



Linux

Linux is a community of open-source Unix like operating systems that are based on the Linux Kernel.



54 Hrs

HCL

Copyright © 2022 HCL Technologies Limited

Module Duration



54 hrs.

S. No.	Topic	Duration (in hrs.)
1	Linux History And Introduction	6
2	Linux-Basics	6
3	Vim Editor	6
4	Linux Commands	6
5	File Permissions	6
6	Process Control	6
7	UNIX	6
8	Unix shell scripting	12

** Note: 15 hours of additional hands-on lab practice*

HCL



Learning Objectives

This Topic provides an introduction to LINUX History And Introduction

Learner completing the **course** would know:

- Linux History
- Linux Basics
- VIM Editor
- Linux commands
- File permissions
- Process control
- UNIX Operating System
- Shell Scripting



Chapter

2

RHEL 7.0 Installation Process

Download and install in Oracle Virtual Box



Topic Coverage

Topics
Installation Process

6Hours



Discussion Point

- How to install
- Installation process
- settings



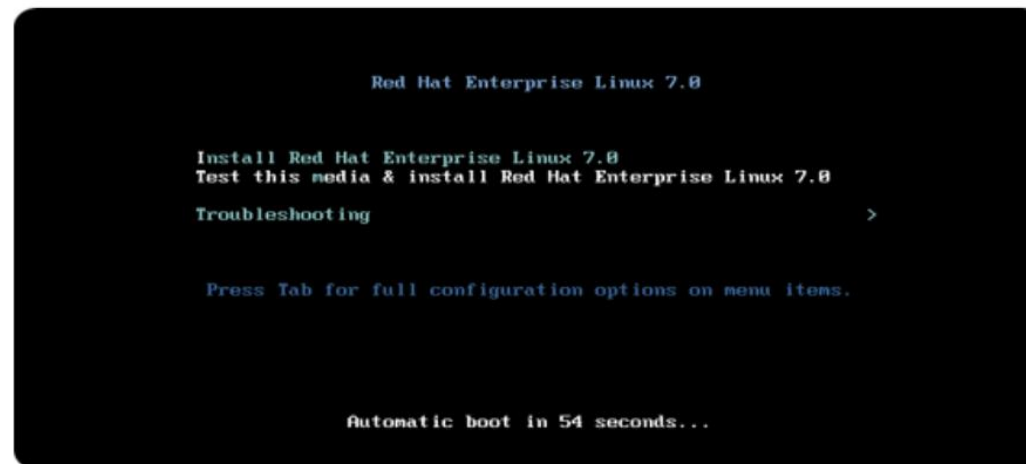
Instructions & Duration

- The participants has to download RHEL7.0 and Oracle virtual Box
- Install RHEL in Oracle virtual Box





INSTALLATION PROCESS

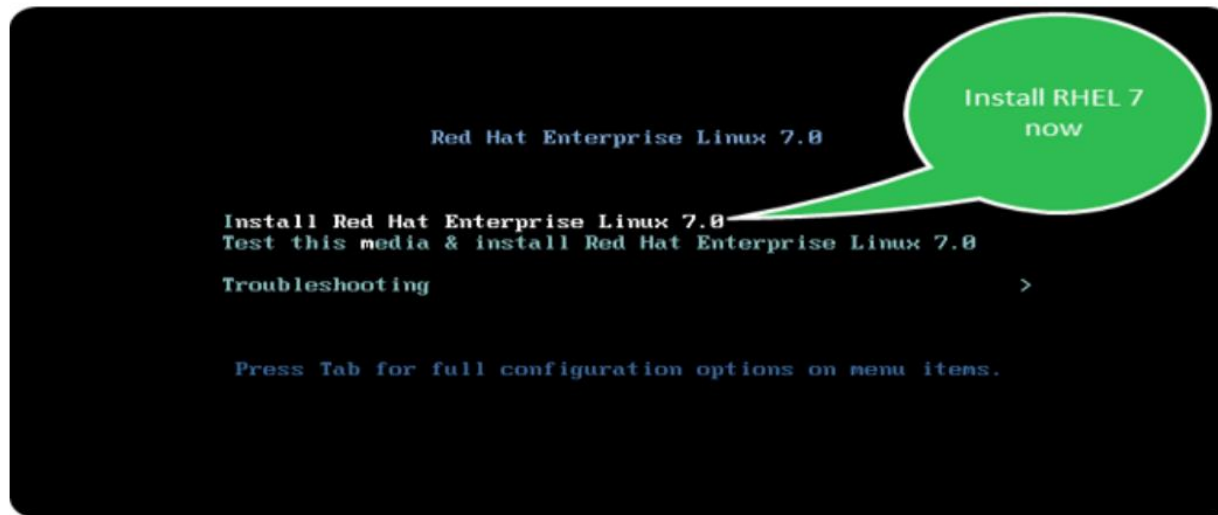


Turn on your machine and allow it to boot from the RHEL 7 boot media. Once your machine boots, you would see following screen. This is the Boot Menu of Red Hat Linux 7. Use the Arrow Keys on keyboard to choose your option.



INSTALLATION PROCESS

- So go ahead and select the option “Install Red Hat Enterprise Linux 7.0” and press Enter key



INSTALLATION PROCESS



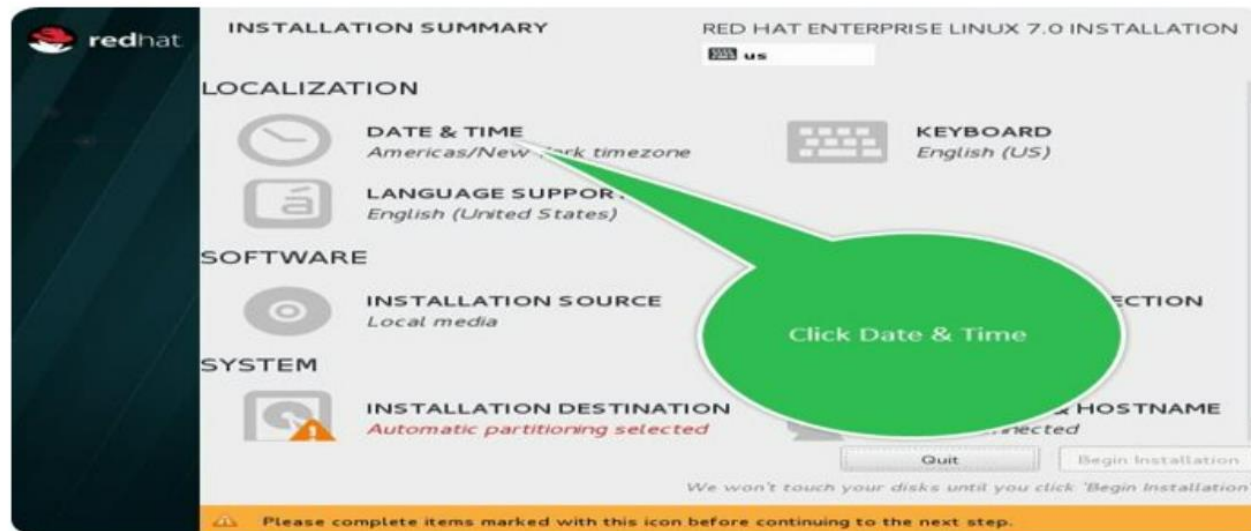
Here you need to choose the **language** would you like to use during the installation process.

INSTALLATION PROCESS



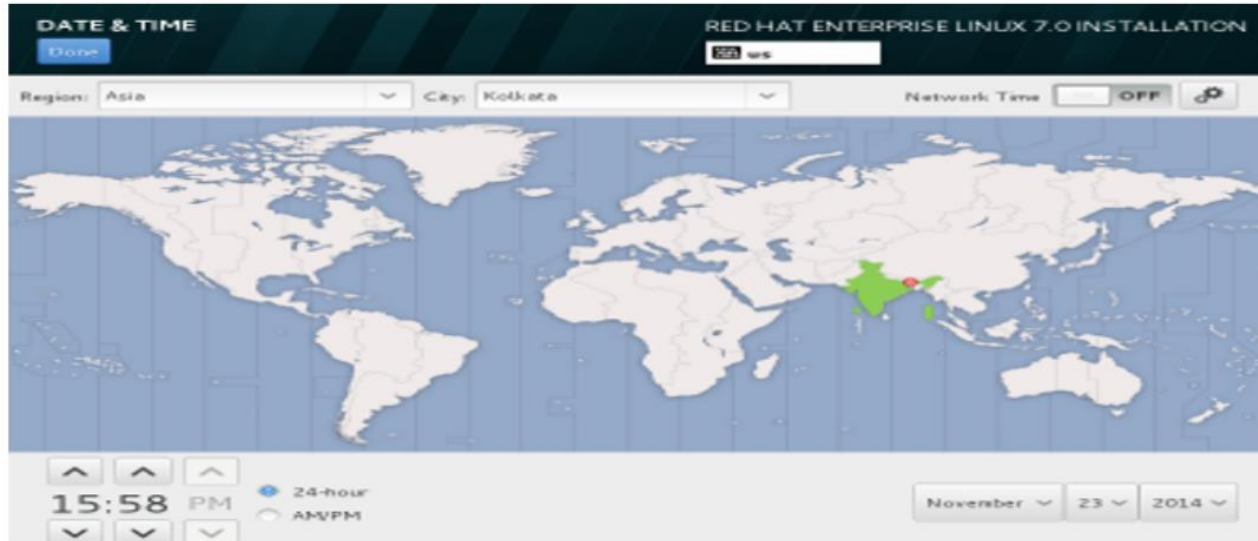
you need to configure all your installation options from this single screen.

INSTALLATION PROCESS



- So, first set correct Date and Time. To set Date and time, click on Date and Time option as shown below.

INSTALLATION PROCESS



The screenshot shows the 'DATE & TIME' configuration window in the Red Hat Enterprise Linux 7.0 installation process. The window has a dark header with the title 'DATE & TIME' and a 'Done' button. Below the header, there are dropdown menus for 'Region' (set to 'Asia') and 'City' (set to 'Kolkata'). To the right, there is a 'Network Time' checkbox (unchecked) and a gear icon. The main area features a world map with India highlighted in green. At the bottom, there are controls for the time format: '24-hour' (selected) and 'AM/PM' (unselected). The time is displayed as '15:58 PM'. To the right of the time, there are dropdown menus for the month ('November'), day ('23'), and year ('2014').

Here, you can select the Time Zone (I selected Europe, Budapest), Select Date, Month and year. You may also select the Time Format (24 Hr or AM/PM format).

INSTALLATION PROCESS



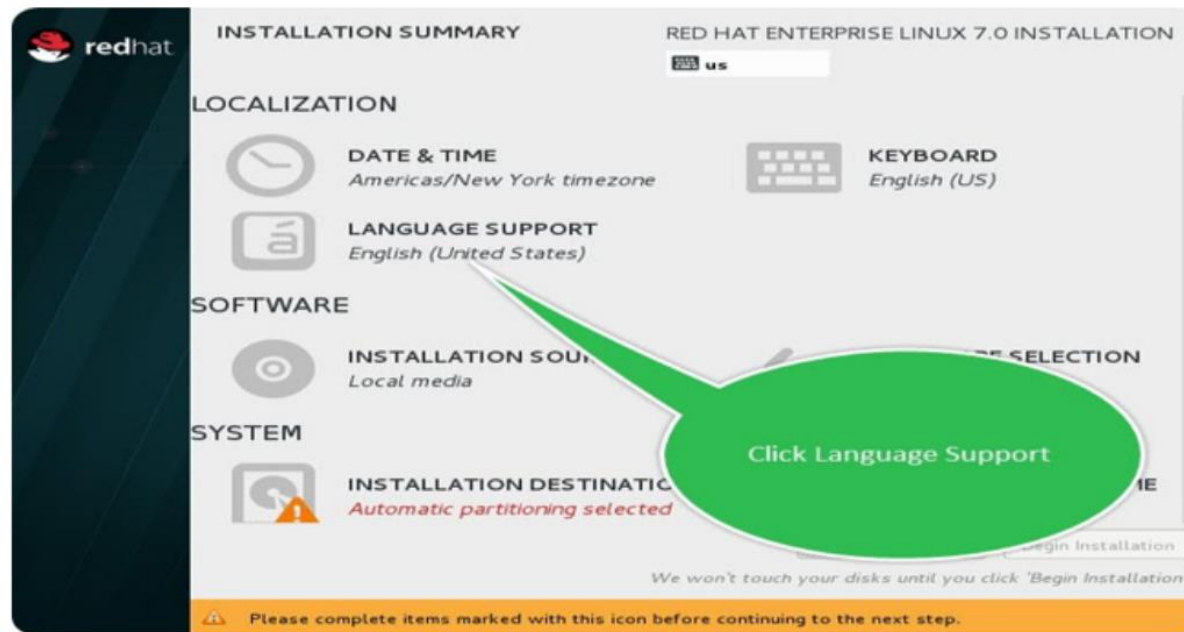
Once you are done with Date & Time setup, click on Done button.

INSTALLATION PROCESS



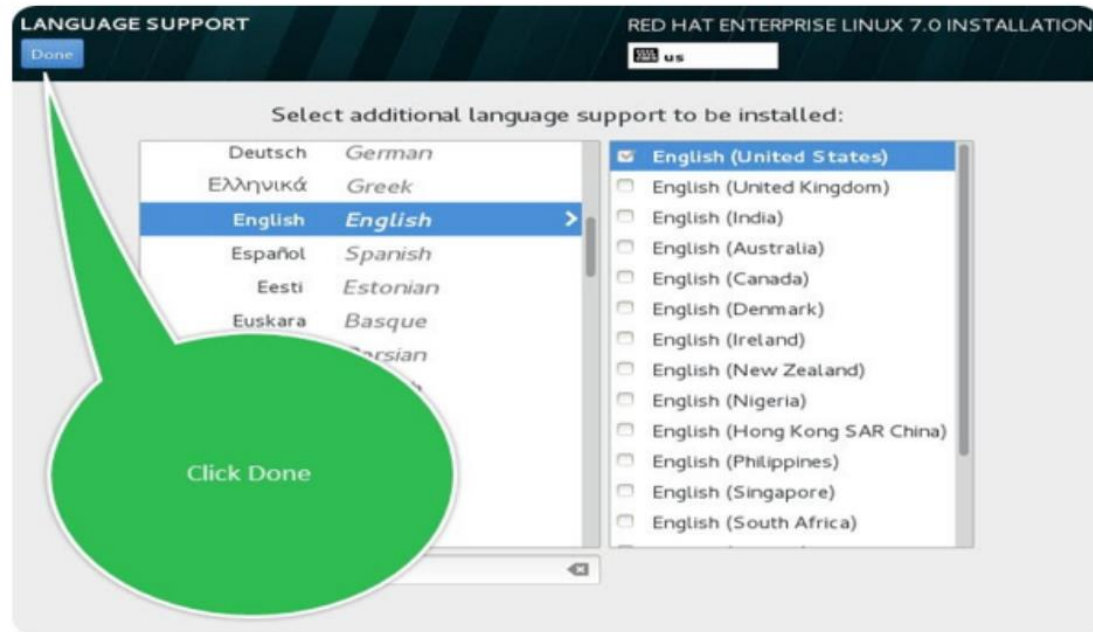
Now we are back at the Summary Screen, click on Keyboard as shown below

INSTALLATION PROCESS



Now you will be back at the Summary Screen, click on Language support button.

INSTALLATION PROCESS



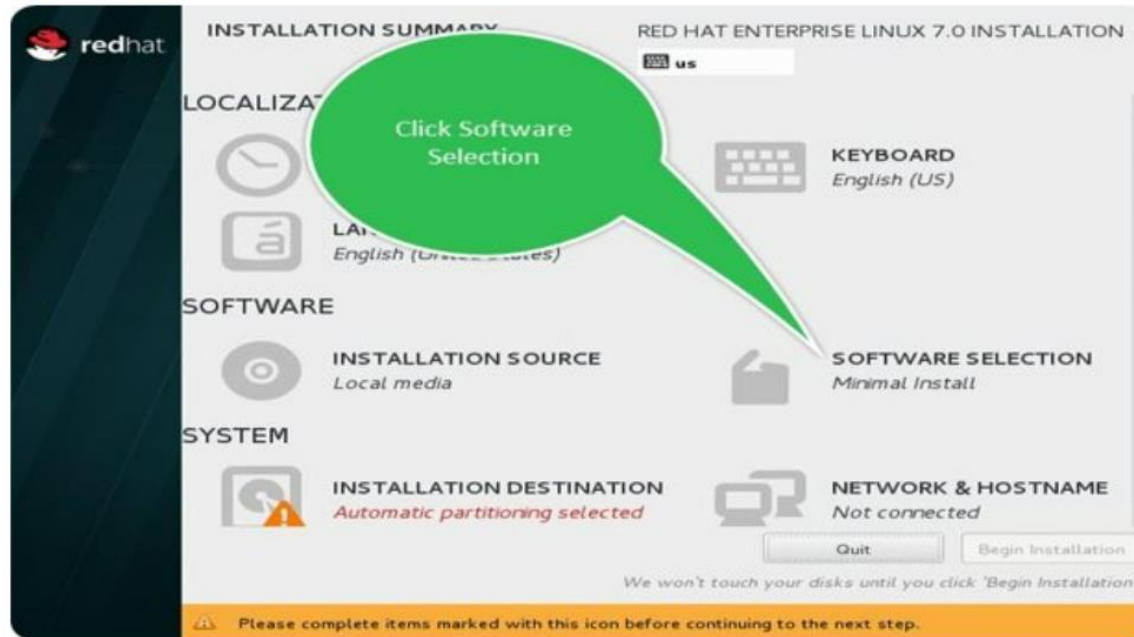
Once you selected the languages you want to use, click on Done button.

INSTALLATION PROCESS



Once you click on Done button, you will be back at Installation Summary Screen. Click on Installation Source option now.

INSTALLATION PROCESS



Once you are done with Installation Source window, click on Done button. Now you are back at the Red Hat Enterprise Linux 7 Summary Screen. Click on Software Selection option.



INSTALLATION PROCESS

SOFTWARE SELECTION

Done

RED HAT ENTERPRISE LINUX 7.0 INSTALLATION

us

Base Environment

☐ Minimal Install
Basic functionality.

☐ Infrastructure Server
Server for operating network infrastructure services.

☐ File and Print Server
File, print, and storage server for enterprises.

☐ Basic Web Server
Server for serving static and dynamic internet content.

☐ Virtualization Host
Minimal virtualization host.

☒ Server with GUI
Server for operating network infrastructure services, with a GUI.

Add-Ons for Selected Environment

☐ authentication policies.

☐ Infiniband Support
Software designed for supporting clustering and grid connectivity using RDMA-based InfiniBand and iWARP fabrics.

☐ Java Platform
Java support for the Red Hat Enterprise Linux Server and Desktop Platforms.

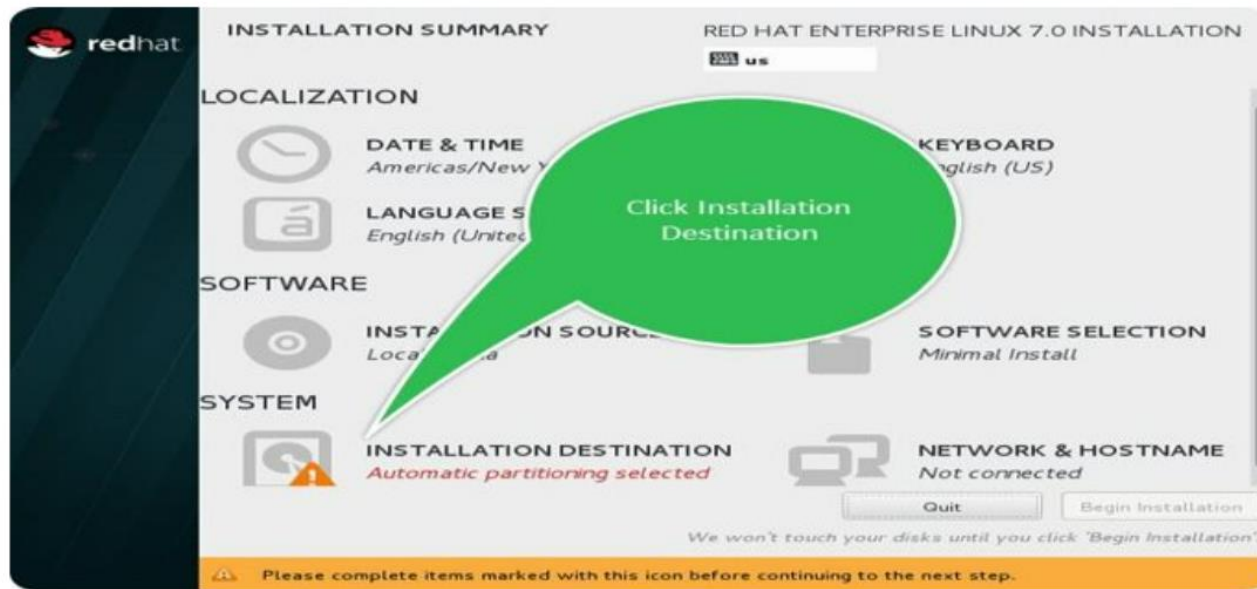
☒ KDE
The KDE Plasma Workspaces, a highly-configurable graphical user interface which includes a panel, desktop, system icons and desktop widgets, and many powerful KDE applications.

☐ Large Systems Performance
Performance support tools for large systems.

☐ Load Balancer
Load balancing support for network traffic.

Once you are completed with Software Selection, click on **Done** button.

INSTALLATION PROCESS



Again you are back at the Summary Screen, Click Installation Destination option.

INSTALLATION PROCESS

INSTALLATION DESTINATION RED HAT ENTERPRISE LINUX 7.0 INSTALLATION

[Done](#) en_US

Device Selection

Select the device(s) you'd like to install to. They will be left untouched until you click on the main menu's "Begin Installation" button.

Local Standard Disks

Capacity	Device	Free Space
20.48 GB	VMware, VMware Virtual S sda	20.48 GB free

Specialized & Network Disks

[Add a disk...](#)

Other Storage Options

Partitioning

☒ Automatically configure partitioning. ☐ I will configure partitioning.

[Full disk summary and bootloader...](#)

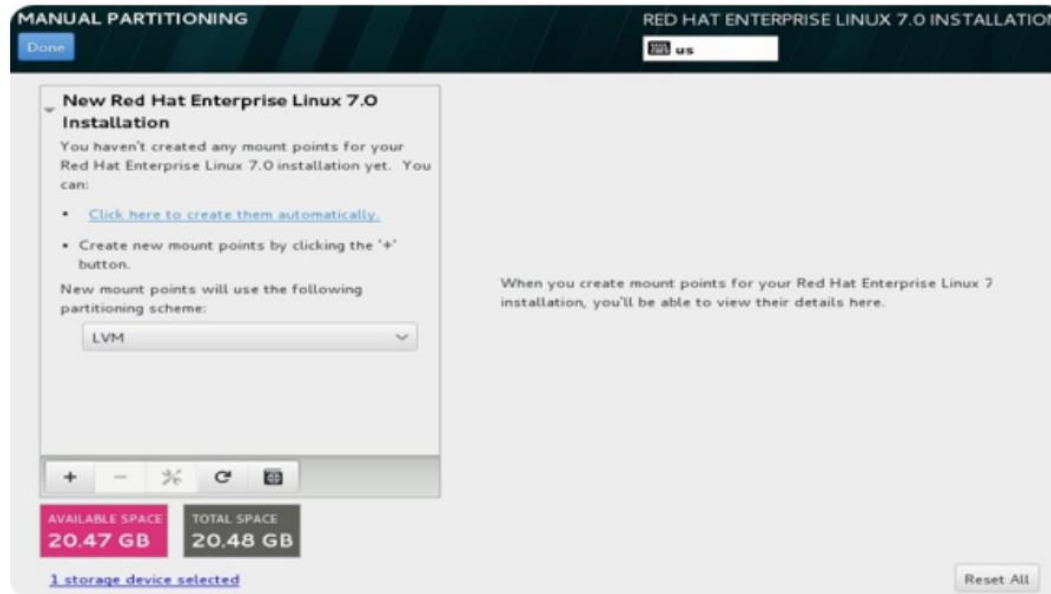
1 disk selected; 20.48 GB capacity; 20.48 GB free

Disks left unselected here will not be touched.

custom partition



INSTALLATION PROCESS



Once you click Done button, the screen will be like the screenshot shown below. If you have chosen Automatically Configure Partitioning option, then everything will be configured automatically. If not, you have to create mount points or partitions manually.

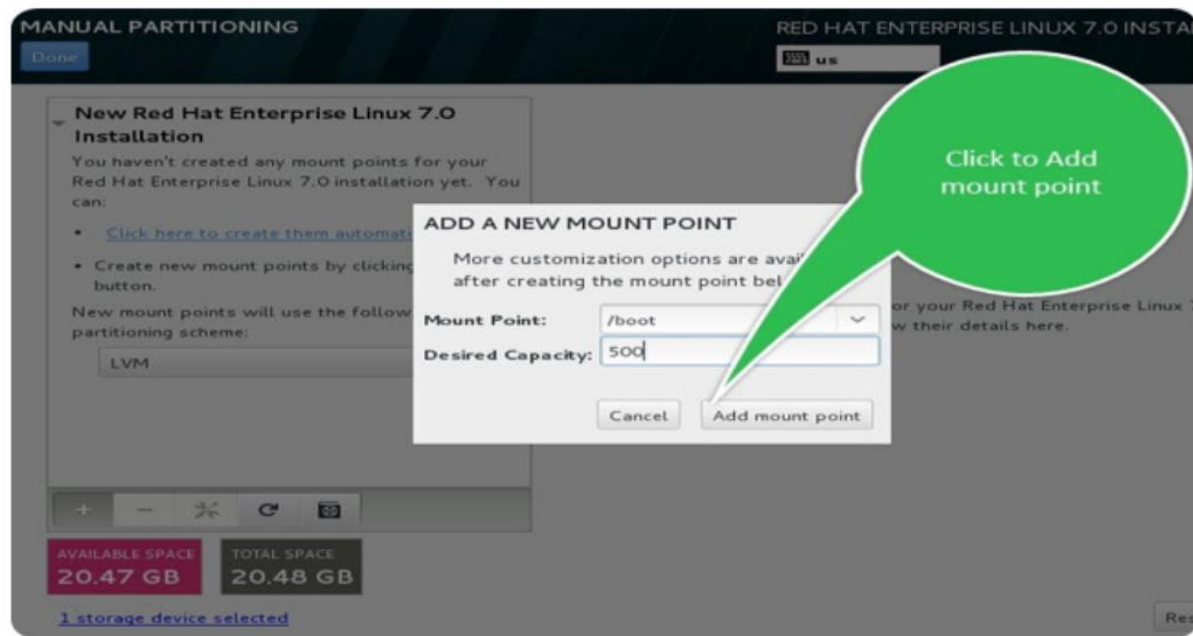


INSTALLATION PROCESS



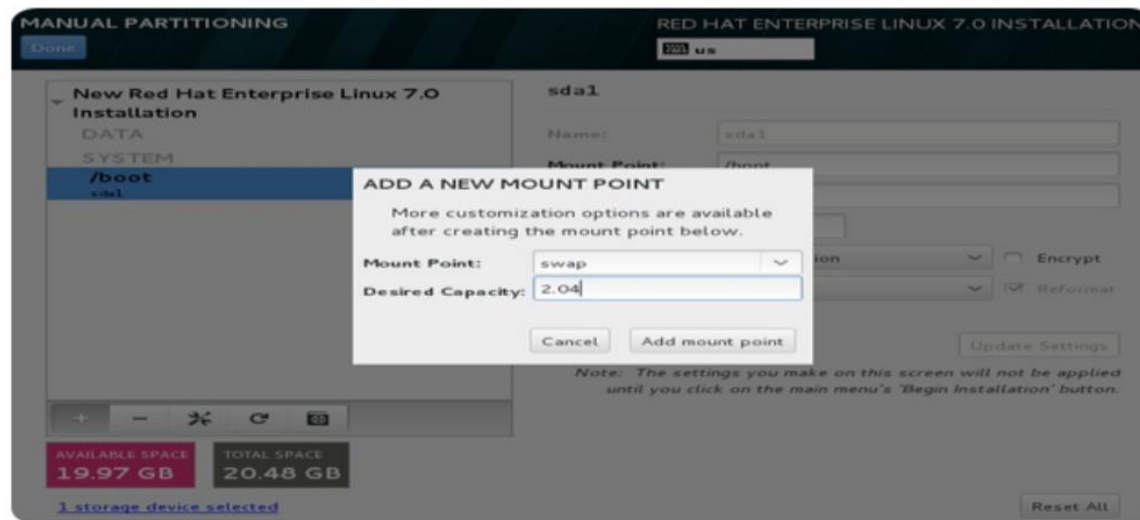
To create the mount points, click the + sign as shown below.

INSTALLATION PROCESS



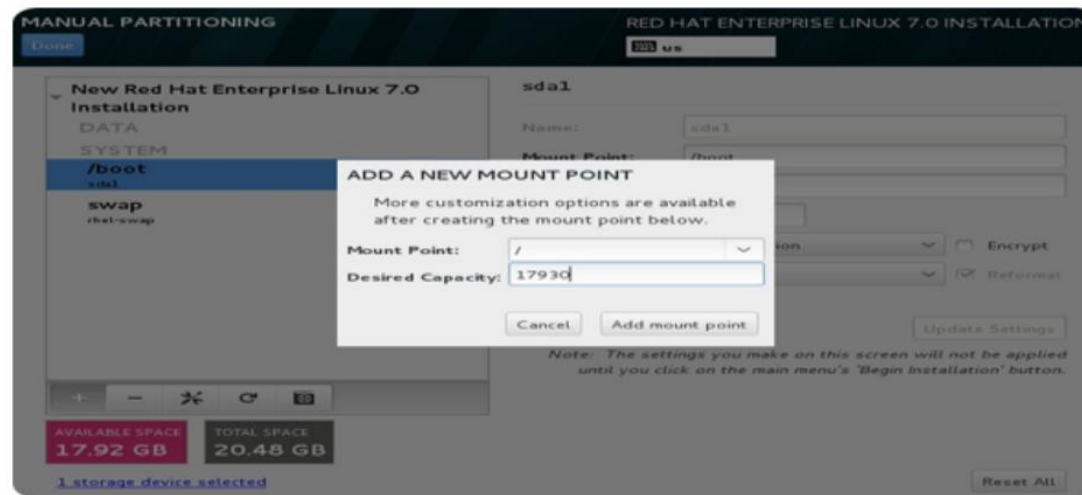
Here, you need to create /boot, swap and / mount points. First create the /boot partition or mount point. 500MB will be enough for /boot mount point.

INSTALLATION PROCESS.



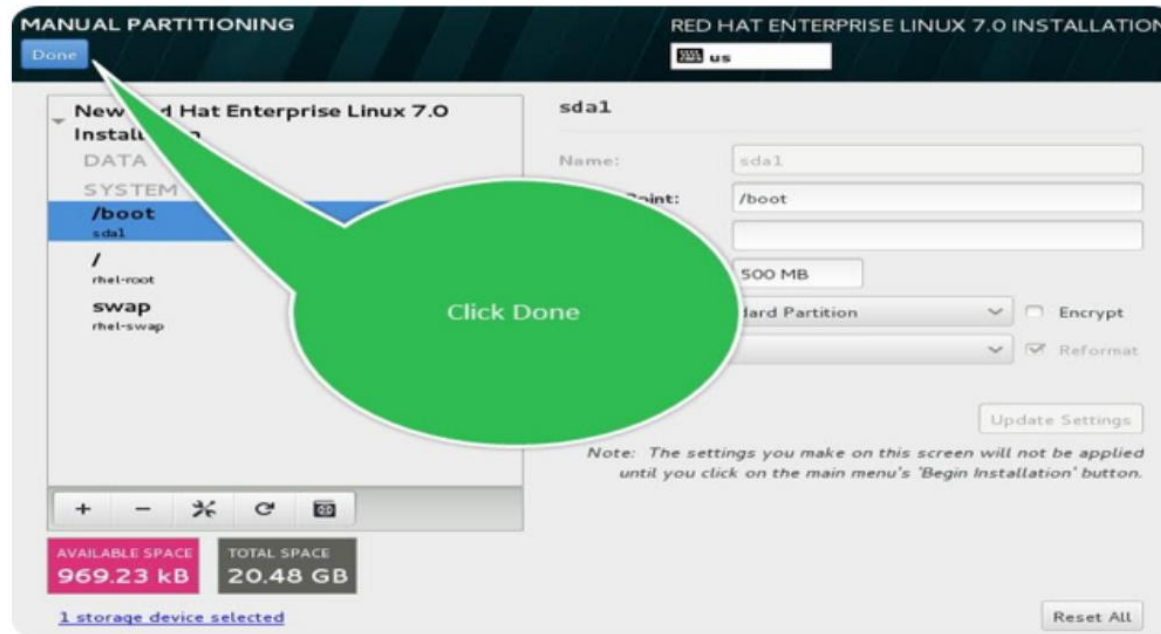
Next create the **swap** mount point or partition. Click the **+** sign button again and select swap size. I would recommend you to choose double the amount of RAM memory as your swap size. In my machine, I only have 1 GB memory hence I will choose 2GB. Click **Add mount point** button once selected the right swap mount point size

INSTALLATION PROCESS



Next, create mount point for /. So click on + sign button again and add all available space for /.

INSTALLATION PROCESS



The screenshot shows the 'MANUAL PARTITIONING' window for 'RED HAT ENTERPRISE LINUX 7.0 INSTALLATION'. The window has a dark header with a 'Done' button on the left and a language selector ('en us') on the right. The main area is divided into two panes. The left pane shows a tree view of the partitioning process, with 'New Red Hat Enterprise Linux 7.0' at the top, followed by 'Installation', 'DATA', 'SYSTEM', and a list of partitions: '/boot', 'sda1', '/', 'rhel-root', 'swap', and 'rhel-swap'. The right pane shows the configuration for the selected partition 'sda1', including fields for 'Name' (sda1), 'Mount' (/boot), 'Size' (500 MB), 'Format' (Standard Partition), and checkboxes for 'Encrypt' and 'Reformat'. A green callout bubble with the text 'Click Done' points to the 'Done' button. At the bottom, there are buttons for '+', '-', 'X', 'R', and 'B', a status bar showing 'AVAILABLE SPACE 969.23 kB' and 'TOTAL SPACE 20.48 GB', a note about settings, and a 'Reset All' button.

MANUAL PARTITIONING

RED HAT ENTERPRISE LINUX 7.0 INSTALLATION

Done

New Red Hat Enterprise Linux 7.0

Installation

DATA

SYSTEM

/boot

sda1

/

rhel-root

swap

rhel-swap

sda1

Name: sda1

Mount: /boot

Size: 500 MB

Format: Standard Partition

Encrypt

Reformat

Update Settings

Note: The settings you make on this screen will not be applied until you click on the main menu's 'Begin Installation' button.

AVAILABLE SPACE 969.23 kB

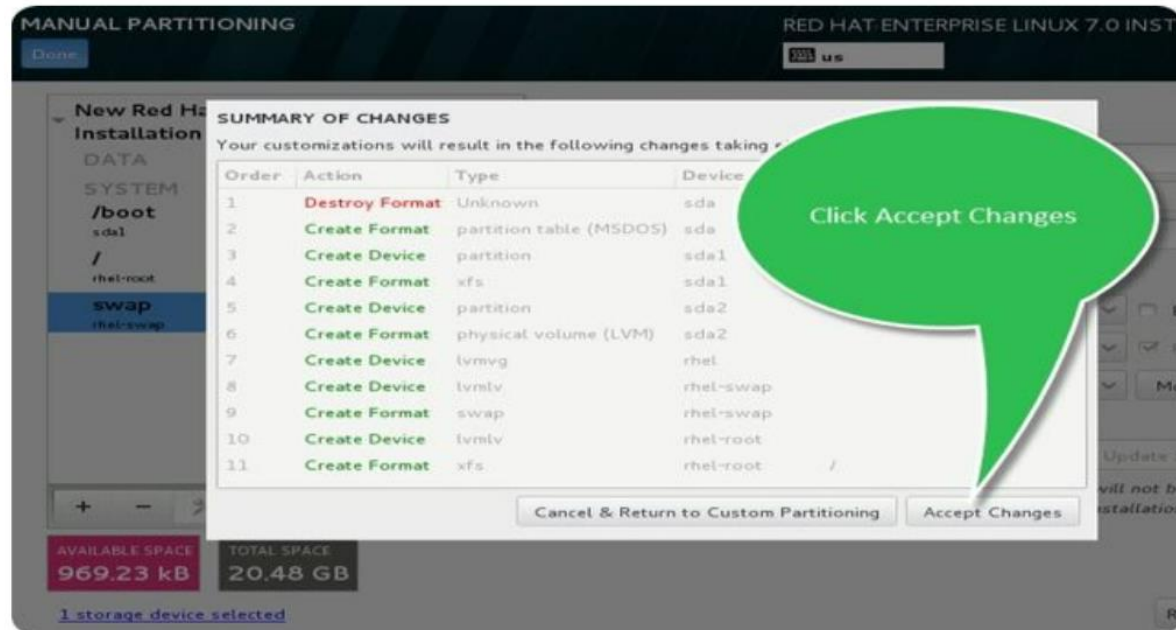
TOTAL SPACE 20.48 GB

1 storage device selected

Reset All

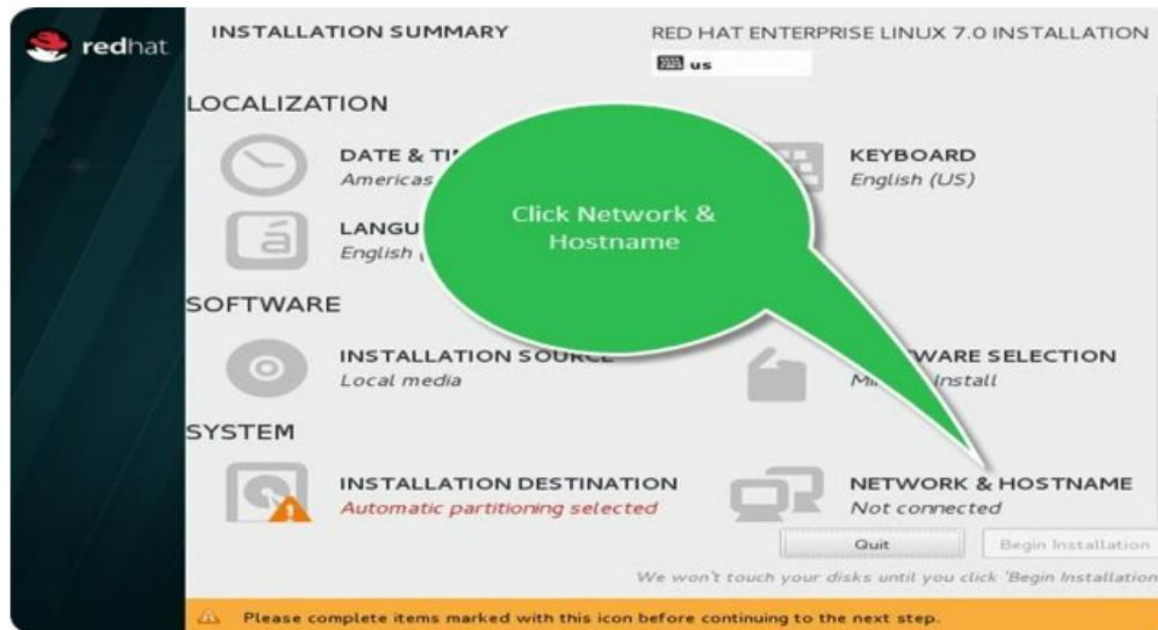
Once you created the mount points and set the right sizes, click the Done button.

INSTALLATION PROCESS



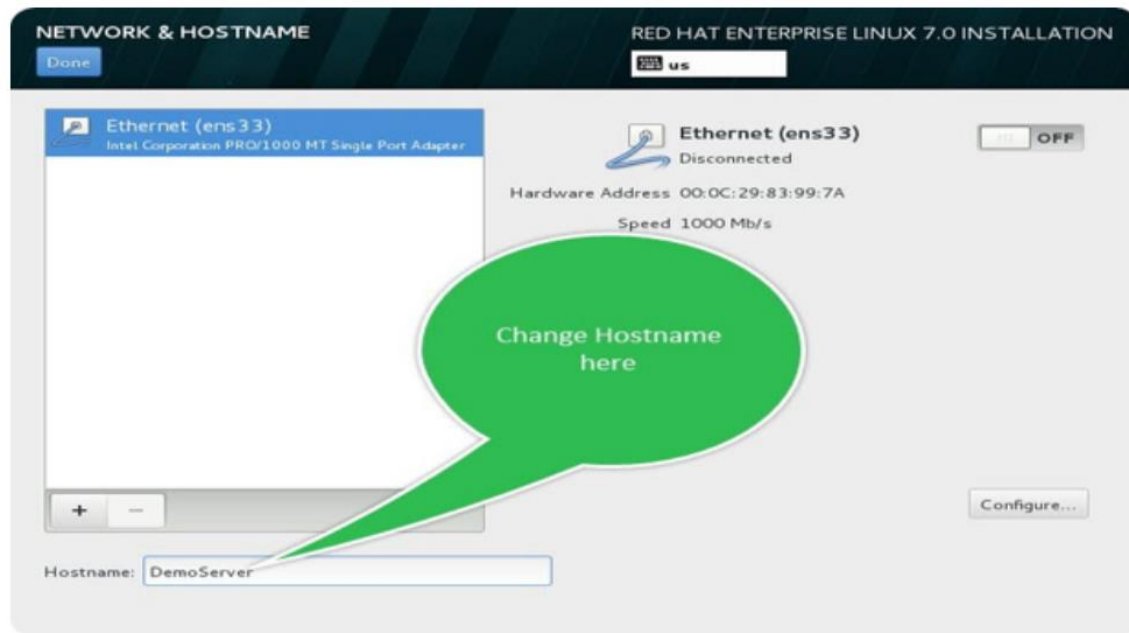
At the Summary of Changes screen, you need to confirm the changes you have done with mount points. Click on Accept changes button to proceed.

INSTALLATION PROCESS



. Click on **Network & Hostname** option to configure Networking properties. A new window will pop-up on your screen. Here you can change the hostname, Network card properties etc.

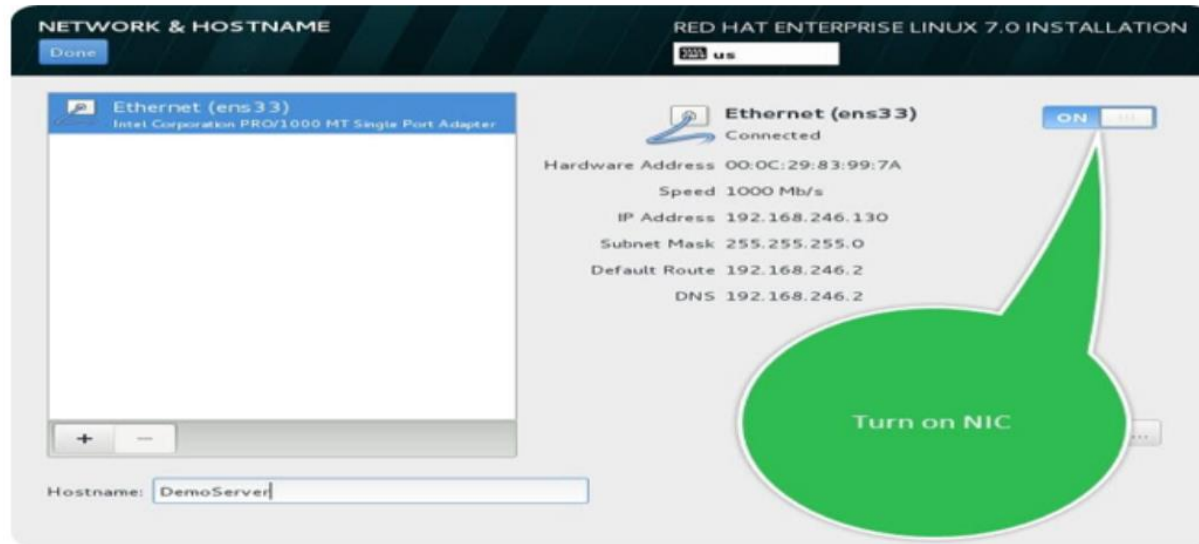
INSTALLATION PROCESS



First change the hostname, I will choose the name as "DemoServer".

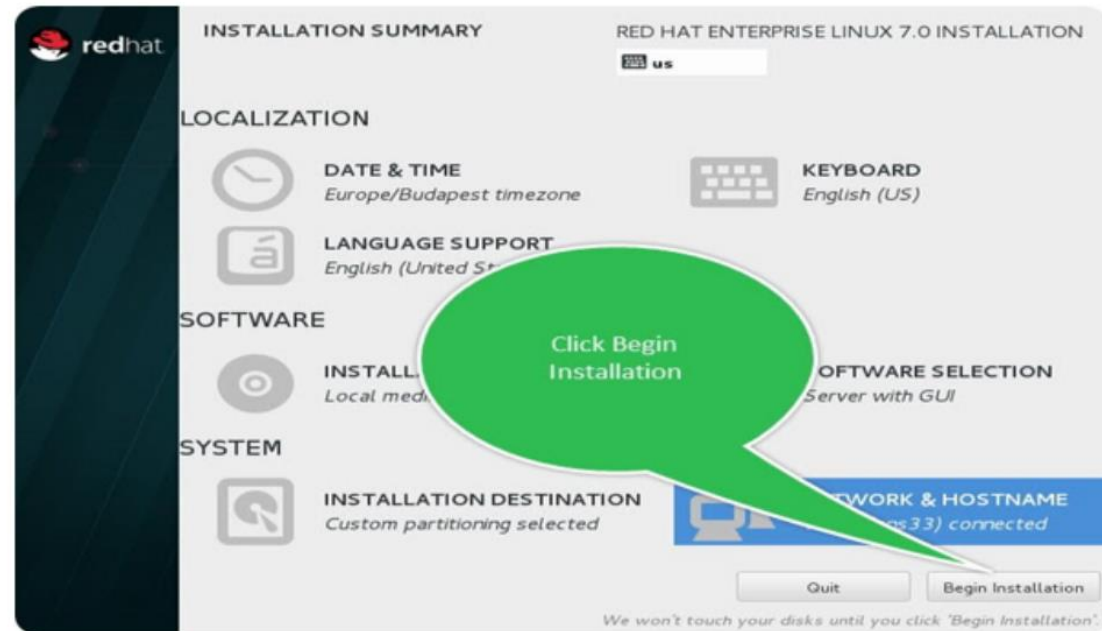


INSTALLATION PROCESS



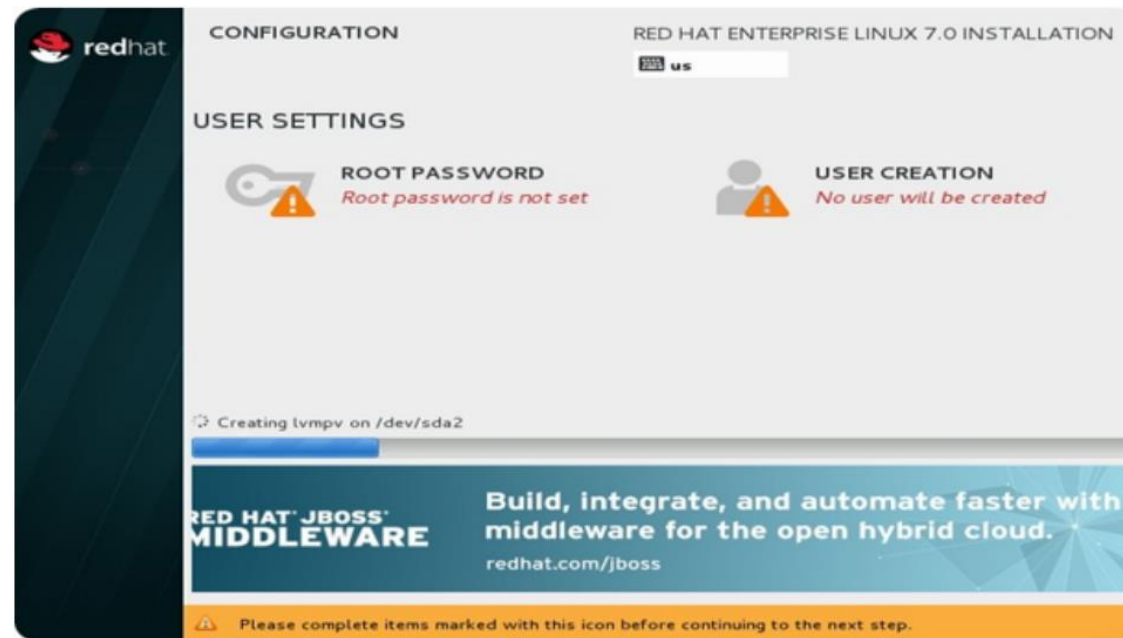
Next you can enable the Network Card interface. Simply bring-up (**Turn ON**) the network card and it will receive an IP address (if your network card is connected to the network port and a DHCP server is available). In my case, I received an IP address from my DHCP server

INSTALLATION PROCESS



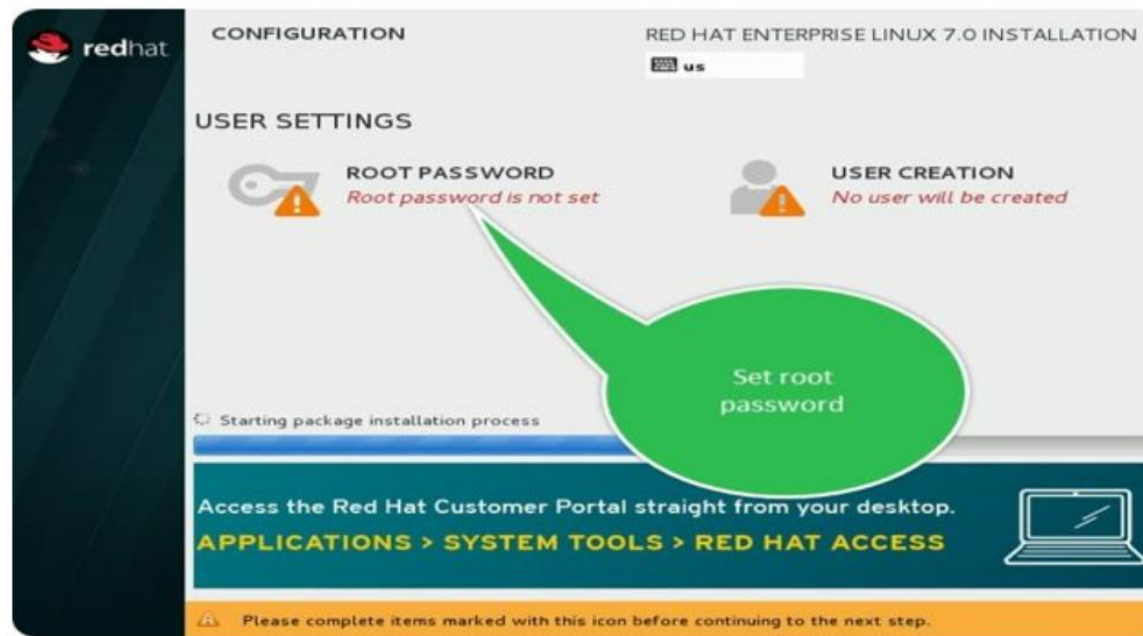
To start the Red Hat Enterprise Linux 7 installation, click on Begin Installation button.

INSTALLATION PROCESS



Linux installer will start formatting the disk and start copying the files. The screen will look similar to this.

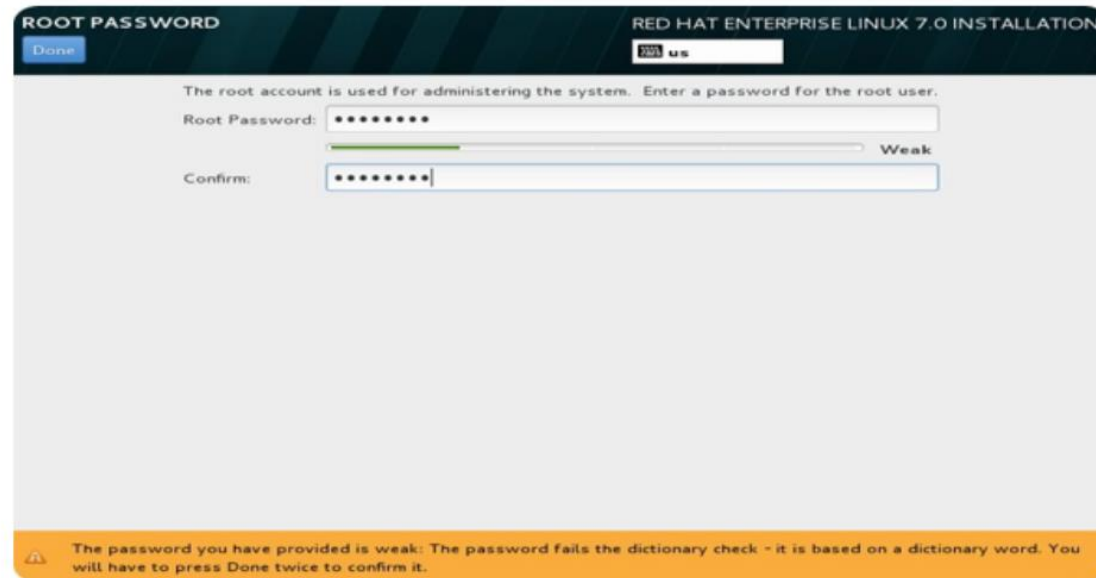
INSTALLATION PROCESS



While files are getting copied or installed, you need to configure user settings as well. You need to set a password for **root** user and need to create one more user as well. Click on **Root Password** option now.



INSTALLATION PROCESS




ROOT PASSWORD RED HAT ENTERPRISE LINUX 7.0 INSTALLATION

[Done](#)

The root account is used for administering the system. Enter a password for the root user.

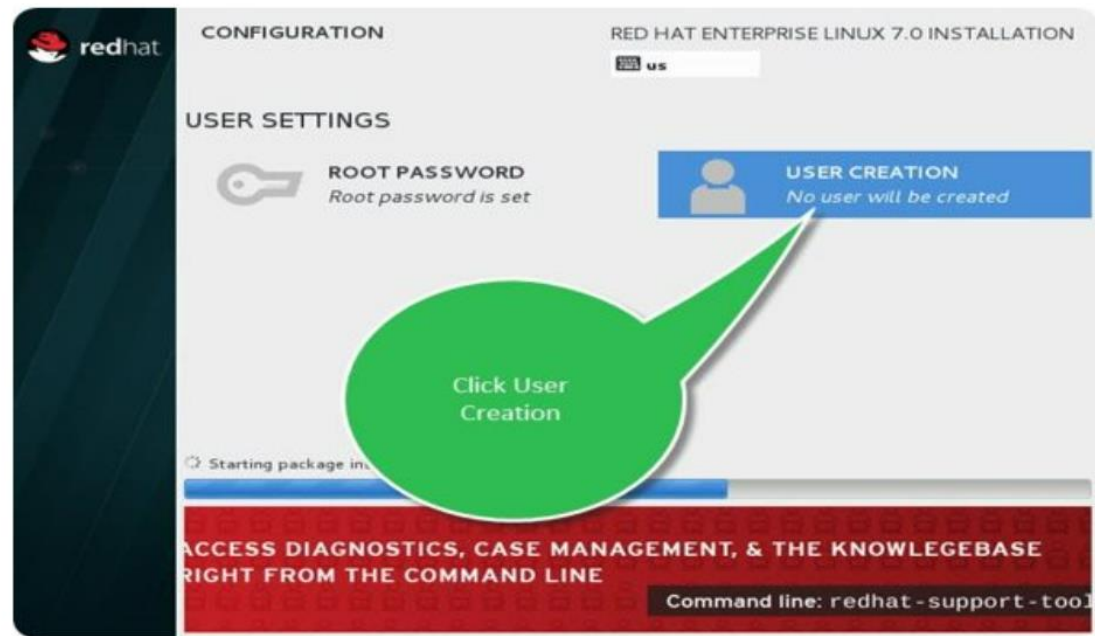
Root Password: Weak

Confirm:

 The password you have provided is weak: The password fails the dictionary check - it is based on a dictionary word. You will have to press Done twice to confirm it.

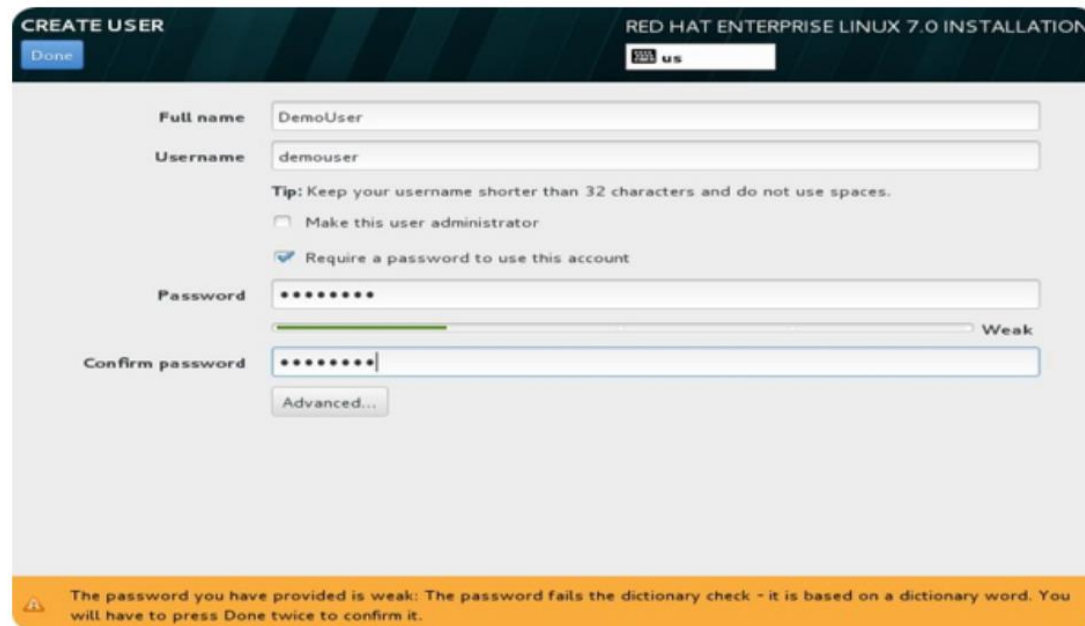
Enter password for the root user and confirm it by re-entering it. root user have all administrative rights hence you should use a complex password. If you are using simple dictionary based words, then you will have to click the **Done** button **twice** to proceed.

INSTALLATION PROCESS



Once you set the root user password, you may to create a new user account on your Red Hat Machine. Click on User Creation as shown below.

INSTALLATION PROCESS



The screenshot shows the 'CREATE USER' window in the Red Hat Enterprise Linux 7.0 installation process. The window has a dark header with the title 'CREATE USER' and a 'Done' button. The main area contains several input fields: 'Full name' with 'DemoUser', 'Username' with 'demouser', and 'Password' with masked characters. Below the password field is a strength indicator showing a green bar and the word 'Weak'. There are also checkboxes for 'Make this user administrator' (unchecked) and 'Require a password to use this account' (checked). A 'Confirm password' field is also present. At the bottom, an orange warning box states: 'The password you have provided is weak: The password fails the dictionary check - it is based on a dictionary word. You will have to press Done twice to confirm it.'

CREATE USER

RED HAT ENTERPRISE LINUX 7.0 INSTALLATION

Done

Full name DemoUser

Username demouser

Tip: Keep your username shorter than 32 characters and do not use spaces.

☐ Make this user administrator

☒ Require a password to use this account

Password

Confirm password

Advanced...

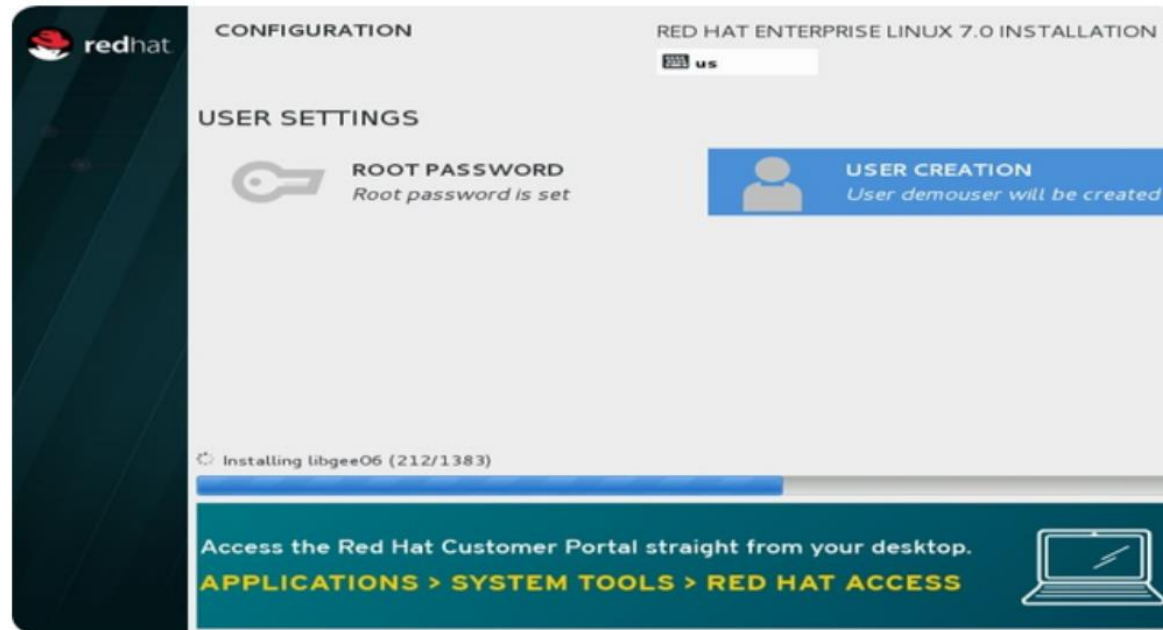
The password you have provided is weak: The password fails the dictionary check - it is based on a dictionary word. You will have to press Done twice to confirm it.

Now create a new user account. Here, I created a new user demouser and set the password. If you wish, you can make this user an Administrator by checking the box Make this user administrator.

INSTALLATION PROCESS

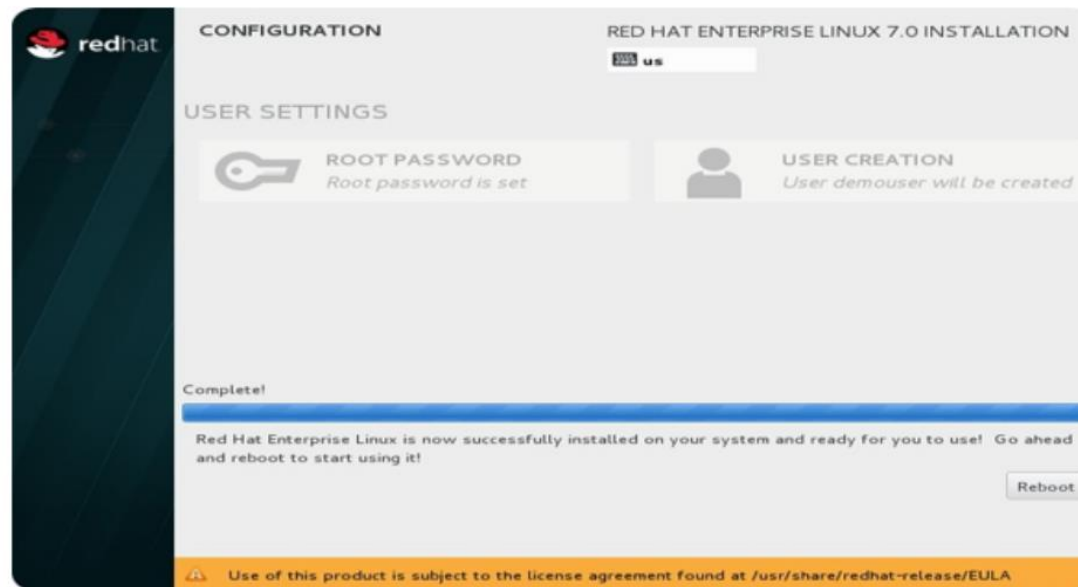
Once you are done with all user related configuration changes, click **Done**. You will need to press Done **twice** if you are using a weak password.

INSTALLATION PROCESS



Again you will be back a.t the installation screen. Please wait till file installation or copy process completes

INSTALLATION PROCESS



Once installation completes, you will receive a message “ Red Hat Enterprise Linux is now successfully installed on your system and ready for you to use! Go ahead and reboot to start using it!”. Now you need to restart the machine or server by pressing **Reboot** button.



INSTALLATION PROCESS

```
Red Hat Enterprise Linux Server, with Linux 3.10.0-121.el7.x86_64
Red Hat Enterprise Linux Server, with Linux 0-rescue-e41a1b97622e47f7b53+

Use the ↑ and ↓ keys to change the selection.
Press 'e' to edit the selected item, or 'c' for a command prompt.
The selected entry will be started automatically in 3s.
```

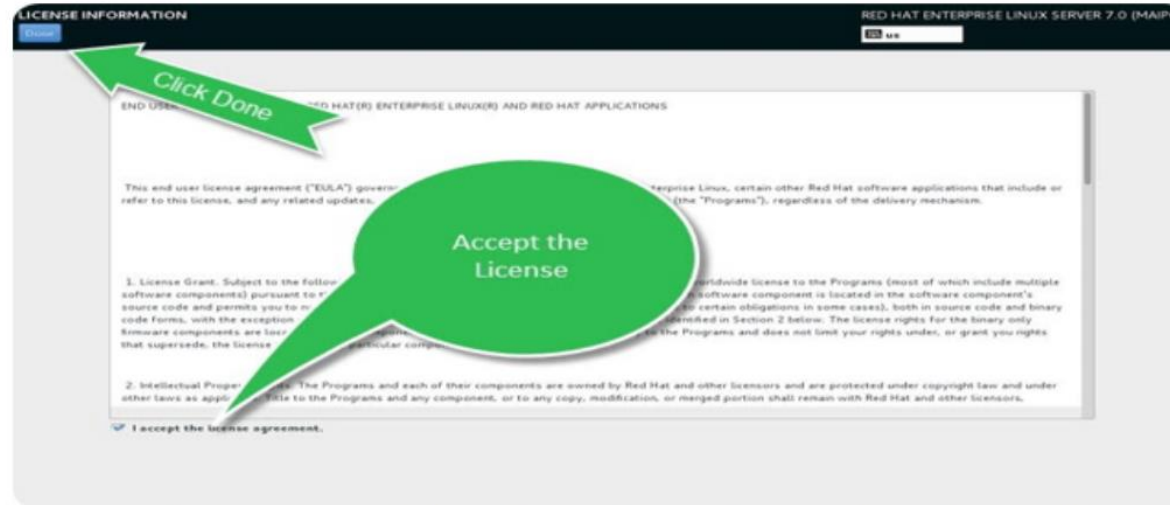
Your machine or server will reboot now. You may receive a boot loader screen. Select the option Red Hat Enterprise Linux Server, with Linux 3.10.0-121.el7.x86_64 (The other option listed here is used when you want to log in to the Linux rescue mode). Once you select the option, press Enter key.

INSTALLATION PROCESS



Here comes the **Initial Setup** wizard, click on **License Information** to read and accept the Red Hat Enterprise Linux 7 License.

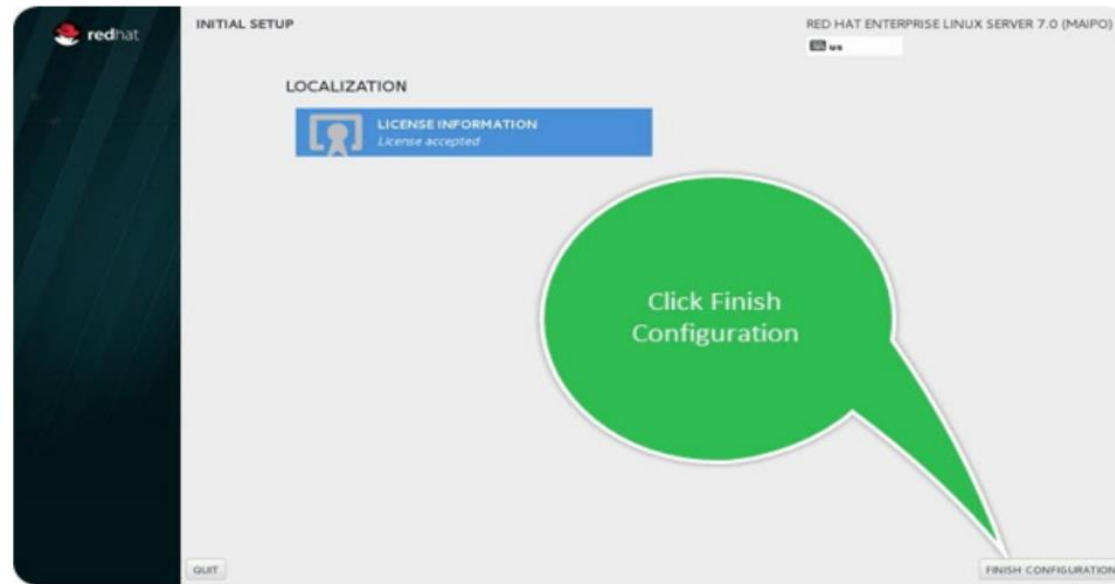
INSTALLATION PROCESS



Click the option I accept the License Agreement to accept the End user License Agreement (EULA). Then click Done.



INSTALLATION PROCESS



Click Finish Configuration button to continue.

INSTALLATION PROCESS

Kdump Subscription Registration

Kdump

Kdump is a kernel crash dumping mechanism. In the event of a system crash, kdump will capture information from your system that can be invaluable in determining the cause of the crash. Note that kdump does require reserving a portion of system memory that will be unavailable for other uses.

☒ Enable kdump?

Kdump Memory Reservation: ☒ Automatic ☐ Manual

Memory Currently Reserved (MB): 0

Memory To Be Reserved (MB): 128

Total System Memory (MB): 1219

Usable System Memory (MB): 1091

Advanced kdump configuration

```
# Configures where to put the kdump /proc/vmcore files
#
# This file contains a series of commands to perform (in order) when a
# kernel crash has happened and the kdump kernel has been loaded. Direc
# this file are only applicable to the kdump intranfs, and have no effect if
# the root filesystem is mounted and the normal init scripts are processed
#
# Currently only one dump target and path may be configured at once.
# if the configured dump target fails, the default action will be performed
# the default action may be configured with the default directive below. If th
# configured dump target succeeds
#
# Basics commands supported are:
# raw <partition> - Will dd /proc/vmcore into <partition>.
#                  Use persistent device names for partition devices,
#                  such as /dev/vg/<devname>.
#
# nfs <nfs mount> - Will mount fs and copy /proc/vmcore to
#                  <mnt>/var/crash/%HOSTNAME%. supports DNS.
```

Click Forward

Back Forward

enable the **Kdump** here. Once you are done, click **Forward** button.

INSTALLATION PROCESS

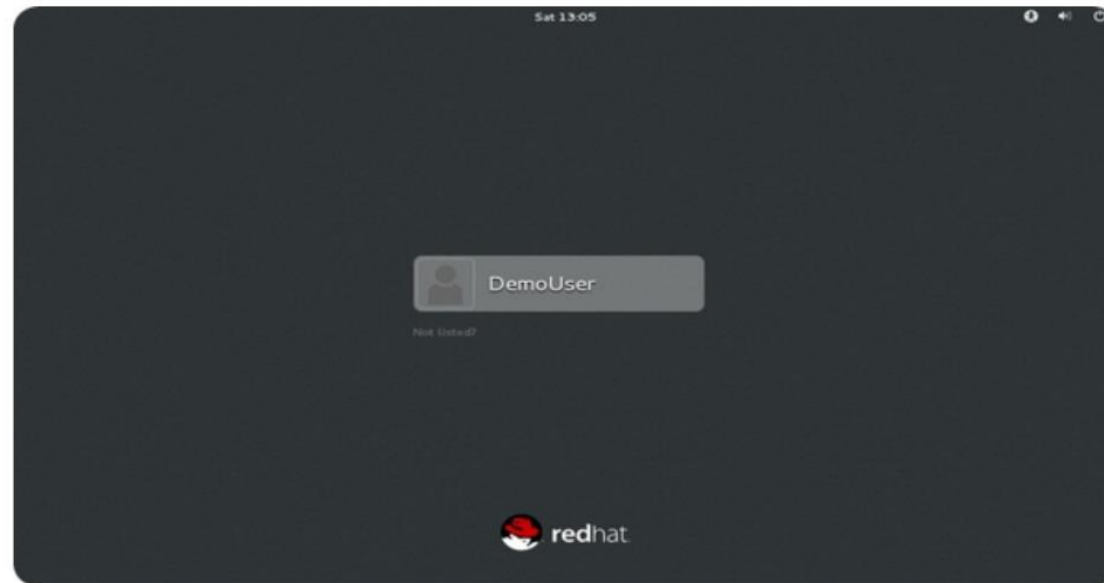


The screenshot shows the 'Subscription Management Registration' window. On the left, a dark sidebar contains the text 'Kdump' and 'Subscription Registration'. The main area has the title 'Subscription Management Registration' and a paragraph: 'This assistant will guide you through the process of registering your system with Red Hat to receive software updates and other benefits. You will need the following to register:'. Below this is a bulleted list: '• A network connection', '• Your account login', and '• The address of a subscription management service (optional)'. A section titled 'Why Should I Register?' asks 'Would you like to register your system at this time? (Strongly recommended.)' with two radio button options: 'Yes, I'd like to register now.' and 'No, I prefer to register at a later time.' (which is selected). A large green arrow points to the 'No' option with the text 'Select your option'. A green speech bubble points to the 'Finish' button with the text 'Click Finish'. At the bottom right are 'Back' and 'Finish' buttons.

. Once you select the desired option, click **Finish**.



INSTALLATION PROCESS



At last, we reached the log-in screen of Red Hat Enterprise 7. If you would like to log-in as a user, click on the user name listed. If you would like to log-in as a root, then select the option **"Not Listed"** and enter user name as **root**.



Discussion Point

- How many types of installations do you know?
- How to do partitioning while installing?
- What are instructions we have to follow.?



Instructions & Duration

- The participants will discuss their knowledge on RHEL Installation process and different versions of RHEL.





Next Session Details

Preparation for the next session:

- How to logging into Linux
- Files and Directories
- Virtual consoles and GUI environment
- Text editors

HCL

www.hcltech.com

\$11.18 BILLION | 197,000+ IDEAPRENEURS | 52 COUNTRIES