IBM iSCSI BladeBoot

Red Hat Enterprise Linux Setup Guide

Version 1.2

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Note

Before using this information and the product it supports, read the information in “Notices,” on page 21.

March 2007

This edition applies to Version 1.2 of IBM iSCSI BladeBoot and to all subsequent releases and modifications until otherwise indicated in new editions.

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Preface

The IBM® iSCSI BladeBoot Red Hat Enterprise Linux® (RHEL) Setup Guide supports Version 1.2 of the IBM iSCSI BladeBoot application. This application provides the capability to boot a blade server from an iSCSI target using the basic network interface cards (NICs) included on the blade. No additional hardware or adapters are required. When employing iSCSI Boot from SAN, you do not have to install an internal disk in the blade.

About this guide

The purpose of this guide is to provide users of the iSCSI BladeBoot application information on installing the application on RHEL 5.

Who should read this guide

This guide is for system programmers and users working in an IBM BladeCenter® environment and using iSCSI BladeBoot on supported blades in an IBM BladeCenter chassis.

Chapter 1. Restrictions and infrastructure preparation

Before you begin, ensure that you have all of the necessary hardware and software to complete the process.

RHEL 5 is provided with limited support in BladeBoot environments. Broader support is planned in RHEL 5.1.

IBM BladeBoot support has the following restrictions:

- Support for IBM BladeBoot is restricted to IBM N-Series iSCSI Targets.
- You cannot install to or boot from multipath devices.
- Reconfiguring iSCSI after a successful initial boot is not supported.
- Support for BladeBoot on RHEL 5 will stop 45 days after RHEL 5.1 is generally available. After this date BladeBoot support on RHEL will be on versions 5.1 and later.

You will need

- An IBM BladeCenter chassis for Blades
- An IBM Blade with BladeBoot support and:
  - The latest BIOS firmware update
  - The latest BMC firmware update
- The IBM iSCSI Configuration Manager software utility
- An iSCSI Target, for example and IBM N3700
- A DHCP server
- A TFTP server
- An NFS server

You can download the iSCSI Configuration Manager and find links to the BIOS and BMC firmware updates at: http://www.ibm.com/servers/eserver/bladecenter/storage/iscsi.html.

You must also configure your iSCSI Target to provide a LUN. The LUN should be cleared when created (all zeros in the first sector at a minimum)

Chapter 2. Before installing RHEL

This section provides information on tasks that must be completed prior to installing Red Hat Enterprise Linux Server 5.

Prerequisites

To complete the installation, you must have the following:

- A server compatible with RHEL. If you will be using this server as your DHCP NFS, or TFTP server, you will need thos applications as well.
- The server must be configured for TFTP connection.
- Create a folder containing the RHEL 5 DVD ISO image.

When you have completed these prerequisites, continue to the next step, "Mount the ISO image and copy files"

Mount the ISO image and copy files

Mount the ISO image to obtain the installer files.

For example:

```
mount -o loop /rhel5iso/RHEL5.iso /rhel5files
```

Copy `initrd.img` and `vmlinuz` from `/rhel5files/images/pxeboot/` to your TFTP root folder.

Obtain pxelinux.0 and copy to the `tftproot` folder of the TFTP server. You can obtain a copy of pxelinux.0 from http://www.kernel.org/pub/linux/utils/boot/syslinux/.

Configure NFS

Edit the NFS configuration file to include the RHEL ISO image.

To add the ISO image you mounted previously to the NFS configuration, edit the file /etc/exports and add the line:

```
/rhel5iso *(ro,no_root_squash)
```

Then start or restart NFS using the following commands:

```
/sbin/service nfs start
/sbin/service nfs reload
```

Create a DHCP reservation

Create a DHCP reservation for the diskless blade.

Add the following options to the reservation:

host-name (option 12)
This value is arbitrary.

root-path (option 17)
Configure the root path as described in IETF RFC 4173, which can be found here: http://www.ietf.org/rfc/rfc4173.txt.

next-server (option 66)
The IP address of the TFTP server.

filename (option 67)
pxelinux.0

Create pxelinux.cfg

You must create a configuration file for use by pxelinux.

To create this file, use the following procedure:

1. Create a folder in the TFTP root folder named pxelinux.cfg.
2. Create a file in pxelinux.cfg with a name that is the hex representation of the IP address assigned to the diskless Blade. For example, 192.168.70.2 would be `C0A84602`.
3. Add the following to the file:

```
label RHEL5GA
 kernel vmlinuz
 append initrd=initrd.img ramdisk_size=10000 method=nfs:server_IP:/home/rhel5iso
```

Note: The `append` line must be on a single line in the file.

Chapter 3. Install RHEL

This example describes how to perform an install of RHEL 5 from the network on a diskless Blade in an iSCSI Boot environment. The type of network install described requires an NFS server supplying the contents of the RHEL 5 DVD ISO image.

Note: In this example there is a LAN and a SAN. Switch 1 in the BladeCenter is connected to the LAN, switch 2 is connected to the SAN. The iSCSI Target, TFTP, DHCP, and NFS servers are all connected to the SAN.

Blade configuration

This section describes the configuration options for the blade.

To configure your diskless blade for RHEL installation, use the following procedure:

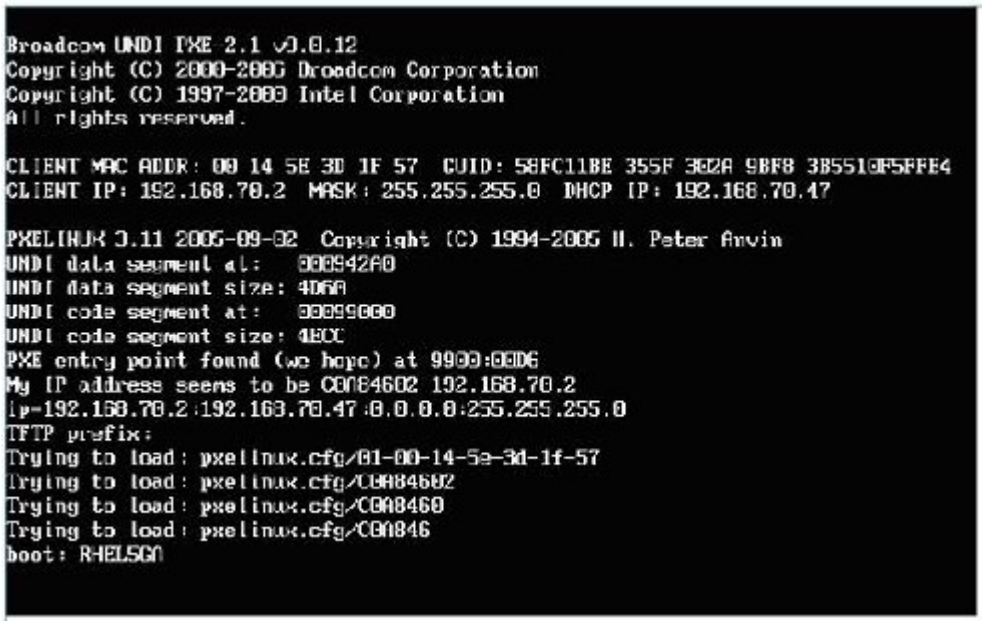
1. Power on the blade and press **F1** when prompted to enter the Configuration/Setup utility.
2. Select **Load Default Settings** then **Select Start Options**.

3. Select the Ethernet connection being used for the SAN. In this example Planar Ethernet 2 is being used. Set **Run PXE only on selected Planar NIC** to Enabled.
4. Press **Esc** to exit the settings menu, then save the settings and exit Setup.

PXE Boot

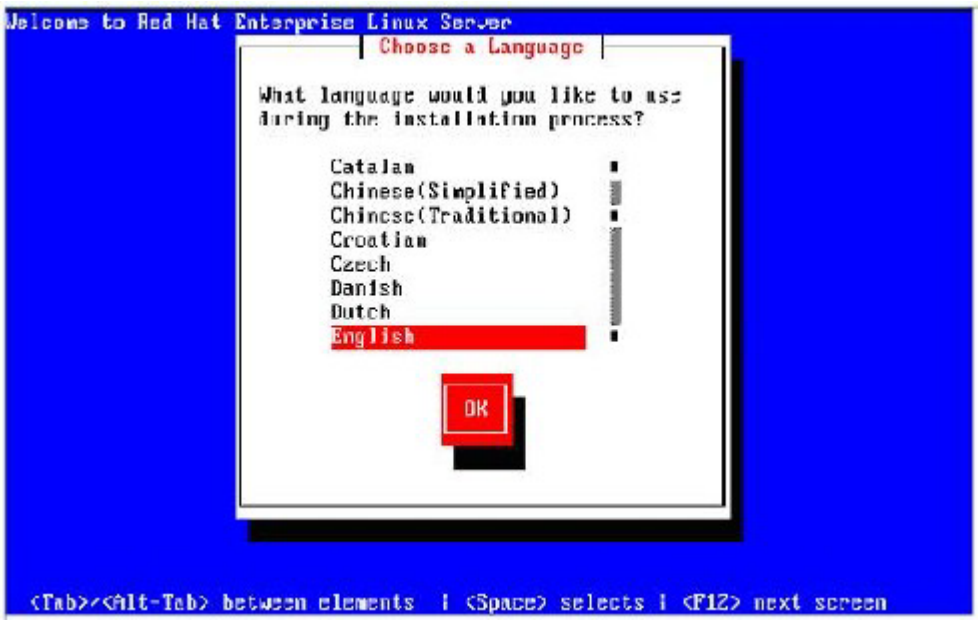
If you have configured your pxelinux file for a prompt, you will be prompted now.

At the prompt, enter the name of your PXE entry. For this example, it is RHEL5GA.



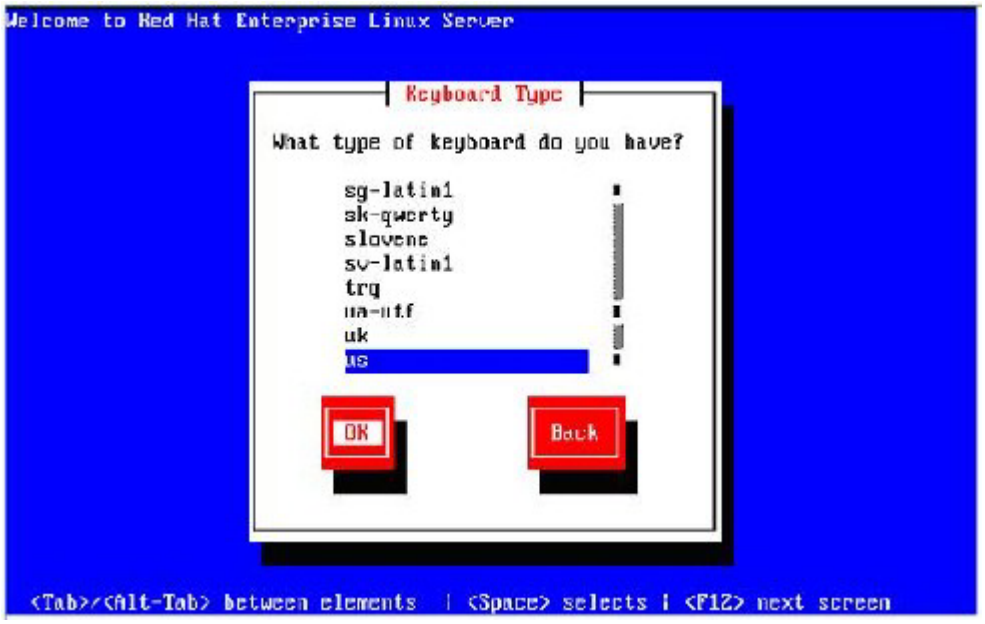
Select a language

Select your language, tab to **OK** and press **Enter**.



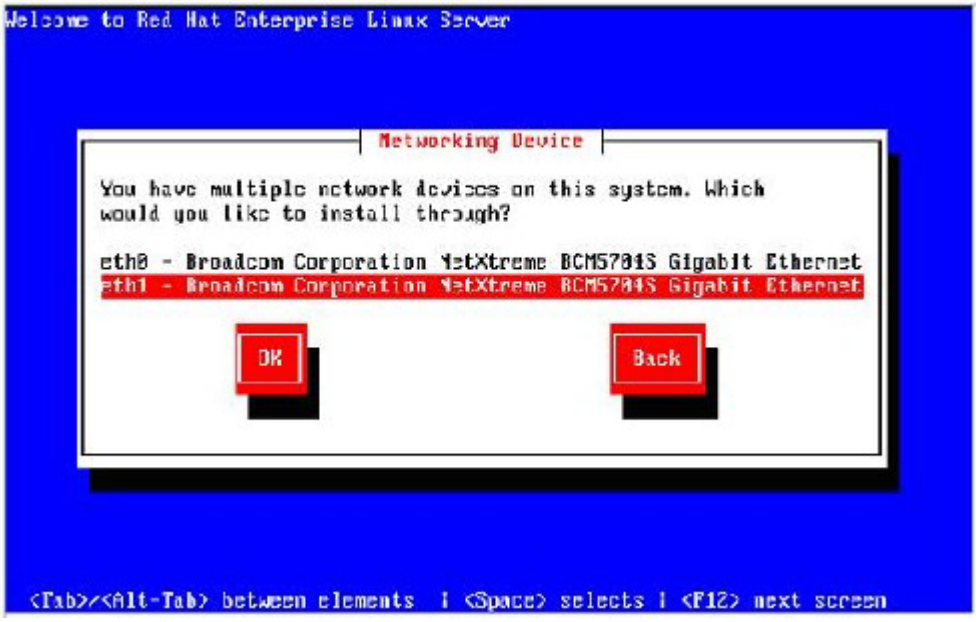
Keyboard type

Select your keyboard type, tab to **OK**, and press **Enter**.



Networking Device

Select your networking device, tab to **OK**, and press **Enter**. In this example the SAN is connected via eth1.



RHEL installation wizard

This section describes the panels and options for the RHEL installation wizard.

When you have completed the configuration steps, the RHEL installation wizard starts. To begin the wizard, follow these steps:

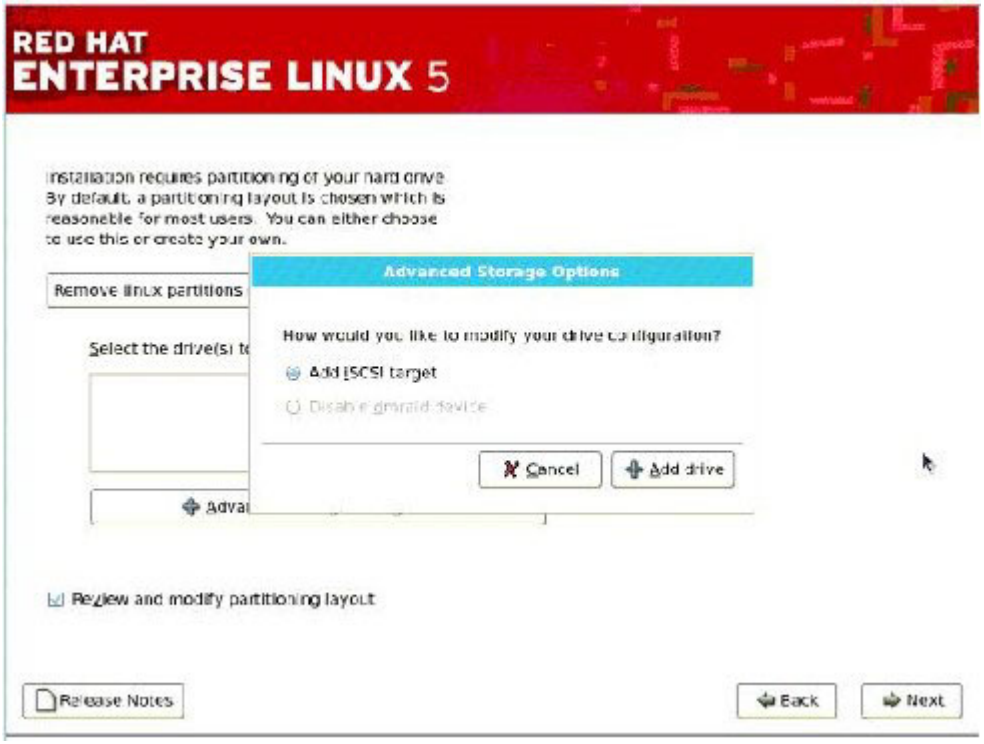
1. On the Start panel, click **Next** to continue to the Installation number panel.
2. If you have an Installation Number enter it on this panel. Otherwise select "Skip entering Installation Number".

Hard Drive

Next you must modify your drive configuration to include an iSCSI Target.

Modify your drive configuration using the following procedure:

1. Select **Review and modify partitioning layout**.
2. Click **Advanced storage configuration**.
3. Click **Add drive**.



4. Enter the Target IP Address.
5. Enter the IQN string you used when setting up the LUN on the iSCSI Target.
6. Click **Add target**. The LUN created on the iSCSI Target shows up as a drive.
7. Click **Next** to display the disk layout.
8. Verify the disk layout and click **Next** to configure and install the GRUB boot loader.
9.

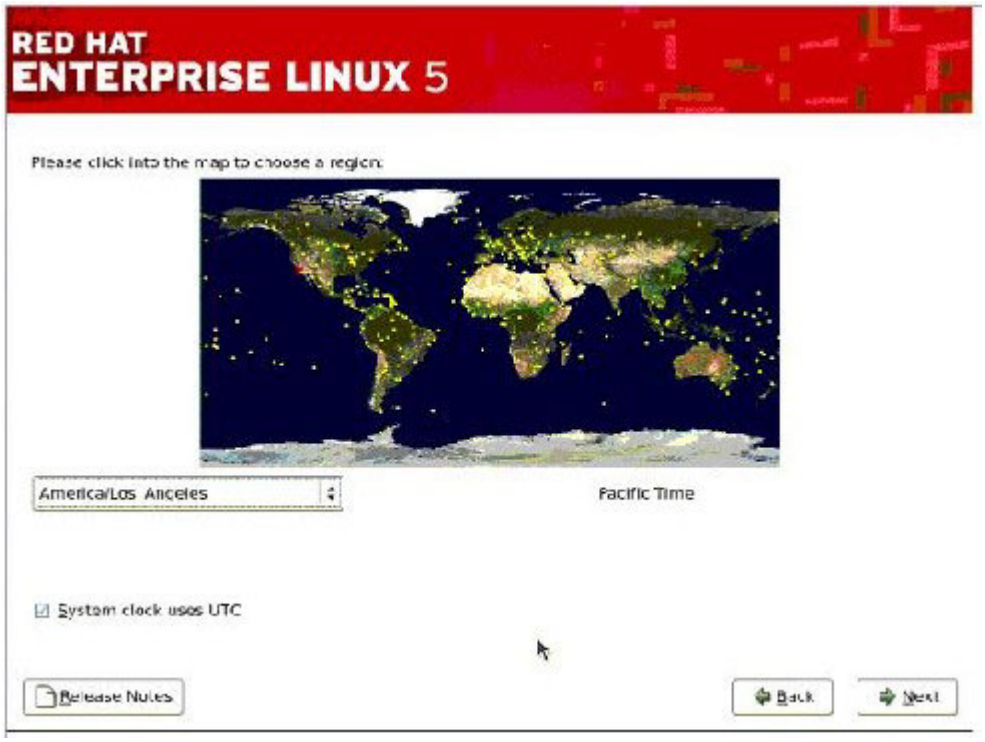
Network configuration

Use the Network Devices screen to set the device that will be active on boot.

In this example the LAN is on eth0 and the SAN is on eth1. Enable the checkbox next to eth0 and click **Next**.

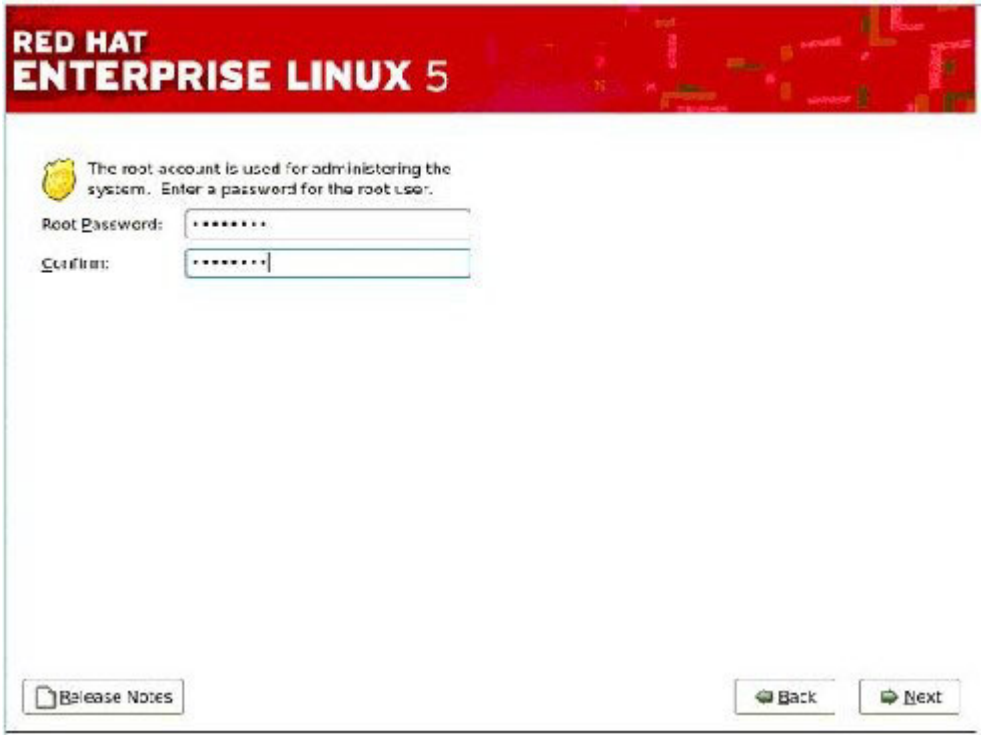
Time Zone

Set the time zone and click **Next**.



Root Password

Enter the Root password and click **Next**.



Installation Options

Select the options appropriate to you requirements and click **Next**.

Begin installation

Click **Next** to begin the installation.

Reboot

When the installation is complete, click **Reboot**. You must press **F1** during the reboot to perform additional configuration on the blade.

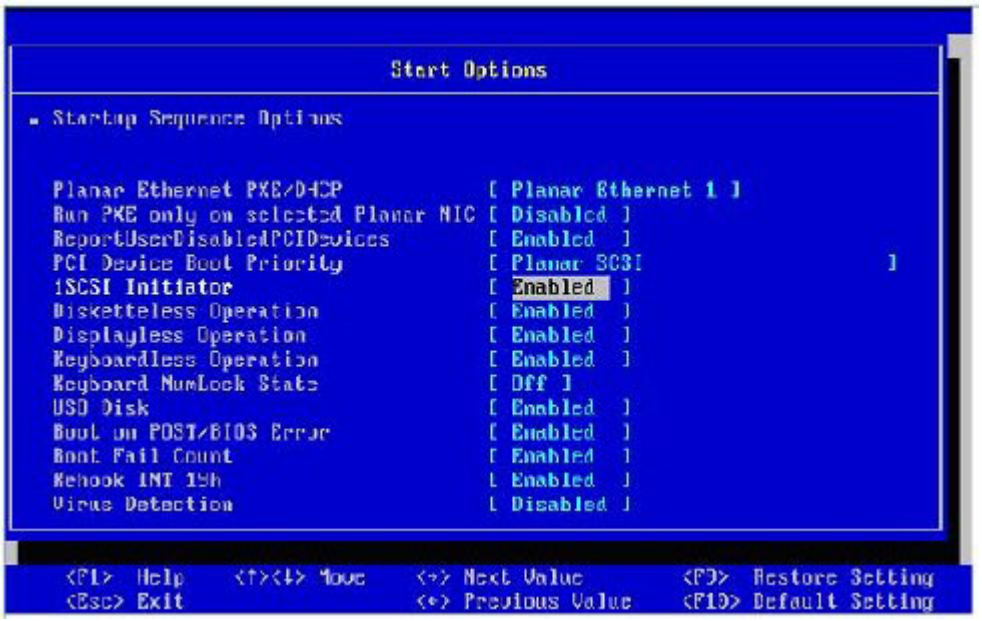
Blade reconfiguration

During the reboot, press **F1** to enter the Configuration/Setup utility and perform additional blade configuration.

After the installation is complete, you must perform the following additional configuration on the blade:

1. Select **Load Default Options** and then select **Start Options.**

2. On the **Start Options** panel, set "iSCSI Initiator" to **Enabled**.



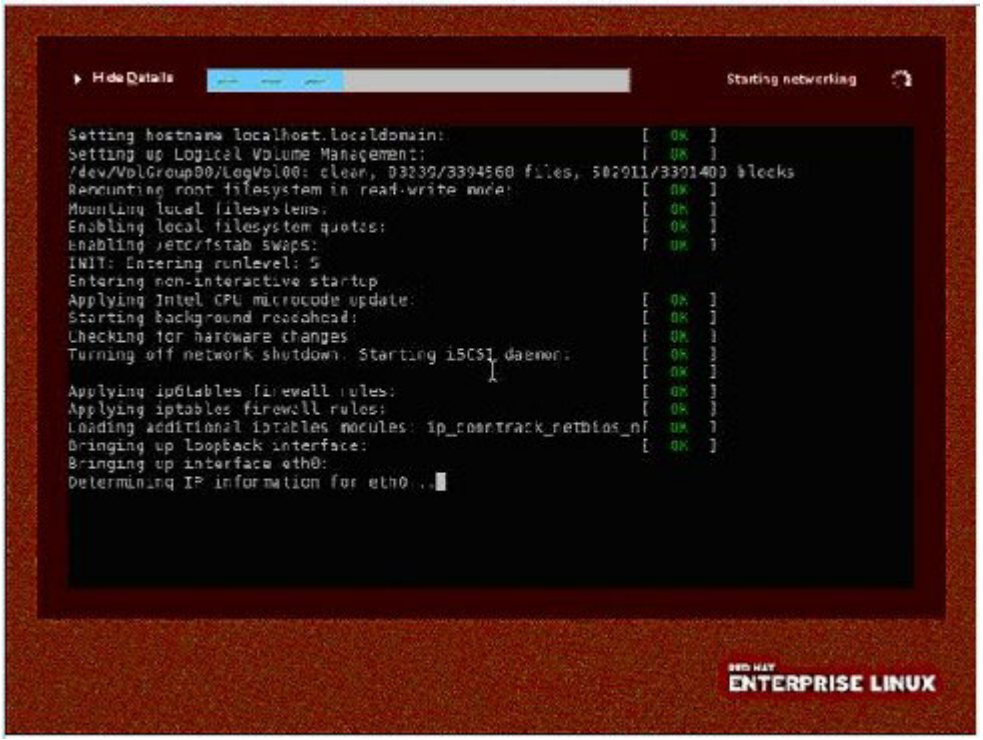
3. Press **Esc** to exit, then save your settings and exit the setup.

iSCSI Firmware login

You should now see the iSCSI firmware successfully log in to the iSCSI target.

RHEL Starts

After the iSCSI firmware has logged in to the target, RHEL starts.



RHEL Welcome screen

When the RHEL Welcome screen is displayed, click **Forward** to complete the installation.

RHEL License Agreement

The RHEL license agreement is displayed. Read the license agreement and, if you agree to it, select **Yes** and click **Next**.

Configure firewall

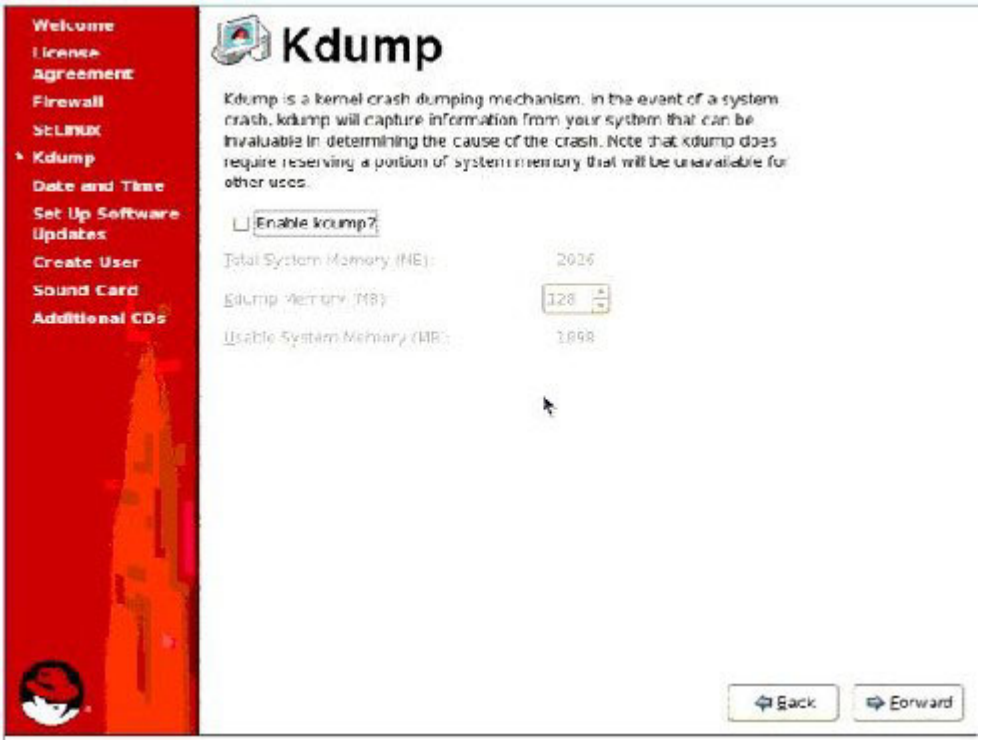
Configure the RHEL firewall as appropriate for your environment and click **Forward**.

Configure security

Select the SELinux Setting as appropriate. Click **Forward** to continue.

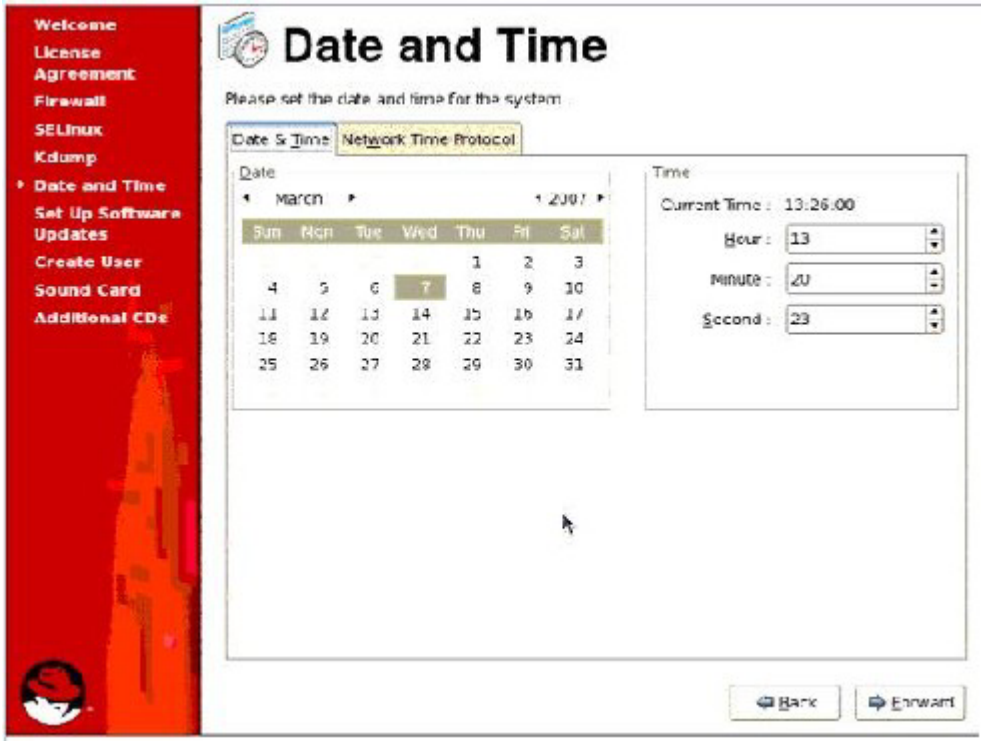
Disable KDump

For this example, KDump must be disabled. Ensure that it is, and click **Forward**.



Configure date and time

Set the date and time and click **Forward** to continue.



Software Updates

For this example, skip setting up Software Updates by clicking **Forward**.

Create User

Enter the user information and click **Forward**.

Sound Card

The sound card is not necessary for this example. Click **Forward** to continue.

Additional CDs

You are prompted for additional CDs. There are no additional CDs for this installation. Click **Forward** to continue.

Installation complete

You have completed all of the required steps for installation.

To begin using the installation, login with the user credentials you supplied during the installation.

Appendix. Notices

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