume or directory you want to search by clicking the volume or directory name link.

3 Click the File Search link.

4 Specify the filename or extension you want to search for.

5 Click Start Search.

In the display results, you can

 ◆ Click the filename link to view or download the file.

 ◆ Click the File Information icon [icon] to view information about the file, change trustees, or rename or delete the file.

   If the file is a simple text file or a file with an extension listed in the sys:login.nrmedit.txt file, you can also edit the file by clicking the Edit File button.

 ◆ Delete, copy, or move selected files.

Searching for Text in Files

In the past, searching for files that contains specific text has been difficult if not impossible. Now, you can do a GREP-type search (it accepts GREP wildcard characters) through the files in the current directory as well as subdirectories.

1 Click the Volumes link in the navigation frame.

2 On the Volume Management page, browse to the volume or directory you want to search in by clicking the volume or directory name link.

3 Click the Text Search link.

4 Specify the content, filename, or extension you want to search for and select if you want to match the case.

5 (Optional) If you want to search all subdirectories as well, select the Search Subdirectories check box.

6 Click Search.

   If the search instructions are valid, the results are displayed on a page with the search instructions. You can click the filename in the results list to view or download it. If nothing is found, no files are listed under the search instructions.

   If the search instructions are not valid, the page showing the directory you wanted to search is returned.

Accessing the Server's Local Partitions and Performing Actions on Them

With Novell Remote Manager, you can access the server's local partitions in addition to the network partitions and volumes, including all devices that are registered as a local device with a FAT partition and have media loaded. This means that floppy drives that have a disk loaded appear in the local server partition list.

Renaming a File on the Server's Local Partitions

1 Click Volumes.

2 Click the applicable drive letter under the Local Server Partition heading.

3 Browse to the applicable file.

4 Click the Rename link for the file.

5 Type the new filename in the New File Name field, then click Rename File.

Deleting a File on the Server's Local Partitions

1 Click Volumes.

2 Click the applicable drive letter under the Local Server Partition heading.

3 Browse to the applicable file.

4 Click the Delete link for the file, then click OK on the returned deletion message.

Viewing Information about Volumes and Performing Specific Actions on Them

The Volume Information page contains the following details about a volume.

- Volume mount status
- File system type
- A list of name spaces loaded
- Read only status
- File compression status
- Suballocation status
- Migration status and files migrated
- Block size
- Sectors per block
- Total space and free space
- FAT blocks
- Amount of space in the salvage system that is freeable and non-freeable
- The directory size
- Amount of space dedicated to directory entry tables and the number directory entries in use

Volume Information

Volume: SYS

Capacity (4 GB)

Free 76%
Used 24%
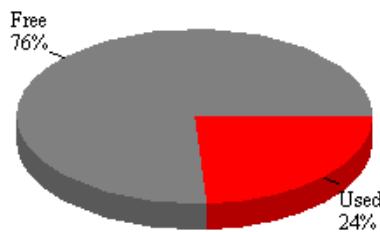
Volume Options

- Volume Segment Info
- Disk Space Usage
- View Open Files
- Purge Deleted Files
- Volume Inventory Report
- Volume Trustee Report
- Rename Volume

Volume Information

Volume is mounted	Yes
File system name	Novell NSS File System
Loaded name spaces	DOS, MAC, NFS, LONG
Read only	Off
Compression status	Off
Sub-allocation	Off
Sub-allocation unit size	
Migration status	Off
Migrated files	0
Block size	4 KB
Sectors per block	8
Total space	3,930 MB
Free space	770 MB
Freeable space in salvage system	2,191 MB
Non-freeable space in salvage system	0 KB
Used directory entries	93,690

From this page you can perform the following actions:

- Generating a Volume Inventory Report; see Inventorying Volumes or Directories (page 53)

- Generating a Volume Trustee Report; see Viewing and Changing Trustee Assignments and Inherited Rights Filters (page 62)

- Monitoring Disk Space Usage (page 60)
- Viewing Volume Segment Information (page 60)
- Viewing Open File Information (page 61)
- Purging Deleted Files (page 62)
- Renaming a volume, see Managing Disk Partitions (page 64)
- Creating a Logical Volume for Saving Core Dumps (page 63)

Viewing Volume Segment Information

If you need to get information about how the partition is laid out for a particular volume, you can get this information from the Partition Segment Information page. This page shows you the volume segment number, the partition type, the partition ID, segment size, starting sectors, ending sectors, and device ID numbers. From this page you can also access the Volume Segments page for each Partition ID or view the Device ID information where you can activate or deactivate a device.

To view volume segment information:

1 Click Volumes.

2 On the Volume Management page, click the Information icon ⓘ to left of the volume name that you want to check.

3 Click the View Volume Segment Info link.

Monitoring Disk Space Usage

If your server is constantly running out of disk space or getting close to it, you can view the disk space usage to find out which users are using the most space and the files that they have rights to.

When monitoring disk space usage, you can perform the following tasks:

- Adding a User Space Restriction for a User on a Volume (page 61)
- Changing or Deleting a User Space Restriction for a User on a Volume (page 61)
- Viewing Disk Space Usage for Each User on a Volume (page 60)
- Viewing the Space in Use in a Directory (page 61)

Viewing Disk Space Usage for Each User on a Volume

1 On the Volume Management page, click the Information icon ⓘ to left of the volume name that you want to check.

2 On the Volume Information page, click the Disk Space Usage link.

A list of users and the space that they have in use is shown. The disk space restriction is also shown. The restriction size is unlimited for all users unless a disk space restriction for a user has been set.

To sort the disk space usage information in a way that is most helpful to you, click the Sort icon in the heading that you want the information sorted by. The default sort is alphabetical by username.

Adding a User Space Restriction for a User on a Volume

1 On the Volume Management page, click the Information icon ⓘ to left of the volume name that you want to check.

2 On the Volume Information page, click the Disk Space Usage link.

A list of users and the space that they have in use is shown. The disk space restriction is also shown. The restriction size is unlimited for all users unless a disk space restriction for a user has been set.

3 Click the Browse icon next to the User Name field, then browse to and click the User object that you want to set the restriction for, or type the user's fully distinguished name in the field.

4 Click the Add User Space Restriction button.

5 Specify the value you want to set the restriction to in the Current Restriction field, then click Change.

Changing or Deleting a User Space Restriction for a User on a Volume

1 On the Volume Management page, click the Information icon ⓘ to left of the volume name that you want to check.

2 On the Volume Information page, click the Disk Space Usage link.

A list of users and the space that they have in use is shown. The disk space restriction is also shown. The restriction size is unlimited for all users unless a disk space restriction for a user has been set.

3 Click the Disk Space Restriction link applicable to user that you want to change or delete.

4 Click the Delete button or specify the new value you want to set the restriction to in the Current Restriction field, then click Change.

Viewing the Space in Use in a Directory

1 On the Volume Management page, click the volume name link that the directory resides on.

2 From the directory listing, click the Folder Information icon 🗐 to the left of the directory or subdirectory you want to view.

3 Under the Directory Entry Information, view the information in the File Space in Use field.

Viewing Open File Information

When you want to perform some operations, such as backing up a server or taking the server down, you might want to know which files are open before you perform these operations.

1 On the Volume Management page, click the Information icon ⓘ to left of the volume name that you want to manage.

2 Click the View Open Files link.

From this page, you can view which connection has the file open or view information about the specific file. On this file information page, you can also add or change trustees to the file, view lock information, close the file, and edit the file if it is a simple text file.

Purging Deleted Files

When your users delete files from the server, the files are retained and can be recovered (salvaged) until they have been purged. The server starts purging files if a volume starts to fill up; the oldest files that have been deleted are automatically purged. If you do not want files to be recovered after deletion, you can set the Immediate Purge of Delete Files parameter value to On.

If your server is running out of disk space or you want to immediately purge files that have been deleted, you can easily do so on each volume from the Volume Information page.

To immediately purge all files that have been deleted from a volume:

IMPORTANT: Files that have been purged can no longer be recovered.

1 On the Volume Management page, click the Information icon ⓘ to left of the volume name that you want to manage.

2 On the Volume Information page, click the Purge Deleted Files link.

To immediately purge specific files that have been deleted from a directory or all files from a specific directory:

IMPORTANT: Files that have been purged can no longer be recovered.

1 On the Volume Management page, click the volume name link where the file was deleted.

2 In the Volume directory list, click the Information icon ⓘ to left of the directory name where the file was deleted.

3 On the Directory Information page, find the Salvageable Files field, then click the Select for List link.

4 Do one of the following:

◆ Locate the file that you want to purge, and click the Salvage button next the file name.

◆ Click the Purge All Files button to purge all the files in the directory.

Salvaging Deleted Files

When your users delete files from the server, they are retained and can be recovered (salvaged) until they have been purged. If a user accidentally deletes a file and wants to recover it, use the following procedure before the file is purged.

1 On the Volume Management page, click the volume name link where the file was deleted.

2 From the directory list, click the Information icon ⓘ to left of the directory name where the file was deleted.

3 On the Directory Information page, find the Salvageable Files field, then click the Select for List link.

4 Locate the file that you want to salvage, then click the Salvage button next to the file name.

Viewing and Changing Trustee Assignments and Inherited Rights Filters

Your eDirectory rights govern your access to directories and files on NetWare partitions or NSS partitions or pools. For more information on trustee assignments and Inherited Rights Filters, see "Trustee Assignments and Targets" in the *Novell eDirectory 8.7.3 Administration Guide*.

To see which users are trustees of which files and directories on a volume:

1 On the Volume Management page, click the Info icon next to volume you are monitoring.

2 Click the Volume Trustee Report link.

To view or change the trustee assignment of a directory or file:

1 Click Volumes.

2 Click the applicable volume name link.

3 Browse to the directory or file you want to view or change the assignment of.

4 Click the Folder icon ![folder] to the left of the directory or file you want to view or change. Then do one of the following:

◆ **To change the Inherited Rights Filter**: Click the Inherited Rights Filter link in the directory or file information table. Select or deselect the check box for the rights you want to set or change, then click OK.

Changing the Inherited Rights Filter does not grant rights; it only removes rights previously assigned at a higher level in the tree.

◆ **To add a trustee**: Type the full distinguished name or bindery name of the User object you want to add in the User Name field of the Trustee Information or browse to it and select it, then click Add Trustee.

◆ **To change a trustee's rights**: Locate the User object name in the list of User objects under the Trustee Information, then click the Trustee Rights link next to the username. Select or deselect the check box for the trustee right you want to change, then click OK.

◆ **To delete a trustee**: Locate the User object name in the list of User objects under the Trustee Information, then click the Delete link next to the username.

Creating a Logical Volume for Saving Core Dumps

Using Coredump Drive Management for creating a local partition space on your server frees you from needing to partition a large chunk of space that you might never use (on the server's local partition or drive C:), and reduces the likelihood of not having enough space on the local FAT partition to take a core dump. Its dynamic nature lets you create local FAT partitions that are the correct size when you know the server is experiencing a problem, and lets you easily recover that space later.

To create the drive,

1 Click Create.

2 Complete the following fields:

Virtual Drive File Name	Type a name for the file. Be sure to use valid file naming conventions. The following characters are invalid or not recommended for use due to transport problems that might occur: + , : * ! % # $ ( ) ^ For additional restrictions, see the guidelines in Naming NSS Storage Objects in the online documentation for NetWare at www.novell.com/documentation/oes.
Size	Type the size in megabytes to allocate for the Core Dump drive. The default size recommendation is based on the amount of physical memory in the server. We recommend looking at previous core dumps taken from this server to get an idea of the size of file you might need and the space available on the volume.
Attributes (optional)	Zero Fill: Controls the formatting of the disk when the drive is created. If Zero Fill is selected, the file compresses more tightly. If it is not selected, the Coredump drive is created faster.

3 Click Create.

When a Coredump drive is created, it is automatically mounted as a volume and displays as a local volume with an assigned drive letter. Unlike other volumes on NetWare® servers, core dumps can be written to the Core Dump drive and the Core Dump drive must be managed from this page rather than from the Volume Management page.

This functionality is available on the NSS file system only. The drive letter is assigned automatically as the next available drive letter on the server.

You can dismount or delete the volume using the Dismount or Volume links.

Managing Disk Partitions

The Partition Disks page displays the disk layout according to the physical connections in your server, using indentation to indicate where a volume physically resides.

You can see the adapters, devices, partitions, pools, and volumes at different levels of indentation. If free space is available for creating a new partition, pool, or volume, you can also view it under each device. A link for creating a volume, mirroring a volume, adding a volume, or expanding a pool is displayed next to the devices, pools, or volumes listed.

You must assign the free space on the disk to create an NSS pool or a traditional volume. With traditional volumes, you assign physical segments from physical partitions on multiple devices. There are physical limitations in how you combine member segments to create the volume.

With NSS pools, you assign logical segments from multiple devices without needing to be aware of the underlying physical partitioning. NSS abstracts that for you so that you can use every bit of available space on each device. After you create your pool, you create logical volumes that reside in the pool. The number of volumes per pool is virtually unlimited. You can set the volume size or let it grow to the size of the pool.

To access the Partition Disk page, click the Partition Disks link under Manage Server in the navigation frame.

From this page, you can do one or more of the following tasks.

- Partitions

Pools

Volumes

Creating a Partition, Partition and Pool, or Partition and Volume

1 On the Partition Disks page, locate and click the Create link next to the free space on the device that you want to create the partition on.

2 From the Partition Type drop-down list, select the type of partition you want to create.

3 Click the applicable link for the action you want to perform.

For NSS partitions, you must create a pool when you create a partition. By clicking the Create Pool and Volume link, you can create a NSS partition, pool, and volume in the same action.

When creating a traditional NetWare partition, you can create a partition and volume in the same action by clicking the Create Partition and Volume link.

4 Complete the required fields for the type of partition, partition and pool, partition, pool and volume, or partition and volume you are creating; click Create; then confirm your decision by clicking OK in the resulting dialog box.

Choose a creation operation:

Partition Type: Novell Storage Services

- **Create a New Pool**

- **Create a New Pool and Volume**

Labeling or Renaming a Partition

After creating a partition, you can give the partition a name (label). Or, after assigning the partition a name, you can rename the partition or delete the label. You can also expand, mirror, or delete the partition. You can create and mount or delete volumes within the partition.

1 On the Partition Disks page, locate and click the Set Partition Label link or the *name_of_the_partition* link next to the partition you to want to label or rename.

2 In the Enter the New Partition Label field, type the name for the partition, click Apply, then click OK.

Deleting a Partition Label

1 On the Partition Disks page, locate and click the *name_of_the_partition* link next to the partition you to want to remove.

2 Click Delete Partition Label, then click OK.

Expanding a Partition or Pool

1 On the Partition Disks page, locate and click the Expand link next to the pool that you want to expand.

2 Click the Free Disk Space / Free Partition Space link with the space available that you want to use.

3 Specify the amount of space (in megabytes) that you want to use, then click Expand.

Mirroring a Partition

1 On the Partition Disks page, locate and click the Mirror link next to the partition you to want to mirror.

2 Locate and click a free disk space segment in the list displayed.

The operation begins. When it is complete, the status "100% mirrored" is displayed.

Deleting a Partition

1 Access the Partition Disks page.

2 (Conditional) If it is an NSS partition, delete any pools in the partition.

3 Click the Delete link for the partition, then click OK.

Creating a Volume and Mounting a Volume

1 On the Partition Disks page, do one of the following:

- ◆ Locate and click the Create link next to the free space on the device that you want to create the volume on

- ◆ Click the Add a Volume link next to the pool or partition you want to create the volume in.

2 Select the type of partition you want to create the volume on.

This step is assumed if you have clicked the Add a Volume link.

3 Provide information for the required fields for the type of pool and volume or partition and volume you want to create, then select the check boxes for the volume attributes that you want to set.

If you select the check box for making the volume encrypted, you must also enter a password for accessing the encrypted volume.

IMPORTANT: Deciding which attributes you want to assign to your volume is important now because some attributes cannot be changed after the volume is created.

4 Click Create, then confirm your decision by clicking OK in the resulting dialog box.

5 In order to use the new volume, mount it by clicking the Mount Volume link next to it or by clicking the No link next to the volume name on the Volume Management page.

NSS Volume Create

Disk Space Available   8459.93 MB

Pool Size   `8459.93`   MB

Pool Name   ``

Volume Name   ``

Volume Attributes:
- ☑ Backup
- ☐ Compression
- ☐ Directory Quotas
- ☐ Flush Files Immediately On Close
- ☐ Migration
- ☐ Modified File List
- ☑ Salvage
- ☐ User Space Restrictions
- ☐ Encrypted Volume   ``   Volume Password

CREATE

Renaming an NSS Pool

On the Disk Partition Disks page, you can access the links to rename an NSS pool or NSS volume.

1 Locate and click the Pool name link next to the pool you to want to rename.

2 Specify the new name in the Enter the New Pool Name field, then click Rename.

Renaming a Volume

1 Access the applicable Volume Information page:

Click the Partition Disk link in the navigation frame; then on the Partition Disks page, locate and click the volume_name link for the volume you to want to rename.

or

Click the Volumes link in the navigation frame, then click the Volume Information icon next to the volume name you want to change.

2 On the Volume Information page, click the Rename Volume link.

3 Specify the new name in the Enter the New Volume Name field, then click Rename.

Deleting a Volume

On the Partition Disks page, you can access links to delete an NSS pool or any type of volume.

1 Dismount the volume by clicking the Dismount Volume link next to the volume you to want to delete.

2 Click the Delete Volume link next to the volume you to want to delete, then confirm your decision by clicking OK in the resulting dialog box.

Deleting an NSS Pool

1 On the Partition Disks page, click the Delete NSS Pool link next to the pool name you want to delete, then confirm your decision by clicking OK in the resulting dialog box.

A Delete link is displayed next to the NSS partition that was automatically created when you created the volume or pool. This partition must be deleted to make the space completely free, or you can create a new pool and volume as desired in this partition.

2 To make the space completely free for reuse, delete the partition by clicking the Delete link next to the NSS partition you want to delete, then clicking OK in the resulting dialog box.

Changing a Space Quota for a Volume

On the Partition Disks page, you can view and set the space quota set on each volume.

1 Locate and click the Space Quota link next to the volume you to want to change.

2 Click the Volume Space Quota link.

3 Specify the value (in megabytes) of the space size you want to specify, then click Apply.

4 Confirm your decision by clicking OK.

Viewing Name Space Information or Loading and Installing a Name Space on a Traditional Volume

On the Partition Disks page, you can view and load and install name spaces on traditional volumes.

1 Locate and click the Name Spaces link next to the volume you to want to view.

2 Locate the name space you want to load, then click the Not Loaded link in the Name Space Module Status column.

3 Locate the name space you want to install, click the Not Installed link in the Volume Name Space Status column, then confirm your decision by clicking OK.

Creating an eDirectory Object for Existing Traditional Volumes

If a NetWare volume exists on the server that does not have a corresponding object in eDirectory, a Create eDir Object link appears on the volume line in Novell Remote Manager on the Partition Disks page. This can occur when you create a new server and keep an existing traditional NetWare volume.

To create the eDirectory object for the volume, click the Create eDir Object link next to the applicable volume name.

Accessing and Running the Server Console Screens

You can access and use any of the server console screens from the Console Screens page, including the server GUI.
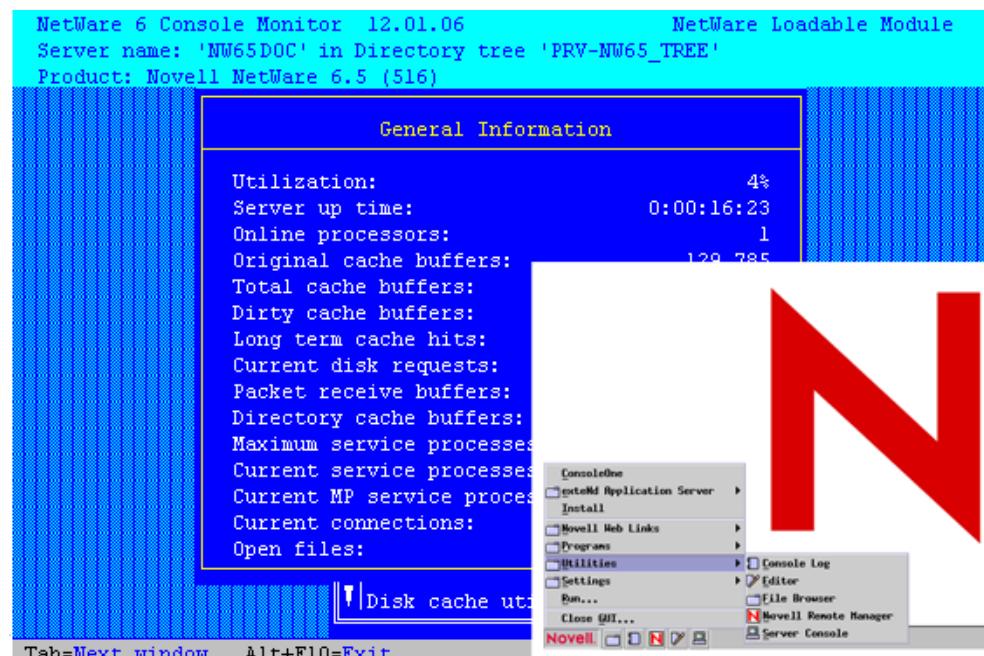
For example, if you wanted to install a support pack update from a remote location, you could access the NWCONFIG utility using the Console Screen link and then run it as though you were at the server console.

To access the Console Screens page, click the Console Screens link in the navigation frame.

From these screens, you can perform the following tasks:

Running the Server Console Screens from the Dynamic Java Applet Pages

The Dynamic console screens let you run any of the console screens through the browser as though you were at the server console keyboard. To do so, click any of the links listed under Dynamic Screens heading on the Console Screens page. Clicking these links runs a Java* applet that opens a secondary browser window that is running the screen listed.

The following table explains what you can do from this secondary browser window.

To	Do This
Use any of the screens listed as though you were at the server console. From the System Console screen, you can load any of the other text-based utilities by loading the applicable NLM program.	Use the keyboard or mouse as though you were at the server console.
Access other screens from the current screen. From the System Console screen, you can load any of the other text-based utilities by loading the applicable NLM program.	1. Click the Screens List button, then enter the screen number at the console prompt. 2. Click the left or right arrow buttons at the top of the page to reach the desired screen.
Cycle through the screens already loaded at the server console. If you access the System Console screen from the applet window, you can load or unload any necessary module or enter any necessary console command.	Click the >> or << button. This is the same as pressing Alt+Esc on the server console keyboard.
Display a list of current utilities that are running at the server console and the screens that are active	Click the Screens List button. This is the same as pressing Ctrl+Esc on the server console keyboard.
Display or remove the title of each screen while viewing the screen.	Click the Title Bar button. This toggles the screen title on or off and is the same as pressing Alt on the server console keyboard.

To	Do This
Access the Emergency Console.	Click the Emergency Console button on this page.
	This is the same as pressing Ctrl+Alt+Esc on the server console keyboard.
	The Emergency console can be useful when the server console seems to hang. You can abort a volume mount or open a new console screen to issue necessary commands such as unloading modules or shutting down the server.
	NOTE: Not all the console commands are available from this screen.
Increase or decrease the font size of the screen displayed.	Click the Font+ or Font- button.

Viewing and Running the Console Screen from HTML Pages

If for some reason you are unable to access the dynamic console screens, you can access an HTML-based screen under the HTML Based Screen Pages heading on the Current Screen page. The screens listed are only screens that are currently running on the server console. These screens let you view the console screen and perform a limited number of tasks. The experience is not as easy as with a dynamic screen, but it does give you access to the screen and the ability in some cases to perform tasks.

When you click the link associated with each of these screens, you can view the screen and control the refresh rate only with the Page Refresh Rate drop-down list at the top of the window. The HTML page for the System Console screen also allows you to enter console commands to be executed at the server console.

You can control the refresh rate of the different server pages. Refresh on the System Console page is suspended when you click Execute Command Line.

Viewing Console Activity

The Logger screen lets you view most of the console activity information that was formerly displayed on the System Console screen. This screen is scrollable and can be saved to a file.

To access a list of commands for scrolling and saving to a file, press F1 while viewing the Logger screen, or click the View History Buffer link on the Console Screens page.

Managing Connections to the Server

On the Connections page, you can view information about and manage connections to your server.
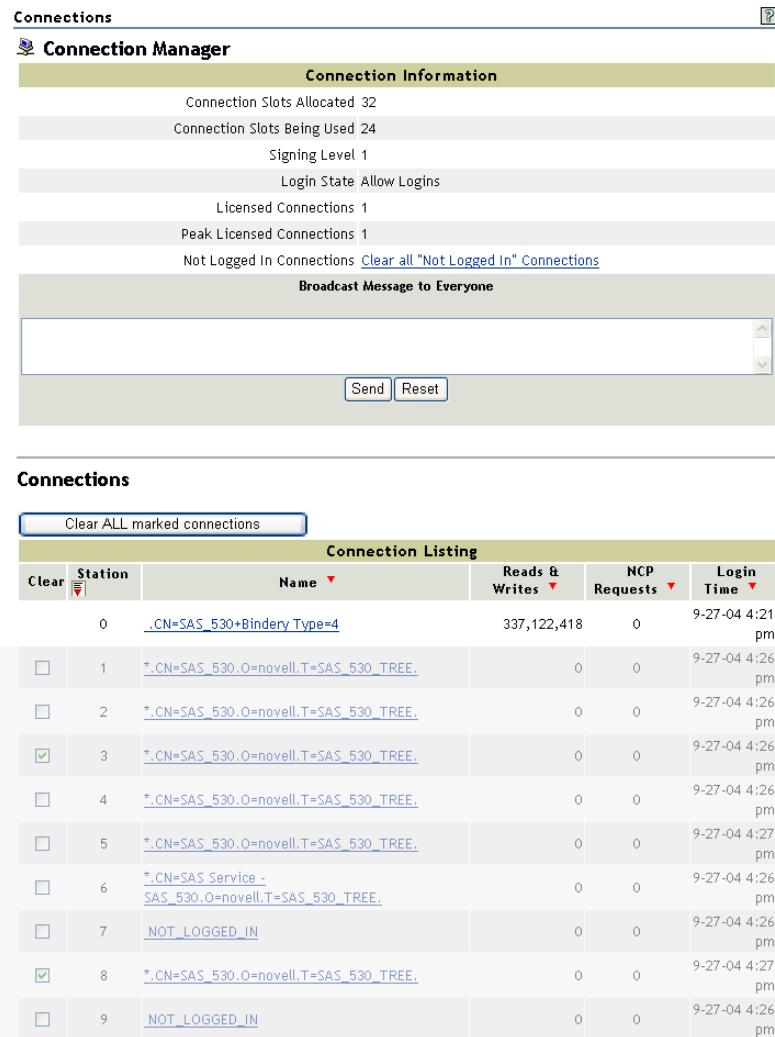
To access the Connections page, click the Connections link in the navigation frame.

This section provides information for the following tasks:

Viewing Connection Information

Viewing connection information in the connection table on the Connections page lets you learn information about each connection to the server and in some cases perform specific tasks related to the information you are viewing.

The following table describes the information that you can view and the tasks that you can do based on the information you see.

Information	Explanation	Associated Tasks
Connection Slots Allocated	Displays the number of slots currently allocated for use. As connection slots are required on this server that exceed the current number of slots displayed here, new slots are allocated. Depending on the server's memory, connection slots are usually allocated in blocks of 16. Connection slots are allocated as needed by users, NetWare Loadable Module™ (NLM) programs, and other services.	NA
Connection Slots Being Used	Displays the number of connection slots currently in use. As this number matches or exceeds the Connection Slots Allocated entry, more connection slots are allocated to the connection table.	NA
Signing Level	Displays the level at which NCP™ packet signature signing is set on the server. NCP packet signatures prevent packet forgery by requiring the server and the workstation to sign each NCP packet. A higher packet signature number impacts the performance of your server. At some point, the need for security might outweigh certain performance issues.	NA
Login State	Displays whether users are allowed to log in to the server.	To disable users from being able to log in to the server (for server maintenance or other reasons), enter `disable login` at the System Console prompt. To allow users to log in to the server, enter `enable login` at the System Console prompt.
Licensed Connections	Displays the number of connections that are currently licensed. Licensed connections are authenticated, logged in, and consume a license. An unlicensed connection does not consume a license and can be authenticated or not. An unlicensed, authenticated connection can access the eDirectory database but cannot access any other resources.	NA
Peak License Connections	Displays the number of licensed connections that have been concurrently logged in while the server has been up.	NA

Information	Explanation	Associated Tasks
Not Logged In Connections	Clears all user connections that are open but not currently authenticated to the server. The connections can be cleared whether they are based on an NLM or based on a user.	Use to clear all user or NLM connections that are not logged in. **IMPORTANT:** Some connections based on an NLM, such as backup NLM programs, maintain a Not Logged In connection until it is time to log in and perform the specified service. If the connection is cleared, the NLM might not be able to re-establish a connection to the server unless it is unloaded and reloaded. This might prevent the NLM from performing the required task.

The table under the Connections heading on the Connections page displays the following information about connections:

Heading	Information Displayed
Station	Shows the connection number for each connection. Connection 0 is the connection used by the server. The server's operating system uses connection numbers to control each station's communication with other stations. Remote Manager does not distinguish connections that don't count against the server's connection limit.
Name	Shows the name of the user, server, service, or login status and links to specific information about that user connection such as the login time, connection number, network address, login status, number of NCP requests, files in use, and security equivalence. Connections with an asterisk (*) displayed next to the name indicate an unlicensed connection (it does not consume a license). These licenses can be either authenticated or not authenticated. An unlicensed, authenticated connection can access the Novell eDirectory database but not other server resources. From this detailed Connection Information page, you can also clear the connection or send a message to the user.
Reads & Writes	Shows the number of reads and writes made by the each connection.
NCP Request	Shows the number of NCP requests made by the each connection.
Login Time	Shows the login time for the connection and a Clear link next to the time for any connection that can be cleared.

Sorting Connection Information

When considering which connections to clear, you can sort the connection information by station, name, reads or writes (in bytes), NCP requests, or login time.

To sort the connection listing, click the table heading. The Login Time heading sorts from the least recent to the most recent. The default sort is by stations.

Clearing All Not-Logged-In Connections

If users are not able to connect to the server, all the licensed user connections might be in use. You can view and clear these users connections from the Connections page. The connections that you want to clear are the connections of users not logged in to the server.

For example, if a user reboots a workstation without properly logging out, the server sends a watchdog packet to that workstation to see if it is still communicating with the server. The server continues to send watchdog packets until the workstation logs in again and re-establishes its connection with the server, or until the watchdog drops the connection because of the lack of response from the workstation.

IMPORTANT: You should be careful in clearing connections based on NLM programs because some backup NLM programs establish a connection during the server initialization process and maintain a Not Logged In connection to the server until it is time to log in and run the backup process. These types of NLM connections cannot re-establish a connection to the server unless the NLM is manually unloaded and reloaded at the server console, which might prevent it from functioning properly at the designated time of execution.

To clear all connections to the server that are open:

1 Click the Connections link in the navigation frame to open the Connections page.

2 On the Connections page, click the Clear All "Not Logged In" Connections link on the Connections page.

The connections cleared can be based on NLM programs or users.

Clearing Specific Connections

If a user's workstation quits working, it usually leaves its connection to the server open and files open.

To clear a specific connection:

1 Click the Connections link under the Manage Server heading in the navigation frame to open the Connections page.

2 On the Connections page, select each specific connection listed in the Connections table that you want to clear, then click Clear All Marked Connections.

If you want to view details about the connection before you clear it, click the link in the name column, view the information, then click the Clear Connection link on the detailed connection page.

Viewing a List of Files in Use by Any Specific Connection

Before clearing a connection, you might want to get an idea of the types of files that the user or operation might be accessing.

1 Click the Connections link in the navigation frame to open the Connections page.

2 On the Connections page, locate the specific connection listed in the Connections table, then click the link for the connection under the Name column.

The list of files that this connection has open are shown in the Open Files section of the Connection Information table for this connection. You can then clear the connection or close the file.

Sending Messages to Users

Before you shut down, reset, or restart your server for any reason, you can send a message to everyone that has connected to it using the Novell Client™. You might also want to send a message to a specific user to see if you get any response before closing a file or clearing a connection. To do so,

To	Do This
Send a message to all users	On the Connections page, type the message in the Broadcast Message to Everyone field, then click Send.
	You can enter up to 252 characters and spaces in the message.
	On Windows-based workstations, the message appears in a pop-up dialog box at the workstation.
	Broken connections and users that are not logged in through Novell Client software do not receive the message.
Send a message to a specific user	On the Connection Information page for that user, type the message in the Send Message field, then click Send.

Viewing or Changing Set Parameters

Changing Set parameters helps you to control special circumstances that a server might have. We recommend that you keep the settings at the default unless you are aware of the ramification of the changed value.

Set Parameters

Category Name
- Common File System
- Communications
- Directory Services
- Disk
- Error Handling
- Licensing Services
- Memory
- Miscellaneous
- Multiprocessor
- NCP
- Novell Storage Services
- Service Location Protocol
- Time
- Traditional File System

Set Parameter Control

Save Settings to a File at the root of Volume SYS: settings.txt   [Save] [Reset]

View Hidden Set Parameters: [OFF]

[View Modified Set Parameters]

[View Non-persistent Set Parameters]

From the Set Parameters page, you can do the following:

To	Do This
View the Set parameter categories	Access the Set Parameters page by clicking the Set Parameters link in the navigation frame.
Access each Set parameter by category to view the current value for the parameter or associated help and change the value	Click the name of the category link on the Set Parameters page. **Common File System** [Back to Set Parameter Categories] **Common File System Set parameters** | Name	Value
Maximum Transactions	10000 ⓘ
Maximum Concurrent Directory Cache Writes	75 ⓘ
Immediate Purge Of Deleted Files	OFF ⓘ
Compression Daily Check Stop Hour	6 ⓘ
Compression Daily Check Starting Hour	0 ⓘ
Minimum Compression Percentage Gain	20 ⓘ
Enable File Compression	ON ⓘ
Maximum Concurrent Compressions	2 ⓘ
Convert Compressed To Uncompressed Option	1 ⓘ
Decompress Percent Disk Space Free To Allow Commit	10 ⓘ
Decompress Free Space Warning Interval	31 minutes 18.5 seconds ⓘ
Deleted Files Compression Option	1 ⓘ
Days Untouched Before Compression	14 ⓘ | **Common File System/Decompress Free Space Warning Interval** [Back to Common File System] **Decompress Free Space Warning Interval** Current Value: 31 minutes 18.5 OK Reset Range: 0 seconds to 29 days 15 hours 50 minutes 3.8 seconds To change the value for that parameter, click the parameter value link, change the value, then click OK. To view the help for each parameter, click the Information icon ⓘ next to the parameter value link. The help description for each parameter describes what the parameter controls, lists the range of values that can be set, shows the NLM program that owns the parameter, and lists the attributes for the file.
Save the settings to a text file on volume sys: to use as a reference	Type a filename with the .txt extension in the Save Setting to a File on Volume Sys: field, then click Save.
Control whether hidden Set parameters are viewable at the System Console prompt or in the Set parameters list in Novell Remote Manager	Click the View Hidden Set Parameter On or Off button on the Set Parameters page.

To	Do This
View Set parameters with settings that are different from the server default (modified) When diagnosing a server problem, you can review settings that have been changed from the server default values or compare them against a server that is working well. If you have more than one network administrator making changes to your server, using this feature will help you to know what changes have been made.	Click the View Modified Set Parameters button on the Set Parameters page. This list does not include nonpersistent Set parameters.
View Set parameters with values that have been changed on the server but that will reset to default values when the server is restarted (nonpersistent). Nonpersistent Set parameters are those that are not stored in the NetWare registry.	Click the View Non-persistent Set Parameters button on the Set Parameters page. If you want the changes to nonpersistent Set parameters to be preserved when the server reboots, you should add a line in the server's autoexec.ncf file for setting the parameter.

If you want to compare Set parameter setting on different servers, create a group and run the Compare Server Set Parameters report. For more information, see "Building and Configuring a Monitoring Group" on page 103 and "Generating and Viewing Server Comparison Reports" on page 110.

Scheduling Tasks to Run at the Server

Rather than making a batch file to run specific console commands on the server at a certain time, you can use the links and the form on the Scheduled Tasks page to schedule console commands to run.

Scheduled Tasks

Currently Scheduled Console Commands:

Inactive Scheduled Commands:

List all the devices running on this server

Console Commands

Create a new scheduled command:

(REQUIRED) Description: [   ]

Console Command to Execute: [   ]

Start Time: 12 ▾ : 50 ▾

Start Day: Tuesday ▾ (for weekly commands)

April ▾ 20 ▾ (for one time or monthly commands)

Frequency:
- ○ One Time
- ○ Hourly
- ◉ Daily
- ○ Weekly
- ○ Monthly

Command Status:
- ◉ Active
- ○ Inactive

Press: Submit to schedule this timed command

Press: Reset to reset the form

To access this page, click the Schedule Tasks link in the navigation frame under the Manage Server heading.

Scheduled task lists are stored in the NetWare registry, so they will be preserved when the server is rebooted.

After scheduling a command, you can view and change the scheduled task until you delete the schedule. Any console command is valid and you can enter commands that execute .ncf files, load NLM programs, send messages, etc.

The following table shows the actions you need to take to accomplish the desired task on the Scheduled Tasks page.

To	Do This
Access the Scheduled Tasks page	Click the Schedule Task link in the navigation frame.
Schedule a console command	Complete the information in the form and click Submit.
See a list of console commands and the associated help	Click the Console Commands link.

To	Do This
Change an already scheduled console command	Select the command from the list of Currently Scheduled Console Commands or Inactive Scheduled Schedule Commands; change the schedule; make the command status active or inactive, then click Submit.
Delete a task	Select the task from the list of Currently Scheduled Console Commands, then click Delete.

Viewing Server Console Commands

Viewing a list of server console commands is easier through Novell Remote Manager than typing the help command at the System Console prompt. You can also do several things from this view that are not physically possible at the server console. You can sort the list by the command name or by the module that registered it. Using the normal print or copy and paste features of your browser, you can also print a copy of this page to use a reference at the server console or save copy of this list to a text file and annotate the list with information that you want.

Console Commands

🔳 Console Screens

Console Commands		
Command ▼	**Owner** ▼	**Info**
ENABLE LOGIN	CONNMGR.NLM	ⓘ
BROADCAST	CONNMGR.NLM	ⓘ
SEND	CONNMGR.NLM	ⓘ
DISABLE LOGIN	CONNMGR.NLM	ⓘ
CLEAR STATION	CONNMGR.NLM	ⓘ
CPUCHECK	CPUCHECK.NLM	ⓘ
LFVOLUMES	FATFS.NLM	ⓘ
LFVMOUNT	FATFS.NLM	ⓘ
ENABLE TTS	FILESYS.NLM	ⓘ

Console Commands

🔳 Console Screens

Console Commands		
Command ▼	**Owner** ▼	**Info**
#	SERVER.NLM	ⓘ
;	SERVER.NLM	ⓘ
ABORT REMIRROR	SERVER.NLM	ⓘ
ACTIVATEMODULE	SERVER.NLM	ⓘ
ADD NAME SPACE	LFS.NLM	ⓘ
ALERT	SERVER.NLM	ⓘ
ALIAS	SERVER.NLM	ⓘ
APPLET	JAVA.NLM	ⓘ
APPLETVIEWER	JAVA.NLM	ⓘ

The following table shows the actions you need to take to accomplish the desired task from the navigation frame or Console Commands page.

To	Do This
View a list of commands that can be executed at the server console	Click the Console Commands link in the navigation frame.
Access the server console in order to execute any of these commands from Novell Remote Manager	Click the Console Screens link on the Console Commands page.
View specific syntax or help for each command	Click the Information icon ⓘ next to the command. Several of the hidden console commands do not have any help associated with the command.

To	Do This
Sort the list by the registered owner of the command.	Click the Sort down icon ▼ in the Owner column. The default sort order for this list is by the command name. The sorted icon ⬇ next to the column title indicates the sort order of the list.

Viewing Memory Configurations

Viewing the general information can help you understand how your server is using physical memory and which programs are using it. It can also help you to understand how the logical address spaces for the NetWare kernel are being consumed. Knowing how memory is used can help you determine whether to add more memory to your server to increase server performance, to unload specific NLM programs that might be causing memory problems, or to change other settings that might allow the server to use memory more proficiently.

View Memory Config

Physical Server Memory		
Memory Usage	**Actual**	**Peak Value**
NLM Memory	1,817,554,944	1,829,474,304
File System Cache	804,130,816	862,240,768
Extended File System Memory	1,715,470,336	1,715,470,336
Virtual Memory System	20,910,080	25,571,328
Extended Virtual Memory System	47,357,952	47,357,952
Available Cache Memory	1,110,904,832	1,086,943,232*
DOS, Video, Misc. Memory	4,166,656	4,166,656
Extended Server Memory In Use	1,887,436,800	1,887,436,800
Total System Memory	12,347,597,824	N/A

Logical Address Space		
Space Usage	**Actual**	**Percent**
In Use Kernel Space	2,831,511,552	65.9
Available Kernel Space	141,787,136	3.3
Fragmented Kernel Space	113,709,056	2.6
Reserved for User Spaces	1,040,187,392	24.2
Reserved for OS Data	167,772,160	3.9
Peak User Space	822,902,784	19.1
Total Address Space	4,294,967,296	100.0

Tune Logical Address Space

To view general memory information, access the View Memory Config page by clicking the View Memory Config link in the navigation frame under the Manage Server heading.

The following table describes each statistic or action of a link shown on the View Memory Config page.

Statistics or Link	Description or Action
NLM Memory	Shows the total physical memory allocated by the operating system to the NLM programs that are loaded on the server. Links to the List Modules page that shows the details of how each NLM program is using memory.
File System Cache	Shows the amount of physical server memory in use by the directory cache buffers in the NSS or traditional NetWare file system. Links to the File System Cache Statistics page that shows the details of these cache statistics. Monitoring these statistics over time helps you determine when you might need to install more RAM for cache. See the online help for details of each of the statistics on this page.
Extended File System Memory	Shows the amount of physical extended memory (above 4 GB) that is in use by the NSS file system.
Virtual Memory System	Shows how much physical memory the virtual memory system is using. The state of the virtual memory system can quickly be determined by the amount of physical memory backing the virtual memory system. Links to the Virtual Memory Health Information page: ◆ **Physical memory**: The amount of physical memory backing the virtual memory system. ◆ **Memory swapped to disk**: The amount of virtual memory swapped to disk and not backed by the virtual memory system. ◆ **Total bytes in virtual memory**: The amount of virtual memory that has been used. Link to Other Pages: ◆ **Swap File Information page**: Shows the amount of hard disk space that has been allocated as a virtual memory swap file. If you find that your server is swapping to virtual memory and its performance is suffering because of it, add more memory to the server. ◆ **Virtual Memory Cache Pool page**: Shows statistics for the physical memory cache pool, virtual memory cache pool, and individual cache pools. See the online help on this page for details about each of these statistics. ◆ **Virtual Memory Statistics page**: Shows specific statistics related to virtual memory and provides links to the Virtual Memory Cache Pool page and Virtual Memory Health page.
Extended Virtual Memory System	Shows the amount of extended (above 4 GB) physical memory that the virtual memory system is using.
Available Cache Memory	Shows the amount of cache memory the server has available.

Statistics or Link	Description or Action
DOS, Video, Misc. Memory	Shows how much physical memory is in use before the NetWare operating system loads.
Extended Server Memory In Use	In servers that have greater than 4 GB of physical memory loaded, this shows the amount of memory in use and links to the Extended Server Memory Information page that shows the amount of memory in use and available amounts above 4 GB, along with a usage chart.
Total System Memory	Shows how much total physical memory the server has.
Logical Address Space Usage table	Shows the logical address space information for the NetWare kernel including space in use, available, fragmented, and reserved for User Spaces and OS data. It also shows the peak usage for User Space and the total amount of address space. The User Space reserve is commonly known as Protected Address Space and it always reserves 1 GB of memory whether it is used or not.
Tune Logical Address Space link	Displays the Tune Logical Address Space page that shows the Set parameters to change for best memory performance under the current conditions for that specific server. To make the changes, click the Change link next to the parameter you want to accept the changes for and restart the server with the -u command displayed. Use caution when changing these parameters because they are determined to provide the best results for the server while it has been running. If the way the server is used changes, you might have to reset these settings. The settings are generated dynamically for the specific service at the use level of the server and should not be replicated to any other server.

Statistics or Link	Description or Action
Bar Chart	Shows how the logical address space is mapping the physical memory on this machine.
	◆ Memory Map: Shows how the logical address space is set up to run on this machine.
	◆ Logical Space: Shows how the actual logical address space is being used on this machine.
	◆ Physical Memory: Shows how the physical memory with addresses smaller than 4 GB are being used on this machine.
	◆ Extended Memory: Shows how the physical memory with addresses larger than or equal to 4 GB are being used on this machine.
	◆ L=P: The amount of logical address space that is reserved for mappings of logical equal physical memory. This memory is primarily used for file cache, but some drivers and NLM programs still require it. This size of the logical equals physical memory pool can be changed by using the File Cache Maximum Size Set parameter. Increasing this pool decreases the NLM Memory pool.
	◆ FS Cache: The amount of memory being used for the file system cache. This color on the Extended Memory bar chart shows the amount of extended memory being used by the file system.
	◆ Frag: The amount of logical address space that is still available but is in sizes smaller than 4 MB.
	◆ Avail: The amount of logical address space or physical memory that is available to be used by the system.
	◆ NLM: The amount of logical address space or physical memory that is being used by NLM programs.
	◆ Peak US: The peak amount of logical address space that has been used in the User address space. On the Physical Memory and Extended Memory chart, this is the amount of physical memory backing all applications running in User space.
	◆ US: The amount of logical user address space reserved for running applications in User space or ring 3. You can change the size of the User address space by using the -u switch when issuing the server command. For example, to set the User space size to 500 MB, use the following command when starting the server: server -u500000000
	◆ OS Data: The amount of logical address space reserved on the Logical Space bar or physical memory being used on the Physical Memory bar for various Operating system data. This data is used to manage both the physical and virtual memory being used on the system.

For more information about Server Memory, see the *NetWare 6.5 Server Memory Administration Guide*.

Viewing System Statistics

Viewing statistics on your server can help you become familiar with how your server is running at the various levels listed. This information can also help you to know when to turn system alerts on or off. The following links on the Server Statistical Information page allow you to view this information:

- **Network Management Information link**: Accesses the Network Management Information page, which shows a short list of network management IDs with their corresponding descriptions and current values.

- **Kernel Statistical Information link**: Accesses the Kernel Event Counter Information page, which shows the number and type of events that occur during a sample period on a per-CPU basis.

- **LSL Statistical Information link**: Accesses the LSL Statistical Information page, which shows the statistics generated and maintained by the Link Support Layer™ of the NetWare server.

- **Media Manager Statistical Information link**: Accesses the Media Manager Information page, which monitors requests in the server's disk I/O subsystem (meaning those requests that actually cause access to disk media). File system requests that access the file cache are not monitored. Therefore, it is possible for these statistics to be at zero even when file requests are occurring.

- **Health Statistic Trend Graphs link**: Access the Statistics Trend Graphs page, which lets you select and create specific server statistics trend graphs for the statistics and duration listed. The graphs can cover from the last minute up to the total time the system has been up, depending on the duration you select.

To access the Server Statistical Information page and view these statistics, click the View Statistics link in the navigation frame under the Manage Server heading, then click the applicable link for the statistic you want to view.

Shutting Down, Resetting, or Restarting the Server

Options for shutting down, resetting, or restarting your server are on the Down Server Options page.

To	Do This
Access the Down Servers Options page	Click the Down / Restart link in the navigation frame under the Manage Server heading.
Shut down, restart, or reset (warm boot) the server	Click the applicable action on the Down Servers Options page, then confirm your choice. Using any of these options forces the server to shut down. A force down updates all cache buffers to disk, closes all files, updates the appropriate Directory Entry and File Allocation Tables, exits the server from the network, and dismounts all volumes. **WARNING:** If files are open and changes have not been saved to the server, some data loss could occur. Resetting the server shuts down the server and then warm boots the computer.
Make the server load automatically after a executing a reset command and allow access to the server from Novell Remote Manager,	Enter a line to run server.exe in the DOS autoexec.bat file.

When the browser loses communication with Novell Remote Manager, the overall health status indicator will display white with a black X through it ⊠. When communication is re-established with the server, the normal health status again displays the server's status unless the accessibility options for manually refreshing the server are enabled.

Accessing and Managing Other Servers

To access other servers in your eDirectory tree that have Novell Remote Manager loaded, click the Managed Server List link under the Manager Server heading in the navigation frame. A list of servers is provided via SLP (Service Location Protocol).

When the list of NetWare servers is first displayed, it might include servers outside the current tree, as reported by SLP. The question mark icon next to the server name indicates that the portal.nlm is checking its availability. The question mark icon changes to a server icon if it is in the current tree. The question mark icon is removed if the server is not in the current tree.

Filtering the server list might take several minutes if the list is long.

To refresh the list, reload the page by clicking the Managed Server List link again, then refresh the list using normal browser functionality.

7 Managing Applications

This section includes instructions for accomplishing the following tasks:

Managing NLM Programs

Managing NLM™ programs on your server includes controlling what programs can run, what functionality your server has, and the capacity your server can provide. Novell® Remote Manager lets you access a list of NLM programs to view information about them and perform different operations with them.

This section includes instructions for accomplishing the following tasks from the Modules List page:

Viewing and Managing Loaded NLM Programs

To view a list of NLM programs and manage them, access the List Modules page by clicking the List Modules link in the navigation frame.

The column totals of this list show how much memory is being used by all of the NLM programs collectively on the system. This information can help you better plan for future memory upgrades to the server.

The Allocated Memory summary indicates how much memory a NetWare® Loadable Module has requested from the system and how much it is currently using. This information is valuable in determining whether the module is using too much system memory.

The following table shows the tasks that you can do with the information in the module list or from the detailed Module Information page.

To	Do This
Sort the list by module name, date, code/data size, or memory usage. **NOTE:** Memory usage is the default sort.	Click the column heading you want to sort by.
Access detailed information about a module (flags, resources, memory use details, module dependency list, etc.), as well as an option to unload the NLM program if there are no module dependencies. **TIP:** Modules with no dependent NLM programs are indicated by an asterisk next to the module's name.	Click the module's name link.
View a list of modules that are dependent on this module being loaded. **TIP:** When a module has other programs that are dependent on it running, that module cannot be unloaded. You must unload the dependent modules first.	View the detailed information page for the module, then view the list of modules under the Modules Currently Using *Module_name* heading. From this list, you can access each NLM listed by clicking the applicable NLM name link. From that modules page, you can unload that NLM.
View information about the resources being used by a modules.	View the detailed information page for the module, then click the Resource Tags button.
View information about the memory resources that are being used by this module.	View the detailed information page for the module, then click the Memory Resource button.

To	Do This
Perform garbage collection on a module. **NOTE:** In this operation, the server operating system deallocates blocks of memory that were once allocated for this module but are no longer in use. These freed blocks of memory are then gathered by the operating system and reclaimed into larger contiguous free blocks for future use.	View the detailed information page, then click the Garbage Collection button.
Unload the NLM program. **TIP:** When a module has other programs that are dependent on it running, that module cannot be unloaded. You must unload the dependent modules first.	View the detailed information page, then click the Unload button.
View the allocated memory summary for an individual NLM program.	Click the value link in the Alloc Memory column.

Loading NLM Programs

The List Modules page makes loading any NLM programs on your server from a remote workstation very easy.

1 Access the List Modules page by clicking the List Modules link in the navigation frame.

2 Specify the name of the module you want to load in the Load Module field.

3 (Conditional) If you want to display the System Console while the NLM program is loading, select the Display Logger Console Screen for Module Load check box.

4 Click the Load Modules button.

Viewing the Search Path for Loading Modules or .Ncf Files

To do this, click the Module Load Search Paths link on the List Modules page.

If the module cannot be found, you can change the search path as follows:

To	Do This
Add another search path to the bottom of the search stack	Enter the following command at the System Console prompt: **search add *complete_path*** For example: search add sys:\system\extras
Insert a search path into the middle of the search stack, such as to make a search path the second place that NetWare looks for it files	Enter the following command at the System Console prompt: **search add *number complete_path*** For example: search add 2 sys:\system\extras
Learn more about using the search command	Click Console Commands, then click the Information icon ⓘ next to Search.

Viewing and Managing Programs in Protected Memory and Protected Address Spaces

To view and manage programs in protected memory and protected address spaces, access the Address Space Information page by clicking the Protected Memory link in the navigation frame.

On the Address Space Information page, you can perform many tasks associated with managing protected memory.

To	Do This
Execute an .ncf file to load several modules into the same protected address space	Type the .ncf filename in the field provided, then click the Load NCF File Protected button.
Load an individual module into the protected address space	Type the module name in the field provided, then click the Load Modules Protected button.
View information about an address, such as its name, address space, time since last fault, restart count, and the status for Restartable, Unload, Remove, and Restart	If there is a button rather than n/a status in these columns, you can perform the following tasks: ◆ *Restartable* allows you to change the restart state of that address space. ◆ *Unload* unloads all modules from the address space. ◆ *Remove* removes the address space from the server without running the termination code of modules in that address space. ◆ *Restart* allows you to reload that address space.
View information about modules running in protected address spaces on the server	Click the name link for that address space.
View the current memory protection Set parameter settings	Click the Memory Protection Set Parameter link to display the Memory page.
Change the current memory protection Set parameter settings	Access the Memory page, click the value link for the setting enter a new value within the specified range, then click OK.

Viewing System Resources

Resource tags are used to track things like allocated memory, screens, and packet receive buffers. When an NLM program wants to check out or allocate a resource from the system, it passes in a resource tag to the system and the resource tag is updated to show how much of the resource is in use. When the resource is returned to the system, the resource tag is again updated to reflect the change. When an NLM program is unloaded, the resource tags are also used to ensure that the NLM program returned all of the system resources that it was using.

To view the resource tags used by the system, access the System Resource page by clicking the System Resources link in the navigation frame.

On the System Resource page, you can do the following:

◆ View a list of all the Resource tags in use at any given time

◆ Access the details of a resource

To view the details of a resource, click the resource name.

A list is displayed that is sorted by NLM and then by number in use. The items displayed are a short name for the NLM, the NLM description, the resource tag description, and the amount of the resource that is checked out to that resource tag.

Viewing and Managing the NetWare Registry

The NetWare registry is a database of setup and configuration information that determines how the NetWare server and applications on this server will run. The following figure shows the NetWare Registry page.
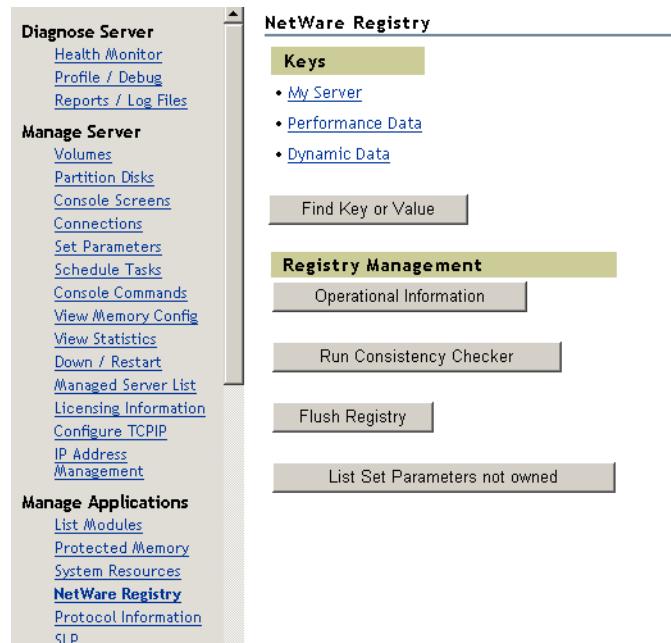
To access the NetWare Registry, click the NetWare Registry link in the navigation frame under the Manage Applications heading.

Key information shows keys and values for your server, performance, and other dynamic data.

Operational information shows the overall details about the NetWare registry for your server, such as the version, number of records, keys, and values, the file size, daemon information, and file location.

If any problems are noted when you run the consistency checker, contact a Novell support provider for actions to take.

Flushing the registry lets you make changes and save them to disk immediately rather than waiting 30 seconds for them to be copied to disk.

If modules are unloaded from the server and never reloaded, some Set parameter settings might be present in the NetWare registry. If you want to remove these parameters from the registry without rebooting your server, you can.

The following table specifies instructions for performing the following tasks associated with viewing and managing the NetWare registry.

To	Do This
View keys and values for your server, performance, or other dynamic data	1. Click the My Server, Performance Data, or Dynamic Data link under the Keys or Values heading. 2. Click the applicable key or value links until you reach the information you need.
Locate a specific key and value using search rather than browsing the registry	Click the Find Key or Value button and enter the required information, then click the Find Key or Value button again. If you want the search to be case sensitive, select the Case Sensitive check box before clicking the button again. To go to the value, click the applicable URL returned in the search page.
View operational information	Click the Operational Information button.
Run the consistency checker.	Click the Run the Consistency Checker button.
Flush the registry	Click the Flush Registry button.
Get a list of Set parameters that are in the registry but not currently owned by a running NLM program.	Click the List Set Parameters not Owned button.
Remove the parameters not owned from the registry.	Click the Yes button on the List Set Parameters not Owned page.

Viewing Information about Each Protocol Running on the Server

On the Protocol General Information page, you can view general and specific information about each protocol running on the server.

To access the Protocol General Information page, click the Protocol Information link in the navigation frame.

To access specific information for a protocol, click the link for the protocol.

On the specific NCP page, you can enable and disable tracking counters for NCP™ (NetWare Core Protocol™).

Viewing SLP Information

Rather than using the Display SLP commands at the server to view and manage your SLP configuration, you can view and manage it using the following links on the Service Location Protocol page.

◆ **Scope List**: Shows each SLP scope that has been configured on the server.

- **SLP Configuration File**: Shows the contents of the sys:etc/slp.cfg file. You can edit this file using the Edit File features of Novell Remote Manager. See "Viewing the Details about a File or Editing, Deleting, or Renaming a File" on page 55.

- **Discovered Directory Agents:** Shows a list of all Directory Agents that have been discovered using multicast or DHCP or through static configurations in the slp.cfg file.

- **Server Agents Services**: Shows the internal services that have been registered.

- **Directory Agent Visible List**: Shows the all servers and directory agents in a reference table and lets you view the differences between each.

- **Directory Agent Services**: Shows the internal services on a directory agent. This option is available only when there is a directory agent loaded on the server.

8 Managing Server Hardware

This section includes instructions for accomplishing the following tasks:

Accessing Processor Information

Information about the processor speed as well as the local cache sizes is useful in determining how much work a processor can do.

To access this information, click the Processors link in the navigation frame to access the Processor Information page.

From this page, you can view the status and detailed information about all processors available on the server.

Many of the profiling operations in Novell® Remote Manager (portal.nlm) require at least a Pentium* Pro processor (family 6 or higher). If the processor is a Pentium III or higher model, the processor serial number is also displayed.

If more than one processor is present, you can stop and start processors individually (except for P0) by clicking the corresponding Stop/Start processor link.

Viewing Storage and Network Adapter Information

To view information about the storage and network adapters that are installed on the server and the slots they are in, access the Disk/LAN Adapter page by clicking the Disk/LAN Adapter link in the navigation frame.

Disk / Lan Adapters

Storage Adapters

Info		Configure	Type	Name	Slot
ⓘ		Parameters	Storage	USB UHCI Controller	Slot: 10006
ⓘ		N/A	IDE	Novell ATA/IDE Host Adapter Module	Slot: ISA
ⓘ		N/A	IDE	Novell ATA/IDE Host Adapter Module	Slot: ISA
ⓘ		N/A	Custom	Legacy FLOPPY Controller	Slot: ISA

Storage Statistics

Network Adapters

Info		Configure	Type	Name	Slot
ⓘ		N/A	Ethernet	Intel(R) 8255x-based Network Connection	Slot: 10008

Network Statistics

From this page, you can do the following:

If the driver does not register a slot, it is reported as an ISA slot.

Viewing Additional Storage Adapter Information

- **Storage Statistics button**: Displays statistical information for the media manager of the server.

- **Info link**: Displays the resources registered for that adapter.

- **Name link**: Displays the information for the devices that are controlled by the adapter.

- **Parameters link**: If present, displays the settable parameters for the adapter. If the parameters are not viewable from this interface, an N/A appears.

Viewing Additional Network Adapters Information

- **Network Statistics button**: Accesses the LSL (Link Support Layer) Statistical Information page. This page displays the statistics generated and maintained by the LSL of the server including Event Control Blocks (ECBs) information and statistics, LAN driver information, and a dynamic graph showing packets per second on the adapter.

- **Info link**: Displays the resources registered and counter information for that adapter.

- **Name link**: Accesses the Hardware Adapters/Network Adapters/Protocols page, where you can view the driver name, version and date, hardware settings, node address, and binding number as well as the frame types, board name, and protocols that are bound to that adapter.

- **Parameters link**: If present, displays the settable parameters for the adapter. If the parameters are not viewable from this interface, an N/A appears.

Viewing PCI Device Information

The PCI Device Information page lets you view a list of Hardware Instance Numbers (HIN). Each HIN represents a hardware device.

To access the PCI Device Information page, click the PCI Devices link in the navigation frame.

To view the Peripheral Component Interconnect (PCI) configuration space and hexidecimal offset for a HIN, click the specific HIN link.

Viewing USB Device Information

The USB Device Management page lets you view details about USB devices in your server by device type. These details include the device product, manufacturer, address, tier, port, and speed information.

To access the USB Device Management page, click the USB Devices link in the navigation frame.

Viewing SMBIOS Information

SMBIOS information lets you access details about the BIOS hardware in each NetWare® server without physically removing the hardware cover. You also have access to information that is only available through the management system.

To view a list of SMBIOS types, access the SMBIOS Information page by clicking the SMBIOS Information link in the navigation frame.

Each link shows the type of device that is available in the BIOS of the server computer.

To view the details of each information type, click the applicable link.

Viewing Hardware Resource Information

Accessing the Hardware Resource page lets you view the resource information that drivers have registered with the following hardware resources:

- Interrupts and handlers
- Non-ISA slots
- Ports
- Direct Memory Access (DMA) channels (if applicable)
- Shared memory addresses

To access the Hardware Resources page, click the Other Resources link in the navigation frame.

To display the information that the drivers have registered with the server operating system for a specific resource, click the specific resource link.

9 Managing Novell eDirectory

Novell® Remote Manager is not the primary tool for managing Novell eDirectory™; however, you can accomplish the following tasks in situations needed:

Walking the eDirectory Tree

On the Traversing NDS Tree page, you can view the current eDirectory tree. This page also lets you view details on and delete individual objects in the tree.

WARNING: Be cautious when deleting objects. As an administrator, you can delete any object and you might accidently delete the Admin object itself. This prevents any access to the system, including administrator access.

To access the page to traverse the current NDS® tree, click the Access Tree Walker link in the navigation frame.

Viewing eDirectory Partitions and Replicas

On the Partitions in Tree *tree_name* page, you can view information about eDirectory partitions on the server. The information available is the partition or replica name, the type of partition or replica, and the current state and name of the server that the partition or replica exists on.

To access the page to view partitions in the current tree, click the View eDirectory Partitions link in the navigation frame.

Accessing Other eDirectory Management Tools

If ndsimon.nlm is loaded on the server, you can also access the Novell iMonitor utility and DSTrace utilities to manage and troubleshoot eDirectory on your server. For more information about iMonitor, see "Using Novell iMonitor 2.1" in the *Novell eDirectory 8.7.3 Administration Guide*.

10 Using Group and Group Operations

Novell® Remote Manager lets you build and use server groups and perform similar operations on them or run reports to collect data from multiple servers.

This section includes instructions for accomplishing the following tasks:

NOTE: In previous version of Novell Remote Manager, part of this functionality was in the Use Server Groups category.

The following figure shows a group created to monitor servers throughout the world. These servers show various statuses. From this group, you can not only monitor server health, ping, and printer health statuses but perform various operations and run reports on this server group.
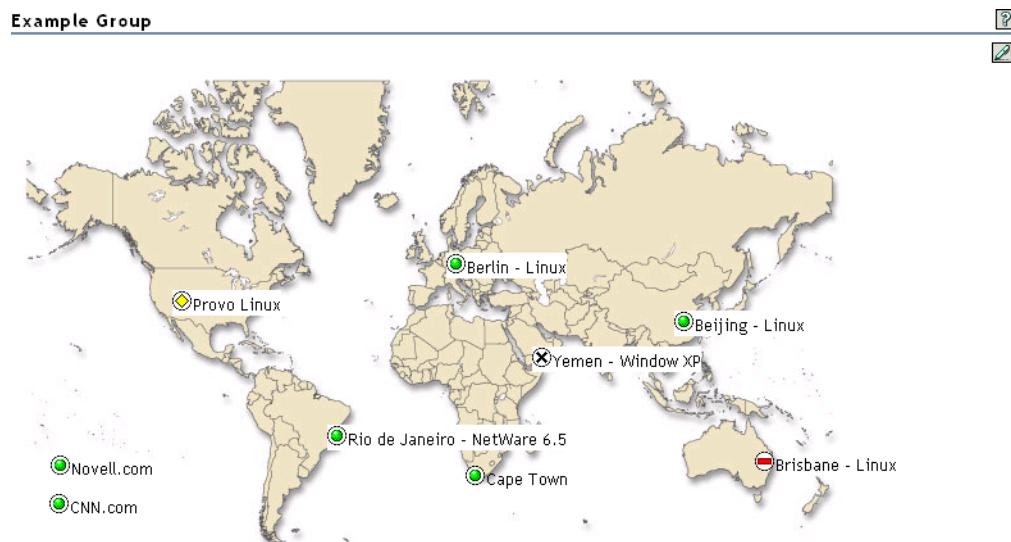
You can perform the following tasks on servers that are running the NetWare® 6.5 version of Novell Remote Manager:

- Add additional monitor items such as:
  - The ability to ping a remote server or download a Web page.
  - Monitor iPrint (if configured)
  - Monitor Branch office servers (if configured)
  - View the response activity of designated TCP/IP services
- Add specific labels to the monitoring items or groups of items, and change the color of the label and its background.
- Search Novell eDirectory™ for and add objects that can be monitored, such as Web servers, print managers, GroupWise® domains or post offices.
- Display status only when it is not normal (good).
- Synchronize the following information between servers (group operations):
  - Sadmin user password
  - Sdbug user password
  - Changes to the default eDirectory context for users logging into Novell Remote Manager
  - E-mail setting for the mail notification page
  - Health item threshold settings
  - Health item configuration settings
- Run reports to compare the following on servers in the group:
  - Set parameters
  - Modules running on each server
  - Server up times
  - Storage space, size, usage, and so on.
- Group servers into collections and monitor or manage the collection.
- Access the server in the group and do the following:
  - Access the Administration page for the server.
  - Monitor server health for the server
  - Access the Novell Remote Manager page for the server
  - Change the item that is being monitored
  - Delete the server from the group.

Using this feature involves one or more of the following tasks:

1. Building and Configuring a Monitoring Group (page 103)

2. (Optional) Saving a Group (page 106).

   You only need to perform this step if you want to use the group at a later time.

3. Performing Synchronizing Operations on Server Groups (page 108) or "Generating and Viewing Server Comparison Reports" on page 110.

   The monitoring operations start immediately. Other tasks such as performing operations or running reports require additional steps.

4. (Conditional) Accessing an Existing Group (page 107)

Building and Configuring a Monitoring Group

Novell Remote Manager lets you build and configure groups of items for monitoring Linux* server or NetWare server health, as well as providing various statistics for servers running other operating systems. A few of the preconfigured monitoring item types are NRM Health Status for a single server or a group of servers, Ping to a specific port, IP connectivity, and status of connectivity to a Web page.

Monitoring items can be defined and represented by icons on a page as shown in the following figure. The icons can represent a single item or a group of items.
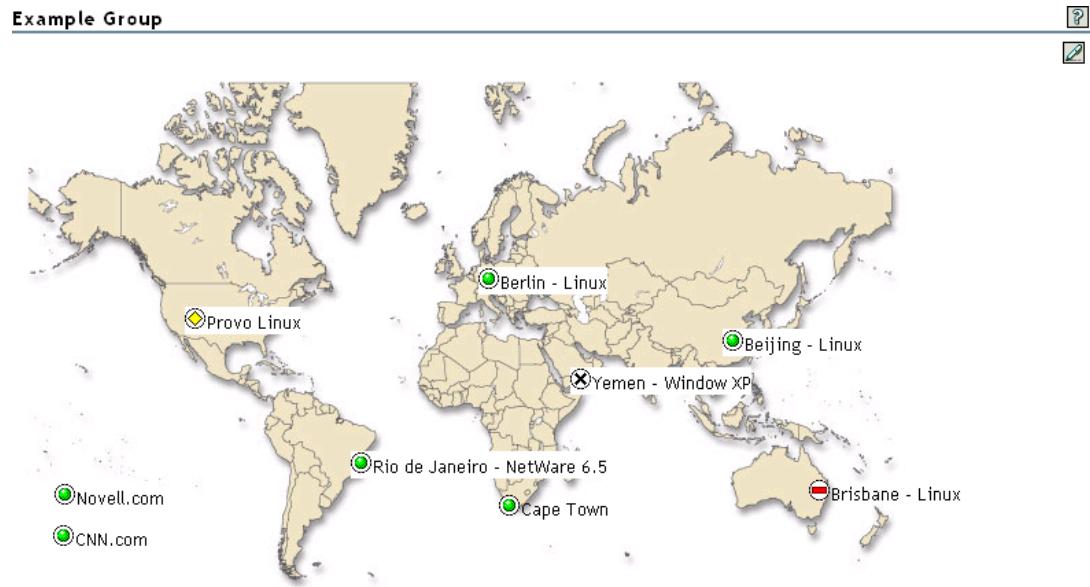
To build and configure a new monitor group:

1 Click the Configure New Group link in the navigation frame.

2 Right-click the Group Monitoring Operations page.

> **TIP:** If your browser does not support right-click functionality, try double-clicking the Reports icon ✏ in the upper-right corner of the page.

3 Click Add Item, and do the following:

> **3a** Complete the Monitoring Item Configuration form.
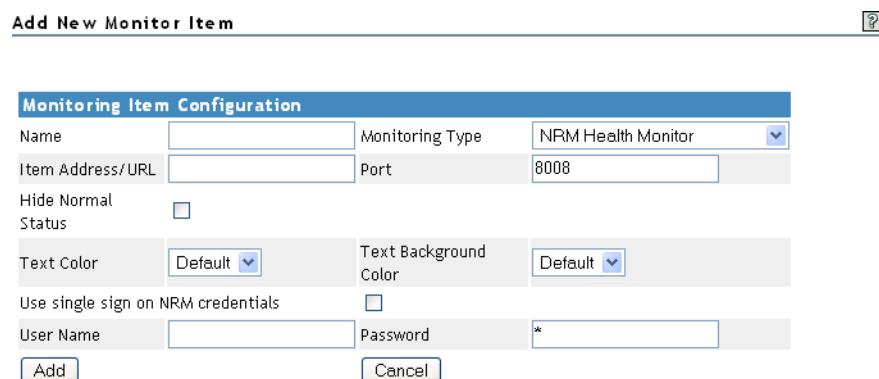
For each item you add to a group or want to change from the default setting (health monitor), complete the following options on the Monitoring Item Configuration form.

Option	Details
Name	Provide a descriptive name for the item.
Monitoring Type	Specify one of the following types: ◆ **Label:** Text information to use as a label on the group monitor display. Lets you identify each group specifically as needed. ◆ **NRM Group:** Shows the health status of a group of servers. Lets you access the specific health page for each server in the group. ◆ **NRM Health Monitor:** Shows the health status of each server in the group. Lets you access the specific health page for each server in the group. ◆ **ICMP Echo (Ping):** Shows the response when sending ping requests to the specified DNS name or IP address. ◆ **TCP/IP Service Query:** Shows response activity of a designated TCP/IP service. This query attempts to make a TCP connection to the specified address and port. Returns green (good) health if any services are listening. For example, you could set up a health monitoring item to tell you whether your GroupWise server is still listening for logins from clients. The only states that are returned are green (good), which means the connection was successful, and red (bad), which means the connection was not successful. ◆ **Download Web page:** Shows the response when trying to download a Web page from the specified URL. You need to type the second part of the address only.
Item Address/URL	Specify the IP address for the server that you want to monitor or ping, or specify the URL for the Web page that you want to download. The address can be an IP address or DNS name. You do not need to specify the HTTP:// portion of a URL
Hide Normal Status	When selected, only items that are in an abnormal state are displayed. If you want to monitor all statuses, leave the check box deselected.
Text Color	Black is the default. You can select any other color from the drop-down list.
Port	The default is provided. You can type a different port to use.
Use Single Sign on NRM Credentials	When selected (default), the credentials used to access this item's data are the same as the credentials that the user logged into Novell Remote Manager with. When deselected, enter the credential necessary to access the item in the User Name and Password fields.
Text Background Color	Clear is the default. You can select any other color in the drop-down list.

You can also define your own monitoring types or edit the default defined health types by editing the XML data in the sys:\login\nrmgrouphealthinfo file. For more information, see "Defining or Editing Group Monitoring Types" on page 113.

3b Click Add.

3c Drag the monitor items to the desired location.

3d Repeat Step 3b through Step 3c for each item that you add.

4 (Optional) If you want to change any of the following, change the configuration of the group:

- ◆ The label for the group
- ◆ The graphic displayed
- ◆ The refresh rate
- ◆ The suspect and critical e-mail notification for the group

4a Right-click the customized Group page, then click Group Configuration.

4b Complete the fields as desired on the Group Operations Configuration page.

Group Operations Configuration

Display Options		E-mail Options	
Monitor Page Title	[ ]	Suspect Server Health E-mail Notification	☐
Background Graphic	NRMDefaultGroupMap.JPG ▾	First notification wait period	0 Minutes
Refresh Rate	30 Seconds	Additional notification wait period	0 Minutes
		Critical Server Health E-mail Notification	☐
		First notification wait period	0 Minutes
		Additional notification wait period	0 Minutes

[Apply]

Option	Description
Display	The display options let you control the following: ◆ **Monitor Page Title:** Specify a title to be shown at the top of the monitor page in the header area when the page is built. ◆ **Refresh Rate:** Specify the number of seconds between status queries to the server. ◆ **Background Graphic:** Select a graphic from the drop-down list for the monitor items to be displayed on. This option can be helpful if you want to show specific locations of the item being monitored. If you want to add a customized graphic, add it to the sys:\login\nrmgroupmaps directory.
E-mail	The e-mail notification options control how and when e-mail notifications are sent when the server health changes. E-mail notifications are sent to the addresses in the mail notification list using the mail servers set on the Mail Notification Configuration page.

4c Click Apply.

5 Perform the desired task, or save the group and perform the task later.

In this release, the only task you can perform on Linux servers is to compare the server up times.

6 (Optional) If you want to reuse the group, save the group.

6a Right-click the customized Group page, then click Save Group.

We recommend using a name that represents the group you built.

6b Click Save Group and perform the required steps.

See .

Saving a Group

You can save the configuration of the group so you can access this page again without completing the configuration options. You can save a group to the local server or save it and associate with an eDirectory object.

Saving the Group to the Local Server

1 While viewing the group you just created or edited, right-click the customized Group page, then click Save Group.

2 In the Group Name field, specify a name for the group or select a group name that you want to replace from the group list.

We recommend using a name that represents the group you built.

3 Click Save Group.

This saves the group to a file with that name in the sys:\login\nrmgroups directory.

Saving the Group and Associating It with an eDirectory Object

You can save a group and associate it with a User or Group eDirectory object. This is helpful when you want to access the configuration and you don't want to save the configuration to a specific server (for example, if the server is down but you want it to be part of the operation or if you want to run the operation while one of the servers is not functioning properly).

Only one group can be associated to an object.

1 While viewing the group you just created or edited, right-click the customized Group page, then click Save Group.

2 In the Make This the Group Monitor for This Object field, specify a User or Group object that you want to associate this group with.

You can browse to the user or group by clicking the Browse link icon or by typing the full content name of the object.

3 Click Save Group.

Accessing an Existing Group

After a group has been saved to the server, you can access the group again to run reports or change the attributes of the group.

1 Click the Select Group link in the navigation frame.

2 On the Group page, select the desired group from the drop-down list.

In this release, browsing for a group configuration file previously saved is not working even though the option exists on the page.

3 Click Build Group.

Changing an Existing Group

After accessing an existing group (see "Accessing an Existing Group" on page 107), you might want to change it using one of the following procedures.

If you want to	Then
Change the configuration of an existing group.	1. Select the group. 2. Right-click the page, then click Group Configuration. 3. Make the desired changes in the Group Operations Configuration form. 4. Click Apply. 5. Save the group. (See "Saving a Group" on page 106.)
See the details of the server health or the monitoring type.	1. Select the group. 2. Select the item you want to see the details of. 3. Double-click the Health Status icon.
Edit an existing item in the group.	1. Select the group. 2. Select the item you want to edit. 3. Right-click the selected item. 4. Click Edit.
Delete a server or monitor item from a group.	1. Select the group. 2. Select the item you want to delete. 3. Right-click the selected item. 4. Click Delete.
Change the display to a full screen in your browser window.	1. Select the group. 2. Right-click the page. 3. Click Full Screen 4. When you are finished viewing the group, close the browser window.

Deleting an Existing Group

To delete a group:

1 Click the Select Group link in the navigation frame.

2 On the Group page, select the desired group from the drop down list.

3 Click Delete Group.

Performing Synchronizing Operations on Server Groups

On the Group Operations page, you can perform several tasks to synchronize specific items on servers belonging to the same group. The items you can synchronize are:

- Sadmin User Password (page 108)
- Sdebug User Password (page 109)
- eDirectory Context for Users Logging in to Novell Remote Manager (page 109)
- E-mail Notification Settings for Novell Remote Manager (page 109)
- Health Item Thresholds for Novell Remote Manager (page 109)
- Health Item Configuration for Novell Remote Manager (page 110)

Sadmin User Password

This procedure is useful when you have a large organization and you want to delegate the administration of several servers to another user.

1 Build the monitor group, or select a group previously saved. See "Building and Configuring a Monitoring Group" on page 103 or "Accessing an Existing Group" on page 107.

2 Right-click the Group Operations page for the group, then select NRM Server Operations link.

3 Click the Synchronize Novell Remote Manager SADMIN Password icon.

4 Type the new password in the SAdmin Password and Confirm Password fields.

5 Click the Synchronize SAdmin Password button.

Sdebug User Password

This procedure is useful when you have several servers that need troubleshooting by a contracted or third-party organization.

1 Build the monitor group, or select a group previously saved. See "Building and Configuring a Monitoring Group" on page 103 or "Accessing an Existing Group" on page 107.

2 Right-click the Group Operations page for the group, then select the NRM Server Operations link.

3 Click the Synchronize Novell Remote Manager SDebug Password icon.

4 Type the new password in the SDebug Password and Confirm Password fields.

5 Click the Synchronize SDebug Password button.

eDirectory Context for Users Logging in to Novell Remote Manager

This procedure synchronizes the eDirectory contexts for users logging into Novell Remote Manager for the servers in this group with the eDirectory contexts specified for the current server you are logged into. This will prevent you from having to log into each server with a different context when performing group operations.

1 Build the monitor group, or select a group previously saved. See "Building and Configuring a Monitoring Group" on page 103 or "Accessing an Existing Group" on page 107.

2 Right-click the Group Operations page for the group, then select NRM Server Operations link.

3 Click the Synchronize Novell Remote Manager Default Login Context icon.

E-mail Notification Settings for Novell Remote Manager

This procedure can be useful when you set up one server and want to have the same notification on another server or when you have added a new server to your system.

1 Build the monitor group, or select a group previously saved. See "Building and Configuring a Monitoring Group" on page 103 or "Accessing an Existing Group" on page 107.

2 Right-click the Group Operations page for the group, then select the NRM Server Operations link.

3 Click the Synchronize E-mail Settings icon.

4 Specify the information in the required fields.

5 Click the Synchronize E-mail Settings button.

Health Item Thresholds for Novell Remote Manager

This procedure can be useful when you want get one server running and tuned properly and then configure similar servers the same way.

1 Build the monitor group, or select a group previously saved. See "Building and Configuring a Monitoring Group" on page 103 or "Accessing an Existing Group" on page 107.

2 Right-click the Group Operations page for the group, then select the NRM Server Operations link.

3 Click the Synchronize Novell Remote Manager Health Item Threshold icon.

Health Item Configuration for Novell Remote Manager

This procedure can be useful when you want get one server running and tuned properly and then configure similar servers the same way.

1 Build the monitor group, or select a group previously saved. See "Building and Configuring a Monitoring Group" on page 103 or "Accessing an Existing Group" on page 107.

2 Right-click the Group Operations page for the group, then select the NRM Server Operations link.

3 Click the Synchronize Novell Remote Manager Health Item Configuration icon.

Generating and Viewing Server Comparison Reports

Running Server Comparison reports on a group of servers can assist you in determining which servers need to be updated or have configurations changed, why operations on that server might be sluggish, or which servers are receiving the most action.

In Group Operations, you can generate and view the following reports to compare information for the servers belonging to the group:

- Set Parameters Report (page 110)
- Modules Running on Each Server Report (page 110)
- Server Durations Report (page 111)
- Storage Space, Size, Usage, Etc. Report (page 111)

Set Parameters Report

To see which servers need tuning for better performance, run this report.

1 Build the monitor group, or select a group previously saved. See "Building and Configuring a Monitoring Group" on page 103 or "Accessing an Existing Group" on page 107.

2 Click the Reports icon.

3 Click the Compare Server Set Parameter icon.

Modules Running on Each Server Report

To see which servers need to be updated with a support pack or patch, run this report.

1 Build the monitor group, or select a group previously saved. See "Building and Configuring a Monitoring Group" on page 103 or "Accessing an Existing Group" on page 107.

2 Click the Reports icon.

3 Click the Compare Server Modules icon.

Server Durations Report

To see which servers might need replacing or tuning to keep them running longer, run this report.

1 Build the monitor group, or select a group previously saved. See "Building and Configuring a Monitoring Group" on page 103 or "Accessing an Existing Group" on page 107.

2 Click the Reports icon.

3 Click the Compare Server Up Times icon.

Storage Space, Size, Usage, Etc. Report

To see which servers you can add users to or which servers might need additional storage, run this report.

1 Build the monitor group, or select a group previously saved. See "Building and Configuring a Monitoring Group" on page 103 or "Accessing an Existing Group" on page 107.

2 Click the Reports icon.

3 Click the Compare Server Storage icon.

Viewing Monitored Items

If you have several groups defined and you want to see which items are being monitored from this server without opening each group, click View Monitored Items.

This page lists of all of the items currently being monitored by the Novell Remote Manager health monitoring engine on this server.

If an item has not been monitored for more than 3 minutes, it is removed from the list.

Column	Description
Status	Shows the health indicator icon for the item
Item Name	The name assigned to the item when it was defined in a NRM health monitoring group.
Type	The type of item being monitored, such as NRM health, ping status, Web download.
Address	The third column is the address that NRM uses to check the item's health status.
Last Check Time	The last time that a NRM group requested the health status of this item.
Monitoring Start Time	The time that health monitoring was started for this item.

If this server's utilization is high due to the monitoring occurring on this server, you might consider moving some of the monitoring to another location.

Viewing Group Monitoring Types

Clicking the NRM Health Types link in the navigation frame displays the Novell Remote Manager Health Monitoring Engine - NRM Health Types content. This page gives you an overview of the Group Monitoring types that are defined on the current host. The legend shows the statuses you might see when you are monitoring groups of hosts with various monitored items and is a graphical view of the items defined in the sys:\login\nrmgrouphealthinfo file.

Health type defines used for Group Operations health monitoring on this machine.

NRM Health Types				
Health Type	Type String	Platform	Health Test	Default Port
NRM Health Monitor	NRM	All	NRM Health State	8008
NRM Item Health States	Icon	Value	Return Value	Item Click
	🟢	1	HEALTH_STATUS_GREEN	NRM Health Page
	🔶	3	HEALTH_STATUS_YELLOW	NRM Health Page
	❓	4	HEALTH_STATUS_UNKNOWN	NRM Health Page
	⛔	5	HEALTH_STATUS_RED	NRM Health Page
	❌	7	HEALTH_STATUS_CANT_CONNECT	NRM Health Page

Health Type	Type String	Platform	Health Test	Default Port
Label	LABEL	All	n/a	

Health Type	Type String	Platform	Health Test	Default Port
NRM Group	GROUP	All	Group Items Health	
NRM Group Health States	Icon	Value	Return Value	Item Click
	🟢	1	HEALTH_STATUS_GREEN	Expand Group
	🔶	3	HEALTH_STATUS_YELLOW	Expand Group
	❓	4	HEALTH_STATUS_UNKNOWN	Expand Group
	⛔	5	HEALTH_STATUS_RED	Expand Group
	❌	7	HEALTH_STATUS_CANT_CONNECT	Expand Group

Health Type	Type String	Platform	Health Test	Default Port
Ping(ICMP)	PING	Linux	ping -c1 -W1 %ITEM_ADDR | grep "bytes from" 1>/dev/null	
PING Health States	Icon	Value	Return Value	Item Click
	🖥️	0	HEALTH_STATUS_UP	ping -c4 %ITEM_ADDR
	❌	Not 0	HEALTH_STATUS_CANT_CONNECT	ping -c4 -W1 %ITEM_ADDR

Health Type	Type String	Platform	Health Test	Default Port
Web Page	WEB_PAGE	Linux	wget --tries=1 --spider %ITEM_ADDR:%ITEM_PORT 2>/dev/null	80
WEB_PAGE Health States	Icon	Value	Return Value	Item Click
	🟢	0	HEALTH_STATUS_UP	http://%ITEM_ADDR:%ITEM_PORT
	❌	Not 0	HEALTH_STATUS_CANT_CONNECT	wget --tries=1 --spider %ITEM_ADDR:%ITEM_PORT

Defining or Editing Group Monitoring Types

If you want to add a Group Monitoring type to the group monitoring that is not defined or change the label of any of the predefined types, you can access the sys:\login\nrmgrouphealthinfo file.

Each item is defined between the beginning and ending NRM_Health_Item_Definition XML tags as shown below.

```
<NRM_Health_Item_Definition>
    <Type_Name>PING</Type_Name>
    <Display_Name>Ping(ICMP)</Display_Name>
    <Platform>NetWare</Platform>
    <Health_Test>
        <Command_Line>ping -c1 -W1 %ITEM_ADDR | grep "bytes from" 1>/dev/null</Command_Line>
        <Result>
            <Value>0</Value>
            <Result_Icon>/sys/login/NRMcanping.gif</Result_Icon>
            <Return_Value>HEALTH_STATUS_UP</Return_Value>
            <Click_Command>ping -c4 %ITEM_ADDR</Click_Command>
        </Result>
        <Result>
            <!Value>0</!Value>
            <Return_Value>HEALTH_STATUS_CANT_CONNECT</Return_Value>
            <Click_Command>ping -c4 -W1 %ITEM_ADDR</Click_Command>
        </Result>
    </Health_Test>
</NRM_Health_Item_Definition>
```

11 Troubleshooting Specific Problems

You can use Novell® Remote Manager to troubleshoot some specific problems. This section includes a tips for doing the following:

Finding CPU Hogs

A CPU hog could be an NLM™ program that is poorly designed or has become corrupted and, as a result, is using up so many of the server's CPU cycles that other NLM programs are not able to run properly.

CPU hog problems are indicated on the Health Monitoring page by a suspect or bad status for the CPU Utilization-*x* indicator.

To track down a CPU hog:

1 Under the Diagnose Server heading, click the Profile/Debug link.

2 Identify the offending thread and Parent NLM.

    2a In the Execution Profile Data by Thread table, note the thread and the Parent NLM that is taking the longest execution time.

    2b To see which tasks the thread is trying to perform, do one of the following:

        ◆ Click the execution time link.

        ◆ Click the Execution Profile Data by NLM link and note and the execution time and module name for the Parent NLM of the first entry. The first entry has the highest execution time. Click the Execution time value.

3 Identify which part of the NLM program is causing the problem by looking at the Nearest Symbol information.

    From here you can trace each procedure including the one that is being called most often (indicated by the highest Call Count).

4 If possible, unload the offending NLM program to see if the problem disappears.

Finding High Memory Users

High memory use problems are indicated on the Health Monitoring page by a suspect or bad status for the Available Memory indicator.

To find high memory users:

1 Under the Manage Applications heading in the Navigation frame, click the List Modules link.

This displays the List Modules page, which shows a list of NLM programs running on the server.

2 On the List Modules page, sort the list displayed by allocated memory usage by clicking the Alloc heading.

The NLM program using the most memory is at the top of the list.

To further track how that module is using memory, you can click the value link in the allocated memory column to display the Allocation Summary page for that NLM program.

This page contains the Allocation Summary L!=P information, links to sort the memory allocation by Resource Tag or size, and a link to display the object cache information.

Tracing Abend Sources

Server abends (abnormal end of a piece of server code) are indicated on the Health Monitoring page by a suspect or bad status for the Abended Thread Count indicator.

To trace sources of server abends:

1 Under the Diagnose Server heading, click the Profile/Debug link.

This displays the Profiling and Debug Information page, which shows information about active and suspended threads, their states, the owning NLM program, and execution times.

2 On the Profiling and Debug Information page, check to see which thread or program has a Suspended by Abend Recovery state and click the thread name link for that thread.

This displays the Thread Information page.

3 On the Thread Information page, view the Suspend Description field.

This information should tell you what the thread experienced and when. You will also be able to see a listing of Registers, Code Executed, and Stack information that the server was executing at the time the thread suspended.

If the thread was suspended by the Abend Recovery process, the state of the thread at the time of the abend is displayed, along with the reason for the abend and the code that was being executed at the time.

4 Click the stack address and perform some basic stack tracing (if you are familiar with interpreting assembly code).

You can use this information to look at the NLM information that is associated with the thread that had the problem. This can help you determine whether the NLM itself is having a problem or whether it is having a problem only when certain other NLM programs are running.

5 If possible, unload the NLM to see if the problem disappears.

Locating Server Process Hogs

Server process hogs (or NLM programs that use a lot of server processes) are indicated on the Health Monitoring page by a suspect or bad status for the Available Server Processes indicator.

To find server process hogs:

1 Under the Diagnose Server heading, click the Profile/Debug link.

This displays the Profiling and Debug Information page that shows information about active and suspended threads, their states, the owning NLM program, and execution times.

2 On the Profiling and Debug Information page, click one of the thread name links that has a Delayed status.

This displays the Thread Information page.

3 On the Thread Information page, view the Suspend Description field.

This information should indicate what method the thread last used to yield the processor. A short trace of stack information that the server was executing at the time the thread suspended is also displayed.

4 Click the stack address and perform some basic stack tracing (if you are familiar with interpreting assembly code).

You can trace the service process that is in use by the NLM to see how it is actually using the process and you can look at the stack and see what the thread is using the service process for.

Locating Disk Space Hogs

To locate disk space hogs per server:

1 Run a server inventory report. See "Inventory Report" on page 47.

2 Look at the Available Space Trend Graphs and the File Owner Profiles data.

To locate disk space hogs per volume:

1 Under the Manage Server heading, click the Volumes link.

This displays the Volume Management page, which shows the volumes and local server partition information.

2 On the Volume Management page, click one of the volumes listed.

This displays a list of all the subdirectories and files that are on that volume.

3 Sort the listing by disk space usage by clicking the Size heading. The highest user is at the top of the sorted list.

Seeing Who Is Using a File

When you receive a message that a file has been locked, you can find out who is using that file:

1 Under the Manage Server heading, click the Volumes link.

This displays the Volume Management page, which shows the volumes and local server partition information.

2 On the Volume Management page, click the volume name link and browse to the file.

This displays a list of all the subdirectories and files that are on that volume.

3 When you have located the file, click the File information icon to the left of the filename.

This displays the information page for this file, which shows the file lock information by connection. You can then send a message to the user or clear the connection for the user.

4 Do one of the following:

- ◆ To clear the connection, click the Connections link, locate the connection that has the file open, then click the Clear Connection link for that user.

- ◆ To send a message to the user, click the username link in the File Lock Information by Connection table on the information page for the file, type a message in the Send Message field, then click Send.

12 **Quick Task Reference**

The following tables provide information about specific tasks you can perform using Novell®
Remote Manager for NetWare®. These references also link to more specific information in this
and other guides.

To do these tasks	See	Starting Link in Navigation frame
Adapters, Disk/LAN, view additional network adapter information, such as statistics generated and maintained by the LSL, resources registered and counter information, and frame types and protocols bound	"Viewing Storage and Network Adapter Information" on page 95	Disk / LAN Adaptor
Adapters, Disk/LAN, view additional storage adapter information, such as statistical information for the media manager of the server, resources registered, and information for the devices that are controlled by the adapter	"Viewing Storage and Network Adapter Information" on page 95	Disk / LAN Adaptor
Adapters, Disk/LAN, view information about the storage and network adapters that are installed on the server and the slots they are in	"Viewing Storage and Network Adapter Information" on page 95	Disk / LAN Adaptor
Adapters, Disk/LAN, view settable parameter for the adapter if applicable	"Viewing Storage and Network Adapter Information" on page 95	Disk / LAN Adaptor
Connections, view list of files in use by	Viewing a List of Files in Use by Any Specific Connection (page 75)	Connections
Connections, view all and information about	Viewing Connection Information (page 73)	Connections
Connections, clear all not-logged-in	Clearing All Not-Logged-In Connections (page 75)	Connections
Connections, clear specific	Clearing Specific Connections (page 75)	Connections
Connections, sort information about	Sorting Connection Information (page 74)	Connections
Connections, send messages to all or specific user	Sending Messages to Users (page 76)	Connections
Console commands, schedule to run at regularly scheduled intervals	"Scheduling Tasks to Run at the Server" on page 78	Schedule Tasks
Console commands, execute any	"Viewing Server Console Commands" on page 80	Console Commands
Console commands, sort the list by command name or the module that registered the command	"Viewing Server Console Commands" on page 80	Console Commands

To do these tasks	See	Starting Link in Navigation frame
Console commands, view the associated help	"Viewing Server Console Commands" on page 80	Console Commands
Console screens, access, view and run	Accessing and Running the Server Console Screens (page 69)	Console Screens
Directory, change file access rights attributes	"Changing File or Directory Access Rights Attributes" on page 56	Volumes
Directory, view details, edit, rename, delete, or create subdirectory	"Viewing Details about Directories and Performing Actions on Them" on page 54	Volumes
Directory, view or change trustee assignments and Inherited Rights Filters	"Viewing and Changing Trustee Assignments and Inherited Rights Filters" on page 62	Volumes
File, change file access rights attributes	"Changing File or Directory Access Rights Attributes" on page 56	Volumes
File, download a file from the server to a local workstation	"Downloading a File from the Server to a Local Workstation" on page 56	Volumes
File, load an NCF file in protected address spaces	"Viewing and Managing Programs in Protected Memory and Protected Address Spaces" on page 90	Protected Memory
File, purge deleted	"Purging Deleted Files" on page 62	Volumes
File, salvage deleted	"Salvaging Deleted Files" on page 62	Volumes
File, search for files	"Searching for Files" on page 56	Volumes
File, search for text in files	"Searching for Text in Files" on page 57	Volumes
File, view	"Viewing Individual Files" on page 55	Volumes
File, view a list of open files	"Viewing Open File Information" on page 61	Volumes
Files, view connections	Viewing a List of Files in Use by Any Specific Connection (page 75)	Connections
File, view details, edit, rename, or delete	"Viewing Details of Directories or Files and Performing Specific Actions on Them" on page 52	Volumes
File, view or change trustee assignments and Inherited Rights Filters	"Viewing and Changing Trustee Assignments and Inherited Rights Filters" on page 62	Volumes
File, upload to the server	"Uploading a File to the Server" on page 56	Volumes
File system, browse	"Browsing the Server's File System" on page 51	Volumes
Licensing, generate and view reports related to NetWare licensing	*Novell Licensing Services Administration Guide for NetWare 6.5*	Licensing Information
Licensing, view Licensing System information about the server license for this server and the type of connection or user license that this server requests whenever a user login occurs.	*Novell Licensing Services Administration Guide for NetWare 6.5*	Licensing Information

To do these tasks	See	Starting Link in Navigation frame
Memory, view cache statistics for the NSS or traditional file system	"Viewing Memory Configurations" on page 81	View Memory Config
Memory, view how NLM™ programs are using allocated memory	"Viewing Memory Configurations" on page 81	View Memory Config or List Modules
Memory, view general information about server memory use	"Viewing Memory Configurations" on page 81	View Memory Config
Memory, view logical address space information	"Viewing Memory Configurations" on page 81	View Memory Config
Memory, view use of extended memory in servers containing more than 4 GB of memory.	"Viewing Memory Configurations" on page 81	View Memory Config
Memory, view virtual memory usage including swap file information, virtual memory cache pool information, and virtual memory statistics	"Viewing Memory Configurations" on page 81	View Memory Config
Memory, protected, execute an .ncf file to load several modules into the same protected address space	"Viewing and Managing Programs in Protected Memory and Protected Address Spaces" on page 90	Protected Memory
Memory, protected, load specific modules in protected address spaces	"Viewing and Managing Programs in Protected Memory and Protected Address Spaces" on page 90	Protected Memory
Memory, protected, view a list of modules loaded in a specific address space	"Viewing and Managing Programs in Protected Memory and Protected Address Spaces" on page 90	Protected Memory
Memory, protected, view or change the current memory protection Set parameter settings	"Viewing and Managing Programs in Protected Memory and Protected Address Spaces" on page 90	Protected Memory
NLM programs, access more detailed information about a module, its flags, resources, and memory allocation	"Viewing and Managing Loaded NLM Programs" on page 87	List Modules
NLM programs, load or unload	"Loading NLM Programs" on page 89	List Modules
NLM programs, view a list of modules loaded in a specific address space	"Viewing and Managing Programs in Protected Memory and Protected Address Spaces" on page 90	Protected Memory
NLM programs, view or add a search path for loading a module or .ncf file	"Viewing the Search Path for Loading Modules or .Ncf Files" on page 89	List Modules
NLM programs, view resource information about each module loaded on the server or in an address space	"Managing Applications" on page 87	List Modules
NSS Pool, delete	Deleting an NSS Pool (page 68)	Partition Disks
NSS Pool, rename	Renaming an NSS Pool (page 68)	Partition Disks
NetWare registry, find key or value information	"Viewing and Managing the NetWare Registry" on page 91	NetWare Registry

To do these tasks	See	Starting Link in Navigation frame
NetWare registry, flush	"Viewing and Managing the NetWare Registry" on page 91	NetWare Registry
NetWare registry, remove Set parameters with no owner	"Viewing and Managing the NetWare Registry" on page 91	NetWare Registry
NetWare registry, run the consistency checker for the registry	"Viewing and Managing the NetWare Registry" on page 91	NetWare Registry
NetWare registry, view operational information	"Viewing and Managing the NetWare Registry" on page 91	NetWare Registry
Partition, create	Creating a Partition, Partition and Pool, or Partition and Volume (page 65)	Partition Disks
Partition, delete	Deleting a Partition (page 67)	Partition Disks
Partition, delete a label	Deleting a Partition Label (page 66)	Partition Disks
Partition, expand	Expanding a Partition or Pool (page 66)	Partition Disks
Partition, mirror	Mirroring a Partition (page 66)	Partition Disks
Partition and pool, create	Creating a Partition, Partition and Pool, or Partition and Volume (page 65)	Partition Disks
Partition and volume, create	Creating a Partition, Partition and Pool, or Partition and Volume (page 65)	Partition Disks
PCI Devices, view a list of Hardware Instance Numbers (HIN)	"Viewing PCI Device Information" on page 97	PCI Devices
PCI Devices, view the Peripheral Component Interconnect (PCI) configuration space and hexadecimal offset for a HIN	"Viewing PCI Device Information" on page 97	PCI Devices
Processors, bring a processor on or offline	"Viewing and Managing the NetWare Registry" on page 91	Processors
Processors, view the status and detailed information about all processors available on the server	"Viewing and Managing the NetWare Registry" on page 91	Processors
Protocols, view general and specific information about each protocol running on the server	"Viewing and Managing the NetWare Registry" on page 91	Protocol Information
Protocols, view Service Location Protocol (SLP) settings and reports	"Viewing and Managing the NetWare Registry" on page 91	SLP
Server, access other servers in your Novell eDirectory™ tree that have Novell Remote Manager loaded.	"Accessing and Managing Other Servers" on page 86	Managed Server List

To do these tasks	See	Starting Link in Navigation frame
Server, restart	"Shutting Down, Resetting, or Restarting the Server" on page 85	Down / Restart
Server, shut down	"Shutting Down, Resetting, or Restarting the Server" on page 85	Down / Restart
Server, reset	"Shutting Down, Resetting, or Restarting the Server" on page 85	Down / Restart
Statistics, access and view statistics for the following information: ◆ Network Management ◆ Kernel ◆ LSL™ ◆ Media Manager	"Viewing System Statistics" on page 84	View Statistics
Resources, other hardware, View the resource information that drivers have registered for interrupts and handlers, non-ISA slots, ports, Direct Memory Access (DMA) channels, or shared memory addresses	"Viewing Hardware Resource Information" on page 97	Other Resources
Resources, system, view all resource tag types in the server operating system	"Viewing System Resources" on page 90	System Resources
Resources, system, view specific details about each resource	"Viewing System Resources" on page 90	System Resources
Set Parameter, access and view the Set parameter current value and associated help and change the Set value	Viewing or Changing Set Parameters (page 76)	Set Parameters
Set Parameter, control whether hidden Set parameters are viewable at the console or through Novell Remote Manager	Viewing Hidden Set Parameters, Hidden Console Commands, Hidden Files or Folders, or System Files or Folders (page 29)	Config page
Set Parameter, save settings to a text file on volume sys:	Viewing or Changing Set Parameters (page 76)	Set Parameters
Set Parameter, view categories	Viewing or Changing Set Parameters (page 76)	Set Parameters
Set Parameter, view or change the current memory protection Set parameter settings	"Viewing and Managing Programs in Protected Memory and Protected Address Spaces" on page 90	Protected Memory
Set Parameter, view settings modified from the default	Viewing or Changing Set Parameters (page 76)	Set Parameters
Set Parameter, view settings modified from the default but reset when the server is restarted (non-persistent)	Viewing or Changing Set Parameters (page 76)	Set Parameters
SMBIOS Information, view System Management BIOS information for SMBIOS-compliant servers	"Viewing SMBIOS Information" on page 97	SMBIOS Information

To do these tasks	See	Starting Link in Navigation frame
TCP/IP, view and configure boards and protocols using TCP/IP. **NOTE:** This link is available only when tcpip.nlm is running on the server.	"Web-based TCP/IP Monitoring " in the *Novell TCP/IP Administration Guide for NetWare 6.5*.	Configure TCPIP
TCPIP, view and configure IP address and ports for specific applications. **NOTE:** This link is available only when tcpip.nlm is running on the server.	*NetWare 6.5 IP Address Management Administration Guide*.	IP Address Management
USB Devices, view a list of USB devices by device name	"Viewing USB Device Information" on page 97	USB Devices
Volume, change a space quota	Changing a Space Quota for a Volume (page 68)	Partition Disks
Volume, create and mount	Creating a Volume and Mounting a Volume (page 67)	Partition Disks
Volume, delete	Deleting a Volume (page 68)	Partition Disks
Volume, monitor disk space usage	"Monitoring Disk Space Usage" on page 60	Volumes
Volume, mount or dismount	"Mounting and Dismounting Volumes" on page 52	Volumes
Volume, rename	"Renaming a Volume" on page 68	Partition Disks or Volumes
Volume, set, change, or remove disk space restrictions	"Viewing, Setting, Changing, or Removing Directory Space Restrictions" on page 54	Volumes
Volume, Traditional, create an eDirectory object for an existing Traditional volume	Creating an eDirectory Object for Existing Traditional Volumes (page 69)	Partition Disks
Volume, Traditional, load or install Name Space	Viewing Name Space Information or Loading and Installing a Name Space on a Traditional Volume (page 69)	Partition Disks
Volume, Traditional, view Name Space Information	Viewing Name Space Information or Loading and Installing a Name Space on a Traditional Volume (page 69)	Partition Disks

A Documentation Updates

The following updates were made to this guide for NetWare® 6.5 Support Pack 3.

Location	Change
Chapter 2, "What's New," on page 15	Added information about new and updated features in Support Pack 3.
"System Requirements" on page 21	Updated browser information in the System Requirements.
"Controlling the Debug Account" on page 30	Updated SDebug user access information to document new feature that enables you to give additional access to the SDebug user.
"Creating a Logical Volume for Saving Core Dumps" on page 63	Added information on how to create a local logical volume for saving core dumps.
"Viewing Memory Configurations" on page 81	Updated Figure to show new layout of memory information.
"Clearing Specific Connections" on page 75	Updated connection page information to document new feature that enables youto clear multiple specific connections rather than just one at a time.
"Viewing System Statistics" on page 84	Updated to add Health Statistics Trend Graphic information.
"Using Group and Group Operations" on page 101	Updated group building, configuring, and saving procedures to current functionality. Updated group figure to exclude header and navigation frame and add Linux* servers to the example.
Figure on page 12 showing health monitoring	Updated figure to exclude header and navigation frame.
Figure on page 23 showing Home page and navigation	Updated figure to show the new header frame and Home page content.
Entire manual	Changed all references from NetWare Remote Manager to Novell® Remote Manager. Changed the document title to clarify that this tool is for managing NetWare servers only and to distinguish it from Novell Remote Manager for Linux.

The following updates were made to this guide for NetWare 6.5 Support Pack 2.

Location	Change
Chapter 2, "What's New," on page 15	Added information about new and updated features in Support Pack 2.
"Benefits of Using Novell Remote Manager for NetWare" on page 11	Corrected grammatical errors in the Benefits list.

Location	Change
"Other Management Utilities" on page 13	Added this topic to reference other management utilities that are needed for managing a NetWare 6.5 server.
Chapter 12, "Quick Task Reference," on page 119	Added.
Overall document	Restructured document to make access to tasks more visible online.

Added figures for Configuration options, Health Monitor page, Volume Information page, Partition Disk page, Pool Creation, Volume Creation, Connections page, Set Parameters page, Console Commands page, View Memory Config page, List Modules page, NetWare Registry page, and Disk / LAN Adapter page. |

The following updates were made to this guide for NetWare 6.5 Support Pack 1.

Location	Change
Chapter 2, "What's New," on page 15	Added information about new and updated features in Support Pack 1.
"Changing the Configuration Views and Settings" on page 27	Added procedures for changing the default eDirectory™ context for logging in. Reordered the list of options and changed the names to match changes in the interface.
"Monitoring Overall Server Health or the Health of a Specific Item" on page 37	Available disk space on volume sys: was added to the list of key health indicators.
"Changing Server Configuration Files" on page 49	Added this section about accessing the files that you use to change the configuration of you server more quickly through the Configuration File Management links on the Reports/Log page.
"Accessing and Managing Server Volumes and Partitions" on page 51	Added to and reorganized information that you can see and do using the Volumes link.
"Viewing Details of Directories or Files and Performing Specific Actions on Them" on page 52	Added information about editing text files on local partitions and being able to save files with ANSI or UTF-8 encoding.
"Monitoring Disk Space Usage" on page 60	Added information about being able to sort the disk space usage information and setting or changing user space restrictions.
"Running the Server Console Screens from the Dynamic Java Applet Pages" on page 70	Added references to the links under the Dynamic Screen heading.
"Viewing Connection Information" on page 73	Updated connection page information to match new functionality provided by the Read & Writes column and the addition of the number of Licensed and Peak Licensed connection information.
"Shutting Down, Resetting, or Restarting the Server" on page 85	Clarified that the server shutdown, reset, and restart options force the server down and that some data could be lost if a file on a workstation is not saved to the server before the file is closed by the shutdown operation.
"Viewing Storage and Network Adapter Information" on page 95	Updated the LAN Adapter details functionality information.