WebEngine Viper™ LX and WebEngine Roadster™ LX

Software Version 1.0

USER GUIDE

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WebEngine Viper™ LX and WebEngine Roadster ™ LX USER GUIDE

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Contents

Preface

Audience

This guide describes the installation, configuration, and operation of the WebEngine Viper™ LX and WebEngine Roadster™ LX server appliances. Other than the hardware differences between the two appliances, most of the information describing these appliances is similar; differences are noted when they apply.

This guide is written for the system administrator who installs and maintains Viper LX or Roadster LX as a stand-alone appliance or as part of a cluster. This guide describes how you create virtual hosts, grant disk resources, and provide web-related services for virtual site administrators and their site users.

Scope

This guide contains the following:

Chapter 1, *Overview*, describes hardware and software for Viper LX and Roadster LX.

Chapter 2, *Installation*, describes how to install an LX appliance in a Telco or standard 19-inch rack.

Chapter 3, *Cabling*, describes how to cable an LX appliance as a stand-alone device or as part of a cluster.

Chapter 4, *Configuring Viper LX*, describes how to configure an LX appliance using the LCD panel and the WebEngine LX QUICK START screen.

Chapter 5, *Operation*, describes how to operate an LX appliance including tasks such as resetting and shutting down.

Chapter 6, *LX Appliance Removal and Replacement*, describes how to remove an LX appliance from a cluster and then add a new appliance to the cluster.

Chapter 7, *LX Management Console*, describes the LX Management Console. It describes how to perform tasks such as logging in, viewing or modifying the current configuration, registering the product, and starting a Telnet session.

Chapter 8, *Virtual Hosts*, provides an overview of virtual hosts and describes configuration procedures. It also describes how to delete an existing virtual host.

Chapter 9, *Virtual Server Creation*, describes how you can create individual virtual servers that virtual hosts automatically create.

Chapter 10, *Access Rights and Resource Limits*, lists the three types of users and describes their access rights. It also describes how to configure and modify access rights for LX user accounts, and how to limit disk and other system resources for Linux user accounts.

Chapter 11, *System Parameters*, describes how to configure system parameters, such as bootup and shutdown initialization scripts, MIME types, system resources, network interfaces, and system time.

Chapter 12, Logs and Reports, describes how to monitor disk usage and display logs and reports generated by web and FTP activity as well as system information and status.

Chapter 13, *Help*, describes how to obtain help when using the LX Management Console.

Appendix A, *Specifications*, lists specifications for Viper LX and Roadster LX.

Appendix B, *Troubleshooting*, provides troubleshooting tips.

Appendix C, *Servers*, describes the supported servers —Apache Webserver, ProFTPD, BIND8 DNS, DHCP, Sendmail, and Majordomo, and lists tasks you can perform using the LX Management Console.

Conventions Used in this Manual

NEI uses these conventions for notes, cautions, warnings, and danger notices.

A note presents information that is important, but not hazard-related.

CAUTION

A caution contains information essential to avoid damage to the system or equipment. The caution may apply to hardware or software.

WARNING

A warning contains information essential to avoid a hazard that can cause severe personal injury, death, or substantial property damage if you ignore the warning.

DANGER

A danger notice contains information essential to avoid a hazard that will cause severe personal injury, death, or substantial property damage if you ignore the warning.

NEI uses the following type style conventions in this guide.

Convention	Example
Angle brackets separate single keys that you press from surrounding text.	Press <Ctrl>
Boldface indicates interface selections that you choose or click.	Click **OK**.
Courier indicates code lines and screen displays.	`On IPport-1 = S`
`Boldface Courier` identifies numbers and characters that you type.	Type **`reset (dio) AC-OK-2`**
Italics emphasize file names and variable information.	See the *multitsk.cfg* file

Where to Get Help

For sales information, please call 781 332-1000 or fax (781) 770-2000. For Technical Support, please call (781) 332-1900.

You can also contact us by using the following e-mail and Internet addresses:

e-mail	Support:	support@networkengines.com
	Information:	Info@networkengines.com
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CHAPTER 1

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Overview

This chapter describes the WebEngine Viper LX and WebEngine Roadster LX server appliances. In addition to listing the appliance features, it describes the front and rear panels of each device.

Viper LX and Roadster LX are Linux-based, enterprise-class web server appliances that operate as stand-alone devices or as part of a cluster. You can connect the appliance to a network using a hub or a switch and manage it using AdminEngine™. AdminEngine is a management server appliance that manages a cluster of Viper LX and Roadster LX appliances through the Cluster Maintenance Bus (CMBus).

Figure 1 shows Viper LX.

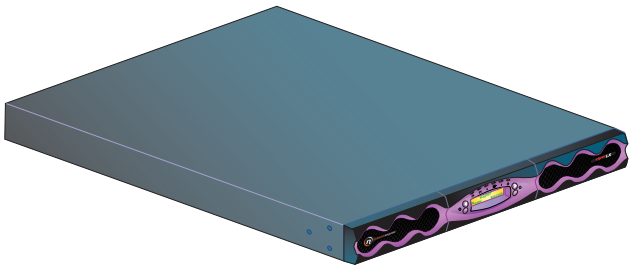

Figure 1. Viper LX

Figure 2 shows Roadster LX.

Figure 2. Roadster LX

Viper LX and Roadster LX are easily manageable through the LX Management Console, which provides extensive utilities for many administrative tasks.

You can configure the LX appliance through the LCD panel and the WebEngine LX QUICK START screen using a web browser. You use the LCD panel for initial configuration. You may also want to use the WebEngine QUICK START screen to configure other parameters such as hostname, domain, and date and time settings.

Hardware

The LX appliance is a single 1 U (1.75 inch) rack-mounted chassis. Table 1 describes the hardware and shows the differences and similarities in hardware for Viper LX and Roadster LX.

Table 1. Viper LX and Roadster LX Hardware

	Viper LX	Roadster LX
Processor	Single or dual Intel® Pentium® III processors	Single Intel Celeron processor
DRAM	64 MB and up to 2 GB DRAM	Up to 512 MB DRAM

Table 1. Viper LX and Roadster LX Hardware (*continued*)

	Viper LX	Roadster LX
Other Hardware Features		
Dual 10/100 Mbps Ethernet interfaces	√	√
Two serial ports	√	√
LCD panel for easy configuration	√	√
Stand-alone or clustered configurations	√	√
Remote management capabilities	√	√
One or two Integrated Device Electronics (IDE) or Small Computer System Interface (SCSI) disk drives	√	√
System Maintenance Bus (SMB) for out-of-band management	√	√
Cluster Maintenance Bus (CMBus) external connection for easy integration with a Network Engines cluster	√	√
Optional CD-ROM drive	√	N/A
Optional floppy disk drive	√	N/A

Software

These are software features for the LX appliance:

- Linux operating system
- Apache® version 1.3.9, HTTP 1.1-compliant
- Web Engine Services (WES) software and SMB driver

- Web Server
- LX Management Console

Management Software

These are management software features for the LX appliance:

- Browser-based utility for configuration and management
- Virtual host creation and management
- Multiple user-access levels based on virtual hosts
- Virtual host-based reporting
- Integration with SNMP-based management platforms
- Site content creation and editing in any standard tool
- Telnet access
- ProFTPD
- Microsoft® Front Page® Server Extensions (must be explicitly enabled at startup)
- Network Time Protocol (NTP) client support
- Domain Name Server (Berkeley Internet Name Domain (BIND 8)
- Simple Mail Transfer Protocol (SMTP), Internet Mail Access Protocol 4 (IMAP4), and Post Office Protocol 3 (POP3) mail protocol support
- Proxy Authentication Module (PAM)/shadow passwords

Front and Rear Panels

The following sections describe LEDs, navigation buttons, and the LCD panel on the front panel and the external connectors on the back panel.

▼ Front Control Panel

Figure 3 shows the front control panel for Viper LX. LEDs are described in Table 2.

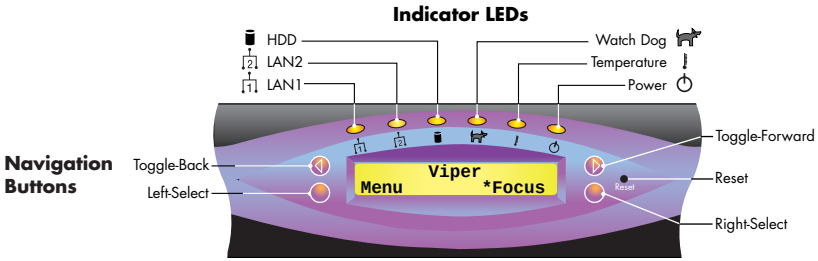

Figure 3. Front Control Panel for Viper LX

Figure 4 shows the front control panel for Roadster LX.

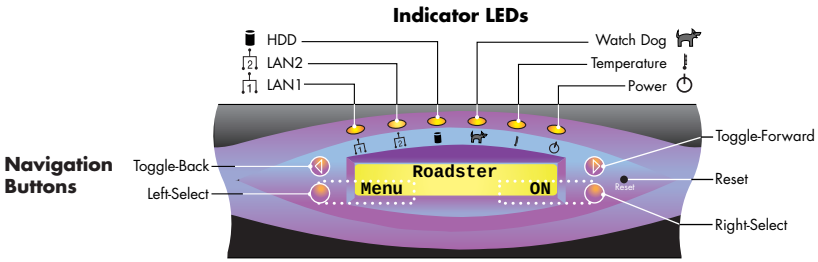

Figure 4. Front Control Panel for Roadster LX

Table 2 describes the front panel LEDs for LX appliances.

Table 2. LEDs

LED	Name	Description
	LAN1	Amber - Indicates Ethernet activity on LAN1, created when you configure the eth1 port. Refer to Chapter 4, *Configuring Viper LX*.
	LAN2	Amber - Indicates Ethernet activity on LAN2, created when you configure the eth0 port. Refer to Chapter 4, *Configuring Viper LX*.
	HDD	Amber - Indicates activity on hard drive(s).
	WatchDog	Amber - Flashes when the operating system is running properly; is solid when the operating system is not running properly. You may have to restart the appliance if the LED remains solid amber. If the condition persists, call Technical Support.
	Temperature	Red - Indicates an over-temperature (alarm) condition. Call Technical Support. You may be asked to use the LCD panel to obtain the Alert ID number.
	Power	Green - Indicates that the power is on. When you press the Right-Select button on the LCD panel, the appliance powers up.

Table 3 describes the front panel buttons for LX appliances.

Table 3. Front Panel Buttons

When you press this button...	It...
Toggle-Back	Moves backwards through the menu items on the front panel.
Left-Select	Selects the lower left field on the panel.
Toggle-Forward	Moves forward through the menu items on the front panel.
Reset	Performs a standard PC reset, causing the system to re-boot.
Right-Select	Selects the lower right field on the panel.

▼ LCD Panel

Table 4 describes configuration and operational tasks you perform using the LCD panel. You do not need a keyboard, monitor, and mouse. Using the LCD panel, you can configure the appliance before installing it in the network and then perform operational tasks once it is installed. The only difference in configuration and operational procedures between Viper LX and Roadster LX is the Auto Focus feature. Only Viper LX uses this feature.

For additional information on performing these procedures, refer to Chapter 4, *Configuring Viper LX* and Chapter 5, *Operation*.

If the LCD panel displays error messages, contact Technical Support.

Table 4. Configuration and Operational Tasks

Use this menu item...	To...
Power On/Off	Power the appliance on and off. This mode performs a hard (immediate) power-off; it is not an orderly shut-down.
NIC Setup	Configure network ports: • Select DHCP to assign an IP address, subnet mask, and default gateway or • Configure a static IP address and subnet mask for each network port.
Default Gateway	Set the default gateway address. You do not need to configure a default gateway if you select DHCP for IP addressing; DHCP automatically configures it.
Auto Focus	Turn on the appliance and gives it focus once it is powered on. A Viper appliance has focus when the video monitor, mouse, and keyboard connections are enabled through its CMBus. This menu item applies only to Viper LX; it does not apply to Roadster LX.
Default Power	Set the start-up mode: • If set to On **(**hard start), when the appliance is powered on using the switch on the rear panel (AC power), the operating system boots. • If set to Off (soft start), when the appliance is powered on using the switch on the rear panel, it enters idle mode (LCD panel displays On). Press the Right-Select button to turn on the appliance and boot the operating system (default mode).
Clean Shutdown	Shut down all processes and the operating system in an orderly fashion.

Table 4. Configuration and Operational Tasks (*continued*)

Use this menu item...	To...
Clean Reboot	Shut down all processes and the operating system, and then reboot the appliance.
Boot Redirect	Perform a one-time network boot. The appliance boots from a Preboot Execution Environment (PXE) server the next time it boots. You can use this feature to install a new operating system image or fix a corrupted operating system.
Reset	Perform a hard reset. The LX appliance reboots the operating system without shutting down the processes.
Show Unique ID	Show the unique address (serial number and vendor ID) in hexadecimal format for the LX appliance.
Show MAC Address	Display the MAC addresses of the two Ethernet ports on the LX appliance.
CAUTION **The following menu items are for information only. Do not make any changes to these menu items unless directed to do so by Technical Support.**	
Show CMB Addr	Display the CMBus address. In a new cluster installation, the first appliance powered on acquires a CMBus address of 2 by default. As each additional appliance in the cluster is powered on, it seeks its own unique CMBus address by polling the other appliances connected to the CMBus. It is important that appliances are powered on and complete their booting sequence, one at a time, to avoid potential address conflicts. Once an appliance initially determines its CMBus address, its identification number (CMBus ID) is stored in the EEPROM of its maintenance processor. Then, you can safely power appliances on or off in any sequence without the possibility of address conflicts.
Clear Temp LED	Clear the temperature LED (used for testing); it does not clear the alarm condition.

Table 4. Configuration and Operational Tasks (*continued*)

Use this menu item...	To...
Show Alert ID	Show the temperature sensor's address.
Default CMB Addr	Change the CMBus address (used for testing).
Disable Temp LED	Permanently disable the temperature LED until you power off the appliance and then power it on again using the On/Off switch on the rear panel.

▼ Rear Panel

Figure 5 shows the connectors on the Viper LX rear panel.

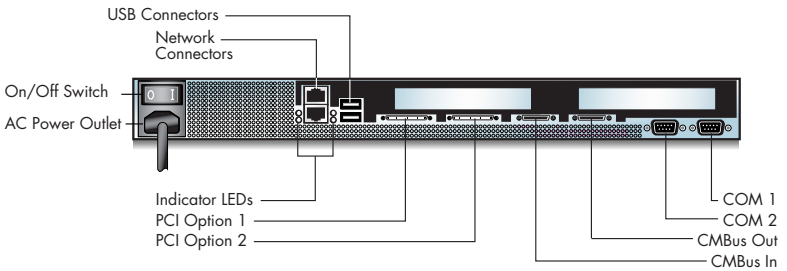

Figure 5. Rear Panel Connectors for Viper LX

Figure 6 shows the connectors on the Roadster LX rear panel.

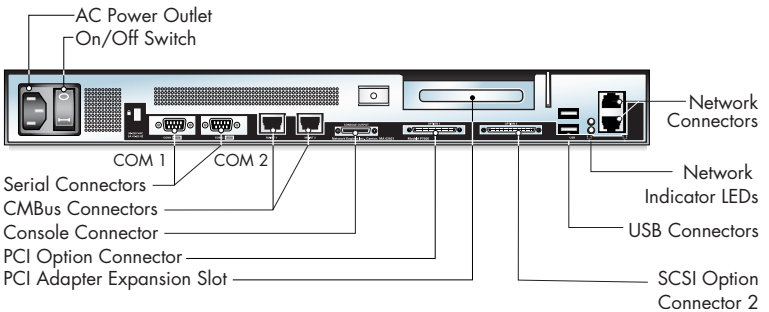

Figure 6. Rear Panel Connectors for Roadster LX

CHAPTER 2

Installation

This chapter describes how to install LX appliances on the desktop, in a Telco rack, or in a standard 19-inch rack. The installation for both appliances is the same; however, the figures in this chapter show Roadster LX.

Pre-Installation

LX appliances are shipped with chassis mounting hardware, power cable, Console Cable Adapter, and CMBus cable.

▼ Tools Required

To mount the chassis rails, you need a #2 Phillips screwdriver. You may also need a small, flathead screwdriver to secure the monitor connector.

▼ Site Preparation

Before you begin, review these safety precautions:

- Do not block the cooling vents or restrict air flow through the chassis.
- Make sure that each rack used is securely mounted in place.
- When installing multiple appliances in a rack, make sure the overall loading for each branch circuit does not exceed the rated capacity. Refer to Appendix A, *Specifications*.
- Each rack system and each appliance requires a reliable ground. Appliances should be connected to an Earth ground through the AC line cord.

Also, install the appliance in or near:

- Controlled environments that meet NEI specifications for ambient temperature and humidity. Refer to Appendix A, *Specifications*.
- Areas with adequate support or floor loading capacity to support the current installation and possible future growth.
- AC outlets for each appliance and one for a monitor.
- Appropriate earth-ground connections for each rack and each appliance.
- Ethernet hubs or individual jacks (10/100 BaseT cables cannot be longer than 100 meters).

▼ Unpacking

- Check the packing list provided with the appliance to verify that you received all the equipment, software, and manuals. If any item is missing, contact:

  Network Engines
  Tel: (781) 332-1000
  e-mail: support@networkengines.com
  Web: http://www.networkengines.com/supportmain.htm

- Remove all protective coverings and uncoil cables.
- Make copies of the packing slips and file the originals with your records. Keep the copies in a binder with this manual for future reference.

Installing LX Appliances on a Desktop

To avoid damage to the units, do not install more than six (6) server appliances in a single stack on the desktop.

Installing an LX Appliance in a Telco Rack

Before you install the server appliance in a Telco rack, make sure that the rack is securely bolted to the floor.

To install the LX appliance:

1. Unpack it, locate the chassis mounting hardware, and mount the two Telco brackets to the sides of the chassis (Figure 7).
2. Align the bracket and chassis with the Telco rack.
3. Secure with the five screws.

CAUTION

To prevent equipment damage, support the appliance until all five fasteners are securely fastened to the Telco rack.

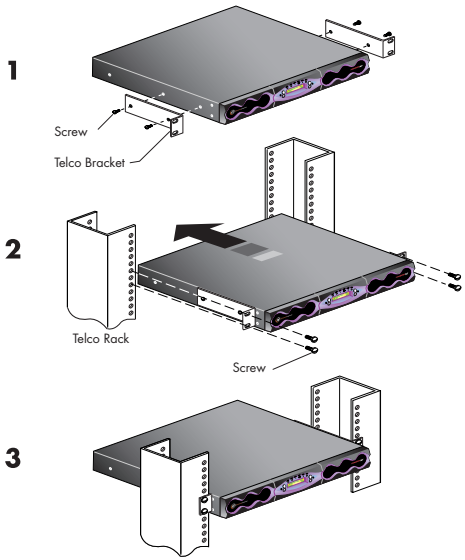

Figure 7. Telco Rack Installation

Installing an LX Appliance in a Standard 19-inch Rack

Unpack the appliance and locate the mounting screws and end brackets. Then, follow these steps:

1. Attach the end brackets to the inside rear of the stationary track.

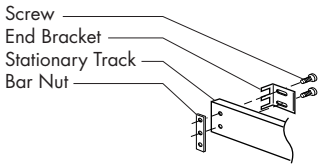

Figure 8. Attaching End Brackets

2. Align the end bracket with the rack in the rear and secure with screws and bar nut.

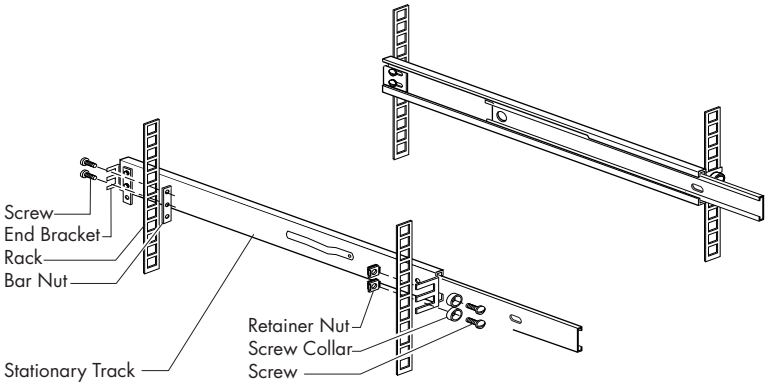

Figure 9. Aligning End Brackets with Rack

3. Attach the stationary track rails to the rack. Secure with mounting screws, screw collar, and retainer nut. The smaller side of the retainer nut should face the rack from the rear (screw collar).

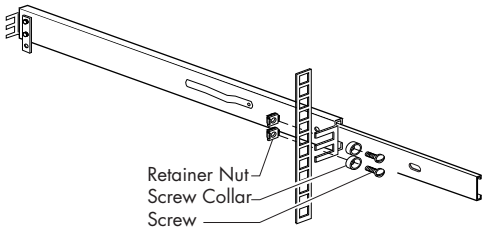

Figure 10. Attaching Stationary Track Rails to the Rack

4. Mount the two S-type chassis rails to the chassis.

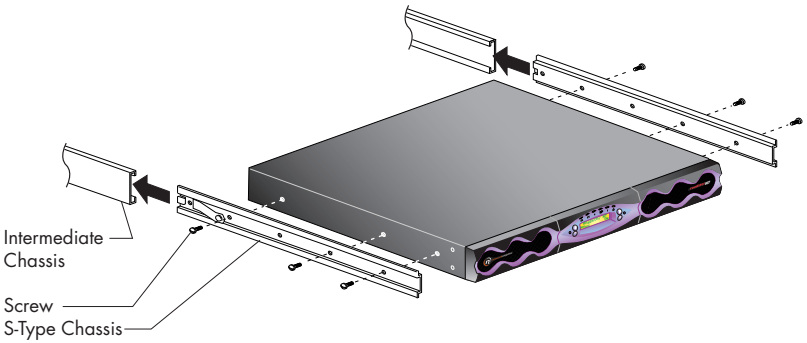

Figure 11. Mounting Chassis Rails to the LX Appliance

5. Align the chassis rails with the cabinet rails and slide the unit into the cabinet until the rails lock in place.

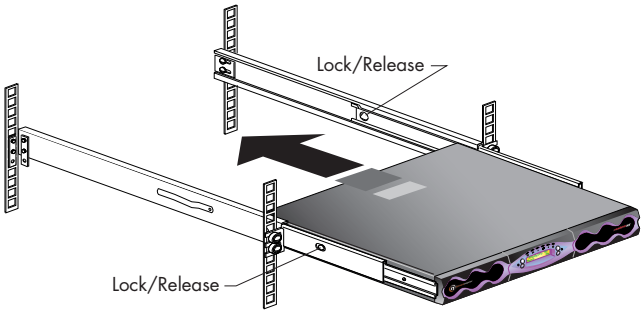

Figure 12. Aligning Rails and Sliding the Appliance into the Rack

6. Depress the lock/release button on each side of the rails and slide the chassis completely into the cabinet.

The intermediate rail has a lock/release button. Be sure to release this button if it is locked.

Chapter 3 describes how to cable an LX appliance.

CHAPTER 3

Cabling

Before powering up and configuring an LX appliance for the first time:

- Connect the power cable.
- Connect Ethernet cables.
- Connect the CMBus cable.
- Connect the Console Cable Adapter.

These procedures are described in the following sections.

Connecting the Power Cable

Connect the power cable on the appliance to a grounded AC power outlet.

Cluster Types

Figures 13 through 15 show connections for different cluster types.

Figure 13 shows cable connections for a Viper LX cluster. Procedures are described at the end of the chapter.

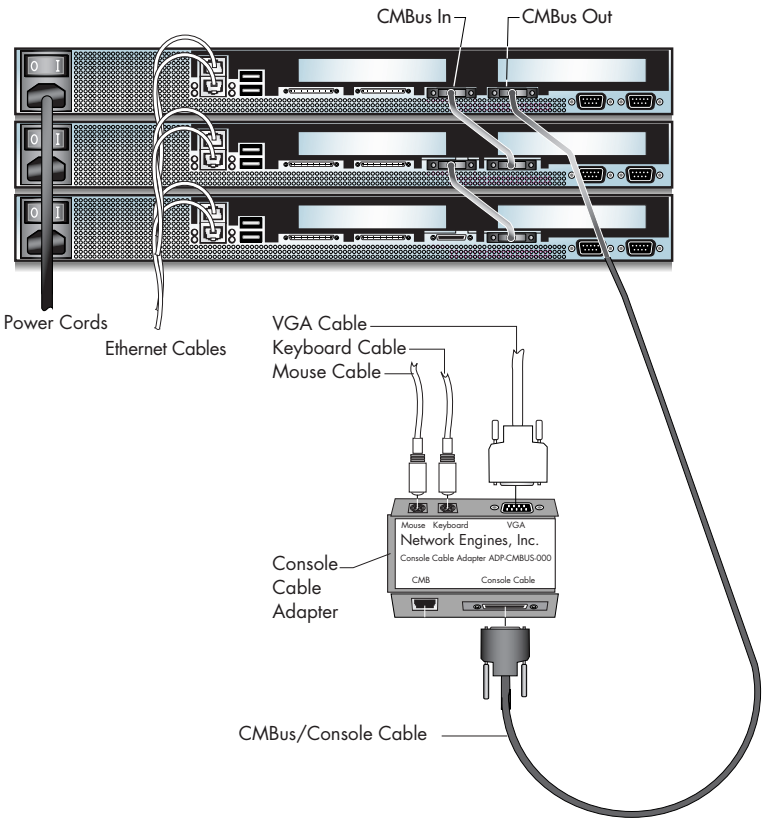

Figure 13. Cabling for a Viper LX Cluster

Figure 14 shows cable connections for a Roadster LX cluster. Procedures are described at the end of the chapter.

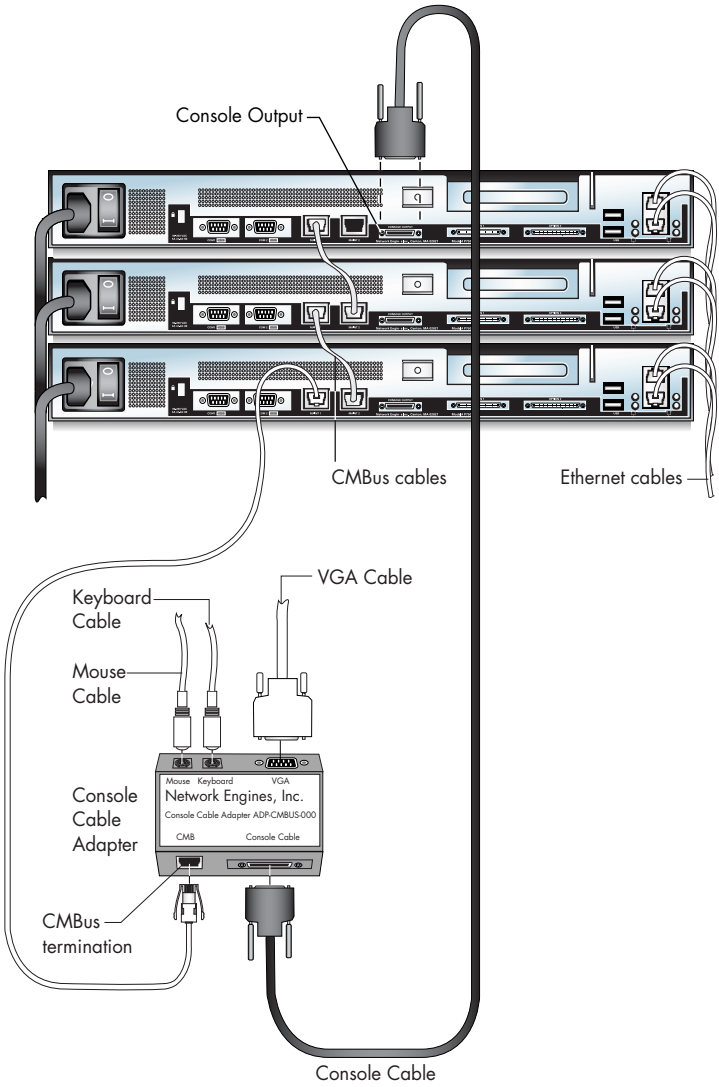

Figure 14. Cabling for a Roadster LX Cluster

Figure 15 shows cable connections for a mixed cluster of LX appliances. Procedures are described on the next page.

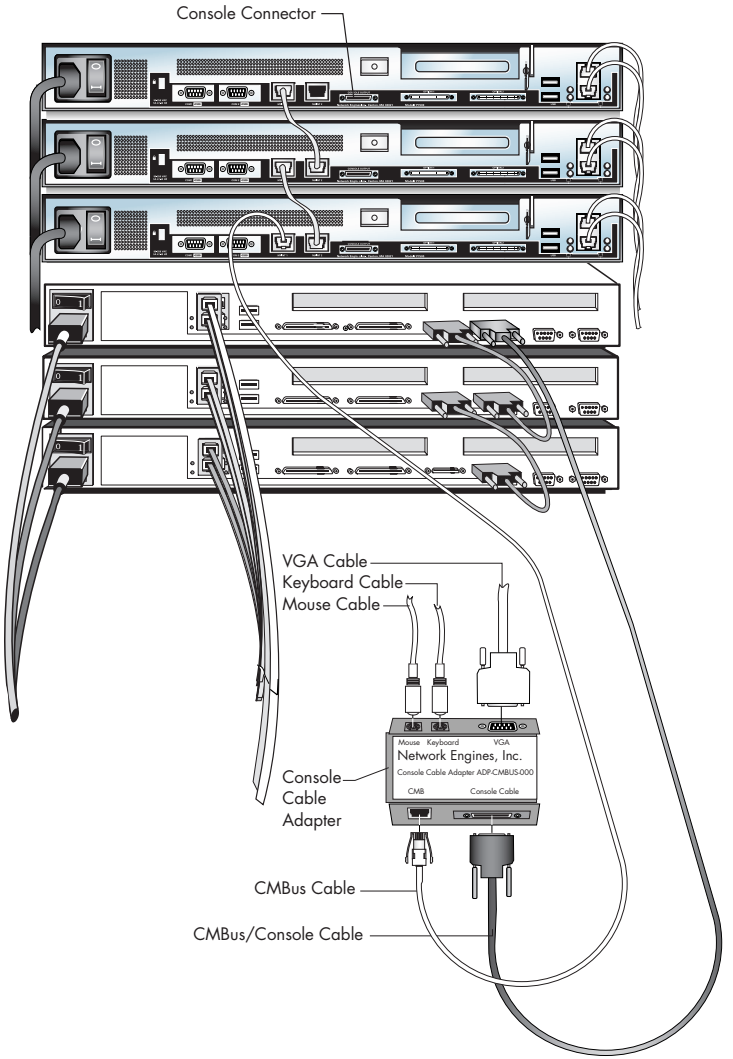

Figure 15. Cabling for a Mixed Cluster

Connecting Ethernet Cables

Ethernet cables connect the appliance to internal and external networks. Internal and external networks are described in Chapter 4, *Configuring Viper LX*. To connect an Ethernet cable:

1. Connect the Ethernet cable from the internal switch or hub to the top port.
2. Connect the Ethernet cable for external access from the appropriate switch or hub to the bottom port.

Connecting the CMBus Cable

To connect an LX appliance to a cluster:

1. Connect a CMBus cable to the left CMBus connector on the first appliance (typically an AdminEngine). Connect the other end to the right CMBus connector on the next appliance.
2. Continue cabling the remaining appliances in a similar crossover manner.
3. Connect a CMBus cable to the open CMBus connection on either the first or the last appliance.
4. Terminate the CMBus cable, connected in Step 3, on the Console Cable Adapter.

   Refer to Figures 13 through 15 and the *Connecting the Console Cable Adapter* section.

Connecting the Console Cable Adapter

The Console Cable Adapter lets you access an LX appliance through a directly connected monitor, keyboard, and mouse. To connect the Console Cable Adapter:

1. Connect a Console Adapter cable to the console connector.
2. Attach the Console Cable Adapter to the other end of the cable.
3. Connect the keyboard, mouse, and VGA cables to the Console Cable Adapter.

After all cable connections are complete, configure the appliance, as described in Chapter 3.

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Configuring Viper LX

After you complete the cable connections on the LX appliance, power it up and configure the following:

- Network Interface Card (NIC) interfaces and default gateway
- Other parameters such as hostname, domain, and time and date

Configure the appliance through the LCD panel or the WebEngine LX QUICK START screen using a web browser. You access this screen using the network IP address followed by a colon (:) and the port number (:3160). Refer to *Accessing the WebEngine LX QUICK START Screen* on page 32.

NIC Interfaces

An LX appliance has two NIC interfaces preconfigured with default IP addresses, that correspond to the Ethernet ports on the back panel shown in Figure 16.

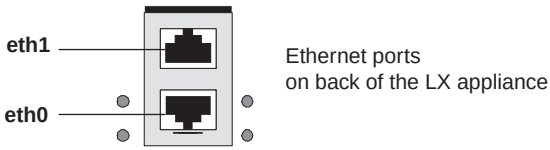


Figure 16 Ethernet Ports

Typically, you use one network to connect to the Internet and the other network as an internal network.

Table 5 shows the default IP addresses and subnet masks for the appliance's two interfaces. Every appliance is shipped with the same set of IP addresses. You must configure these interfaces so they do not conflict with addresses on existing devices in the network. To avoid conflicts within a cluster of new appliances, configure and completely reboot the first appliance before you power up and configure the next unit.

Table 5. Default Interface Configuration

Ethernet Port	Interface	IP Address	Subnet Mask
Top port (internal address)	eth1	192.168.30.2	255.255.255.0
Bottom port (external address)	eth0	10.10.10.10	255.0.0.0

▼ Resolving IP Address Conflicts

If the address 10.10.10.10 on subnet 255.0.0.0 conflicts with a system on your network, change the IP address while connected to a private network.

For example, you can use a workstation on your network and reconfigure its IP address to 10.10.10.5 and its subnet mask to 255.0.0.0 to enable it to communicate with eth0. Configure eth0 with a new IP address and reboot the appliance. Remember to change your workstation back to its original network configuration after you finish.

If the address 192.168.30.2 on subnet 255.255.255.0 conflicts with another system on your network, you must change the IP address. Each address must be unique.

Configuring NIC Interfaces

Before configuring the NIC interfaces, obtain an IP address from your network administrator. Then, use the LCD panel on the LX appliance and the procedures in the following sections to:

- Select DHCP for IP addressing

  or

- Configure static IP addresses

You can configure one Ethernet port with DHCP and the second Ethernet port with a static IP address.

▼ Powering On

To power on an LX appliance:

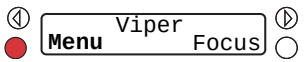
1. Power on (AC) the appliance using the On/Off switch on the rear panel.
2. Press the Right-Select button on the front panel to turn on the appliance.
3. Wait until the WatchDog LED starts flashing; Ready appears on the LCD panel of Roadster LX; Focus appears on the LCD panel of Viper LX.

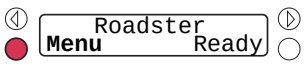
▼ Selecting DHCP for IP Addressing

You can use the Microsoft DHCP Server Services on AdminEngine to automatically configure IP addresses, subnet masks, and a default gateway. If you configure the interface for DHCP, the netmask (subnet mask), and the default gateway are automatically set.

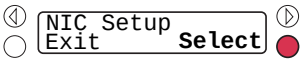
To select DHCP for IP addressing for both Ethernet ports:

1. Press the Left-Select button on the front panel to access the menu items. Depending on the hardware platform, one of these menus is displayed.

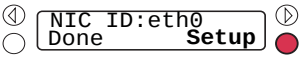




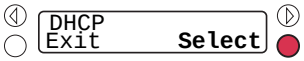
2. Press the Right-Select button to select the NIC Setup menu item. Use the Toggle-Forward button until NIC ID: eth0 (interface for external IP address) appears.



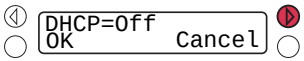
3. Press the Right-Select button to set up NIC ID eth0: configuration.



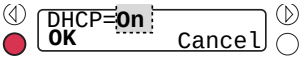
4. At the DHCP menu item, press the Right-Select button to select it.



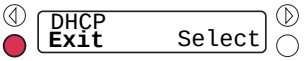
5. Press the Toggle-Forward button to switch DHCP from Off to On.



6. Press the Left-Select button to confirm that DHCP is on and will assign the IP address, subnet mask, and default gateway.



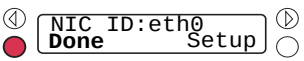
7. Press the Left-Select button to exit DHCP.



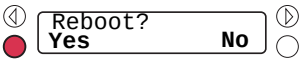
8. Press the Toggle-Forward button to access the NIC ID: eth1 configuration. Press the Right-Select button to select setup for NIC ID: eth1 configuration. Repeat Steps 4, 5, 6, and 7 to configure DHCP for NIC ID: eth1.

   or:

   Press the Left-Select button to complete configuration for NIC ID: eth0.



9. Press the Left-Select button to reboot.

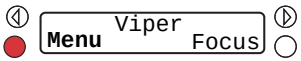


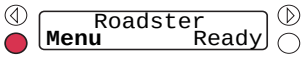
Configuring a Static IP Address

If you configure static IP addresses, you need to configure the IP address and subnet mask for Ethernet ports and a default gateway. Be sure that the DHCP menu item is set to Off before you configure a static IP address.

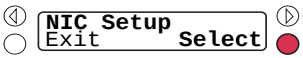
To configure a static IP address for an Ethernet port:

1. Press the Left-Select button on the front panel to access the menu items. Depending on the hardware platform, one of these menus is displayed.

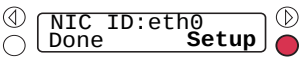




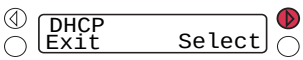
2. Press the Toggle-Forward or Toggle-Back button until the NIC Setup menu item appears; then, use the Right-Select button to select the menu item.

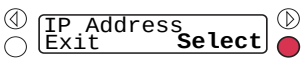


3. Press the Right-Select button to select setup for the NIC ID: eth0 configuration.

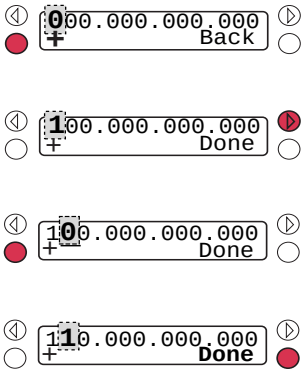


4. Press the Toggle-Forward button until the IP Address menu item appears; then, press the Right-Select button to select the menu item.

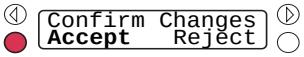




5. Press the Left-Select button to change the number incrementally; press the Toggle-Forward button to move the cursor to the next field; repeat this step until you have configured all the fields of the IP address. Then, press the Right-Select button to complete the IP address configuration.



6. Press the Left-Select button to confirm changes.

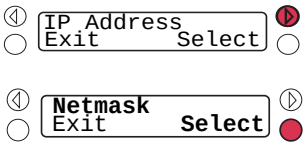


7. Follow the steps in the next section, *Configuring the NetMask*.

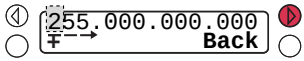
Configuring the NetMask

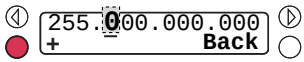
To configure the netmask for the port configured in the previous section:

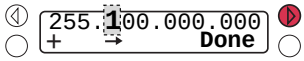
1. Press the Toggle-Forward button until the Netmask menu item appears; then, press the Right-Select button to select it.

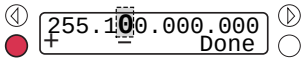


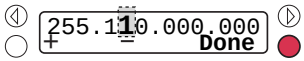
2. Press the Toggle-Forward button to move the cursor to the next field; press the Left-Select button to change the number incrementally; repeat this step until you have configured the netmask. Then, press the Right-Select button to complete the netmask configuration.



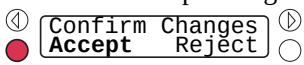




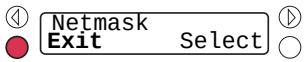




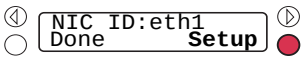
3. Press the Left-Select button to accept changes.

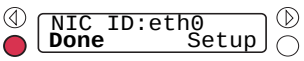


4. Press the Left-Select button to exit the Netmask configuration.

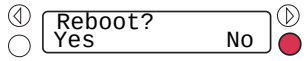


5. You may configure an IP address and subnet mask for NIC ID: eth1 by pressing the Toggle-Forward button and following the steps in *Configuring a Static IP Address* and then the procedure in *Configuring the NetMask* on page 28 or you can press the Left-Select button to complete the procedure.





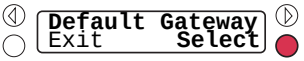
6. Although you are prompted to reboot, press the Right-Select button. Configure the default gateway before you reboot. Follow the steps in the next section, *Configuring an IP Address for a Default Gateway*.



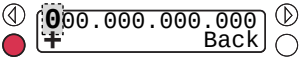
Configuring an IP Address for a Default Gateway

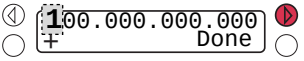
To configure an IP address for a default gateway:

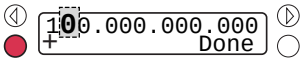
1. At the Default Gateway menu item, press the Right-Select button.

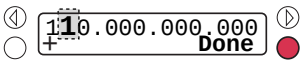


2. Press the Left-Select button to change the number incrementally; press the Toggle-Forward button to move the cursor to the next field; repeat this step until you have configured the IP address. Then, press the Right-Select button to complete the IP address for the default gateway.

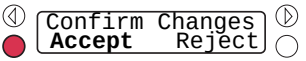




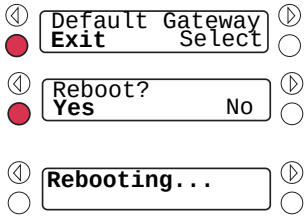




3. Press the Left-Select button to accept the IP address, if it is correct.



4. Press the Left-Select button to reboot the system. The Default Gateway menu item appears when rebooting has completed.



5. Follow the steps in *Configuring Other Parameters* to complete the WebEngine LX QUICK START screen.

Configuring Other Parameters

With the WebEngine LX QUICK START screen and a web browser, you can configure other settings, for example, hostname, domain, and date and time settings on an LX appliance.

This section includes:

- Steps to set up your web browser
- Steps to access the WebEngine LX QUICK START screen
- Steps to complete the WebEngine LX QUICK START screen
- Information about the WebEngine LX QUICK START screen

▼ Setting Up Your Web Browser

The WebEngine LX QUICK START screen supports these web browsers:

- Netscape 4.x
- Internet Explorer 4.x/5.x with Java™ and JavaScript™ enabled

You want to configure the browser to update the page information each time the page is browsed.

Netscape

With the browser open:

1. Click **Edit Preferences.** Go to the **Advanced** menu item.
2. Click + to display the Advanced pull-down menu, and select **Cache**.
3. Under the field, *Document in cache is compared to documentation on network*, select **Every time** and **OK**.

Internet Explorer

With the browser open:

1. Click **View Internet Options.** (version 4.x) or **Tools Internet Options** (version 5.x).
2. At the General tab, in the Temporary Internet Files field, click **Settings...**
3. In the field, *Check for newer versions of stored pages*, click **Automatically**, and click **OK**.

▼ Accessing the WebEngine LX QUICK START Screen

To access the WebEngine LX QUICK START screen:

1. Using the information below, on a remote PC, launch your web browser and point it to the appropriate address.

Did you set new IP address yet?	Ethernet cable is connected to...	Point your browser to...
No	Top port	http://192.168.30.2:3160
No	Bottom port	http://10.10.10.10:3160
Yes	Top port	http://<*new_eth1_IP_address*>:3160
Yes	Bottom port	http://<*new_eth0_IP_address*>:3160

2. Log into the initial screen of the LX Management Console using the default user name and password, which are case-sensitive:
   `Username:` **`neiadmin`**
   `Password:` **`password`**

   The WebEngine LX QUICK START screen appears as shown in Figure 17. The screen displayed shows the default settings. If you configure static IP addresses using the front panel, those addresses appear in the screen.

3. Complete the fields of the screen and click **Submit**. For additional information, refer to *Screen Descriptions*.

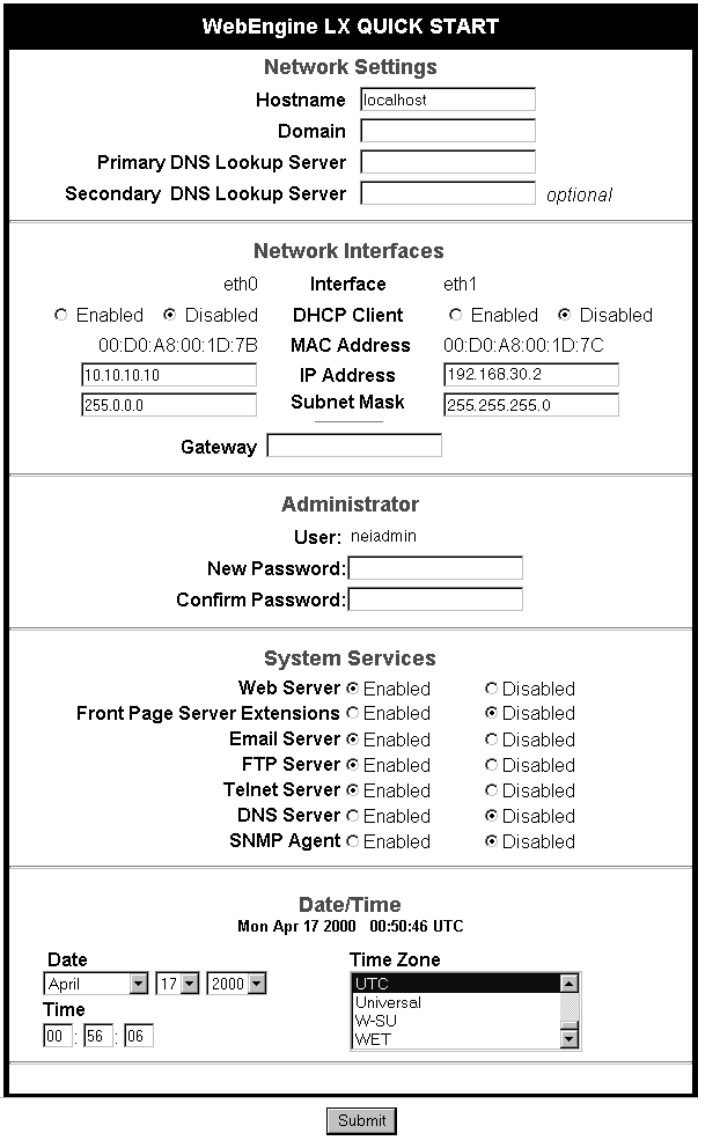


Figure 17. WebEngine LX QUICK START Screen

▼ Screen Descriptions

This section describes how to complete the fields in the WebEngine LX QUICK START screen.

Network Settings

Hostname	Enter an alphanumeric name that applies to the device.
Domain	Enter your domain name.
Primary DNS Lookup Server	Enter the IP address of the Domain Name Server (DNS).
Secondary DNS Lookup Server (optional)	Enter the IP address of the secondary DNS.

Network Interfaces

DHCP Client	For each interface, press the Enabled button if you want the DHCP services on AdminEngine to configure the IP address and subnet mask for the interface.
MAC Address	For each interface, enter the MAC address.
IP Address	If you disabled DHCP for this interface, enter an IP address.
Subnet	If you disabled DHCP for this interface, enter a subnet mask.
Gateway	If you disabled DHCP for this interface, enter an IP address for the default gateway.

Administrator

New Password	Change the password for the default password.
Confirm Password	Confirm the new password.

System Services

WebServer	Keep the WebServer enabled during initial setup.
Front Page Server Extensions	Microsoft Front Page Server Extensions (FPSE) is initially disabled. Once enabled, you cannot disable FPSE. All virtual hosts created are FPSE-enabled.
Email Server	E-mail services are enabled by default so that they are available to virtual hosts created through the procedure described in Chapter 8.
FTP Server	FTP services are enabled by default so that they are available to virtual hosts created through the procedure described in Chapter 4.

Telnet Server	Telnet service is enabled by default so that it is available to virtual hosts created through the procedure described in Chapter 8.
DNS Server	Enable DNS Server services if you plan on configuring them.
SNMP Agent	Enable SNMP Agent services if you plan on configuring them.

Date/Time

Date	Using the pull-down menus, enter today's date.
Time	Enter the current time.
Time Zone	Using the pull-down menus, select a time zone.

4. Click **Submit**. A series of messages may display, depending on your configuration.
5. Click **OK** to reboot and initialize the configuration. The system waits 60 seconds to shut down, then begins its boot sequence. During this time, a clock displays the number of seconds to reboot, followed by the number of seconds since reboot.

   The boot sequence completes in approximately three minutes (180 seconds) for the appliances containing 1 GB RAM. Systems with more RAM may take up to five minutes (300 seconds) to finish rebooting.

   Usually, the WatchDog LED starts to blink to indicate that the appliance has completed its reboot.

   ---

6. For a cluster of new appliances, repeat this procedure for the next appliance. You must wait for each appliance to complete its boot sequence before you power up and configure the next appliance.

You have completed the configuration procedure. Be sure that you record all your configuration settings in the event that you have to reconfigure the LX appliance.

Chapter 7 provides an overview of the LX Management Console, including how to register your product online.

CHAPTER 5

Operation

This chapter describes operations you can perform on an LX server appliance using the LCD panel. You can:

- Shut down
- Reboot
- Redirect where the appliance reboots
- Power off
- Reset
- Display the appliance's Unique ID
- Display MAC addresses of the Ethernet ports on each appliance
- Automatically provide focus to a Viper LX
- Set the powerup mode

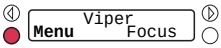
Although there are other menu selections available, do not use them unless directed to do so by Technical Support.

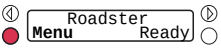
Shutting Down

Use this menu selection when you want to shut down the operating system. Perform this task before you power off the appliance using the LCD panel or using the On/Off switch on the rear panel.

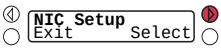
To shut down the appliance:

1. Depending on the hardware platform, one of these menus is displayed on the LCD panel. Press the Left-Select button to access the menu items.

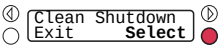




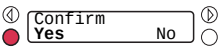
2. Press the Toggle-Forward or Toggle-Back buttons until the Clean Shutdown menu item appears.

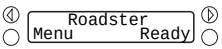


3. Press the Right-Select button to select the menu item.

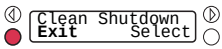


4. Press the Left-Select button to confirm the shutdown. The message Shutting Down... appears.





5. When the Clean Shutdown menu item appears again, press the Left-Select button to exit the menu.

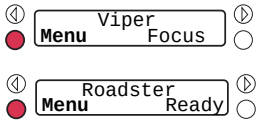


Rebooting

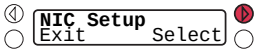
Reboot an LX appliance after you perform the initial configuration or when you want to shut down all services and reboot the operating system.

To reboot an appliance:

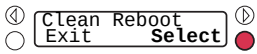
1. Depending on the hardware platform, one of these menus is displayed on the LCD panel. Press the Left-Select button to access the menu items.



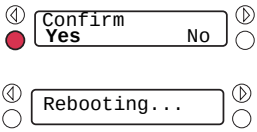
2. Press the Toggle-Forward and Toggle-Back buttons until the Clean Reboot menu item appears.



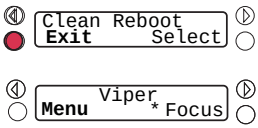
3. Press the Right-Select button to select the menu item.



4. Press the Left-Select button to confirm the reboot. A Rebooting... message appears.



5. When the Clean Reboot menu item appears, press the Left-Select button to exit the menu. The Ready state appears after the operating system has rebooted. This may take several minutes.

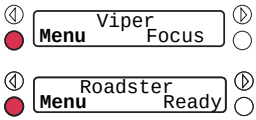


Redirecting Reboot

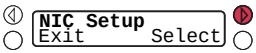
If selected, instead of booting locally, the LX appliance performs a one-time network boot and looks for a PXE server the next time it boots.

To redirect reboot:

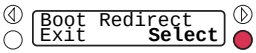
1. Depending on the hardware platform, one of these menus is displayed on the LCD panel. Press the Left-Select button to access the menu items.



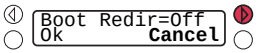
2. Press the Toggle-Forward and Toggle-Back buttons until the Boot Redirect menu item appears.



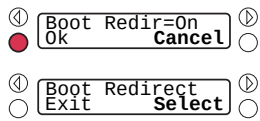
3. Press the Right-Select button to select the menu item.



4. Press the Toggle-Forward button to turn on boot redirect.



5. Press the Left-Select button to confirm your action. The Boot Redirect menu item appears.



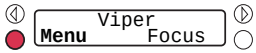
   To activate Boot Redirect, reset or reboot the appliance. If you power down using the LCD panel or power off the LX appliance using the On/Off switch on the rear panel, Boot Redirect does not occur.

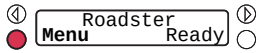
Powering Off

When you power off the appliance, the DC power is turned off. The operating system and system services are immediately shut down if the operating system is running.

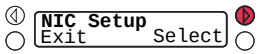
To power off an LX appliance:

1. Depending on the hardware platform, one of these menus is displayed on the LCD panel. Press the Left-Select button to access the menu items.

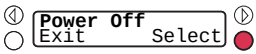




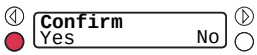
2. Press the Toggle-Forward and Toggle-Back buttons until the Power Off menu item appears.



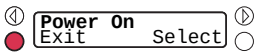
3. Press the Right-Select button to select the menu item.



4. Press the Left-Select button to confirm. The Power On menu item appears.



5. Press the Left-Select button to exit the menu.

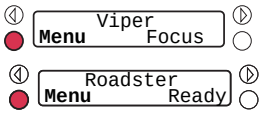


Resetting

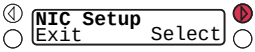
When you reset an LX appliance, it immediately stops the operating system, if it is running, and initiates a reboot.

To reset an appliance:

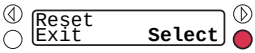
1. Depending on the hardware platform, one of these menus is displayed on the LCD panel. Press the Left-Select button to access the menu items.



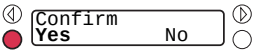
2. Press the Toggle-Forward or Toggle-Back buttons until the Reset menu item appears.



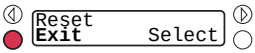
3. Press the Right-Select button to select the menu item.



4. Press the Left-Select button to confirm your action. The Reset menu item appears.



5. Press the Left-Select button to exit the menu.

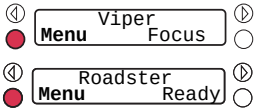


Displaying the Unique ID

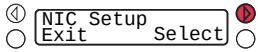
Each appliance has a unique ID, which consists of a serial number and vendor ID.

To display the unique ID for an appliance:

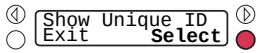
1. Depending on the hardware platform, one of these menus is displayed on the LCD panel. Press the Left-Select button to access the menu items.



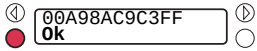
2. Press the Toggle-Forward button until the Show Unique ID menu item appears.



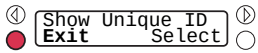
3. Press the Right-Select button to select the menu item.



4. Press the Left-Select button after you view the unique ID.



5. Press the Left-Select button to exit the menu item.

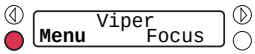


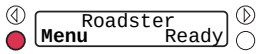
Displaying MAC Addresses

Each Ethernet port on an appliance has a unique Media Access Control (MAC) address.

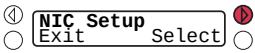
To display the MAC address:

1. Depending on the hardware platform, one of these menus is displayed on the LCD panel. Press the Left-Select button to access the menu items.

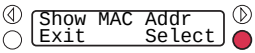




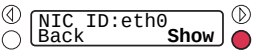
2. Press the Toggle-Forward button until the Show MAC Addr menu item appears.



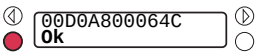
3. Press the Right-Select button to select the menu item.



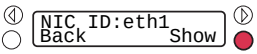
4. Press the Right-Select button to display the MAC address for NIC ID: eth0.



5. Press the Left-Select button to exit the MAC address display.



6. Press the Left-Select button to exit the menu or press the Right-Select button to display the MAC address for NIC ID: eth1.



Providing Automatic Focus to Viper LX

An appliance has *focus* when the video monitor, mouse, and keyboard connections are enabled through its CMBus. You can give Viper LX focus any time it is up and running by pressing the Right-Select button at Focus.

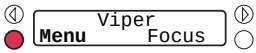
For a stand-alone appliance, you can set it to automatically have focus at startup. This means that you set the Default Power menu item to On and the Auto Focus menu item to On.

If the Default Power menu item is set to Off and Auto Focus is set to On, the appliance will not have focus automatically. It will respond as though Auto Focus was not set to On. To give the appliance focus, manually press the Right-Select button at Focus.

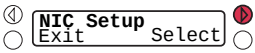
If your appliances are part of cluster, do not use the automatic focus feature. In a cluster, only one appliance can have focus at a time.

To provide automatic focus to Viper LX:

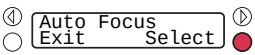
1. On the LCD panel, press the Left-Select button to access the menu items.



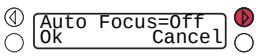
2. Press the Toggle-Forward button until the Auto Focus menu item appears.



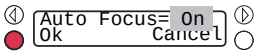
3. Press the Right-Select button to select the menu item.



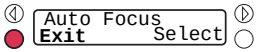
4. Press the Toggle-Forward button until the Auto Focus = On menu item appears.



5. Press the Left-Select button at OK to confirm the Auto Focus = On setting. The Auto Focus menu item appears.



6. Press the Left-Select button to exit the menu item.

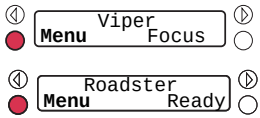


Setting the Powerup Mode

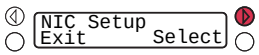
When set to On, an LX appliance powers up and boots the operating system. When set to Off, the appliance enters idle mode (LCD displays On).

To set the powerup mode as On:

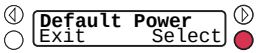
1. Depending on the hardware platform, one of these menus is displayed on the LCD panel. Press the Left-Select button to access the menu items.



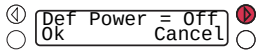
2. Press the Toggle-Forward or Toggle-Back buttons until the Default Power menu item appears.



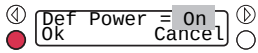
3. Press the Right-Select button to select the menu item.



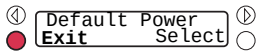
4. Press the Toggle-Forward button until the Def Power = On menu item appears.



5. Press the Left-Select button to confirm the Def Power = On setting. The Default Power menu item appears.



6. Press the Left-Select button to exit the menu item.



CHAPTER 6

LX Appliance Removal and Replacement

This chapter describes how to shut down, remove, and replace an LX appliance. Before you perform these procedures, be sure to record all the network settings.

Replacing a Standalone LX Appliance

To replace a stand-alone LX appliance:

1. Perform a clean shutdown from the LCD panel. Refer to Chapter 5, *Operation* for information on shutting down an appliance.
2. Disconnect the power cord and Ethernet cables from the appliance.
3. Follow the procedures described in Chapter 2 and Chapter 3 to install and cable the new appliance.
4. Follow the procedures described in Chapter 4 to configure the new appliance. Record the settings you configure in the event that you must reconfigure the settings.

Replacing a Clustered LX Appliance

To remove and replace an LX appliance that is part of a cluster, follow these steps:

1. Perform a clean shutdown from the LCD panel. Refer to Chapter 5, *Operation* for information on shutting down an appliance.
2. Disconnect the power cord and Ethernet cables.

CAUTION

Disconnect the CMBus cable from the appliance.

3. Remove one CMBus cable from the appliance you are removing and connect the other cable.
4. Carefully remove the disconnected appliance from the cluster. Figure 18 shows the removal of a Roadster LX appliance from the cluster.

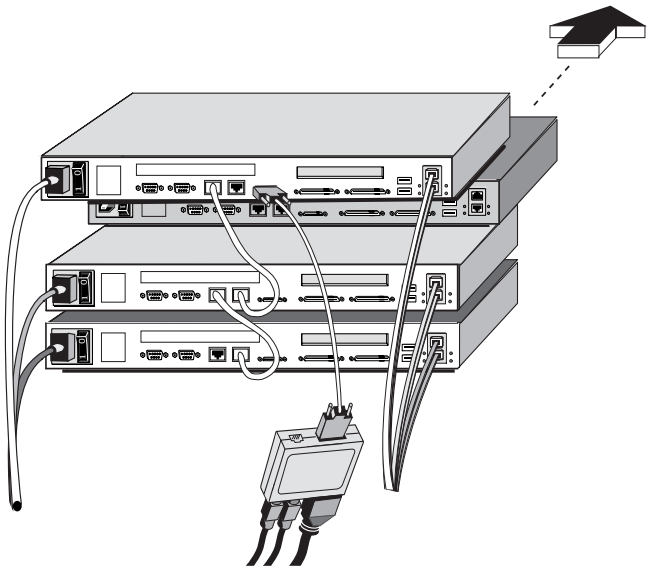


Figure 18. Removing a Roadster LX from a Cluster

5. Install the new appliance in the cluster.
6. Connect the power cord, Ethernet cables, and CMBus cable using the procedures describes in Chapter 3, *Cabling*.
7. Power up (AC) and configure the LX appliance using the procedures in Chapter 4, *Configuring Viper LX*. Use the same configuration settings as you used on the removed appliance.

CHAPTER 7

LX Management Console

This chapter describes the LX Management Console, which is a web-based interface on an LX appliance used for all configuration, administration, and management tasks. This chapter describes how to:

- Log into the LX Management Console
- Navigate through the LX Management Console menus
- Register your product
- View and modify your current configuration
- Start a Telnet session

Logging into the LX Management Console

Do not log into the LX Management Console until you have completed initial configuration. Refer to Chapter 4, *Configuring Viper LX*.

To use the LX Management Console, you need a remote PC with access to a web browser and a network connection to the LX appliance. For browser setup requirements, refer to Chapter 4, *Configuring Viper LX*.

1. On your remote PC, launch a web browser and enter the current IP address and the LX Management Console port number for either the eth0 or eth1 interface in the address field:

   `http://<IP_address>:3160`

2. Log in at the initial screen:

   `Username: neiadmin`
   `Password: <current_password>` or **`password`** (default)

Figure 19 shows the LX Management Console.

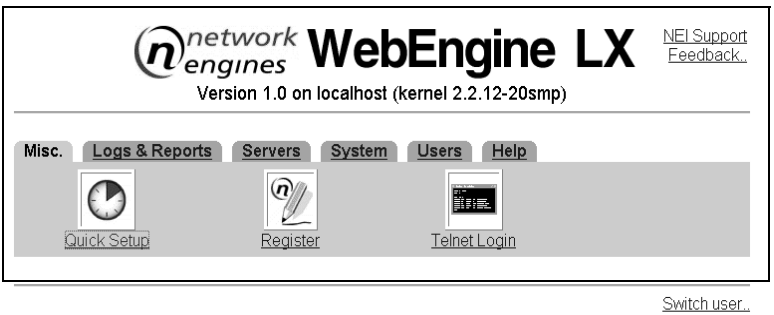


Figure 19. LX Management Console

LX Management Console Menus

Table 6 describes the LX Management Console menus and the corresponding tasks you can perform.

Table 6. Menu Descriptions

Use this menu....	and this menu item...	To...
Misc.	Quick Setup	Display and modify the current appliance configuration.
	Register	Submit the product registration form.
	Telnet Login	Start a Telnet session.
Logs & Reports	Disk Usage	Monitor appliance disk usage.
	Logs	Display these logs: • FTP • HTTP access • HTTP errors • Administrative access
	Reports	Display these reports in graphical format: • FTP • HTTP • Access to the LX Management Console
	System Information	Display system information including: • CPU statistics • Memory resources • Network statistics • System uptime • Active users

Table 6. Menu Descriptions (*continued*)

Use this menu....	and this menu item...	To...
Servers	Apache Webserver	Configure parameters for Apache Webserver.
	BIND 8 DNS Server	Configure the appliance as a Berkeley Internet Name Domain (BIND) 8 Domain Name Server (DNS).
	DHCP Server	Configure the appliance as a DHCP server (not a client).
	Majordomo List Manager	Configure and manage the Majordomo list server.
	ProFTPD Server	Configure WU-FTP daemon.
	Sendmail Configuration	Configure Sendmail.
	Virtual Host	Create virtual hosts through the Virtual Host Builder script, which automatically configures web, FTP, and e-mail services for the new host; you can also modify and delete virtual hosts.
	Note: Most of the LX Management Console servers are robust programs and have been documented extensively in online resources and published books. Since it is beyond the scope of this manual to document these programs, Appendix C highlights the issues specific to an LX appliance and describes tasks you can perform using the LX Management Console.	

Table 6. Menu Descriptions (*continued*)

Use this menu....	and this menu item...	To...
System	Bootup and Shutdown	Control system startup and shutdown processes.
	MIME Types	Add or edit MIME types.
	Meta Shell	Configure shell parameters for: • Environment • Limits • Mask • Shells
	Network Configuration	Configure the following: • Network interfaces • Routing and gateways • DNS client • Host addresses
	System Time	Set time for system and hardware clocks, and the external time server.
Users	HTPasswd	Limit web site access.
	Linux User Manager	Manage Linux user accounts and groups.
	WebEngine LX Users	Manage new LX appliance user accounts and configure their access rights.
Help	About	Display the LX appliance software version number and copyrights.
	Help	Search the LX Management Console help system.
	Manual Pages	Display online man pages.
The **Switch user** link in the lower right corner of the main screen lets you log into the LX Management Console as a different user.		

▼ Navigation

Depending on the screen displayed in the LX Management Console, the links described below may appear in the left corner of the screen.

Press this link...	To...
WebEngine LX Index	Display the LX Management Console main screen.
Module Index	Display the main screen of the current module.
Help	Display Help. Refer to Chapter 13, *Help*.
Module Config	To set the defaults for the parameters the module uses.

Modifying the Current Configuration

You can view the current configuration, modify the network settings, change the LX appliance administrator's password, or reconfigure system services or time after initial configuration.

To view the current configuration, from the LX Management Console, under **Misc**., click **Quick Setup**. Figure 20 shows a screen that has already been completed.

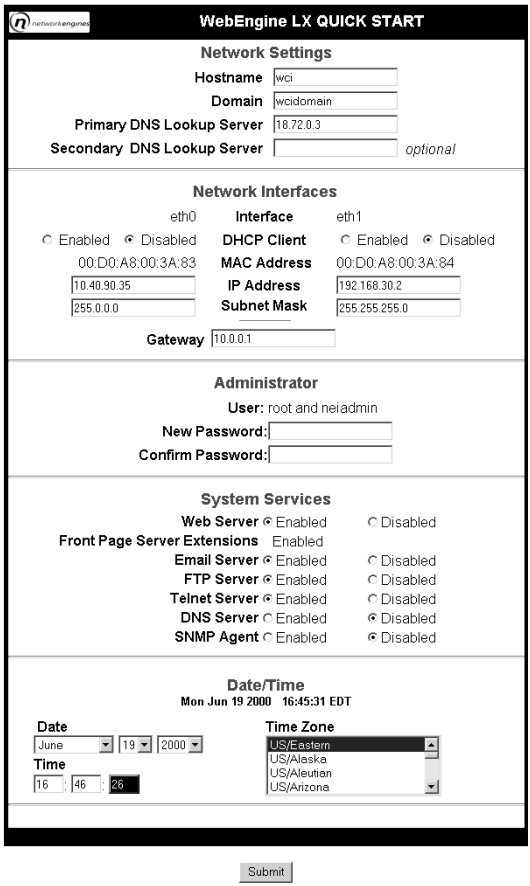


Figure 20. WebEngine LX QUICK START Screen

Registering Your Product

It is important to register your product so that you can get updated product information and services.

To register your product:

1. From the LX Management Console, under **Misc**., click **Register**. The Product Registration Form appears, as shown in Figure 21.
2. In the first field, a product name is filled in by default. Use the pull-down menu to select the product name you are registering.
3. Fill in the remaining fields; then, click **Submit**.

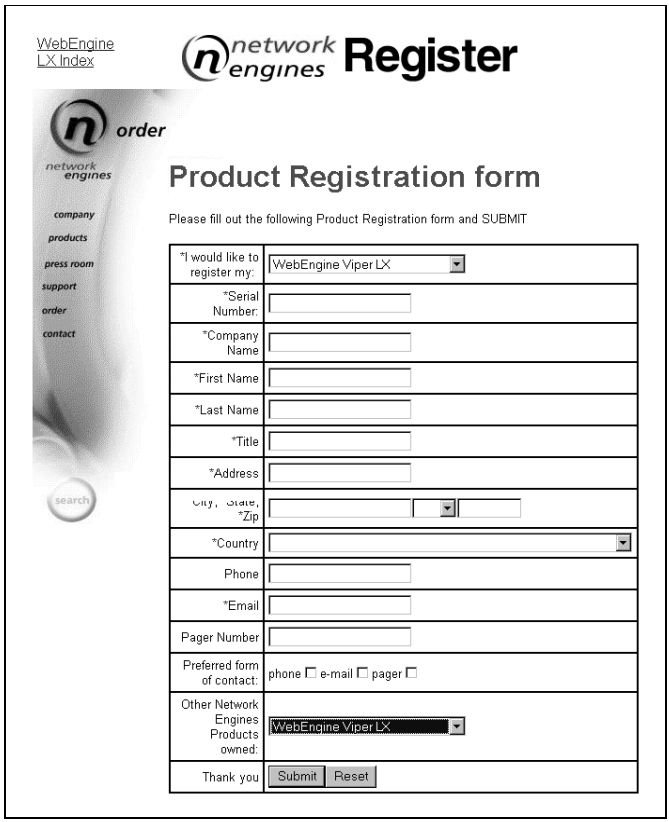


Figure 21. Product Registration Screen

Starting a Telnet Session

Through a Telnet session, you can access the LX appliance. Only those users who are proficient in UNIX should log into the LX appliance through Telnet because you can adversely affect the performance of your system if you modify configuration files.

To log into an LX appliance through a Telnet session:

1. From the LX Management Console, under **Misc**., click **Telnet Login**. The Telnet Login screen appears, as shown in Figure 22.
2. Click **Module Config** in the upper left corner. Change the IP address from automatic to static. Enter the IP address of the LX appliance and click **Save**. The login prompt appears in the Telnet window.

You cannot start a Telnet session from a remote device as root. You must create Linux users first.

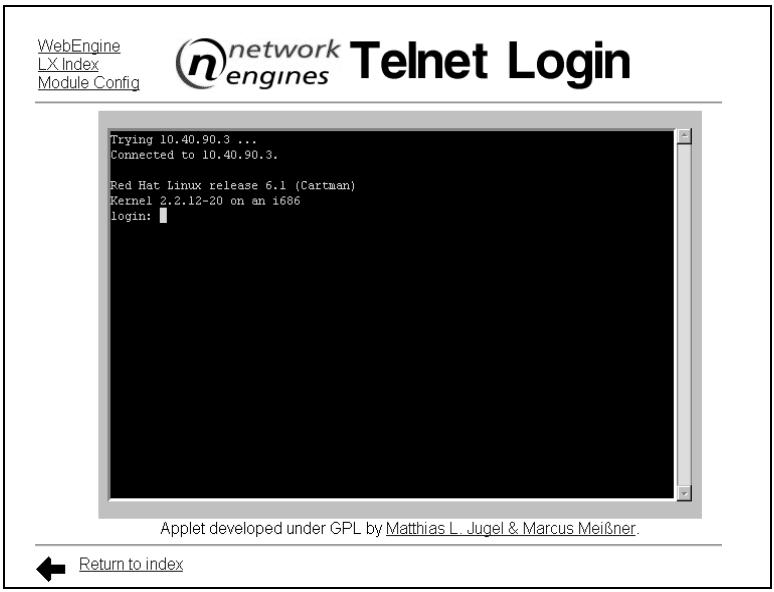


Figure 22. Telnet Login Screen

3. Follow these guidelines:
   - You cannot start a Telnet session as root; you must use a valid user name.
   - If the system logs you out, click the Refresh/Reload button on your browser tool bar to return to the login prompt.
   - When you disable the Telnet server, you deny Telnet access to all users, even if they have been granted shell access.

CHAPTER 8

Virtual Hosts

This chapter describes how to create and manage virtual hosts on an LX appliance.

About Virtual Hosts

A virtual host consists of a virtual FTP server, web server, and possibly e-mail services.

An LX appliance may serve multiple virtual hosts. You can configure virtual hosts in one of two ways:

- IP-based host - Each virtual host has an IP address. IP-based hosts are preferred as they are safer and prone to fewer problems.
- Name-based host - Each virtual host has a unique host name but shares its IP address with other virtual hosts. Use name-based hosts only when you have a limited range of IP addresses available. Name-based hosts require minor manual configuration changes after creation to work correctly.

Although both appliances support IP-based and name-based hosts, it is recommended that you configure IP-based hosts.

▼ Directory Structure for Virtual Hosts

An LX appliance contains a directory */home*, which is the root of the user directory tree. The *home* directory contains all the virtual hosts (<*user*>) created on the appliance.

Figure 23 shows the directory structure for virtual hosts.

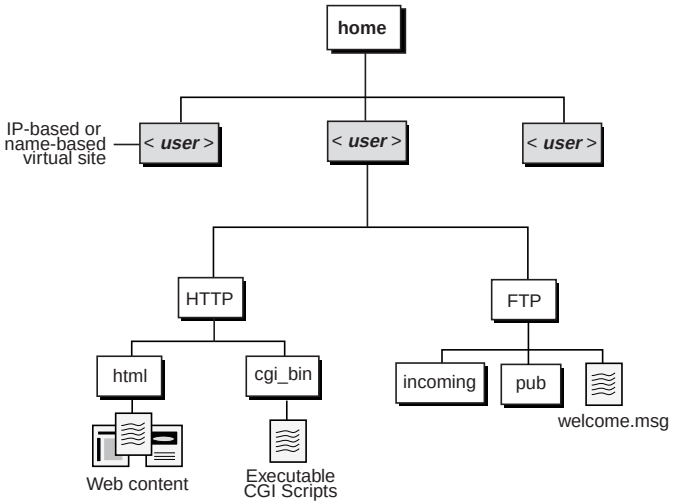


Figure 23. Directory Root for Virtual Hosts

Each virtual host (/home/<*user*>) contains an HTTP and an FTP directory.

Directory	Description
HTTP	• html - Stores and organizes web content • cgi_bin - Contains executable Common Gateway Interface (CGI) scripts available to run on your site
FTP	• incoming - Directory to which site users can copy (upload) files from their sites • pub - Contains files that site users can download to their sites • welcome.msg - Welcomes users to the site when they connect with an FTP client
Each virtual host is mapped to a Linux user account, whose files are stored in the directory structure shown in Figure 23.	

Virtual Host Builder

Virtual Host Builder automates the creation of virtual hosts. When you create a virtual host, Virtual Host Builder automatically configures web and FTP services for your new site. If your site is name-based, it also configures e-mail service for the site through Sendmail.

▼ What Virtual Host Builder Does

Virtual Host Builder performs these tasks:

- Creates a virtual host
  Creates a new virtual IP-based or name-based host and binds it to port 80, the default port on which web services normally run.
- Configures an FTP server
  Creates a virtual FTP server and binds it to port 21, the default port on which the FTP services normally run.
- Configures e-mail service
  Configures Sendmail to accept messages for the new host if it is a name-based host.
- Creates a Linux user account
  Creates a corresponding Linux user account who owns the host. This allows login-shell access through Telnet and FTP. The Linux user account also enables the user to securely execute CGI scripts on the site. This account is also the user ID for which reports are generated.
- Creates an LX appliance user account
  Shares the same name and password as the Linux user account, which also has restricted access to monitoring and administrative tasks through the LX Management Console.

- Creates host directories
  Sets up these directories for the new virtual host, as shown in Figure 23 on page 62.
  - /home/<*user*>/FTP
  - /home/<*user*>/HTTP/html
  - /home/<*user*>/HTTP/cgi_bin
- Enables host reports
  Sets up the report generator for the host. Host reports are generated from the logs of the virtual host, and the accumulated data is converted into easy-to-read charts and graphs. Initially, reports are generated on a weekly basis by default. For more information, refer to *Chapter 12, Logs and Reports*.

▼ Example Script Results

When you create virtual hosts for *domain1.com* and *domain2.com*, Virtual Host Builder automatically configures these services:

Web service:	www.domain1.com www.domain2.com
FTP service:	ftp.domain1.com ftp.domain2.com
e-mail:	user@domain1.com user@domain2.com

Before You Begin

When you create a virtual host, use one of the LX appliance's addresses to set a target IP address (Apache's *NameVirtualHos*t directive). Typically, you perform this task once.

To specify the target IP address for the virtual host you are configuring:

1. At the LX Management Console, under **Servers,** click **Apache Webserve**r.
2. Click **Networking and Addresses**.

3. Add the IP address for the virtual host you are creating in the **Addresses for name virtual servers** field.

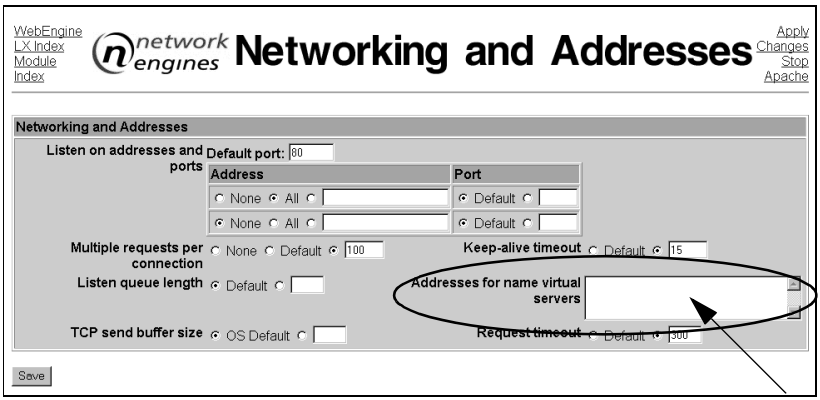


Figure 24. Network and Address Screen

4. Click **Save**; then, click **WebEngine LX Index** on the Apache WebServer screen to display the LX Management Console.

Virtual Host Creation

Creating a virtual host involves three steps:

1. Creating the virtual host.
2. Addressing issues related to name-based hosts, such as changing the default FTP port.
3. Restarting web and FTP services.

You may also update the Domain Name Server (DNS).

Details for each step are provided in the following sections. Also be sure that you review *Additional Information About Virtual Hosts* on page 74.

▼ Creating a Virtual Host

You can create an IP-based or name-based virtual host.

To create a virtual host:

1. From the LX Management Console, under **Servers,** click **Virtual Host** to display the Virtual Hosts screen.

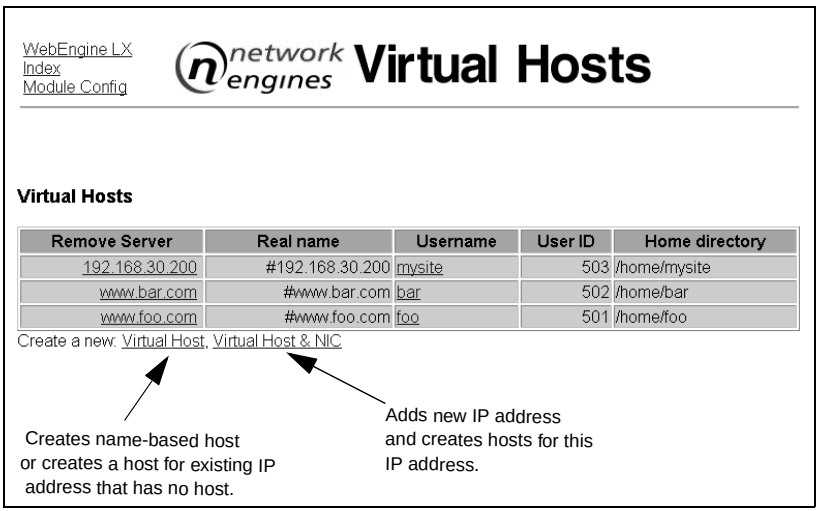


Figure 25. Virtual Hosts Screen

2. Click (create a new) **Virtual Host & NIC** to create an IP-based virtual host

   or:

   Click **Virtual Host** to configure a name-based virtual host.

3. If you are creating an IP-based virtual host, in the Network Interfaces screen, click the physical interface name (eth0, eth1) on which to create the virtual interface.

   If you are creating a name-based virtual host, skip to Step 5.

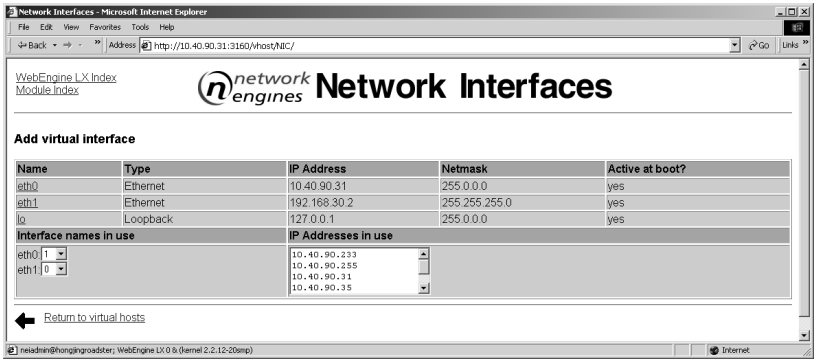


Figure 26. Network Interfaces Screen

4. Enter an unused number (Name field) and an IP address.

   Number subsequent interfaces in ascending order, for example, eth1:1, eth1:2, eth1:3 and so on; then, click **Create**.

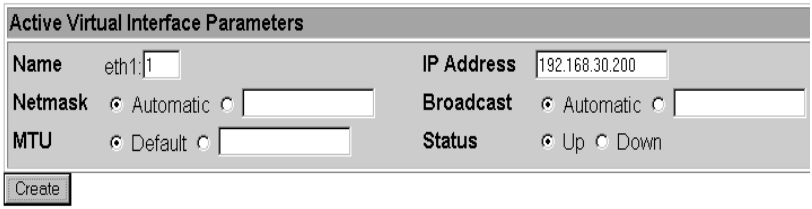


Figure 27. Active Virtual Interface Parameters Screen

5. In the Create Virtual Host screen, for both IP-based and name-based virtual hosts, enter the parameters for your host (described in Table 7); then, click **Create**. The Create User screen appears if the host was successfully created.

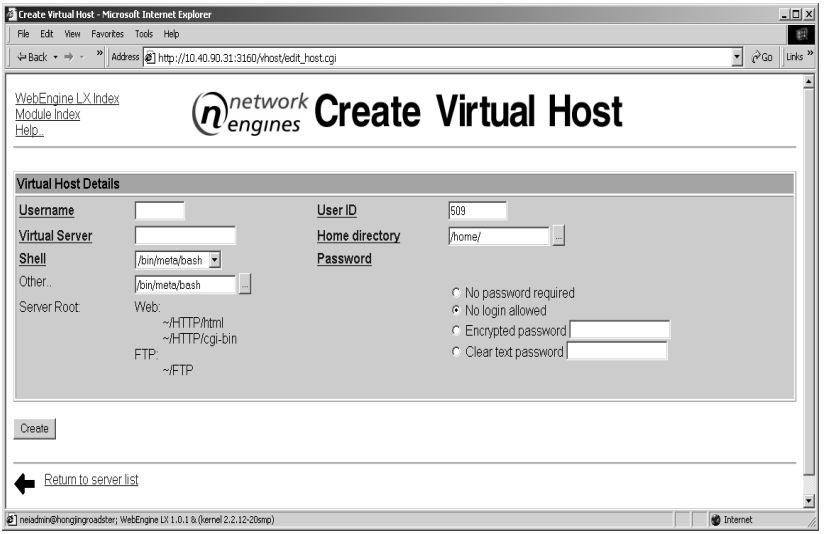


Figure 28. Create Virtual Host Screen

Table 7. Parameter Descriptions

Parameter	Description
Username	Indicates a unique user name. This user name lets you access the virtual FTP server, administer the virtual host through the LX Management Console, and receive e-mail addressed to your virtual host. Any web server scripts run on your virtual host are also executed under this user name.
User ID	The system automatically enters the value.
Virtual Server	The system automatically enters the value if you selected a Virtual Host & NIC; otherwise, enter the new host name or IP address.

Table 7. Parameter Descriptions (*continued*)

Parameter	Description
Home Directory	Indicates the */home/<user>* directory where you place your html, FTP, and cgi_bin files.The system automatically enters this field, based on your user name.
Shell	Indicates the command-line interpreter used when you log in. If you are not providing login privileges, keep the default value.
Password	Indicates the password for this virtual host. The password and user name are used to authenticate access to the host's LX Management Console and FTP. Be sure to use a clear text password (unencrypted) the first time. If you click the field, **No Password required**, you must still enter a password, which is used for FPSE and the LX user (This will prevent Telnet access). This configuration is not recommended.

6. At the Create User screen, click **WebEngine LX Index** to display the LX Management Console.

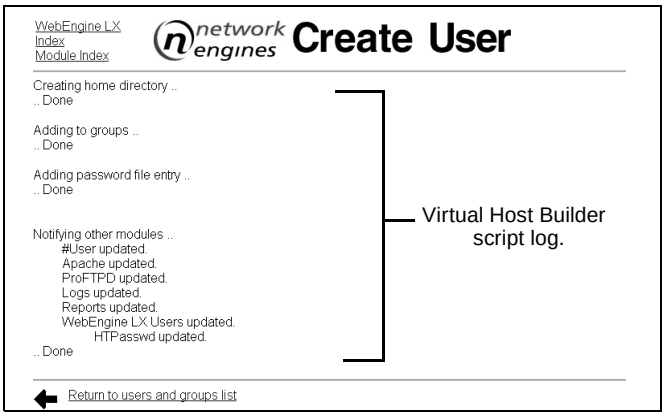


Figure 29. Create User Screen

7. From the LX Management Console, under **Servers**, click **Virtual Host** to view the new host in the Real name column of the Virtual Hosts table.

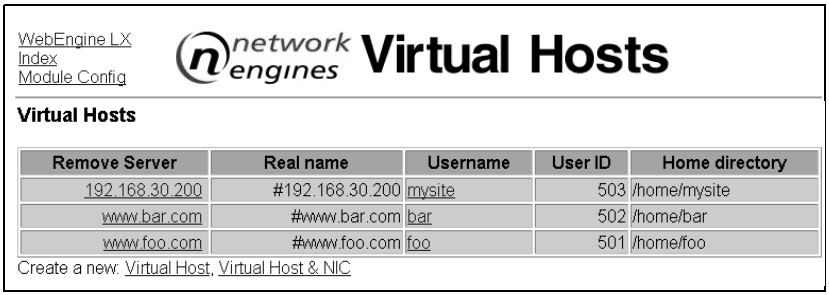


Figure 30. Virtual Hosts Screen

8. If this is an IP-based host, follow the steps in *Restarting the Servers* on page 72; otherwise, follow the steps in the next section.

▼ Changing the Default FTP Port

If you have multiple name-based virtual hosts associated with one IP address, you need to change the default FTP port.

To change the default FTP port:

1. Click **WebEngine LX Index**; then, under **Servers**, click **ProFTPD Server**.
2. In the Simple ProFTPD screen, using the pull-down menu, select the virtual server you just created and click **Edit**.

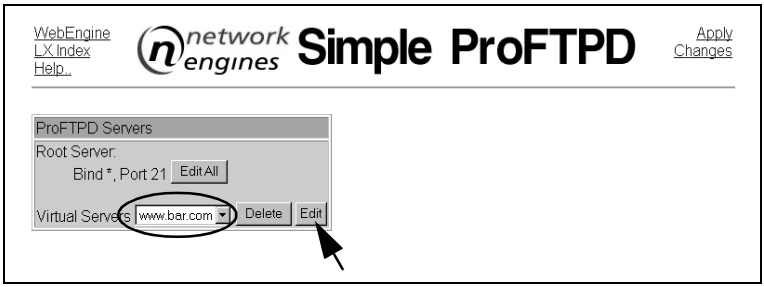


Figure 31. Simple ProFTPD Screen

3. Edit the text file to change the FTP port to an available port on your server, numbered 1024 or higher.

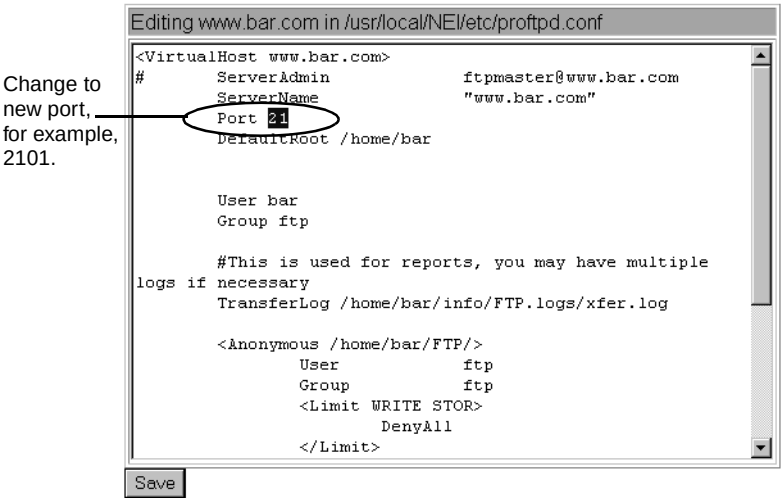


Figure 32. Editing Screen

4. Click **Save**.
5. Click **WebEngine LX Index** to return to the LX Management Console. Follow the steps in the next section, *Restarting the Servers*.

▼ Restarting the Servers

After creating the virtual host, restart the ProFTPD server and the Apache Webserver from the LX Management Console.

Restarting ProFTPD Server

To restart the ProFTPD server:

1. From the LX Management Console, under **Servers**, click **ProFTPD Server**.
2. Click **Apply Changes**.
3. Click **WebEngine LX Index** to display the LX Management Console.

Restarting Apache Webserver

To restart the Apache Webserver:

1. Under Servers, click **Apache Webserver**.

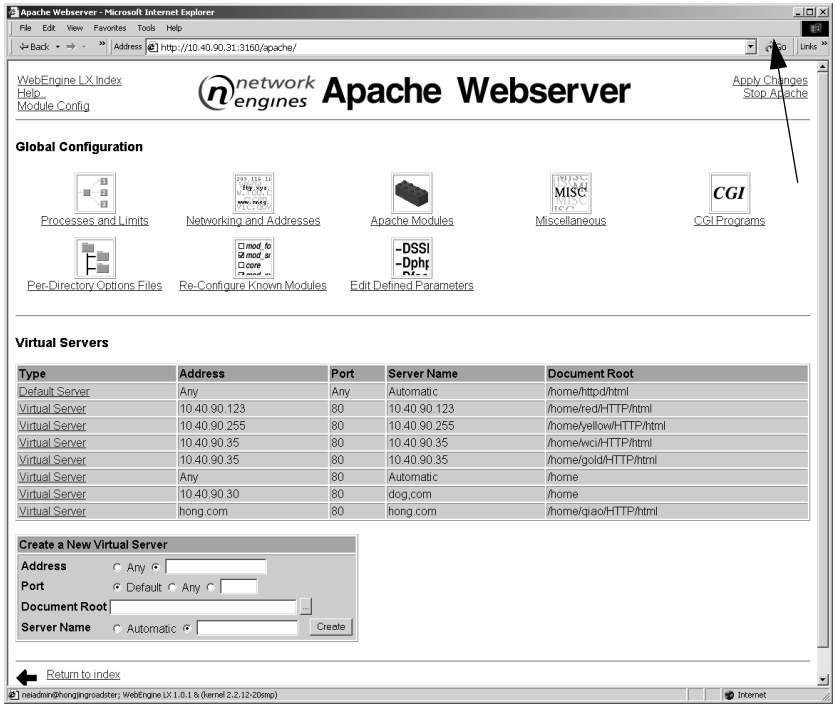


Figure 33. Apache Webserver Screen

2. At the Apache Webserver screen click **Apply Changes**. You may need to widen the browser window to see this item in the upper, right corner of the screen.

3. Click **WebEngine LX Index** to display the LX Management Console.

Updating the DNS Server

If your virtual host is name-based, you must add an entry to the DNS Server for this new host. You may want to add an entry for an IP-based virtual host, though this is optional. You may also want to add a Mail Exchange. Refer to *Creating a Mail Exchange* on page 80.

Additional Information About Virtual Hosts

Review these guidelines when modifying or deleting virtual hosts:

- Always use the **Servers->Virtual Hosts** screen to edit or delete virtual hosts because removing hosts in another manner may prevent services such as web, FTP, and e-mail from working properly. Removing a user who owns a virtual host also removes the host; this procedure is not recommended.
- If the server has FPSE enabled, and you change the UID of a user, you may need to repair FPSE. At the console or through a Telnet session, type the following at the command line:

  $ **chown -R nobody /home/<*user*>/HTTP**

  where */home/<user>/HTTP* is the top of the virtual host document tree.
- If you move the user's home, you must create a symbolic link from the original location to its new location. At the command line, type:

  $ **ln -s new_location /home/<*user*>**
- Do not change the address of the virtual server located in the Virtual Server Configuration screen (Apache Webserver->Virtual Server Options->Server Configuration->Virtual Server Configuration) or the address of the virtual server with ProFTPD.
- NEIProto is used for virtual host creation. Do not delete, copy, or clone NEIProto.

Deleting a Virtual Host

You can delete a virtual host. When you delete a host, if you do *not* remove the user's directory, the portion of the server configuration files associated with this host is saved to the home directory. This occurs for possible restoration later.

To delete a virtual host:

1. At the LX Management Console, under **Servers**, select **Virtual Host**.
2. Click the host that you want to delete in the **Remove Server** column of the Virtual Hosts screen (Figure 34 on page 75).

3. The Delete Virtual Host screen, shown in Figure 34, lists the selected host and its associated files that will be deleted. Click **Delete**.

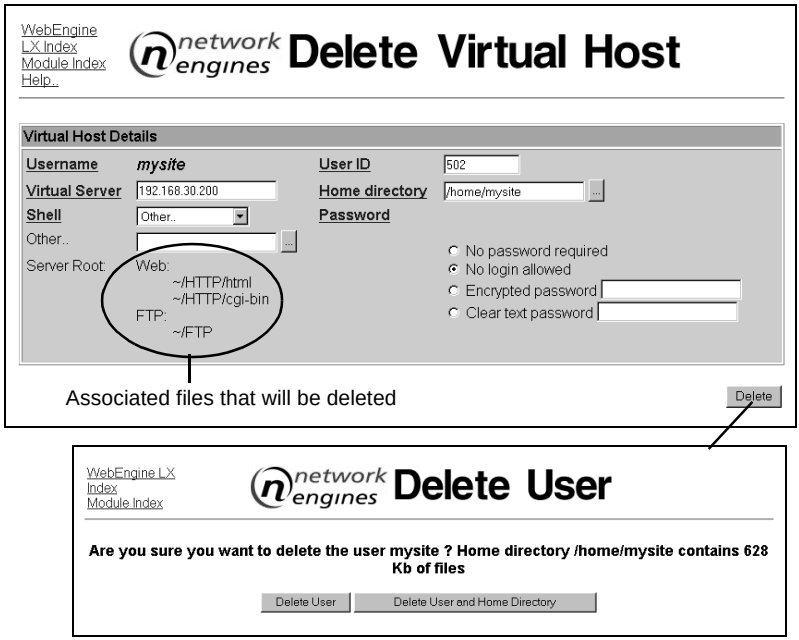


Figure 34. Delete Virtual Host Screen

If a dialog box appears, follow the instructions and then return to Step 3.

4. Click one of the following:
   - Delete User - Deletes the user, but leaves the associated files intact.

     This is recommended because service configuration files associated with the host are saved to the user's directory and can be restored if necessary.
   - Delete User and Home Directory - Deletes the user and associated configuration files.

CHAPTER 9

Virtual Server Creation

This chapter describes how to create individual virtual servers. Virtual hosts automatically create virtual servers. You can create:

- A virtual Apache Server
- A virtual FTP Server
- A Mail Exchange

Creating a Virtual Apache Server

To create a virtual Apache server:

1. From the LX Management Console, under **Servers**, click **Apache Webserver**.

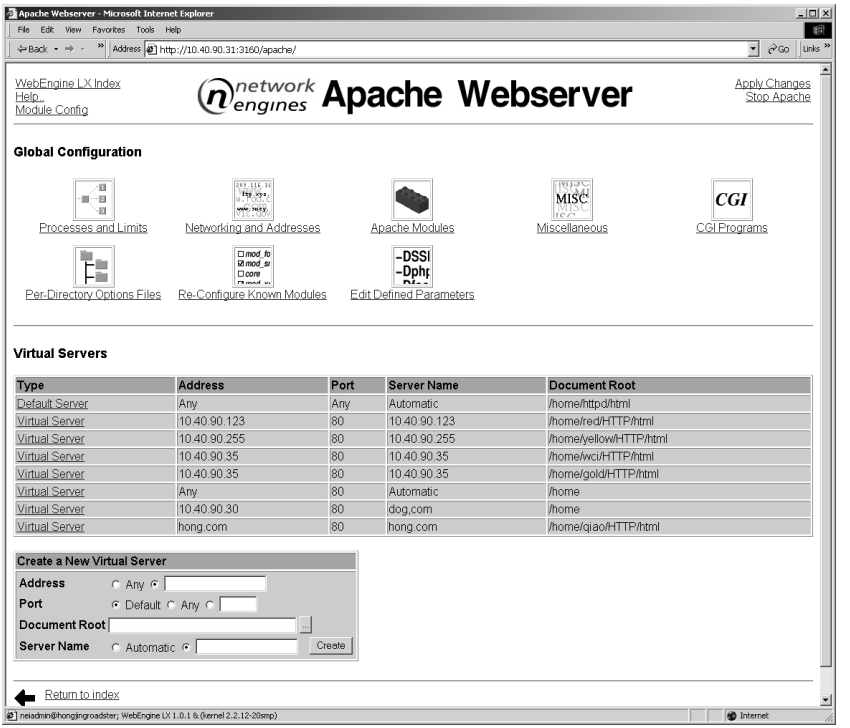


Figure 35. Apache Webserver Screen

2. From the Apache Webserver screen, enter the following:
   - Address - IP address of the server or the server name
   - Port number - Port number of the server; default is 80
   - Document Root - Directory of information that you want viewed on the server.
     To browse for a directory, click the ellipsis (...) button. After selecting a directory, click **OK**.

- Server name

  If you select Automatic, the system automatically enters the information from the Address field.

3. Click **Create**.

   The virtual server information appears in the Virtual Server section of the screen.

Creating a Virtual FTP Server

To create a virtual FTP server:

1. From the LX Management Console, under **Servers**, click **ProFTPD Server**.

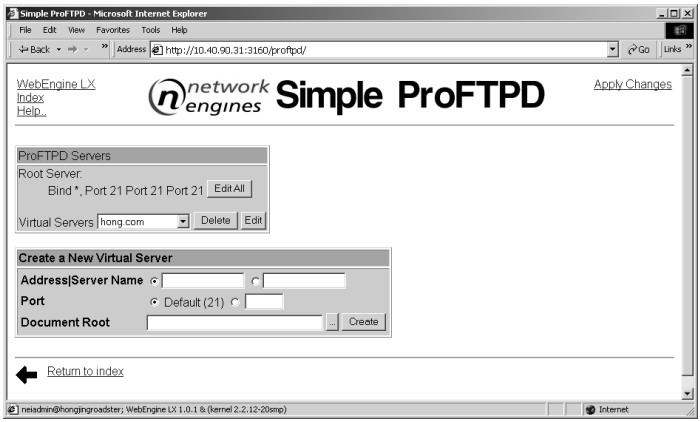


Figure 36. Simple ProFTPD Screen

2. At the Simple ProFTPD screen, complete the following information in the Create a New Virtual Server section:
   - Address or server name
   - Port number
   - Document Root - Directory of information that you want viewed on the server.

     To browse for a directory, click the ellipsis (...) button. After selecting a directory, click **OK**.
3. Click **Create**.

Creating a Mail Exchange

To create a Mail Exchange:

1. At the LX Management Console, under **Servers**, click **Sendmail**.

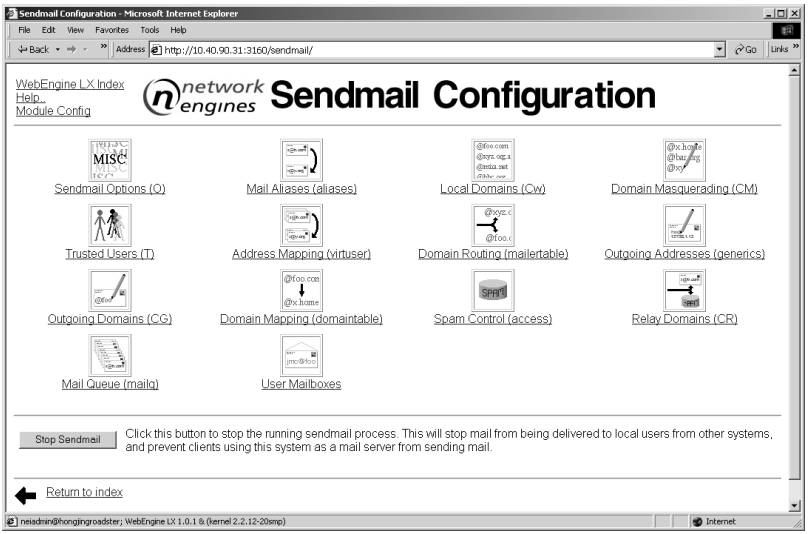


Figure 37. Sendmail Configuration

2. At the Sendmail Configuration screen, click **Local Domains.**
3. At the Local Domains screen, add a domain, and click **Save**.
4. Restart Sendmail.

CHAPTER 10

Access Rights and Resource Limits

This chapter describes the configuration of user access rights and resource limits for virtual hosts and LX user accounts. It includes information to:

- Configure access rights for virtual hosts and their users
- Create new LX user accounts and modify access rights
- Set per-directory access options for LX user accounts
- Set Linux user account access to support collaborative publishing applications, for example, WebDAV and Microsoft Front Page
- Set limits for disk usage, memory, jobs, and files for Linux user accounts

Access Levels for Users

This table describes the three user types and their access rights. For each user created, a Linux user account and an LX user account are created.

LX Appliance Administrator	• Has full access to the LX appliance and the LX Management Console • Configures and maintains the LX appliance • Creates virtual hosts for site administrators • Sets up access limits for virtual hosts and site users • Grants disk resources to virtual hosts • Views reports for the LX Management Console and virtual hosts • Provides services for the site administrators and site users • Restricts access or limits LX Management Console's administrative tasks to site administrators • Creates a custom configuration from which all subsequent virtual hosts can clone their access rights • Sets user access rights per host or per directory
Site Administrator	• Has limited access to the LX Management Console to manage one or more virtual hosts • Publishes web content on the site • Provides FTP and e-mail services to their site users • Sets up user accounts and access limits for site users • Maintains mailing lists • Views reports about the host's web usage • Has Telnet access
Site User	• Has no access to the LX Management Console • Sends and receives e-mail through the host • Publishes web pages • Uploads and downloads files using FTP

NEIProto

Default options for access rights for all LX user accounts' are initially configured from the user named NEIProto, a special user created for the Virtual Host Builder script—every new virtual host clones its access options from those set in NEIProto.

Do *not* delete NEIProto, and use caution when modifying its configuration.

By default, NEIProto provides your virtual hosts access to these LX Management Console menu items:

- HTPasswd
- Linux User Manager
- Apache Webserver
- Logs
- Reports
- MIME Types
- WebEngine LX Users

If you modify NEIProto, LX users created by subsequent virtual hosts have these modifications. Any host or user, created before NEIProto was modified, retain the original access rights.

▼ Allocating Access Rights for New Users

To modify the default NEIProto configuration to extend or limit access options for all subsequent hosts and their users that you create:

1. From the LX Management Console, under **Users,** select **WebEngine LX Users**.

2. Under NEIProto, click the module for which you want to modify access rights. This example shows Apache Webserver.

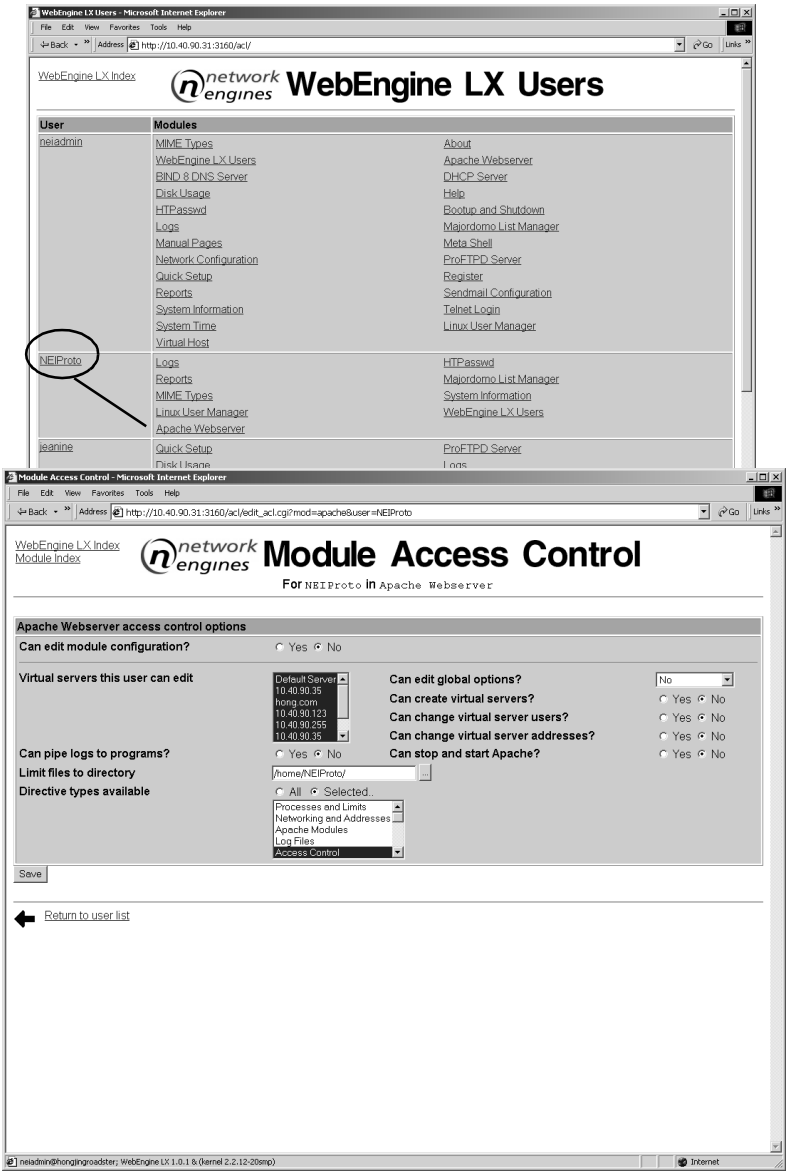


Figure 38. Modifying Apache Webserver

3. Modify the information for Apache Webserver to extend or limit the access rights for new users.
4. Click **Save** to apply the changes to NEIProto. All subsequent new hosts and their users clone these new settings.

▼ Modifying Access Rights for Existing Users

To modify the access options for an existing LX user account whose current access rights were cloned from NEIProto:

1. From the LX Management Console, under **Users**, select **WebEngine LX Users**.
2. In the User column, click on an existing user in the WebEngine LX User table.
3. From the WebEngine LX user access rights, check or uncheck boxes to extend or limit user access.

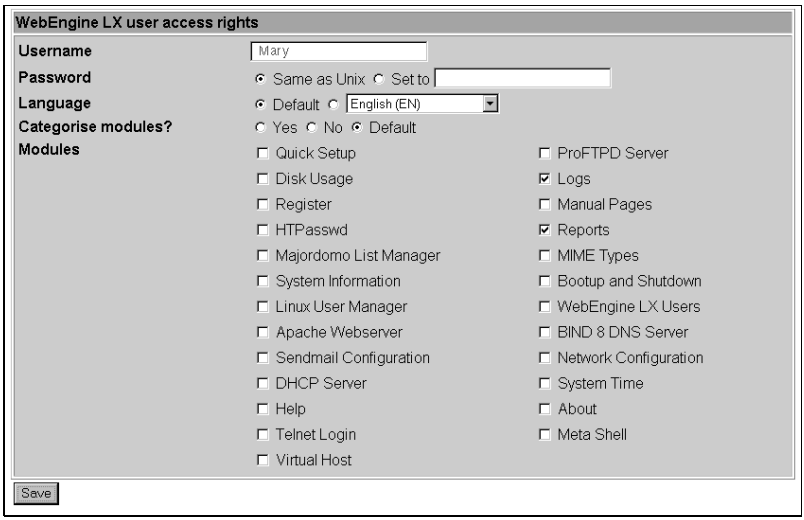


Figure 39. User Access Rights Screen

4. Click **Save** to store the new settings.

▼ Creating New LX User Accounts

Site administrators can create new LX user accounts and configure the account access rights. These are user accounts *other* than those created through the Virtual Host Builder script.

To add a new LX user account:

1. From the LX Management Console, under **Users**, click **WebEngine LX Users**.
2. In the User column, click **NEIProto** to display the default WebEngine LX user access rights screen.
3. Click **Clone** to clone the default access rights of NEIProto for the new user.
4. In the next screen, enter the new user name and check or uncheck boxes to extend or further limit access for this user.
5. Click **Save** to store the settings.

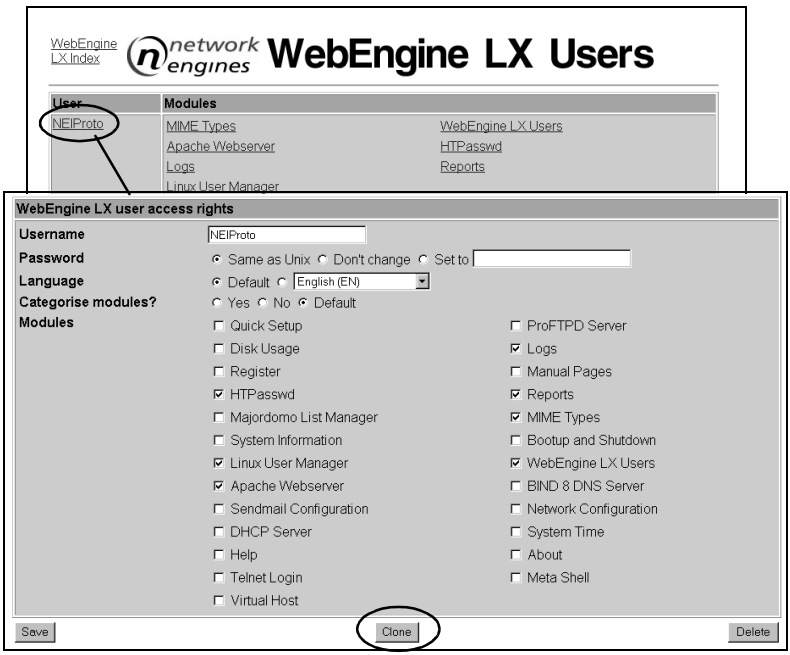


Figure 40. New Users Screen

Per-directory Access Options

LX appliance administrators can set global parameters for the Apache Webserver. Site administrators can set access rights for LX user accounts on an individual directory basis.

For more information, refer to the **Help** link in the top left corner of the Apache Webserver main screen. This Apache document is also available at **http://www.apache.org/docs/**.

▼ Setting Per-directory Access Options

To set per-directory access options:

1. From the LX Management Console, under **Servers**, click **Apache Webserver**.
2. From the Apache WebServer screen, select a virtual server.

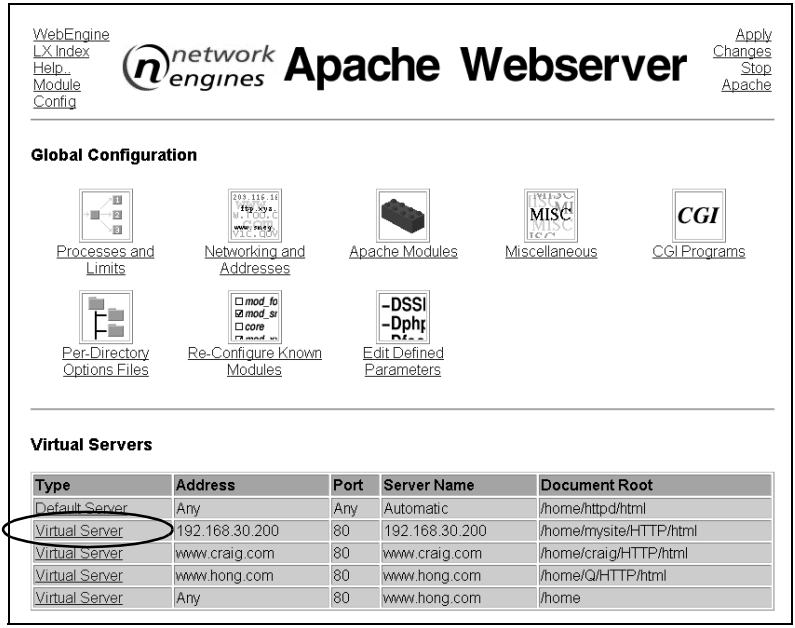


Figure 41. Apache Webserver Screen

3. In the Virtual Server Options screen, under Per-Directory Options Files, click on a directory for which you want to set access rights.

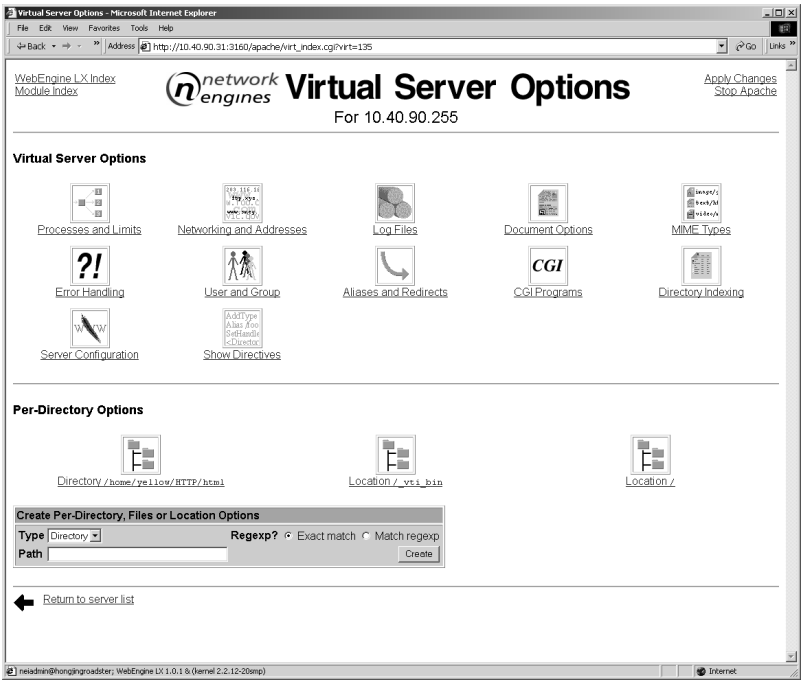


Figure 42. Virtual Server Options

4. From the Per-Directory Options Files screen, click **Access Control**.

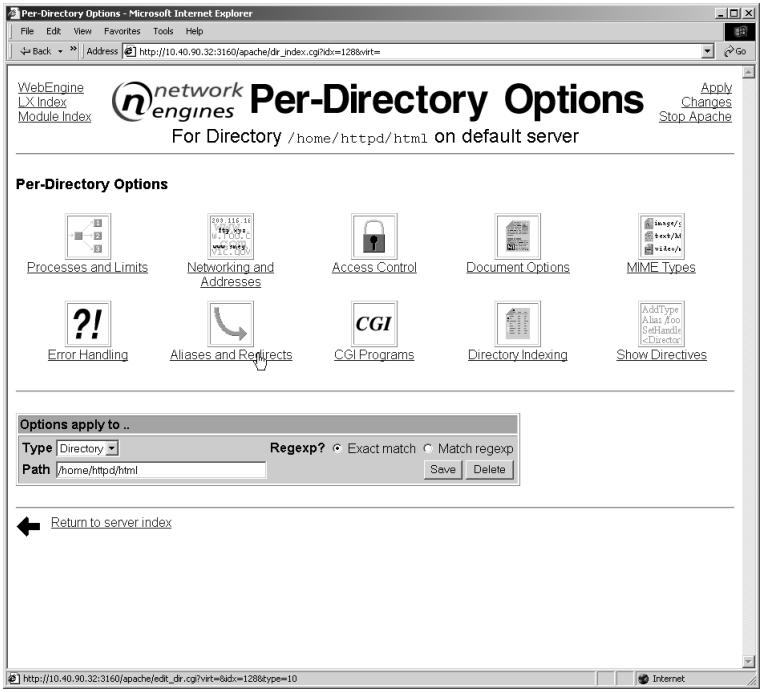


Figure 43. Per-Directory Options Screen

5. At the Access Control screen, enter the appropriate information. To restrict access to several users, separate the entries by commas, for example, user1,user2,user3 and so on.

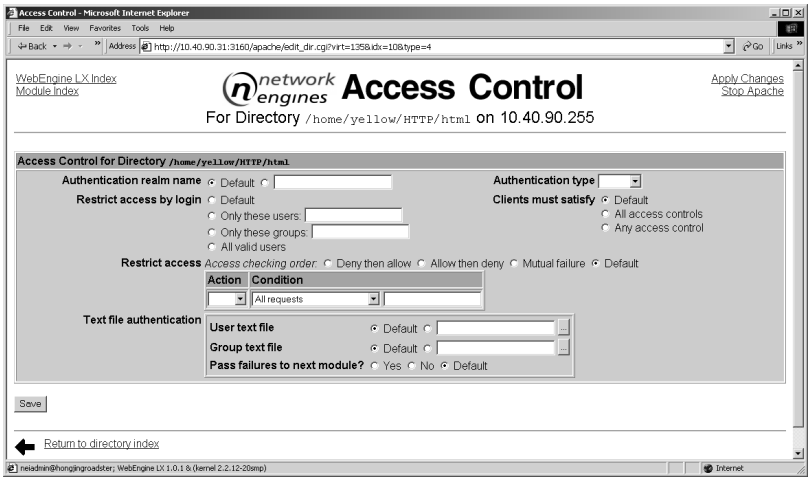


Figure 44. Access Control Screen

6. Click **Save**.

Password Databases

Site administrators can create flat file password databases for the web server, thus allowing collaborative publishing over the web through WebDAV-based applications and Microsoft Front Page. Users who log into the virtual host have access through the WebDAV application or Front Page Server Extensions only; they do not have access to the LX Management Console.

Two default password databases are stored in the */etc/passwd* directory:

- WebDAV.htpasswd - Controls access to WebDAV's ability to use extended HTTP verbs and the ability to remotely manage content
- fpage.htpasswd - Controls access to Microsoft Front Page Server Extensions

The hosts created with the Virtual Host Builder script contain a single entry with the user name and password given at user creation; the databases for root are blank.

▼ Creating Password Databases

To add a user to the password database:

1. From the LX Management Console, under **Users,** click **HTPasswd**.

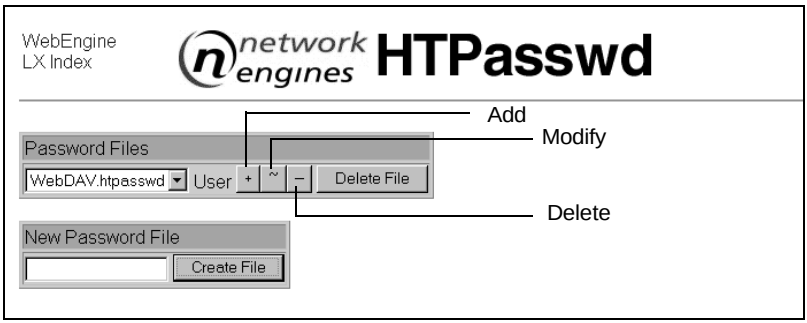
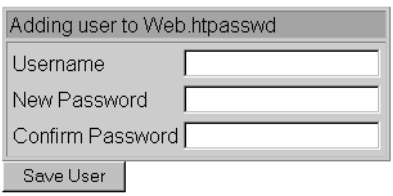


Figure 45. HTPasswd Screen

2. From the pull-down menu, select one of the password files.
3. Click the + (add) button, and enter a new user name and password.



4. Click **Save User**.

▼ Changing a Password

You are not be able to see the passwords when you change them; you can only overwrite them.

To change a user's password:

1. Click the ~ (tilde) button in the HTPasswd screen (Figure 45).
2. Enter the new password and click **Save Password**.

Resource Limits for WebEngine LX Users

You can set resource limits for the corresponding Linux user accounts. The Linux user account has shell access to the LX appliance through Telnet. You can set limits for disk usage, memory allocation, jobs, and file size. These limits only restrict resources for a user's login shell; they do not apply to the Apache Webserver.

▼ Setting Resource Limits

To set resource limits for an LX user's login shell:

1. From the LX Management Console, under **System,** click **Meta Shell**.
2. From the Metal Shell screen, click **Limits**.

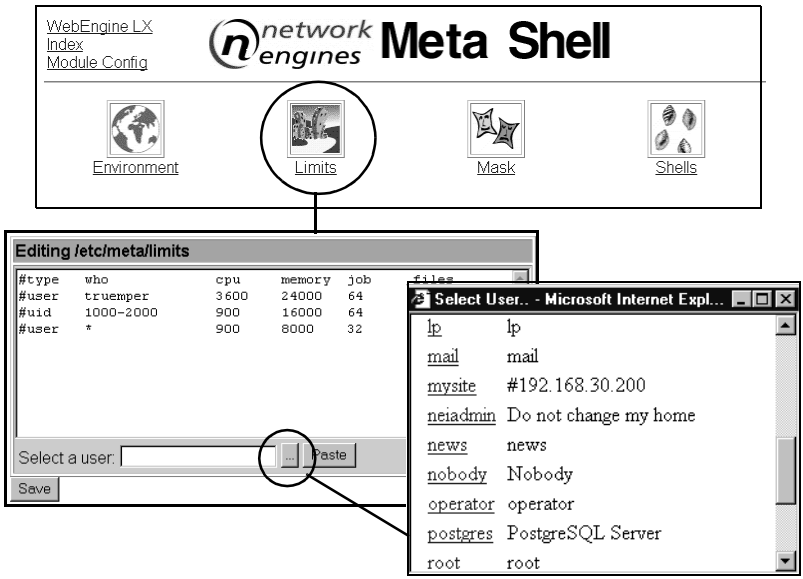


Figure 46. Meta Shell Screen

3. Click the**...** (ellipsis) button in the Editing Screen. From the Select User window, click the user for which you want to set the limits.
4. Select **Paste** to paste the user into the file.

CHAPTER 11

System Parameters

This chapter describes how to configure LX appliance system parameters. It includes procedures to:

- Create, edit, and delete bootup and shutdown initialization scripts
- Create and edit MIME types
- Set limits on system resources
- List currently active network interfaces
- Configure other network parameters
- Set hardware and system time
- Configure the time server

Initialization Scripts

You can control system initialization scripts for bootup and shutdown. You can create new initialization scripts, and edit or delete existing scripts. Only advanced LX appliance administrators should perform these tasks.

Creating a New Initialization Script

To create a new initialization script:

1. From the WebEngine LX main page, under **System**, click **Bootup and Shutdown**.

   The Bootup and Shutdown page (Figure 47) lists all of the initialization scripts currently defined and stored in the */etc/rc.d / init.d* directory. The list includes the special */etc/rc.d /rc.local* script that you can customize, and is executed after all the other initialization scripts run.

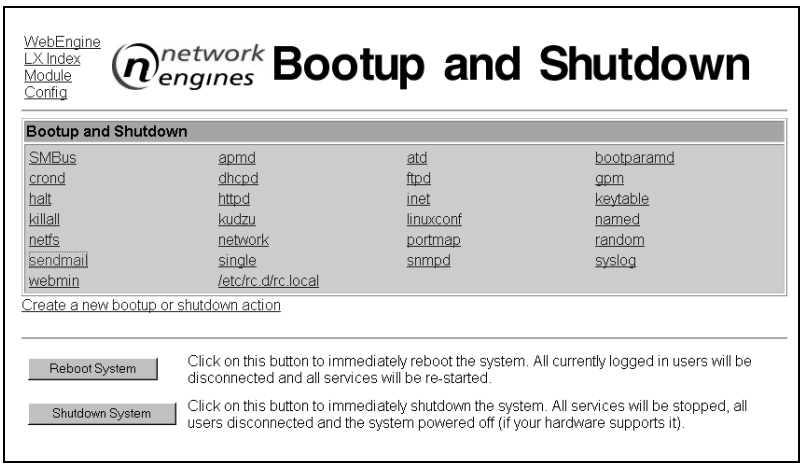


Figure 47. Bootup and Shutdown Screen

2. At the Bootup and Shutdown screen, click **Create a new bootup or shutdown action**.
3. At the Create Action screen, enter the information for a script.
4. Set the run levels at which the new script starts and stops.

Generally, bootup actions are started in run levels 3, 4, and 5, and are stopped in run levels 0, 1, 2, and 6.

5. Click **Create**.

Editing an Existing Initialization Script

1. From the LX Management Console, under **System**, click **Bootup and Shutdown**.
2. Click on an existing script in the Bootup and Shutdown table. The Edit Action screen appears.

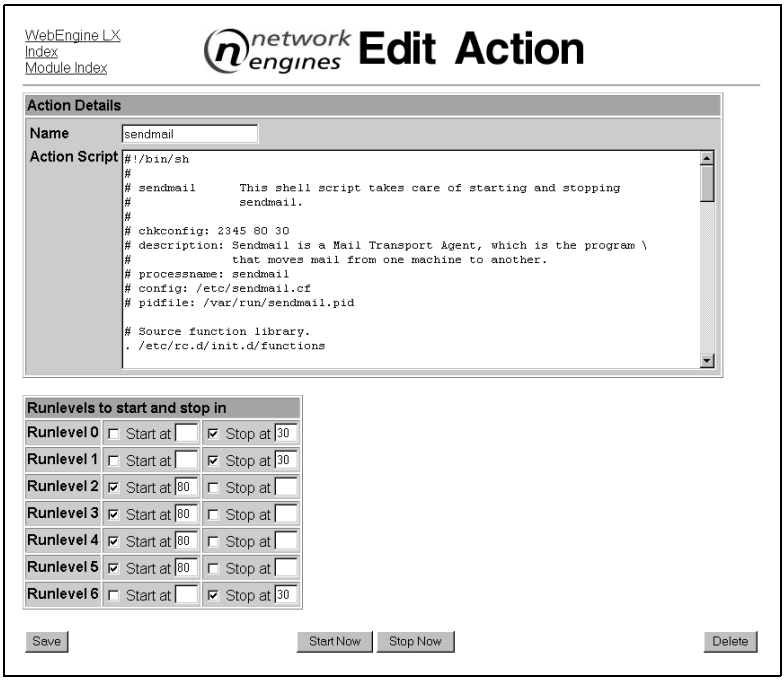


Figure 48. Edit Action Screen

3. Edit the script in the Action Script field, and modify the run levels, if necessary.
4. Click **Save**.

Deleting an Initialization Script

1. From the LX Management Console, under **System**, click **Bootup and Shutdown**.
2. Click on an existing script in the Bootup and Shutdown table.
3. Click **Delete** in the Edit Action table.

MIME Types

Sometimes, the server must provide a document whose type cannot be determined by its MIME types mappings. The server must inform the client of the content-type of the document. In the event of an unknown type, it uses the type specified in the default MIME types file.

You can create a new MIME type, edit an existing MIME type file, or specify the location of a different default MIME type file.

▼ Creating a New MIME Type File

To configure a new MIME type file:

1. From the LX Management Console, under **System**, click **MIME Types**.

   A list of the top-level MIME types and their associated subtypes appears in the table on the MIME main screen (Figure 49).

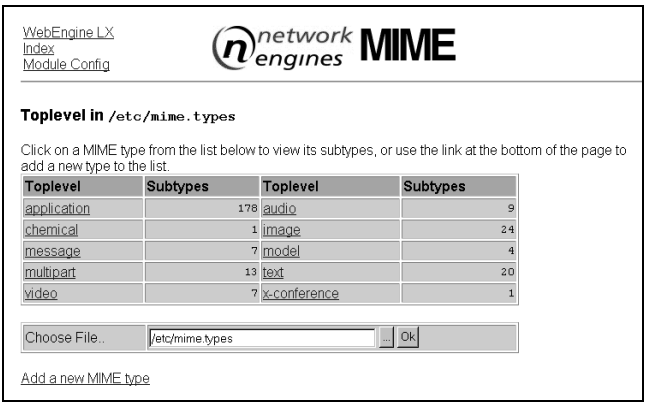


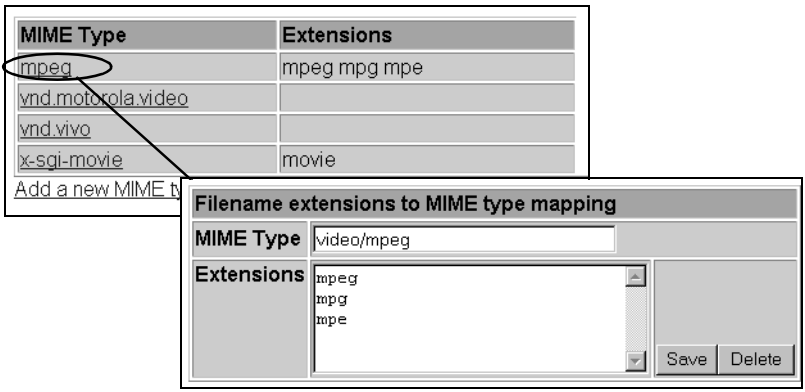
Figure 49. MIME Screen

2. Click **Add a new MIME type**.
3. Enter the name of the new MIME type and its extensions.
4. Click **Save**.

You cannot delete a top-level MIME type in the Apache Webserver. If you misspell a name, create a new MIME type with the correct spelling.

Editing an Existing MIME Type File

1. From the LX Management Console, under **System**, click **MIME Types**.
2. Click a top-level MIME type file from the table.
3. Click on the subtype you want to edit in the MIME Type column.
4. Edit the filename extensions for the selected subtype.



5. Click **Save**.

Deleting a MIME Type File

There is no delete button in the Apache MIME screen. If you misspell a MIME type, create a new MIME type with the correct spelling.

Changing the Default MIME Type File

To change the default MIME type file:

1. From the LX Management Console, under **System**, click **MIME Types**.
2. To choose a new default MIME file, click the **...** (ellipsis) button; then, click **OK**.

Setting Limits on System Resources

You can set up limits on system resources through metash, a wrapper program that can be used to enforce the configured limits. These limits only apply to command-line shells, for example, telnet or rlogin.

To configure limits on system resources:

1. From the LX Management Console, under **System**, click **Meta Shell**.

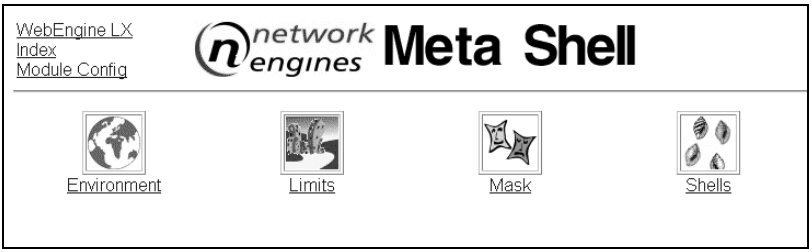


Figure 50. Meta Shell Screen

2. At the Meta Shell screen, click **Limits**. The Editing screen appears.

   The default shell for WebEngine LX is */bin/metash*.

   For more information, refer to the metash man page, or see any of the metash web sites.

Network Configuration

Only advanced LX appliance administrators should perform these basic networking connectivity tasks through the Ethernet interfaces:

- Creating a network interface
- Editing an existing network interface
- Configuring routing and gateways to route traffic beyond the IP subnet
- Configuring DNS Client options
- Configuring host addresses, which includes local IP/host definitions for this device only

---

If you are connected to a LAN that uses DHCP, these networking tasks are automatically provided by the DHCP server.

▼ Creating a Network Interface

To create a network interface:

1. From the LX Management Console, under **System**, click **Network Configuration**.

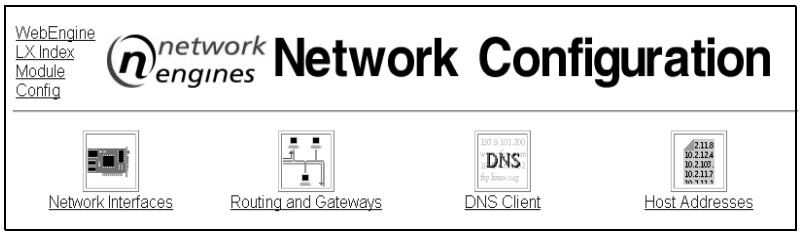


Figure 51. Network Configuration Screen

2. At the Network Configuration screen, click **Network Interfaces**.

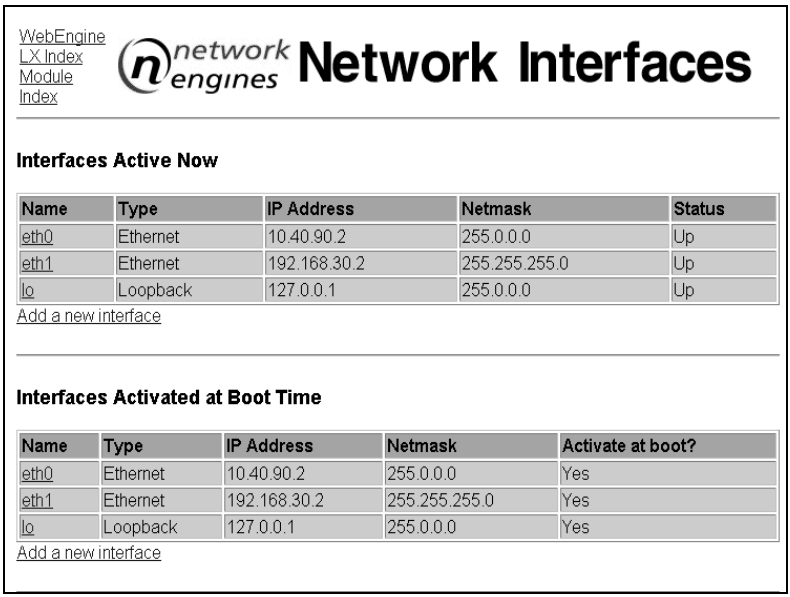


Figure 52. Network Interfaces Screen

The Network Interfaces screen lists all the interfaces that are currently active (non-persistent) and the interfaces that are permanent (persistent) at boot time.

The names eth0 and eth1 are the names of the two physical Ethernet interfaces on the LX appliance. The interface lo is the loopback interface; do *not* delete it.

Do *not* create virtual hosts through this module; use the Virtual Host Builder procedure described in Chapter 8, *Virtual Hosts*.

---

3. Click **Add a new interface**.

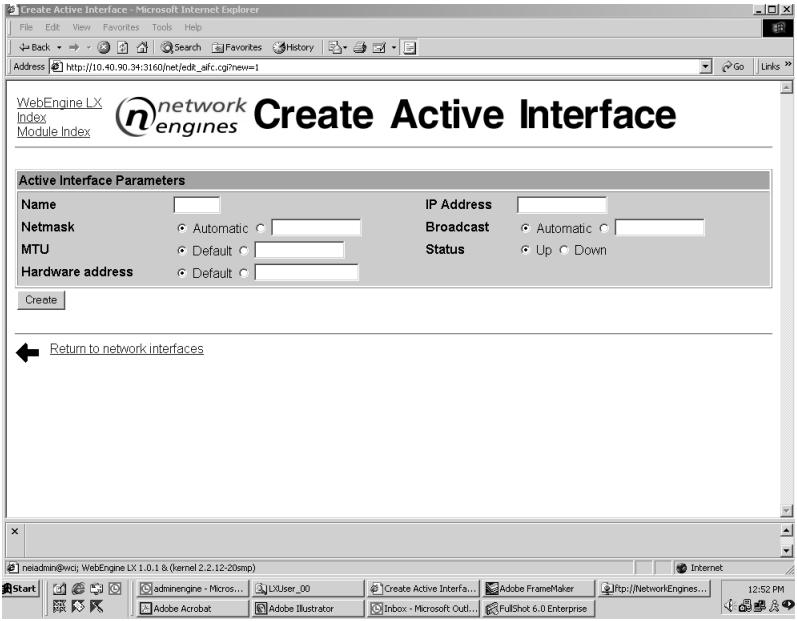


Figure 53. Create Active Interface Screen

4. Enter values to configure an interface in the Create Active Interface screen.

Name	Specifies the name of the port
Netmask	Specifies the subnet mask of the port in dotted decimal notation
Maximum Transmission Unit (MTU)	Specifies the largest size packet, in octets (eight-bit bytes), that can be transmitted
Hardware Address	Specifies the MAC address of the port
IP Address	Specifies the IP address of the port in dotted decimal notation
Broadcast	Specifies whether the port sends broadcast messages
Status	Specifies whether the port is up or down

▼ Editing a Network Interfaces

To edit a network interface:

1. From the LX Management Console, under **System**, click **Network Configuration**.
2. At the Network Interfaces screen, click the interface name that you want to edit. Depending on the interface selected, the Edit Active Interface screen or the Edit Bootup Interface screen appears.
3. Edit the parameters; then, click **Save**.

System Time

You can set the system clock, managed by the kernel, and the hardware clock—the realtime clock (RTC) internal to the chip set. The RTC for the LX appliance is set to Universal Time Code (UTC) by default.

▼ Setting System and Hardware Time

To set the system and hardware time:

1. From the LX Management Console, under **System**, click **System Time.**

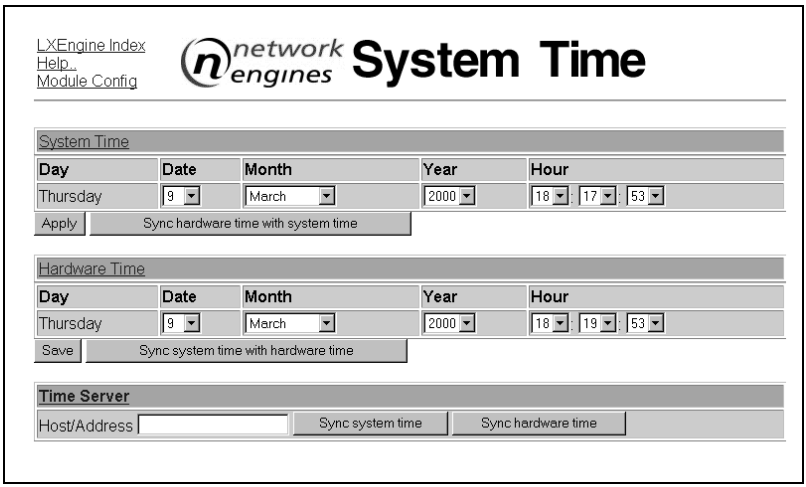


Figure 54. System Time Screen

2. Click **Sync hardware time with system time** to synchronize the hardware clock to the current system time.
3. Click **Sync system time with hardware time** to synchronize the system time with the hardware clock time.

▼ Adding a Time Server

To add a time server and synchronize it with system or hardware time:

1. From the LX Management Console, under **System**, click **System Time.**
2. At the System Time screen, enter the IP address of the time server.
3. Click **Sync system time** if you want to synchronize the time server with the system time.
4. Click **Sync hardware time** if you want to synchronize the time server with the hardware time.

CHAPTER 12

Logs and Reports

This chapter describes how LX appliance administrators and site administrators can monitor LX appliances. It includes information on:

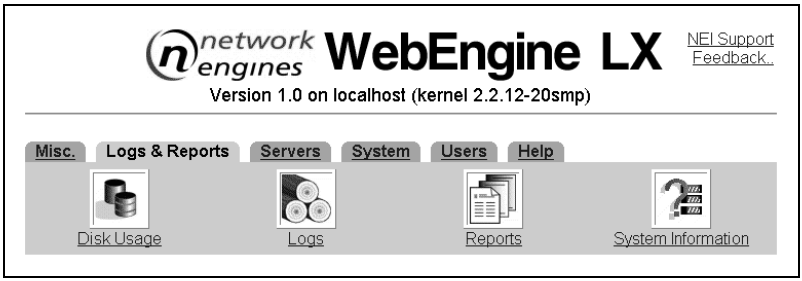
- Monitoring disk usage
- Configuring and displaying logs for web, FTP, and LX appliance activity
- Displaying detailed graphical reports generated from log output
- Displaying information on system usage and activity

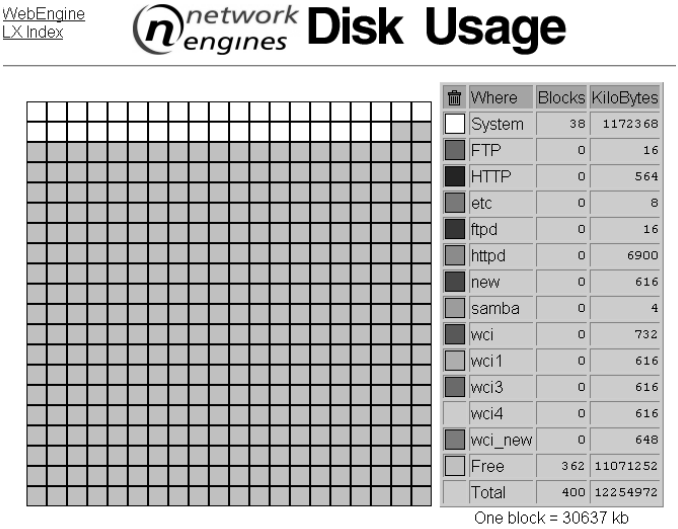
Monitoring Disk Usage

You can obtain a real-time summary of the total disk space used by system files, virtual hosts, and site users, the amount of remaining free disk space, and the total size of the disk.

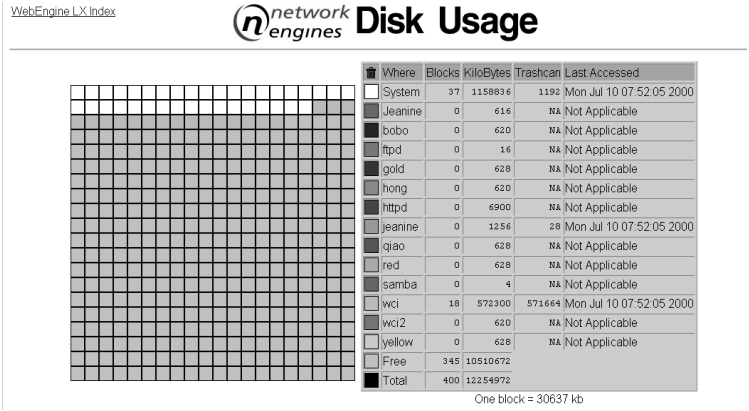
To monitor disk usage:

1. From the LX Management Console, under **Logs and Reports,** click **Disk Usage**.





2. Click the trashcan in the upper left-hand corner of the table to display more information about users' trashcans. The space used by a user's trashcan is included in the user's overall disk usage.



Logs

Logs are raw usage data files created by various processes. An LX appliance keeps several special logs in the */var/NEI/* directory. Logs are created for virtual hosts in the */var/NEI/<user>/* directory and for root, Apache, and ProFTPD servers in the */var/NEI/root* directory.

Log types include:

- FTP - Lists all FTP activity
- HTTP access - Lists all web activity (Apache)
- HTTP error - Lists all web error codes
- WebEngine LX access - Lists information about LX Management Console site usage

▼ Log Rotation

When a log is rotated, the system compresses the current log and renames it; then, it opens a new log. It also removes expired, archived logs.This process allows you to keep a current history of your logs at regular intervals. By default, the system keeps seven archived logs.

The logrotate.NEI program, located in the */etc/cron.weekly* directory, rotates logs. This means that the logs are rotated weekly—every Sunday morning. You can move this file to another directory, for example, */etc/cron.monthly* for monthly log rotation.

You can modify the number of archived logs by editing logrotate.NEI and adding a second line to */usr/local/NEI/sbin/logrotate -a:*

-o=n option

where n is the number of archived logs you want to keep.

A log for access to the LX Management Console is stored in the */var/NEI/.LX* directory. This is rotated by the */etc/logrotate.d/LX* program. By default, it is rotated weekly and the system keeps four archived logs. For more information, see the man page for logrotate(8).

At the time of rotation, reports are generated. Reports are processed logs containing historical data in a graphical format. Refer to *Reports* on page 115 for more information.

▼ Displaying Logs

You can display web server logs generated from FTP and web activity.

To display a log:

1. From the LX Management Console, under **Logs & Reports**, click **Logs**.

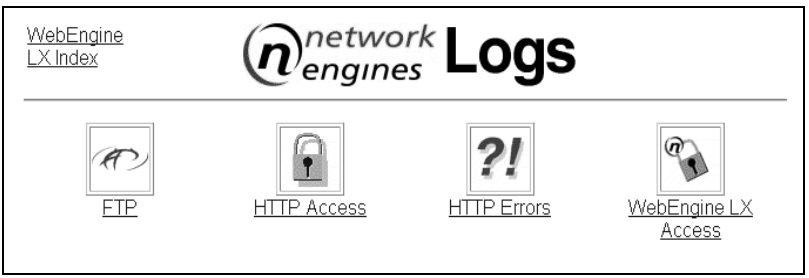
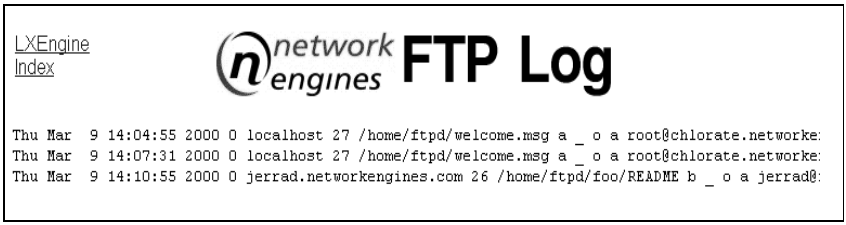
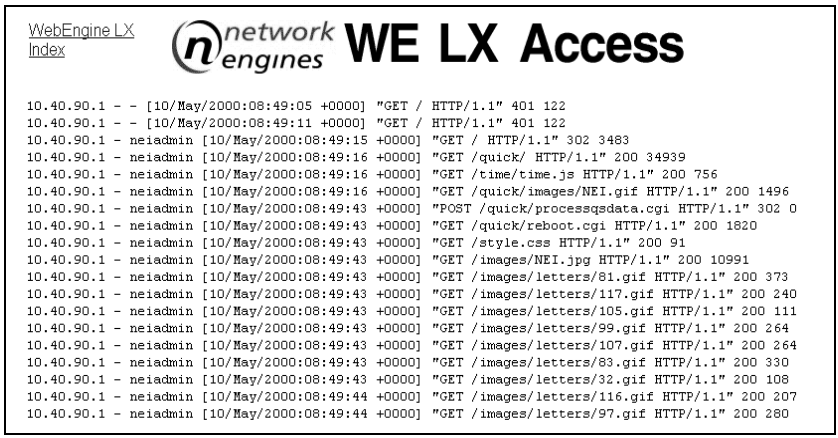


Figure 55. Logs Screen

2. Click **FTP** to display FTP server logs that are displayed in "wu-ftpd style" transfer log format.



3. Click **WebEngine LX Access** to display the access log, using the Common Log format.



HTTP access logs and HTTP error logs also use the Common Log format.

▼ Common Log Format

The Common Log Format contains a separate line for each request. A line is composed of several tokens, separated by spaces.

```
host ident authuser date request status bytes
```

If a token does not have a value, then it is represented by a hyphen (-). The tokens are described below:

host—The fully qualified domain name of the client or its IP number, if the name is not available.

ident—If IdentityCheck is enabled and the client machine runs ident, this is the identity information reported by the client.

authuser—If the request was for a password-protected document, this is the userid used in the request.

date—The date and time for the request in the following format:
date = [day/month/year:hour:minute:second zone]
day = 2-digit
month = 3-letter
year = 4-digit
hour = 2-digit
minute = 2-digit
second = 2-digit
zone= ('+' | '-') 4-digit

request—The request line from the client, enclosed in double quotation marks (").

status—The three-digit status code returned to the client.

bytes—The number of bytes in the object, not including any headers, returned to the client.

▼ The since Command

With the Linux since command, you can monitor log files. The since command displays the contents of the log since the last viewing (*<filename>.since*). The since command displays only the data that has been added since the last time the command was used. If you have not used the since command, the entire file is displayed. For more information, see the man page for since(1).

▼ Security Warning

Do *not* give users write-access to the directory where logs are stored. If a user can write to the directory where Apache writes a log file, that user can have Apache act as the UID that the server is logging as, on the user's behalf. Then, the user could have Apache replace the log file with

a link to a critical file, thus causing Apache to overwrite a file that the user could not normally access.

For example, the root server that runs as nobody logs into the */var/NEI/root* directory. This directory is mode 755 and owned by root:root by default. If the mode were 775 and owned by root:group, then a user in the group could replace a log file with a link to */etc/passwd*, which would cause Apache to overwrite the login file, thus preventing logins.

The directories created by Virtual Host are owned by the user. Apache writes to them as that user. Therefore, the environment is secure unless you log to those directories as a more privileged user.

For online information:

FTP Logs:
LX Management Console: Servers->ProFTPD Server->Help
Sections: LogFormat and ExtendLog

Web Logs:
http://apache.org/docs/mod/mod_log_config.html
Section: logformat

http://apache.org/docs/mod/mod_log_config.html
Sections: customlog and Apache Webserver

Reports

Reports are graphical presentations of statistical analysis on logs that include historical data.

You can display reports that show the historical data in easy-to-read graphs and charts. Reports are generated when the logs are rotated (Sundays, by default), If you change the log rotation frequency, the reports reflect the change. You can display these reports:

- FTP
- HTTP
- WebEngine LX

For a new installation, the LX Management Console displays a sample report for the first week until a real report is generated.

▼ Displaying FTP Reports

To display an FTP report:

1. From the LX Management Console, under **Reports**, click **FTP**.

Figure 56. Reports Screen

2. At the FTP Report screen, click the user for which you want a report. A report is displayed in the format of the WebEngine LX report shown in Figure 57 and Figure 58.

▼ Displaying HTTP Reports

To display an HTTP report:

1. From the LX Management Console, under **Reports**, click **HTTP**.
2. At the HTTP Report screen, click the user for which you want a report. A report is displayed in the format of the WebEngine LX report shown in Figure 57 and Figure 58.

▼ Displaying WebEngine LX Reports

To display a WebEngine LX report, from the LX Management Console, under **Reports**, click **WebEngine LX**. A report is displayed as shown in Figure 57 and Figure 58.

The top graph displays a monthly usage summary for the selected server. The lower chart displays a summary of daily averages and monthly totals and the accumulated statistics for the year.

When you click on a month in the monthly usage summary, the report displays an expanded summary of hourly, daily, monthly statistics and hits by response codes.

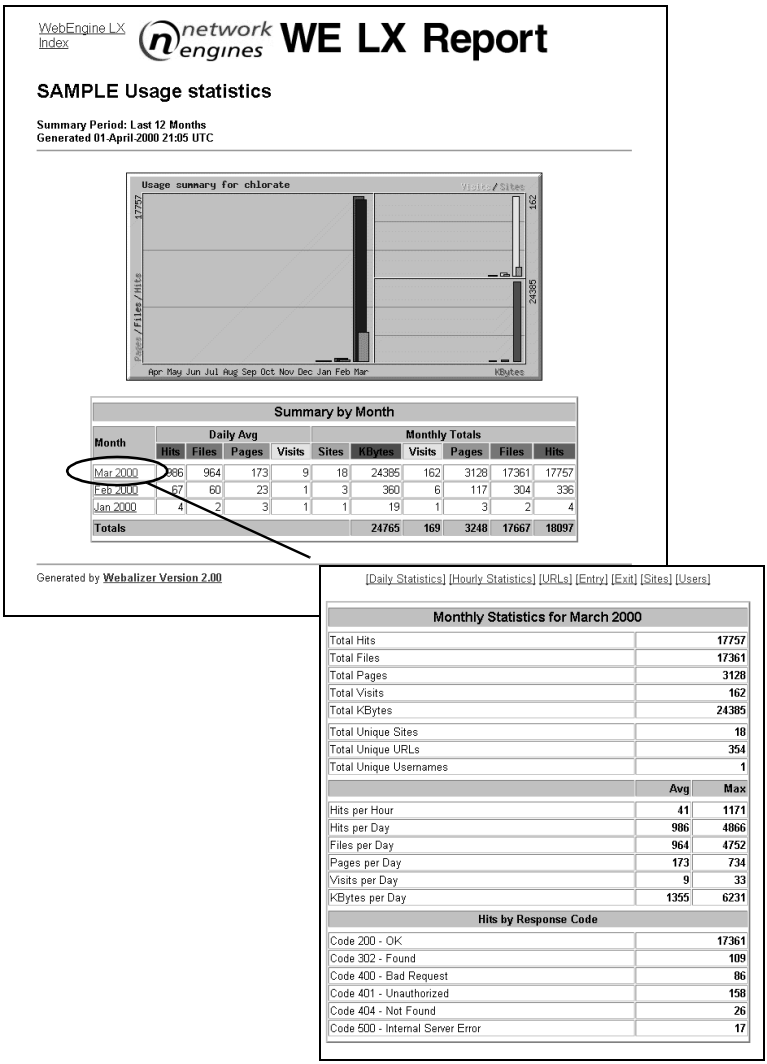
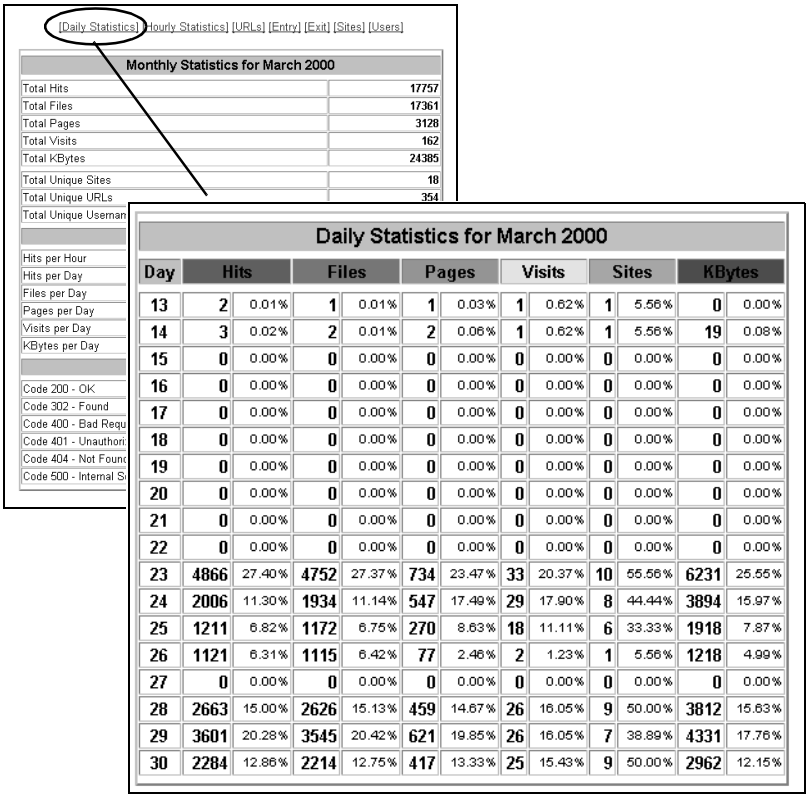


Figure 57. WE LX Report

You can also obtain expanded charts of the monthly statistics by selecting the links at the top of the Monthly Statistics page.



Daily Statistics for March 2000

Day	Hits		Files		Pages		Visits		Sites		KBytes	
13	2	0.01%	1	0.01%	1	0.03%	1	0.62%	1	5.56%	0	0.00%
14	3	0.02%	2	0.01%	2	0.06%	1	0.62%	1	5.56%	19	0.08%
15	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
16	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
17	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
18	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
19	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
20	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
21	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
22	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
23	4866	27.40%	4752	27.37%	734	23.47%	33	20.37%	10	55.56%	6231	25.55%
24	2006	11.30%	1934	11.14%	547	17.49%	29	17.90%	8	44.44%	3894	15.97%
25	1211	6.82%	1172	6.75%	270	8.63%	18	11.11%	6	33.33%	1918	7.87%
26	1121	6.31%	1115	6.42%	77	2.46%	2	1.23%	1	5.56%	1218	4.99%
27	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
28	2663	15.00%	2626	15.13%	459	14.67%	26	16.05%	9	50.00%	3812	15.63%
29	3601	20.28%	3545	20.42%	621	19.85%	26	16.05%	7	38.89%	4331	17.76%
30	2284	12.86%	2214	12.75%	417	13.33%	25	15.43%	9	50.00%	2962	12.15%

Figure 58. Expanded Monthly Statistics Reports

Displaying System Information

To display current information for the CPU, system memory resources, network statistics, system uptime, and current users:

1. From the LX Management Console, under **Logs & Reports,** click **System Information.** The System Info screen appears, as shown in Figure 59.
2. Click one of the time period options (30, 60, or 90 seconds) under Refresh Rate to obtain new statistics. Do not leave this screen open after you have finished viewing.

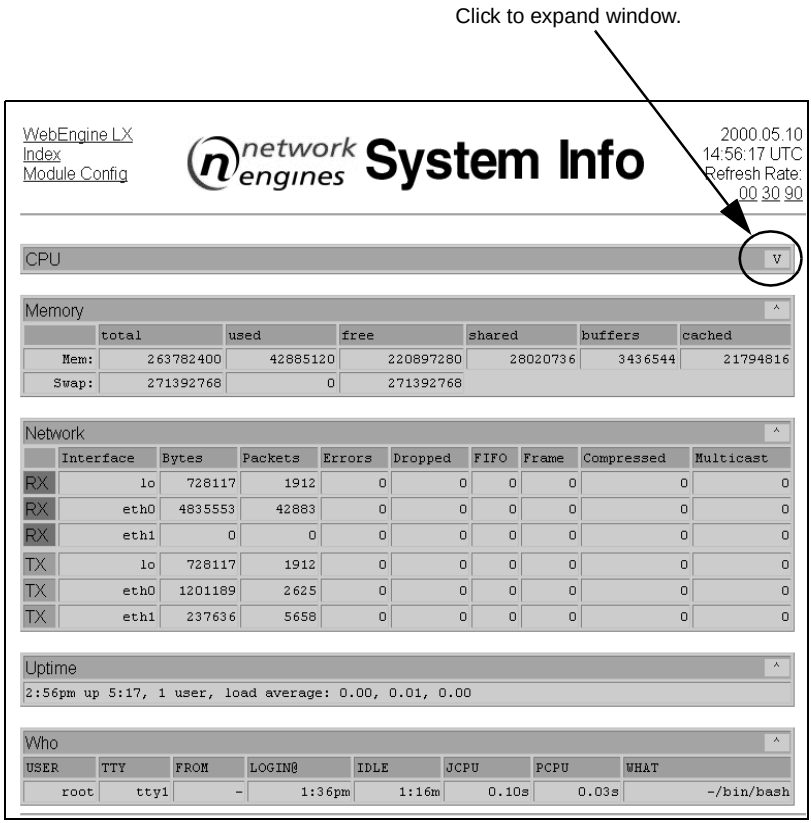


Figure 59. System Info Screen

CHAPTER 13

Help

This chapter describes how to get help when using the LX Management Console.

Getting Help in the LX Management Console

There are various ways to get help when using the LX Management Console. Help provides a global search index and online man pages. In addition, some screens contain online help files, selectable from the Help link in the upper left corner of the screen.

▼ Obtaining the Software Version

To obtain the software version of the LX appliance, from the LX Management Console, under **Help**, click **About**.

The version number of the LX appliance software and the software build date appears in the title of the window. The window lists copyright information for software (Figure 60).

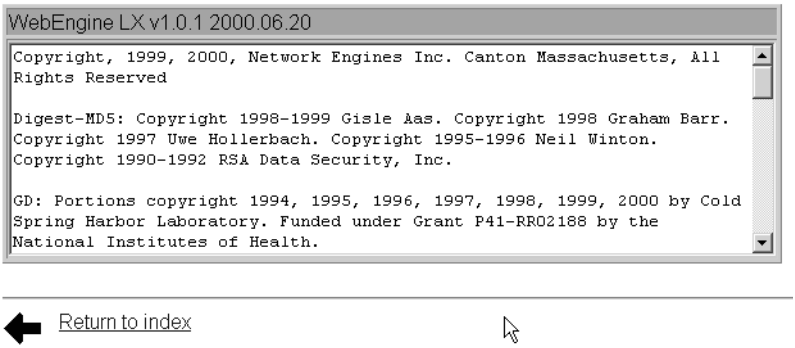


Figure 60. WebEngine LX About Screen

▼ Searching the Help Files

To search for a word or a phrase:

1. From the LX Management Console, under **Help**, click **Help**.
2. Browse the result screen (Figure 61) as you would a standard Web page.

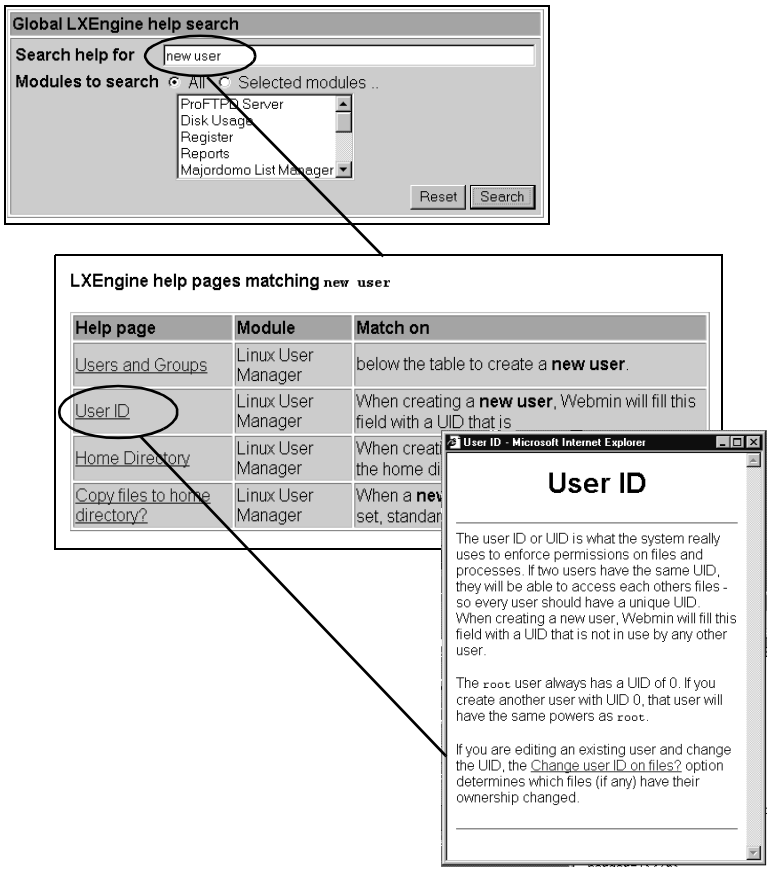


Figure 61. Search Index

▼ man Pages

You can search through the set of Linux online manual (man) pages. If you search for an exact command, the system displays its man page. If you search for a keyword that describes a function, the system displays a list of all related commands.

Searching man Pages

To search man pages:

1. From the LX Management Console, under **Help**, click **Manual Pages**.
2. Fill in the Apropos field for a key word search. This is the same as entering the following at the command line:

   ```
   man -k <keyword>
   ```

   You can also fill in the path name where you want the search to occur. Do not use wildcard symbols. The syntax for path is dir:dir:dir. Then, click **Search**

   or:

   Fill in the Manual field with the command for which you want more information. The system searches through the sections in ascending order. If you want an entry that is past the first entry encountered, for example, in Section 2, highlight Section 2. Then, click **Search**.

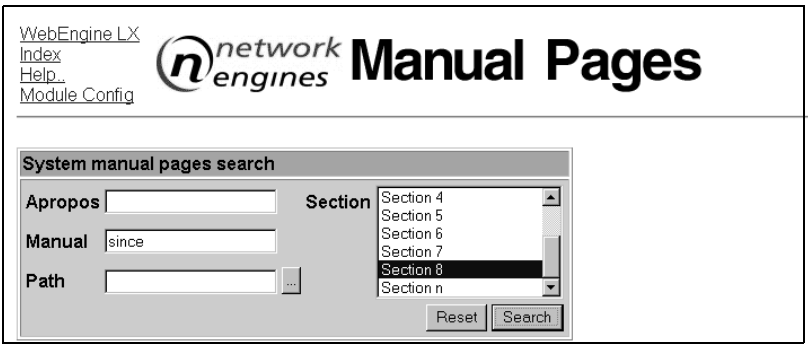


Figure 62. Linux man Pages

Commands Not Listed in man Pages

Several Linux commands do not appear in this set of online files, but are helpful in administering the LX appliance. You can access them from the command line:

- **metash** - Controls the environment of the login shell. Refer to *Chapter 12, Logs and Reports* for more information.
- **since** - Displays the contents of a log file since the last viewing. Refer to *The since Command* on page 114 for more information.
- **slay** - Kills all processes owned by a user.
- **trashcan** - Provides full system-wide trashcan capabilities on a per user basis. Trashcan replaces the UNIX rm command. Trashcan retains a copy of the deleted files in the user's trashcan, which can then be restored at a later time. Trashcan automatically removes files that are more than a week old.

The original rm and man page are located in the */usr/local/NEI* directory.

Specifications

Appendix A lists these specifications for LX appliances:

- Hardware and software
- Physical
- Operational

Table 8 shows the hardware and software specifications for Viper LX.

Table 8. Specifications for Viper LX

Component	Description
Processor	One or two Intel Pentium III
Processor Internal Clock	400 through 1000 MHz
Memory	• 4 DIMM sockets • 64 - 512MB DIMM; up to 2048 MB total on-board
Disk	IDE or SCSI
IDE Bus	Primary and secondary IDE; both connectors present on board, internal only.
PCI Bus	• 2 PCI connectors • 1 Mezzanine connector • 32 bit/ 33MHz
Ethernet	2 10/100 Mbps RJ45
USB	Dual USB connectors
Serial Ports	2 serial ports; COM1, COM2

Table 8. Specifications for Viper LX (*continued*)

Component	Description
SCSI	PCI board option only
CM Bus	Standard NEI Cluster Management Bus (CMBus)
SMBus	Standard System Maintenance Bus (SMBus)
Power Supply	100-240VAC, 50-60 Hz IEC 320 connector, switched from rear panel
Case	1U, 19” RETMA rack mountable, internally cooled by air flow
Operating System	Linux 2.2
PC Compliance	Microsoft HCT; HCT cases as appropriate for system configuration

Table 9 shows the physical specifications for Viper LX. Depending on your environment, these temperature and humidity calculations may vary.

Table 9. Physical Specifications for Viper LX

Specification	Lower Limit	Upper Limit	Unit
Operating Temperature	5	35	Degrees Celsius
Non-Operating Temperature	-20	80	Degrees Celsius
Rate-of-change of temperature, operating		5	Degrees Celsius per minute
Operating humidity, non-condensing	10	90	%
Non-operating humidity, Non-condensing	5	95	%
Operating shock		5	G half sine, 2 mS

Table 9. Physical Specifications for Viper LX (*continued*)

Non-operating shock		50	G half sine, 2 mS
Operating vibration		1	G, 5-500 Hz
Non-operating vibration		2	G, 5-500 Hz
Operating altitude		• 10,000 • 3,000	• Feet ASL • Meters ASL
Non-operating altitude		• 40,000 • 12,000	• Feet ASL • Meters ASL
AC line voltage	100	240	Volts AC, 50-60 Hz
Power		• 150 • 90	• Watts maximum • Watts typical
Line current Actual line current depends on actual line voltage, applications software, and product configuration		• 1.14 • 1.40 • 0.57 • 0.70	• Amps, 120V line • Amps, 100V line • Amps, 240V line • Amps, 200V line
Heat		515 310	• BTU/hr maximum • BTU/hr typical
Acoustic noise Measured in a free field over a hard floor, 1 meter from equipment face and 1 meter above floor		60	DBA
Weight		25	Lb

Table 10 shows the AC current, real power, heat load, and number of branch circuits required for different numbers of Viper LX appliances. Actual numbers may vary depending on options and operating conditions, but these numbers represent fully-loaded systems running test software.

The rationale for the numbers is that a typical server draws approximately 1.14 amperes from a nominal 120 Volt, 60 Hz line. A

branch circuit with a 20-ampere breaker can be loaded with 15 amperes rated load. No limit is assumed on the amount of current that can be supplied to a single rack of servers; multiple independently protected branch circuits may be used when the capacity of a single branch circuit is not enough.

For units powered from 240 volt AC mains, current will be half of the 120-volt value shown.

Table 10. Operational Specifications for Viper LX

Units	AC Current (Amperes)	Power (Watts)	Heat (BTU/hr)	# 20A Circuits
5	5.70	450	1413	1
10	11.40	900	2826	1
15	17.10	1350	4239	2
20	22.80	1800	5652	2
25	28.50	2250	7065	2
30	34.20	2700	8478	3
35	39.90	3150	9891	3
40	45.60	3600	11304	4
42	47.88	3780	11869	4

Table 11 shows the hardware and software specifications for Roadster LX.

Table 11. Specifications for Roadster LX

Component	Description
Processor	Intel Celeron
Processor Internal Clock	533 MHz depending on model
Memory	• 2 DIMM sockets • 64 - 256MB DIMM; up to 512 MB total onboard

Table 11. Specifications for Roadster LX (*continued*)

IDE Bus	• Primary and secondary IDE • Both connectors present onboard, internal only.
PCI Bus	• 1 PCI connector • 1 Mezzanine connector • 32 bit/ 33MHz
Ethernet	2 10/100 Mbps RJ45
USB	Dual Universal Serial Bus (USB) connectors
Serial Ports	2 serial ports; COM1, COM2
SCSI	• Ultra-2 SCSI • Internal connector plus external connector • External connector, ultra-high-density 68-pin.
CMBus	Standard NEI CMBus
SMBus	Standard SMBus
Power Supply	• 90 - 250 VAC, 50-60 Hz • IEC 320 connector, switched from rear panel
Case	1U, 19” RETMA rack mountable, internally cooled by air flow
Operating System	Linux 2.2
Voltage Monitoring	All power voltages +5, +3.3, +12, -12, VCCVID
Temperature Monitoring	Case internal temperature maximum ambient plus 10 degrees C, CPU maximum ambient plus 35 degrees C

Table 12 shows the physical specifications for Roadster LX. Depending on your environment, these temperature and humidity calculations may vary.

Table 12. Physical Specifications for Roadster LX

Specification	Lower Limit	Upper Limit	Unit
Operating Temperature	5	35	Degrees Celsius
Non-Operating Temperature	-20	80	Degrees Celsius
Rate-of-change of Temperature, operating		5	Degrees Celsius per minute
Operating Humidity, non-condensing	10	90	%
Non-operating Humidity, Non-condensing	5	95	%
Operating Shock		5	G half sine, 2 mS
Non-operating Shock		50	G half sine, 2 mS
Operating Vibration		1	G, 5-500 Hz
Non-operating Vibration		2	G, 5-500 Hz
Operating Altitude		10,000 3,000	Feet ASL Meters ASL
Non-operating Altitude		40,000 12,000	Feet ASL Meters ASL
AC Line Voltage	100	240	Volts AC, 50-60 Hz
Power		120 45	Watts maximum Watts typical
Line Current Actual line current depends on line voltage, configuration, and activity		0.75 0.91 0.38 0.45	Amps, 120V line Amps, 100V line Amps, 240V line Amps, 200V line

Table 12. Physical Specifications for Roadster LX (*continued*)

Heat		588	BTU/hr Maximum BTU/hr typical
Acoustic Noise Measured 1 meter from front panel, 1 meter above hard floor, otherwise a free field		50	DBA
Weight		20	lb

Table 13 shows the AC current, real power, heat load, and number of branch circuits required for different numbers of Roadster LX appliances.

Table 13. Operational Specifications for Roadster LX

Units	AC Current (Amperes)	Power (Watts)	Heat (BTU/hr)	# 20A Circuits
5	2.05	225	707	1
10	4.10	450	1413	1
15	6.15	675	2120	1
20	8.20	900	2826	1
25	10.25	1125	3533	1
30	12.30	1350	4239	1
35	14.35	1575	4946	1
40	16.40	1800	5652	2
42	17.22	1890	5935	2

Troubleshooting

This appendix provides troubleshooting tips.

If You Need Additional Help

For Technical Support, please call (781) 332-1900. You can also contact us by using the following e-mail and Internet addresses:

e-mail	Support:	support@networkengines.com
	Information:	Info@networkengines.com
Web	Information:	http://www.networkengines.com

Situation	What to Do
CD-ROM light is flashing.	You may have selected On at the menu on the front panel too quickly after switching the power on. Select the Power Off menu item or turn off the switch on the rear panel. Then, be sure to wait 5 to 7 seconds after turning on the power switch and before selecting **On** from the menu.
The LX appliance does not detect the mouse connection.	Check for these conditions: • The BIOS tries to detect the mouse immediately; therefore, you must connect the mouse to the Console Cable Adapter before you power up the first appliance. If the mouse is not detected, it will not be available to the operating system. • Each appliance's BIOS attempts to detect a mouse when it performs its Power-on Self Test (POST). Because a single mouse is used for all the appliances in a cluster, it is important that each appliance is selected during the POST. Therefore, you must boot one appliance at a time. • If the BIOS discovers the external devices such as mouse keyboard, before you select **Focus** from the menu on the front panel, the mouse may not function with that unit. Some operating systems may not load a driver because the device has not been discovered. In this case, you need to reboot the appliance.
The cluster of LX appliances experiences video display problems.	Install a CMBus cable and CMBus adapter with a VGA terminator in the open "out" CMBus port on the last appliance in the cluster.

Situation	What to Do
If one or several appliances in the cluster is not responding or does not appear in AdminEngine.	• Check the CMBus cabling. Be sure that all systems are connected in the crossover fashion and that all connections are tight. • Check the cluster termination. If you experience video problems, it may indicate CMBus termination problems. Attach a CMBus cable, Adapter and VGA terminator at the “out” port on the last system of your cluster.
The LX Management Console does not time out after extended periods.	When you are logged into LX Management Console and you leave it open for an extended period of time, the system does not time out. This is a potential security issue. When you are finished using the LX Management Console, be sure to close the browser window, which automatically logs you out.
There are security risks, reliability issues, and lack of support in older browsers involved with the manner of name-based virtual sites in Apache used by the Virtual Host Builder.	After creating a name-based host in the **Servers->Virtual Host** screen: 1. Edit the server configuration through the Apache Webserver. 2. Change the server address to an address given by a *NameVirtualHost* directive. 3. Select **Global Networking Addresses->Addresses for name virtual servers**. Avoid using the same address as the root server for this directive; otherwise you must create a virtual host for the root server.

Situation	What to Do
A user forgets a password or you want to force users to change current passwords.	You cannot decrypt a password; however, as root you can change a password and inform the individuals of the new password. This can be done from LX appliance users, or from the command line: **$ su** **$** password: ***<root_password>*** **$ changepass** ***<user>*** ***<new_password>*** This changes the user's login for LX Management Console only, not for Linux.
MIME types cannot be removed.	There is no Delete button in the Apache MIME module. You can manually edit the MIME type file to delete it, or create a new MIME type with the correct spelling.

Situation	What to Do
If this error message appears: **`Failed to restart miniserv`**	Make sure that you did not delete the loopback (lo) interface in the **System-> Network Interfaces** screen.
At the Linux prompt during bootup, if L <nn> appears, it indicates one of 16 disk-error codes. Disk error codes can indicate problems such as an open floppy door, a drive timeout, a controller error, a media problem, a BIOS error, or transient read problem, which can be overcome by rebooting.	Refer to the Linux documentation.
At the Linux prompt during bootup, if any of these prompts appear: • LI - Indicates that the second-stage boot loaded, but could not run. • LIL - indicates that the descriptor table could not be read • LIL?- indicates that the second-stage boot loader loaded at an incorrect address • LIL- - indicates that LILO found a corrupt descriptor table. If the LILO prompt appears during bootup, LILO ran successfully.	Contact Technical Support.

Servers

The LX Management Console lets you configure and control these server programs installed on your system:

- Apache Webserver
- ProFTPD
- Berkeley Internet Name Domain (BIND) 8 DNS
- DHCP
- Sendmail
- Majordomo

Most of these applications are robust programs that have been documented in numerous online resources and published books. Since it is beyond the scope of this manual to document these programs, this appendix highlights issues specific to the LX appliance, and includes a list of online resources for each server.

An LX appliance is fully configured to enable you to immediately create virtual hosts, so it is not necessary to reconfigure these modules unless you want to customize your system.

Apache Webserver

Apache V1.3 is HTTP 1.1-compliant, which allows you to configure name-based virtual hosts and IP-based hosts. The advantage of using name-based virtual hosts is that a single IP address can now manage an entire set of web sites on a single server. The new Apache *NameVirtualHost* directive specifies an IP address that should be used as a target for name-based virtual hosts.

▼ Configuration of Virtual Hosts

Apache Webserver is preconfigured on LX appliances so you can begin to create virtual web sites immediately. When you create virtual hosts at the **Server->Virtual Hosts** screen, web, FTP, and e-mail services are automatically configured for each site. Refer to Chapter 8, *Virtual Hosts* for more information.

▼ Additional Configuration

You can perform additional configuration for Apache Webserver by selecting **Servers->Apache Webserver** in the LX Management Console.

▼ Online Resources

These are online resources for Apache Webserver:

- **Apache 1.3 User's Guide**
  LX Management Console: Servers->Apache Webserver->Help (top left side of screen)
- **Apache Online documents**
  http://www.apache.org/docs/
- **WebDAV Resource Site**
  http://www.webdav.org

▼ Tasks You Can Perform Using the LX Management Console

To perform tasks using the Apache Webserver screen:

1. From the LX Management Console, under **Servers**, click **Apache Webserver**.

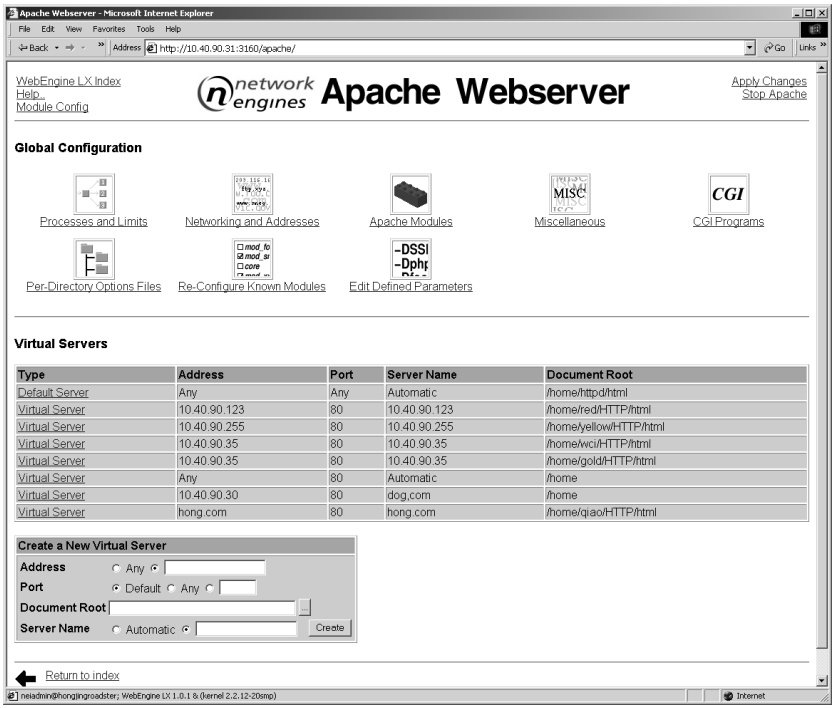


Figure 63. Apache Webserver Screen

2. From the Apache Webserver screen, you can:

   - Specify minimum and maximum server values, such as the maximum number of requests per server process
   - Supply information for the addresses Apache Webserver is using
   - Activate or deactivate Apache modules
   - Specify miscellaneous server information such as the location of the core dump directory
   - Specify information regarding CGI programs
   - Apply an option file to a specified directory

- Display the currently installed modules installed on the LX appliance
- Edit defined parameters

  For additional information, refer to the Apache documentation.

ProFTPD Server

ProFTPD is an FTP server used for UNIX variants. FTP service for virtual hosts is configured on port 21 by default by the Virtual Host Builder script, described in Chapter 8, *Virtual Hosts*.

The ProFTPD Server lets you create an isolated FTP server beyond the set of virtual hosts. The FTP protocol does not support multiple name-based servers with the same IP and port.

▼ Online Resources

These are online resources for ProFTPD:

- **ProFTPD configuration parameters**
  LX Management Console: Servers->ProFTPD->Help (top left side of screen)
- **Manpage**
  ftpaccess
- **ProFTPD Homepage**
  http://www.proftpd.org/
- **ProFTPD User's Guide**
  http://hamster.wibble.org/proftpd/proftpd_userguide.html
- **ProFTPD FAQs**
  http://proftpd.net/docs/proftpdfaq-full.html

▼ Tasks You Can Perform Using the LX Management Console

To perform tasks using the Simple ProFTPD screen:

1. From the LX Management Console, under **Servers**, click **ProFTPD Server**.

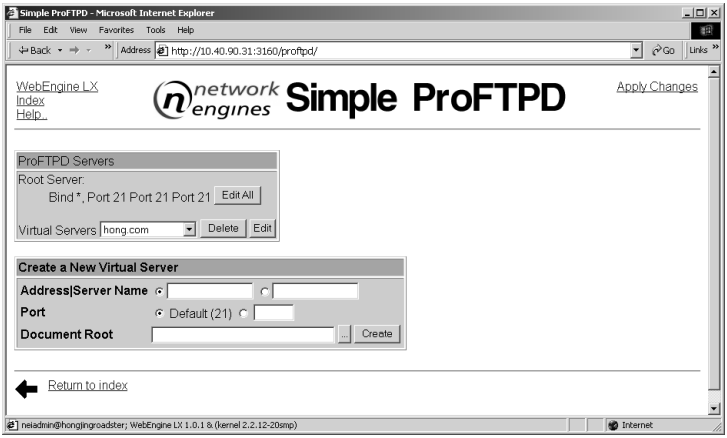


Figure 64. Simple ProFTPD Screen

2. From the Simple ProFTPD screen, you can:
   - Edit the ProFTPD server
   - Add a new virtual server

BIND 8 DNS Server

You can configure an LX appliance as a Domain Name Server (DNS). DNS translates named-based host names (networkengines.com) into a numeric IP address for TCP/IP communications. The Berkeley Internet Name Domain (BIND) is the defacto standard program for translating host names into IP addresses.

The BIND DNS server is used on most name-serving devices on the Internet, providing a robust and stable architecture on top of which an organization's naming architecture can be built. The resolver library included in the BIND distribution provides translation between domain names and Internet addresses.

Only administrators who are thoroughly familiar with DNS concepts and procedures should configure the LX Management Console DNS server.

Having a complete understanding of how DNS works is key to successfully administering an Internet-connected network.

▼ Online Resources

These are online resources for BIND 8 DNS Server:

- **Bind 8 Online Documentation**
  LX Management Console: Servers->Bind 8 DNS Server->Help (top left side of screen)
- **DNS Resources Directory (DNSRD)**
  http://www.dns.net/dnsrd/
- **Internet Software Consortium**
  http://www.isc.org/products/BIND/

▼ Tasks You Can Perform Using the LX Management Console

To perform tasks using the BIND 8 DNS Server screen:

1. From the LX Management Console, under Servers, click **BIND 8 DNS Server**.

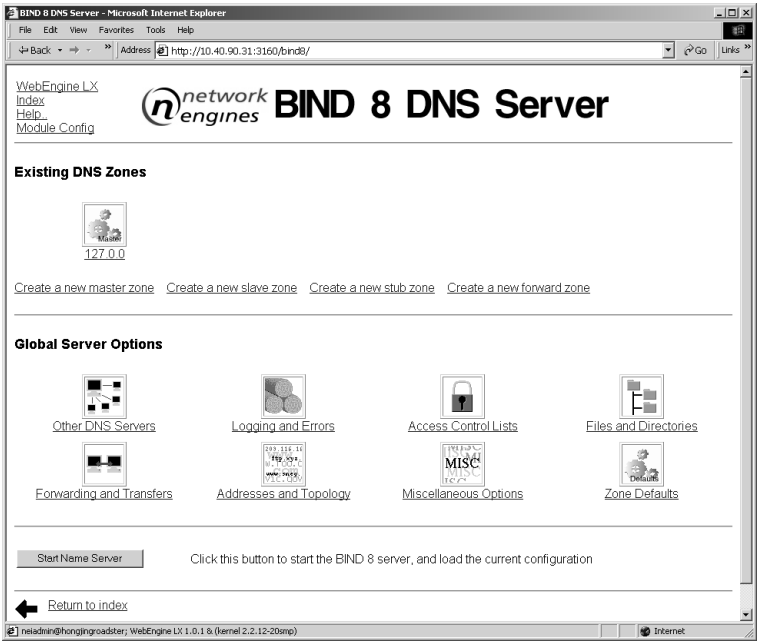


Figure 65. BIND 8 DNS Server

2. From the BIND 8 DNS Server screen, you can:
   - Create new zones
   - Share information with and accept information from other servers
   - Specify details on logging such as the location of the logs
   - Modify access control lists for this server
   - List the options for the files and directories
   - Set global forwarding and zone transfer options
   - Set address information that the server uses
   - Set miscellaneous global parameters
   - Set default settings for zones
   - Start and stop the server

DHCP Server

You can configure an LX appliance as a Dynamic Host Configuration Protocol (DHCP) server (not the client). DHCP is a network protocol that enables the DHCP server to automatically assign a new IP address from a pool of available IP addresses to an individual computer on the network, thus reducing the work necessary to administer a large IP network.

To configure DHCP on an LX appliance, you need to allocate IP address pools in each subnet. When a client requests an address using DHCP, it is assigned both an IP address and a lease, which expires after a specified amount of time (default=1 day). Once a lease has expired, the client to which the lease was assigned is no longer permitted to use the leased IP address. The DHCP server keeps a list of these assigned leases across system reboots and server restarts.

▼ Online Resources

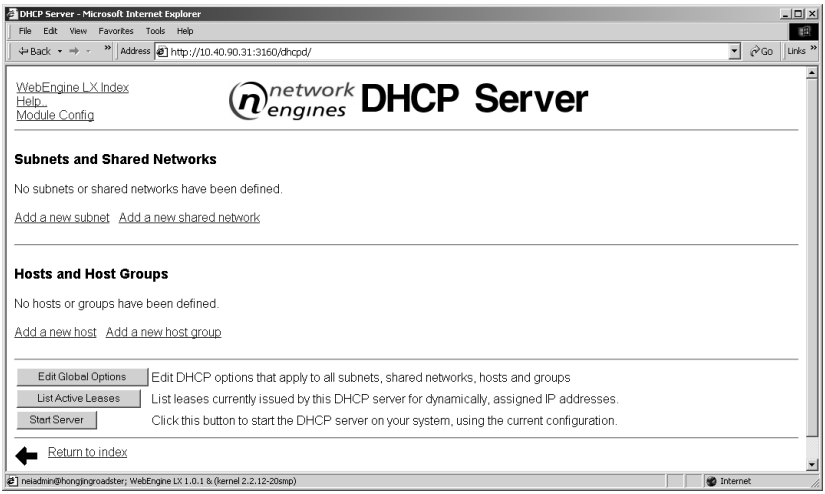
These are online resources for DHCP:

- **man page**
  dchpd, also viewable from Servers->DHCP Server->Help (top left side of screen)
- **DHCP FAQs**
  http://www.dhcp_handbook.com/dhcp_faq.html
- **Request for Comments 2131, 2132**
  http://www.cis.ohio-state.edu/htbin/rfc/rfc2131.html
  http://www.cis.ohio-state.edu/htbin/rfc/rfc2132.html
- **Internet Software Consortium**
  http://www.isc.org/products/DHCP/

▼ Tasks You Can Perform Using the LX Management Console

To perform tasks using the DHCP Server screen:

1. From the LX Management Console, under Servers, click **DHCP Server**.



2. From the DHCP Server screen, you can:
   - Add a new subnet
   - Add a new shared network
   - Add a new host
   - Add a new host group
   - Edit global options that apply to all subnets, shared networks, hosts, or host groups
   - List leases currently issued to start the DHCP server on your system
   - Start and stop the server

Sendmail Configuration

Sendmail is the standard UNIX program for mail transport and delivery. Sendmail is not intended as a user interface routine; it actually delivers the mail across networks. Sendmail does internetwork forwarding as necessary to deliver the message to the correct place.

Configuring the Sendmail server for virtual sites is automatically done by the Virtual Host Builder script, described in Chapter 8, *Virtual Hosts*. Under normal circumstances, you should not have to reconfigure Sendmail.

▼ Online Resources

These are the online resources for Sendmail:

- **Sendmail man page**
  man sendmail (at the command line)
- **Sendmail Consortium Homepage**
  http://www.sendmail.org/
- **Sendmail FAQs**
  http://www.sendmail.org/faq/faq.txt

▼ Tasks You Can Perform Using the LX Management Console

To perform tasks using the SendMail Configuration screen:

1. From the LX Management Console, under **Servers**, click **Sendmail Configuration**.

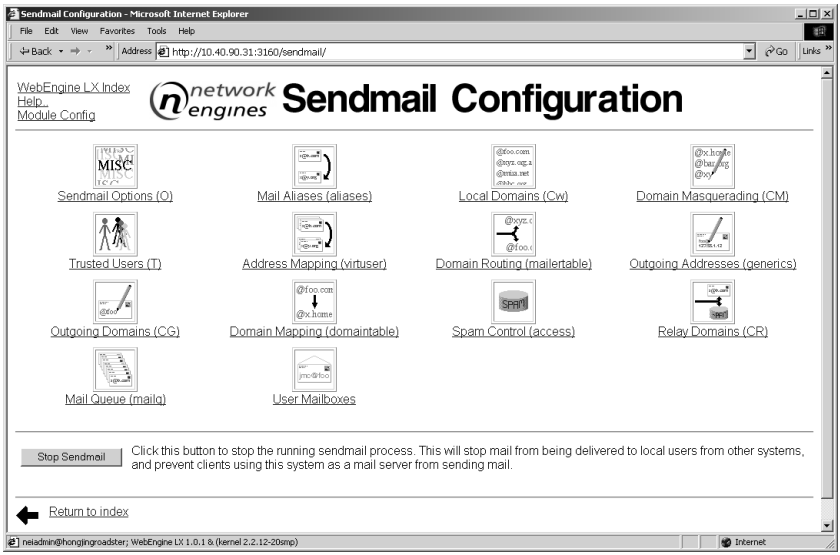


Figure 66. Sendmail Configuration Screen

2. From the Sendmail Configuration screen, you can:
   - Specify the options for mail forwarding
   - Create mail aliases
   - Specify that accepted mail is processed by address mapping
   - Masquerade a domain so that it appears that e-mail from the system comes from the domain rather than the host name
   - Specify trusted users
   - Set up address mappings if you have multiple e-mail domains
   - Send mail to another device or host
   - Set up address mapping for outgoing mail
   - List the domains or hosts for which you want outgoing address mapping
   - Set domain mapping information

- Specify Spam control, which allows you to prevent spam from reaching your users by rejecting mail from certain addresses, and prevent spammers from using your system to relay mail.
- Set up the mail you want to accept and pass along without examination
- Check if mail messages are in the queue
- Manage mail online

Majordomo List Manager

Majordomo is a community-supported freeware program that automates the management of Internet mailing lists. Commands are sent to Majordomo through e-mail to handle all aspects of list maintenance.

Majordomo controls a list of addresses for Sendmail to handle. Majordomo itself performs no mail delivery, though it has scripts to format and archive messages.

Once a list is set up, you can perform almost all operations remotely, requiring no intervention from the postmaster of the list site. Users can then subscribe and unsubscribe themselves using e-mail. Mail sent to the list is relayed to all recipients. In the case of moderated lists, a message (post) must first be approved by the list moderator.

Majordomo supports access control so you can allow queries to the server to determine which lists are available by subscription, and obtain detailed information about the lists. Majordomo features a modular design, so you can set up only those features you need.

▼ Online Resources

These are online resources for Majordomo:

- **Majordomo FAQs**
  LX Management Console: Servers->
  Majodomo List Manager-> Help (top left side of screen)
- **Majordomo Homepage**
  http://www.greatcircle.com/majordomo/
- **Majordomo Searchable Users Archives**
  http://www.hpc.uh.edu/majordomo-users/

▼ Tasks You Can Perform Using the LX Management Console

To perform tasks using the Majordomo List Manager screen:

1. From the LX Management Console, under **Servers**, click **Majordomo List Manager**.

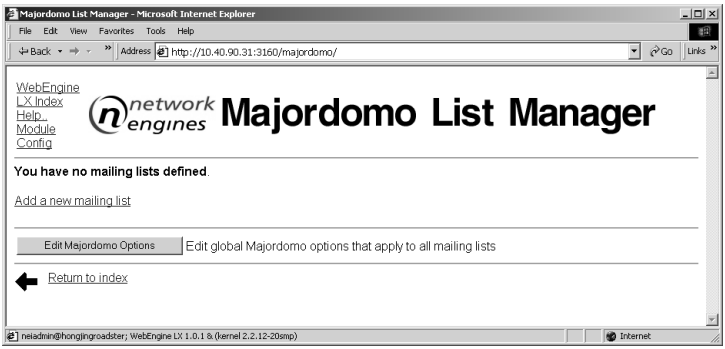


Figure 67. Majordomo List Manager

2. From the Majordomo List Manager screen, you can:
   - Add a new mail list
   - Modify options that apply to the existing mailing lists

Index

T

U

V

W