Enigma NMS - RHEL6.5 - Installation Guide

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1 About this guide

This document describes RHEL6.5 installation, which is specific to Enigma NMS.
Please note that this guide has been written for people who have no prior knowledge of Linux environment. It is constructed as series of easy-to-follow step-by-step instructions with screen-shots and brief description.

1.1 Who Should Use It

This guide is intended for enterprise network managers and network engineers with various roles: support, implementation, provisioning, etc, basically anyone who intend to install and use Enigma NMS.
This guide assumes that you have no knowledge of Linux environment but have general knowledge of network technologies, terms and abbreviations.

1.2 All Rights Reserved

2 Introduction to Enigma NMS and RHEL6.5

2.1 Purpose

The main purpose of Enigma NMS is to provide the most efficient and intuitive network management solution for large multi-vendor enterprise networks. Enigma NMS installs and runs on RHEL, which is free operating system based on Red Hat Enterprise Linux (RHEL). RHEL6.5 is enterprise-grade operating system known for its stability, which requires little or no maintenance.

2.2 Scope

This guide provides detailed description of installation process on RHEL6.5.
The same procedure can be used to install RHEL6.5 on dedicated hardware or Virtual Machine (VM). Dedicated hardware is a preferred option because Enigma NMS is very CPU and I/O intensive, but it will work on VM as well, subject to allocation of relevant VM Host Resources.

3 Prerequisites – what you will need

1. **Software** RHEL6.5 - You will need to download the ISO image of RHEL6.5 on to your PC using following link:
   https:// dl.netsas.com.au/rhel-server-6.5-x86_64-dvd.iso.
   Please note, we support **64 bit** hardware only:

   If you are building Enigma NMS on dedicated hardware, please create bootable DVD-R disk using "Burn Image" option of Nero or similar DVD burning products.
   If you are using VM, you can simply point your VM CD/DVD drive to use downloaded image: rhel-server-6.5-x86_64-dvd.iso.
2. **Software** Putty is very convenient free client for telnet and ssh connections - available from http://www.putty.org.
3. **Software** free FTP Client, e.g. FileZilla - available from http://filezilla-project.org
4. **Software** Enigma NMS Binary distribution package, which is available via Enigma http://netsas.com.au/download/ - Enigma NMS Download Request.
   Once you fill out and submit the form, you will receive detailed instructions in your email. If you don't receive the email within few minutes, please check your Spam folder.
   The email will contain links for the archive with Enigma binaries.
   The file name is **ENIGMA_CENTOS6_BINARY.tar.gz**. It is over 1.5Gb in size and contains 64 bit distribution binaries. After you have downloaded this file you may need to check its integrity using MD5 checksum, which can be found in the file: **ENIGMA_CENTOS6_BINARY.checksum**, link to which can be found in the same email. It can be opened with any text editor. The MD5 checksum in this file should be the same as "**CALCULATED"** checksum.
   To calculate the MD5 checksum
   On Windows – download, install and run small utility - http://www.winmd5.com/download/winmd5free.zip
   On Linux - run command "/usr/bin/md5sum ENIGMA_CENTOS6_BINARY.tar.gz"

5. **Hardware** for Enigma NMS (where you are going to be installing RHEL6.5) - You need to decide which hardware to install RHEL6.5 on. For the purpose of Enigma NMS evaluation any standard PC will do. If you don't have dedicated hardware, you can use Virtual Machine (VM).

For VM we recommend using Oracle VirtualBox – Free software without registration, which can be downloaded from https://www.virtualbox.org/wiki/Downloads - we find it to be more compact and easier to use than VMWare. Please make sure that you allocate at least 2 CPU, 4Gb of RAM and 100Gb of HDD (select Fixed Disk option). After you create your virtual machine (VM), verify its settings before starting it click "System" and tick IO APIC box, click on "Network" Interfaces link on the right pane. Select Network Adapter and "**Attached to**" setting (select Bridged Adapter and select which physical network controller it is going to use, e.g. Ethernet or Wireless controller)

If you prefer VMWare, it can be downloaded from http://www.vmware.com – but it requires registration and much larger in size than VirtualBox

For large networks, where you will be monitoring thousands of nodes please make sure that your VM host has enough resources as Enigma NMS is very CPU and IO intensive.

6. **Hardware** client PC. We recommend having another (different from Enigma NMS) PC for client for putty (terminal) and web connections. If you using VM both could be the same physical machine.
7. **Configuration Information.** You will need to decide on
   - Enigma IP Address has to be **STATIC** IP Address
   - Subnet Mask
   - Default gateway
   - Hostname
   - DNS Servers (could be the same as default gateway)

Note: both machines (Enigma and Client PC) or even **one machine** (when you are using VM, Enigma and Client PC physically are on the same machine) **need to be connected to the Network Switch or Hub**.
Please make sure that IP Addresses on Enigma and your Client PC belong **to the same subnet or Enigma NMS IP Address can be on different subnet but it has to be routable from your local PC.**
Following is just an ip subnet example (192.168.1.0/24) used throughout this guide, please use your own IP Addresses

Enigma NMS (RHEL) IP Address (static): 192.168.1.100 (Mask: 255.255.255.0)

Client PC IP Address (static or DHCP): 192.168.1.200 (Mask: 255.255.255.0)

4 Recommended hardware specifications

Enigma NMS is very powerful enterprise network management system, which can be deployed as hardware or virtual appliance. It contains dozens of various monitoring modules. Following are examples of Enigma capabilities:

- 200,000+ monitored interfaces
- 50,000+ monitored QoS Classes
- 20,000+ monitored IP SLA Probes
- Unlimited number of NetFlow exporters.
- 1000+ Monitored Servers
- 60 seconds non-aggregated stats for everything

It requires full and exclusive control over Operating System environment (RHEL6.5).
After you install RHEL6.5, you can run following command to upgrade your kernel to the version 6.10 or later:

yum –y update

RHEL OS update should not interfere with Enigma operations.

We don't recommend casual user access into Enigma. Number of real user accounts should be kept to bare minimum, this will reduce the risk of accidental user errors. If you need a "jump box", please use or build dedicated server, which also can be monitored by Enigma NMS.

Enigma NMS is going to be your main source of network knowledge and should be protected from environmental and human risks. Please consider using Enigma High-Availability Cluster, which requires second identical hardware server or VM. High-Availability Cluster provides highest protection from hardware failures.

Enigma NMS is very powerful enterprise network management system, which can be deployed as hardware or virtual appliance. It contains dozens of various monitoring modules. Following are examples of Enigma capabilities:

Following are minimal recommended hardware specifications.

Nodes Count	HW Grade	CPU(Ghz/Cores)	RAM	Disk Type	Disk Size	NIC
500	PC	2.0/2	4 Gb DDR2	IDA/SATA/SSD	100Gb	1Gbps
1000	Server	2.4/4	8 Gb DDR2	SATA-2/SSD	200Gb	1Gbps
2000	Server	3.0/8	16 Gb DDR3	SATA-2/SSD/SCSI	400Gb	1Gbps
5000	Server	3.0/16	32 Gb DDR3	SATA-2/SSD/SCSI/SAN	1T	1Gbps
10000	Server	3.0/24	64Gb DDR3	SATA-2/SSD/SCSI/SAN	2T	1Gbps

If you are planning to use large number of NetFlow sources, please double the Disk Size.

5 Firewall Rules Configuration

All firewalls between Enigma NMS and managed nodes should have following ports open:

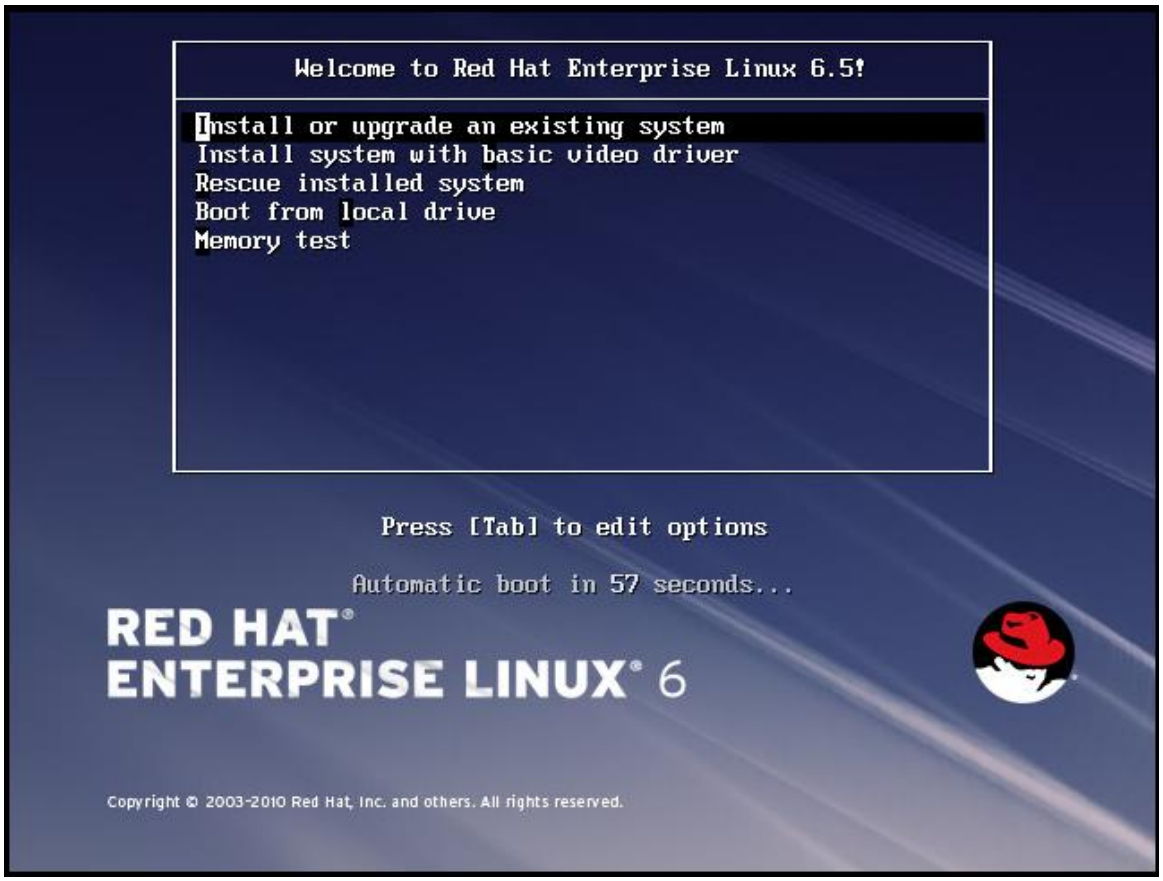
- SSH (From Enigma NMS)
- TELNET (From Enigma NMS)
- SNMP Query (From Enigma NMS)
- SNMP Trap (Into Enigma NMS)
- DNS Query (From Enigma NMS)
- SMTP (From Enigma NMS)
- NTP (From Enigma NMS)
- SYSLOG (into Enigma NMS)
- NetFlow Export (UDP 2055) (into Enigma NMS)
- FTP (into Enigma NMS)
- TFTP (into Enigma NMS)
- SMTP Gateway needs to be configured in order to allow Enigma NMS to send out the emails.

6 Installing RHEL6.5

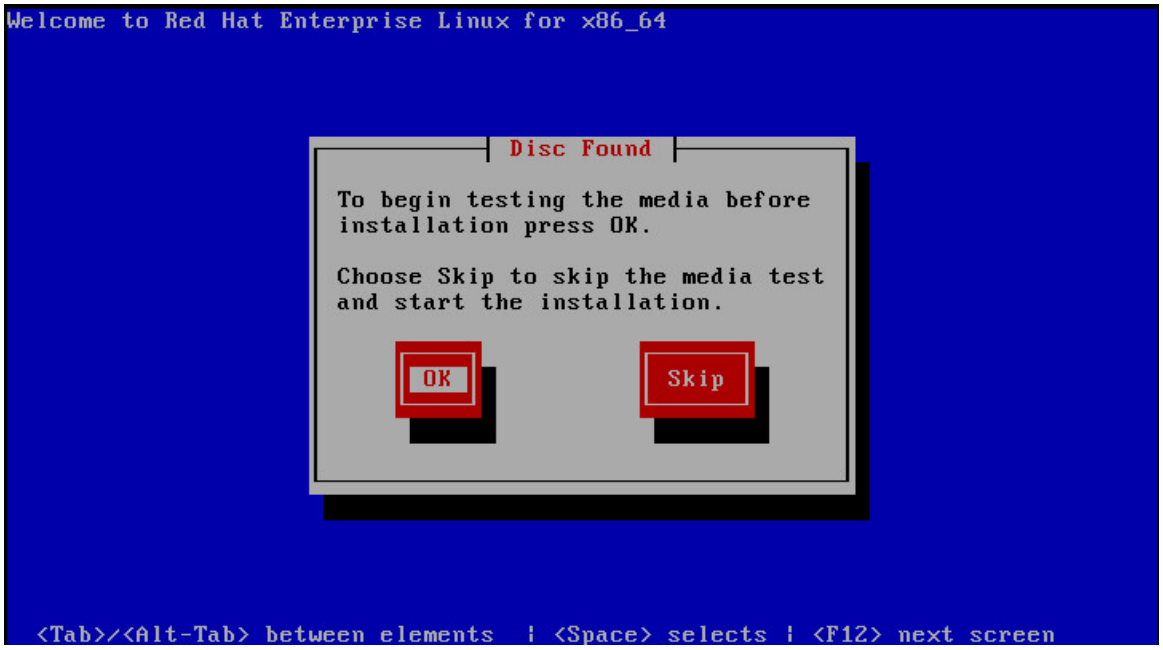
Once you have everything ready you can install process by putting your RHEL DVD into DVD-Rom drive. Please note you need to configure your CMOS to boot from DVD-Rom first. **On VM you can map you CD/DVD drive to use RHEL6.5 ISO image, without having to burn DVD disk.**

As soon as you power on your PC/Server or VM, system will begin reading CD/DVD drive or mapped ISO image. If you are trying to install 64 bit RHEL version and get the system error saying "**No Bootable device found"** or similar please, please make sure that your platform is 64bit enabled.

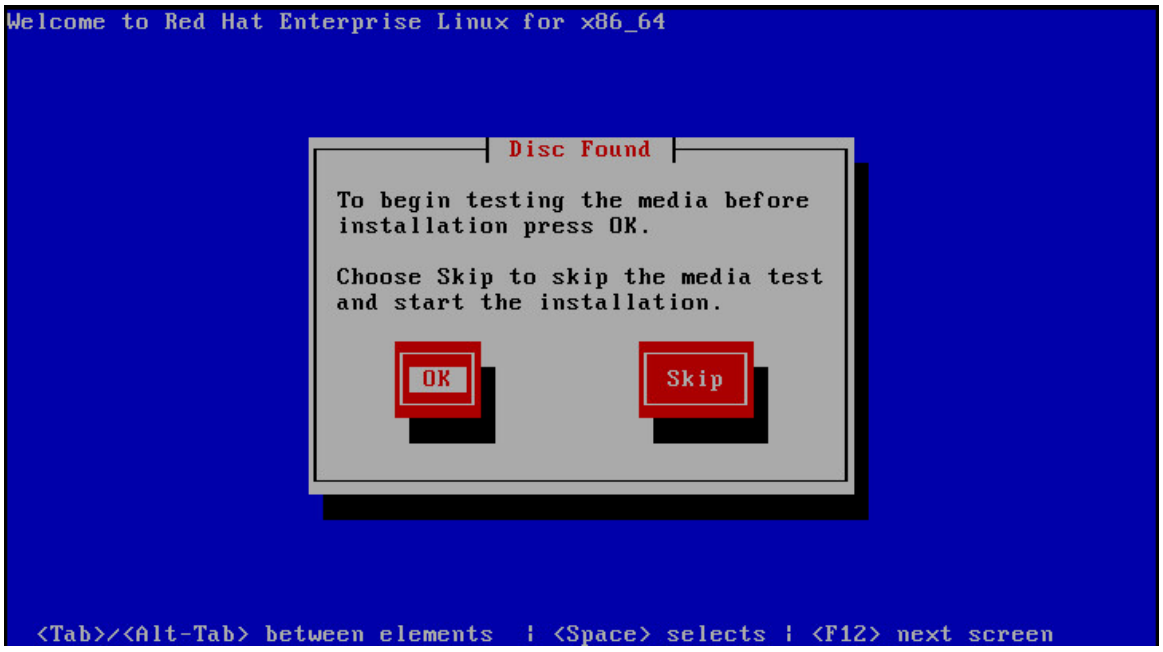
You should see following screen-shot.

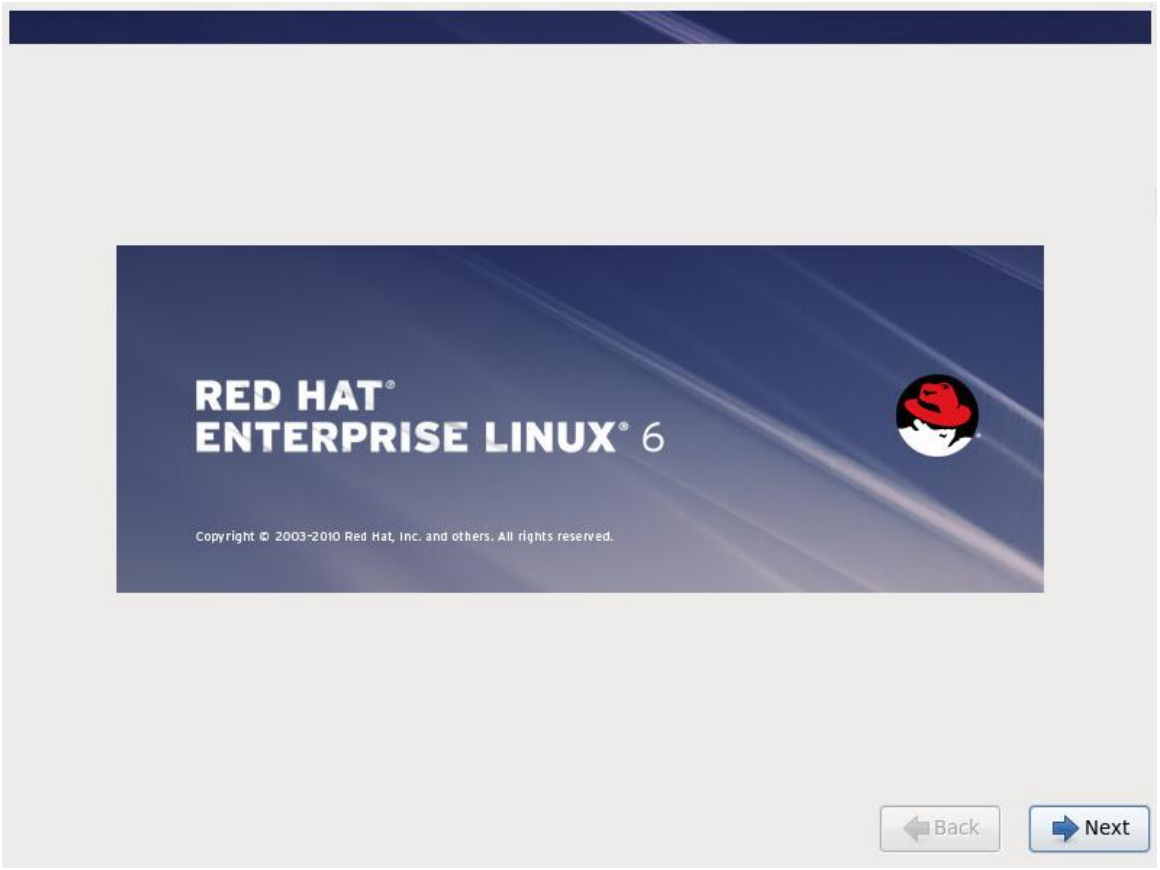


Hit "Enter" key.



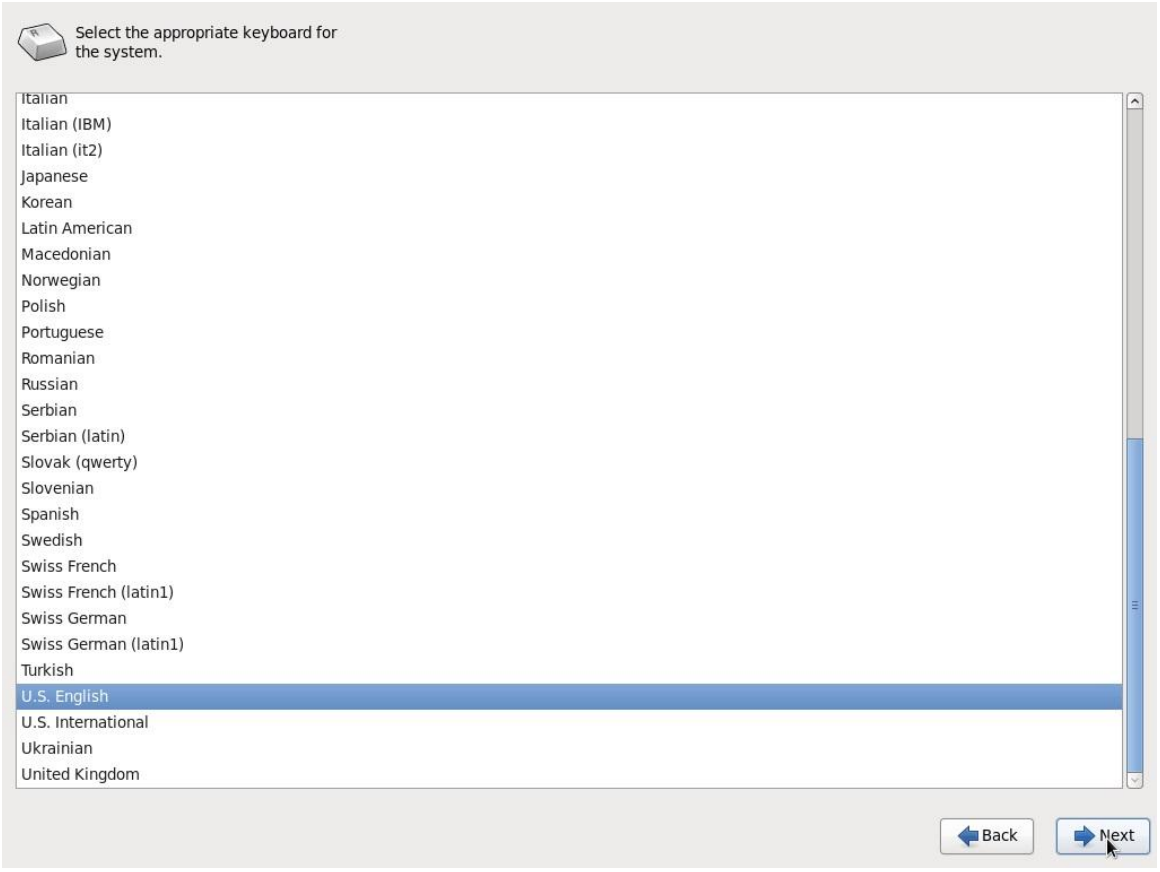
Use “TAB” key to **Skip** media testing.



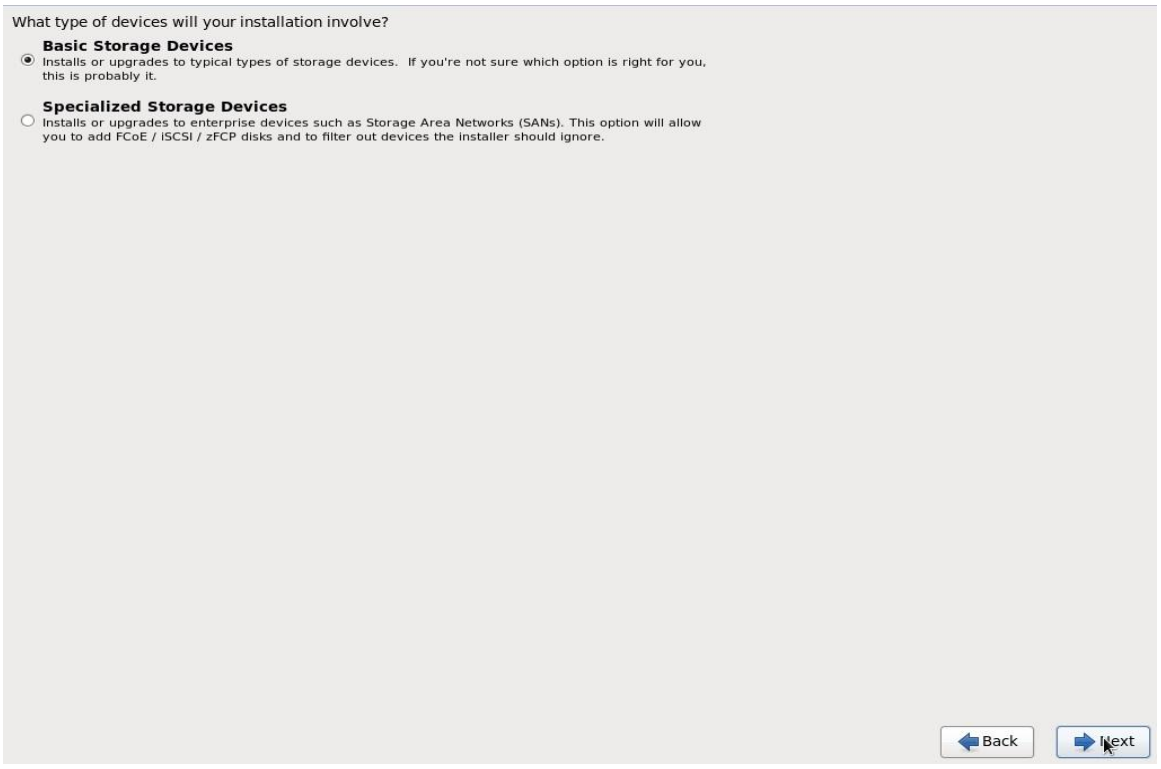


Click “**Next**” button

Click “**Next**” button



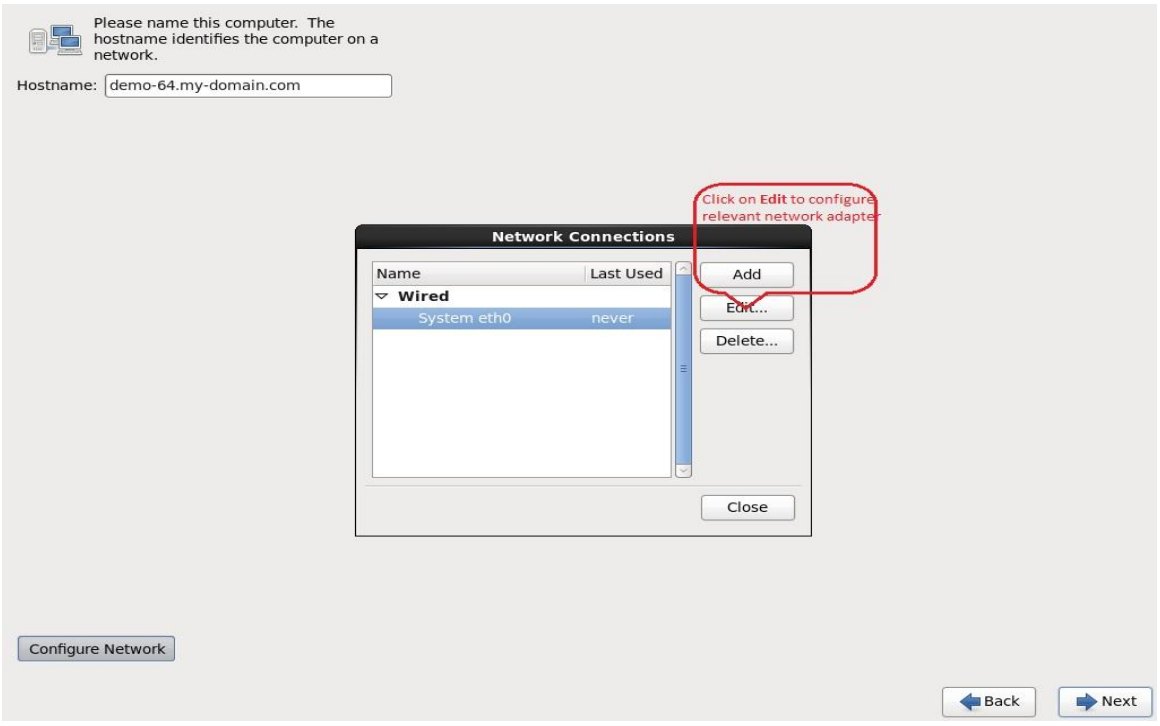
Click “**Next**” button



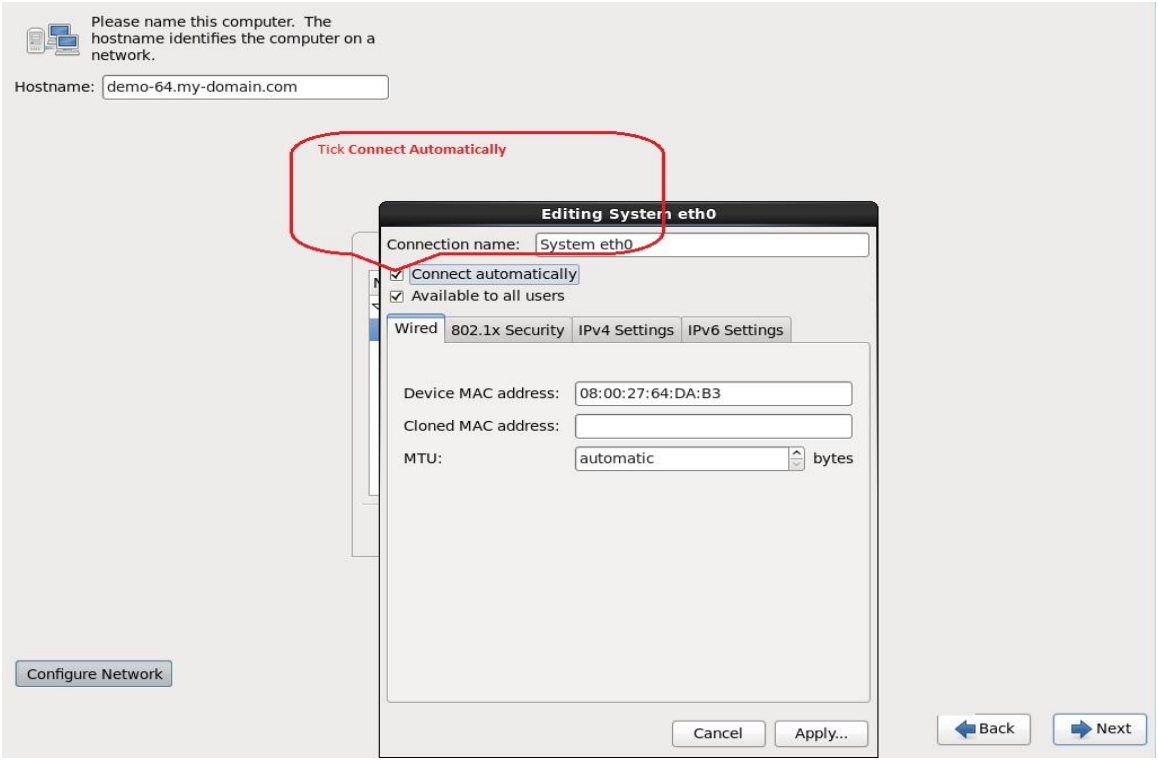
Click on "**Basic Storage Devices**" radio button, when prompted, click on the button “Yes, Discard any Data” and click Next

You will see following screen

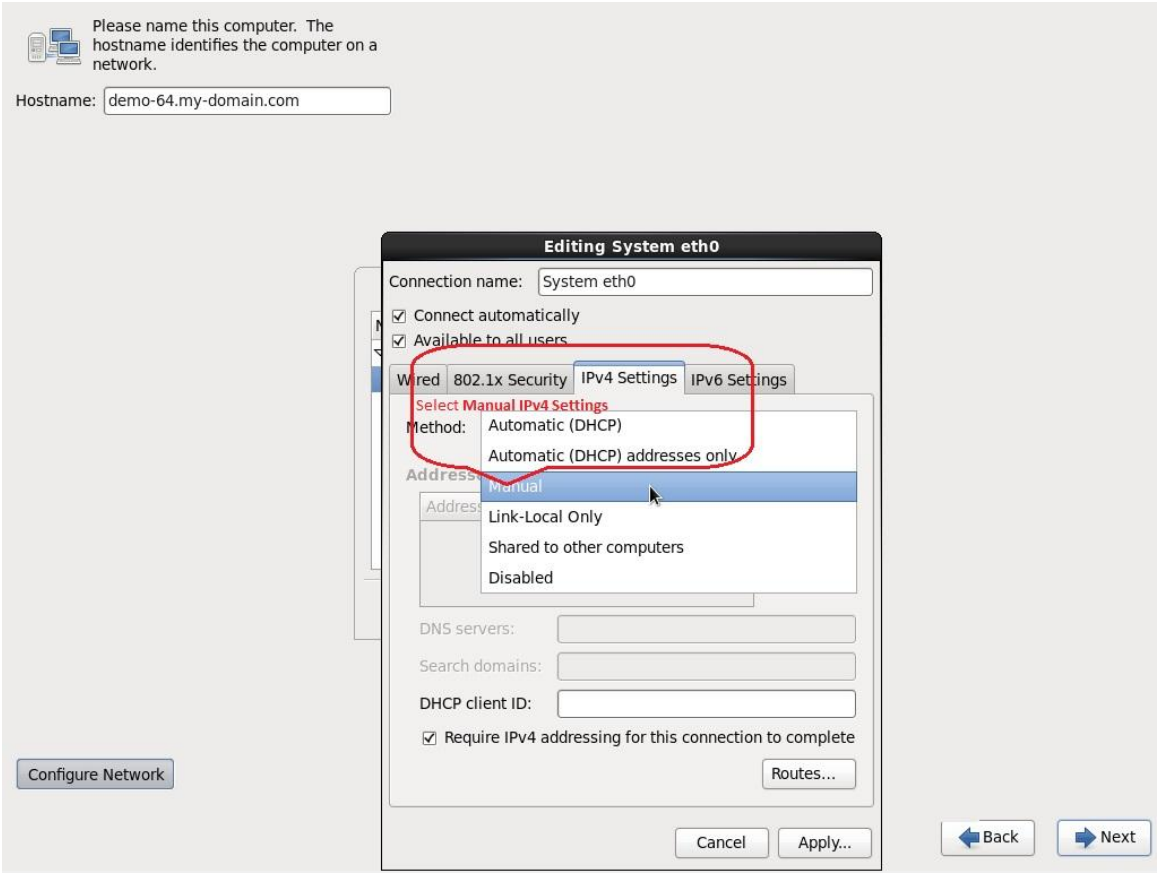
Here you defined your Enigma server name and click "**Configure Network**" button as below



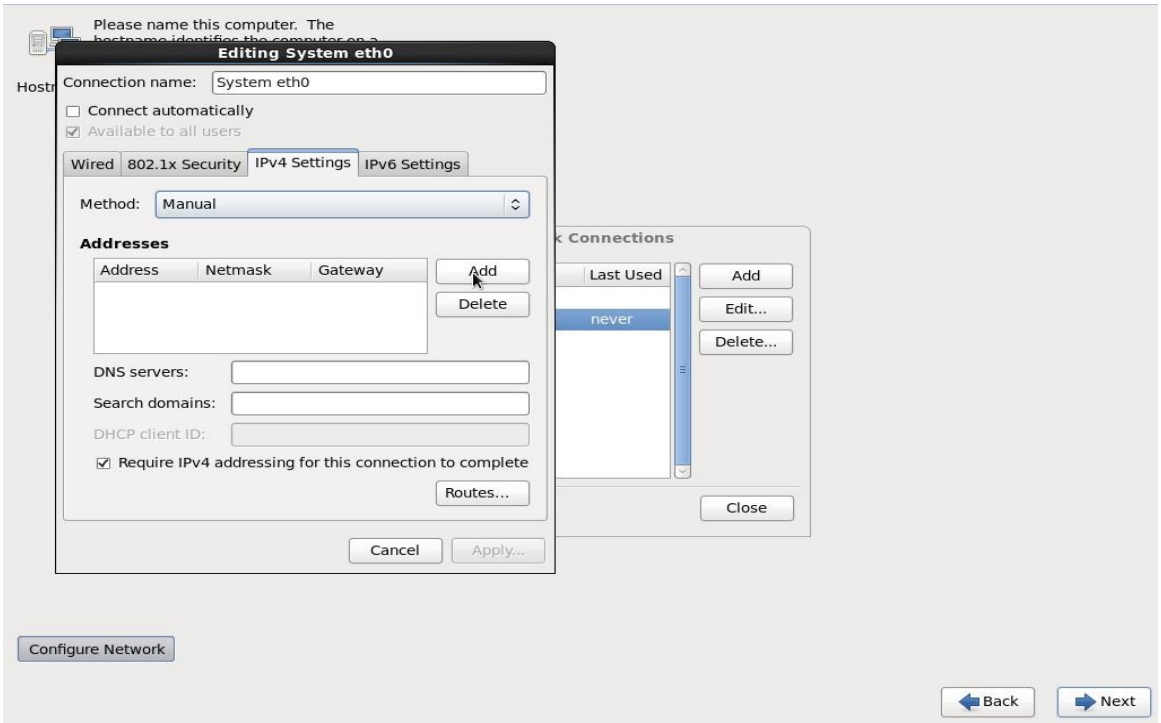
Click **Edit** button



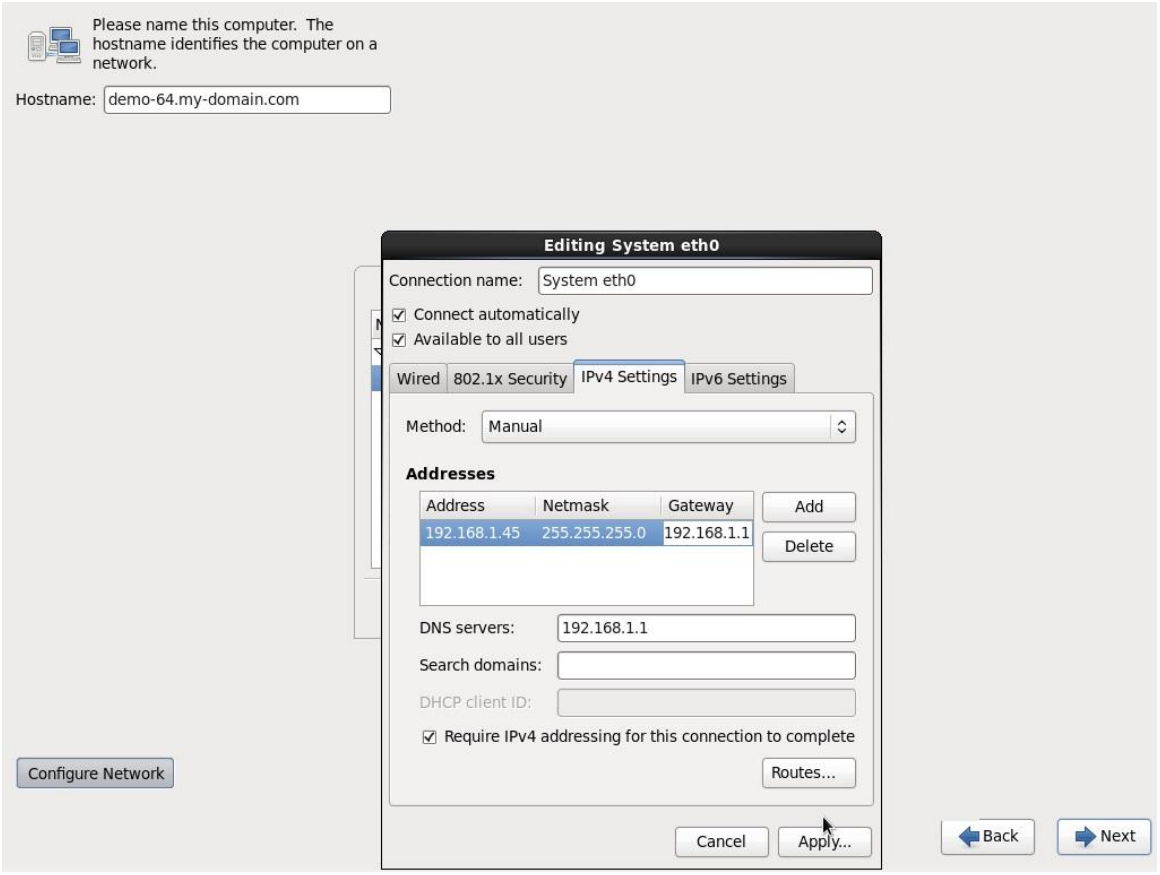
Warning: Please make sure that you tick "**Connect Automatically"** check box as shown above, otherwise your network interfaces will stay inactive.



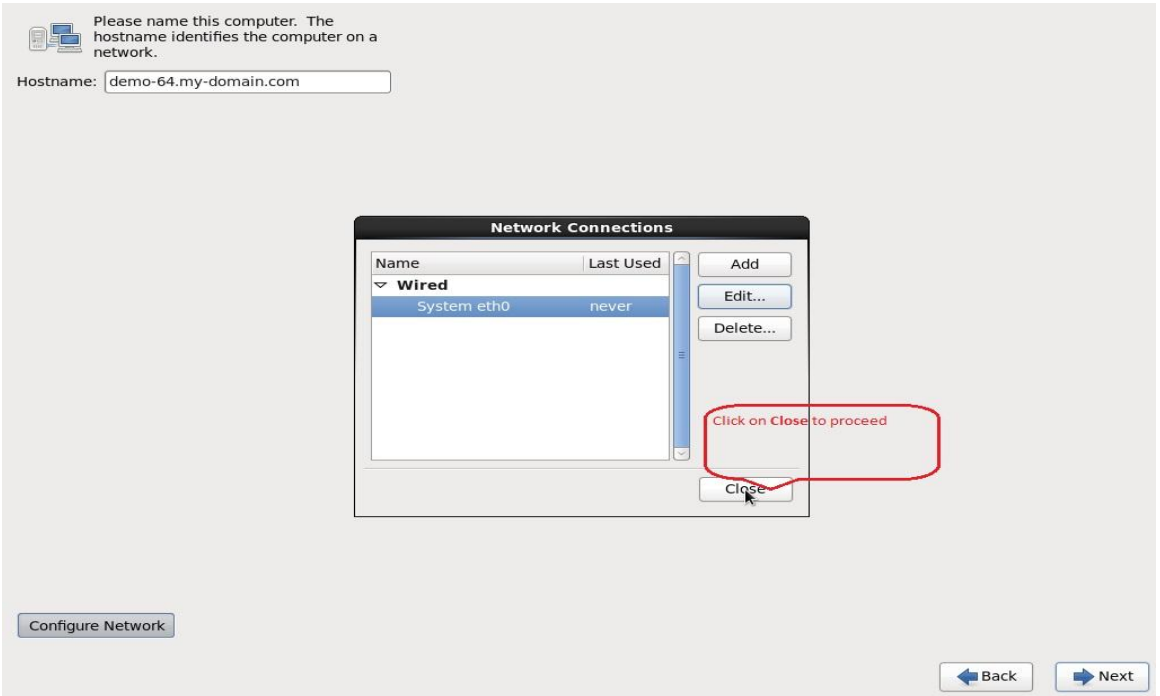
Select "**Manual**" Method



Click on "**Add**" button

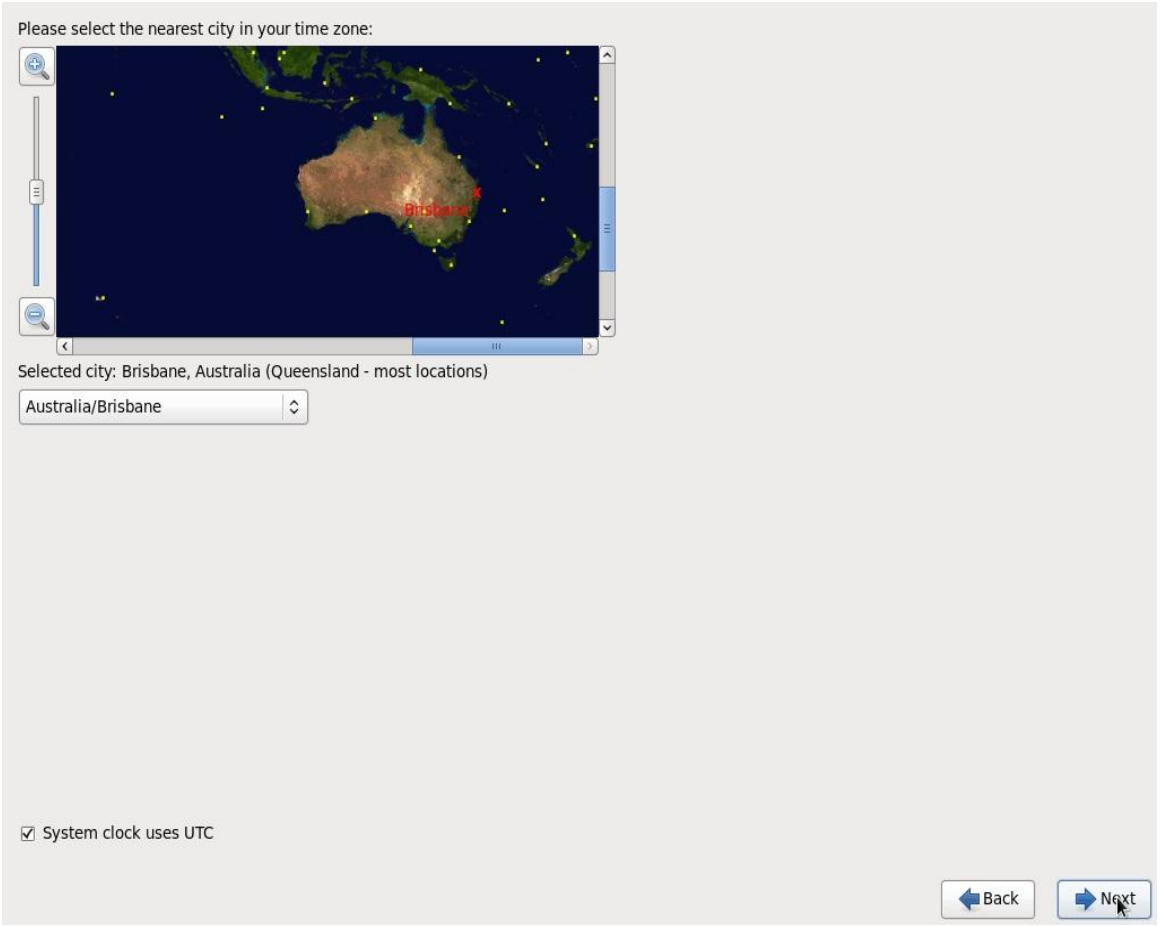


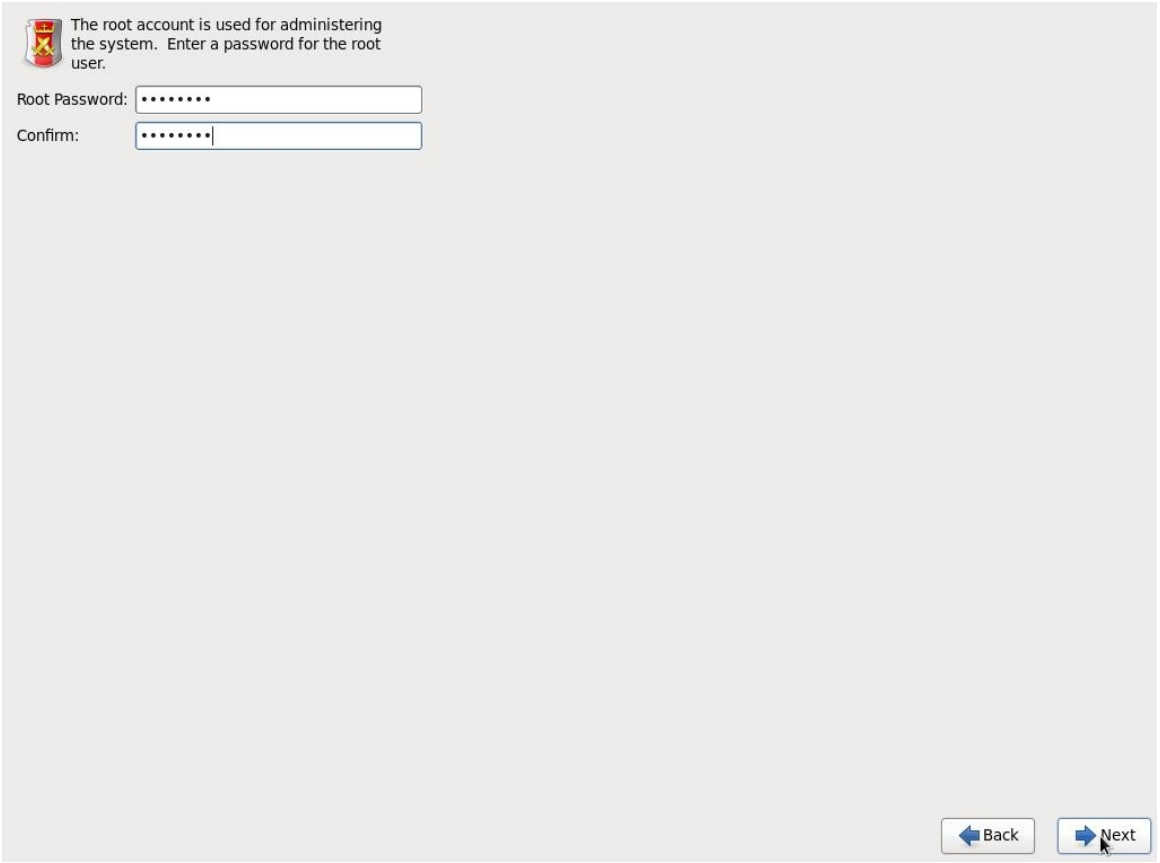
Fill out IP Address, Netmask, Gateway and DNS server fields and click on "**Apply**" button.



Click on "**Next**" button to complete your network settings configuration.

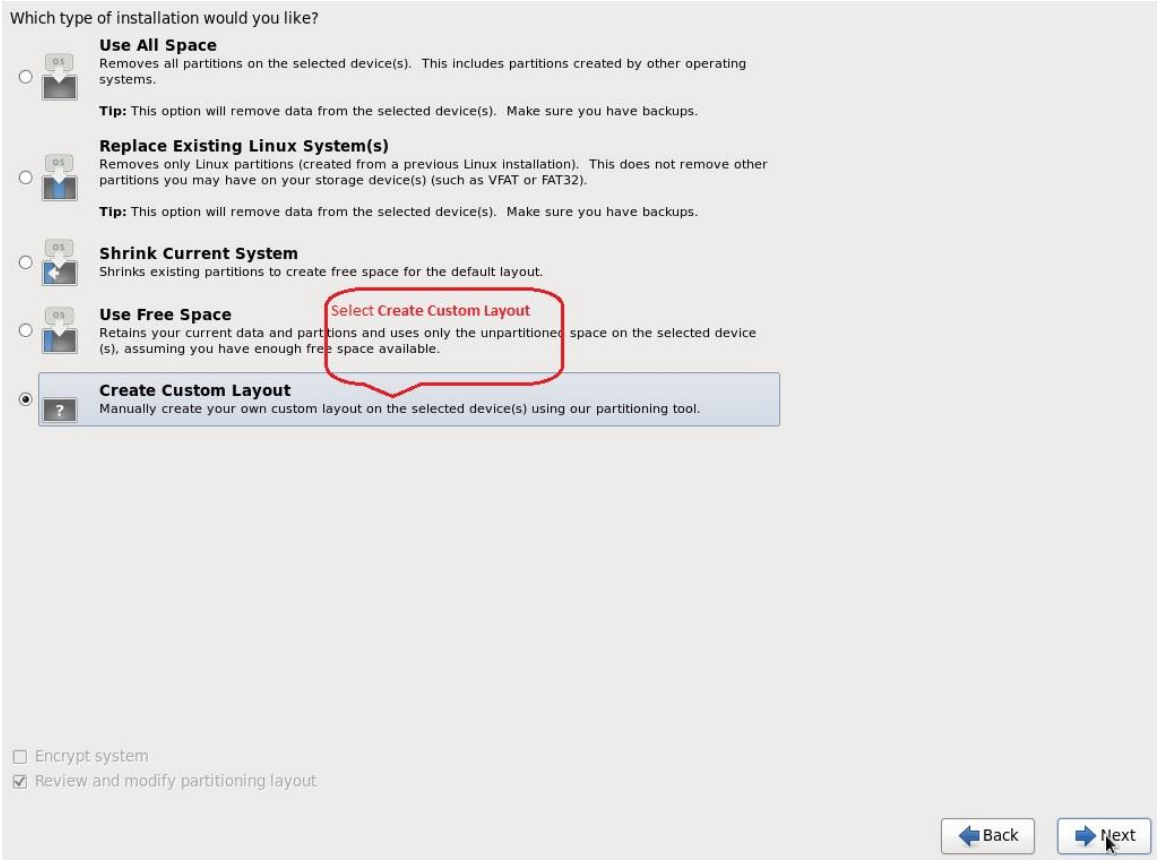
Click on "**Next**"



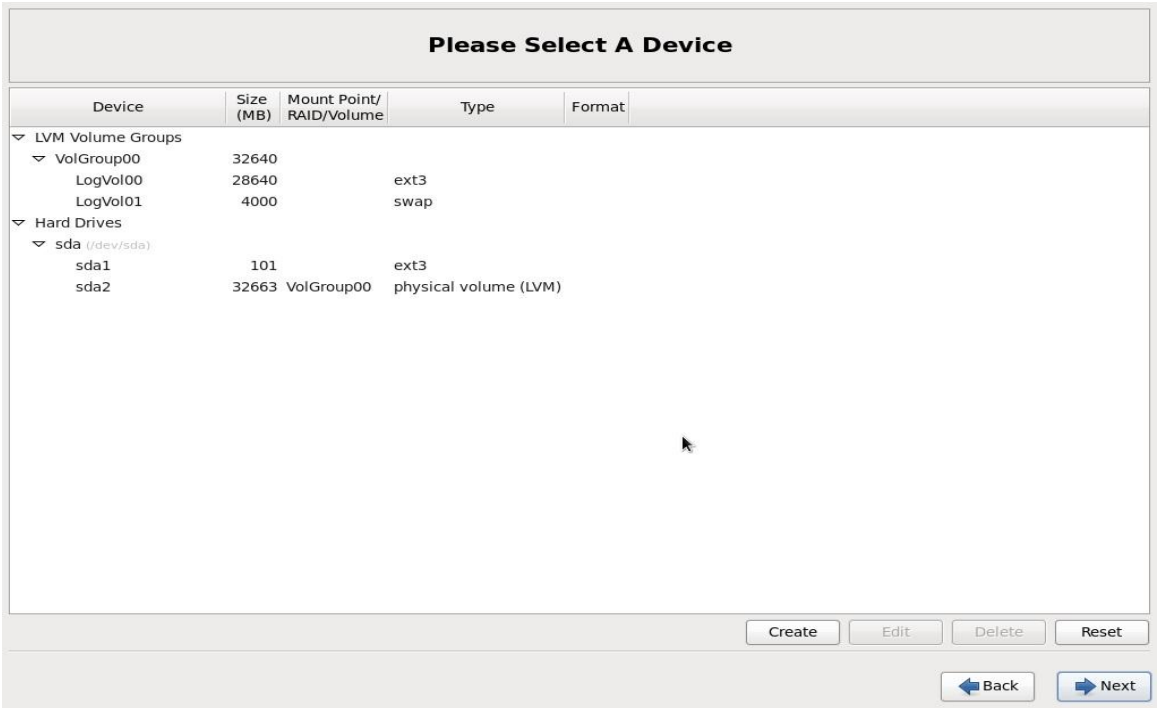


Here you define Root password. **Root account is very important and its password should be kept secret. Please make sure that you write down or memorize Root password as you will need to Enigma NMS installation.**

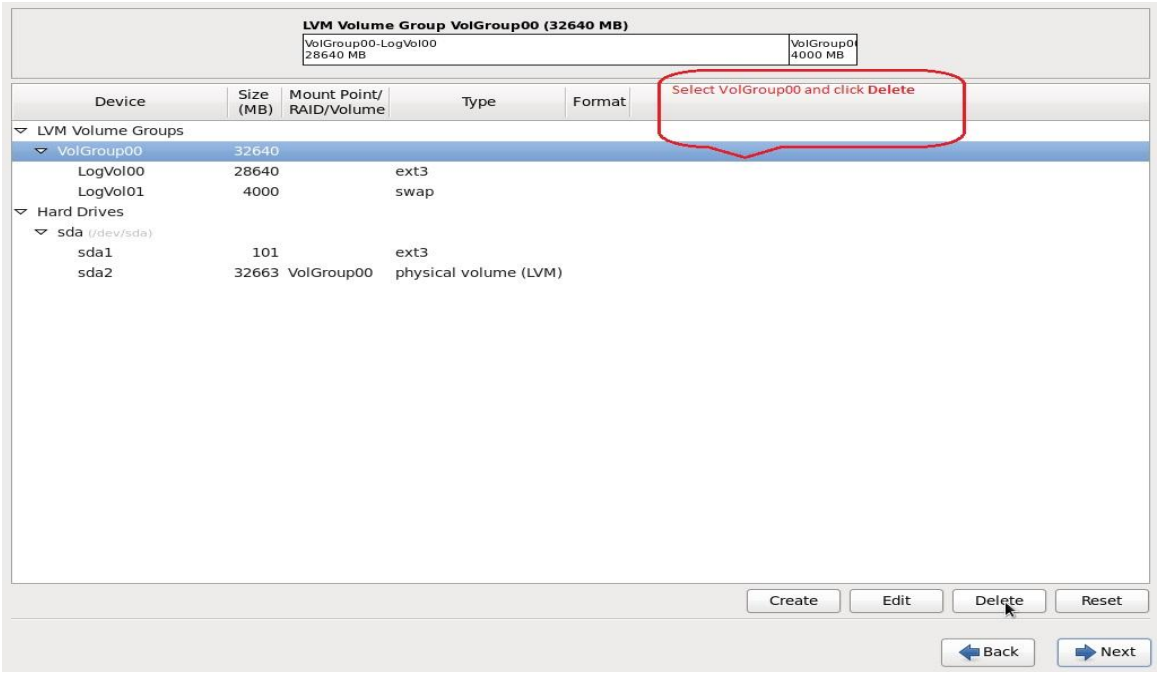
Following screenshots will show you how to create file system layout required for Enigma NMS. Please make sure that you follow these exactly as shown with exception of the file system size as it will be different for your specific hardware or VM. We will need to delete all default partitions and re-create new ones.



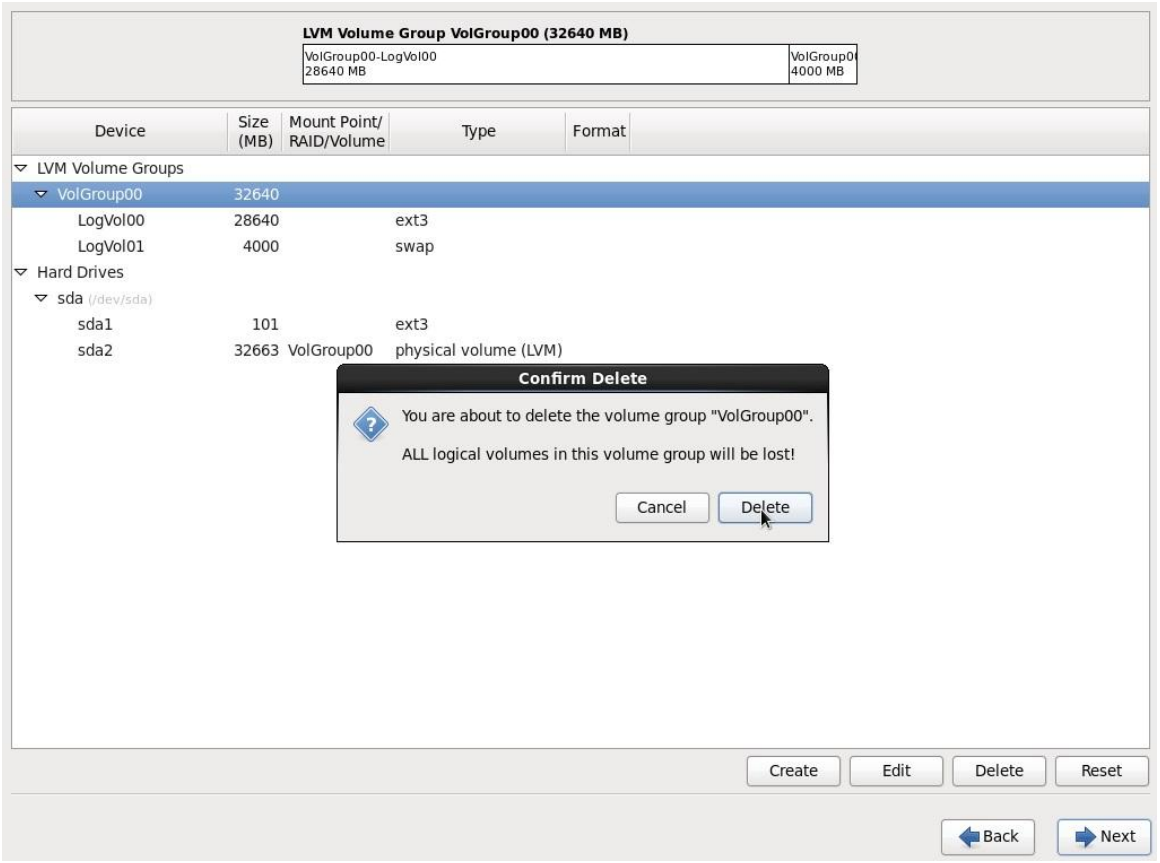
Click on **Create Custom Layout** radio button and click **Next**.



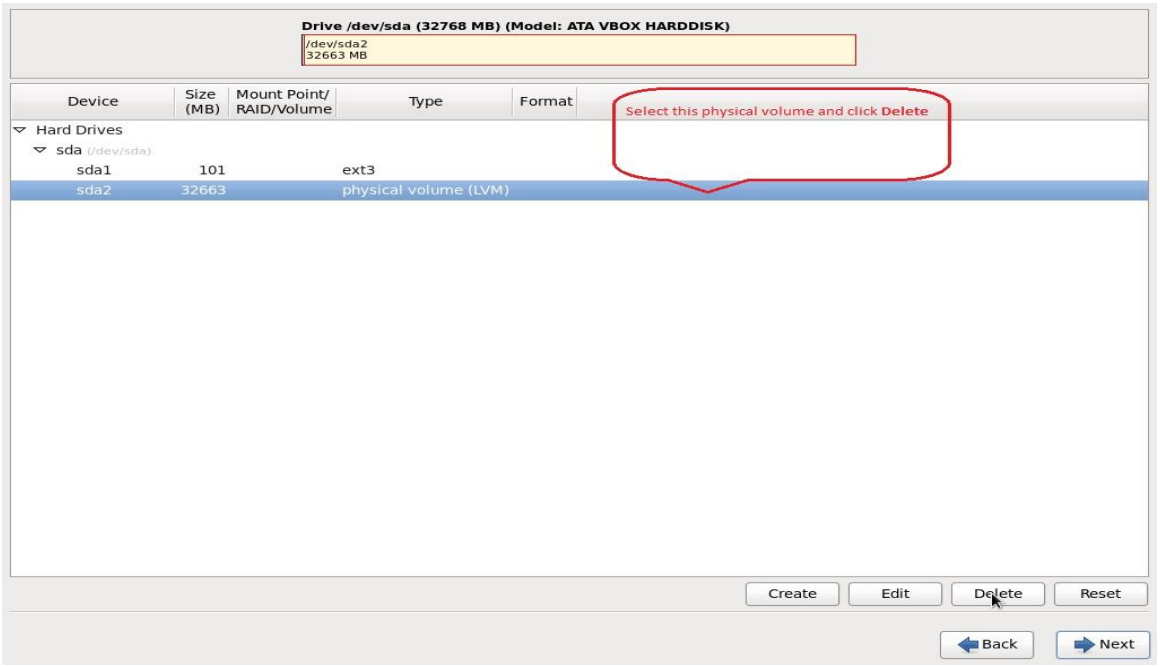
Above screenshot displays default partitioning schema, which needs to be changed to be suitable for Enigma NMS.



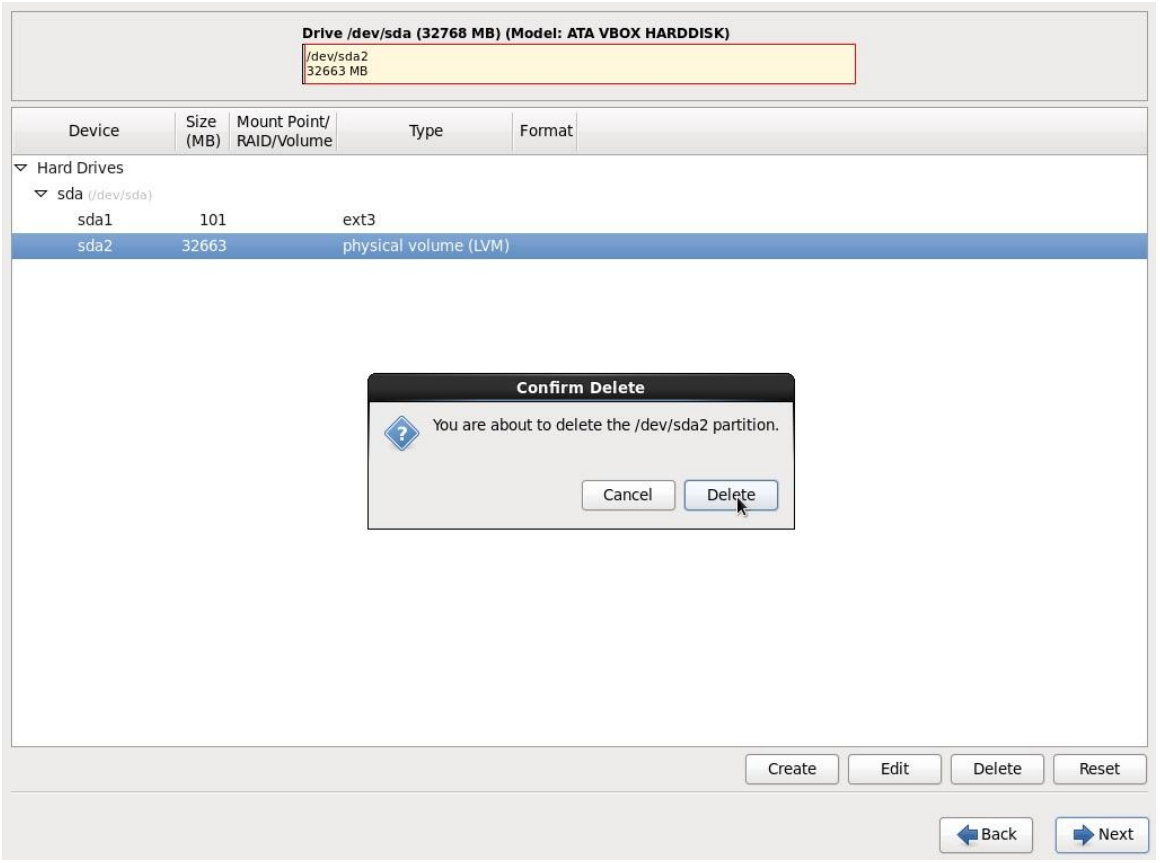
Click on **VolGroup00** as shown above and click "**Delete**"



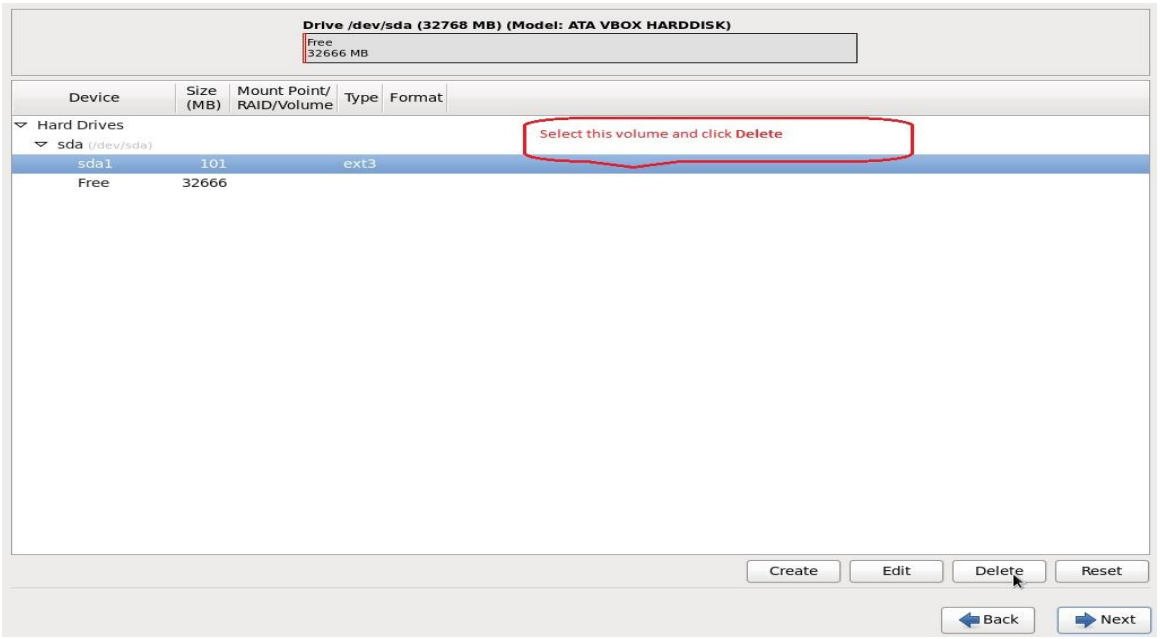
Click on ”**Delete**" button in Confirm Delete popup.



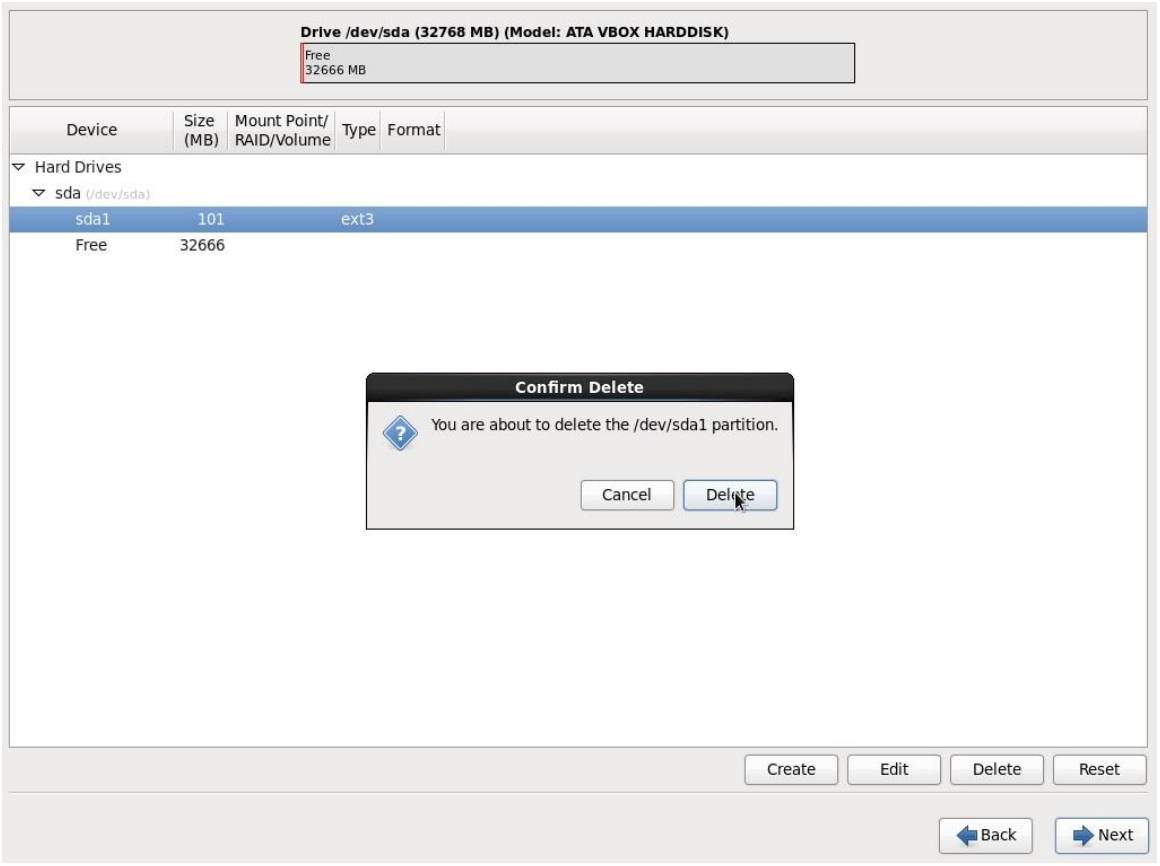
Click on sda2, which type should be **physical volume (LVM)** and click **Delete** button.



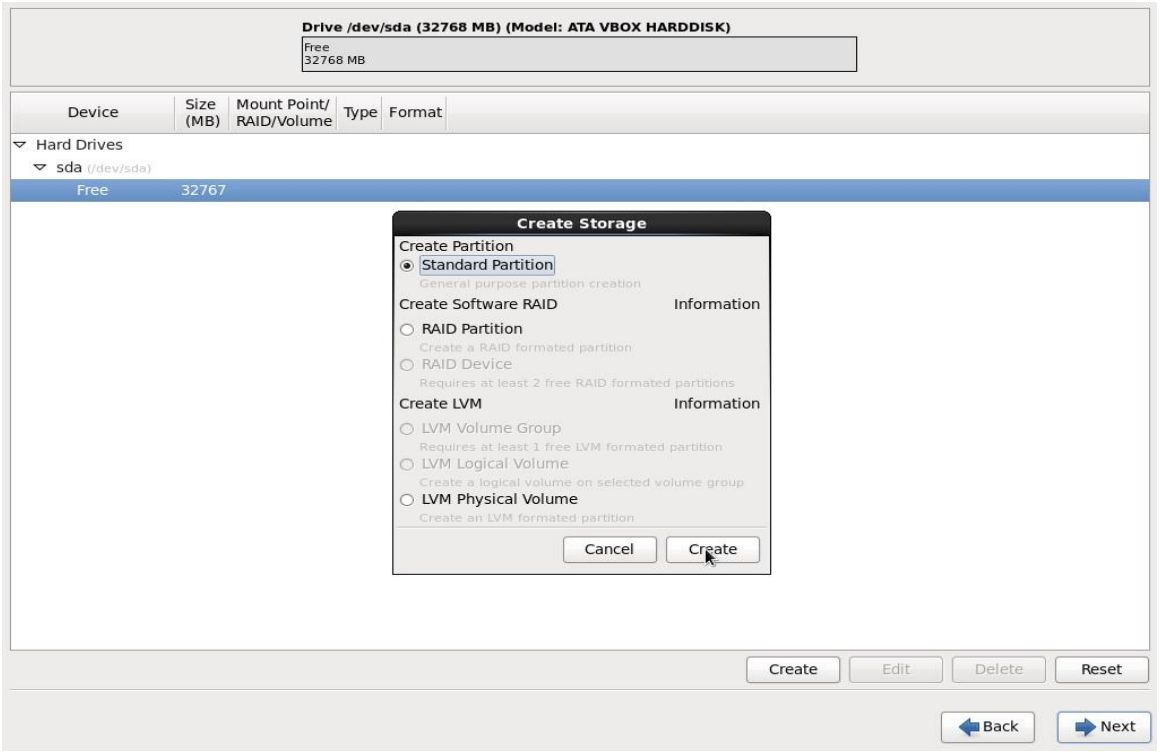
Confirm **Deletion**



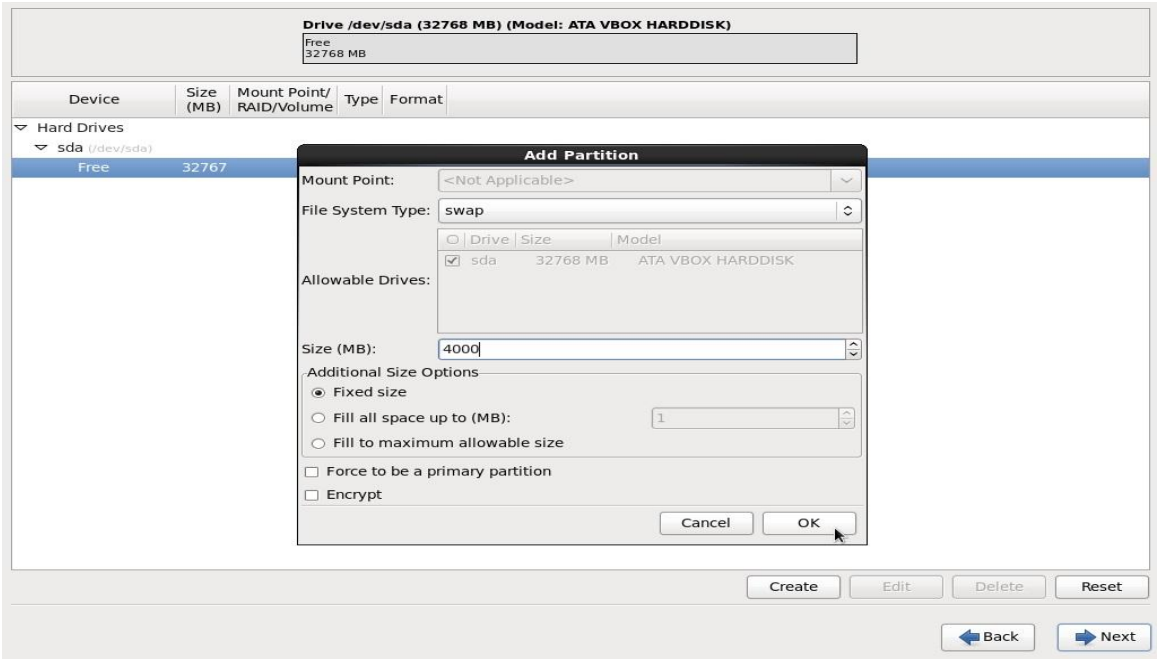
Click on sda1 (partition of type **ext3**) and click **Delete** button.



Confirm **Deletion**.

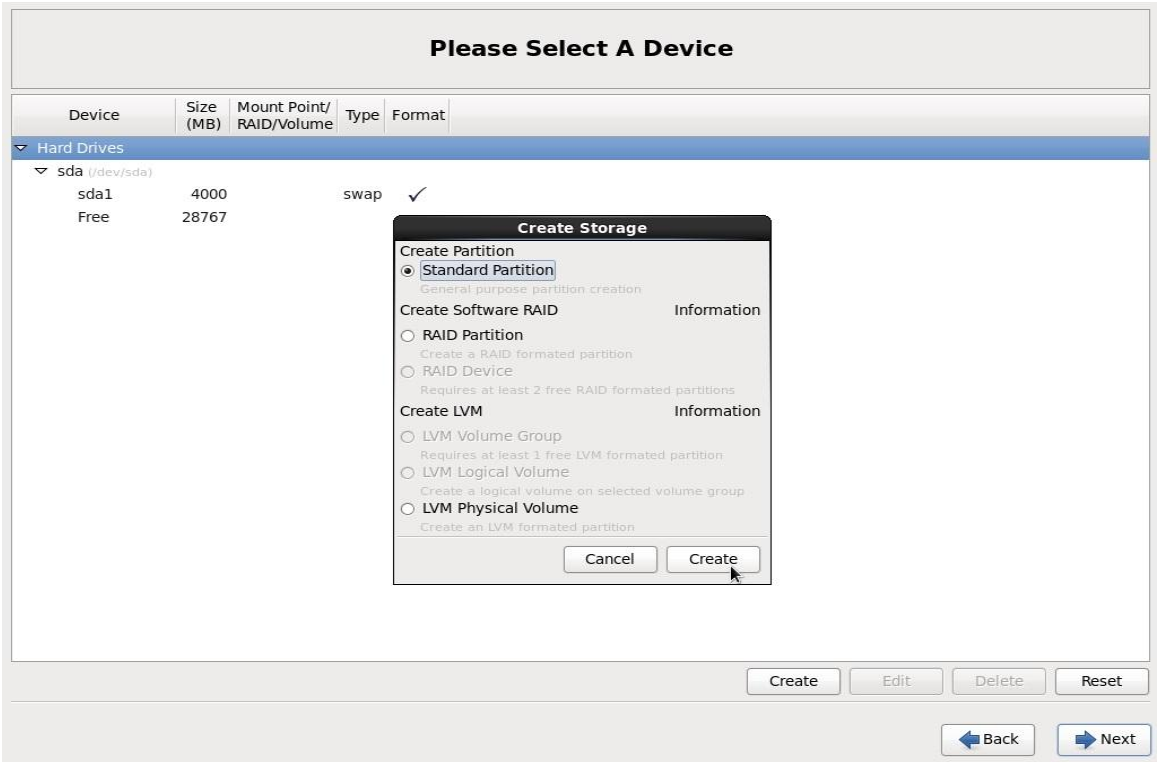


Click on **Create** button and select **Standard Partition**.

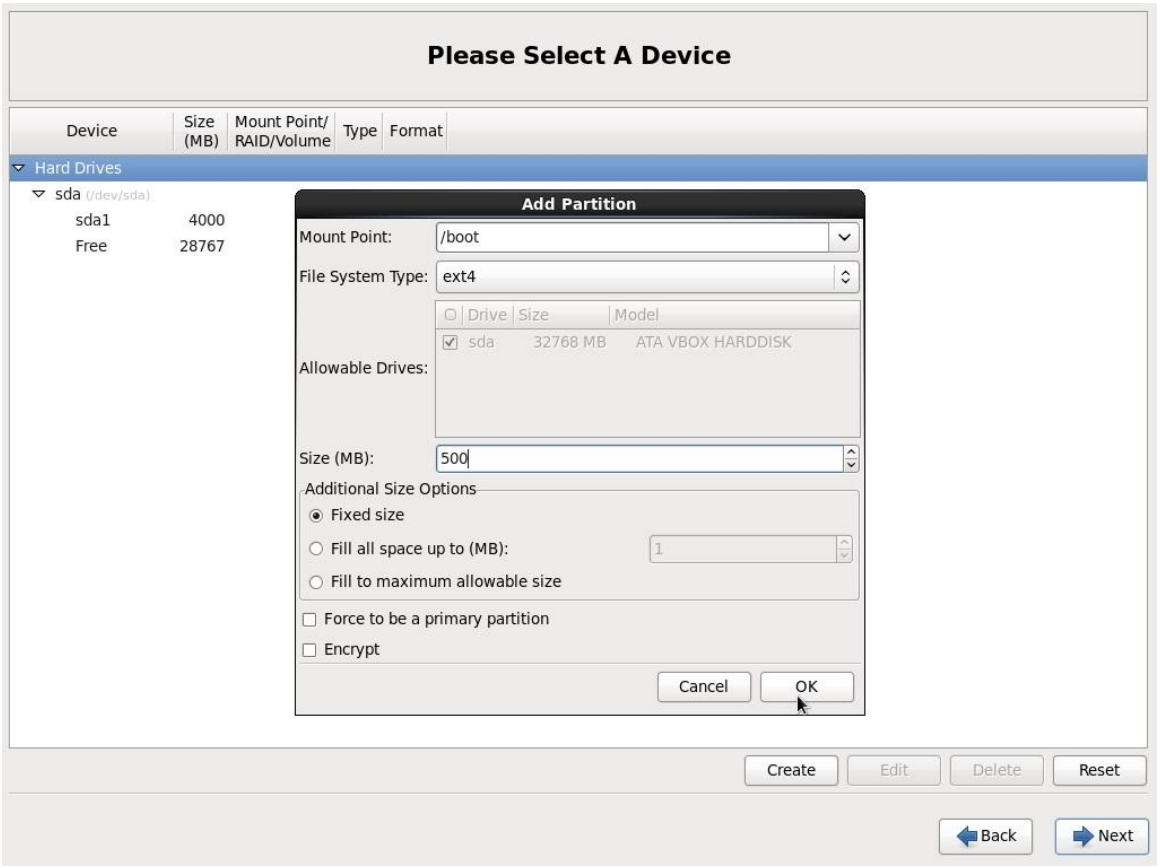


First we will create **swap** partition, select **File System Type**: **swap** and defined **Size** (MB), which should equals to physical memory in dedicated hardware or RAM allocated to VM. In above example we have 4Gb of RAM in VM and we define swap partition size as 4000 MB. When you click **OK** you will see following screen:

Click on **Create** button.

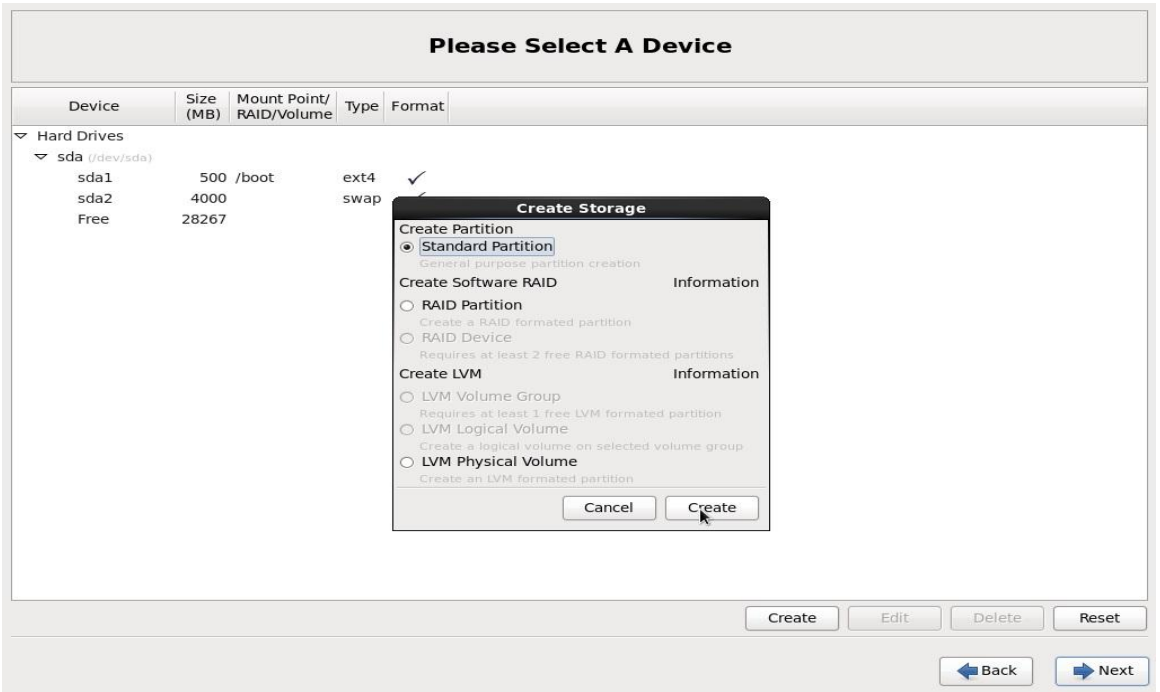


Select **Standard Partition** and click **Create** button.

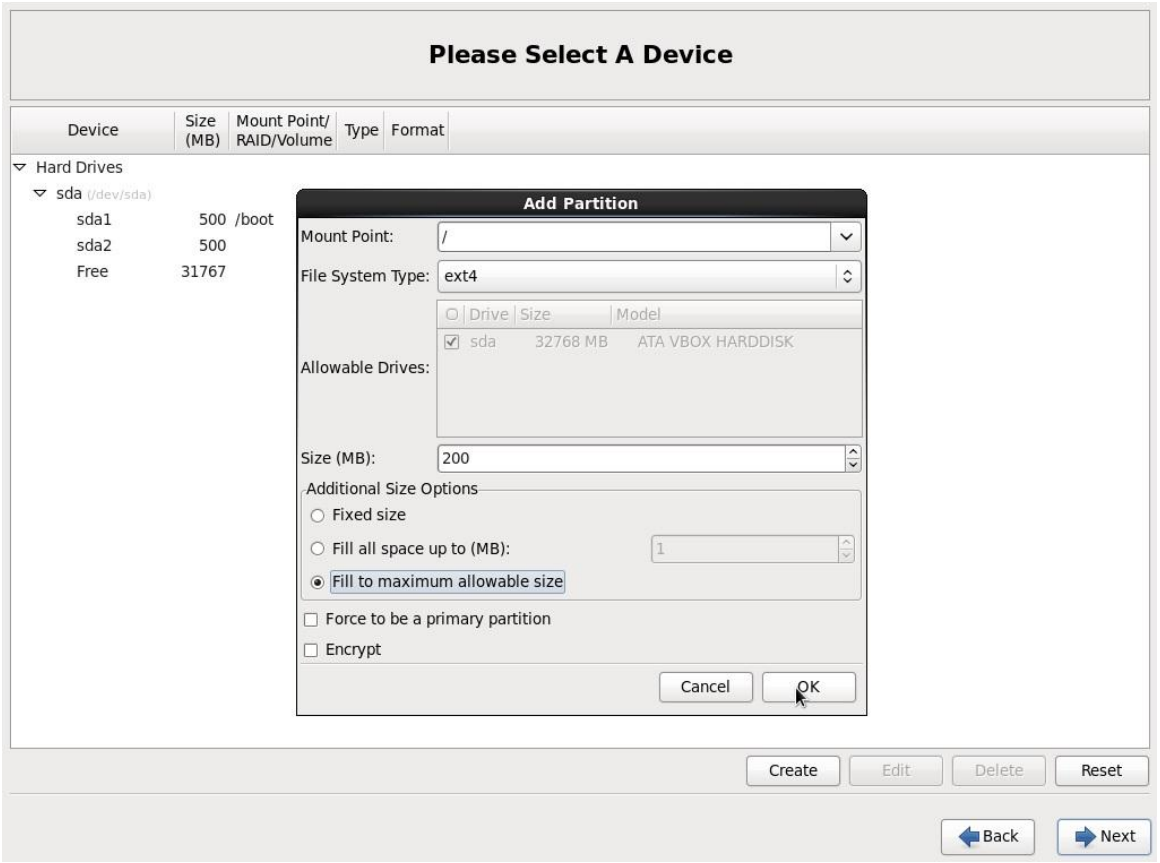


Defined **Mount Point /**boot, select **File System Type** as **ext4** and **Size** of **500 MB.** Then click **OK** button. You will see following screen

Click on **Create** button.

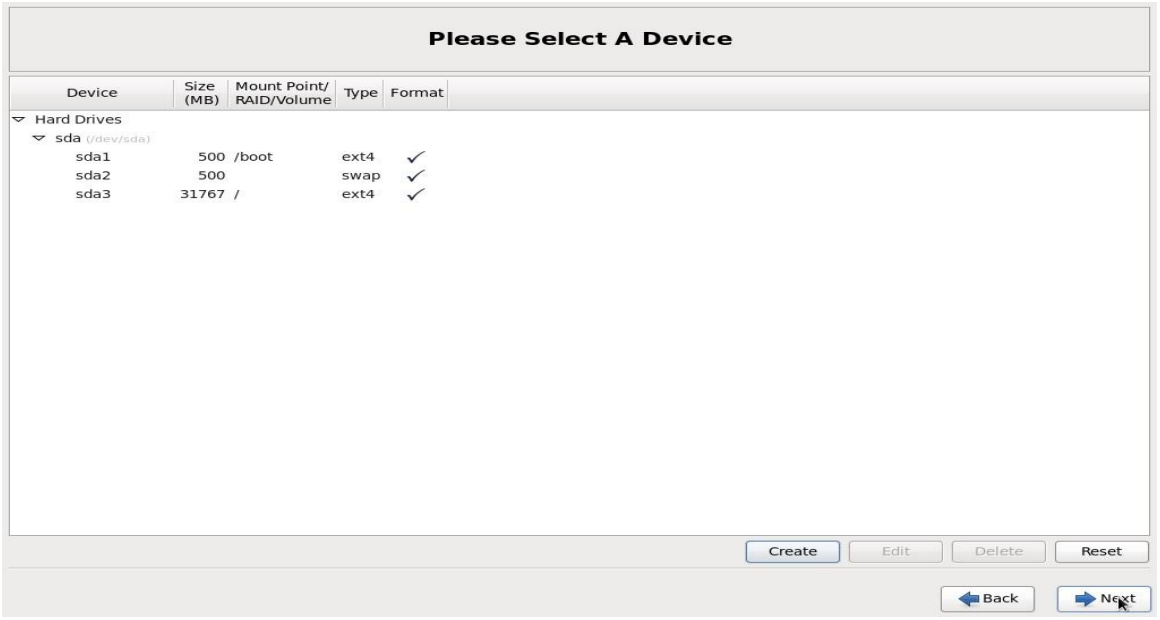


Select **Standard Partition** and click **Create** button.



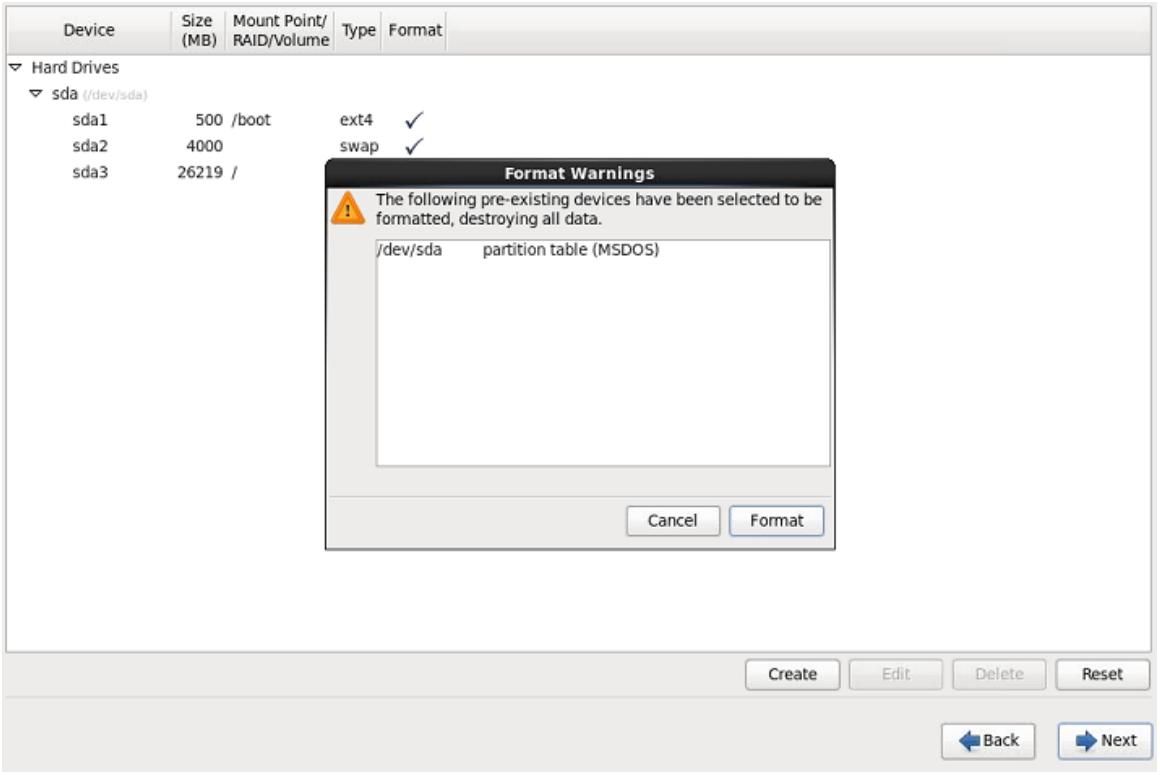
Defined **Mount Point** as **/** which main or root directory. Select **File System Type**: **ext4** and in **Additional Size Options** select **Fill to maximum allowable size**, then click **OK**.

You will see following screen:



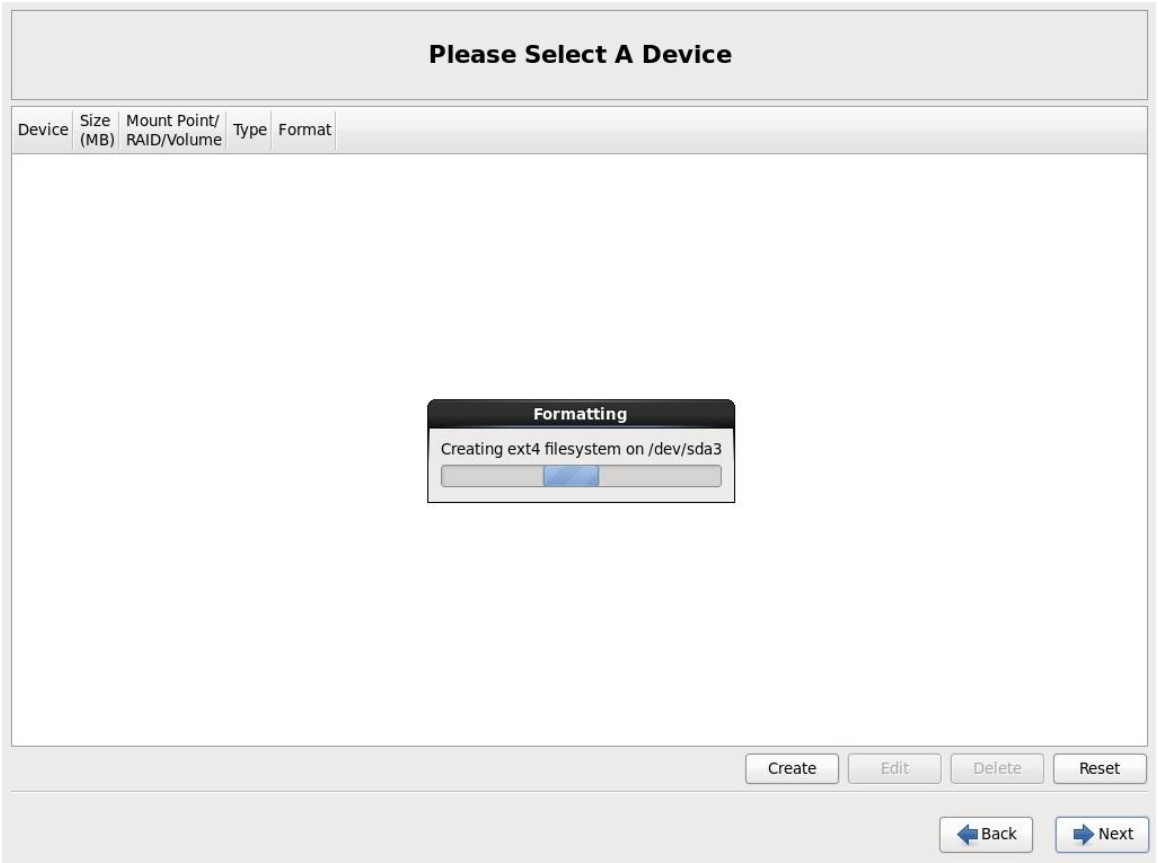
Click **Next** button.

The next screenshot you may or may not see.



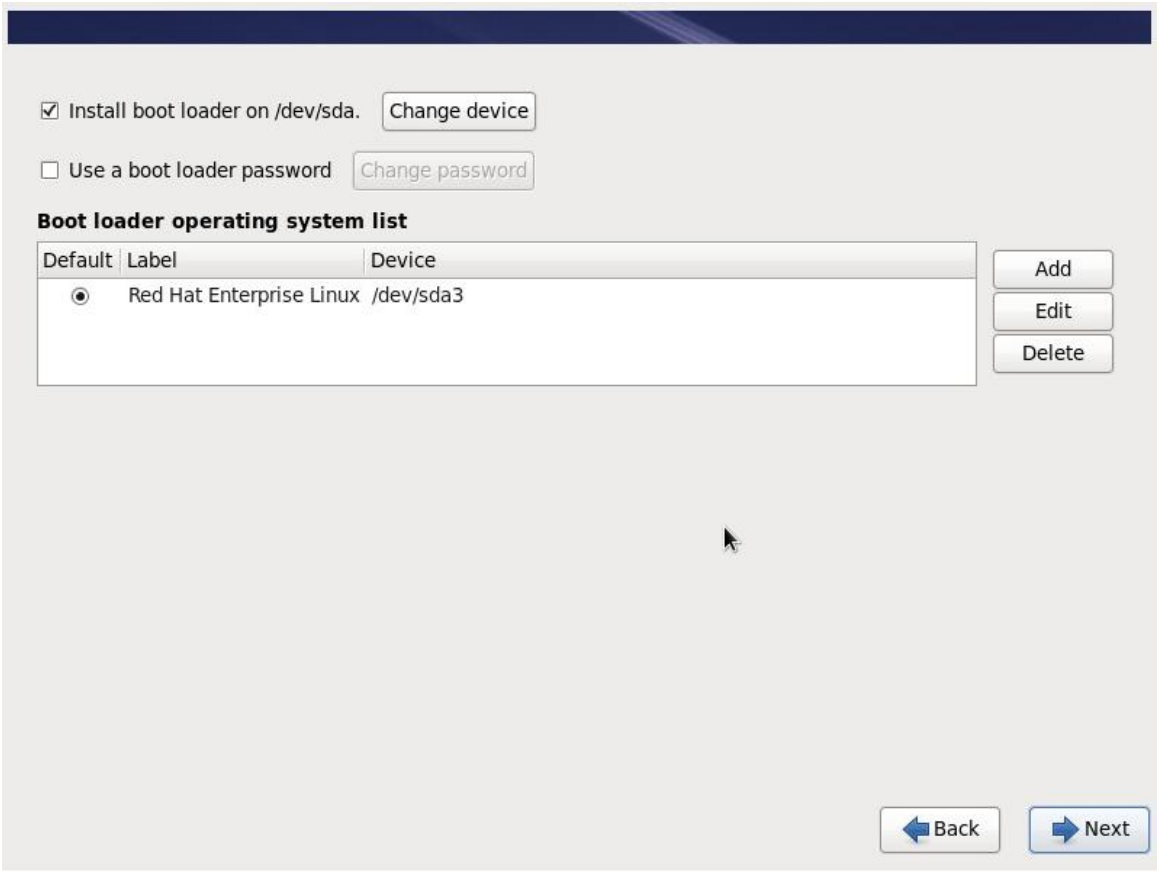
If you see, please click on "**Format**" button.

Click on **Write changes to disk** button, after which you will see how system creates and formats new file system partitions:



Click **Next** button.

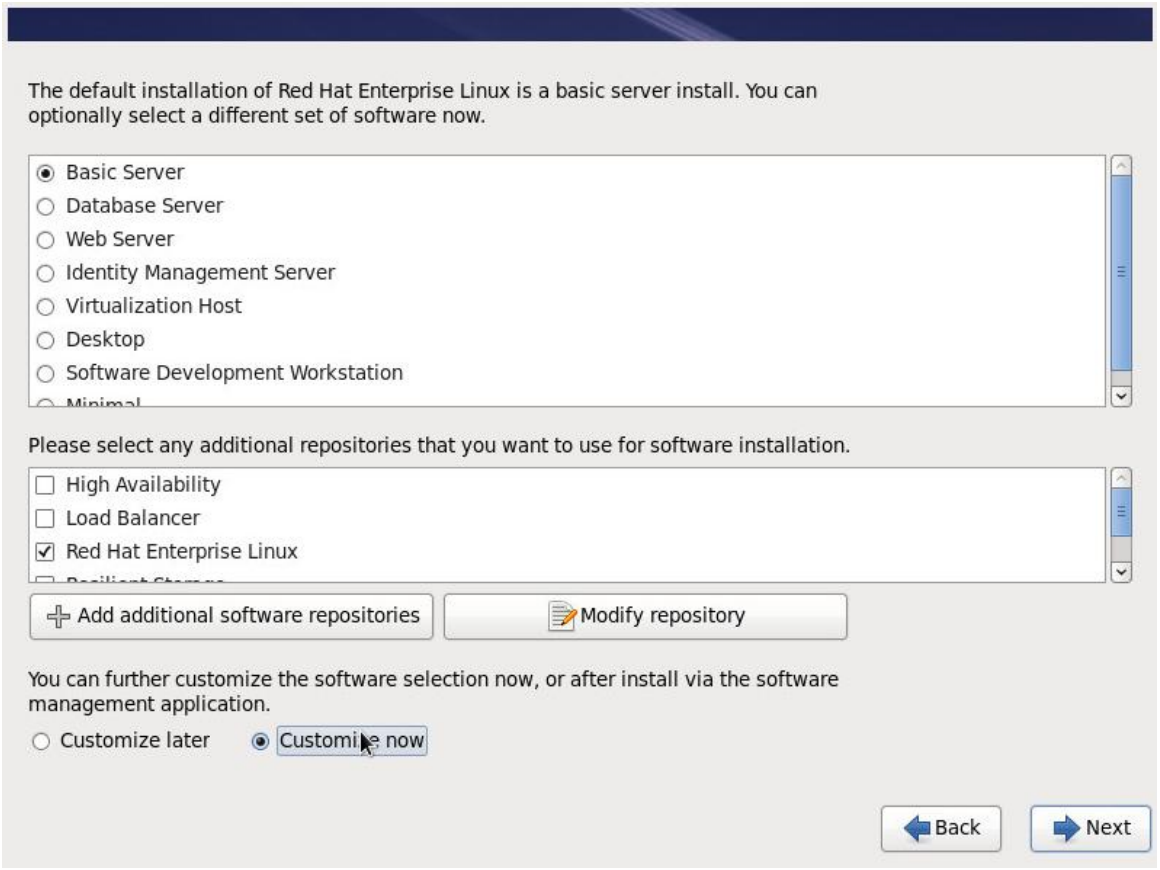
Next screen is very important, please make sure that **Install boot loader** tick box is checked. Because if it isn't you will not be able to boot your new RHEL6.5 server.



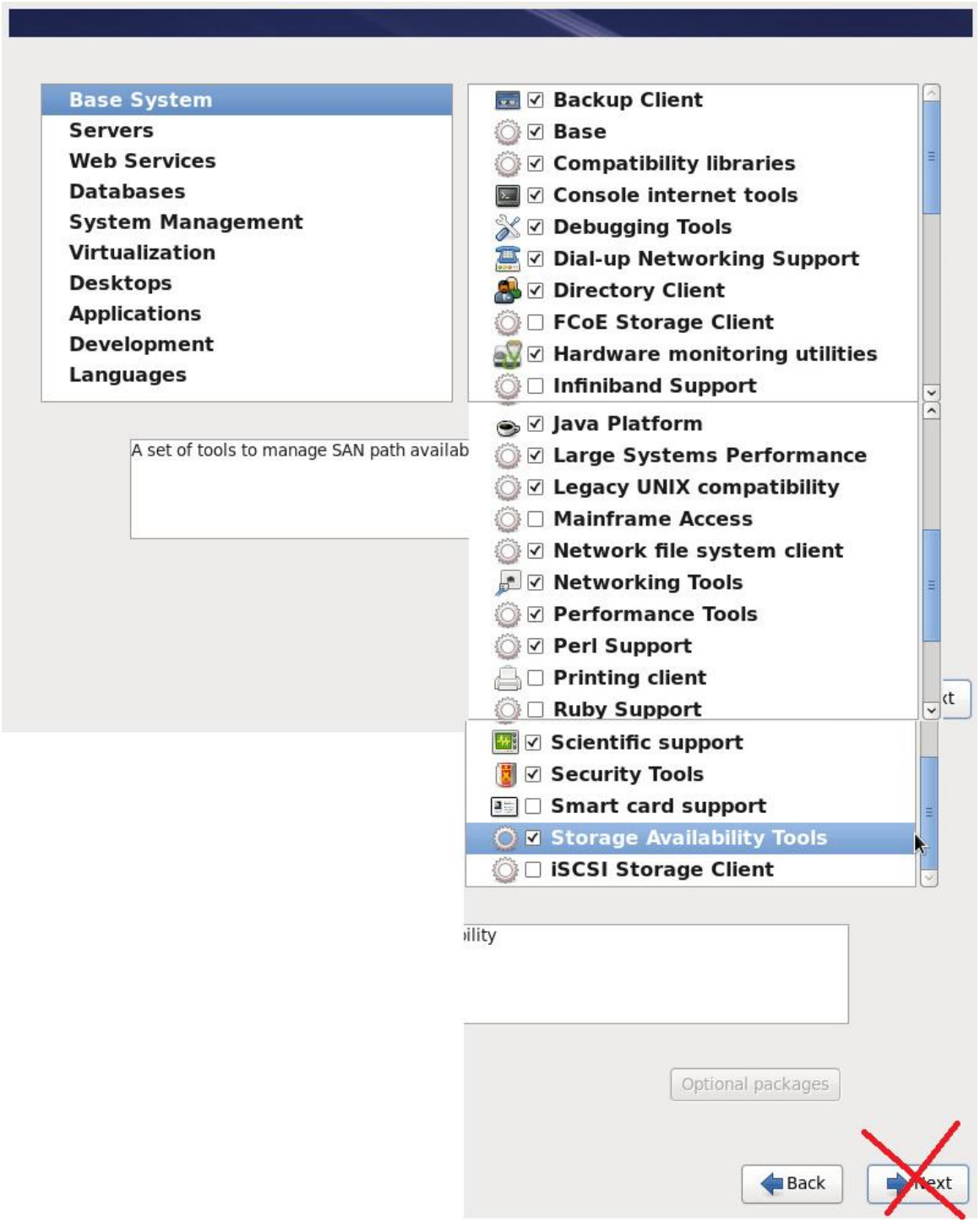
Click on **Next** button.

Following screenshots will guide you through selection of packages required for Enigma NMS.

Please be careful here and make sure that you select packages exactly as shown. If you fail to do so your Enigma NMS will not be installed properly and will not function as designed.



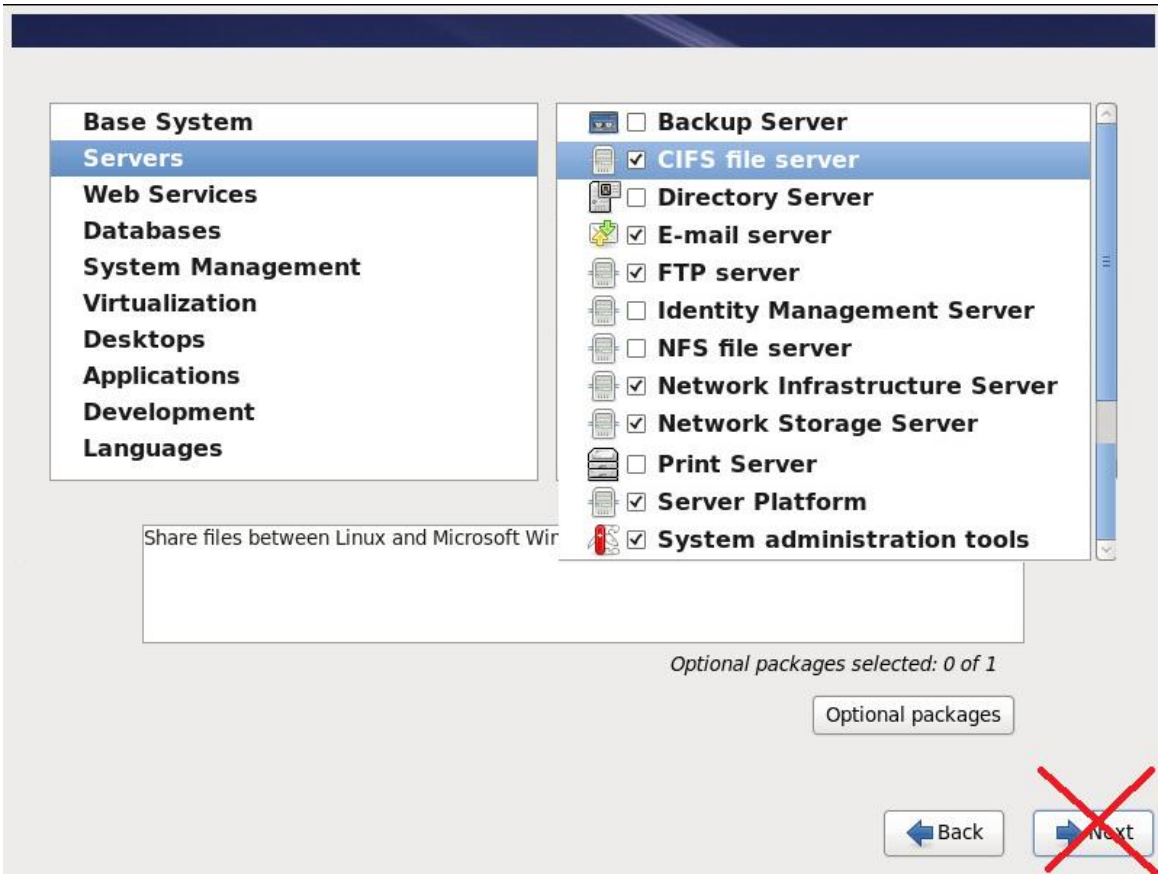
Click on **Customize now** radio button and click on **Next**.



Warning: DO NOT CLICK ON "Next" button here!

Select **Base System** category and tick all check-boxes except for:

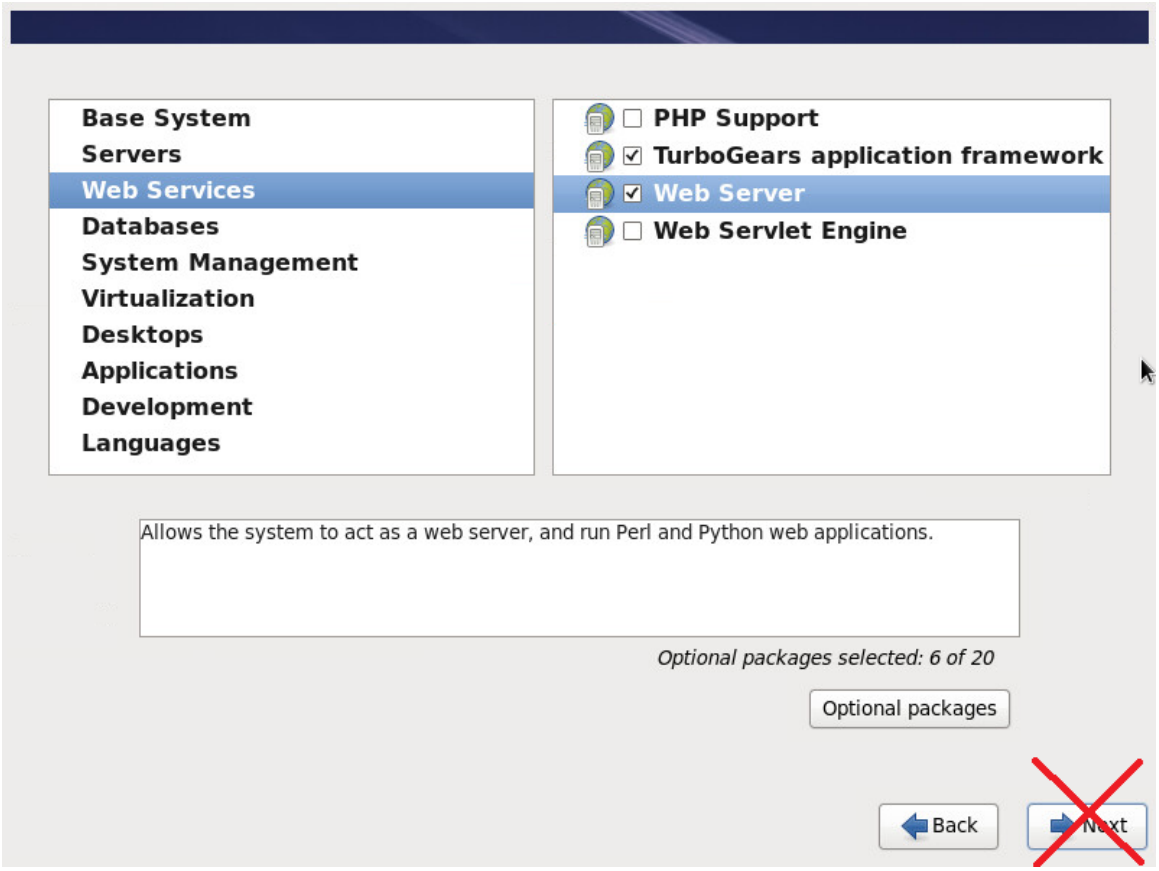
FCOE Storage Client, Infiniband Support, Mainframe Access, Printing client, Ruby Support, Smart card support and **iSCSI Storage Client**



Warning: DO NOT CLICK ON "Next" button here!

Select **Servers** category and tick:

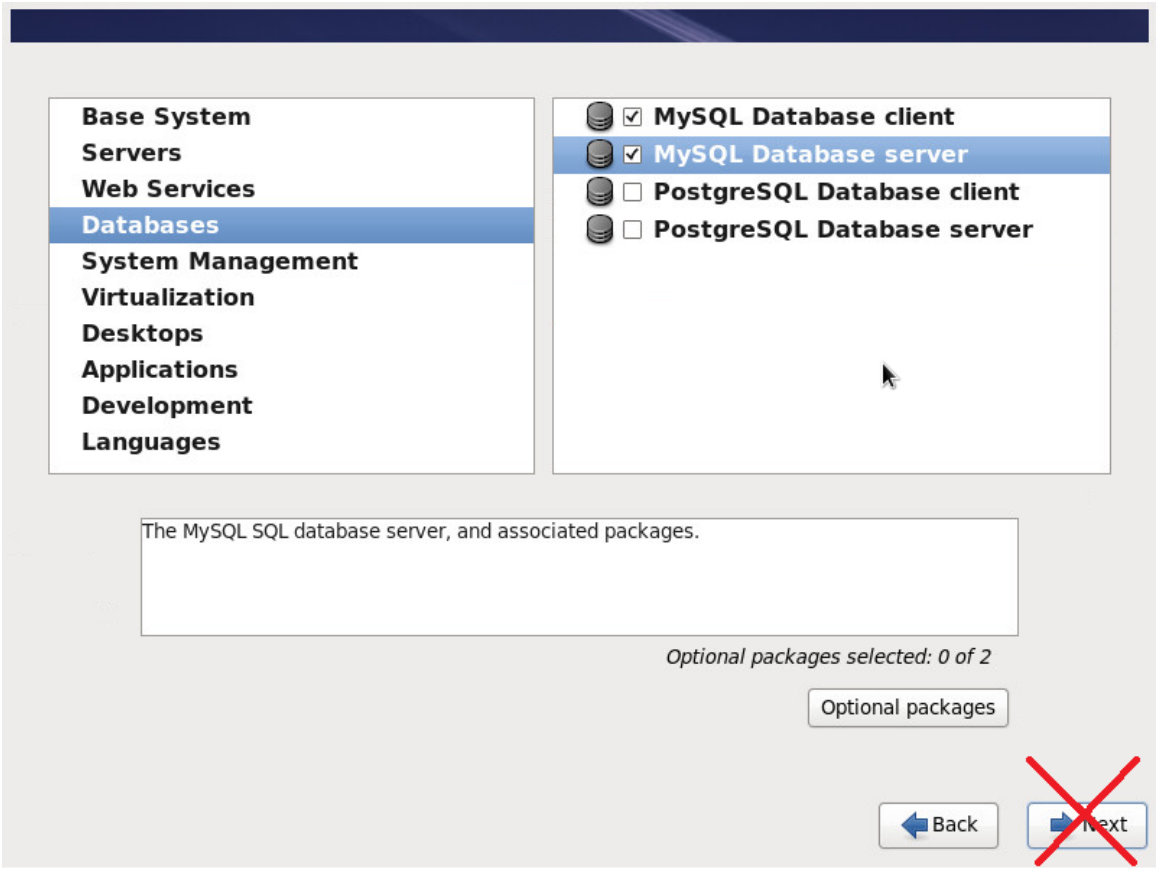
- **CIFS file server**
- **E-mail server**
- **FTP server**
- **Network Infrastructure Server**
- **Network Storage Server**
- **Server Platform**
- **System administration tools**



Warning: DO NOT CLICK ON "Next" button here!

Select **Web Services** category and tick:

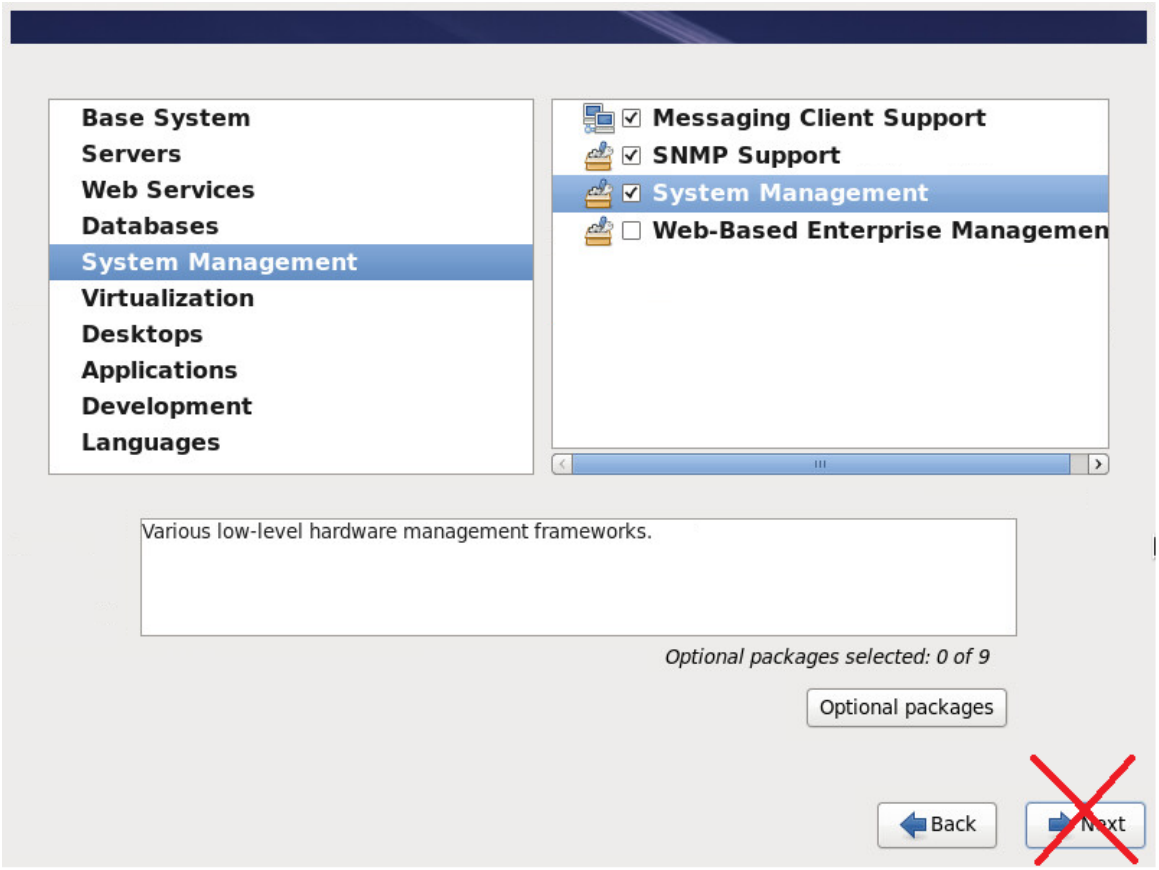
- **PHP Support**
- **Web Server**
- **Web Servlet Engine**



Warning: DO NOT CLICK ON "Next" button here!

Select **Databases** and check

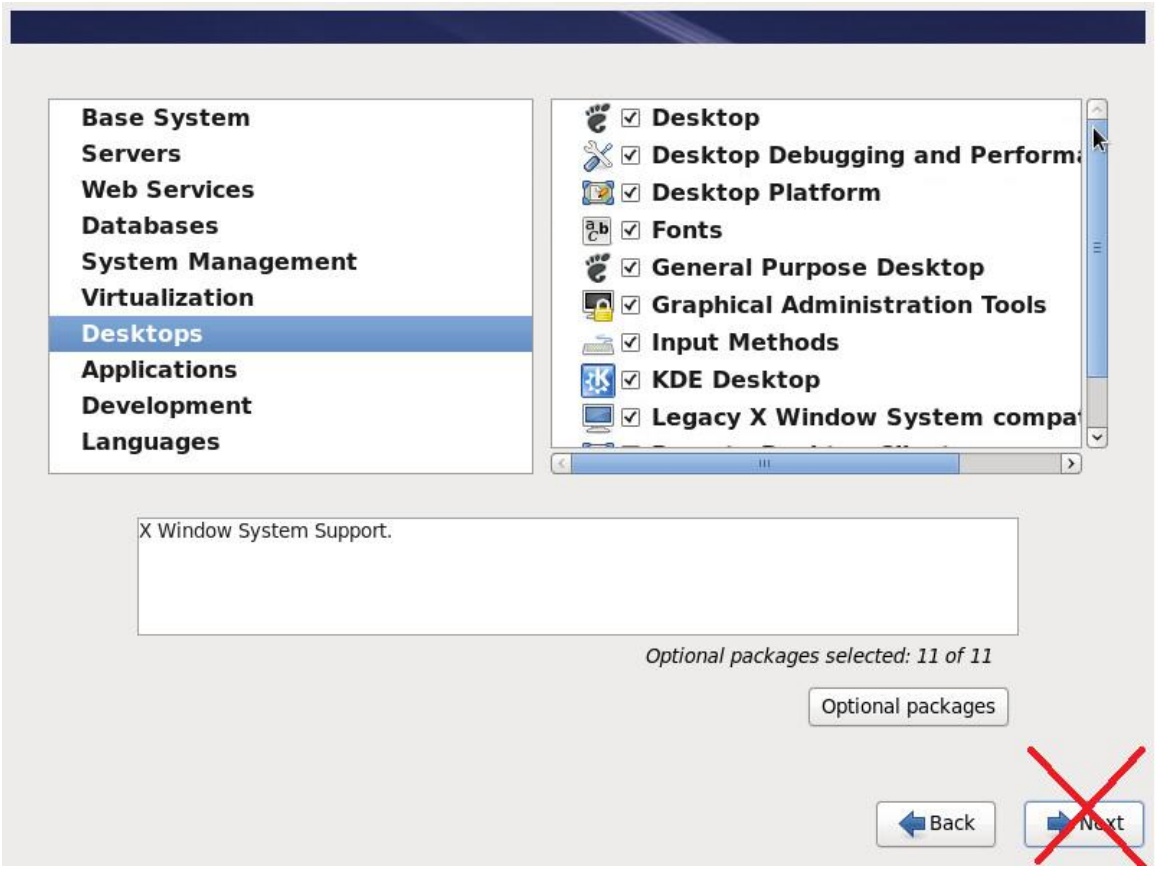
- **MySQL Database Client**
- **MySQL Database Server**.



Warning: DO NOT CLICK ON "Next" button here!

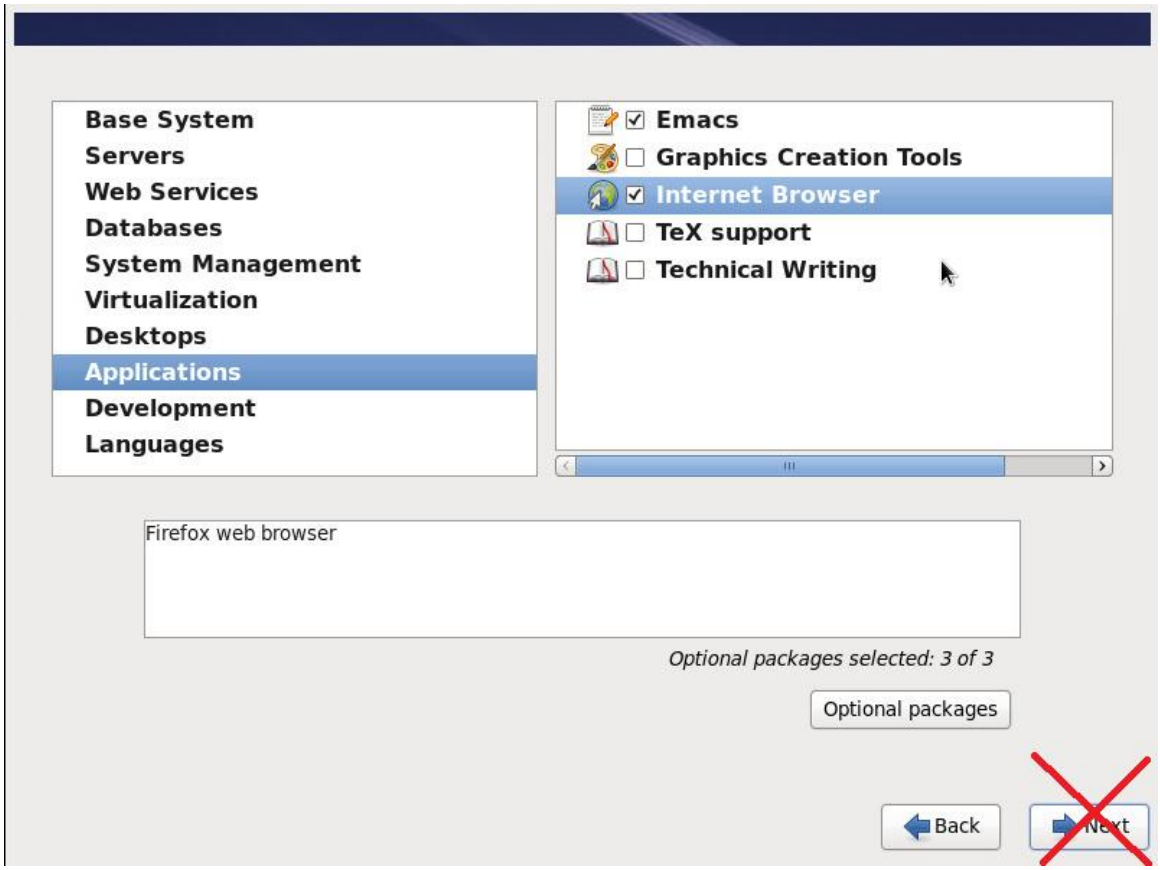
Select **System Management** category and tick:

- **Messaging Client Support**
- **SNMP Support**
- **System Management**



Warning: DO NOT CLICK ON "Next" button here!

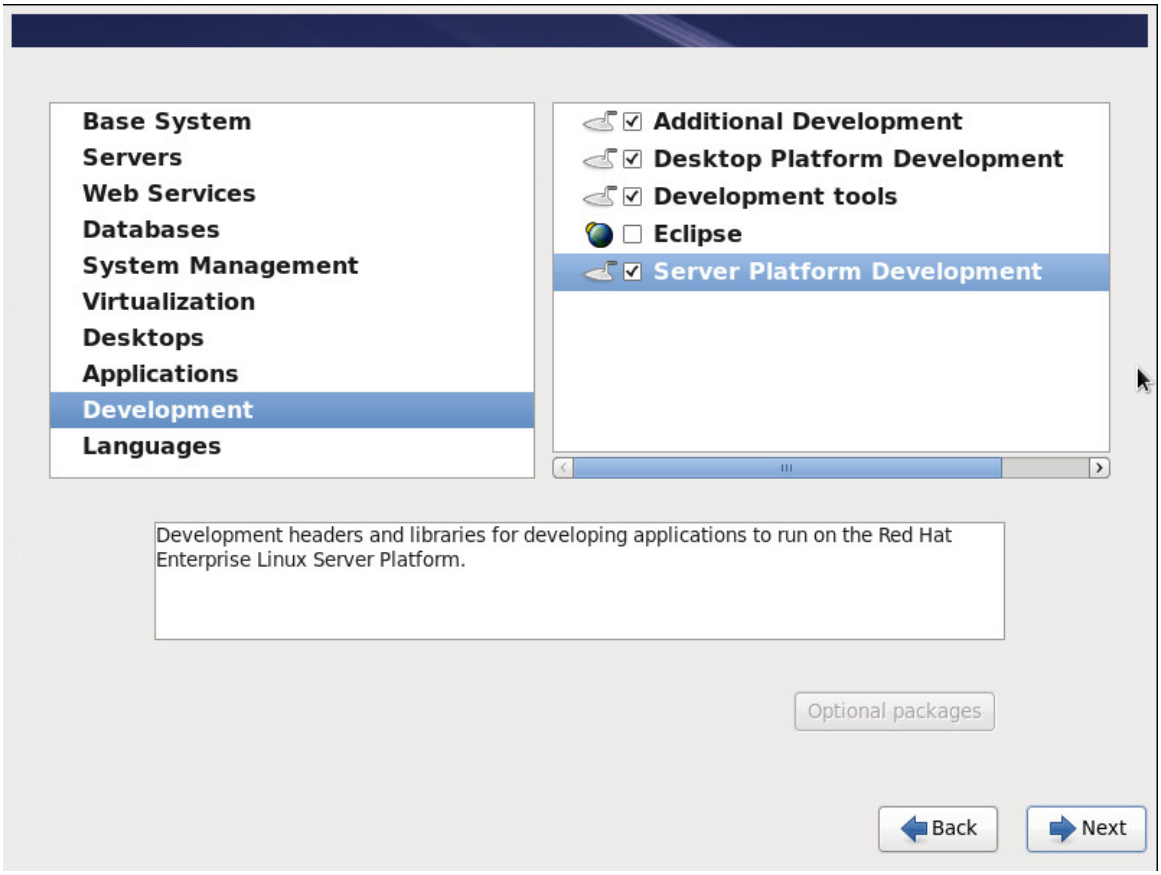
Select **Desktops** category and **tick All Check-boxes.**



Warning: DO NOT CLICK ON "Next" button here!

Select **Applications** category and tick:

- **Emacs**
- **Internet Browser**



Select **Development** category and tick **All Check-boxes** except for Eclipse:

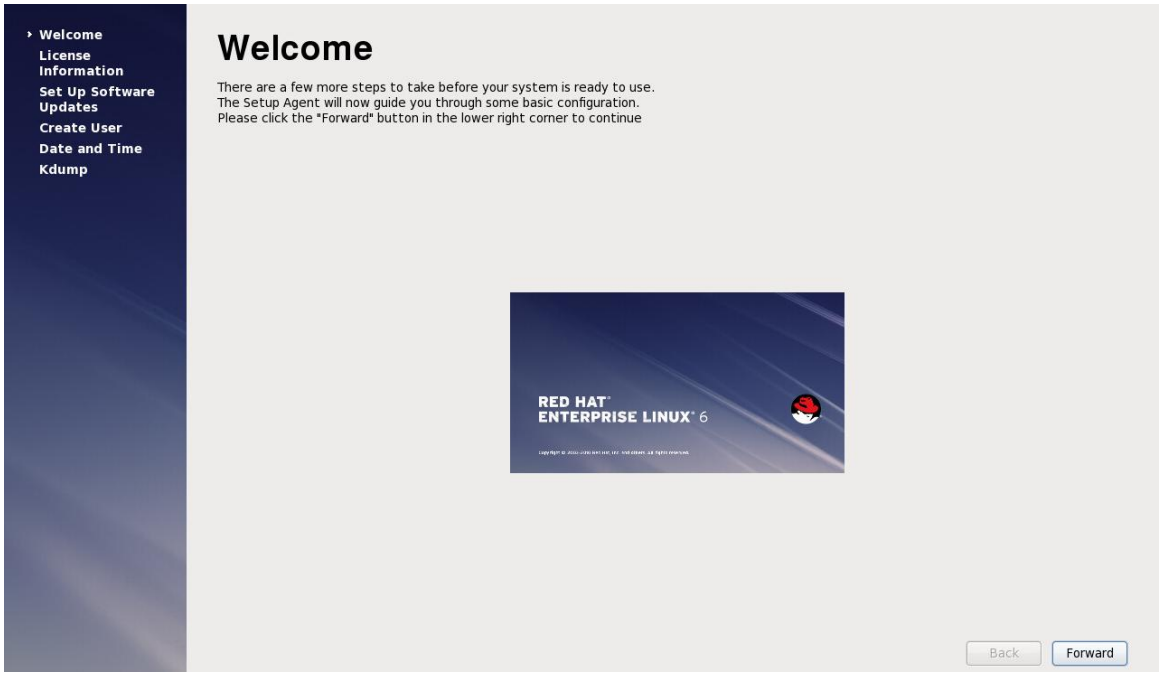
Click **Next** button

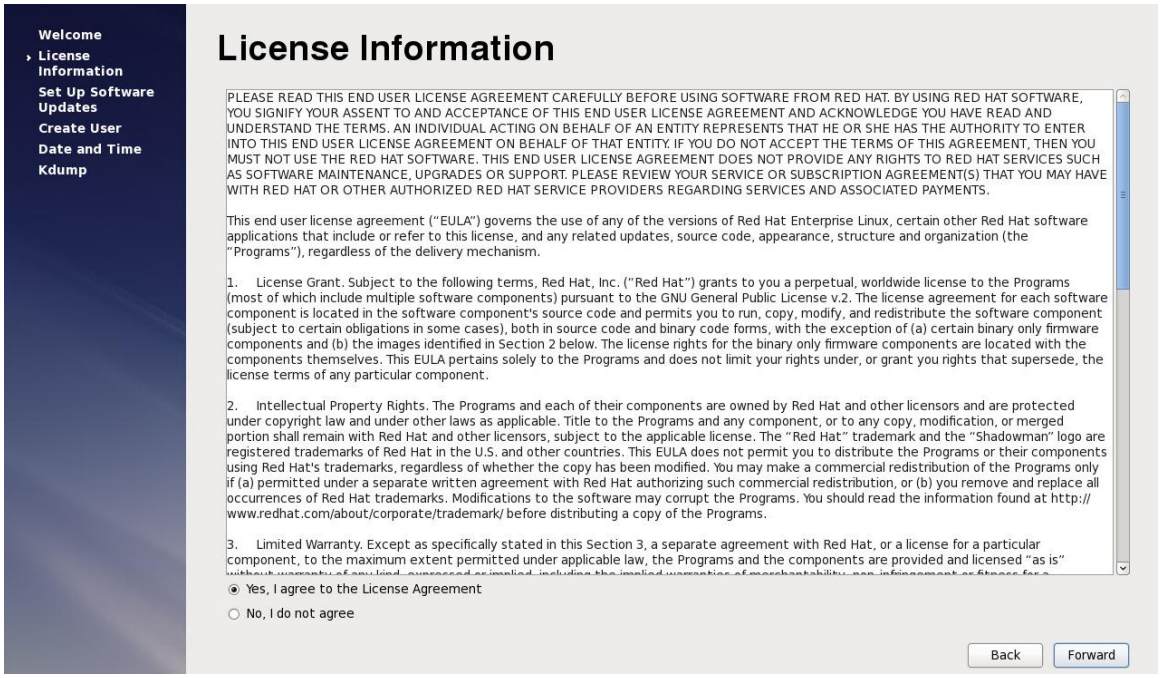
The system will go through dependency check and will start installing selected packages.
It will take up to 15 minutes depending on available hardware resources.

Once finished you will be prompted to **Reboot** to complete some post-installation tasks.

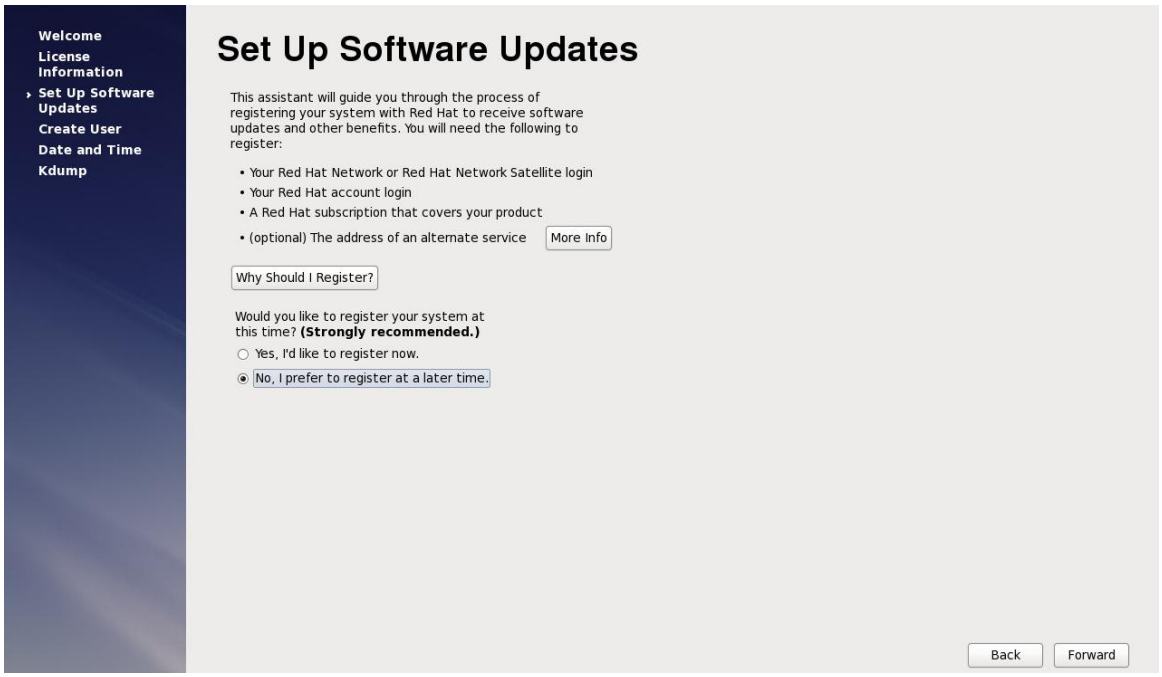
Once rebooted you will see following screen:

Click on **Forward** button.

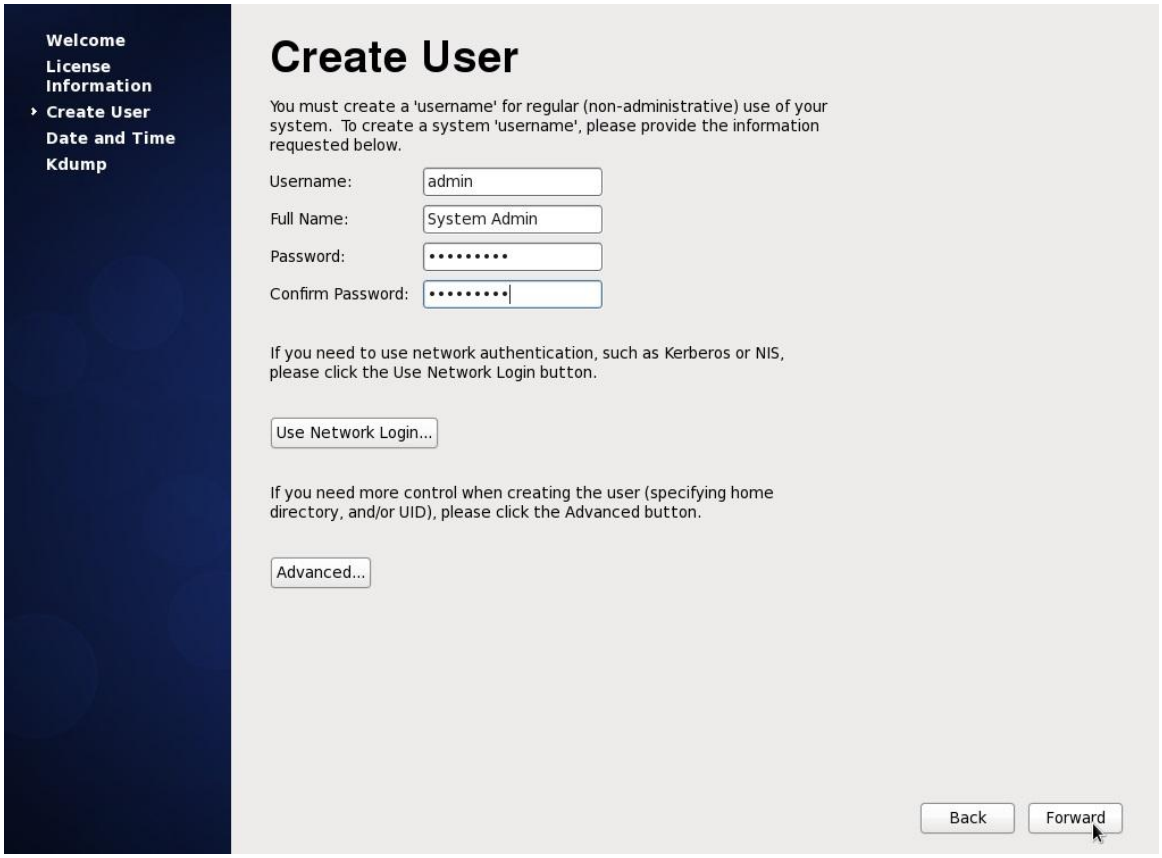




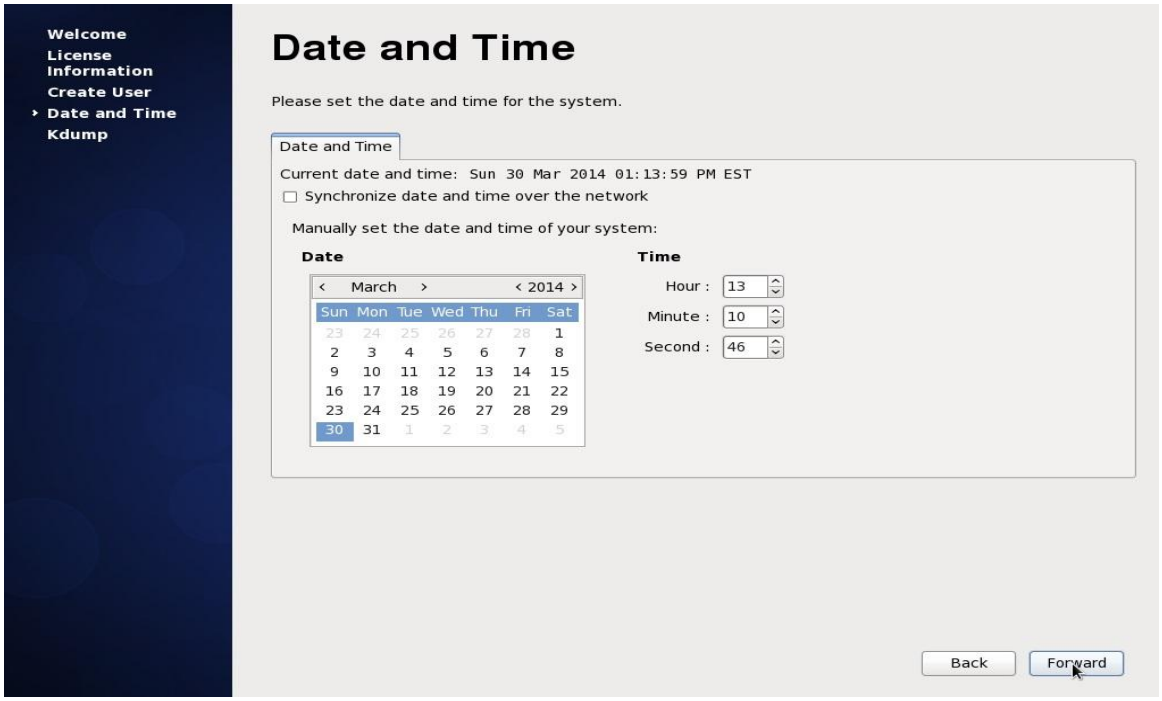
Select **Yes, I agree to the License Agreement** and click **Forward** button.



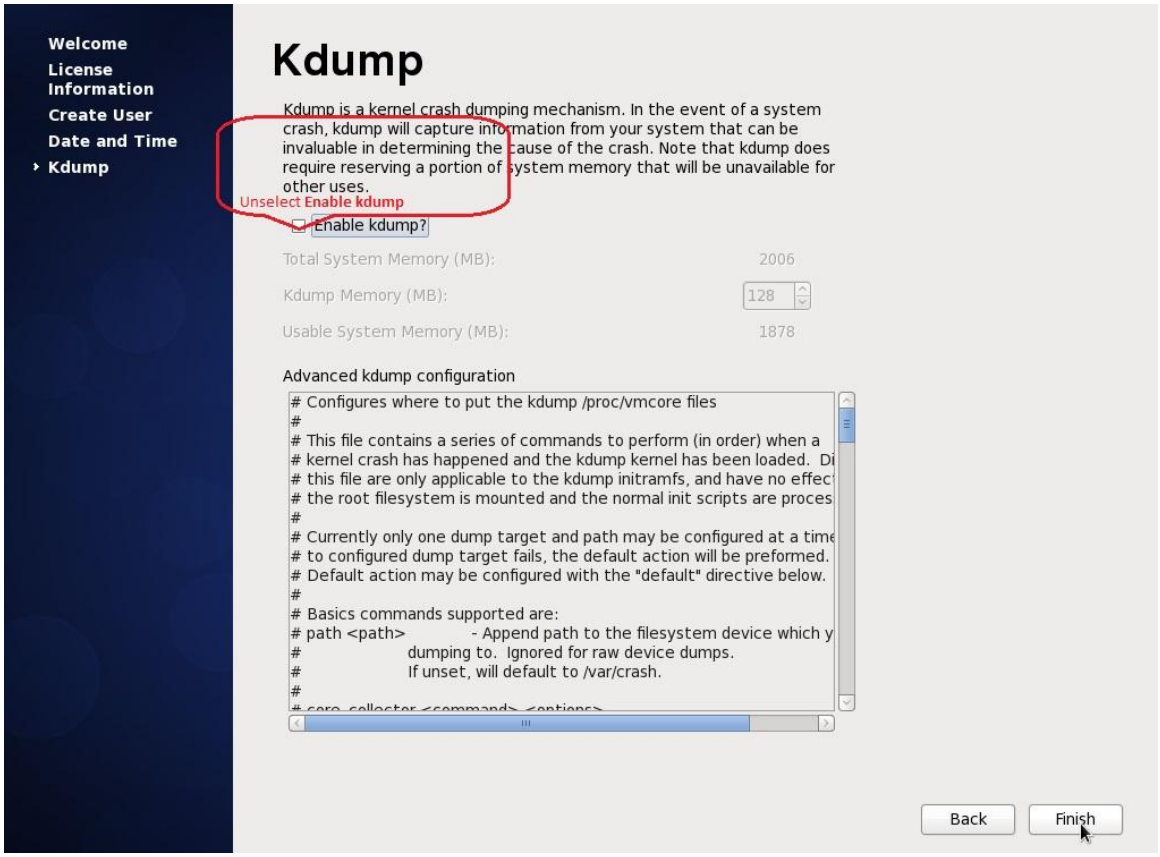
Please select option “**No, I prefer to register at a later time**” and click **Forward** button



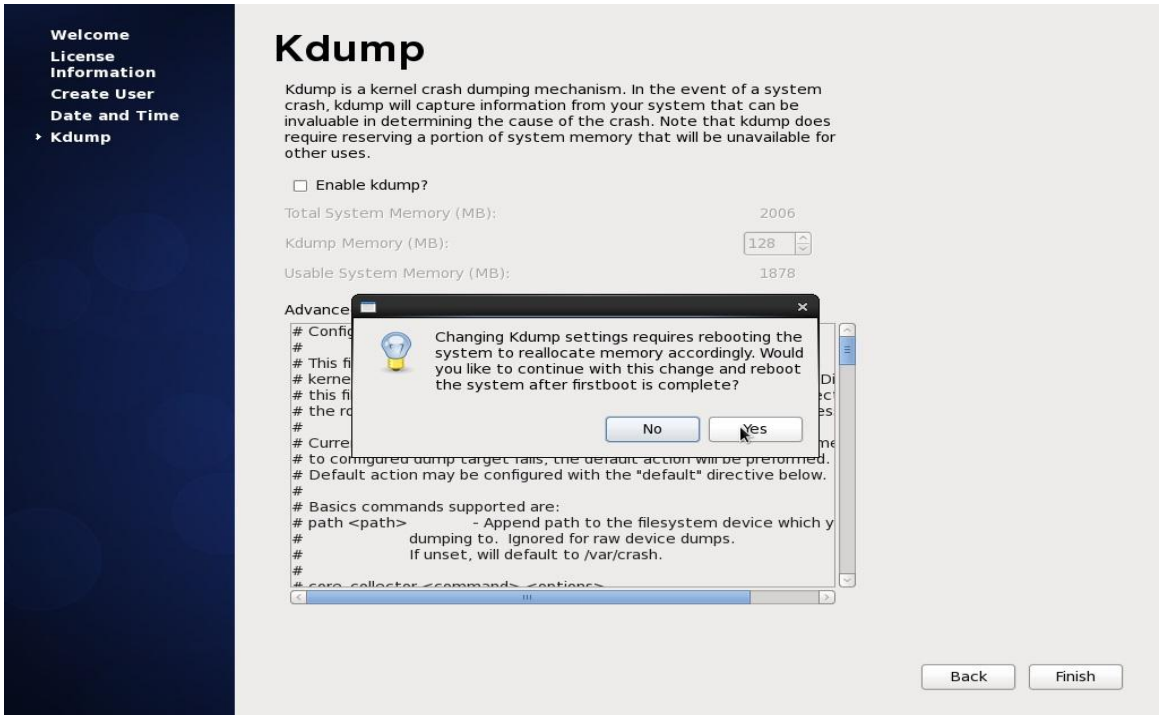
Here you need to define admin user. Please fill-out above fields as shown and memorize or write down **admin** user password. Click **Forward** button.



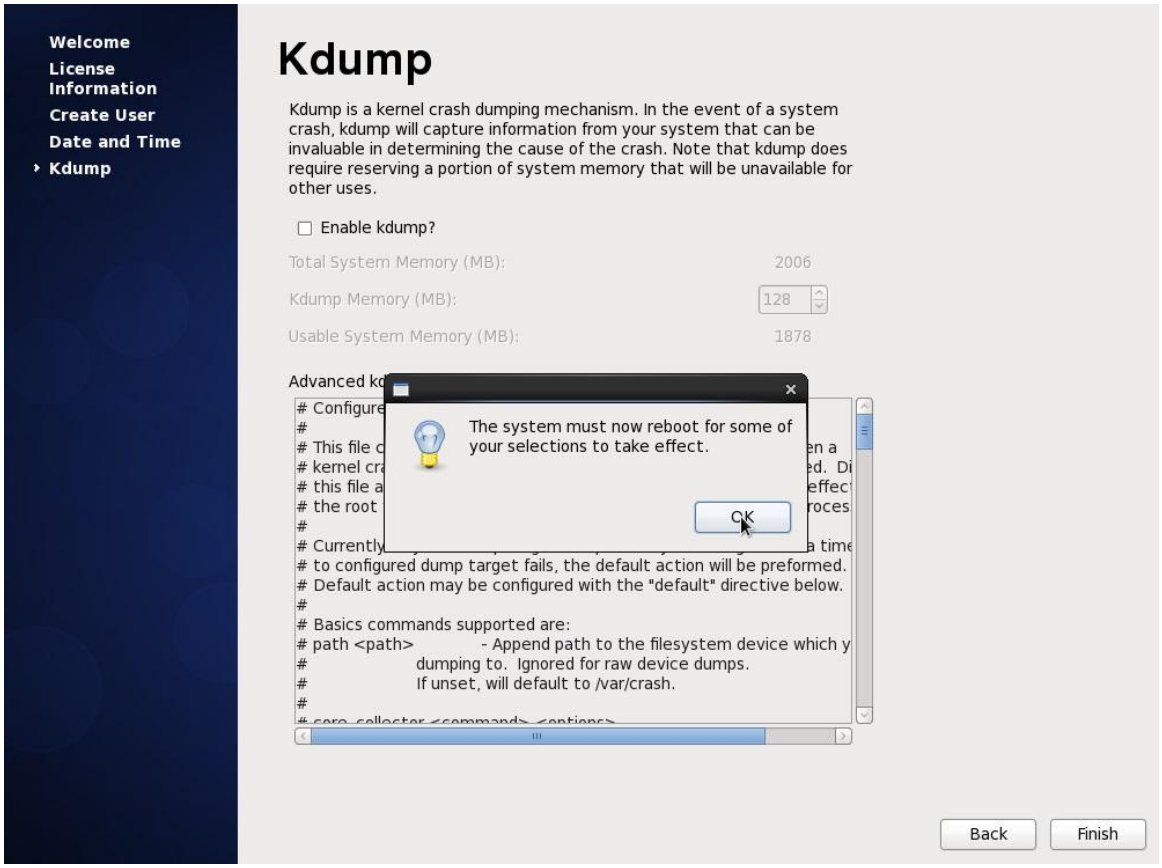
Define date and time.



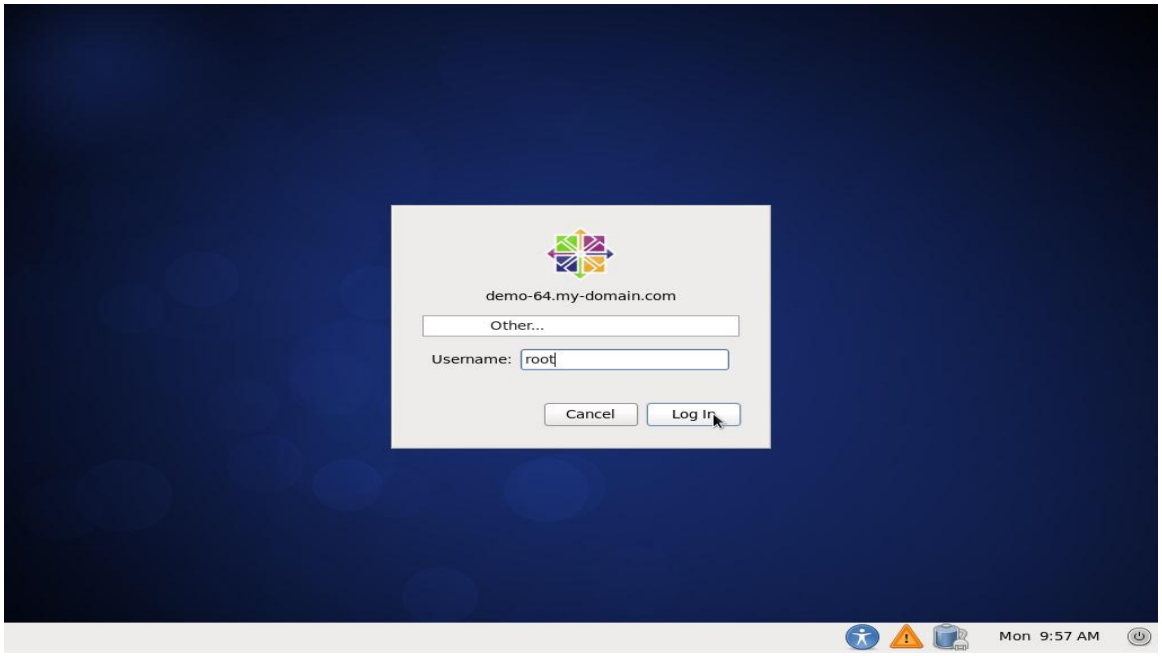
Un-tick **Enable Kdump** checkbox and click **Finish** button.



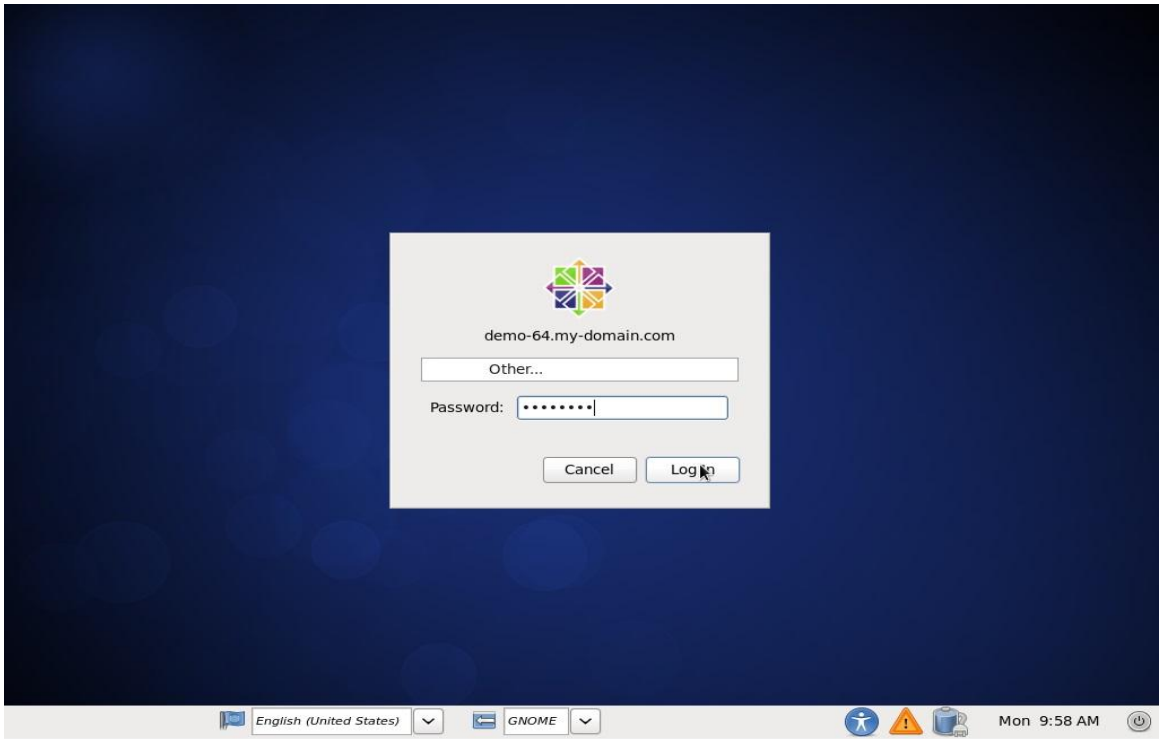
Click on **Yes** button in warning pop-up.



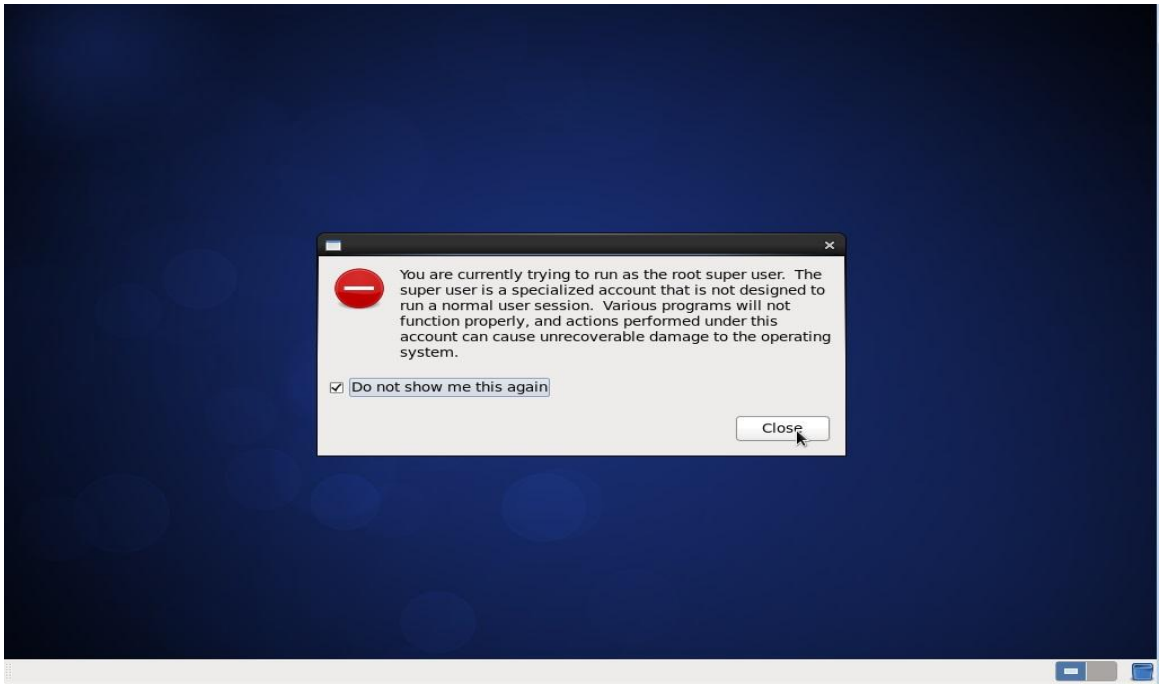
Click on **OK** button in system reboot warning popup.



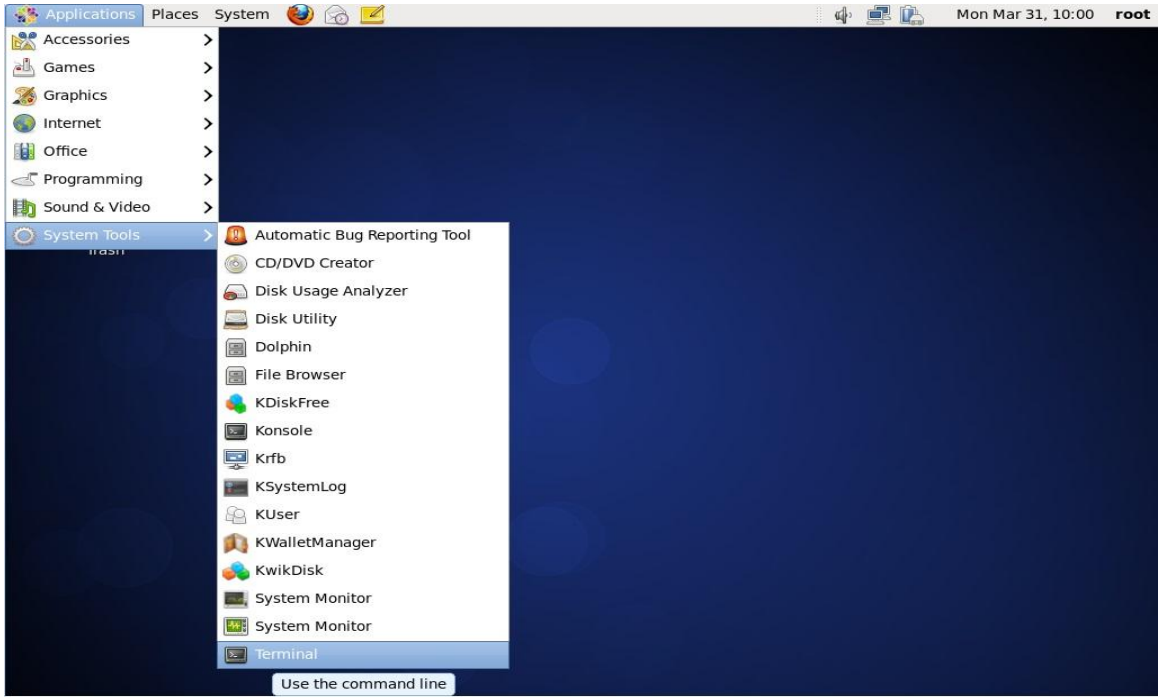
When system reboots, select **Other** user and define **Username** as **root**. Click on **Log in** button.



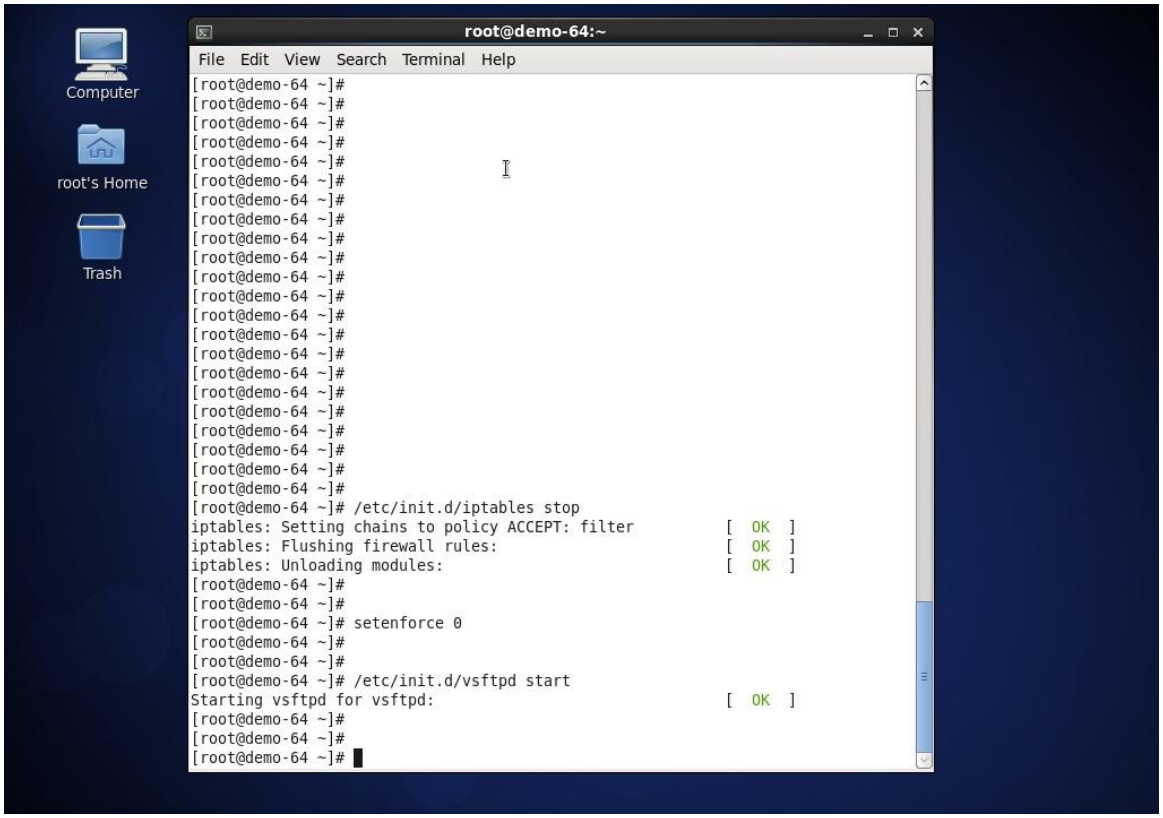
Type in root password



Tick **Do not show me this again** checkbox in popup warning and click **Close** button.



Click on the icon at the top left corner, go to **System Tools** --> **Terminal**.



You will get into shell prompt as show above.

You will need to execute 3 commands (**shown** above) to enable external access into the system via FTP.

These commands are:

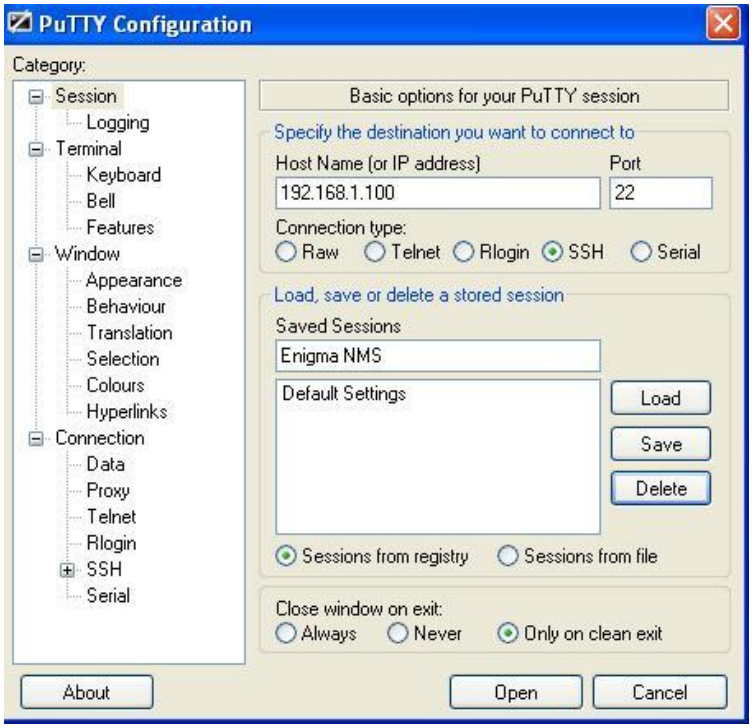
 # /etc/init.d/iptables stop

 # setenforce 0

 # /etc/init.d/vsftpd start

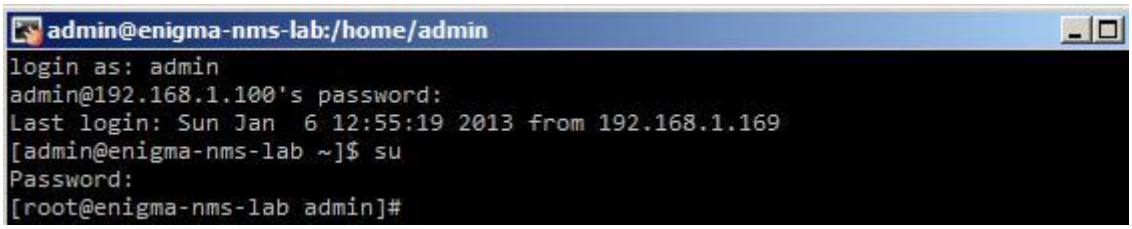
The next step is to establish terminal connection from your client PC into your newly built RHEL6.5 system and transfer Enigma NMS binaries image

On your client PC start your putty client, by clicking on Putty icon 



Fill out fields as above, click Save and Open buttons.

Click “Yes” button.



In the screen-shot above you will notice that we have logged into as user admin but then we executed su (**superuser**) command, which gives us full control over this system.

7 Installing Enigma NMS

For Enigma NMS install, you need to transfer Enigma distribution package on to your newly build RHEL6 machine, dedicated or running on VMWare.
By now we assume that you have successfully installed RHEL6 and logged into your Putty session with root (superuser) privileges

7.1 Installing Enigma NMS

Firstly you will need to transfer Enigma distribution package onto your RHEL6.5 server.
You have already started FTP Server on RHEL6.5 with following command:
/etc/init.d/vsftpd start

Also you will need FTP client, we recommend FileZilla – free FTP Client or if ftp is blocked for some reason, you can use WinSCP (Secure Copy for Windows), which is free SCP client.

The name of Enigma NMS distribution package is **ENIGMA_CENTOS6_BINARY.tar.gz**

Please start you FTP client software, define connection details, including IP Address of your RHEL6 machine (**for example 192.168.1.100**), Username: **admin**, Password: "**the password you have chosen during RHEL6 install for user admin**" and connect to your RHEL6 machine.

Once connected find location of Enigma NMS distribution package, which you have downloaded via http://netsas.com.au (ENIGMA_CENTOS6_BINARY.tar.gz) on your client PC and transfer it onto RHEL6 machine using FTP Client (FileZilla FTP Client) or WinSCP or similar. Put ENIGMA_CENTOS6_BINARY.tar.gz file into home directory of admin user, this should be set to

/home/admin

When the file transfer is complete, in your putty terminal window you should see that this file appeared in admin user home directory: /home/admin, type at shell prompt #

[root@demo-64 admin]# ll ENIGMA_CENTOS6_BINARY.tar.gz

-rw-r--r--. 1 admin admin 156991622 Mar 31 13:23 ENIGMA_CENTOS6_BINARY.tar.gz

For Enigma install, please type following commands

tar xvf ENIGMA_CENTOS6_BINARY.tar.gz

cd ENIGMA_CENTOS6_BINARY

The following script will determine appropriate hardware architecture (32 or 64 bit) and install required software components. The same script is used to upgrade Enigma NMS to the latest version. When you run following script without any arguments you will see following output:

```
# ./INSTALL_ENIGMA.pl
########################################################################
#################### PLEASE READ BELOW!!! ##############################
########################################################################

ATTENTION: This script can UPDATE your existing ENIGMA NMS to the LATEST Version OR INSTALL BRAND NEW ENIGMA NMS INSTANCE.


 ----> WARNING: Please make sure that you know what you are doing!!! <----

 1. If you choose to UPDATE ENIGMA NMS to the LATEST Version - It will update only DATABASE SCHEMA and BINARIES

 2. If you choose to INSTALL NEW ENIGMA NMS - IT WILL DELETE EVERYTHING IN YOUR DATABASE, PLEASE MAKE SURE THIS IS WHAT YOU WANT!!!


----> To PROCEED WITH UPDATE or NEW INSTALL USE ONE OF THE FOLLOWING FORMATS:


 1. To UPDATE ENIGMA NMS TO THE LATEST VERSION ONLY (SAFE OPTION) Type:

    ./INSTALL_ENIGMA.pl "UPDATE ENIGMA NMS TO THE LATEST VERSION ONLY"

------------------------------------------------------------------------------

 2. To INSTALL NEW ENIGMA NMS Type:

    ./INSTALL_ENIGMA.pl "INSTALL NEW ENIGMA NMS AND DELETE ALL EXISTING DATABASE CONTENT"

########################################################################
```

If you are installing fresh Enigma instance, please us option 2:

```
# ./INSTALL_ENIGMA.pl "INSTALL NEW ENIGMA NMS AND DELETE ALL EXISTING DATABASE CONTENT"


#########################################################

INSTALLING NEW INSTANCE OF ENIGMA NMS
ANY DATA FROM YOUR EXISTING DATABASE WILL BE DELETED


THIS FULLY FUNCTIONAL TRIAL VERSION OF ENIGMA NMS IS LIMITED TO 60 DAYS

If you wish to purchase a Commercial License
Please contact NETSAS PTY LTD on sales@netsas.com.au


PLEASE BE PATIENT AS IT WILL TAKE A FEW MINUTES..

RUNNING (/home/admin/ENIGMA_CENTOS6_BINARY/INSTALL_ENIGMA_NMS_RHEL6_64_BINARY.pl "INSTALL
NEW ENIGMA NMS AND DELETE ALL EXISTING DATABASE CONTENT")


#########################################################

INSTALLING NEW INSTANCE OF ENIGMA NMS
ANY DATA FROM YOUR EXISTING DATABASE WILL BE DELETED


THIS IS FULLY FUNCTIONAL VERSION OF ENIGMA NMS WITH UNLIMITED NODES BUT LIMITED TO 60 DAYS

If you wish to purchase a License
Please contact us on sales@one-nms.com


PLEASE BE PATIENT AS IT WILL TAKE BETWEEN 5 AND 15 MINUTES, DEPENDING ON YOUR HARDWARE

IN THE MEANTIME YOU CAN SIT BACK AND RELAX, WHY DON'T YOU HAVE A CUP OF TEA OR COFFEE? :-)

NEW INSTANCE OF ENIGMA NMS HAS BEEN INSTALLED
PLEASE POINT YOUR WEB BROWSER TO THIS SERVER IP ADDRESS

Login: admin
Password: password

THAT'S ALL FOLKS!!! ;-) ENJOY!!!
#########################################################
```

Without closing you putty terminal window, try open web connection into your RHEL6 machine, which has become Enigma NMS.

Open your web browser (we recommend using Firefox) and in address field, type in IP Address of RHEL6 machine, e.g.

http://192.168.1.100

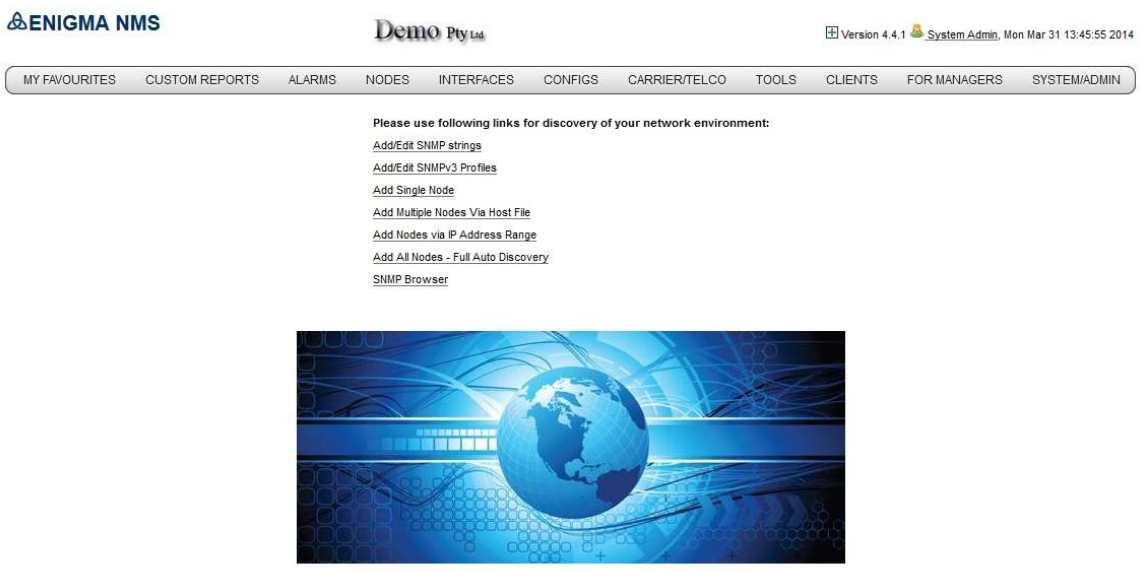
or if http is blocked you can use https (ssl) – TCP port 443

https://192.168.1.100

Enigma should prompt you for username and password, use following

Username: admin
Password: password

Once logged in you will see Enigma NMS main screen as below.



At the very beginning your Enigma NMS will have the single node record in its database, which is itself and SNMP Community Strings: **public - Read-Only, private - Read-Write**. You will need to use displayed links to add additional SNMP Strings and configure preferred method of database population.

We recommend you familiarize yourself with Enigma Quick Start Guide, which gives an idea of relationships between main database objects and provide logical order of system configuration. Enigma Quick Start Guide can be accessed via

Main Menu → SYSTEM/ADMIN --> Help → Quick Start Guide

and Enigma NMS User Guide, which can be accessed via

Main Menu → SYSTEM/ADMIN --> HELP → Help Topics → click on “User Manual” link and refer to Chapter 4 – INITIAL SYSTEM CONFIGURATION.

Please note if you need to re-install Enigma NMS and try to run
#./INSTALL_ENIGMA.pl "INSTALL NEW ENIGMA NMS AND DELETE ALL EXISTING DATABASE CONTENT"
System will recognise that it is not a brand new install and will prompt you to

1. stop mysqld process
2. stop crond process
3. delete Enigma database data directory

See example below

 # ./INSTALL_ENIGMA.pl "INSTALL NEW ENIGMA NMS AND DELETE ALL EXISTING DATABASE CONTENT"

########## WARNING!!! - PLEASE READ BELOW!!! ##########

WE HAVE FOUND EXISTING ENIGMA DATABASE WHICH CAN BE DELETED BY MISTAKE!!!

WE WON'T PROCEES ANY FURTHER!!!

PLEASE CONSIDER ENIGMA UPDATE OPTION

IF YOU DO WANT TO DELETE EXISTING ENIGMA DATABASE,
PLEASE EXECUTE FOLLOWING COMMANDS MANUALLY AS ROOT AND RE-RUN THIS SCRIPT

/etc/init.d/mysqld stop

/bin/rm -R /var/lib/mysql/nms

PLEASE MAKE SURE THAT YOU KNOW WHAT YOU ARE DOING!!!

The time needed for network discovery is directly related to the size of your network. This could take anywhere from few minutes to few hours, after which things should settle down.

If you need to run on-demand rediscovery of your network, please use
Main Menu → Tools → System Settings → select Network Discovery category and modify "**network discovery start now**" setting to Y.
To modify this setting, click system setting name and then click on modify icon (Pencil).
We recommend you follow instructions in quick start guide, which can be accessed via
Main Menu → Help → Quick Start Guide

If you need to upgrade your Enigma NMS to the latest version, please select relevant option during installation process.

8 Technical Support

You will have superuser (full) rights to RHEL6.5 OS, so please be careful with anything you do on the system. If you are not Linux expert better leave it alone.
We strongly recommend against granting other regular users access to operating system, as operating system and database engine configuration has been tailored to maximize performance of existing hardware resources. During installation of Enigma NMS, RHEL6.5 auto-update mechanism will be disabled, please keep it this way as OS updates may and most likely will impact Enigma performance.
If you give other people access to the operating system, they might cause accidental (honest mistakes) or intentional (hackers) damage, which may not be covered by maintenance and support contract.

If you need to have a jump-box, you can easily build another RHEL6 machine for that very purpose.

If you encounter any issues with Enigma NMS or RHEL6 install, please advise NETSAS Technical Assistance Centre via

Email: support@netsas.com.au or Phone: +61 1300 496 389

We will do everything we can to assist you with any Enigma or RHEL6.5 related issues.

If you decide to purchase support and maintenance contract, your Enigma NMS will be covered by comprehensive SLA (Service Level Agreement), which defines all terms and conditions.
Support and maintenance contract covers all technical issues with the product and includes minor customization and changes including free product upgrades.

These upgrades cover management and monitoring challenges associated with introduction of new and unification of existing network technologies.

Contact details:
NETSAS Technical Support Hotline: **1300 496 389**
Email: **support@netsas.com.au**