# CentOS Operating System Installation Manual

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# Part 1: Introduction

## 1 General Introduction

CentOS is an Enterprise Linux distribution based on the sources from Red Hat Enterprise Linux. Each CentOS version is supported for 7 years (by means of security updates). A new CentOS version is released every 2 years and each CentOS version is regularly updated (every 6 months) to support newer hardware. This results in a secure, low-maintenance, reliable, predictable and reproducible environment. This document details the installation steps of CentOS 5.5.

## 1.1 Who should use this manual?

This manual is intended for the audience who are responsible for deploying SSDG at the State Data Centers. This manual helps you to install BOSS-64 on the designated servers. The installation of this Operating system is very straightforward and it is easy to do without any prior knowledge of Linux or networks. In this document we have tried to give the entire flow of installing CentOS 5.5.

## 1.2 Authorized Use Permission

SSDG is wholly owned by Department of Information Technology (DIT), Government of India, and may not be used or referenced without their express consent. The Gateway (SSDG) Software Product has been developed by Centre for Development of Advanced Computing (C-DAC), Mumbai. Before implementing the SSDG, user agreement needs to be signed with C-DAC, Mumbai

## 1.3 Points of Contact

For additional information or queries regarding SSDG, the SSDG Project Implementation Office can be contacted at the following address or one may also mail relevant issues on the email id mentioned below.

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# Part 2: Installation

# 2 Installation Steps

This section gives a detailed layout of the CentOS operating system.

## 2.1 System Requirements

CentOS doesn't impose any hardware requirements beyond the requirements of the kernel and the GNU tool sets.

### 2.1.1 Overview of the Installation Process

1. Back up any existing data or documents on the hard disk where you plan to install.
2. Gather information about your computer and any needed documentation, before starting the installation.
3. Create partition table space for CentOS on your hard disk.
4. Insert the CentOS DVD into the drive
5. Boot the installation system.
6. Select installation language.
7. Activate the Ethernet network connection, if available.
8. Create the partitions on which CentOS GNU/Linux will be installed.
9. Watch the automatic install/setup of the base system. Choose the Set of packages specified that need to be installed.

The installation starts with the detection of the CentOS installer from the DVD. The installation is easily carried out through a set of well-defined steps as explained in detail in the remaining sections of the document

### 2.1.2 Back Up Your Data

Before you start with the CentOS Installation, make sure you back up every file that is now on the system. It is quite obvious that we'll make new partitions in the disk to accommodate CentOS operating system. Even after backing up be careful and think about your answers and actions.
Two minutes of thinking can save hours of unnecessary work.

## 2.2 Beginning the Installation

The installation starts with booting the system with boot media, (from SSDG Solution DVD1). Configure the BIOS to boot from DVD-ROM or External USB DVD-ROM, If you don't know how to do it, consult the documentation provided by the manufacturer. Detailed information on hardware specifications and configuration is beyond the scope of this document.
To abort the installation process at any time before the Installing Packages screen, either press Ctrl+Alt+Del or power off the computer with the power switch. CentOS make no changes to your computer until package installation begins.

## 2.3 Installing CentOS

To start the installation, insert the SSDG Installation DVD1 disc in the DVD drive and start the computer. The system will boot from the DVD. Figure 1 shows the typical screen shot of the CentOS installer screen

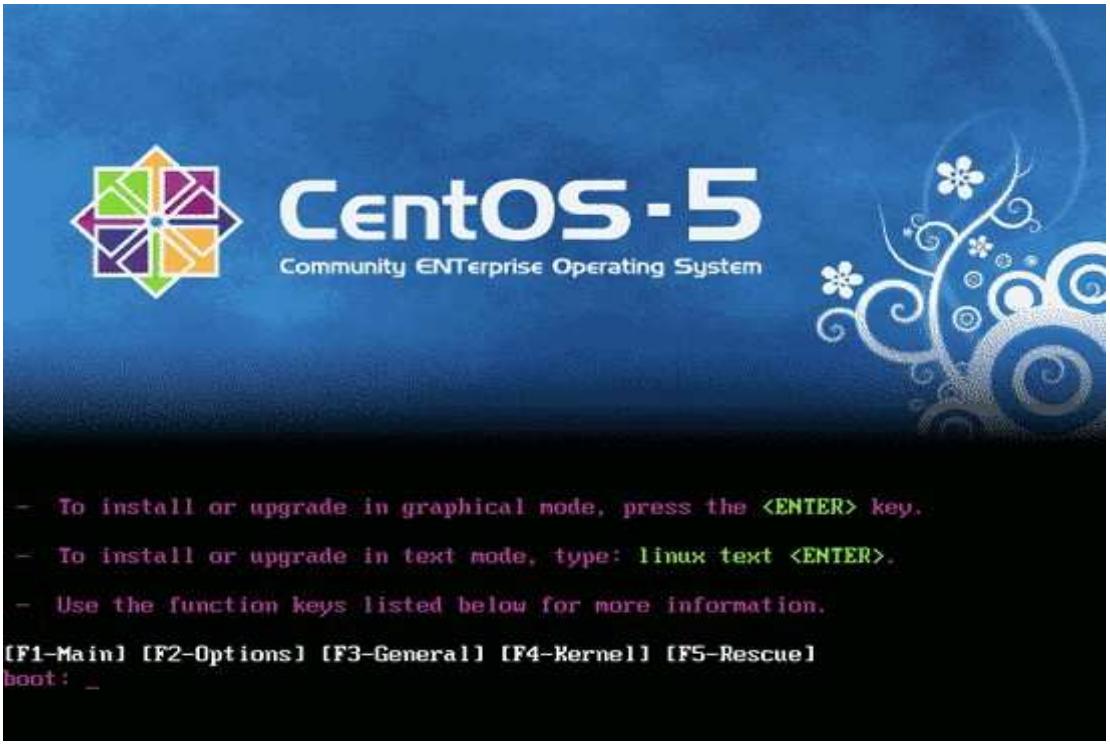


*Figure 1: Installer Menu Screen*

The installer boot menu in the above figure shows two options
1. Install or Upgrade in Graphical Mode
2. Install or Upgrade in Text Mode

For further information on Kernel, Rescue and Other options please use the function keys as shown in the above Figure 1.
Choose '**Install or Upgrade in Graphical Mode**' from the options available in the installer boot menu and Continue.


*Figure 2 : Checking Installation Media*

It can take a long time to test the installation media so we **skip** this test as shown in Figure 3.


*Figure 3: Installation Wizard Starting*

The welcome screen of the CentOS installer as shown in Figure3.Click on Next to continue.

### 2.3.1 Language Selection

The installation program displays a list of languages that are supported by the operating System. Select the Language as “English” and enter to proceed.


*Figure 4 : Language Selection*

### 2.3.2 Keyboard Configuration

Select “**U.S. English**” and click “**Next**” to proceed.

Before starting with the network configuration, the following sequences of steps are carried out after the keyboard configuration. This is done without any manual intervention. Initially detects the CD-ROM drives, mounts it and loads the basic installer components from the CD.

### 2.3.3 Partitioning the Hard Disk

If you are installing CentOS 5.5 on a fresh system, then answer Yes to the question "**Would you like to initialize this drive, erasing ALL DATA?** ". Or Other Wise No

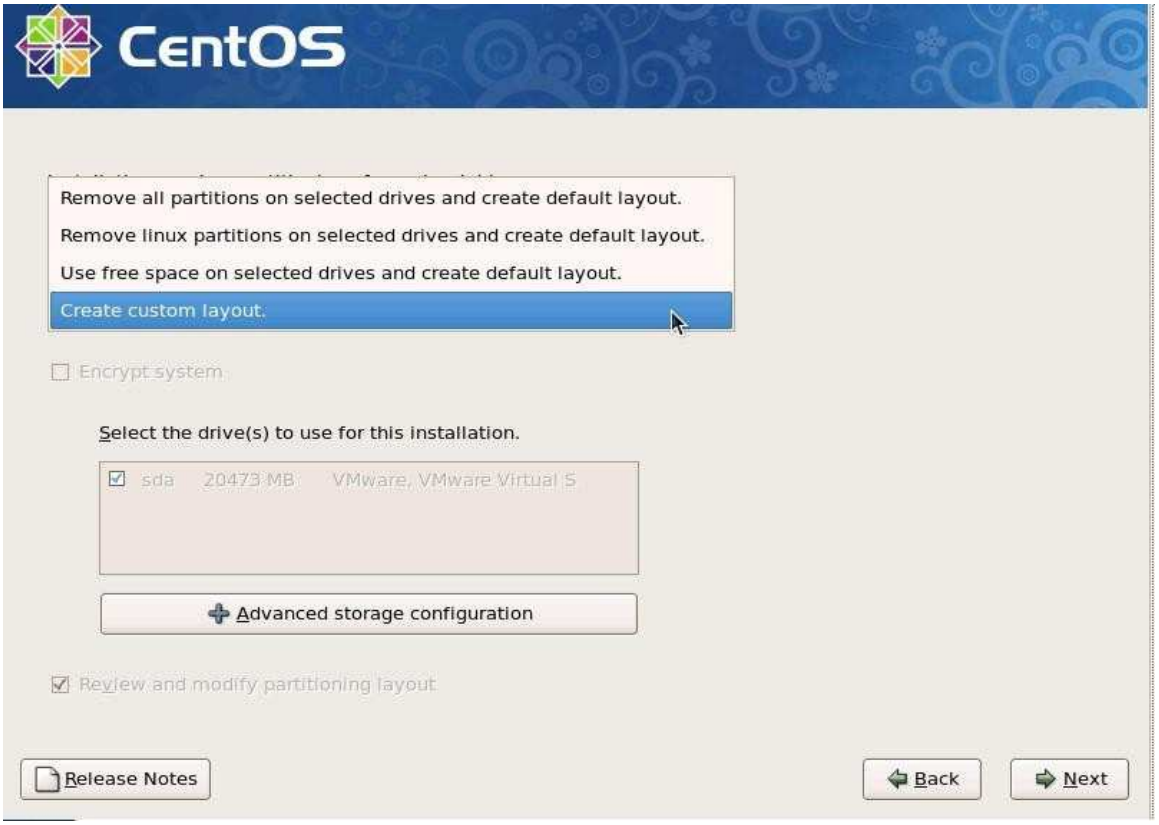


*Figure 5 : Choosing the Partition layout*

Next step is to select a partition schema for our installation. CentOS provides these four options as listed below

a. Remove all partitions on selected drives and create default layout

b. Remove Linux partitions on selected drive and Create default layout

c. Use free space on selected drives and create default layout

d. Create custom layout

For our purpose of installing SSDG, choose '**Create Custom Layout**' from the drop down available and Click next to continue. Choosing this step will help us to customize the necessary set of partitions

The following set of Screens illustrates the step-by-step partition of the Hard disk under various heads.

Choose the Boot partition (/boot from the Mount Point Drop down) and specify the size of the partition and click **Ok** to continue

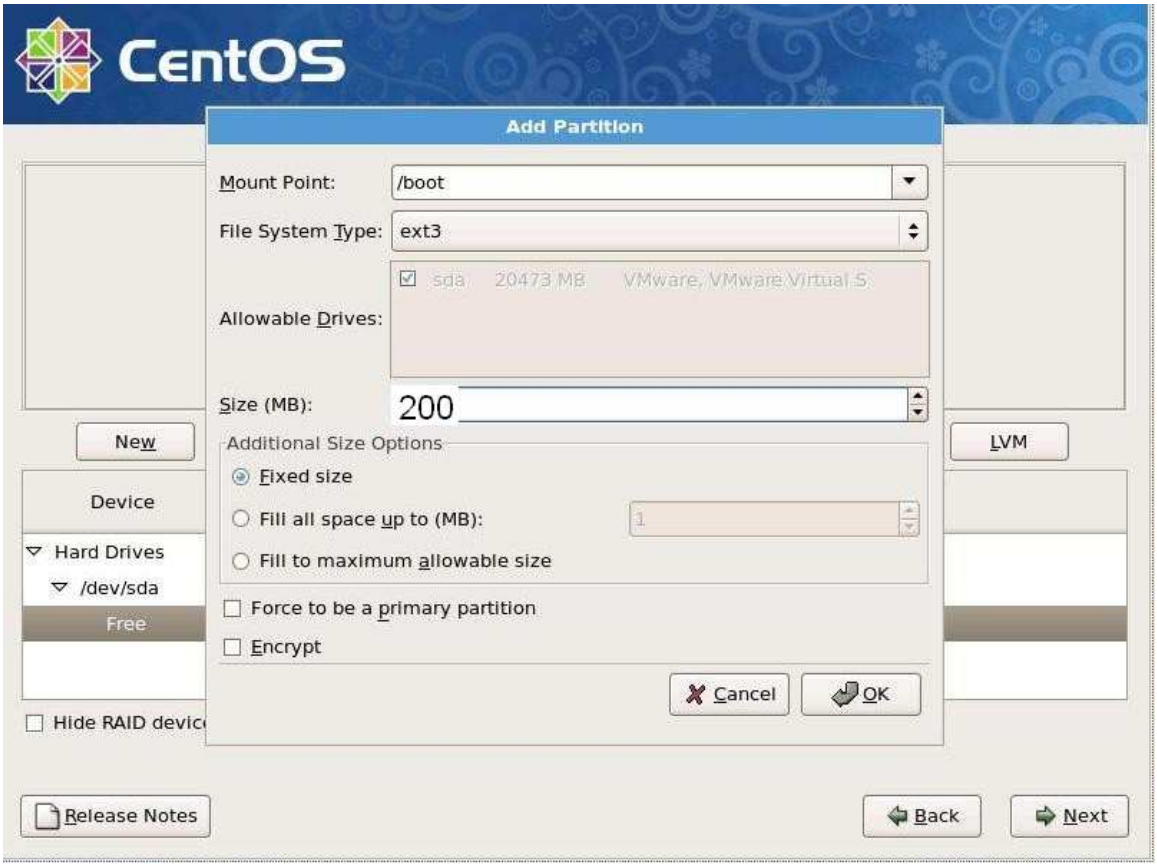


*Figure 6 : Partitioning the Hard Disk - /boot*

Choose **/home** from the drop down and give the size of **/home** partition and then click **Ok** to Continue

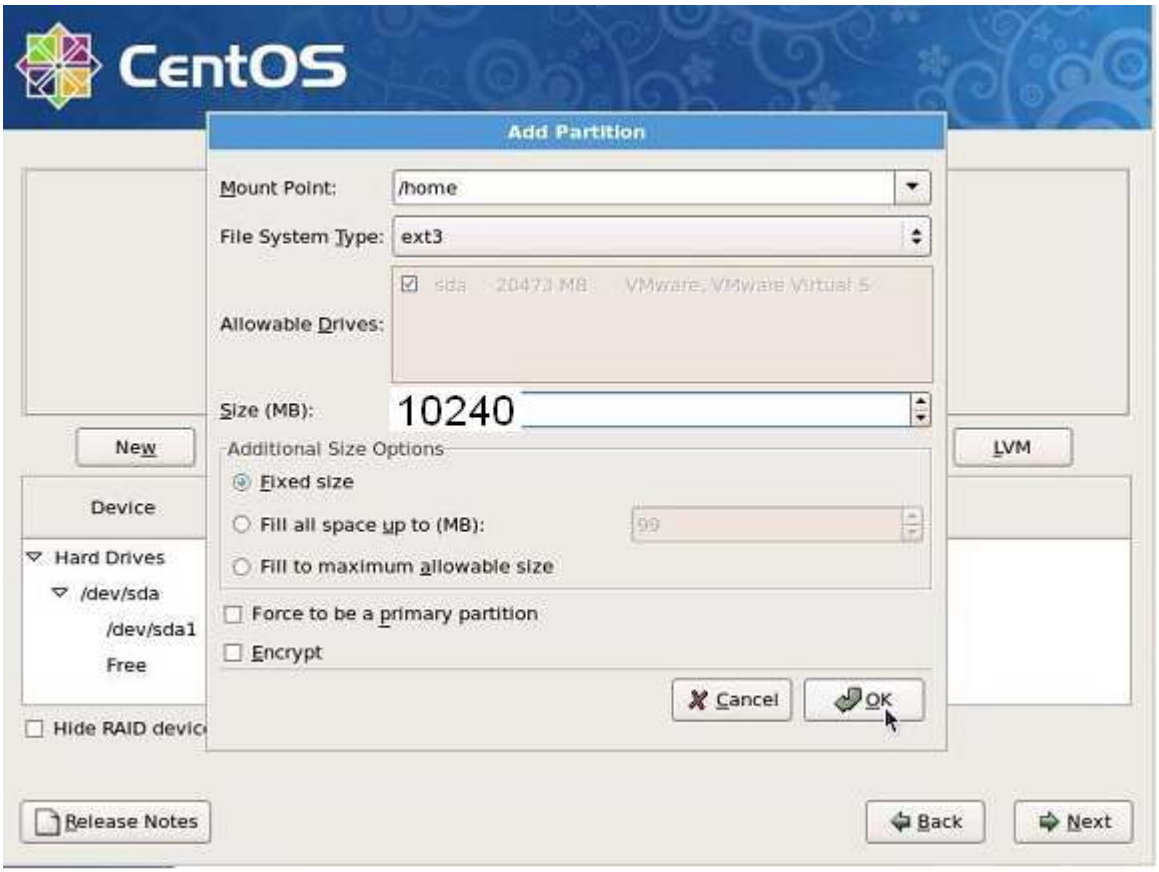


*Figure 7: Partitioning the Hard Disk - /home*

Choose **/var** from the drop down and give the size of **/var** partition and then click **Ok** to Continue

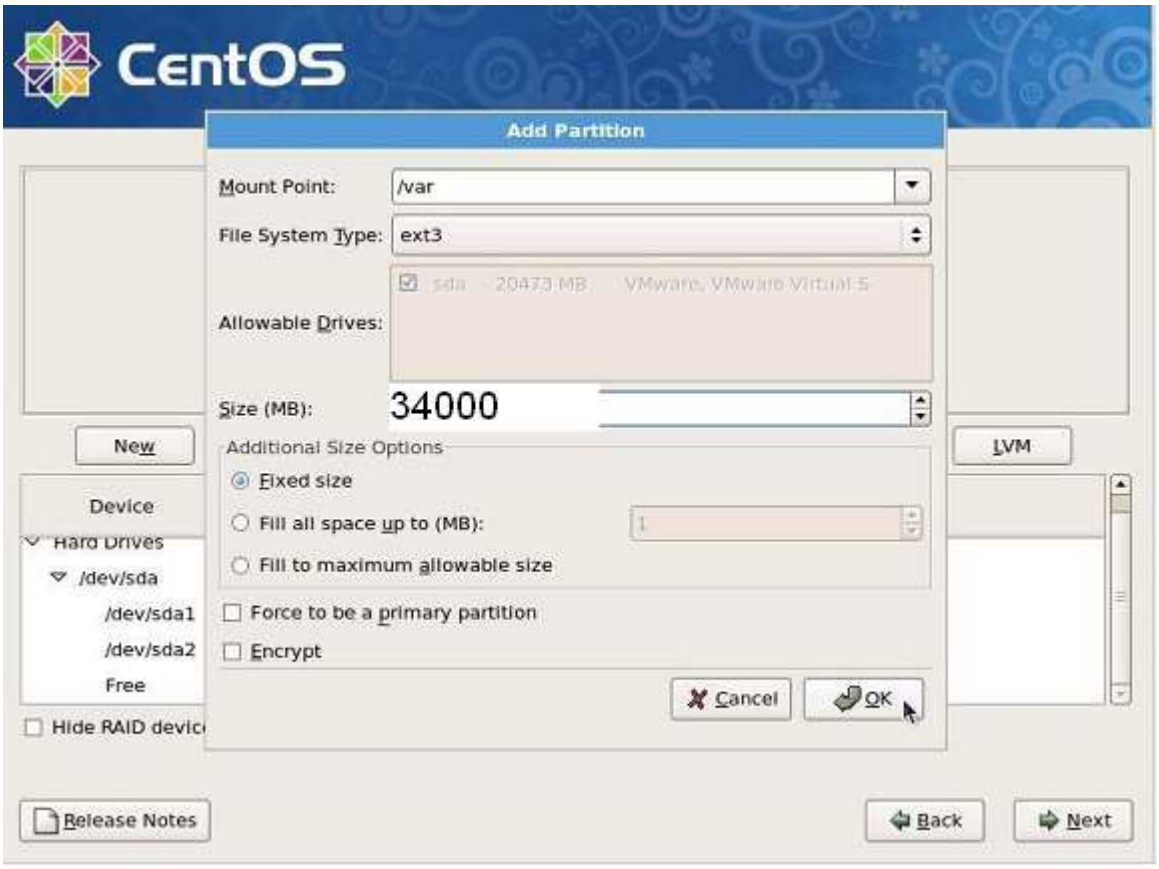


*Figure 8: Partitioning the Hard Disk -/var*

Choose **/tmp** from the drop down and give the size of **/tmp** partition and then click **Ok** to Continue.

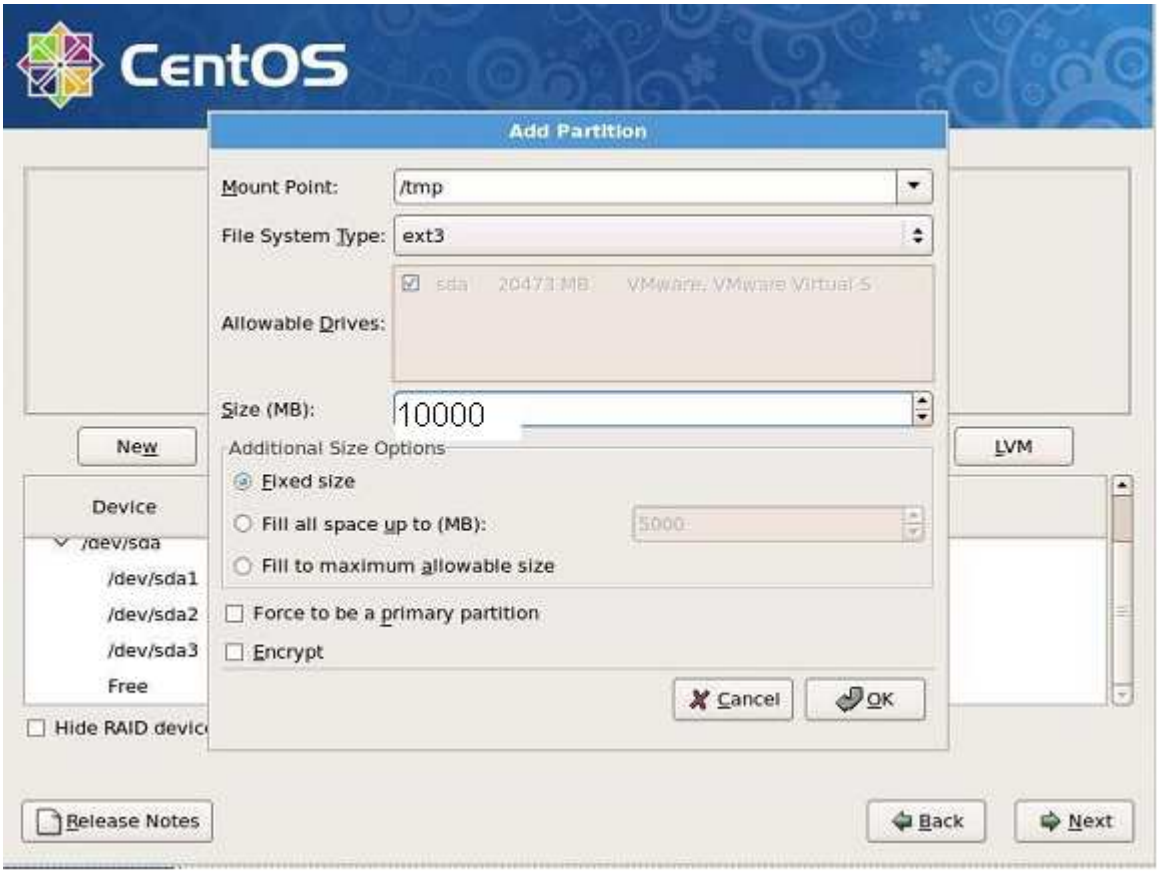


*Figure 9: Partitioning the Hard Disk -/tmp*

Choose **/usr** from the drop down and give the size of **/usr** partition and then click **Ok** to Continue

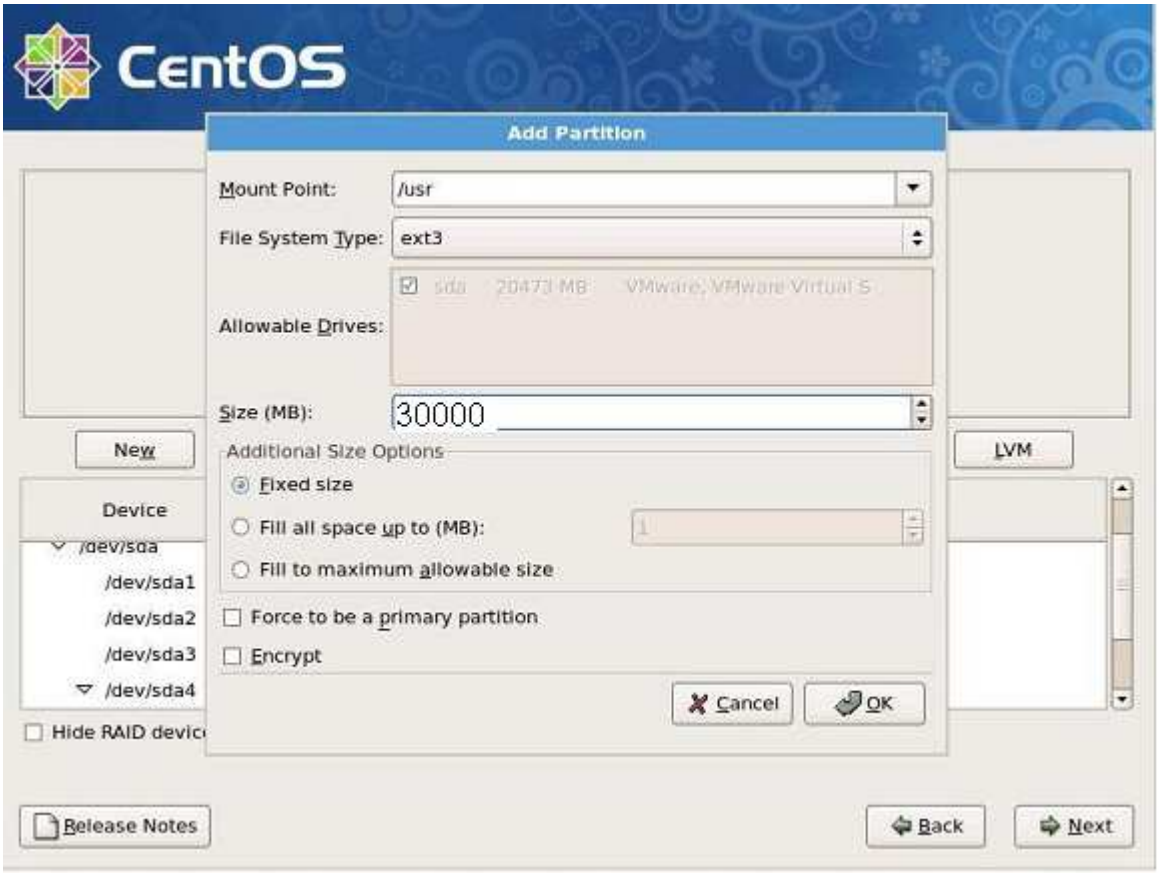


*Figure 10 : Partitioning the Hard Disk -/usr*

Choose /opt from the drop down and give the size of /opt partition and then clickOk to Continue.

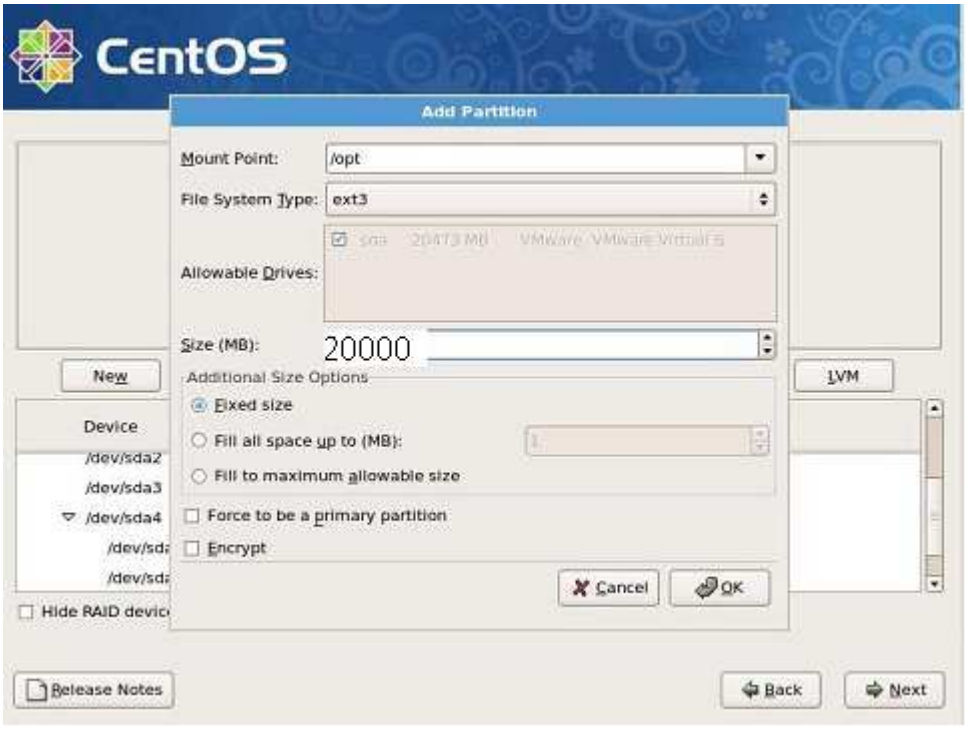


*Figure 11: Partitioning the Hard Disk -/opt*

Choose File System Type as **swap** from the drop down and give the size of the **swap** partition* and then click **Ok** to Continue.


*Figure 12 : Partitioning the Hard Disk – Swap Partition*

*** SWAP Size Criteria:**

1. Systems with 4GB of RAM or less require a minimum of 6GB of swap space
2. Systems with 4GB to 16GB of RAM require a minimum of 8GB of swap space
3. Systems with 16GB to 64GB of RAM require a minimum of 16GB of swap space

Choose / from the drop down and choose '**Fill to maximum allowable size**' and then click Ok to Continue.

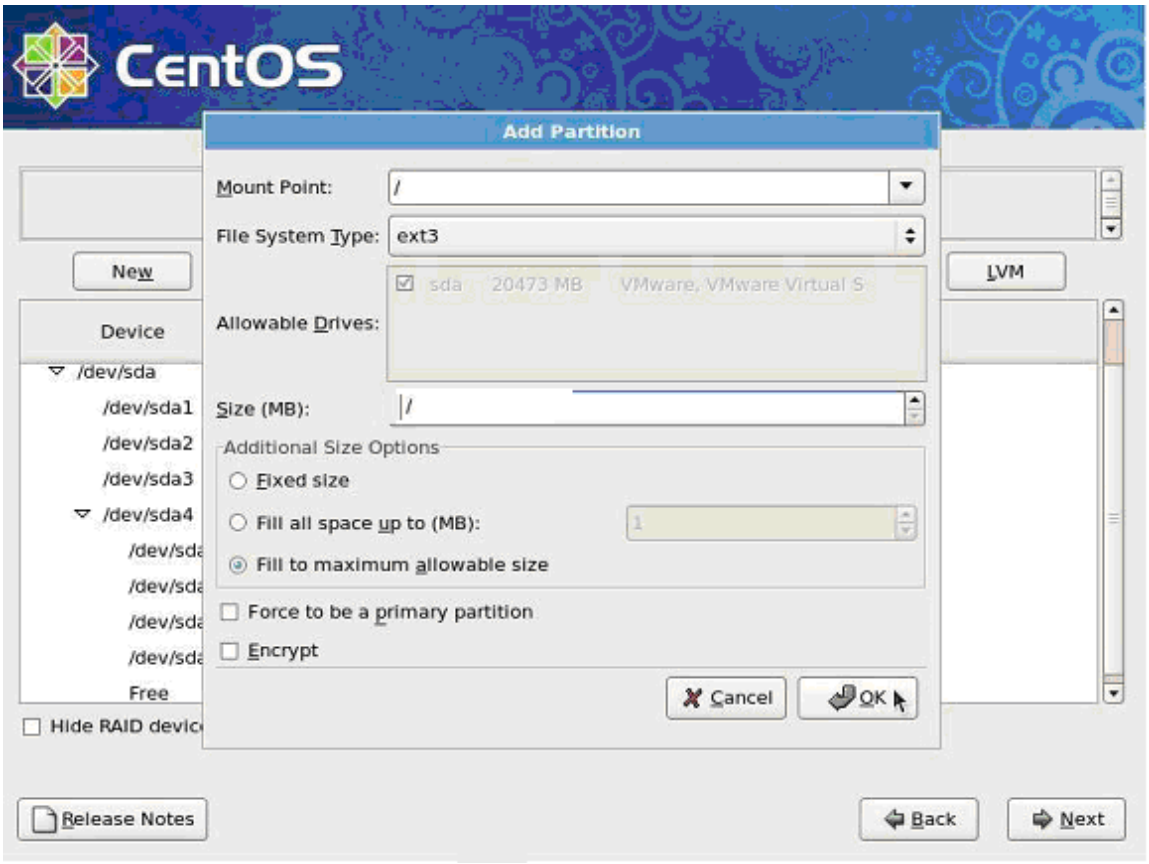


*Figure 13: Partitioning the Hard Disk – root*

Figure 14 gives an overall view of the partition that will be made.
This can further changed at this point of time by editing and deleting the partitions that are listed.
If there are no more changes, click **Next** to **Continue.**

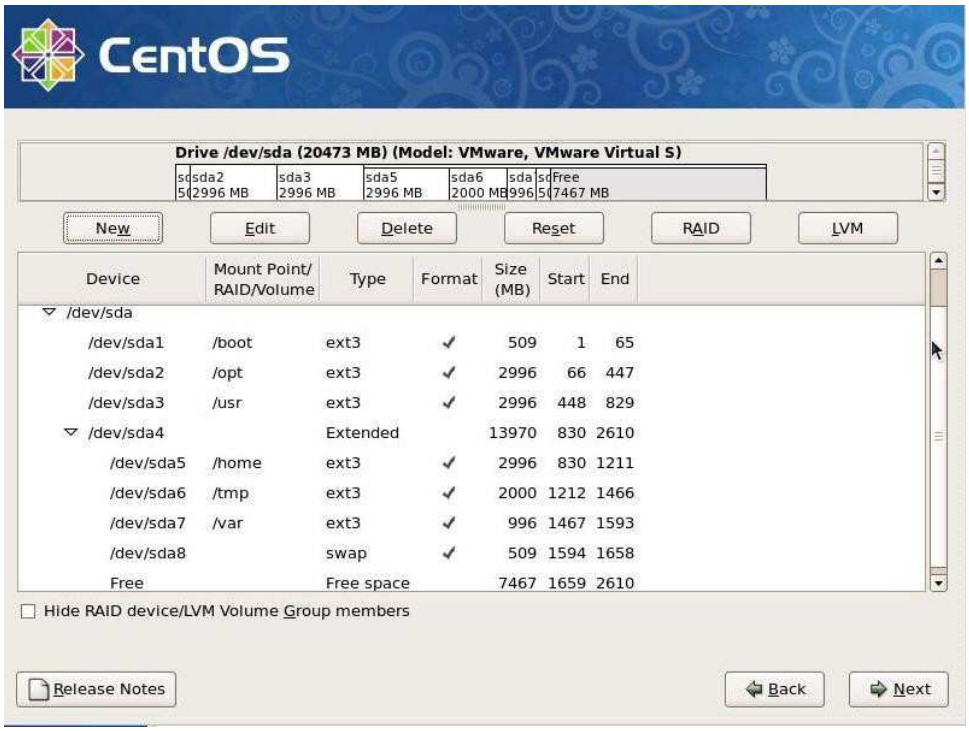


*Figure 14 : Final Partitioning Overview*

**Note:** Suppose you have 146 GB x 2 Hard Disk Drives configured in RAID 1, than you can do the file-system partition for 146 GB disk space as given below:

/boot 200MB
/home 10GB
/var 34GB
/tmp 10GB
/usr 25GB
/opt 20GB
/swap 16GB *
/ choose option fill to maximum

*** SWAP Size Criteria:**

- Systems with 4GB of RAM or less require a minimum of 6GB of swap space
- Systems with 4GB to 16GB of RAM require a minimum of 8GB of swap space
- Systems with 16GB to 64GB of RAM require a minimum of 16GB of swap space

### 2.3.4 Installing GRUB

Next Step is the Installation of the GRUB loader. Just Click Next to Continue.


*Figure 15 : Installing GRUB*

Check the option **Use a boot loader password.** Enter a Boot Loader Password.

### 2.3.5 Network Configuration

Network Configuration starts with detecting the network hardware and automatically configuring the network with DHCP. But since we are installing a server, it's good to assign a static IP address, if the static IP is known. Click on the **Edit** button at the top right.


*Figure 16 : Configuring Network*

In the window that pops up **uncheck** Use dynamic IP configuration (DHCP) and Enable IPv6 support and give your network card static IP address (For Example 192.67.100.10) and a suitable netmask (for example) 255.255.255.0

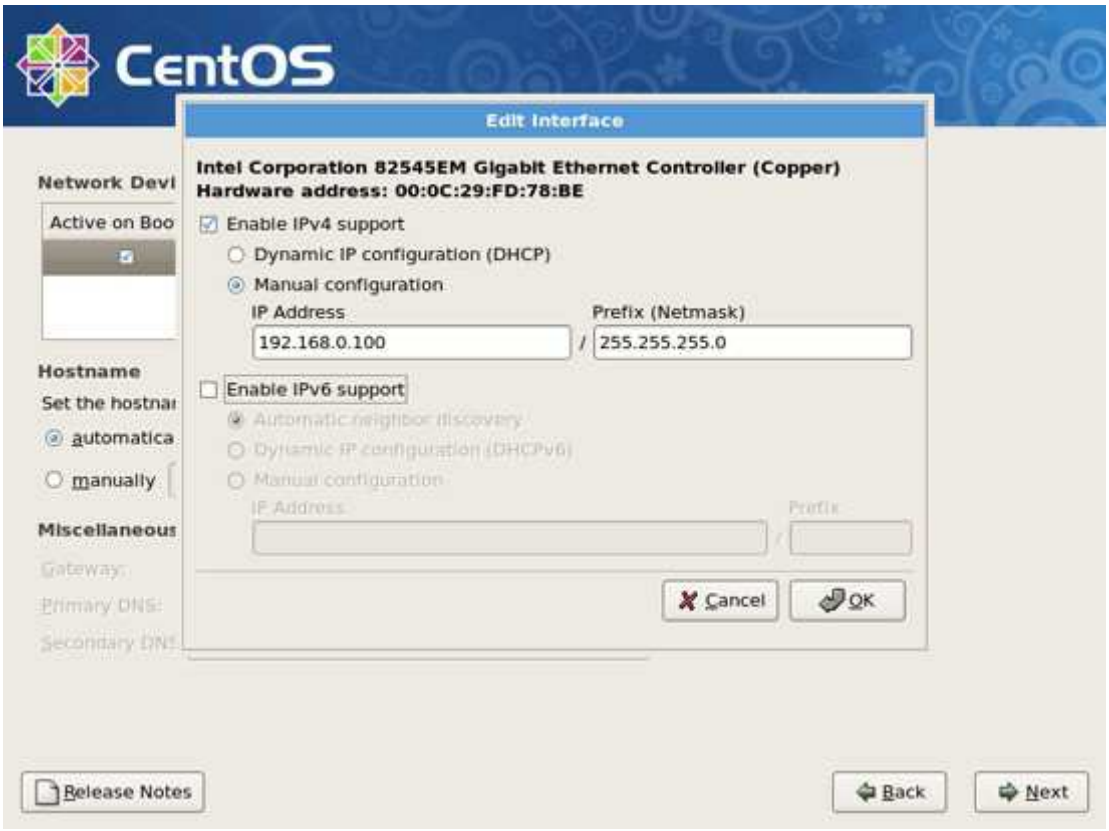


*Figure 17: Configuring Network*


*Figure 18 : Configuring Network*

Set the hostname manually, e.g. server1.example.com, and enter a gateway (e.g. 192.168.0.1) and up to two DNS servers (e.g. 213.191.92.86 and 145.253.2.75):
Once this is complete, network Configuration is complete.

### 2.3.6 Setting up the System Clock

Choose an **Asia/Kolkata** from the time zone for setting up the system clock and choose **Next** to continue.

### 2.3.7 Setting up Root Account

Specify **root** super-user password: and click next to continue. Password should be strong with at least 10 characters containing Alpha-Numeric and Special Characters.


*Figure 19 : Setting up Root Account*

### 2.3.8 Installing Packages

This section details the set of steps involved in installing the packages. Since we are trying to install server, choose **Desktop-Gnome and Server** also choose the **Customize Now** from the options given below to install only the necessary set of packages required for our purpose.


*Figure 20: Selection of Packages other than Default*

Now we must select only the package groups mentioned below to install, other packages may be added after installation if required.

Select **Desktop –*Gnome Desktop Environment***
**Application - *Editors, Graphical Internet (For messaging and web servers)***
**Servers –*Server Configuration Tools***
**Base System –*Administration Tools, Base, X-Window System*** and click on Next.

The installer then checks the dependencies of the selected packages.

***Desktop –***

**Gnome Desktop Environment-**

**1:NetworkManager-gnome-0.7.0-10.el5.X86_64**

**evince-0.6.0-13.el5.X86_64**

**file_roller-2.16.0-2.fc6X86_64**

**1:gedit-2.16.0-9.el5X86_64**

**gnome-netstatus-2.12.0-5.el5X86_64**

**gnome-system-monitor-2.16.0-3.el5X86_64**

**1:gnome-utils-2.16.0.5- el5X86_64**

**gnome-volume-manager-2.15.0_5 el5X86_64**

**gtk2-engines-2.8.0.3. el5X86_64**

**gtkhtml3_3.163_1.el5X86_64**

**10 out of 43 optional packages**

***Application*→**

**Editors**

**2:vim-enhanced-7.0.109-6.el5X86_64**

**1 package**

**Graphical Internet**

**firefox-3.0.18-1_.el5X86_64 (Only for Messaging & Web)**

**1 package**

**NOTE: Uncheck other package groups apart from those mentioned above in Blue color.**

***Servers*→Server Configuration Tools**

**system-config_securitylevel-1.6.27.1-5.el5X86_64**

**system-config_services-0.9.4.5-.el5.noarch**

**2 out of 8 optional packages**

***Base System*** → **Administration Tools, Base, X-Window System**

**NOTE: the subpackages selected (by default) for above three packages should be left untouched and no new subpackages should be selected.**

### 2.3.9 Installation Begins

Click Next to start the CentOS installation with chosen packages.


*Figure 21: Installation Confirmation Prompt*


*Figure 22: Formatting File Systems*

The hard drive is being formatted as shown in the Figure.


*Figure 23 : Package Installation*

The installation is in progress and this will take a few minutes.


*Figure 24 : Installation Complete*

Finally, the installation is complete, and you can remove your DVD from the computer and reboot it.

### 2.3.10 Firewall Configuration at First-Boot

Firewall & SELinux should be disabled at the time of installation of SSDG solution. Later IA's can identify the Known Hosts IP/Ports to be granted access and make an entry in IPTABLES.