Tutorial Link https://course.testpad.chitkara.edu.in/tutorials/Linux Installation/62d7f496cde4603aa597bc69

TUTORIAL

Linux Installation

Topics

Various method of Linux Installation

Mostly used Linux OS versions are:

· Red hat Linux Enterprise Linux: Provides Technical Support, Patches and Fixes to Users

· CentOS: No Technical Support from red Hat

· Fedora: Free, Sponsored by Red hat Group

· SuSe: Owned by Novell

· Debian

· Ubuntu

There are some other versions are also there like Kali Linux which is used for most of the Cyber Security tools.

We can install a Linux Server through various installation methods like:

- Create Bootable CD/DVD Media: used for Dual boot where we can physically install Linux and Windows on the same PC

- ISO or Image installation: Used in virtual environments Eg We can use Oracle Virtual Box or VMware Workstation for Installation of Linux in Windows.
- Network Installation: PXE Boot : We can Setup a Server in Network through which Installation can be done. Generally used for Quick installation on a large number of PC's.

What is Oracle Virtual Box

Virtual box is a free, open-source hypervisor for x86 computers currently being developed by Oracle Corporation

It install on your existing Inter or AMD based computers, ether they are running windows, Linux, Solaris or mac operating system. It extends capabilities of your

existing computer so that it can run multiple OS at same time and on same hardware.

There are two types of Hypervisors: a) Type1 which directly communicate with Hardware eg. ESXi b) Type2 eg. VMware Workstation, Oracle Virtual Box

We will use Type 2 Hypervisor for our Installation process, which run on Host Operating System(Windows 10/11) and we will install RHEL/CentOS (Guest

Operating System).So type 2 Hypervisors can communicate to hardware through host operating system only.

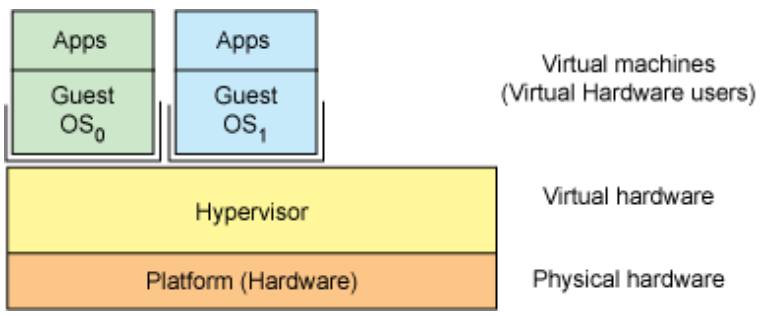

Fig 2.1 Type 2 hypervisor

Download and install Oracle Virtual Box from:
https://www.virtualbox.org/wiki/Downloads

OR

Alternatively you can also use Vmware Workstation pro from
https://www.vmware.com/in/products/workstation-pro/workstation-pro-evaluation.html

Installation of type 2 hypervisor is straight through.After installation of hypervisor you have to create a new Virtual machine for Linux and start the installation process.

Installation of Linux

The partition layout needs to be decided at the time of installation; it can be difficult to changer later. While Linux systems handle multiple partitions by mounting them at specific points in the filesystem, and you can always modify the design later, it is always easier to try and get it right to begin with. Nearly all installers provide a reasonable default layout, with either all space dedicated to normal files on one big partition and a smaller swap partition, or with separate partitions for some space-sensitive areas like /home and /var. You may need to override the defaults and do something different if you have special needs, or if you want to use more than one disk.

All installations include the bare minimum software for running a Linux distribution. Most installers also provide options for adding categories of software. Common applications (such as the Firefox web browser and LibreOffice office suite), developer tools (like the vi and emacs text editors), and other popular services, (such as the Apache web server tools or MySQL database) are usually included. In addition, for any system with a graphical desktop, a chosen desktop (such as GNOME or KDE) is installed by default. All installers set up some initial security features on the new system. One basic step consists of setting the password for the superuser (root) and setting up an initial user. In some cases (such as Ubuntu), only an initial user is set up; direct root login is not configured and root access requires logging in first as a normal user and then using sudo, as we will describe later.

Some distributions will also install more advanced security frameworks, such as SELinux or AppArmor. For example, all Red Hat-based systems including Fedora and CentOS always use SELinux by default, and Ubuntu comes with AppArmor up and running.

Like other operating systems, Linux distributions are provided on removable media such as USB drives and CDs or DVDs. Most Linux distributions also support booting a small image and downloading the rest of the system over the network. These small images are usable on media, or as network boot images, in which case it is possible to perform an install without using any local media. Many installers can do an installation completely automatically, using a configuration file to specify installation options. This file is called a Kickstart file for Red Hat-based systems, an AutoYAST profile for SUSE-based systems, and a Preseed file for Debian-based systems. Each distribution provides its own documentation and tools for creating and managing these files.

The actual installation process is pretty similar for all distributions. After booting from the installation media, the installer starts and asks questions about how the system should be set up. These questions are skipped if an automatic installation file is provided. Then, the installation is performed. Finally, the computer reboots into the newly-installed system. On some distributions, additional questions are asked after the system reboots. Most installers have the option of downloading and installing updates as part of the installation process; this requires Internet access. Otherwise, the system uses its normal update mechanism to retrieve those updates after the installation is done.

The above method shows how to install Linux directly on your machine, erasing everything that was there. We have some alternatives to this erase-all installation. These alternate methods are:

- Re-partitioning your hard disk to free up enough room to permit dual boot (side-by-side) installation of Linux, along with your present operating system.
- Using a host machine hypervisor program (such as VMWare's products or Oracle Virtual Box) to install a client Linux Virtual Machine.
- Booting off of and using a Live CD or USB stick and not writing to the hard disk at all.

The first method is sometimes complicated and should be done when your confidence is high and you understand the steps involved. The second and third methods are quite safe and make it difficult to damage your system.

Installing Red Hat Linux in a Dual-Boot Environment

After Windows is installed and you have free disk space ready for Linux, you can start the Red Hat Linux installation program. In order to accommodate RHEL on a disk drive that already contains a Windows installation the first step involves shrinking the Windows partition to make some room. If you are running Windows 10, the recommended course of action is to use the Windows Disk Management interface to reduce the size of the partition before attempting to install RHEL 6. You can generally access this by right clicking on the This PC icon and selecting Manage from the popup menu. Within the Computer Management interface, select Disk Management to display a graphical representation of the disk drives in your system or You can directly run a command diskmgmt.msc to open Disk management wizard. At this point, the only difference between a Red Hat Linux installation and configuring a dual-boot system during the Red Hat Linux installation is partitioning the hard drive and configuring the boot loader.

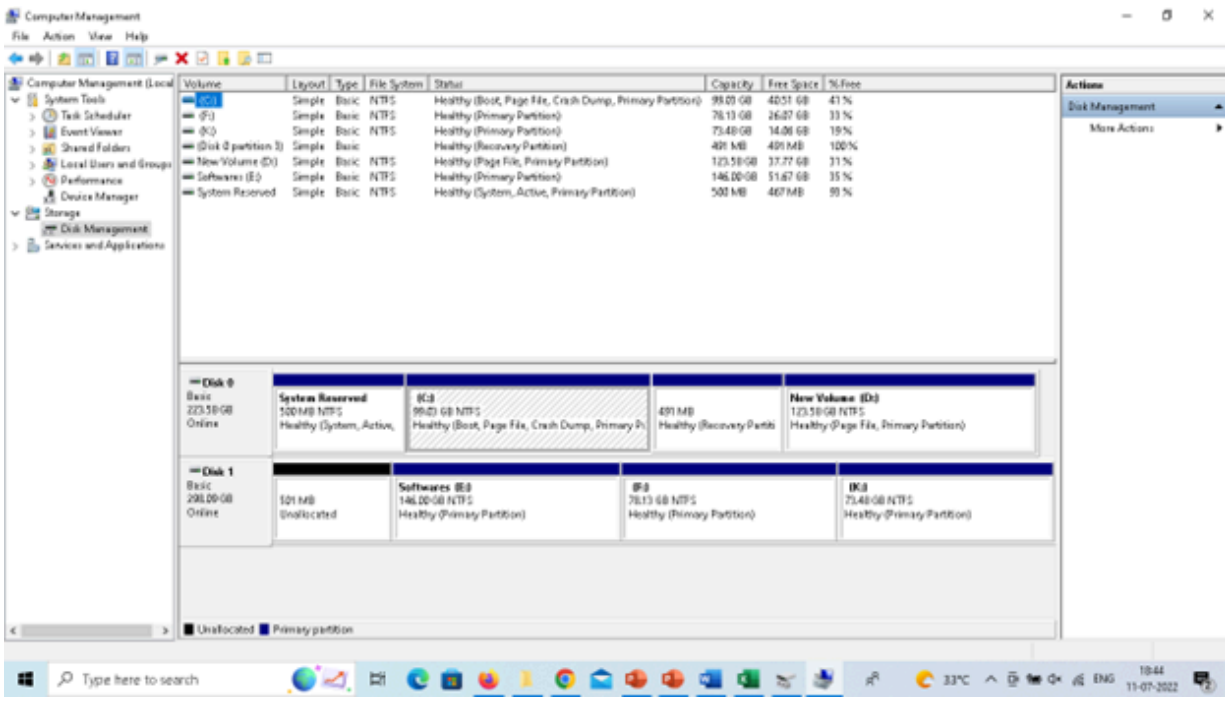

Fig 2.2 Disk Management in Windows 10

Now we have to shrink some partition to free some space for Linux Installation as under

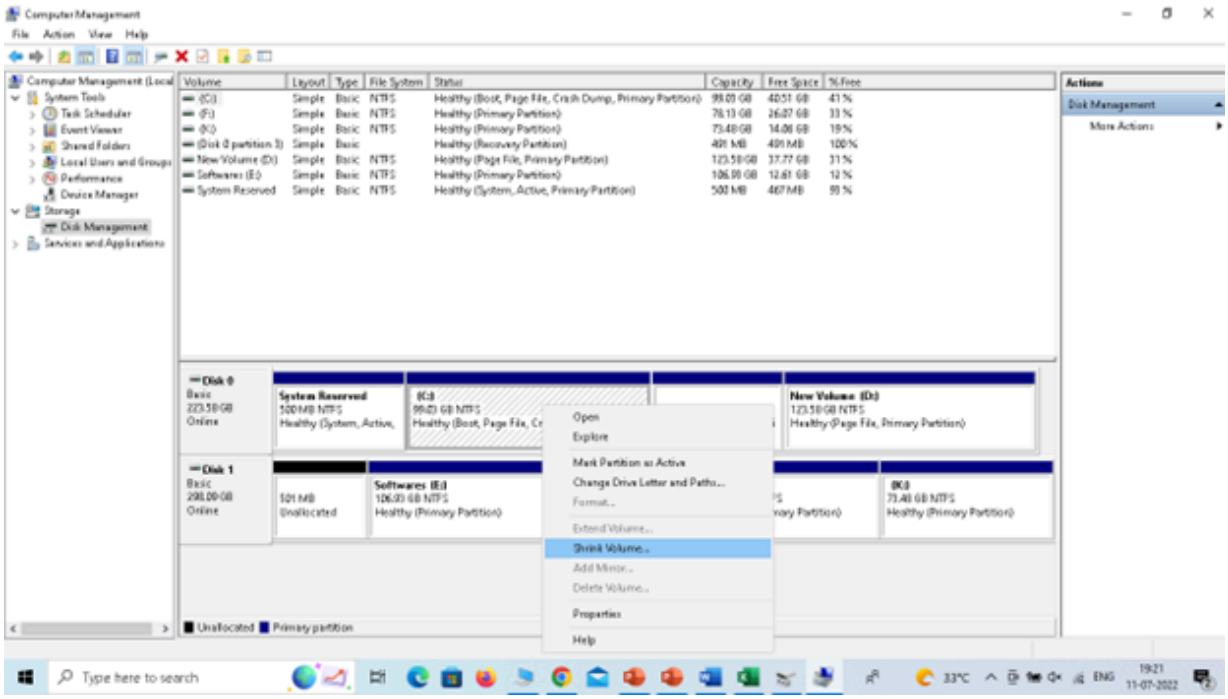

Fig 2.3 Shrink Volume for creating Free space in Windows File System

After starting the dual boot process, just take care about creation of three basic partitions: /boot, Swap and /

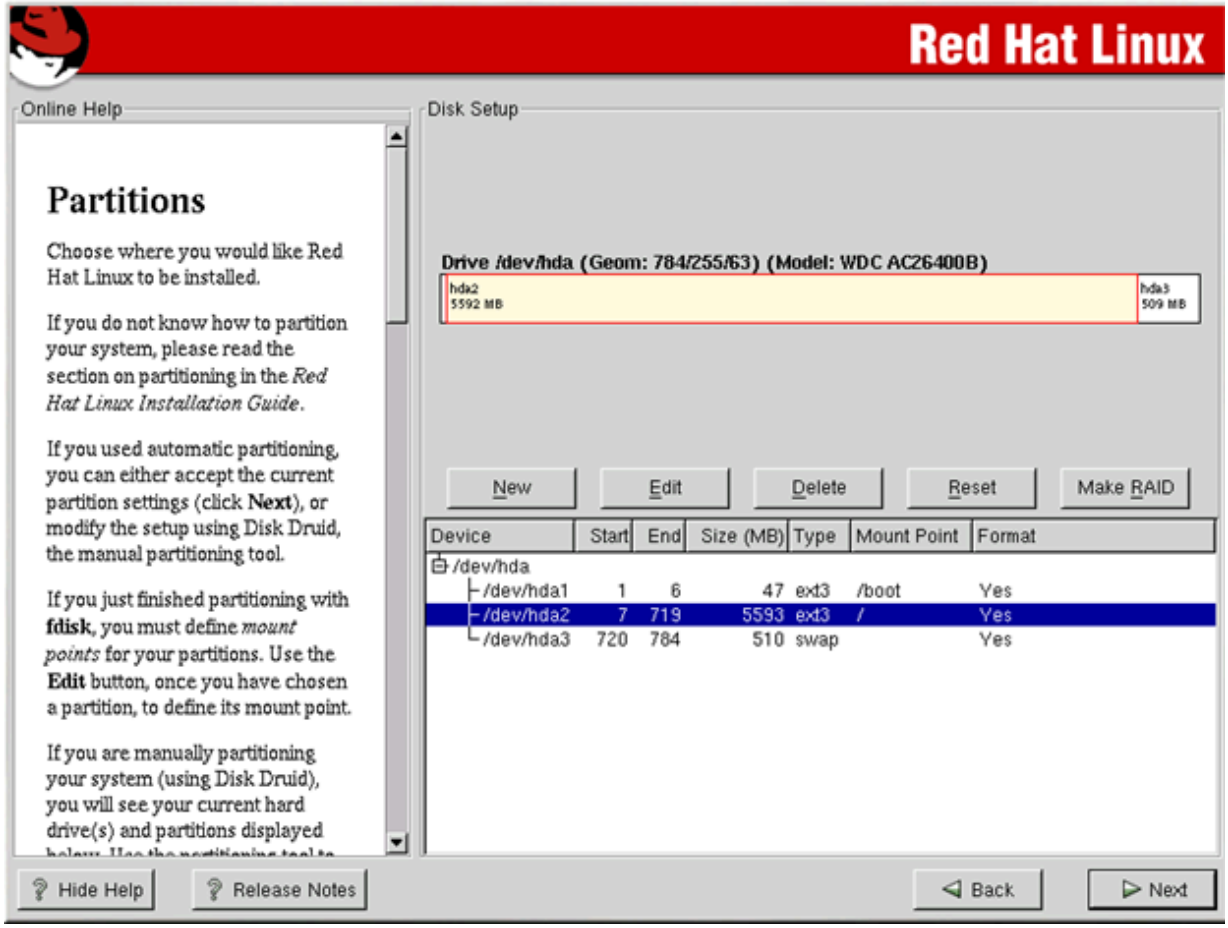

Fig 2.4 Minimum partitions to be created for Linux Installation