

Novell Open Enterprise Server

www.novell.com

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NOVELL REMOTE MANAGER
ADMINISTRATION GUIDE FOR LINUX*



Novell[®]

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Contents

About This Guide	9
1 Overview of Novell Remote Manager for Linux	11
1.1 Benefits of Using Novell Remote Manager	11
1.2 Other Management Utilities	12
1.3 What's Next	12
2 What's New	15
2.1 OES SP2 Release	15
2.2 OES SP1 Release	16
3 Coexistence and Migration	17
3.1 Coexistence	17
3.1.1 Compatibility	17
3.1.2 Coexistence Issues	17
3.2 Migration	17
4 Accessing Novell Remote Manager for Linux	19
4.1 System Requirements	19
4.2 Accessing Novell Remote Manager	19
4.3 Starting or Stopping Httpstkd	21
4.4 Post-Installing Novell Remote Manager	21
4.5 Understanding the Layout of Novell Remote Manager	22
4.6 Accessing Online Help	23
4.7 Accessing Novell Web Pages	24
5 Changing the Configuration	25
5.1 Accessing and Editing the HTTPSTKD Configuration File	26
5.2 Accessing and Editing the HTTPSTKD PAM Configuration File	27
5.3 Restarting the HTTPSTKD Daemon	28
5.4 Viewing the HTTP Logs	28
5.5 Viewing and Creating Certificates for Novell Remote Manager	28
5.6 Extending the eDirectory Schema for Novell Remote Manager Group Operations	29
6 Diagnosing Problems	31
6.1 Monitoring Server Health	31
6.1.1 Monitoring Overall Server Health or the Health of a Specific Item	31
6.1.2 Configuring the Items to Monitor	33
6.1.3 Configuring E-Mail Notification for Server Health Status	33
6.2 Troubleshooting a Suspect or Bad Health Status	33

7	Viewing File Systems	35
7.1	Viewing Mounted Devices and Performing Actions on Them	35
7.2	Browsing File Systems and Performing Actions on Them	36
7.2.1	Viewing Details about Directories and Performing Actions on Them	38
7.2.2	Uploading a File to the Server	38
7.2.3	Downloading a File from the Server to a Local Workstation	39
7.2.4	Searching for Text in Files	39
7.2.5	Viewing the Details of a File and Performing Specific Actions	40
7.2.6	Viewing Individual Files	40
7.3	Viewing Partition Information	40
7.4	Inventorying Directories or NCP Volumes	41
7.4.1	Generating an File Inventory Report	42
7.4.2	Generating a Volume Inventory Report	43
7.4.3	Generating a Customized Report	44
8	Managing Linux	49
8.1	Accessing VNC Consoles	49
8.2	Viewing Kernel Modules	50
8.3	Viewing Memory Information	51
8.4	Shutting Down and Restarting the Host	52
8.5	Managing Packages	53
8.6	Managing Processes	55
9	Managing Hardware	57
9.1	Viewing Processors	57
9.2	Viewing Interrupt Information	58
9.3	Viewing I/O Memory Information	59
9.4	Viewing I/O Port Information	60
9.5	Viewing SMBIOS Information	61
10	Using Group Operations	63
10.1	Building and Configuring a Monitoring Group	64
10.2	Saving a Group	68
10.2.1	Saving the Group to the Local Server	68
10.2.2	Saving the Group and Associating It with an eDirectory Object	68
10.3	Accessing an Existing Group	69
10.4	Changing an Existing Group	69
10.5	Deleting an Existing Group	70
10.6	Generating and Viewing Server Reports	70
10.6.1	Compare Server Up Time Report	70
10.7	Viewing Monitored Items	71
10.8	Viewing Group Monitoring Types	72
10.9	Defining or Editing Group Monitoring Types	73
10.10	Discovering Items on the Network to Monitor	73
11	Tasks Quick Reference	77
12	Security Considerations	81
12.1	Security Features	81

12.2	Security Characteristics	82
12.3	Security Configuration	82

A HTTPSTKD Configuration File Options 85

A.1	Options	85
A.1.1	Address and Port Commands	85
A.1.2	Load Command	86
A.1.3	Filtering Commands	87
A.1.4	E-Mail Notification Commands	87
A.1.5	Language Commands	88
A.1.6	Disable Auto LUM Command	89
A.1.7	Supervisor Only Command	90

B Novell Remote Manager Packages 91

C Documentation Updates 93

C.1	December 23, 2005 (Open Enterprise Server SP2)	93
C.1.1	Accessing Novell Remote Manager for Linux	93
C.1.2	Entire Guide	94
C.1.3	Managing Hardware	94
C.1.4	Managing Linux	94
C.1.5	Task Quick Reference	95
C.1.6	Using Group Operations	95
C.1.7	Viewing File Systems	95
C.1.8	What's New	96
C.2	August 19, 2005 (Open Enterprise Server SP1)	96
C.2.1	Accessing Novell Remote Manager for Linux	96
C.2.2	Changing the Configuration	96
C.2.3	Documentation Updates	96
C.2.4	HTTPSTKD Configuration File Options	97
C.2.5	Managing Linux	97
C.2.6	Security Considerations	97
C.2.7	What's New	97

About This Guide

This guide describes how to access and use Novell® Remote Manager on a host that is running the Linux operating system. This guide includes the following information:

- “Overview of Novell Remote Manager for Linux” on page 11
- “What's New” on page 15
- “Coexistence and Migration” on page 17
- “Accessing Novell Remote Manager for Linux” on page 19
- “Changing the Configuration” on page 25
- “Diagnosing Problems” on page 31
- “Viewing File Systems” on page 35
- “Managing Linux” on page 49
- “Managing Hardware” on page 57
- “Using Group Operations” on page 63
- “Tasks Quick Reference” on page 77
- “Security Considerations” on page 81
- “HTTPSTKD Configuration File Options” on page 85
- “Novell Remote Manager Packages” on page 91
- “Documentation Updates” on page 93

Audience

This guide is intended for network administrators.

Feedback

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please use the User Comments 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.

Documentation Updates

For the most recent version of the *Novell Remote Manager Administration Guide for Linux*, visit the [Open Enterprise Server online documentation Web site \(http://www.novell.com/documentation/oes/index.html?page=/documentation/oes/remotemgr_lx/data/front.html#bktitle\)](http://www.novell.com/documentation/oes/index.html?page=/documentation/oes/remotemgr_lx/data/front.html#bktitle).

Documentation Conventions

In Novell 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 or UNIX*, should use forward slashes as required by your software.

Overview of Novell Remote Manager for Linux

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

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 for server management are that:

- It does not require a special client.
- It provides a graphical interface that makes interpreting diagnostic information much more comprehensive and easier to manage.
- It provides added functionality that is not available in the other management utilities.

This section explains the following:

- [Section 1.1, “Benefits of Using Novell Remote Manager,” on page 11](#)
- [Section 1.2, “Other Management Utilities,” on page 12](#)
- [Section 1.3, “What's Next,” on page 12](#)

1.1 Benefits of Using Novell Remote Manager

Organizations usually don't have a technician 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 preventively avoid) server problems is a significant advantage. It is also a major benefit to be able to provide technical service from any location—any point 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.

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

- Securely access and manage a Linux 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 control for viewing or managing Linux servers, directories, processes, and hardware.

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

- Monitor and manage your server's health
 - Monitor the health status of one or more servers
 - Build a group of servers and items to be monitored together
 - Access server and configuration logs
- Configure your server
 - View information about all hardware adapters, hardware resources, and processor data
 - Upload and replace files
 - Monitor memory resources
 - Access files
 - Shut down or reset a server
- Troubleshoot server problems
 - Find high memory users
 - Monitor server processes

1.2 Other Management Utilities

Novell Remote Manager does not replace the need for other management utilities that are available in Open Enterprise Server. For an understanding of which utilities are best used for the task you need to perform, see “OES Utilities and Tools” in the *Novell OES SP2 Planning and Implementation Guide*.

1.3 What's Next

Now that you have learned some of the benefits of using Novell Remote Manager, use the information in [Table 1-1](#) to help you access and use it.

Table 1-1 *Information About Novell Remote Manager*

For Information About	See
Accessing and understanding the layout of Novell Remote Manager	“Accessing Novell Remote Manager for Linux” on page 19
Determining whether Novell Remote Manager for Linux is compatible with other operating systems and how it fits in your current network	“Coexistence and Migration” on page 17
Changing the configuration of Novell Remote Manager	“Changing the Configuration” on page 25
Using Novell Remote Manager to monitor and manage your Linux servers	<ul style="list-style-type: none">• “Diagnosing Problems” on page 31• “Viewing File Systems” on page 35• “Managing Linux” on page 49• “Managing Hardware” on page 57• “Using Group Operations” on page 63

For Information About**See**

Learning about things to consider for setting up your system in a secure environment.

[“Security Considerations” on page 81](#)

Learning about updates to this document

[“Documentation Updates” on page 93](#)

What's New

2

This section includes the features that were updated in Novell[®] Remote Manager (NRM) since its release in Open Enterprise Server.

2.1 OES SP2 Release

The following new features are available in Novell Remote Manager on OES Linux in OES SP2:

Area of Service	Functionality	For More Information
View File System (Home)	<p>On the home page, you can view the percent of free space available on each mounted physical devices or external file systems that have actual disk space. Available disk space on virtual file systems is not shown.</p> <p>You can also view the details of the file system on the Information Page for each mounted system on the device. The <i>Unmount</i> button was moved to this page.</p>	<p>“Viewing Mounted Devices and Performing Actions on Them” on page 35.</p>
View File System	<p>The <i>General File Inventory</i> link in this section provides a page where you can get an inventory of all the files from the root directory or browse to a specific subdirectory and generate a file inventory of all the files in the selected subdirectory.</p> <p>This same functionality is available by clicking the <i>Inventory</i> link when browsing the file system from the <i>View File System</i> link.</p> <p>The <i>Volume Inventory</i> link in this section provide a list of all NCP[™] mounted volumes. When you click the volume name link from this page, an inventory report of all the files from the root of that volume is generated.</p> <p>From these generated reports, you can also perform actions on the files or directories such as moving, copying, deleting, and renaming.</p> <p>This feature has not been extensively tested. Your feedback is welcomed.</p>	<p>“Inventorying Directories or NCP Volumes” on page 41.</p>

Area of Service	Functionality	For More Information
Use Group Operation	<p>If you want to scan the network for specific services, access the Network Discovery page and specify the host and ports that should be scanned for. After discovering the items on the network, you can click the item and add it to the current group for future monitoring.</p> <p>Using this feature can help you to quickly gather the information you need to create monitoring groups.</p>	<p>“Discovering Items on the Network to Monitor” on page 73.</p>

2.2 OES SP1 Release

The following new features are available in Novell Remote Manager on OES Linux in OES SP1:

Area of Service	Functionality	For More Information, see
Configure	<p>Added configuration options for controlling which users can log in to Novell Remote Manager and specifying which languages the browser supports for Novell Remote Manager.</p>	<ul style="list-style-type: none"> • “Accessing and Editing the HTTPSTKD Configuration File” on page 26 • “HTTPSTKD Configuration File Options” on page 85.
View File System (Home)	<p>Left navigation frame includes collapsible categories that are remembered for the next time you log in. This lets you display the Novell Remote Manager features that you use most often and hide the ones that you don't.</p>	<p>“Navigation Frame” on page 23</p>
Diagnose, Health Monitor	<p>CPU usage process information is now reporting the correct information.</p>	<p>“Diagnosing Problems” on page 31</p>
Access	<p>Network services now has a selection for installing the Novell Remote Manager services. This lets you install Novell Remote Manager after the server installation and performs the proper configuration steps that weren't performed if you installed the packages separately.</p>	<p>“Post-Installing Novell Remote Manager” on page 21</p>
Manage Linux, VNC Consoles	<p>If VNC services are configured on the server, you can access the VNC console screens by clicking the <i>VNC Consoles</i> link under the <i>Manage Linux</i> heading in the navigation frame. Then click the <i>1024 X 728</i> button on the VNC Console Screens page.</p>	<p>“Accessing VNC Consoles” on page 49</p>

Coexistence and Migration

This section contains information about the following:

- [Section 3.1, “Coexistence,” on page 17](#)
- [Section 3.2, “Migration,” on page 17](#)

3.1 Coexistence

This section provides information regarding the compatibility and coexistence of Novell® Remote Manager for Linux with existing networks containing NetWare® or Linux platforms.

3.1.1 Compatibility

When you create a group, you can get server health status from a NetWare server running NetWare 6.0 or later or from a Linux server running Novell Open Enterprise Server (OES).

You can access the Novell Remote Manager on Linux only on servers with OES services installed. See [“System Requirements” on page 19](#).

3.1.2 Coexistence Issues

Monitoring on Linux servers that are not running the owcimomd module can report only an Up/Down status.

3.2 Migration

Novell Remote Manager for Linux is a new service in Novell Open Enterprise Server.

Accessing Novell Remote Manager for Linux

4

This section includes information about the following:

- [Section 4.1, “System Requirements,” on page 19](#)
- [Section 4.2, “Accessing Novell Remote Manager,” on page 19](#)
- [Section 4.3, “Starting or Stopping Httpstkd,” on page 21](#)
- [Section 4.4, “Post-Installing Novell Remote Manager,” on page 21](#)
- [Section 4.5, “Understanding the Layout of Novell Remote Manager,” on page 22](#)
- [Section 4.6, “Accessing Online Help,” on page 23](#)
- [Section 4.7, “Accessing Novell Web Pages,” on page 24](#)

4.1 System Requirements

- ❑ Mozilla* Firefox* 1.0, Microsoft* Internet Explorer 6 or later, Mozilla 1.7 (SLES 9 SP1 and Linux Professional 9.2), KDE 3.2 Konqueror (limited functionality), or Safari* 1.2 (limited functionality)
- ❑ The HTTPSTKD module loaded and running on the server. This module is installed and configured with a default configuration when you install any component of the default Open Enterprise Server software selection on Linux or any of following software selections:
 - Novell iFolder[®]
 - Novell iPrint
 - Novell QuickFinder[™]
 - Novell Virtual Office

For details, see [“Novell Remote Manager Packages” on page 91](#).

4.2 Accessing Novell Remote Manager

- 1 Open a Web browser.
- 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
```

For example:

```
http://172.16.123.11:8008
```

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.

- 3 Accept the SSL certificate.

You need to 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.

Log in as user Root, a local Linux user, or as an eDirectory™ user that is Linux User Management enabled.

If you have Linux User Management enabled in your tree and have it installed and configured on the local server, you can log in to Novell Remote Manager using your eDirectory credentials. For instructions on enabling Linux, see the *Novell Linux User Management Technology Guide*.

If you log in as a local Linux user or as a non-Admin eDirectory user, you can see only the information that the user you log in as has rights to view.

Two specific things to remember when logging in as an eDirectory user to Novell Remote Manager:

- For users to log in as user Admin or equivalent, the Admin user must either be associated to the group that has the Supervisor right for the Entry Rights property for the UNIX Workstation object or have the Supervisor right for the Entry Rights to the NCP™ object that represents the Linux server in the eDirectory tree.

IMPORTANT: eDirectory users that have the Supervisor right to one of these objects have rights equivalent to Root on the Linux server.

If eDirectory and LUM are installed on the local server, the eDirectory user Admin can log in to Novell Remote Manager using its fully distinguished name (admin.context) because this user is enabled for Linux User Management by default in this case.

- For non-Admin users to log in using eDirectory credentials, they must be users enabled for Linux User Management.

Users that are enabled for Linux User Management have a Linux Profile tab on their Modify User page in iManager and an eDirectory object that is associated with the UNIX Workstation object that represents the Linux server.

You can use iManager or the LUM command line utility `namuseradd` to enable users for Linux User Management. For instructions, see “**Overview**” in the *Novell Linux User Management Technology Guide*.

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

4.3 Starting or Stopping Httpstkd

When you install Open Enterprise Server (OES) on Linux, Novell Remote Manager is installed and started by default.

A script for starting and stopping the Novell Remote Manager/Linux components is in `/etc/init.d/novell-httpstkd`. Enter the following commands at a console shell prompt to perform the desired action:

Table 4-1 *Commands for Starting, Stopping, or Checking the Status of Novell Remote Manager*

Task	Command
To see whether the module is running	<code>rcnovell-httpstkd status</code> or <code>/etc/init.d/novell-httpstkd status</code>
To start HTTPSTKD	<code>rcnovell-httpstkd status</code> or <code>/etc/init.d/novell-httpstkd status</code>
To stop HTTPSTKD	<code>rcnovell-httpstkd stop</code> or <code>/etc/init.d/novell-httpstkd stop</code>

4.4 Post-Installing Novell Remote Manager

If you selected Minimum System, Minimum Graphical System, Full, or Default when you installed OES Linux, you can do the following to post-install only Novell Remote Manager:

- 1 Open YaST.
- 2 Click *Network Services > Novell Remote Manager*.

If you have only Novell Remote Manager installed, then you can log in to Novell Remote Manager only as user Root or a local Linux user.

If you log in as a local Linux user, you can see only the information that the user you log in as has rights to view.

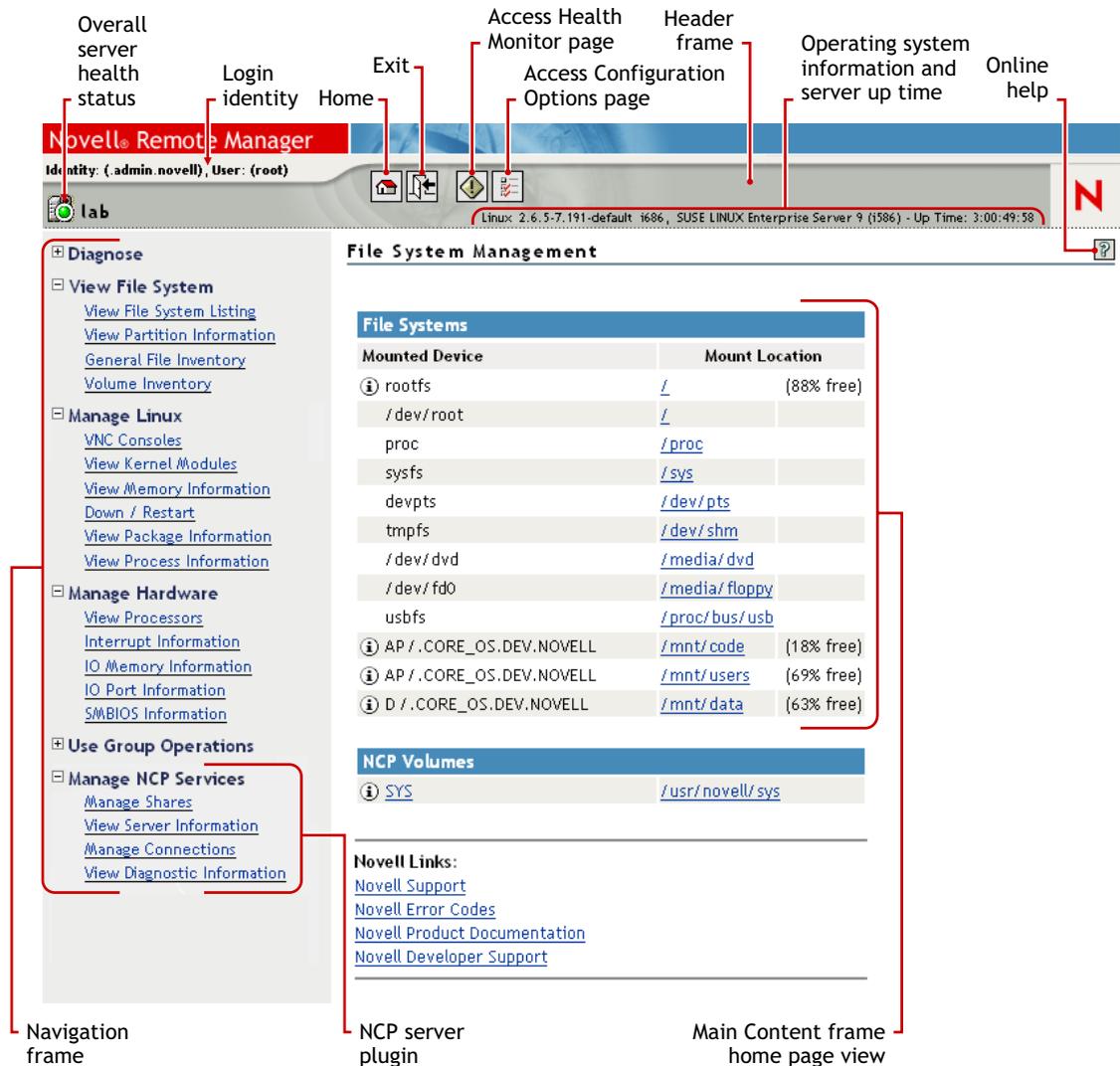
If you want to install Novell Remote Manager and ensure that eDirectory and Linux User Management are configured correctly, you can do the following:

- 1 In the YaST control center, click *Network Services* and then click any OES product components such as *eDirectory*, *NCP server*, *iFolder*, or *Health Monitoring*.
This post-installs and configures eDirectory and installs `novell-nrm` and other required RPM files.
- 2 In the YaST control center, click *Security and Users > Linux User Management*.
This post-installs and configures Linux User Management.

4.5 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). They also contain the *Overall Health Indicator* and online help.

Figure 4-1 Layout of Novell Remote Manager



Header Frame

Contains general information about the server as well as links to the Health Monitor and Configuration pages and an *Exit* link to close the browser window. The File System Management page is considered the Home page.

The general information about the server includes the following:

- Overall server health status as one of the following:
 - Green (good) 
 - Yellow (suspect) 
 - Red (bad) 
 - White with black X (no connection) 
- Server name
- Name of the user you are logged in to Novell Remote Manager as
- Version of the operating system running on the server and the amount of time the server has been running

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 left navigation frame includes collapsible categories that are remembered for the next time you log in. This lets you display the Novell Remote Manager features that you use most often and hide some of the ones that you don't.

The links in the navigation frame change depending on the plug-in programs that are installed 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 *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.

4.6 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.

4.7 Accessing Novell Web Pages

Novell Links on the Home (File System Management) page provide quick access to the following:

- *Novell Support Web page* (<http://www.novell.com/support/>) links directly to the Novell Support Web site, where you can get current server patch kits and updates or find troubleshooting information. You can also access this link by clicking the word *Novell* in the upper-right area of the header frame.
- *Novell Error Codes documentation Web page* (<http://www.novell.com/documentation/nwec/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 all shipping Novell products.
- *Novell Developer Support Web page* (http://developer.novell.com/wiki/index.php/Developer_Home) 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.

Changing the Configuration

When Novell[®] Remote Manager (NRM) is installed, it sets up a small Web server on your server. The interface and module is called HTTPSTKD. Its basic configuration parameters that allow it to work are set.

You might need to configure Novell Remote Manager after the initial installation for a variety of reasons. For example, you might want to bind additional IP addresses to HTTPSTKD, set up stronger security, set up mail notification for health events, or extend the eDirectory schema for Group Monitoring.

You can perform these tasks using the options on the Novell Remote Manager Configuration Options page. To access this page, click the *Configure*  icon in the header frame.

Figure 5-1 *The Novell Remote Manager Configuration Options Page*

Novell Remote Manager Configuration Options

HTTP Interface Management

WARNING: You must restart httpstkd in order to apply changes in these config files.

[Edit httpstkd config file](#)

[Edit httpstkd PAM config file](#)

Daemon Restart

Restart httpstkd

HTTP Logs

[View last 100 log entries](#)

[View entire log](#)

Novell Remote Manager Certificate Management

WARNING: You will need to restart the httpstkd daemon and you may need to change httpstkd config file to use any new certificates created.

[View Certificate\(s\)](#)

[Create Certificate](#)

Novell Remote Manager Schema Management

[Extend NDS Schema for Group Operations.](#)

On this page you can perform the following tasks:

- [Section 5.1, “Accessing and Editing the HTTPSTKD Configuration File,” on page 26](#)
- [Section 5.2, “Accessing and Editing the HTTPSTKD PAM Configuration File,” on page 27](#)
- [Section 5.3, “Restarting the HTTPSTKD Daemon,” on page 28](#)
- [Section 5.4, “Viewing the HTTP Logs,” on page 28](#)
- [Section 5.5, “Viewing and Creating Certificates for Novell Remote Manager,” on page 28](#)
- [Section 5.6, “Extending the eDirectory Schema for Novell Remote Manager Group Operations,” on page 29](#)

5.1 Accessing and Editing the HTTPSTKD Configuration File

Anytime you want to change the following interactions with Novell Remote Manager, access the `httpstkd.conf` file and make the applicable changes:

Table 5-1 *Information for Changing the Functionality of Novell Remote Manager*

Functionality	Information On How to Change
Which network board Novell Remote Manager is bound to or add additional IP address that it is bound to	“Address and Port Commands” on page 85
The certificates Novell Remote Manager is using for authentication	<ul style="list-style-type: none">• “Viewing and Creating Certificates for Novell Remote Manager” on page 28• “Address and Port Commands” on page 85
Which plug-ins are loaded	“Load Command” on page 86
Which workstations can access Novell Remote Manager	“Filtering Commands” on page 87
Whether e-mail notification is sent for health monitoring or who receives it	“E-Mail Notification Commands” on page 87
Which users can log in to Novell Remote Manager	<ul style="list-style-type: none">• “Disable Auto LUM Command” on page 89• “Supervisor Only Command” on page 90
The language the browser supports	“Language Commands” on page 88

To access and edit this file:

- 1 Click the *Configure* icon  in the navigation frame.
- 2 Click *Edit Httpstkd Config File*.
- 3 Make the changes.
- 4 Click *Save Changes*.

or

With an editor that saves files to a UNIX format, edit the `/etc/opt/novell/httpstkd.conf` file.

After making changes to this file and saving it, restart the HTTPSTKD daemon. See [“Restarting the HTTPSTKD Daemon” on page 28](#).

5.2 Accessing and Editing the HTTPSTKD PAM Configuration File

Linux uses PAM (Pluggable Authentication Modules) in the authentication process as a layer that mediates between user and application. PAM modules are available on a system-wide basis, so they can be requested by any application.

Every program that relies on the PAM mechanism has its own configuration file in the directory `/etc/pam.d/program_name`. These files define the PAM modules that are used for authentication. In addition, there are global configuration files for most PAM modules under `/etc/security` directory, which define the exact behavior of these modules (examples are `pam_env.conf`, `pam_pwcheck.conf`, `pam_unix2.conf`, and `time.conf`). Every application that uses a PAM module actually calls a set of PAM functions, which then processes the information in the various configuration files and returns the results to the calling application.

This file controls the authentication to Novell Remote Manager on an OES Linux server. The default configuration should work. If you want to change the way your users authenticate to Novell Remote Manager, you can edit this file.

To access and edit this file:

- 1 Click the *Configure* icon  in the navigation frame.
- 2 Click *Edit Httpstkd PAM Config File*.
- 3 Make the changes.
- 4 Click *Save Changes*.

or

With an editor that saves files to a UNIX format, edit the `/etc/pam.d/httpstkd` file.

These are the lines that enable Novell Remote Manager integration with user management:

```
auth      sufficient /lib/security/pam_nam.so
account  sufficient /lib/security/pam_nam.sos
password sufficient /lib/security/pam_nam.so
session  optional /lib/security/pam_nam.so
```

After making changes to this file, restart the HTTPSTKD daemon. See [“Restarting the HTTPSTKD Daemon” on page 28](#).

For more information about the PAM configuration file and the options available, see “[PAM - Pluggable Authentication Modules](#)” in the *SUSE LINUX Enterprise Server 9 Administration Guide*.

5.3 Restarting the HTTPSTKD Daemon

After making changes to the HTTPSTKD configuration file or the HTTPSTKD PAM configuration file, restart the HTTPSTKD daemon.

To restart the HTTPSTKD daemon, click *Restart Httptkd* on the Novell Remote Manager Configuration Options page.

You can also restart it manually. See “[Starting or Stopping Httptkd](#)” on page 21.

5.4 Viewing the HTTP Logs

The Novell Remote Manager Configuration Options page contains a link for all the HTTPSTK-related messages contained in the `var/log/messages` file.

This information is valuable for seeing who logged in through Novell Remote Manager, when they logged in, the pages being viewed, log failures, etc.

You can view the last 100 entries of the log or the entire log.

To view this log:

- 1 Click the *Configure* icon  in the navigation frame.
- 2 Under the *HTTP Logs* heading, click either *View Last 100 Log Entries* or *View Entire Log*.

The logging to this file is controlled by the Syslog options. To change these default syslog options, edit the `etc/sysconf/syslog` file.

5.5 Viewing and Creating Certificates for Novell Remote Manager

Novell Remote Manager uses the default certificates created during the installation to secure access through it to the server. This certificate is bound to the first network board found in the server configuration.

You can create new certificates and modify the `httpstkd.conf` file to use any certificates other than the default certificate file for any reason. You should create a new certificate in cases such as the following:

- The default certificate does not meet the level of security required by your organization
- The default certificate was bound to a DHCP address
- You have changed the server’s IP address
- You want to bind a new certificate to a different network board

To view the certificates being used:

- 1 Click the *Configure* icon  in the navigation frame.
- 2 Under the Novell Remote Manager Certificate Management heading, click *View Certificate(s)*.

To create a new certificate:

- 1 Click the *Configure* icon  in the navigation frame.
- 2 Under the *Novell Remote Manager Certificate Management* heading, click *Create Certificate*.
- 3 On the Create a Certificate for Novell Remote Manager page, specify the required information in the *Certificate Information* fields.

This creates a new certificate and automatically replaces the current certificate at `/etc/opt/novell/httpstkd/server.pem`.

If you want to create the certificate in a different location or with a different name, change the filename or path in the *Certificate File* field.

- 4 Click *Create*.
- 5 (Conditional) If you changed the name of the certificate file or the path to it from the default location, edit the `httpstkd.conf` before restarting HTTPSTKD.
- 6 Restart HTTPSTKD by clicking the *Restart Httpstkd* button on the Novell Remote Manager Configuration Options page.

To bind Novell Remote Manager to an additional IP address to or to a different certificate:

- 1 Click the *Configure* icon  in the navigation frame.
- 2 Click *Edit Httpstkd Config File*.
- 3 In the Address and Port portion of the file, specify the new IP address or certificate path and name.

For example, if you had two network boards that you wanted to bind Novell Remote Manager to, you would create or have two separate certificates and then make these entries in the `httpstkd.conf` file:

```
addr 192.27.1.123:8008
addr 192.27.1.123:8009 keyfile=/etc/opt/novell/httpstkd/server.key
certfile=/etc/opt/novell/httpstkd/server1.pem

addr 192.27.1.124:8008
addr 192.27.1.124:8009 keyfile=/etc/opt/novell/httpstkd/server.key
certfile=/etc/opt/novell/httpstkd/server2.pem
```

You can put the certificate in any location as long as the entry in the `httpstkd.conf` points to the correct location and filename.

5.6 Extending the eDirectory Schema for Novell Remote Manager Group Operations

When you use Group Operations and want to save the groups that you have created, Novell Remote Manager requires you to save the file on the server locally or assign it to an eDirectory™ object.

Before you can save it to an eDirectory object, you must extend the eDirectory schema to access the attributes for Novell Remote Manager group operations at least once in the eDirectory tree that you are saving to.

You can do this easily by clicking either the *Extend the NDS Schema for NRM* link on the Novell Remote Manager Configuration Options page any time before you create a group or the link in the failure error message displayed when saving the group. As with all schema extensions, you must have the necessary rights to extend the schema.

The message `NDS schema extension complete` is displayed on this page when the operation is done. Then you can save the group.

Diagnosing Problems

Novell® Remote Manager for Linux 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 can help you to become familiar with the health and status of your servers:

- [Section 6.1, “Monitoring Server Health,” on page 31](#)
- [Section 6.2, “Troubleshooting a Suspect or Bad Health Status,” on page 33](#)

6.1 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:

- [Section 6.1.1, “Monitoring Overall Server Health or the Health of a Specific Item,” on page 31](#)
- [Section 6.1.2, “Configuring the Items to Monitor,” on page 33](#)
- [Section 6.1.3, “Configuring E-Mail Notification for Server Health Status,” on page 33](#)

6.1.1 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 a 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.

Table 6-1 *Server Health Status*

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 Server Health page as shown in [Figure 6-1](#). By default, all items are selected.

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 in 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.

The Server Health 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.

Figure 6-1 Server Health Page

Server Health ?

Begin Refresh

Page Refresh Rate 10 seconds ▼

Server Health Table							
Include	Notify	Info	Description	Status	Current	Peak	Max
<input checked="" type="checkbox"/>	<input type="checkbox"/>		CPU Utilization		4	100	100
<input checked="" type="checkbox"/>	<input type="checkbox"/>		Process Count		197	436	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>		Physical Memory		5 MB	* 0 MB	0 MB
<input checked="" type="checkbox"/>	<input type="checkbox"/>		Swap Memory		0 MB	* 0 MB	0 MB
<input checked="" type="checkbox"/>	<input type="checkbox"/>		Virtual Memory		5,127 MB	* 0 MB	0 MB
<input checked="" type="checkbox"/>	<input type="checkbox"/>		LAN Collisions		0	0	N/A

*Low Value

APPLY SETTINGS

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

- CPU Utilization (for each processor, if there is more than one)
- Process Count
- Available Memory
- Physical, Swap, and Virtual Memory
- LAN Collisions

In this release, you cannot change the thresholds for the *Suspect* and *Critical* values of these indicators. See the online help for each parameter to see the set thresholds.

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

-  Overall server health status indicator icon
-  Health Monitor icon in the header frame
- *Diagnose* > *Health Monitor* link in the navigation frame

6.1.2 Configuring the Items to Monitor

As stated in the previous section, the server's overall health is determined by items that are selected in the *Include* list on the detailed Server Health page. By default, all of the items are selected.

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 only when other parameters have changed, you can remove the items with the suspect or bad parameters from the *Include* and *Notify* lists by deselecting them and clicking *Apply Settings*.

6.1.3 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 the item on the Server Health page.
- 2 Specify the required information for e-mail notification in the `/etc/opt/novell/httpstkd.conf` file.

You can edit this file via the link provided on the Configuration Options page.

- 3 After changing the `httpstkd.conf` file, restart HTTPSTKD.
Click the *Restart HTTPSTKD* button on the Configuration Options page or execute the following command in a console shell on the Linux server:

```
rcnovell-httpstkd restart
```

6.2 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 check the online help for suggested remedies.

- 1 Access the Server Health 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, or red 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.

Viewing File Systems

The *Home* icon  and *View File Systems* section in Novell® Remote Manager for Linux include the following links to these pages:

Table 7-1 Links for Viewing File System Information

Link	Page Displayed
<i>Home</i> icon	File System Management
<i>View File System Listing</i>	Directory Listing of / (Root) directory
<i>View Partition Information</i>	Partition Information

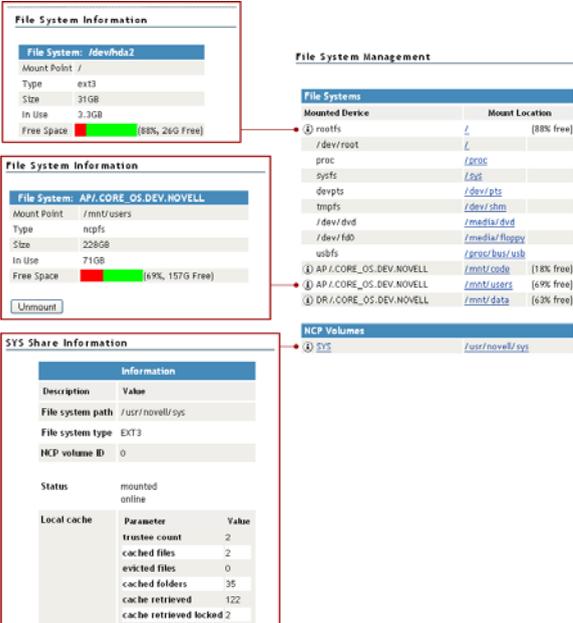
From these pages you can perform the following tasks:

- [Section 7.1, “Viewing Mounted Devices and Performing Actions on Them,”](#) on page 35
- [Section 7.2, “Browsing File Systems and Performing Actions on Them,”](#) on page 36
- [Section 7.3, “Viewing Partition Information,”](#) on page 40
- [Section 7.4, “Inventorying Directories or NCP Volumes,”](#) on page 41

7.1 Viewing Mounted Devices and Performing Actions on Them

The File System Management page is the home page for Novell Remote Manager.

Figure 7-1 File System Management Page with Information Pages



The screenshot shows the File System Management page with three information panels highlighted by red boxes and arrows pointing to the File Systems table:

- File System Information (top left):** Shows details for the file system `/dev/hda2`, including Mount Point `/`, Type `ext3`, Size `31GB`, In Use `3.3GB`, and Free Space `26G` (88% Free).
- File System Information (middle left):** Shows details for the file system `AP/.CORE_OS.DEV.NOVELL`, including Mount Point `/mnt/users`, Type `ncpfs`, Size `228GB`, In Use `71GB`, and Free Space `157G` (69% Free).
- SYS Share Information (bottom left):** Shows details for the share `/usr/novell/sys`, including File system path, File system type `EXT3`, NCP volume ID `0`, Status `mounted online`, and Local cache statistics.

The **File Systems** table (center) lists the following entries:

Mounted Device	Mount Location	Free Space
<code>/dev/root</code>	<code>/</code>	88% free
<code>proc</code>	<code>/proc</code>	
<code>sysfs</code>	<code>/sys</code>	
<code>devpts</code>	<code>/dev/pts</code>	
<code>tmpfs</code>	<code>/dev/shm</code>	
<code>/dev/dmdev</code>	<code>/media/storaged</code>	
<code>/dev/lsp</code>	<code>/media/storaged</code>	
<code>usbfs</code>	<code>/proc/bus/usb</code>	
<code>AP/.CORE_OS.DEV.NOVELL</code>	<code>/mnt/ncode</code>	18% free
<code>AP/.CORE_OS.DEV.NOVELL</code>	<code>/mnt/users</code>	69% free
<code>DR/.CORE_OS.DEV.NOVELL</code>	<code>/mnt/data</code>	63% free

The **NCP Volumes** section (bottom right) shows the volume `sys` located at `/usr/novell/sys`.

You can access this page by clicking the *Home* icon  (*File System*) link in the header frame.

The File System Management page provides a list of the server's mounted devices. The devices that are shown are from the Linux mountable file, which is a list of other file systems mounted on this host's file system.

You can view the percent of free space available on all mounted physical devices or external file systems that have actual disk space. Available disk space on virtual file systems is not shown.

To view specific information about each mounted physical device or external file system that has actual disk space, click the *Info* icon  on the left. Clicking the *Info* icon  displays one of the following types of pages:

- **File System Information.** This page shows the mount point, the file system type, the size of the mount point and the space in use. Clicking the *Unmount* button on this page, unmounts the remote file system shown. The *Unmount* button is available only on remotely mounted file systems such as NFS, NCP™, and Samba.
- **NCP Share Information.** This page shows the volumes underlying file system type, mount point and status, and cache information.

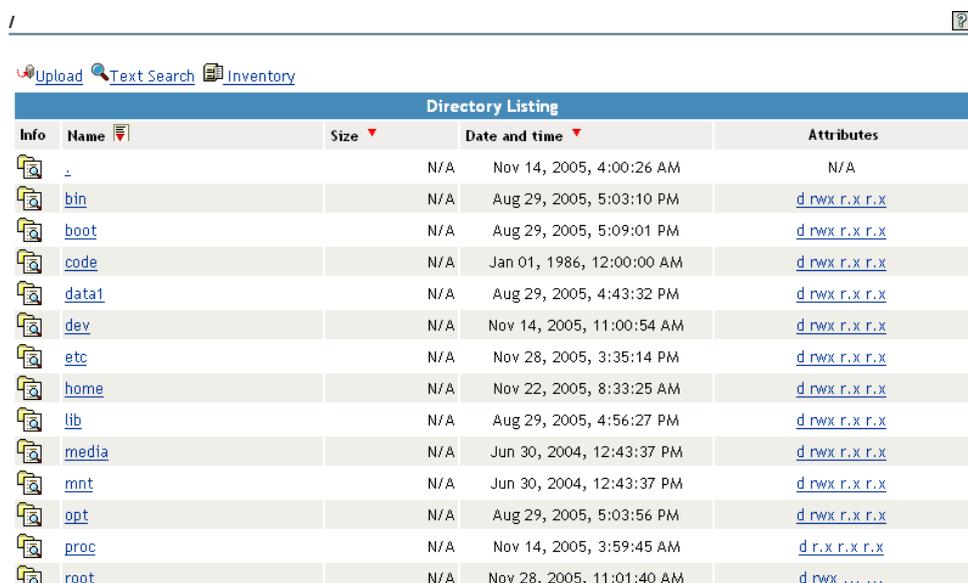
You can browse any of these file systems by clicking the link in the *Mount Location* column. At this point, you can perform any of the tasks listed for browsing the servers file system. See “[Browsing File Systems and Performing Actions on Them](#)” on page 36.

7.2 Browsing File Systems and Performing Actions on Them

On the Directory List page, you can view the Linux traditional file system and NSS file system from mount points or local partitions; browse directories and files; view and change attributes, directories, and files; and edit, delete, or rename files.

To access this page, click *View File System > View File System Listing* in the navigation frame.

Figure 7-2 Directory List Page



The screenshot shows a web interface with a navigation bar at the top containing 'Upload', 'Text Search', and 'Inventory' links. Below the navigation bar is a 'Directory Listing' table. The table has five columns: 'Info', 'Name', 'Size', 'Date and time', and 'Attributes'. The rows list various file systems such as 'bin', 'boot', 'code', 'data1', 'dev', 'etc', 'home', 'lib', 'media', 'mnt', 'opt', 'proc', and 'root', each with associated size, date, and attribute information.

Info	Name	Size	Date and time	Attributes
	.	N/A	Nov 14, 2005, 4:00:26 AM	N/A
	bin	N/A	Aug 29, 2005, 5:03:10 PM	d rwx r.x r.x
	boot	N/A	Aug 29, 2005, 5:09:01 PM	d rwx r.x r.x
	code	N/A	Jan 01, 1986, 12:00:00 AM	d rwx r.x r.x
	data1	N/A	Aug 29, 2005, 4:43:32 PM	d rwx r.x r.x
	dev	N/A	Nov 14, 2005, 11:00:54 AM	d rwx r.x r.x
	etc	N/A	Nov 28, 2005, 3:35:14 PM	d rwx r.x r.x
	home	N/A	Nov 22, 2005, 8:33:25 AM	d rwx r.x r.x
	lib	N/A	Aug 29, 2005, 4:56:27 PM	d rwx r.x r.x
	media	N/A	Jun 30, 2004, 12:43:37 PM	d rwx r.x r.x
	mnt	N/A	Jun 30, 2004, 12:43:37 PM	d rwx r.x r.x
	opt	N/A	Aug 29, 2005, 5:03:56 PM	d rwx r.x r.x
	proc	N/A	Nov 14, 2005, 3:59:45 AM	d r.x r.x r.x
	root	N/A	Nov 28, 2005, 11:01:40 AM	d rwx

The following table describes the actions necessary to access directories, files, and file and directory attributes from the Directory List page.

Table 7-2 *Directory List Page Tasks and Procedures*

Tasks	Procedures
Browse to a mount point, volume, directory, or local partition	Click the <i>link_for_the_mount_point, volume, directory, or local partition</i> under the <i>Name</i> column.
Move down the directory tree	Click the <i>directory_name</i> link.
Move up the directory tree	Click the <i>double_dots</i> (..) link.
Re-sort the list by name, size, or date and time.	Click the <i>column heading</i> that has a <i>Sort</i> icon ▼ next to it. The default sort for this listing is by the directory or file name.
View or change the attributes of a directory	Click the <i>Attributes</i> link.

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

Clicking the *Attributes* link opens the Directory Information page where you can view or change the attributes of the directory. For more information, see [“Viewing Details about Directories and Performing Actions on Them” on page 38](#) and [“Viewing the Details of a File and Performing Specific Actions” on page 40](#).

Viewing attributes on NSS volumes, directories, and files conveys the status of the NSS file system directory and file attributes: Hidden (H), Read Only (Ro), Read/Write (Rw), and Execute (X). You can view these settings in Novell Remote Manager for Linux as a combination of Read, Write, and Execute fields for the User, Group, and Other categories. Although it appears that you can control these attributes using the selections on the Directory Information page, the selections do not actually control the conventional POSIX settings for NSS directories and files.

To set directory and file attributes for NSS, use Novell Client™ or Novell NetStorage. For more information, see [“Displaying Key NSS Directory and File Attributes as Linux POSIX Permissions”](#) in the *File Systems Management Guide for OES*.

From the Directory Listing page, you can perform the following tasks.

- [Section 7.2.1, “Viewing Details about Directories and Performing Actions on Them,” on page 38](#)
- [Section 7.2.2, “Uploading a File to the Server,” on page 38](#)
- [Section 7.2.3, “Downloading a File from the Server to a Local Workstation,” on page 39](#)
- [Section 7.2.4, “Searching for Text in Files,” on page 39](#)
- [Section 7.2.5, “Viewing the Details of a File and Performing Specific Actions,” on page 40](#)
- [Section 7.2.6, “Viewing Individual Files,” on page 40](#)

7.2.1 Viewing Details about Directories and Performing Actions on Them

- 1 Click the *View File System > View File System Listing* link in the navigation frame or click a *Mount_Location_name* link on the *Home* page.
- 2 On the Directory list page, browse to the directory you want to search in by clicking the *directory_name* link.
- 3 From the directory listing, click the *Folder Information* icon  to the left of the directory or subdirectory you want to view information about or change the attributes of.
- 4 On the Directory Information page that is displayed, view the information or select/deselect the check box for the attributes that you want to change.
- 5 Click *OK*.
- 6 When viewing the details of a directory from the Directory Information page, you can also rename the directory, create a subdirectory, create a symbolic link to the selected directory, or delete the directory and its contents by completing the required information and clicking the applicable button.

Delete Directory and Contents	
Rename Directory	<input type="text" value="/home/test/bin"/>
Create Subdirectory	<input type="text"/>
Create Symbolic Link	<input type="text"/>

7.2.2 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* link to copy a file from your local machine or any other network directory to the currently selected directory.

You can upload only one file at a time. The file's date and time are changed when performing this task.

To perform this task:

- 1 Click the *View File System > View File System Listing* link in the navigation frame or click a *Mount_Location_name* link on the *Home* page.
- 2 On the Directory list page, browse to the directory you want to upload a file to by clicking the *directory_name* link.
- 3 In the directory listing, click the *Upload* link at the top of the Directory listing page.
- 4 Browse to and select the file that you want to upload.
- 5 Click *Upload*.

7.2.3 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.

- 1 Click the *View File System > View File System Listing* link in the navigation frame or click a *Mount_Location_name* link on the *Home* page.
- 2 On the Directory/File List page, browse to or search for the file that you want to download.
- 3 Click the *filename* link.
- 4 When prompted, save the target file to the desired location.

If the file opens rather than prompting you to save it, you can use the browser features to save the file.

7.2.4 Searching for Text in Files

On the Directory Listing page, you can do a GREP-type search (it accepts GREP wildcard characters) through the files in the current directory as well as subdirectories to find text in a file.

- 1 Click the *View File System > View File System Listing* link in the navigation frame or click a *Mount_Location_name* link on the *Home* page.
- 2 On the Directory list page, browse to the directory you want to search in by clicking the *directory_name* link.
- 3 Click the *Text Search* link.
- 4 Specify the content, filename, or extension you want to search for and select whether you want to match the case.
- 5 (Optional) If you want to search all subdirectories as well, select *Search Subdirectories*.
- 6 Click *Search*.

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.

If the search instructions are valid, the results are displayed on a page with the search instructions.

In the display results, you can

- Click the filename link to view or download the file.
- Click the *File Information* icon  to view information about the file; change the attributes to it; or edit (conditional), rename, or delete the file.

If the file is a simple text file or a file with an extension listed in the `/opt/novell/nrm/nrmedit.txt` file, you can also edit the file by clicking the *Edit File* button.

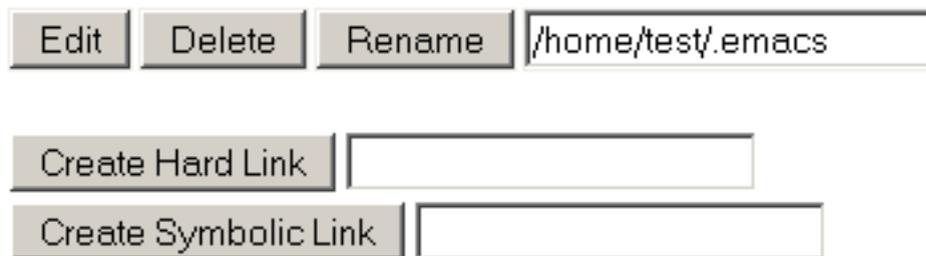
7.2.5 Viewing the Details of a File and Performing Specific Actions

- 1 Click the *View File System Listing* link in the navigation frame or click a *Mount Location* name link on the Home page.
- 2 On the Directory list page, browse the directories to the file, then click the *File* icon  to the left of the filename.
- 3 On the File Information page that is displayed, view the information or specify the information required for the applicable task, and then click the applicable button for the task you want to perform.

For Attributes management, click the attributes that you want to select/deselect and then click *OK*.

For file management, use the *Edit*, *Delete*, or *Rename* buttons. The *Edit* button is available only on simple text files or files with the extensions listed in the `/opt/novell/nrm/nrmedit.txt` file.

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



7.2.6 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.

7.3 Viewing Partition Information

If you need to get information about how a partition is laid out, you can get this information from the Partition Information page. This page shows you the major and minor numbers of the partition, the number of blocks in the partition, and its name.

To view partition information, click *View Partition Information* in the navigation frame.

Figure 7-3 Example Partition Information Page

Partition Information

Partition Information			
major	minor	#block	name
3	0	39121488	hda
3	1	2096451	hda1
3	2	4096575	hda2
3	3	1	hda3
3	5	1052226	hda5
3	6	31872928	hda6

7.4 Inventorying Directories or NCP Volumes

With this feature, you can inventory NCP mounted volumes, or general file system 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.

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.

This section includes the following tasks:

- [Section 7.4.1, “Generating an File Inventory Report,” on page 42](#)
- [Section 7.4.2, “Generating a Volume Inventory Report,” on page 43](#)
- [Section 7.4.3, “Generating a Customized Report,” on page 44](#)

7.4.1 Generating an File Inventory Report

To generate an inventory report for a the entire server or any subdirectory including mounted NCP volumes:

- 1 Click *View File System > General File Inventory*.

This opens the General File Inventory page. By default the / (root) directory is selected.

General File Inventory

Choose Subdirectory to Inventory:

 /

Browse Subdirectories:

[.](#)
[..](#)
[bin](#)
[dev](#)
[etc](#)
[lib](#)
[mnt](#)
[opt](#)
[srv](#)
[tmp](#)
[sys](#)
[var](#)
[usr](#)
[boot](#)
[code](#)
[home](#)
[proc](#)
[sbin](#)
[root](#)
[data1](#)
[media](#)
[windows](#)

- 2 From this point you can do the following:

Click the *Select* button to generate an inventory of the entire server (default selection of the / [root] subdirectory).

or

Select a subdirectory to generate a report from by clicking the *subdirectory_name* links until the desired subdirectory appears in the *Select* field, then clicking the *Select* button.

General File Inventory

Choose Subdirectory to Inventory:

 /etc/xinetd.d

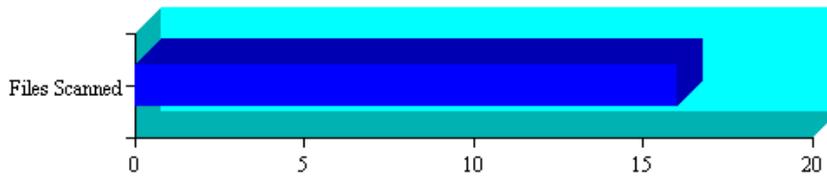
Browse Subdirectories:

[.](#)
[..](#)

If you are viewing the File System Listing page for the desired directory, you can generate the same reports by clicking the *Inventory* link on this page.

A report similar to the following is generated.

General File Inventory



Inventory Report for: /home/test

- [File type profiles](#)
- [File owner profiles](#)
- [Last modified profiles](#)
- [Last accessed profiles](#)
- [Change time profiles](#)
- [File size profiles](#)
- [Links to specific reports](#)
- [Custom Directory Tree Scan](#)

Key Statistics	Totals
Total Subdirectories:	6
Total Files:	16
Space In Use:	0 MB
File Types:	4
Soft Link Files:	0
Soft Link Subdirectories:	0

File type profiles:

[Data Tables:](#)

File Types (By Bytes In Use)



At this point, you can click any of the links to the left of the *Key Statistics* table to move quickly to the generated information or you can create a custom report. See “[Generating a Customized Report](#)” on page 44.

7.4.2 Generating a Volume Inventory Report

To quickly generate a inventory report for a mounted NCP volume:

- 1 Click *View File System > Volume Inventory*.

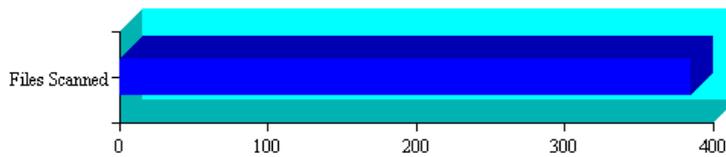
This opens the Volume Inventory page that shows all mounted volumes available for inventory.

Volume Inventory

NCP Volumes available for Inventory	
Volume	Mount Point
SYS	(/usr/novell/sys)
NCPVOL	(/home)

- 2 Click the *volume_name* link to generate an inventory of the volume selected. A report similar to the following is generated.

Volume Inventory



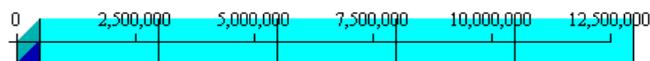
Inventory Report for: /usr/novell/sys

- [File type profiles](#)
- [File owner profiles](#)
- [Last modified profiles](#)
- [Last accessed profiles](#)
- [Change time profiles](#)
- [File size profiles](#)
- [Links to specific reports](#)
- [Custom Directory Tree Scan](#)

Key Statistics	Totals
Total Subdirectories:	35
Total Files:	385
Space In Use:	21 MB
File Types:	12
Soft Link Files:	0
Soft Link Subdirectories:	0

- [File type profiles:](#)
- [Data Tables:](#)

File Types (By Bytes In Use)



At this point, you can click any of the links to the left of the *Key Statistics* table to move quickly to the generated information or you can create a custom report. See “[Generating a Customized Report](#)” on page 44.

7.4.3 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 and perform additional actions on the files such as move, copy, or delete files selected in the report.

- 1 Create the initial report as specified in “[Generating an File Inventory Report](#)” on page 42 or
- 2 In the generated report, click the *Custom Directory Tree Scan* link. A page similar to the following is returned.

Custom Directory Tree Scan

Search Pattern:

File Owner Restriction:

Time Stamp Restrictions:

Time Stamp:

- Last Modified Time
- Last Accessed Time
- Last Changed Time

Range:

- Within Last Day
- 1 Day - 1 Week
- 1 Week - 2 Weeks
- 2 Weeks - 1 Month
- 1 Month - 2 Months
- 2 Months - 4 Months
- 4 Months - 6 Months
- 6 Months - 1 Year
- 1 Year - 2 Years
- More than 2 Years

File Size Restriction:

- Less than 1KB
- 1 KB - 4 KB
- 4 KB - 16 KB
- 16 KB - 64 KB
- 64 KB - 256 KB
- 256 KB - 1 MB
- 1 MB - 4 MB
- 4 MB - 16 MB
- 16 MB - 64 MB
- 64 MB - 256 MB
- More than 256 MB

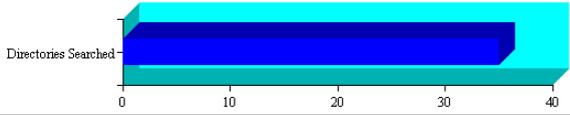
Start Scan

- 3 Type the specific search criteria in the *Search Pattern* field.
. is the default entry.

- 4 Select the desired settings in the *File Owner Restriction* drop-down box.
None is the default selection.
- 5 Select the check boxes desired to customize the report by *Time Stamp* or *File Size* restrictions.
No restrictions is the default setting.
- 6 Click *Start Scan*.

A page similar to the following is returned.

Volume Inventory ?

Directories Searched: 

Inventory Detail Report for: /usr/novell/sys
All files matching selected filter:

Move Checked Files To:

Copy Checked Files To:

-  [/usr/novell/sys/LOGIN/NLS/1257_UNI.001](#)
OWNER: root,
Size: 727, Modified: 03-20-1998 13:02:34, Accessed: 03-20-1998 13:02:34, Changed: 12-06-2005 08:22:29,
-  [/usr/novell/sys/LOGIN/NLS/1250_UNI.001](#)
OWNER: root,
Size: 727, Modified: 03-20-1998 13:02:26, Accessed: 03-20-1998 13:02:26, Changed: 12-06-2005 08:22:29,
-  [/usr/novell/sys/LOGIN/NLS/FRANCAIS/MAP.MSG](#)
OWNER: root,
Size: 9,183, Modified: 08-21-1996 18:12:08, Accessed: 08-21-1996 18:12:08, Changed: 12-06-2005 08:22:29,

Performing Actions on Files from Custom Reports

After a custom report is generated, you can perform the following actions on the files listed in the report.

- [“Moving Selected Files” on page 46](#)
- [“Copying Selected Files” on page 47](#)
- [“Deleting Selected Files” on page 47](#)
- [“Opening or Downloading a File” on page 47](#)
- [“Managing Individual Files” on page 47](#)

Moving Selected Files

- 1 From the generated report, select the check box to the left of each file that you want to move. If you want to move all the files in the list, click the *Check All* button.
- 2 Specify the path where you want to move the selected files to in the field to the right of the *Move Checked File To* button.
- 3 Click the *Move Checked File To* button.

Copying Selected Files

- 1 From the generated report, select the check box to the left of each file that you want to copy. If you want to copy all the files in the list, click the *Check All* button.
- 2 Specify the path where you want to copy the selected files to in the field to the right of the *Copy Checked File To* button.
- 3 Click the *Copy Checked File To* button.

Deleting Selected Files

- 1 From the generated report, select the check box to the left of each file that you want to delete. If you want to delete all the files in the list, click the *Check All* button.
- 2 Click the *Delete Checked Files* button.

Opening or Downloading a File

- 1 From the generated report, select the *filename* link for the file you want to open or download.
- 2 From the resulting dialog box, select *Open With* or *Save to Disk*, then click *OK*.

Managing Individual Files

- 1 From the generated report, click the *File Information*  icon.
- 2 Perform the desired actions by entering the required information in the applicable field and clicking the applicable button.

Edit	Delete	Rename	/home/test/.emacs
Create Hard Link			
Create Symbolic Link			

Managing Linux

The Manage Linux section in Novell® Remote Manager (NRM) for Linux includes the following links to these pages from which you can perform the following tasks:

Table 8-1 *Manage Linux Section Tasks, Links, and Pages*

Task	Link	Page Displayed	For More Info, See
Access VNC Console screens	<i>VNC Consoles</i>	VNC Consoles Screens	“Accessing VNC Consoles” on page 49
View Kernel Modules Information	<i>View Kernel Modules</i>	Kernel Module Listing	“Viewing Kernel Modules” on page 50
View Memory Information and turn swapping on and off.	<i>View Memory Information</i>	View Memory Config	“Viewing Memory Information” on page 51
Shut down and restart the host	<i>Down/Restart</i>	Down/Reset Options	“Shutting Down and Restarting the Host” on page 52
Manage packages	<i>View Package Information</i>	Package Information	“Managing Packages” on page 53
Manage processes	<i>View Process Information</i>	Process Information	“Managing Processes” on page 55

8.1 Accessing VNC Consoles

If VNC services are configured on the server, you can access the VNC consoles screens by clicking the *VNC Consoles* link under the *Manage Linux* heading in the navigation frame. Then click the *1024 X 728* button on the VNC Console Screens page.

If VNC services are not configured, you can configure them through YaST > *Network Services* > *Remote Administration*.

This form of remote administration is less secure than SSH; therefore, we recommend using this feature only in a secure environment (behind a firewall).

Clicking the *VNC Consoles* link opens a Java* applet in a secondary browser window. The following table explains what you can do from this window.

Table 8-2 *VNC Console Page Tasks and Procedures*

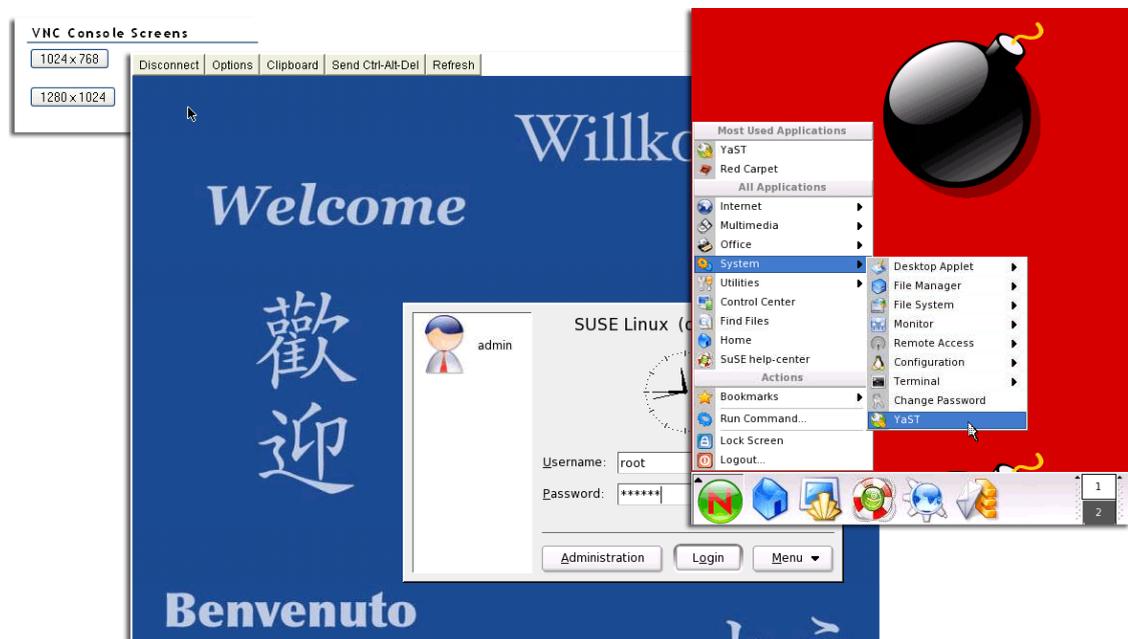
Task	Procedure
Use any of the screens listed as though you were at the server console.	Use the keyboard or mouse as though you were at the server console.
Disconnect from the console.	Click the <i>Disconnect</i> button on this page.

Task	Procedure
Change any of the VNC client options currently selected.	Click the <i>Options</i> button.
Access the VNC client clipboard and cut or paste any commands that you might want to execute in a active terminal shell.	Click the <i>Clipboard</i> button.
Restart the server.	Click the <i>Send Ctrl+Alt+Del</i> button.
Refresh the current screen you are viewing.	Click the <i>Refresh</i> button.

Figure 8-1 illustrates a user accessing YaST on a remote server from the user's desktop browser. To access YaST on the remote server, the user did the following:

- 1 Clicked the *VNC Consoles* link in the navigation frame.
- 2 Clicked the *1024 X 728* button on the VNC Consoles Screens page.
- 3 Logged into Linux.
- 4 Clicked *N > System > YaST*.

Figure 8-1 Example Access of YaST through NRM VNC Console Screens Linux.



8.2 Viewing Kernel Modules

Clicking the *View Kernel Modules* link in the navigation frame displays the Kernel Module Listing page. On this page you can view the status of the modules that have been compiled into the Linux kernel on this system. Printing this page can be useful to document your system as you make changes or upgrades to it in the future.

The information shown on this page is equivalent to the information in the `lsmod` shell command plus the Live information or equivalent to viewing the `proc/modules` file.

Figure 8-2 Example Kernel Module Listing Page

Kernel Module Listing



Kernel Module Information				
Name	Memory	Use Count	Module Users/Configuration Info	Live
ncpfs	57760	1		0xfad76000
edd	9368	0		0xfacc5000
joydev	10304	0		0xfacc1000
sg	35744	0		0xfad5b000
st	39452	0		0xfad50000
sr_mod	16292	0		0xfacb0000
ide_cd	36740	0		0xfad46000
cdrom	37148	2	sr_mod ide_cd	0xfad3b000
nvrाम	8456	0		0xfac84000
snd_seq_oss	31360	0		0xfacee000
snd_seq_midi_event	7680	1	snd_seq_oss	0xfac6a000
snd_seq	55312	4	snd_seq_oss snd_seq_midi_event	0xfacdf000

8.3 Viewing Memory Information

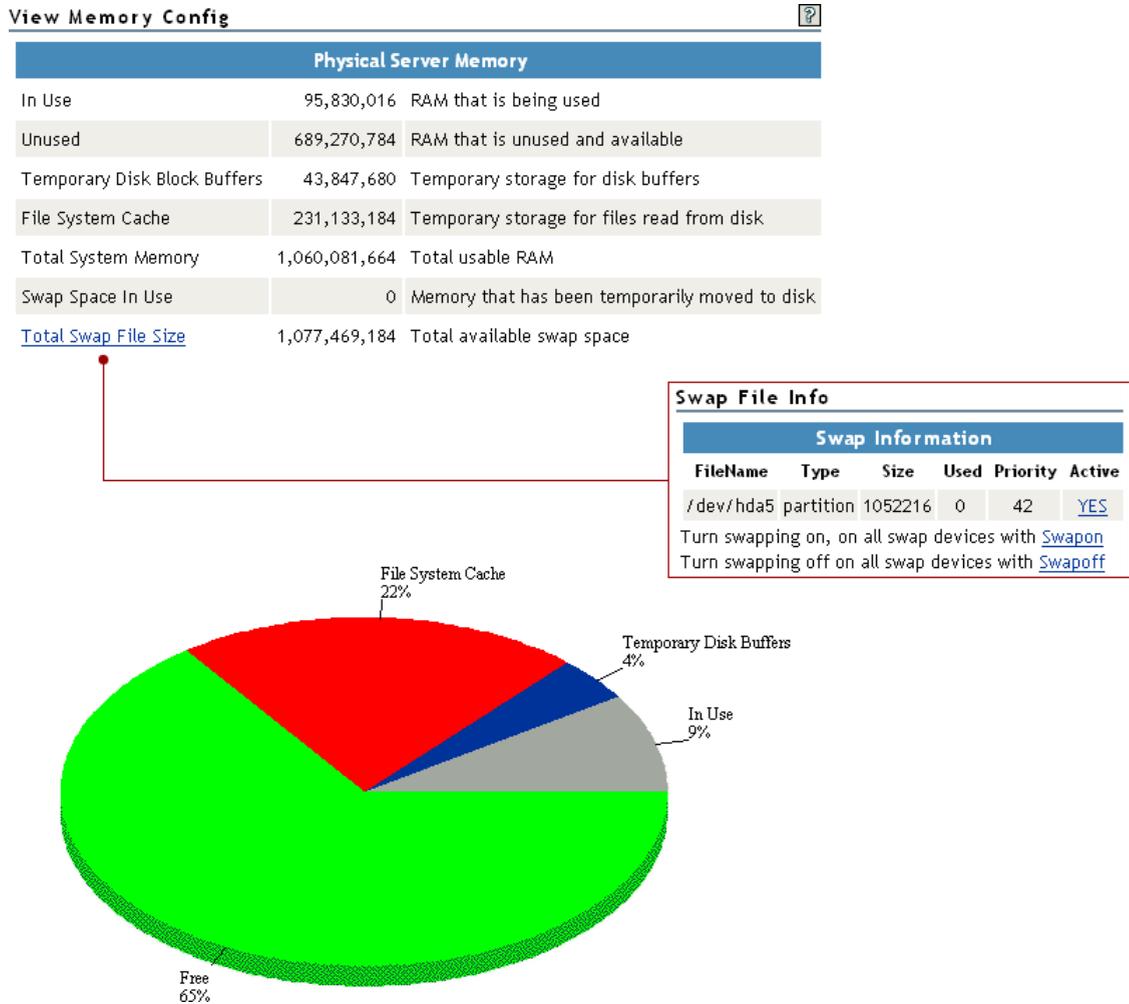
Clicking the *View Memory Information* link in the navigation frame displays the View Memory Config page. On this page you can view the following information about the memory in the server. The amount values are shown in bytes.

- Used and unused amounts of physical memory
- Amount of memory in buffer cache
- Amount of memory used by the file system cache
This value is determined by subtracting the SwapCache from the PageCache (disk cache) amounts.
- Amount of total memory that can be used by the system.
This value is determined by subtracting the physical RAM from the kernel binary code.
- Amount of swap space in use and available.
- The *Total Swap File Size* link goes to a Swap File Information page that provides a very quick snapshot of every swap filename, type of swap space, and total and used sizes (in kilobytes) on the server including the following information:
 - The Priority column is useful when multiple swap files are in use and some of them are preferred over others, such as if they are on faster hard disks. The lower the priority, the more likely the swap file will be used.
 - The Active column shows a *Yes* or *No* status, indicating whether the Swap file is active or not. Clicking the link toggles swapping on or off for the listed device.
 - Two additional links turn swapping on or off for all devices.

If you add a swap file to a device, you need to add an entry to the `/etc/fstab` file to make the `swapon` or `swapoff` links work correctly.

This information is also in the `/proc/swaps` file.

Figure 8-3 Example View Memory Config Page



8.4 Shutting Down and Restarting the Host

Clicking the *Down/Restart* link in the navigation frame displays the Down/Reset Options page. You can use these options to shut down or reset the host.

The following table describes the specific actions of each option.

Table 8-3 Down/Reset Options Page Options and Actions

Option	Action
<i>Down</i>	Forces the host to shut down immediately.
<i>Reset</i>	Forces the host to shut down immediately, then warm boots the computer.

Using either of the options additionally forces the host to perform the following actions:

- Update the cache buffers to disks
- Close all open files

WARNING: If files are open and changes have not been saved to the host, some data loss might occur. Users might need to save changes locally until the host is started again.

- Update the appropriate file system tables
- Exit the host from the network
- Unmount all file systems

8.5 Managing Packages

Clicking the *View Package Information* link displays the Packing Information page. On this page you can view the following information about each package that is installed on the system:

- *Name*
- *Group*
- *Version*
- *Release*
- *Vendor*

Figure 8-4 Example Package Information Page

Package Information ?

Package Information		Install	Search (case sensitive)		
Name	Group	Version	Release	Vendor	
3ddiag	System/Base	0.716	116.1	SuSE Linux AG, Nuernberg, Germany	
aaa_base	System/Fhs	9	29.20	SuSE Linux AG, Nuernberg, Germany	
aaa_base_novell	System/Fhs	0.0.1	3	(none)	
aaa_skel	System/Fhs	2004.6.8	0.2	SuSE Linux AG, Nuernberg, Germany	
aalib	System/Libraries	1.4.0	279.1	SuSE Linux AG, Nuernberg, Germany	
acl	System/Filesystems	2.2.21	54.4	SuSE Linux AG, Nuernberg, Germany	
acroread	Productivity/Publishing/PDF	5.010	4.2	SuSE Linux AG, Nuernberg, Germany	
alsa	System/Libraries	1.0.3	41.3	SuSE Linux AG, Nuernberg, Germany	
apache2	Productivity/Networking/Web/Servers	2.0.49	27.21	SuSE Linux AG, Nuernberg, Germany	
apache2-jakarta-tomcat-connectors	Productivity/Networking/Web/Frontends	5.0.19	29.1	SuSE Linux AG, Nuernberg, Germany	
apache2-worker	Productivity/Networking/Web/Servers	2.0.49	27.21	SuSE Linux AG, Nuernberg, Germany	
arts	Productivity/Multimedia/Sound/Players	1.2.1	35.4	SuSE Linux AG, Nuernberg, Germany	
ash	System/Shells	0.4.18	56.1	SuSE Linux AG, Nuernberg, Germany	
at	System/Daemons	3.1.8	898.1	SuSE Linux AG, Nuernberg, Germany	
atk	System/Libraries	1.4.1	128.1	SuSE Linux AG, Nuernberg, Germany	
attr	System/Filesystems	2.4.16	1.2	SuSE Linux AG, Nuernberg, Germany	
audiofile	System/Libraries	0.2.5	37.1	SuSE Linux AG, Nuernberg, Germany	
autofs	System/Daemons	3.1.7	900.1	SuSE Linux AG, Nuernberg, Germany	
autoyast2	System/YaST	2.9.52	0.2	SuSE Linux AG, Nuernberg, Germany	

On the View Package Information page and subsequent pages, you can perform these tasks using the following procedures:

Table 8-4 *View Package Information Page Tasks and Procedures*

Tasks	Procedures
Sort the listed packages by name, group, or vendor	Click the <i>Sort</i> icon ▼ at the top of the applicable column. The default sort is by name.
View more detailed information about an installed package	Click the link for the applicable package under the <i>Name</i> column.
Remove an installed package	<ol style="list-style-type: none"> 1. Click the <i>link for the package</i> under the Name column. 2. Click <i>Remove</i>.
Install a new package that you have downloaded to the host	<ol style="list-style-type: none"> 1. Click <i>Install</i>. 2. Browse to the location where you uploaded the package to. The browse starts at the root of the host. 3. Click <i>Install</i>. <p>The selected package's file path is transferred to the <i>RPM File Path</i> field on the Package Installation page.</p> <p>When the <i>Install</i> button is clicked on the View Package Information page, Novell Remote Manager attempts to install the specified RPM file using the Linux RPM utility.</p>

The following figure shows a sample of the details you see when you click the *package_name* link.

Figure 8-5 *Detailed Information Page for the 3ddiag Example Package*

3ddiag

```

Name      : 3ddiag                Relocations: (not relocatable)
Version   : 0.716                 Vendor: SuSE Linux AG, Nuernberg, Germany
Release   : 116.1                 Build Date: Thu Jul  1 06:46:41 2004
Install date: Wed Jan 26 08:59:05 2005  Build Host: millikan.suse.de
Group     : System/Base           Source RPM: 3ddiag-0.716-116.1.src.rpm
Size      : 47076                 License: GPL
Signature : DSA/SHA1, Thu Jul  1 06:47:54 2004, Key ID a84edae89c800aca
Packager  : http://www.suse.de/feedback
Summary   : A Tool to Verify the 3D Configuration
Description :
With 3Ddiag you can verify the 3D configuration.

Authors:
-----
  Stefan Dirsch
Distribution: SuSE SLES-9 (i586)

```

8.6 Managing Processes

Clicking the *View Process Information* link in the navigation frame displays the Process Information page. On this page, you can view a list of all the processes as well as their state in the host and perform the actions listed in the following table.

Table 8-5 Process Information Page Tasks and Procedures

Tasks	Procedures
Sort the process by name (in alphabetical order by default), by process ID, by CPU Usage, or by Memory Usage	Click the <i>Sort</i> icon ▼ at the top of the applicable column.
View more specific information about a listed process	Click the <i>link</i> for the applicable process under the <i>Name</i> column.
Kill a process	<ol style="list-style-type: none"> 1. Click the link for the applicable process under the <i>Name</i> column. 2. Click <i>Kill</i>.

Figure 8-6 Example Process Information Page

Process Information ?

Process Information							
Name ▼	Owner ▼	ID ▼ (Status)	CPU Usage % ▼	Priority ▼	Run Time ▼	Physical Memory (%) ▼	Virtual Memory ▼
aio/0	root	10 (Sleep)	0.0%	9	0:00.00	0 (0.0%)	0
cron	root	4429 (Sleep)	0.0%	16	0:00.00	708608 (0.0%)	1617920
events/0	root	3 (Sleep)	0.0%	5	0:00.11	0 (0.0%)	0
httpstkd	root	2612 (Sleep)	0.0%	16	0:10.87	6807552 (0.0%)	135266304
hwscand	root	3140 (Sleep)	0.0%	15	0:00.00	430080 (0.0%)	1441792
init	root	1 (Sleep)	0.0%	16	0:05.01	249856 (0.0%)	602112
kacpid	root	4 (Sleep)	0.0%	13	0:00.00	0 (0.0%)	0
kblockd/0	root	5 (Sleep)	0.0%	5	0:00.00	0 (0.0%)	0
khelper	root	6 (Sleep)	0.0%	5	0:00.00	0 (0.0%)	0
khubd	root	2290 (Sleep)	0.0%	15	0:00.00	0 (0.0%)	0
klogd	root	2541 (Sleep)	0.0%	16	0:00.00	606208 (0.0%)	1544192
kseriad	root	678 (Sleep)	0.0%	25	0:00.00	0 (0.0%)	0
ksoftirqd/0	root	2 (Sleep)	0.0%	34	0:00.00	0 (0.0%)	0
kswapd0	root	9 (Sleep)	0.0%	25	0:00.00	0 (0.0%)	0
master	root	4264 (Sleep)	0.0%	17	0:00.00	1478656 (0.0%)	4276224

Managing Hardware

The *Manage Hardware* section in Novell® Remote Manager (NRM) for Linux includes the following links to pages from which you can perform the following tasks:

Table 9-1 *Manage Hardware Section Tasks, Links, and Pages*

Task	Link	Page Displayed	For More Info, See
View Processor information	<i>View Processors</i>	Processor Information	“Viewing Processors” on page 57
View Interrupt information	<i>Interrupt Information</i>	Interrupts	“Viewing Interrupt Information” on page 58
View memory I/O information	<i>IO Memory Information</i>	I/O Memory Information	“Viewing I/O Memory Information” on page 59
View port I/O information	<i>IO Port Information</i>	IO Port Information	“Viewing I/O Port Information” on page 60
View SMBIOS information	<i>SMBIOS Information</i>	SMBIOS Information	“Viewing SMBIOS Information” on page 61

9.1 Viewing Processors

Clicking the *View Processors* link under the *Manage Hardware* heading in the navigation frame displays the Processor Information page. On this page you can view information about each processor on this host.

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

This information is equivalent to the information you would see in the `/proc/cpuinfo` file.

Figure 9-1 *Example Processor Information Page*

Processor Information ?	
processor : 0	
vendor_id	GenuineIntel
cpu family	15
model	3
model name	Intel(R)
Pentium(R)	134555524
4 CPU 3.00GHz	
stepping	3.000000.3
cpu MHz	2993.171
flags	fpu vme de pse tsc msr pae mce cx8 sep mtrr pge mca cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe pni monitor ds

9.2 Viewing Interrupt Information

Clicking the *Interrupt Information* link under the *Manage Hardware* heading in the navigation frame displays the Interrupts page, which includes the following:

Table 9-2 *Interrupts Page*

Category	Information Displayed
Interrupt	Interrupt number or name of an interrupt that might be generated.
CPU <i>number</i>	Number of interrupts that have occurred on a given processor.
Route-Trigger Method	How the interrupt is being delivered to the processor and the method of interrupting the processor.
Device	Name of the device driver that is generating the interrupt.

Figure 9-2 *Example Interrupt Information Page*

Interrupts

Interrupt Information			
Interrupt	CPU0	Route-Trigger Method	Device
0:	4,084,188	XT-PIC	timer
1:	1,132	XT-PIC	i8042
2:	0	XT-PIC	cascade
5:	0	XT-PIC	ehci_hcd
8:	2	XT-PIC	rtc
9:	93,026	XT-PIC	acpi, libata, eth0, uhci_hcd
10:	0	XT-PIC	uhci_hcd, Intel ICH5
11:	0	XT-PIC	uhci_hcd, uhci_hcd
12:	4,630	XT-PIC	i8042
14:	16,200	XT-PIC	ide0
15:	77	XT-PIC	ide1
NMI:	0		
LOC:	0		
ERR:	0		
MIS:	0		

9.3 Viewing I/O Memory Information

Clicking the *IO Memory Information* link under the *Manage Hardware* heading in the navigation frame displays the I/O Memory Information page, which includes the following:

Table 9-3 *I/O Memory Information Page*

Category	Information Displayed
Memory Address	I/O memory range that a given device is using.
Device Description	A description of the device that is using a given I/O memory range.

Figure 9-3 *Example I/O Memory Information Page*

I/O Memory Information

I/O Memory Information	
Memory Address	Device Description
00000000-0009ffff	System RAM
000a0000-000bffff	Video RAM area
000d1000-000d3fff	Extension ROM
000f0000-000fffff	System ROM
00100000-3ff73fff	System RAM
00100000-002ffe16	Kernel code
002ffe17-003afdff	Kernel data
3ff74000-3ff75fff	ACPI Non-volatile Storage
3ff76000-3ff96fff	ACPI Tables
3ff97000-3fffffff	reserved
e8000000-efffffff	0000:00:00.0
f0000000-f7ffffff	PCI Bus #01
f0000000-f7ffffff	0000:01:00.0
f0000000-f1ffffff	vesafb
fcfe0000-fcffffff	0000:02:0c.0

9.4 Viewing I/O Port Information

Clicking the *IO Port Information* link under the *Manage Hardware* heading in the navigation frame displays the I/O Port Information page, which includes the following:

Table 9-4 *IO Port Information Page*

Category	Information Displayed
IO Address	Shows the I/O port range that a given device is using.
Device Description	Shows the name of the device that is using a given I/O port range.

Figure 9-4 *Example I/O Port Information Page*

I/O Port Information

I/O Port Information	
IO Address	Device Description
0000-001f	dma1
0020-0021	pic1
0040-005f	timer
0060-006f	keyboard
0070-0077	rtc
0080-008f	dma page reg
00a0-00a1	pic2
00c0-00df	dma2
00f0-00ff	fpu
0170-0177	ide1
01f0-01f7	ide0
02f8-02ff	serial
0376-0376	ide1
03c0-03df	vesafb
03f6-03f6	ide0

9.5 Viewing SMBIOS Information

Clicking the *SMBIOS Information* link under the *Manage Hardware* heading in the navigation frame displays the SMBIOS Information page. On this page, you can view details about the BIOS hardware in each host without physically removing the hardware cover. You also have access to information that is available only through the management system.

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

You might see information types such as the following. The types displayed vary depending on the hardware in your system.

- BIOS
- System
- Base Board
- System Enclosure or Chassis
- Processor
- Cache
- Port Connector
- System Slots
- On Board Device
- OEM Strings
- BIOS Language
- System Event Log
- Physical Memory Array
- Memory Device
- Memory Array Mapped Address
- Memory Device Mapped Address
- Hardware Security
- System Boot

Selecting an information type displays information contained within SMBIOS for the type selected. For example, to see all the BIOS information, click the *BIOS Information* link. See [Figure 9-5](#).

Figure 9-5 Example SMBIOS and BIOS Information Pages

SMBIOS Information

Information Type

- [BIOS Information](#) ●
- [System Information](#)
- [Base Board Information](#)
- [System Enclosure or Chassis](#)
- [Processor Information](#)
- [Cache Information](#)
- [Port Connector Information](#)
- [System Slots](#)
- [On Board Device Information](#)
- [OEM Strings](#)
- [BIOS Language Information](#)
- [System Event Log](#)
- [Physical Memory Array](#)
- [Memory Device](#)
- [Memory Array Mapped Address](#)
- [Memory Device Mapped Address](#)
- [Hardware Security](#)
- [System Power Controls](#)
- [Voltage Probe](#)

BIOS Information

Name	Value
BIOS Vendor	Dell Computer Corporation
BIOS Version	A04
BIOS Release Date	01/15/2004
BIOS Characteristics	PCI is supported
	Plug and Play is supported
	APM is supported
	BIOS is Upgradeable (Flash)
	BIOS shadowing is allowed
	ESCD support is available
	Boot from CD is supported
	Selectable Boot is supported
	EDD (Enhanced Disk Drive) Specification is supported
	Int 13h - Japanese Floppy for Toshiba 1.2 MB (3.5", 360 RPM) is supported
	Int 5h, Print Screen Service is supported
	Int 9h, 8042 Keyboard services are supported
	Int 14h, Serial Services are supported
	Int 17h, Printer Services are supported
BIOS Characteristics Extension Byte 1	ACPI supported
	USB Legacy is supported

Using Group Operations

The *Use Group Operations* section in Novell® Remote Manager (NRM) for Linux includes the following links to pages from which you can perform the following tasks:

Table 10-1 *Use Group Operations Tasks, Links, and Pages*

Task	Link	Page Displayed	For More Information
Access an existing group	<i>Select Group</i>	Select Group	“Accessing an Existing Group” on page 69
Build and configure a new monitoring group	<i>Configure New Group</i>	Group Monitoring Operations	“Building and Configuring a Monitoring Group” on page 64
Change an existing group	<i>Select Group</i>	Select Group	“Changing an Existing Group” on page 69
Define or edit Group Monitoring types	<i>NRM Health Types</i>	Novell Remote Manager Health Monitoring Engine (NRM Health Types)	“Defining or Editing Group Monitoring Types” on page 73
Delete an existing group	<i>Select Group</i>	Select Group	“Deleting an Existing Group” on page 70
Scan the network for items to monitor on the network.	<i>Configure New Group > right-click > click Network Discovery</i>	Network Discovery	“Discovering Items on the Network to Monitor” on page 73
Generate and view server reports	<i>Configure New Group > right-click > click Save Group</i>	Group Monitoring Operations	“Generating and Viewing Server Reports” on page 70
Save a new group	<i>Configure New Group > right-click > click Save Group</i>	Save Group	“Saving a Group” on page 68
View group operations monitored items	<i>View Monitored Items</i>	Novell Remote Manager Health Monitoring Engine - Monitored Items	“Viewing Monitored Items” on page 71
View group operations defined NRM health types	<i>NRM Health Types</i>	Novell Remote Manager Health Monitoring Engine - NRM Health Types	“Viewing Group Monitoring Types” on page 72

Using the group features involves performing one or more of the following tasks:

1. [Building and Configuring a Monitoring Group \(page 64\)](#).
2. (Optional) [Saving a Group \(page 68\)](#).

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

3. [Generating and Viewing Server Reports \(page 70\)](#).

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

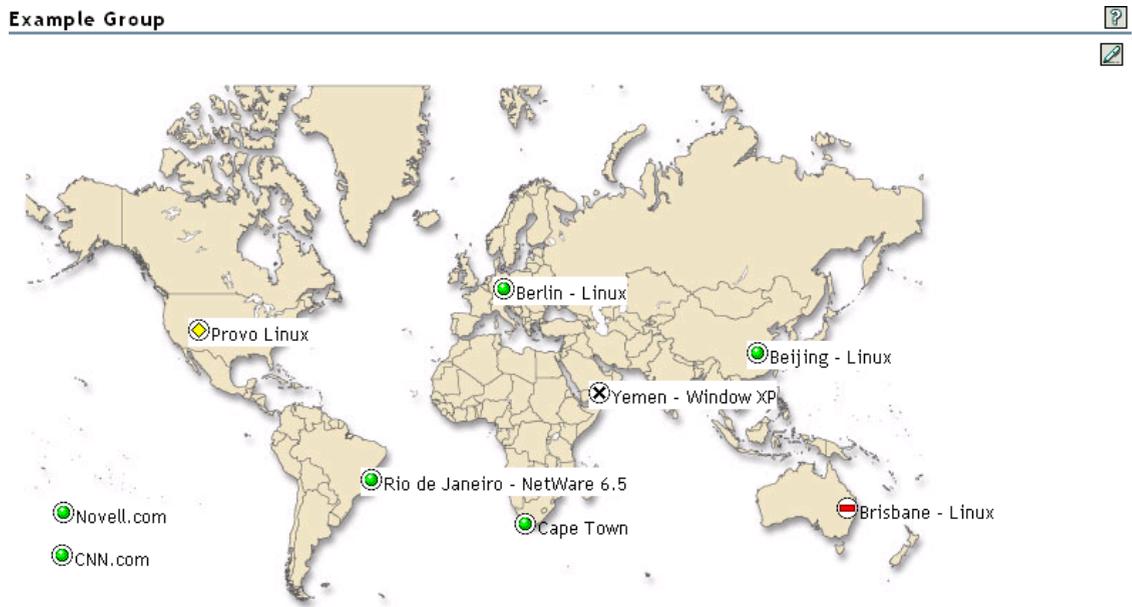
4. (Conditional) [Accessing an Existing Group \(page 69\)](#).

10.1 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, LDAP Directory Root Search, and status of connectivity to a Web page.

Monitoring items can be defined and represented by an icons on a page as shown in the following figure. The icons can represent a single item or a group of items.

Figure 10-1 NRM Server Health Example Group



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.

You should see a pop-up similar to the following:

- Add Item
- Configure New Group
- Full Screen
- Group Configuration
- Network Discovery
- Refresh
- Save Group
- Select Group
- Show Hidden Items
- NRM Reports & Operations

3 Click *Add Item*, and do the following:

3a Complete the Monitoring Item Configuration form.

Add New Monitor Item ?

Monitoring Item Configuration

Name	<input type="text"/>	Monitoring Type	NRM Health Monitor ▼
Item Address/URL	<input type="text"/>	Port	8008
Hide Normal Status	<input type="checkbox"/>		
Text Color	Default ▼	Text Background Color	Default ▼
Use single sign on NRM credentials	<input type="checkbox"/>		
User Name	<input type="text"/>	Password	* <input type="text"/>
<input type="button" value="Add"/>		<input type="button" value="Cancel"/>	

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.

Option	Details
<i>Monitoring Type</i>	<p>Specify one of the following types:</p> <ul style="list-style-type: none"> • Label: Text information to use as a label on the group monitor display. Lets you identify each group specifically as needed. • LDAP Directory Root Search: Shows the response when trying to ping port 389 of the specified LDAP server. Credentials are not used. This is useful to monitor the status of your LDAP servers in your network. • 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. • Ping (ICMP): Shows the response when sending ping requests to the specified DNS name or IP address. • TCP/IP Port 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 is 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. • Web page: Shows the response when trying to download a Web page from the specified URL. You need to put the second part of the address only.
<i>Item Address/URL</i>	<p>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.</p> <p>The address can be an IP address or DNS name.</p> <p>You do not need to specify the HTTP:// portion of a URL</p>
<i>Hide Normal Status</i>	<p>When selected, only items that are in an abnormal state are displayed.</p> <p>If you want to monitor all statuses, leave the check box deselected.</p>
<i>Text Color</i>	<p>Black is the default. You can select any other color from the drop-down list.</p>
<i>Port</i>	<p>The default is provided. You can type a different port to use.</p>
<i>Use Single Sign on NRM Credentials</i>	<p>When selected (default), the credentials used to access this items' data are the same as the credentials that the user logged into Novell Remote Manager with.</p> <p>When deselected, enter the credential necessary to access the item in the User Name and Password fields.</p>
<i>Text Background Color</i>	<p>Clear is the default. You can select any other color in the drop-down list.</p>

You can also define your own monitoring types or edit the default defined health types by editing the XML data in `/opt/novell/nrm/NRMGroupHealthInfo` file. For more information, see “[Defining or Editing Group Monitoring Types](#)” on page 73.

3b Click *Add*.

3c Drag the monitor items to the desired location.

3d Repeat **Step 3a** 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 form.

Group Operations Configuration		E-mail Options	
Monitor Page Title	<input type="text"/>	Suspect Server Health E-mail Notification	<input type="checkbox"/>
Background Graphic	<input type="text" value="NRMDefaultGroupMap.JPG"/>	First notification wait period	<input type="text" value="0"/> Minutes
Refresh Rate	<input type="text" value="30"/> Seconds	Additional notification wait period	<input type="text" value="0"/> Minutes
		Critical Server Health E-mail Notification	<input type="checkbox"/>
		First notification wait period	<input type="text" value="0"/> Minutes
		Additional notification wait period	<input type="text" value="0"/> Minutes

Option	Description
<i>Display</i>	<p>The display options let you control the following:</p> <ul style="list-style-type: none"> • 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. <p>If you want to add a customized graphic, add it to the <code>/opt/novell/nrm/NRMGroupMaps</code> directory.</p>
<i>E-mail</i>	<p>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 in the <code>/etc/opt/novell/httpstk.conf</code> file.</p>

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 (Conditional) If you haven't saved any groups, you might need to extend the schema for NRM group operations before you can save the group.

Extending the schema is required only once per eDirectory™ tree. If the host is connected to a pre-existing NetWare® 6.5 or later network, then extending the schema is not necessary.

6c Click *Save Group* and perform the required steps to save the group to a local server or save it and associate it with an eDirectory object.

See “[Saving a Group](#)” on page 68.

10.2 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 associate with an eDirectory object and save it.

10.2.1 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 `/opt/novell/nrm/NRMGroups` directory.

10.2.2 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*.

10.3 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 Server Group page, select the desired group from the drop-down list.

IMPORTANT: 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*.

10.4 Changing an Existing Group

After accessing an existing group (see “[Accessing an Existing Group](#)” on page 69), you might want to change it using one of the following procedures.

Table 10-2 *Changing an Existing Group Tasks and Procedures*

If you want to	Then
Change the configuration of an existing group.	<ol style="list-style-type: none">1. Select the group.2. Right-click the page, then click <i>Group Configuration</i>.3. Make the desired changes in the Group Operations Configuration form.4. Click <i>Apply</i>.5. Save the group. (See “Saving a Group” on page 68.)
See the details of the server health or the monitoring type.	<ol style="list-style-type: none">1. Select the group.2. Select the item you want to see the details for.3. Double-click the <i>Health Status</i> icon.
Edit an existing item in the group.	<ol style="list-style-type: none">1. Select the group.2. Select the item you want to edit.3. Right-click the selected item.4. Click <i>Edit</i>.

If you want to	Then
Delete a server or monitor item from a group.	<ol style="list-style-type: none"> 1. Select the group. 2. Select the item you want to delete. 3. Right-click the selected item. 4. Click <i>Delete</i>.
Change the display to a full screen in your browser window.	<ol style="list-style-type: none"> 1. Select the group. 2. Right-click the page. 3. Click <i>Full Screen</i> 4. When you are finished viewing the group, close the browser window.

10.5 Deleting an Existing Group

To delete a group:

- 1 Click the *Select Group* link in the navigation frame.
- 2 On the Server Group page, select the desired group from the drop-down list.
- 3 Click *Delete Group*.

10.6 Generating and Viewing Server Reports

Running Server Comparison reports on a group of servers can help you in determine 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.

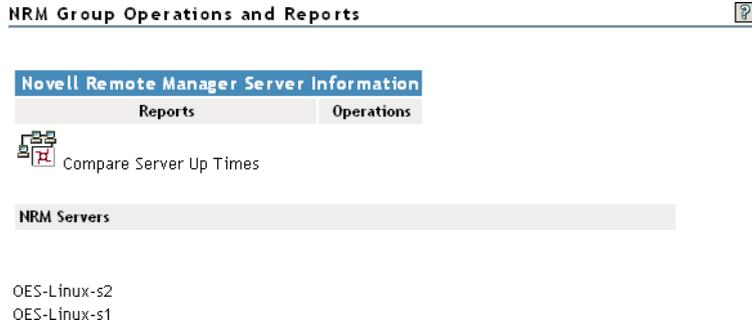
In this release, you can run only one report, the [“Compare Server Up Time Report” on page 70](#).

10.6.1 Compare Server Up Time Report

Run this report to see which servers might need replacing or tuning to keep them running longer. This report gives you an idea how long each server in the group has been running without being restarted.

- 1 Build the monitor group or select a group previously saved.
See [“Building and Configuring a Monitoring Group” on page 64](#) or [“Accessing an Existing Group” on page 69](#).
- 2 Right-click the customized Group page.

3 Click *NRM Reports & Operation*.



4 Click *Compare Server Up Times*.

A report similar to the following is returned.

Server Up Time Report

Server	Up Time
 OES-Linux-s2	16 days 06 hours 05 minutes 46 seconds
 OES-Linux-s1	14 days 22 hours 58 minutes 08 seconds

 Server has been up less than one hour.
 Server has been up less than one day.

10.7 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.

Table 10-3 Health Monitoring Engine Monitored Items

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 Novell Remote Manager 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 Novell Remote Manager uses to check the items health status.
Last Check Time	The last time that a Novell Remote Manager group requested the health status of this item.
Monitoring Start Time	The 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.

10.8 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 `/opt/novell/nrm/NRMGroupHealthInfo` file.

Figure 10-2 The Default NRM Health Monitoring Engine - NRM Health Types Content Definitions

Novell Remote Manager Health Monitoring Engine ?					
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

10.9 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 `/opt/novell/nrm/NRMGroupHealthInfo` file and make changes to it.

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>Linux</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>
```

10.10 Discovering Items on the Network to Monitor

If you want to scan the network for specific services, you can access the Network Discovery page and specify the host and ports that should be scanned for. After discovering the items on the network, you can click the item and add it to the current group for future monitoring.

Using this feature can help you to quickly gather the information you need to create monitoring groups.

To access this page, do the following:

- 1 In the navigation frame, click *Use Group Operations > Configure New Group* or *Select Group*.
- 2 Right-click the applicable group page displayed.
- 3 Make sure the browser you are using will accept pop-ups.
- 4 Click *Network Discovery*.

The Network Discovery page is displayed:

NetWork Discovery 

Network Scan Parameters

DNS Name/IP Address Subnet Mask

Select a Network Discovery Method

Scan available Hosts (ping/ICMP Echo)

Scan for Web Servers (port 80)

Scan for LDAP Servers (port 389)

Scan for Novell Remote Manager Servers (port 8008/8009)

Scan for Services (user supplied port) port:

To perform the scan, do the following:

- 1 Access the Network Discovery page.
- 2 Do the tasks specified in the following table:

The *Network Scan Parameter* fields determine which hosts or ports should be scanned.

The *DNS Name / IP Address* field is an IP address is used with the subnet mask to determine the range of IP addresses to be scanned. These fields default to the IP address of the current Novell Remote Manager host and a class C subnet mask. For example, if you wanted to scan for all the active hosts in the class B range of 137.65 subnet, you might set the IP address to 137.65.1.1 and the subnet mask to 255.255.0.0.

Instead of scanning for all hosts that respond on the network, you can scan for hosts with specific services available.

Task	Procedure
Scan the network for hosts that are responding to ICMP Echo Requests in the network within a specified subnet.	<ol style="list-style-type: none"> 1. Accept the default IP address or DNS name and subnet mask information or change it. 2. Click <i>Subnet Scan</i>.
Scan the network for hosts with port 80 open and listening for connections (Web Servers) within a specified subnet.	<ol style="list-style-type: none"> 1. Accept the default IP address or DNS name and subnet mask information or change it. 2. Click <i>Web Server Scan</i>.
Scan the network for hosts with port 389 open and listening for connections (LDAP Servers) within a specified subnet.	<ol style="list-style-type: none"> 1. Accept the default IP address or DNS name and subnet mask information or change it. 2. Click <i>LDAP Server Scan</i>.
Scan the network for hosts with port 8009 open and listening for connections (Hosts with Novell Remote Manager configured for the default ports) within a specified subnet.	<ol style="list-style-type: none"> 1. Accept the default IP address or DNS name and subnet mask information or change it. 2. Click <i>NRM Agent Scan</i>.

Task	Procedure
Scan the network for hosts with <i>user_defined_port</i> open and listening within a specified subnet.	<ol style="list-style-type: none"> 1. Accept the default IP address or DNS name and subnet mask information or change it. 2. Click <i>Service Scan</i>.

After scanning for a desired service, a Network Discovery page is displayed showing results for all hosts with the ports.

You can do the following task with the information returned:

Task	Procedure
See more information about the scanned host.	<ol style="list-style-type: none"> 1. Click the <i>Web Service More Info</i> icon  for the applicable host on the Network Discovery page. 2. View information on the page returned.
Add the host to the current group.	<ol style="list-style-type: none"> 1. Click the <i>Add Item to Group</i> icon  for the applicable host on the Network Discovery page. 2. Complete the required information on the Add New Monitor Item page, then click <i>Add</i>. <p>Most of the information is completed by default.</p>

Tasks Quick Reference

The following table provides information about specific tasks you can perform using Novell Remote Manager. These references also link to more specific information in this guide.

Table 11-1 *Task Quick Reference List*

Tasks	Link in Navigation frame or Other Location	For More Information
Build a group for monitoring	<i>Use Group Operations > Configure New Group</i>	Building and Configuring a Monitoring Group (page 64)
Directory, change attributes of	<i>View File System > View File System Listing</i>	Viewing Details about Directories and Performing Actions on Them (page 38)
Directory, edit	<i>View File System > View File System Listing</i>	Viewing Details about Directories and Performing Actions on Them (page 38)
Directory, delete	<i>View File System > View File System Listing</i>	Viewing Details about Directories and Performing Actions on Them (page 38)
Directory, rename	<i>View File System > View File System Listing</i>	Viewing Details about Directories and Performing Actions on Them (page 38)
Directory, view detailed information about	<i>View File System > View File System Listing</i>	Viewing Details about Directories and Performing Actions on Them (page 38)
File, change attributes of	<i>View File System > View File System Listing</i>	Viewing the Details of a File and Performing Specific Actions (page 40)
File, download	<i>View File System > View File System Listing</i>	Downloading a File from the Server to a Local Workstation (page 39)
File, edit	<i>View File System > View File System Listing</i>	Viewing the Details of a File and Performing Specific Actions (page 40)
File, delete	<i>View File System > View File System Listing</i>	Viewing the Details of a File and Performing Specific Actions (page 40)
File, rename	<i>View File System > View File System Listing</i>	Viewing the Details of a File and Performing Specific Actions (page 40)
Files, search for text in	<i>View File System > View File System Listing</i>	Searching for Text in Files (page 39)

Tasks	Link in Navigation frame or Other Location	For More Information
File, upload	<i>View File System > View File System Listing</i>	Uploading a File to the Server (page 38)
File, view	<i>View File System > View File System Listing</i>	Viewing Individual Files (page 40)
File system, browse	<i>View File System > View File System Listing</i>	Browsing File Systems and Performing Actions on Them (page 36)
File system, perform action on	<i>View File System > View File System Listing</i>	Browsing File Systems and Performing Actions on Them (page 36)
Files, viewing details about	<i>View File System > View File System Listing</i>	Viewing the Details of a File and Performing Specific Actions (page 40)
Group operations, access an existing group	<i>Use Group Operations > Select Group</i>	Accessing an Existing Group (page 69)
Group operations, build and configure a new monitoring group	<i>Use Group Operations > Configure New Group</i>	Building and Configuring a Monitoring Group (page 64)
Group operations, change an existing group	<i>Use Group Operations > Select Group</i>	Changing an Existing Group (page 69)
Group operations, define or edit Group Monitoring types	<i>Use Group Operations > NRM Health Types</i>	Defining or Editing Group Monitoring Types (page 73)
Group operations, delete an existing group	<i>Use Group Operations > Select Group</i>	Deleting an Existing Group (page 70)
Group operations, discover items to monitor on the network.	<i>Use Group Operations > Configure New Group > right-click menu > Network Discovery</i>	Discovering Items on the Network to Monitor (page 73)
Group operations, generate and view server reports	<i>Use Group Operations > Configure New Group > right-click menu > Save Group</i>	Generating and Viewing Server Reports (page 70)
Group operations, save a new group	<i>Use Group Operations > Configure New Group > right-click menu > Save Group</i>	Saving a Group (page 68)
Group operations, view defined health types	<i>Use Group Operations > NRM Health Types</i>	Viewing Group Monitoring Types (page 72)
Group operations, view monitored items	<i>View Monitored Items</i>	Viewing Monitored Items (page 71)
Host, shut down	<i>Manage Linux > Down/Reset Options</i>	Shutting Down and Restarting the Host (page 52)
Host, restart	<i>Manage Linux > Down/Reset Options</i>	Shutting Down and Restarting the Host (page 52)
Interrupt information, view	<i>Manage Hardware > Interrupt Information</i>	Viewing Interrupt Information (page 58)

Tasks	Link in Navigation frame or Other Location	For More Information
I/O Memory information, view	<i>Manage Hardware > IO Memory Information</i>	Viewing I/O Memory Information (page 59)
IO Port information, view	<i>Manage Hardware > IO Port Information</i>	Viewing I/O Port Information (page 60)
Kernel modules, view	<i>Manage Linux > Kernel Module Listing</i>	Viewing Kernel Modules (page 50)
Memory information, view	<i>Manage Linux > View Memory Information</i>	Viewing Memory Information (page 51)
Mounted devices, perform actions on them	<i>Home icon > Info icon</i>	Viewing Mounted Devices and Performing Actions on Them (page 35)
Mounted devices, view	<i>Home icon > Info icon</i>	Viewing Mounted Devices and Performing Actions on Them (page 35)
Packages, install	<i>Manage Linux > Package Information</i>	Managing Packages (page 53)
Packages, remove	<i>Manage Linux > Package Information</i>	Managing Packages (page 53)
Packages, view information about	<i>Manage Linux > Package Information</i>	Managing Packages (page 53)
Partition information, view	<i>View File System > View Partition Information</i>	Viewing Partition Information (page 40)
Process, kill	<i>Manage Linux > Process Information</i>	Managing Processes (page 55)
Process, view information about	<i>Manage Linux > Process Information</i>	Managing Processes (page 55)
Processors, view information about	<i>Manage Hardware > View Processors</i>	Viewing Processors (page 57)
Server health, configure e-mail notification about status	<i>Health Monitor and Configuration Icon</i>	Configuring E-Mail Notification for Server Health Status (page 33)
Server health, configure item to monitor	<i>Diagnose > Health Monitor</i>	Configuring the Items to Monitor (page 33)
Server health, monitor health of a specific item	<i>Diagnose > Health Monitor</i>	Monitoring Overall Server Health or the Health of a Specific Item (page 31)
Server health, monitor overall health	<i>Diagnose > Health Monitor</i>	Monitoring Overall Server Health or the Health of a Specific Item (page 31)
Server health, troubleshooting suspect or bad health status	<i>Diagnose > Health Monitor</i>	Troubleshooting a Suspect or Bad Health Status (page 33)
Server Group, monitor overall server health	<i>Use Group Operation > Configure New Group or Select Group</i>	Building and Configuring a Monitoring Group (page 64)

Tasks	Link in Navigation frame or Other Location	For More Information
SMBIOS information, view	<i>Manage Hardware > SMBIOS Information</i>	Viewing SMBIOS Information (page 61)
Swap information, view	<i>Manage Linux > View Memory Information</i>	Viewing Memory Information (page 51)

Security Considerations

12

This section contains information that helps you know whether you can use this utility in a secure environment and points you to information to help you set up access to your server so you can be certain that its contents are not compromised through the use of this utility.

For additional security implementation information, see “[Security](#)” in the *Novell OES SP2 Planning and Implementation Guide*.

The default settings for Novell Remote Manager for OES Linux are set so your network and information cannot be compromised. If you change settings from the default, please be aware of the consequences of your actions.

12.1 Security Features

The following table contains the security features of Novell[®] Remote Manager on OES Linux.

Table 12-1 Security Features of Novell Remote Manager on OES Linux

Feature	Yes/ No	Details
Users are authenticated	Yes	<p>Users must log in to Novell Remote Manager.</p> <p>Log in as user Root, a local Linux user, or as a Novell eDirectory™ user that is Linux User Management enabled.</p> <p>User root can restrict all users from logging in. If the server is LUM enabled, user Admin and users with rights equivalent to user Admin can also perform the same tasks as user root.</p> <p>For more information, see “Accessing Novell Remote Manager” on page 19 and “Changing the Configuration” on page 25.</p>
Servers, devices, and services are authenticated	Yes	<p>When gathering information with group operations, Novell Remote Manager authenticates to other servers.</p>
Access to information is controlled	Yes	<p>Access to information is restricted to valid users that have rights to access the server through eDirectory or access rights to the local file system.</p> <p>The port for accessing the login dialog box must be open through a firewall if you want the server to be accessible outside the firewall. You can restrict access to specific workstations or a range of IP addresses.</p> <p>For more information, see “Accessing Novell Remote Manager” on page 19 and “Changing the Configuration” on page 25.</p>
Roles are used to control access	No	<p>Novell Remote Manager does not have role-based management.</p>

Feature	Yes/ No	Details
Logging and security auditing is done	Yes	
Data on the wire are encrypted by default	Yes	The following data are encrypted on the wire: <ul style="list-style-type: none"> • Administration via browser UI • When logging in the administration is switching to the HTTPS protocol.
Data is stored encrypted	No	
Passwords, keys, and any other authentication materials are stored encrypted	Yes	
Security is on by default	Yes	

12.2 Security Characteristics

Novell Remote Manager communicates using port 8008 and 8009. Port 8008 access the Login page, then all other communications take place through secure HTTP ports 8009. These default settings can be changed using options in the `httpstkd.conf` file.

The HTTPS communication uses SSL encryption. It uses the server certificate by default; however, you can reconfigure this setting if desired.

12.3 Security Configuration

The following table provides a summary of the options you can change to allow or limit access to the server through Novell Remote Manager.

Table 12-2 *Options for Changing or Limiting Access to a Server Through Novell Remote Manager*

Issue/Feature	Recommendation	For More Information
Let all users access the server through Novell Remote Manager with default eDirectory rights or local users access rights.	This is the default setting. All user access is controlled by eDirectory and LUM.	“Accessing Novell Remote Manager” on page 19.

Issue/Feature	Recommendation	For More Information
Restrict access to all users except root.	<p>Set the <code>nolog</code> and <code>supervisoronly</code> options in the <code>httpstkd.conf</code> file and edit the <code>/etc/pam.d/httpstkd</code> file.</p> <p>Remove these lines:</p> <pre>auth sufficient /lib/ security/pam_nam.so account sufficient /lib/ security/pam_nam.so password sufficient /lib/ security/pam_nam.so session optional /lib/ security/pam_nam.so</pre>	<ul style="list-style-type: none"> • “Changing the Configuration” on page 25. • “Accessing and Editing the HTTPSTKD Configuration File” on page 26.
Restrict access all users except root, and eDirectory user Admin and users with rights equivalent to Admin.	Set the <code>supervisoronly</code> options in the <code>httpstkd.conf</code> file.	<ul style="list-style-type: none"> • “Changing the Configuration” on page 25. • “Accessing and Editing the HTTPSTKD Configuration File” on page 26.
Restrict access to specific workstations or a range of IP address	Set the <code>filteraddr</code> and <code>filtersubnet</code> options in the <code>httpstkd.conf</code> file.	<ul style="list-style-type: none"> • “Changing the Configuration” on page 25. • “Accessing and Editing the HTTPSTKD Configuration File” on page 26.
Remove access to the utility for all users	Stop the HTTPSTKD daemon.	“Starting or Stopping Httpstkd” on page 21.

HTTPSTKD Configuration File Options

To control the behavior of Novell® Remote Manager on Linux, you can specify the following options in the HTTPSTKD Configuration file in `/etc/opt/novell/httpstkd.conf`. This information is in the default configuration file when installing a new server. If you are upgrading your server, you must add the information and settings noted if you want the applicable functionality.

A.1 Options

The following are available for controlling the behavior of Novell Remote Manager on Linux:

- [Section A.1.1, “Address and Port Commands,” on page 85](#)
- [Section A.1.2, “Load Command,” on page 86](#)
- [Section A.1.3, “Filtering Commands,” on page 87](#)
- [Section A.1.4, “E-Mail Notification Commands,” on page 87](#)
- [Section A.1.5, “Language Commands,” on page 88](#)
- [Section A.1.6, “Disable Auto LUM Command,” on page 89](#)
- [Section A.1.7, “Supervisor Only Command,” on page 90](#)

A.1.1 Address and Port Commands

Purpose

Specifies each address and port that HTTPSTKD opens and listens on.

Optionally, you can enable SSL on the port using the `keyfile` and `certfile` parameters.

Syntax

```
addr ip_address:port_number
```

```
addr ip_address:port_number keyfile:key_file_path/name
certfile:certificate_file_path/name
```

Option	Use
<code>IP_address</code>	<p>One of the following:</p> <ul style="list-style-type: none"> • 0.0.0.0 • The assigned static IP address of the node <p>A DNS name is not allowed.</p>

Option	Use
<i>port/</i>	<p>One of the following for public or secure:</p> <ul style="list-style-type: none"> • 8008 is the default public port • 8009 is the default secure port • any port not in use on the server <p>If you are accessing Novell Remote Manager outside a firewall, these ports must be open.</p>
<i>keyfile_path/name</i>	<i>/etc/opt/novell/httpstkd/server.key</i> is the default path and filename on a new OES server installation.
<i>certificate_path/name</i>	<i>certfile=/etc/opt/novell/httpstkd/server.pem</i> is the default path and filename on a new OES server installation.

Examples

```
addr 0.0.0.0:8008
```

```
addr 0.0.0.0:8009 keyfile=/etc/opt/novell/httpstkd/server.key
certfile=/etc/opt/novell/httpstkd/server.pem
```

A.1.2 Load Command

Purpose

Loads plug-in files used by Novell Remote Manager.

Syntax

```
load plug-in_file_path/name
```

Option	Use
<i>plug-in_file_path</i>	<i>/opt/novell/lib/</i> is the default path for Novell Remote Manager plug-in files.
<i>plug-in_filename</i>	<i>libnrm.so</i> is a default plug-in for Novell Remote Manager.

Examples

```
load nrm.so
```

```
load /opt/novell/lib/libnrm.so
```

A.1.3 Filtering Commands

Purpose

Blocks access to Novell Remote Manager from all addresses except those specified by these `filteraddr` and `filtersubnet` commands.

Syntax

```
filteraddr IP_address  
filtersubnet IP_address subnet_mask
```

Command	Use
not specified	Allows access from any address. This is the default setting.
<code>filteraddr</code>	Allows access from specific addresses only.
<code>filtersubnet</code>	Allows access from any address on the specified network or subnet.

Examples

The following command allows access only from address 192.168.20.1:

```
filteraddr 192.168.20.1
```

The following command allows access from only addresses 192.56.56.0 thru 192.56.59.255:

```
filteraddr 192.56.56.0 255.255.252.0
```

A.1.4 E-Mail Notification Commands

Purpose

Sets up e-mail notification service in Novell Remote Manager.

You can specify up to two mail servers and up to eight recipients to receive e-mail when a notification is specified in the Novell Remote Manager server health area. Use a separate command line for each server or e-mail address.

Syntax

```
mailserver IP_address  
mailto email_address
```

Command	Use
no setting	E-mail notification is not configured. This is the default setting.
<code>mailserver</code>	Sends e-mail notification to the specified mail server. You can specify up to two mail servers.
<code>mailto</code>	Sends e-mail notification to the specified user. You can specify up to eight users.

Example

The following commands send e-mail notifications to mail servers `mail.bobs1bank.com` and `smtp.bobs1bank.com`:

```
mailserver mail.bobs1bank.com
mailserver smtp.bobs1bank.com
```

The following commands send e-mail notifications to users Bob, George, and Mary from mailserver `bobs1bank.com`:

```
mailto bob@bobs1bank.com
mailto george@bobs1bank.com
mailto mary@bobs1bank.com
```

A.1.5 Language Commands

Purpose

Sets up a mapping of HTTP Accept-Language header tags for Linux locales. These locales determine the languages in which the browser can view content through the Novell Remote Manager utility.

To see a list of possible locales on your Linux server, enter the following at a shell prompt:

```
locale -a
```

Syntax

```
lang HTTP_language_string locale_string
```

Command	Use
lang	Use the following settings: <ul style="list-style-type: none">• English: en en_US.UTF8.• US English: en-us en_US.UTF8.• French: fr fr_FR.UTF8.• Japanese: ja ja_JP.UTF8.• Portuguese: pt pt_BR.UTF8. These are the default settings for this release. In this release, Novell Remote Manager supports only English, French, Japanese, and Portuguese.

Example

The following commands set the browser languages for English, French, Japanese, and Portuguese:

```
lang en      en_US.UTF8
lang en-us   en_US.UTF8
lang fr      fr_FR.UTF8
```

```
lang ja      ja_JP.UTF8
lang pt      pt_BR.UTF8
```

More Information

If you are upgrading this server and you want to use this option, you need to add these parameters to the `httpstkd.conf` file for this server.

A.1.6 Disable Auto LUM Command

Purpose

Auto LUM lets users log in to Novell Remote Manager on Linux using their eDirectory username and password. For example, you can log in as user Admin or as a user with rights equivalent to Admin rather than having to log in as user Root.

Use this command to allow users to log in to Novell Remote Manager only with their local username and passwords.

Syntax

```
nolum
```

Option	Use
no setting	<p>This is the default setting.</p> <p>To perform all management functions, users must be logged in as user root. Non-root users must log in using the username and password created on the local system. Only limited functionality is available.</p> <p>When this command is not specified, HTTPSTKD checks its PAM configuration file at load time and adds the LUM configuration to it if LUM is installed but not already in its configuration.</p>
nolum	<p>Setting this option does not disable LUM if it is already part of HTTPSTKD configuration.</p> <p>You can remove the auto LUM functionality by manually by editing <code>/etc/pam.d/httpstkd</code> and removing these lines:</p> <pre>auth sufficient /lib/security/pam_nam.so account sufficient /lib/security/pam_nam.so password sufficient /lib/security/pam_nam.so session optional /lib/security/pam_nam.so</pre>

Example

```
nolum
```

A.1.7 Supervisor Only Command

Purpose

Disables access to the server through Novell Remote Manager for all users except root. If Linux User Management is enabled for Novell Remote Manager, eDirectory user Admin and eDirectory users with rights equivalent to user Admin also have access to the server through Novell Remote Manager and can perform the same tasks as user root.

Syntax

```
supervisoronly
```

Option	Use
no setting	This is the default setting. Local users and all LUM-enabled eDirectory users can log in to Novell Remote Manager. The non-root and non-admin users have limited access to the server through Novell Remote Manager. They can access only the server's file systems that they have rights to and can perform very limited tasks such as file upload and text search.
supervisoronly	Lets only user root and eDirectory user Admin and users with rights equivalent to Admin have access to the server through Novell Remote Manager. LUM must be set for eDirectory user access.

Example

```
supervisoronly
```

More Information

If you are upgrading this server and you want to use this option, you need to add these parameters to the `httpstkd.conf` file for this server.

Novell Remote Manager Packages

The following table lists the packages that are required to run Novell[®] Remote Manager (NRM) for Linux on OES Linux servers.

Table B-1 *Packages Required for Running Novell Remote Manager on OES Linux Servers*

Package (RPM)	Description	Notes
NLDAPbase	LDAP Tools and Libraries	Contains the Novell extensions to LDAP runtime and Security libraries (Client NICI).
NLDAPsdk	LDAP SDK Libraries	Contains the Novell extensions to LDAP runtime and Security libraries (Client NICI).
nmap	Portscanner	Designed to let system administrators scan large network.
novell-life	Linux Instrumentation for Enterprise (LIFE) providers for the OpenWBEM CIMOM	Contains the providers and agents necessary for Health Monitoring Services. The health monitoring pages require this package to be installed.
novell-nrm	Novell Remote Manager, Web-based Linux machine management, and control interface	Contains all the binaries and necessary components for Novell Remote Manager.
novell-nrm-welcome	Novell Remote Manager Welcome page content for Novell OES	The Novell Remote Manager Welcome page content for the Novell Open Enterprise Server (OES).
NOVLam	Linux User Management	Required if you want Novell Remote Manager to be Linux enabled. Provides PAM and Name Services Switch functionality to LDAP servers based on eDirectory™.
openwbem	Web-Based Enterprise Management (WBEM) Implementation	Contains the providers necessary for Robust health monitoring on a Linux server. The health monitoring pages require this package to be installed.

These packages are installed with the following software selections during the OES SUSE® Linux installation. You can also install them during a post installation. Additional packages might be requested depending on the software selection and other packages installed on the server. See “[Post-Installing Novell Remote Manager](#)” on page 21.

Table B-2 *Novell Remote Manager Required Packages Installed with OES Linux Installation*

Package (RPM)	Minimum System	Minimum Graphical System	Full	Default	Novell QuickFinder	Novell iFolder	Novell Virtual Office	Novell iPrint	Novell Open Enterprise Server
NLAPbase	No	No	No	No	Yes	Yes	Yes	Yes	Yes
NLAPsdk	No	No	No	No	Yes	Yes	Yes	Yes	Yes
nmap	No	No	No	No	Yes	Yes	Yes	Yes	Yes
novell-life	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes
novell-nrm	No	No	No	No	Yes	Yes	Yes	Yes	Yes
novell-nrm-welcome	No	No	No	No	Yes	Yes	Yes	Yes	Yes
NOVLam	No	No	No	No	Yes	Yes	Yes	Yes	Yes
openwbem	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes

Documentation Updates

To help you keep current on updates to the documentation, this section contains information on content changes that have been made in this *Novell Remote Manager Administration Guide for Linux* since the initial release of Open Enterprise Server.

This document is provided on the Web in HTML and PDF, and is kept up to date with the documentation changes listed in this section. If you need to know whether a copy of the PDF documentation you are using is the most recent, check its publication date on the title page.

This documentation update information is grouped according to the date the changes were published. Within a dated section, the changes are alphabetically listed by the names of the main table of contents sections in the *Novell Remote Manager Administration Guide for Linux*.

This document was updated on the following dates:

- [Section C.1, “December 23, 2005 \(Open Enterprise Server SP2\),” on page 93](#)
- [Section C.2, “August 19, 2005 \(Open Enterprise Server SP1\),” on page 96](#)

C.1 December 23, 2005 (Open Enterprise Server SP2)

Updates were made to the following sections:

- [Section C.1.1, “Accessing Novell Remote Manager for Linux,” on page 93](#)
- [Section C.1.2, “Entire Guide,” on page 94](#)
- [Section C.1.3, “Managing Hardware,” on page 94](#)
- [Section C.1.4, “Managing Linux,” on page 94](#)
- [Section C.1.5, “Task Quick Reference,” on page 95](#)
- [Section C.1.6, “Using Group Operations,” on page 95](#)
- [Section C.1.7, “Viewing File Systems,” on page 95](#)
- [Section C.1.8, “What's New,” on page 96](#)

C.1.1 Accessing Novell Remote Manager for Linux

Location	Change
“Accessing Novell Remote Manager” on page 19	Added information about user Admin being able to log in to Novell® Remote Manager using its fully distinguished name when eDirectory™ and LUM are installed on the local server.
“Starting or Stopping Httpstkd” on page 21	Changed the format of the start, stop, and status information from a list to a table.
“Understanding the Layout of Novell Remote Manager” on page 22	Updated Figure 4-1 on page 22 to show new features on the home page.

Location	Change
“Accessing Novell Web Pages” on page 24	Updated links for Novell Support and Novell Developer Support.

C.1.2 Entire Guide

Location	Change
Entire guide	Page design reformatted to comply with revised Novell documentation standards.

C.1.3 Managing Hardware

Location	Change
Table 9-1 on page 57	Added the Tasks and More Information columns to this table.
“Viewing Processors” on page 57	Added Figure 9-1 on page 57 .
“Viewing Interrupt Information” on page 58	Added Figure 9-2 on page 58 .
“Viewing I/O Memory Information” on page 59	Added Figure 9-3 on page 59 .
“Viewing I/O Port Information” on page 60	Added Figure 9-4 on page 60 .
“Viewing SMBIOS Information” on page 61	Added Figure 9-5 on page 62 .

C.1.4 Managing Linux

Location	Change
Table 8-1 on page 49	Added the Tasks and More Information columns to this table.
“Accessing VNC Consoles” on page 49	Changed the section title from VNC Consoles to Accessing VNC Console Screens. Added Figure 8-1 on page 50 .
“Viewing Kernel Modules” on page 50	Added Figure 8-2 on page 51 .
“Viewing Memory Information” on page 51	Updated information for the Total Swap File Size link and the Swap File Information page. This functionality was present in OES SP1 but was never documented. Added Figure 8-3 on page 52 .
“Managing Packages” on page 53	Added Figure 8-4 on page 53 and Figure 8-5 on page 54 .

Location	Change
"Managing Processes" on page 55	Added Figure 8-6 on page 55 .

C.1.5 Task Quick Reference

Location	Change
"Tasks Quick Reference" on page 77	Changed section title from "Quick Task Reference" to "Tasks Quick Reference."
Table 11-1, "Task Quick Reference List," on page 77	Changed location for viewing Swap information. Added Group Operation tasks.

C.1.6 Using Group Operations

Location	Change
Table 10-1 on page 63	Added the Tasks and More Information columns to this table.
"Compare Server Up Time Report" on page 70	Changed the section title from Server Duration report to Compare Server Uptime Report and change the label for the link in Step 3 to match the current interface. Added Figures showing the Reports Selection page and an Example Report
"Discovering Items on the Network to Monitor" on page 73	Added this section.

C.1.7 Viewing File Systems

Location	Change
Table 7-1 on page 35	Removed the <i>Viewing Swap Information</i> link.
"Viewing Mounted Devices and Performing Actions on Them" on page 35	Revised the entire section to match the OES SP2 interface and added Figure 7-1 on page 35 .
"Inventorying Directories or NCP Volumes" on page 41	Added this section to document the functionality added in OES SP2.
"Viewing Partition Information" on page 40	Added Figure 7-3 on page 41 .
Viewing Swap Information section	Removed this section. This link was removed in OES SP1 but was never documented.

C.1.8 What's New

Location	Change
"What's New" on page 15	Added information about new and updated features in OES SP2.

C.2 August 19, 2005 (Open Enterprise Server SP1)

Updates were made to the following sections:

- [Section C.2.1, "Accessing Novell Remote Manager for Linux," on page 96](#)
- [Section C.2.2, "Changing the Configuration," on page 96](#)
- [Section C.2.3, "Documentation Updates," on page 96](#)
- [Section C.2.4, "HTTPSTKD Configuration File Options," on page 97](#)
- [Section C.2.5, "Managing Linux," on page 97](#)
- [Section C.2.6, "Security Considerations," on page 97](#)
- [Section C.2.7, "What's New," on page 97](#)

C.2.1 Accessing Novell Remote Manager for Linux

Location	Change
"Post-Installing Novell Remote Manager" on page 21	Updated information for post-installing Novell Remote Manager.
"Navigation Frame" on page 23	Added information about the expanding and collapsing navigation frame and updated the figure.

C.2.2 Changing the Configuration

Location	Change
"Accessing and Editing the HTTPSTKD Configuration File" on page 26	Added information about restricting access to the server to perform management functions through Novell Remote Manager.

C.2.3 Documentation Updates

Location	Change
"Documentation Updates" on page 93	Added this appendix to the document.

C.2.4 HTTPSTKD Configuration File Options

Location	Change
"HTTPSTKD Configuration File Options" on page 85	Added this section to the document.

C.2.5 Managing Linux

Location	Change
"Accessing VNC Consoles" on page 49	Added information about accessing the server remotely through VNC console screens link.

C.2.6 Security Considerations

Location	Change
"Security Considerations" on page 81	Added this section to the document.

C.2.7 What's New

Location	Change
"What's New" on page 15	Added this section containing information about new and updated features in OES SP1 and renumbered existing sections.
