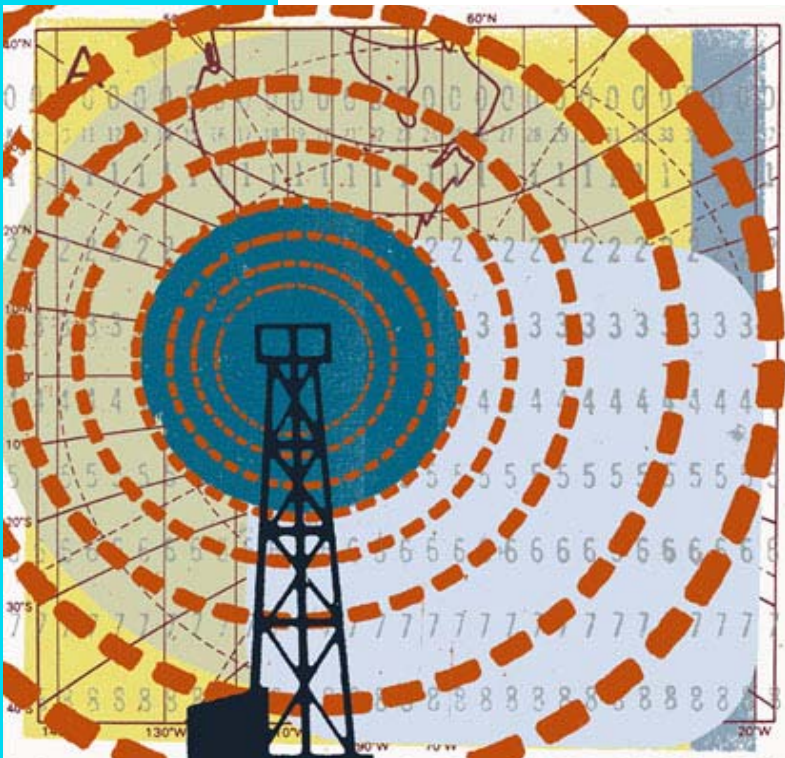


SkyPilot OS Installation: Red Hat Enterprise Linux ES 3 and 4



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SkyPilot Firmware 1.5

Document Last Revised: April 18, 2007



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About This Guide

This guide provides directions for installing the Red Hat Enterprise Linux ES operating system on the server you'll use for configuring and managing nodes on your SkyPilot™ wireless network.

This guide assumes administrator-level knowledge of IP networks, basic knowledge of wireless networking, and a familiarity with the information in *Getting Started with the SkyPilot Network*.

This guide is organized as follows:

- "Preparing for Installation" lists the server requirements for installation.
- "Installing Red Hat Enterprise Linux ES" provides detailed instructions for performing a custom installation of the Red Hat Enterprise Linux ES operating system.
- "Configuring a Firewall for SkyPilot Operations" tells you which ports to open for data traffic from SkyPilot devices if your server is behind a firewall.

Complete SkyPilot documentation is available from the SkyPilot website at www.skypilot.com/support/.



Preparing for Installation

If you're setting up a SkyPilot network to use automatic provisioning of devices, you must perform a custom installation of the Red Hat Enterprise Linux ES operating system. This custom installation prepares your server for the installation of SkyPilot EMS software that will provide unattended configuration of SkyPilot devices from a central server at your network operations center (NOC).

Requirements

Table 1 lists the hardware and software requirements for the server on which you'll install Red Hat Enterprise Linux ES and, later on, the SkyPilot EMS software.

Table 1. Server Requirements

	Minimum	Recommended
CPU (RAM)	2 GHz Pentium	3 GHz Xenon
Memory	512 MB	1 GB
Hard disk space	10 GB	40 GB
Network	10/100 Mbps Ethernet	10/100 Mbps Ethernet



Installing Red Hat Enterprise Linux ES

To prepare your server for provisioning and management of devices on a SkyPilot wireless network, you must perform a custom installation (or reinstallation) of the operating system that will, among other things, exclude software packages or services that are duplicated by the SkyPilot EMS server software installation: the Apache HTTP server, MySQL database server, VSFTPD server, and DHCP server.

Installation Procedure

WARNING The following installation procedure will reformat your server's hard drive, overwriting its contents. If you have important data on the drive, back it up before proceeding.

To perform a custom installation of Red Hat Enterprise Linux ES:

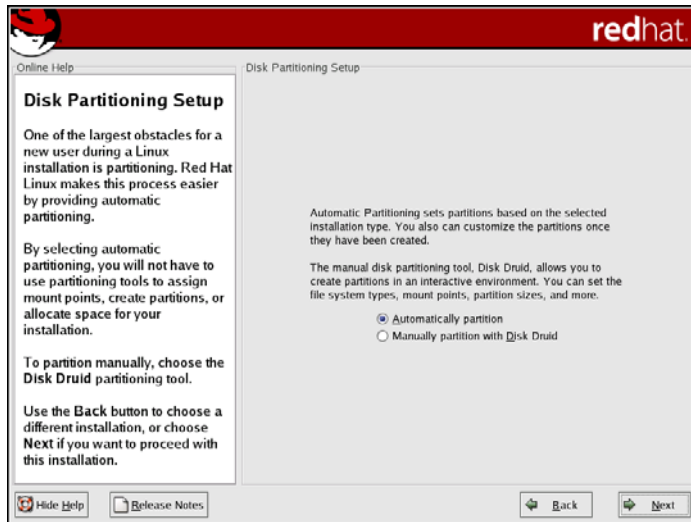
- 1** Insert *Red Hat Enterprise Linux ES Disk 1* in the CD-ROM drive of the server and reboot.

After the server reboots, the installer's Welcome screen appears.

- 2** Click **Next** to continue.
- 3** Follow the prompts to select options on the Language Selection screen and additional configuration screens, until the Disk Partitioning Setup screen appears.

The Disk Partitioning Setup screen (Figure 1) offers you a choice between automatic partition and manual partitioning (with the Disk Druid utility).

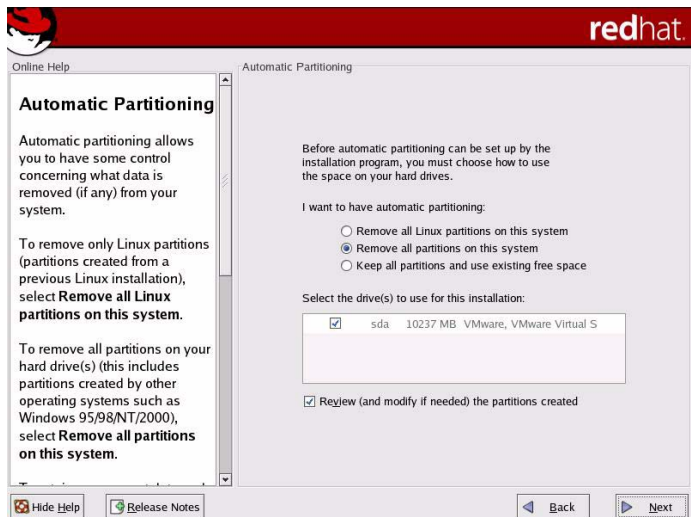
Figure 1. Disk Partitioning Setup screen



- 4 Select **Automatically partition** and click **Next**.

The Automatic Partitioning screen appears, offering you a choice of partitioning options.

Figure 2. Automatic Partitioning screen



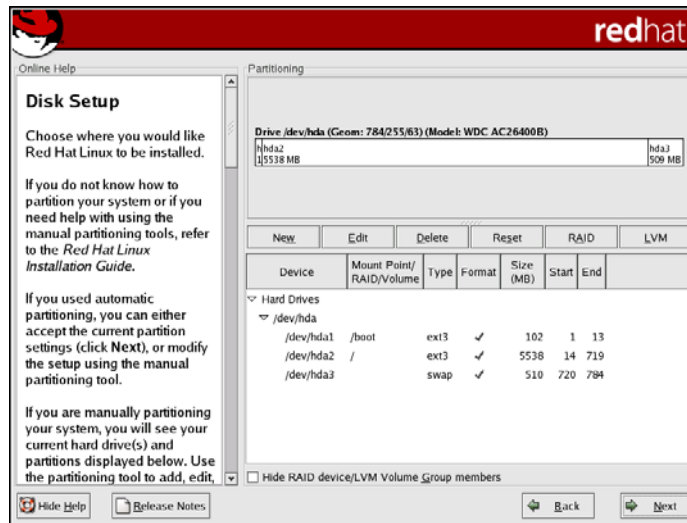
For this installation, you must remove all partitions (Linux and otherwise) from the drive on which you're installing Red Hat Enterprise Linux ES.

- 5 Select **Remove all partitions on this system**. If your server uses more than one hard drive, select the drive on which you want Red Hat Enterprise Linux ES installed. Click **Next** to continue.

When prompted to confirm the removal of all partitions (and all data stored on them), click **Yes**.

The Disk Setup screen appears, allowing you to verify the hard drive partitioning.

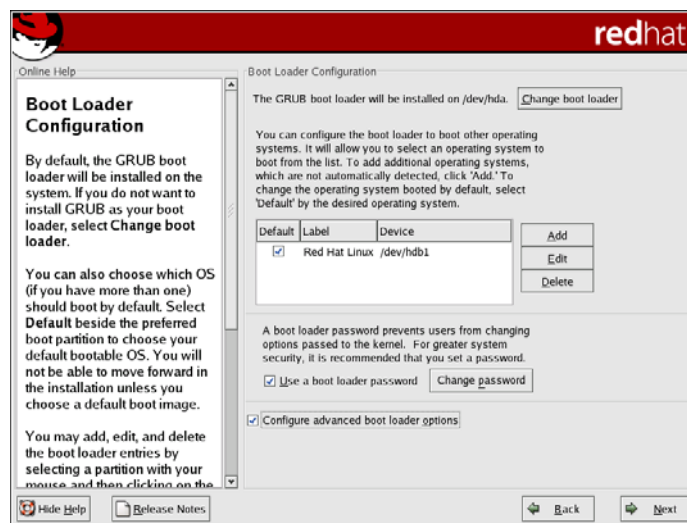
Figure 3. Disk Setup screen



6 Click **Next**.

The Boot Loader Configuration screen appears, providing options for booting other operating systems.

Figure 4. Boot Loader Configuration screen



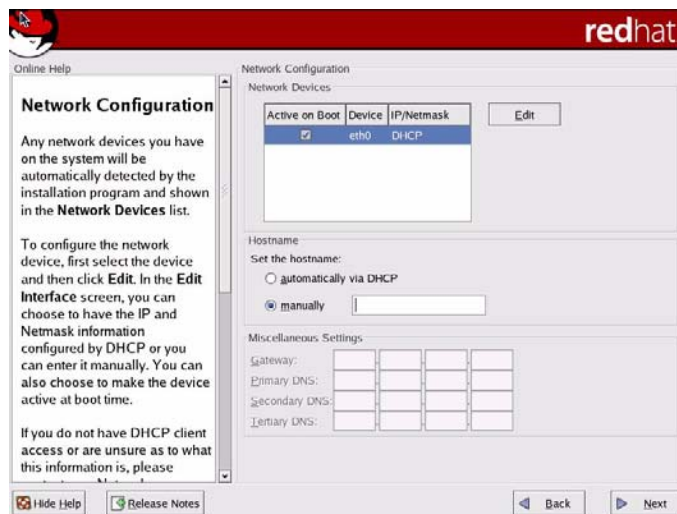
7 Click **Next**.

The Network Configuration screen appears, listing the network devices on your system and providing options for IP addressing and DNS settings.

Figure 5 shows an example.

NOTE Automatic configuration of devices on a SkyPilot network requires a provisioning server with a static IP address.

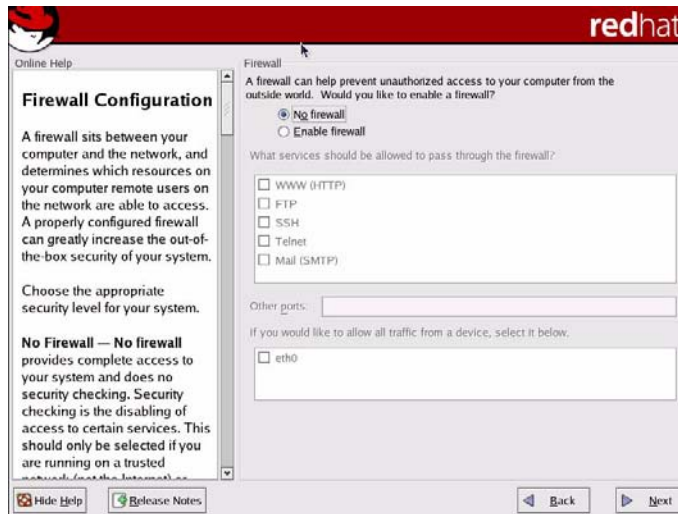
Figure 5. Network Configuration screen



8 Deselect the option for setting a hostname automatically via DHCP, and then make the appropriate selections and data entries for your network, including a static IP address for the server and a hostname of your choice. For optimal network connectivity, also include gateway and DNS addresses in the Miscellaneous Settings area of the screen. Click **Next** to continue.

The Firewall Configuration screen (Figure 6) appears.

Figure 6. Firewall Configuration screen



As the default, Red Hat Enterprise Linux ES uses a medium-level security scheme that enables a firewall. To ensure that the SkyPilot wireless network operates properly, it's recommended that you install the operating system *without* firewall protection.

NOTE If security issues demand that you include a firewall, you can still use the provisioning server by configuring the firewall to allow incoming data traffic on the ports used by SkyPilot devices and remote clients; see “Configuring a Firewall for SkyPilot Operations” on page 15. In this case, for step **9** leave the **Medium** option selected and click **Next**.

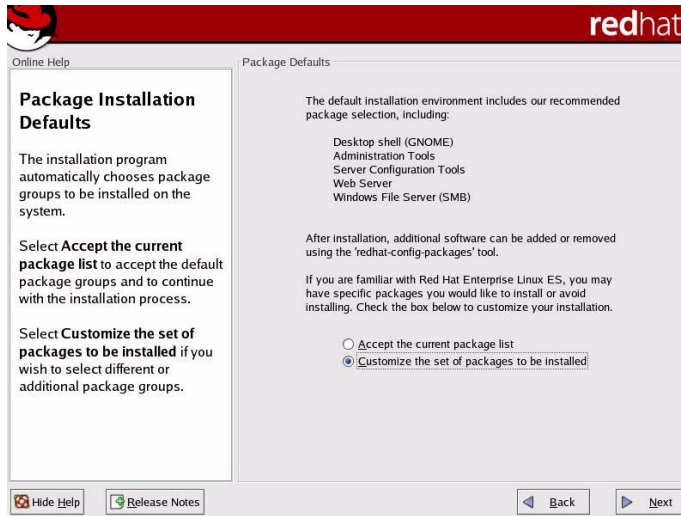
- 9** Select **No firewall** and click **Next**.

When prompted to confirm continuing without configuration a firewall, click **Proceed**.

The Additional Language Support screen appears.

- 10** Follow the prompts to select additional languages, set a time zone, specify a root password, and configure authentication, until the Package Installation Defaults screen (Figure 7) appears.

Figure 7. Package Installation Defaults screen

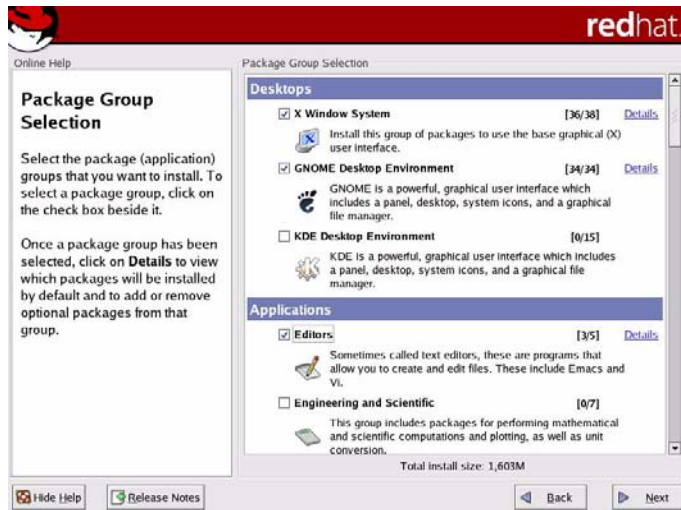


Because you want to exclude or include specific packages and services to support the SkyPilot EMS server, you must choose the customization option.

- 11 Select **Customize the set of packages to be installed** and click **Next**.

The Package Group Selection screen appears.

Figure 8. Package Group Selection screen



You'll use this screen to select package groups for exclusion or inclusion.

Table 2 shows which Linux packages you must select or deselect for SkyPilot. For packages not listed in this table, you're free to include or exclude each, depending on your requirements.

NOTE Be careful *not* to check the **Everything** box at the bottom of the package group list. Checking this box automatically includes every package options in the installation.

Table 2. Red Hat Enterprise Linux ES Packages for SkyPilot (Page 1 of 2)

Include (box checked)	Exclude (box unchecked)
Desktop packages:	Desktop packages:
<input checked="" type="checkbox"/> X Window System	No exclusion requirement
<input checked="" type="checkbox"/> GNOME or KDE	
Application packages:	Application packages:
<input checked="" type="checkbox"/> Editors	No exclusion requirement
<input checked="" type="checkbox"/> Graphical Internet	
<input checked="" type="checkbox"/> Text-based Internet	
Server packages:	Server packages:
<input checked="" type="checkbox"/> Server Configuration Tool	<input type="checkbox"/> Web server (Apache)
	<input type="checkbox"/> SQL database server and clients
	<input type="checkbox"/> FTP server
	<input type="checkbox"/> Network servers (including DHCP and Telnet)
Developer packages:	Developer packages:
<input checked="" type="checkbox"/> Development Tools	No exclusion requirement

Table 2. Red Hat Enterprise Linux ES Packages for SkyPilot (Page 2 of 2)

Include (box checked)	Exclude (box unchecked)
System packages:	System packages:
<input checked="" type="checkbox"/> Administration Tools	No exclusion requirement
<input checked="" type="checkbox"/> System Tools	
Miscellaneous packages:	Miscellaneous packages:
No requirement	<input type="checkbox"/> Everything
	<input type="checkbox"/> Minimal

- 12** Click checkboxes to select or deselect packages for your SkyPilot software installation (see Table 2). After selecting the appropriate packages (and being especially careful *not* to check the **Everything** box), click **Next** to continue.

The About to Install screen appears.

- 13** Click **Continue**.

The Required Install Media screen appears, identifying the media you'll need to complete the installation.

- 14** Click **Next**.

The installer begins copying package files to the server's hard disk, and a meter tracks the installation progress.

When package installation is complete, the installer presents the first of a series of screens on which you choose system options and identify hardware components.

- 15** Follow the prompts to make installation selections that correspond to your system setup.

Finally, the installer prompts you to prepare the system for rebooting. Remember to remove any installation media (diskette from the diskette drive or CD from the CD-ROM drive) if they haven't been ejected.

- 16** Click **Reboot** to reboot the server under Red Hat Enterprise Linux ES.

When you boot Red Hat Enterprise Linux ES for the first time, the system prompts you for additional information, including a user profile and the type

of display. A resolution of 1024 x 768 is recommended for easier navigation of EMS.

What's Next

With your server running a customized version of Red Hat Enterprise Linux ES, you can now install the SkyPilot EMS software that you'll use to provision and manage SkyPilot devices. For instructions on installing the EMS software, refer to *SkyPilot EMS Installation*, available from the SkyPilot website at www.skypilot.com/support/.



Configuring a Firewall for SkyPilot Operations

For optimal SkyPilot operations, you should install Red Hat Enterprise Linux ES without a firewall. However, if security concerns or other issues force you to use a firewall, you must configure the firewall to allow incoming data traffic on ports that SkyPilot clients and devices use for server communications (see Table 3).

NOTE Each port you open reduces the overall security provided by the firewall.

Table 3. Ports to Open

To...	Open these ports...
Allow EMS clients to connect to the EMS server	1098 TCP (JBoss RMI port)
	1099 TCP (JBoss RMI port)
	4444 TCP (JBoss RMI object port)
	3306 TCP (MySQL DB port)
	32007 (Notification port)
Allow SkyProvision to configure SkyPilot devices outside the firewall	8000 TCP (HTTP server)
	20 TCP (FTP server)
	21 TCP (FTP server)
	67 TCP/UDP (DHCP server)
Allow SkyControl to monitor SkyPilot devices outside the firewall	161 TCP/UDP (SNMP Read)
	162 UDP (SNMP Traps)

