Practical 8C – Adding Linux Storage Partitions

Course : ITDF15 - Diploma in Infocomm & Security

Module : IT2654 – System Administration & Security

Objectives

1 Using the Linux Partition Manager
2 Creating Primary/Extended/Logical Partitions in Linux
3 Mounting a partition on the Linux file system

Scenarios

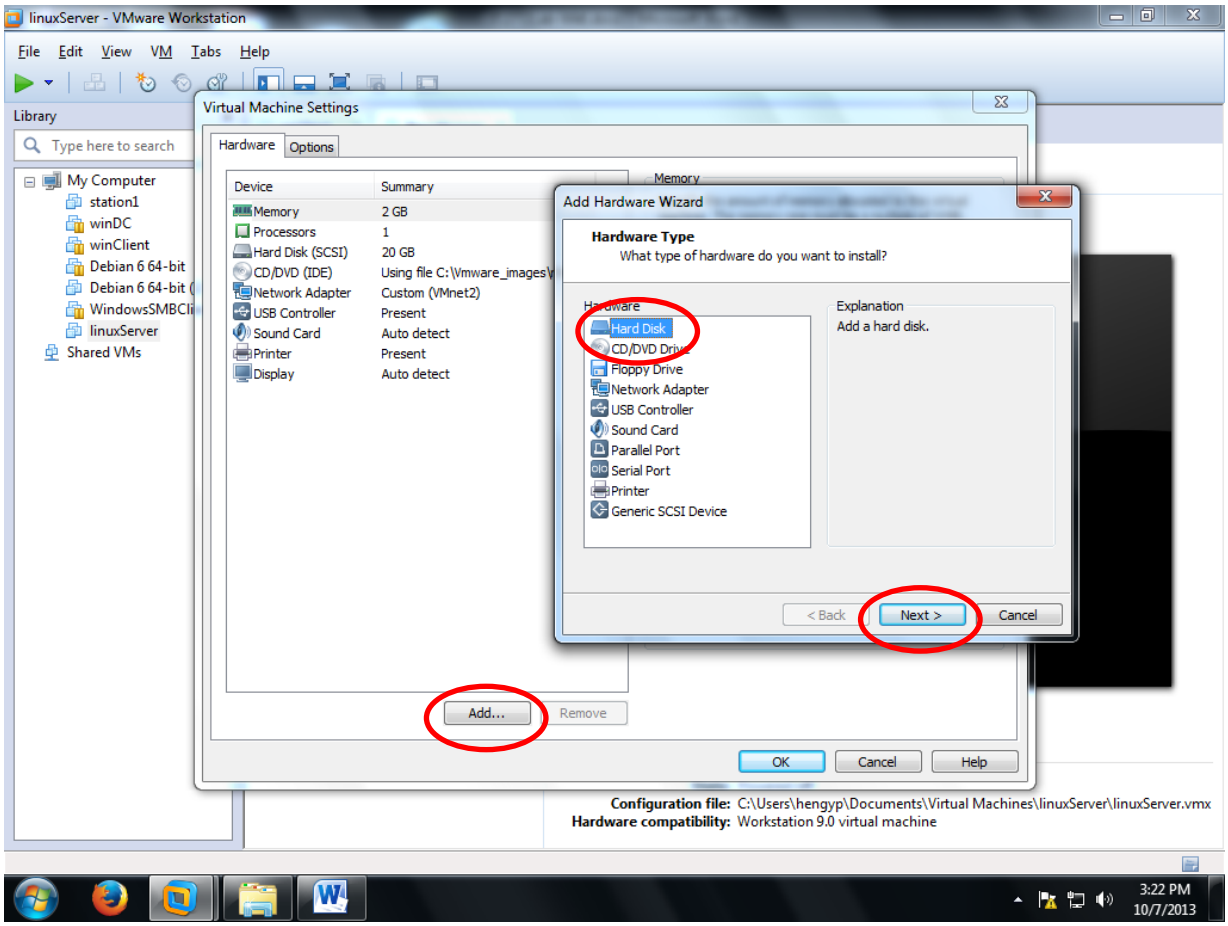
Just like Windows Server OS, a physical drive needs to be partitioned before the Linux OS can access it. On Windows, drive partitions appear with a drive letter. However, for Linux OS, an empty directory must be created so that a partition can be mounted onto it.

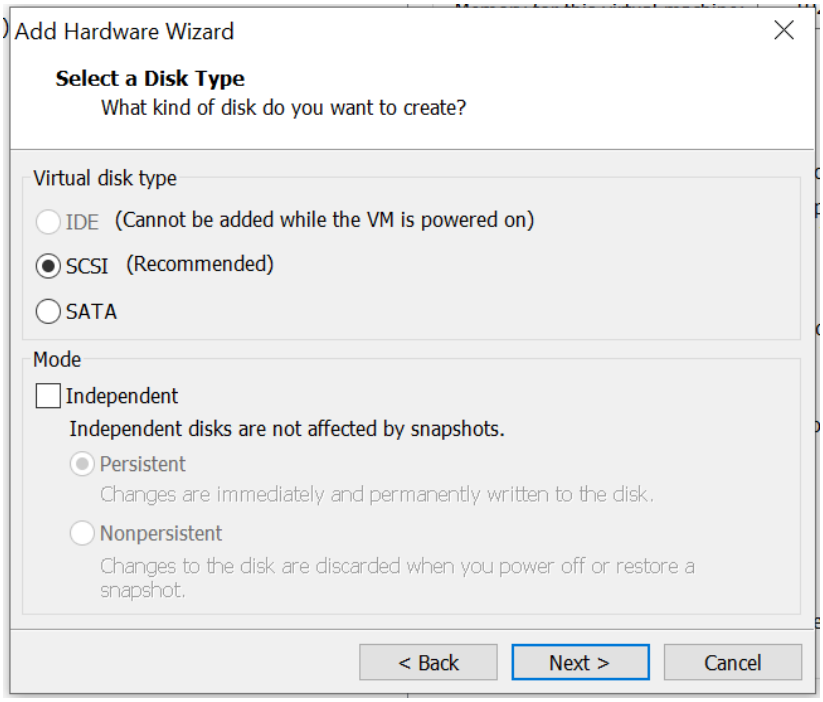
Lab Requirements

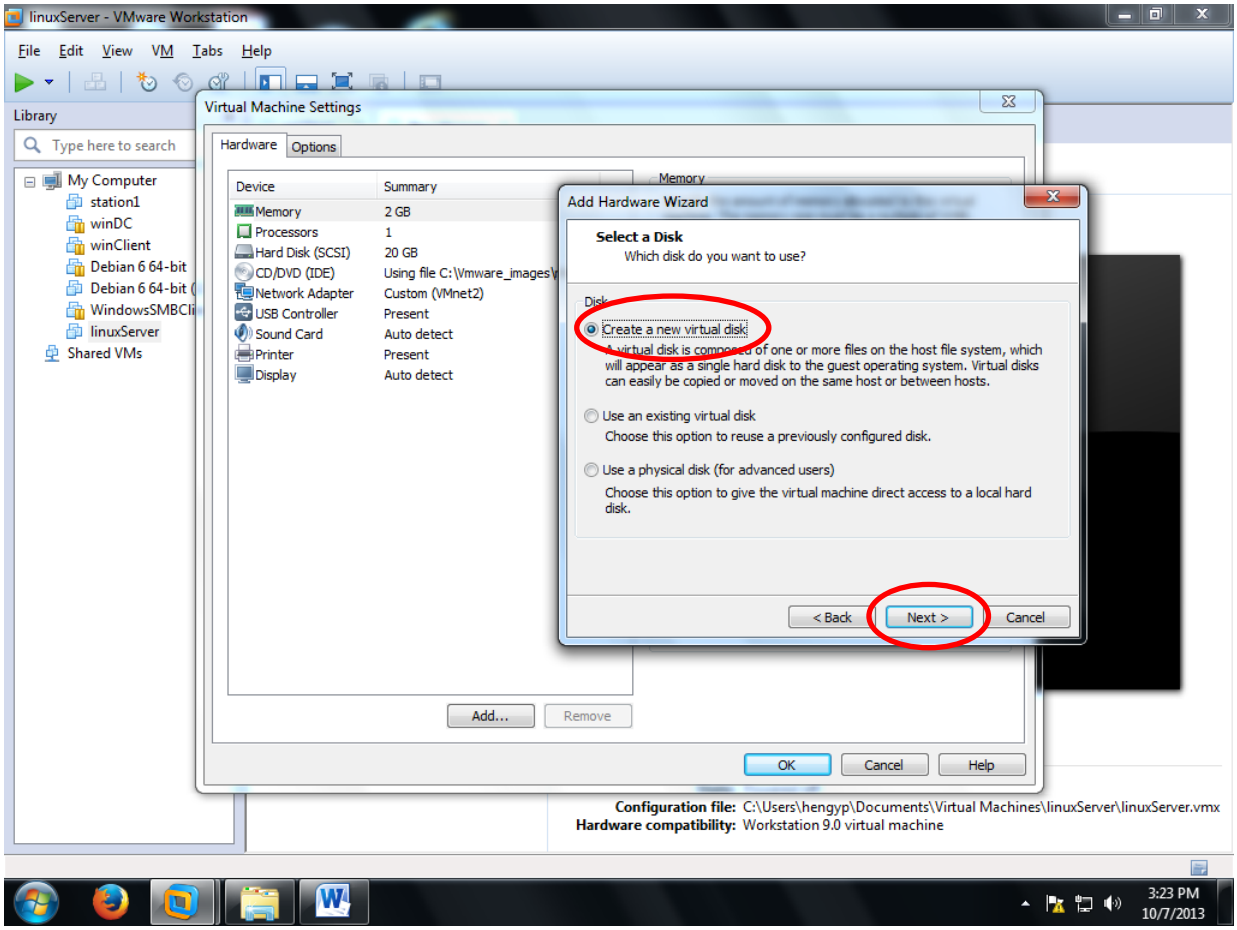
1. RHEL 6 Server

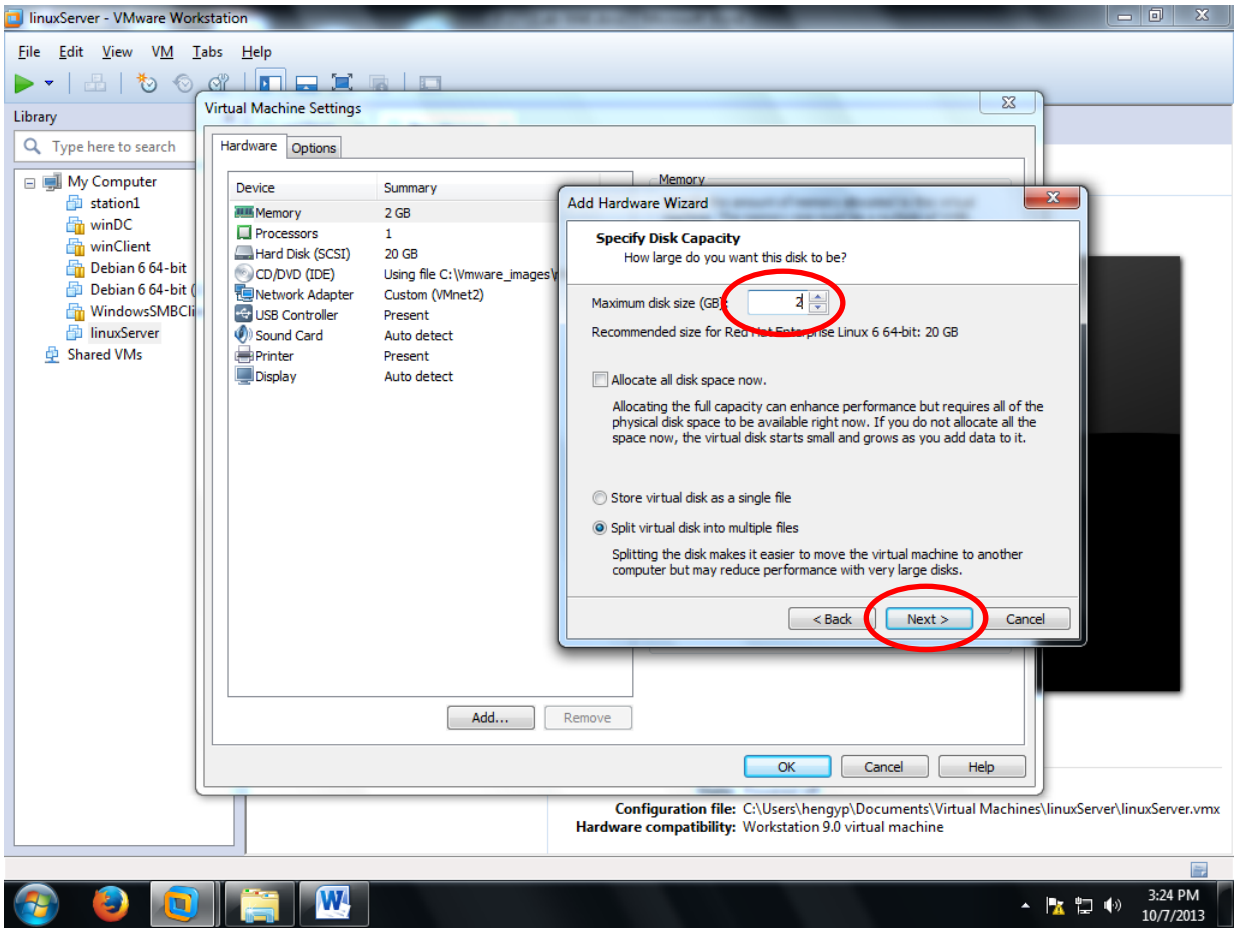
Objective 1 - Using the Linux Partition Manager

1. Firstly, we need to attach one more new virtual disk of 2GB on your Linux VM. **Shutdown** your Linux VM, if you have not done so. Click on **VM->Settings** in **VMWare** to add a new hard disk






linuxServer - VMware Workstation
File Edit View VM Tabs Help
Library
Type here to search
My Computer
station1
winDC
winClient
Debian 6 64-bit
Debian 6 64-bit (
WindowsSMBCli
linuxServer
Shared VMs
Virtual Machine Settings
Hardware Options
Device Summary
Memory 2 GB
Processors 1
Hard Disk (SCSI) 20 GB
CD/DVD (IDE) Using file C:\Vmware_images\
Network Adapter Custom (VMnet2)
USB Controller Present
Sound Card Auto detect
Printer Present
Display Auto detect
Add... Remove
OK Cancel Help
Add Hardware Wizard
Select a Disk
Which disk do you want to use?
Disk
Create a new virtual disk
A virtual disk is composed of one or more files on the host file system, which will appear as a single hard disk to the guest operating system. Virtual disks can easily be copied or moved on the same host or between hosts.
Use an existing virtual disk
Choose this option to reuse a previously configured disk.
Use a physical disk (for advanced users)
Choose this option to give the virtual machine direct access to a local hard disk.
< Back Next > Cancel
Configuration file: C:\Users\hengyp\Documents\Virtual Machines\linuxServer\linuxServer.vmx
Hardware compatibility: Workstation 9.0 virtual machine
3:23 PM
10/7/2013


linuxServer - VMware Workstation
File Edit View VM Tabs Help
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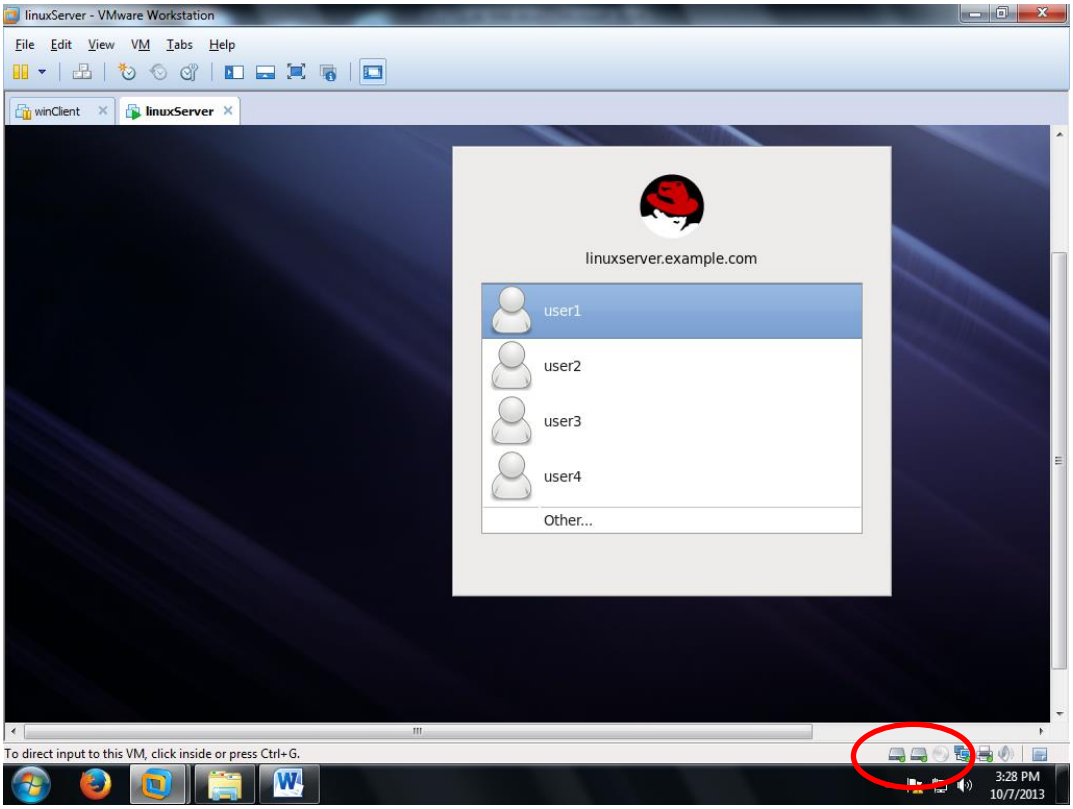
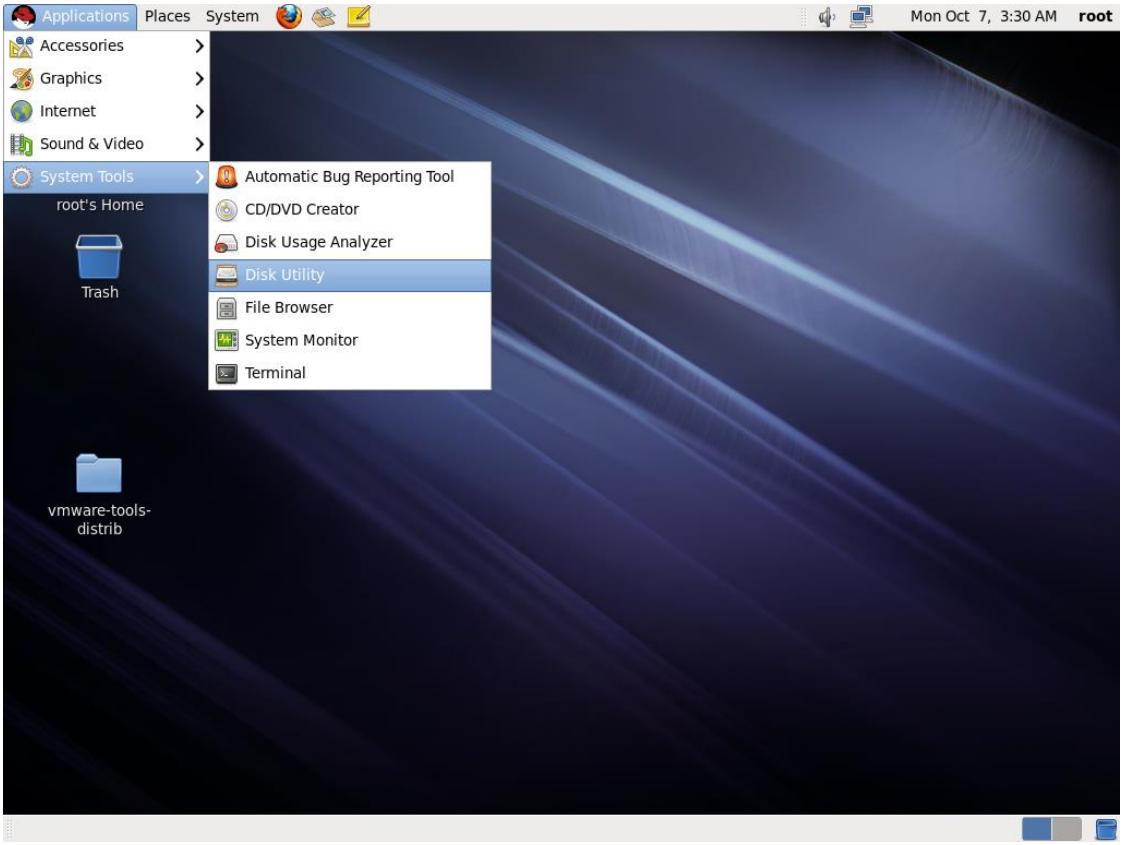
Network Adapter Custom (VMnet2)
USB Controller Present
Sound Card Auto detect
Printer Present
Display Auto detect
Add... Remove
OK Cancel Help
Add Hardware Wizard
Specify Disk Capacity
How large do you want this disk to be?
Maximum disk size (GB)
Recommended size for Red Hat Enterprise Linux 6 64-bit: 20 GB
Allocate all disk space now.
Allocating the full capacity can enhance performance but requires all of the physical disk space to be available right now. If you do not allocate all the space now, the virtual disk starts small and grows as you add data to it.
Store virtual disk as a single file
Split virtual disk into multiple files
Splitting the disk makes it easier to move the virtual machine to another computer but may reduce performance with very large disks.
< Back Next > Cancel
Configuration file: C:\Users\hengyp\Documents\Virtual Machines\linuxServer\linuxServer.vmx
Hardware compatibility: Workstation 9.0 virtual machine
3:24 PM
10/7/2013

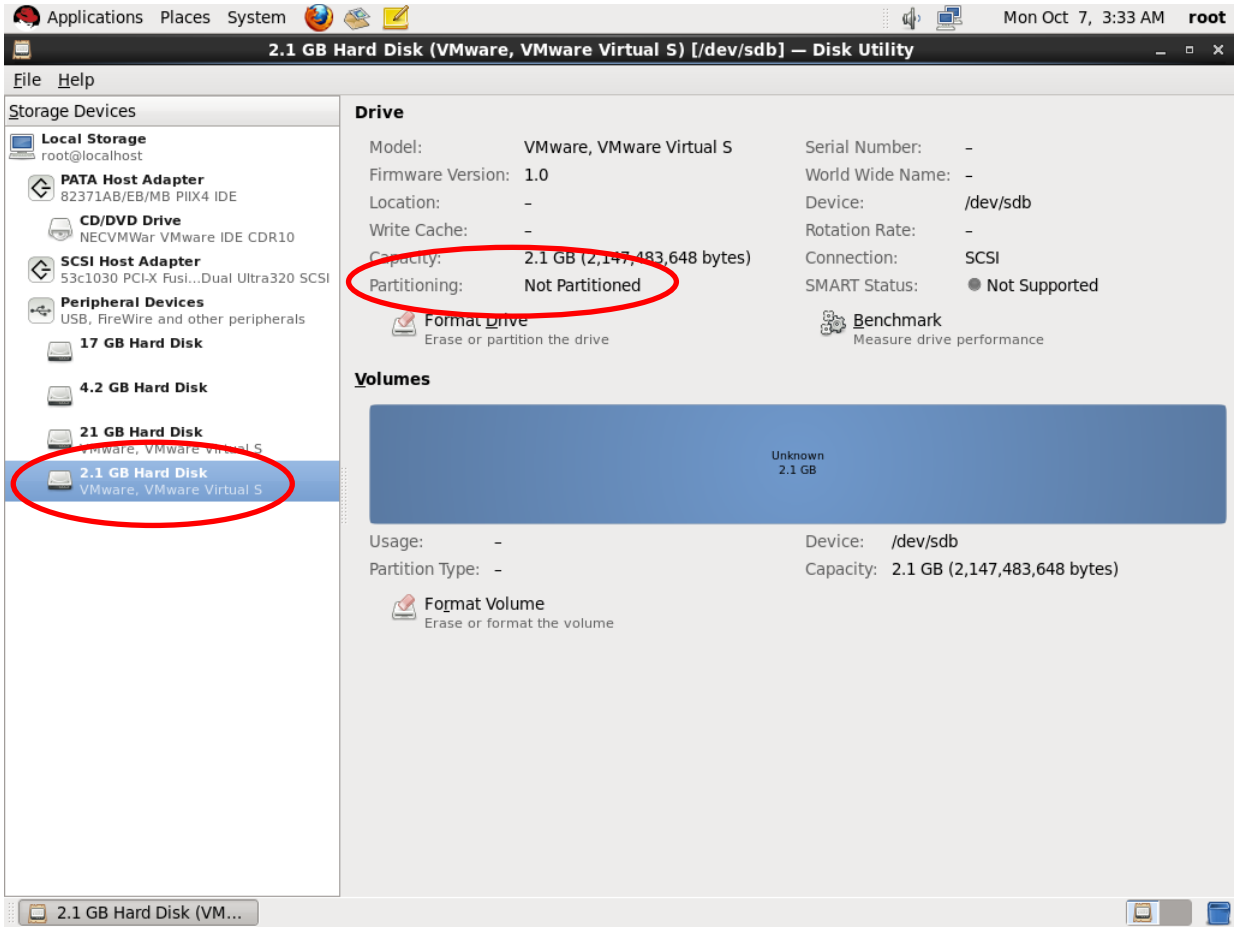
2. Power up your Linux VM. If you have added in a new disk correctly, you should see 2 disk icons on the lower right hand corner of the UI.



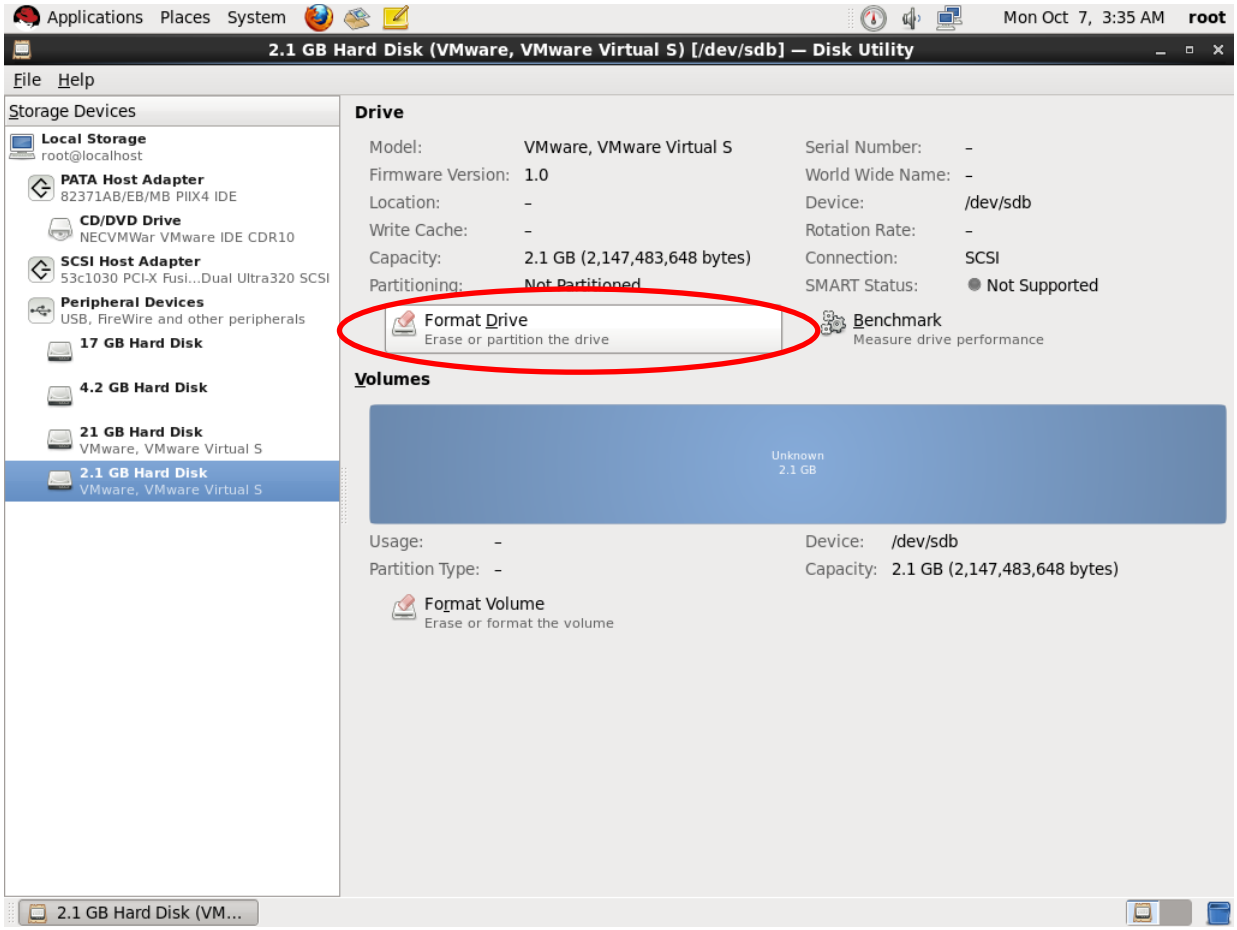
3. Login as **root**. Click on Applications->System Tools->Disk Utility



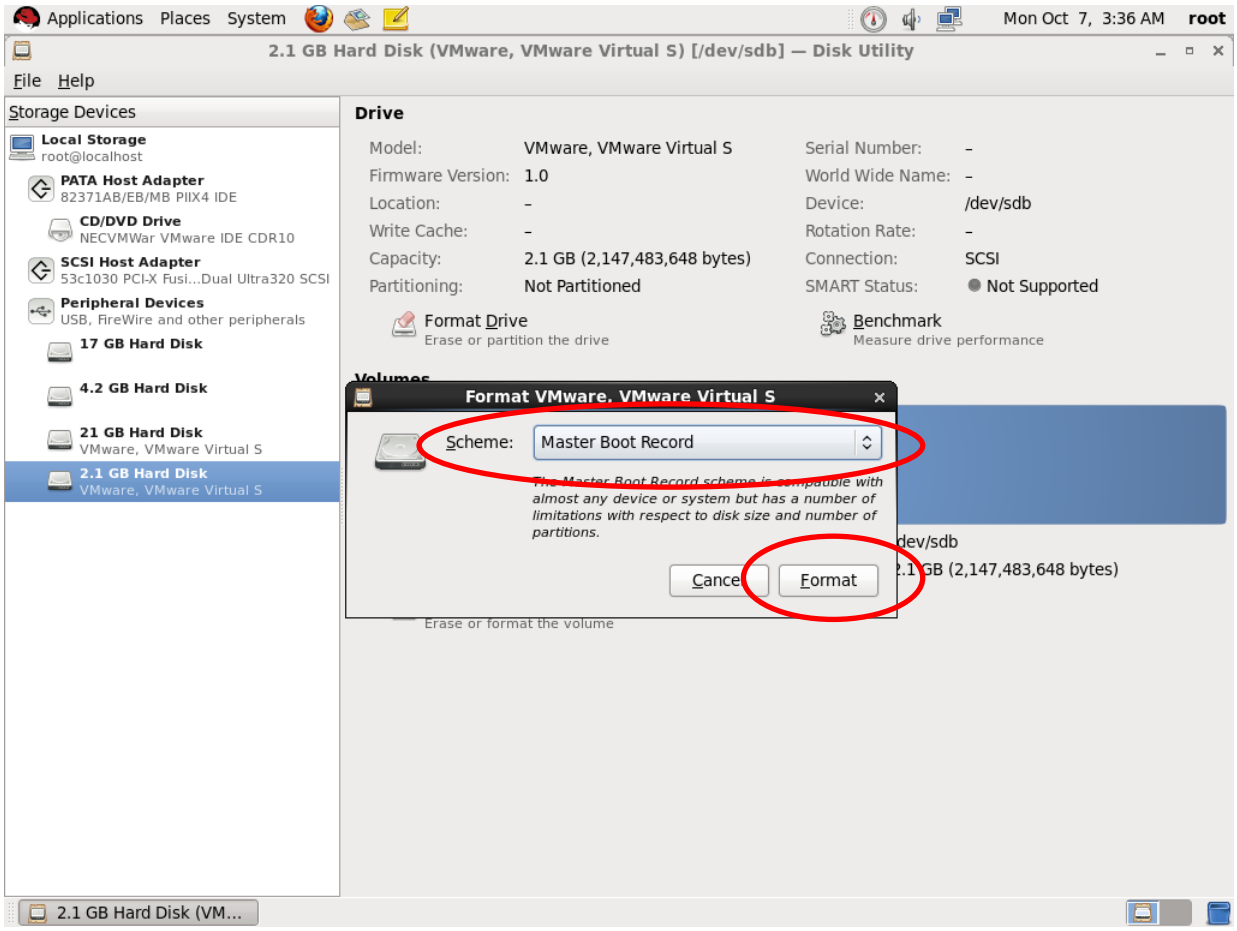
You should see the newly added virtual disk on the Right Hand Plane of the Disk Utility application. Notice that it shows no partitions.



4. Select Format Drive to create partitions on the new virtual disk.



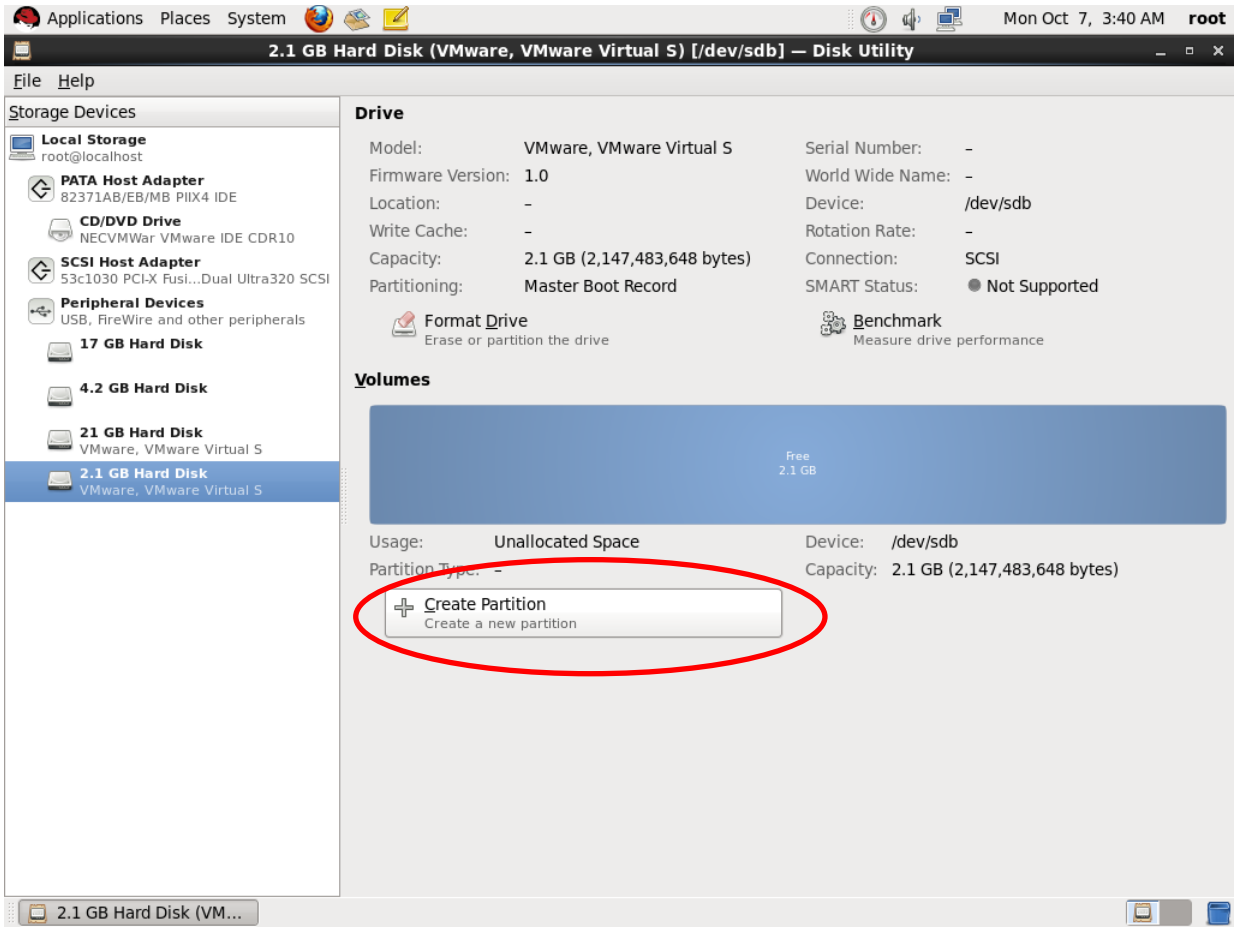
5. Make sure to select **Master Boot Record** partitioning scheme then click on **Format** button.



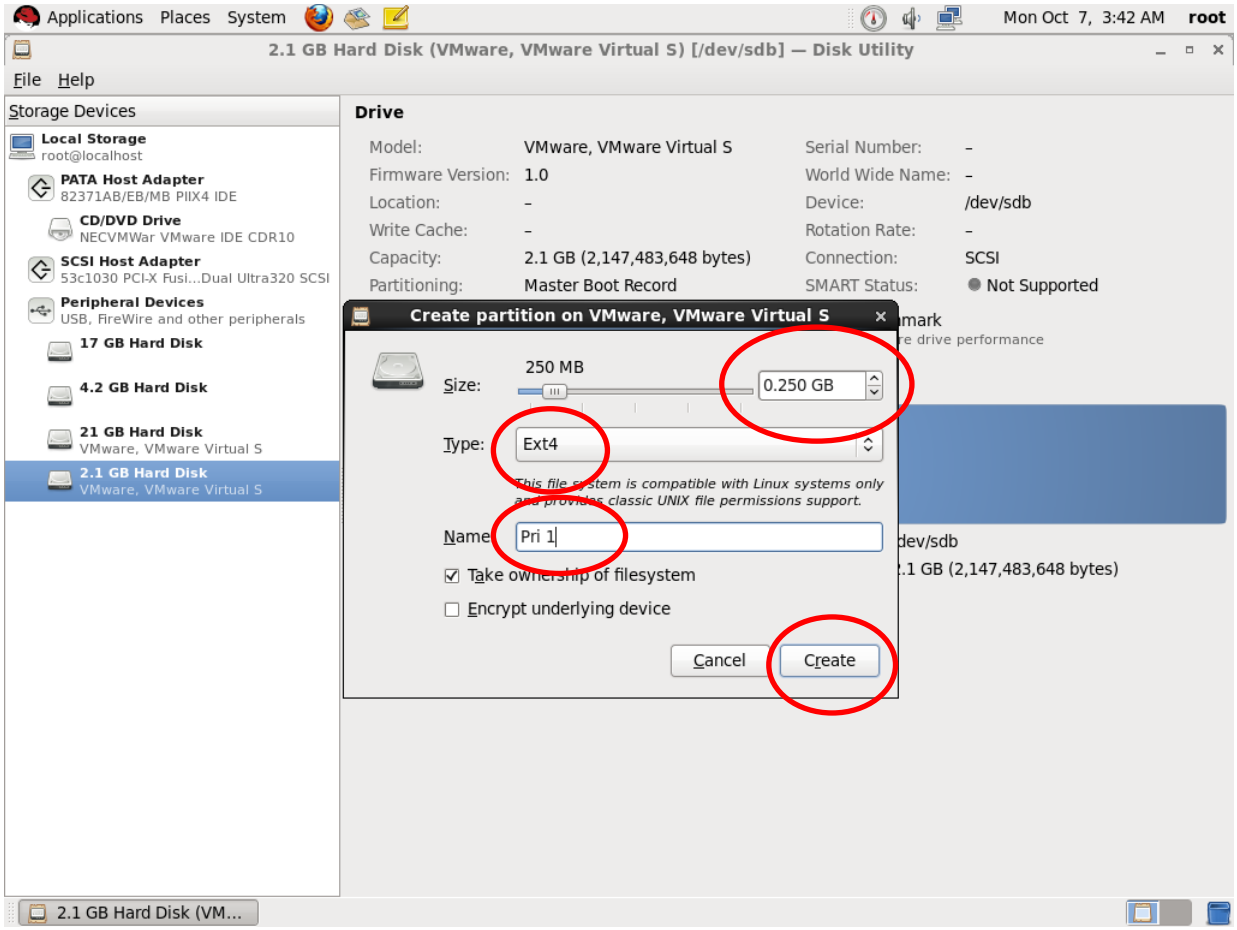
Your disk has now been formatted with the **MBR** scheme.

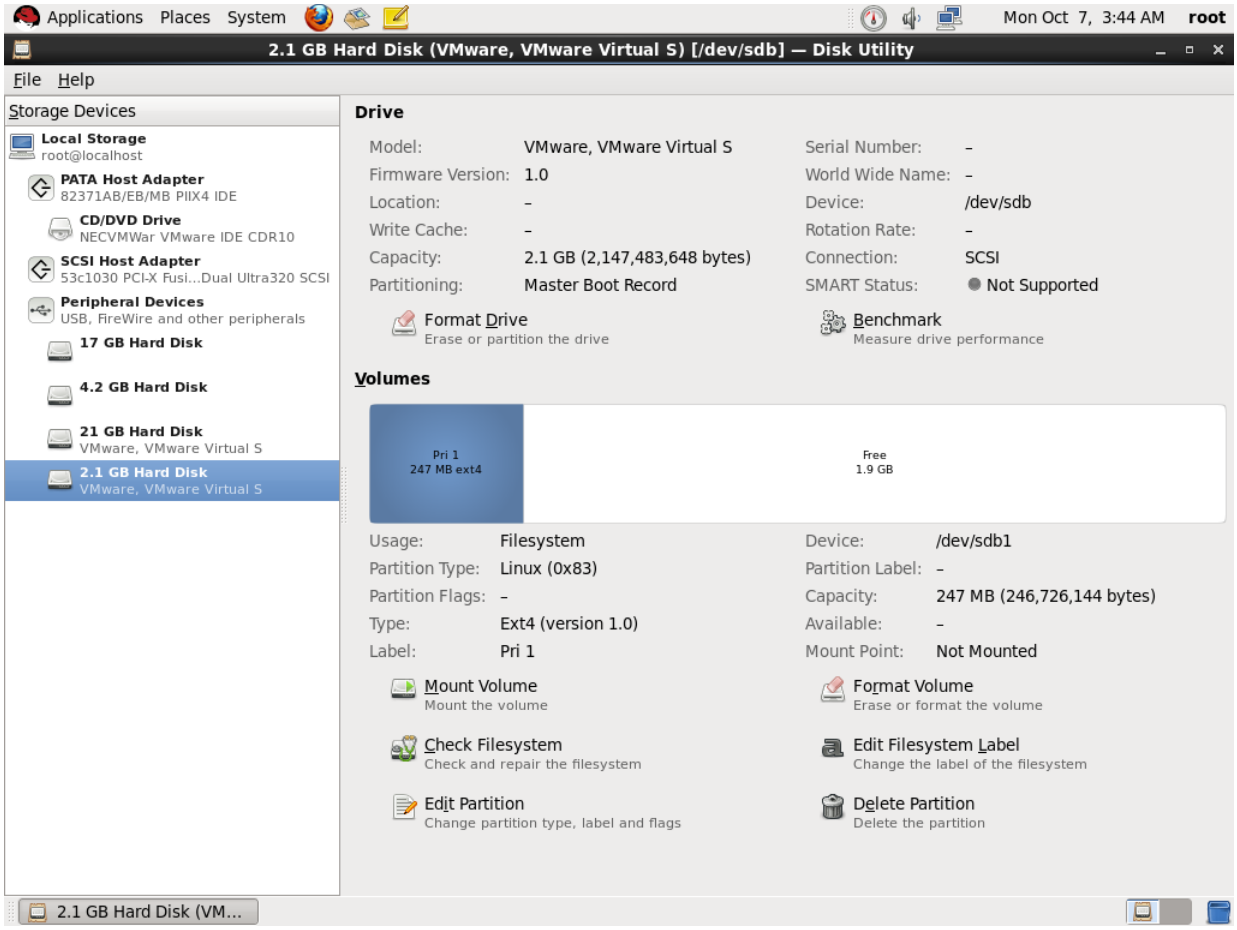
Objective 2 - Creating Primary/Extended/Logical Partitions in Linux

1. Click on Create partition button.

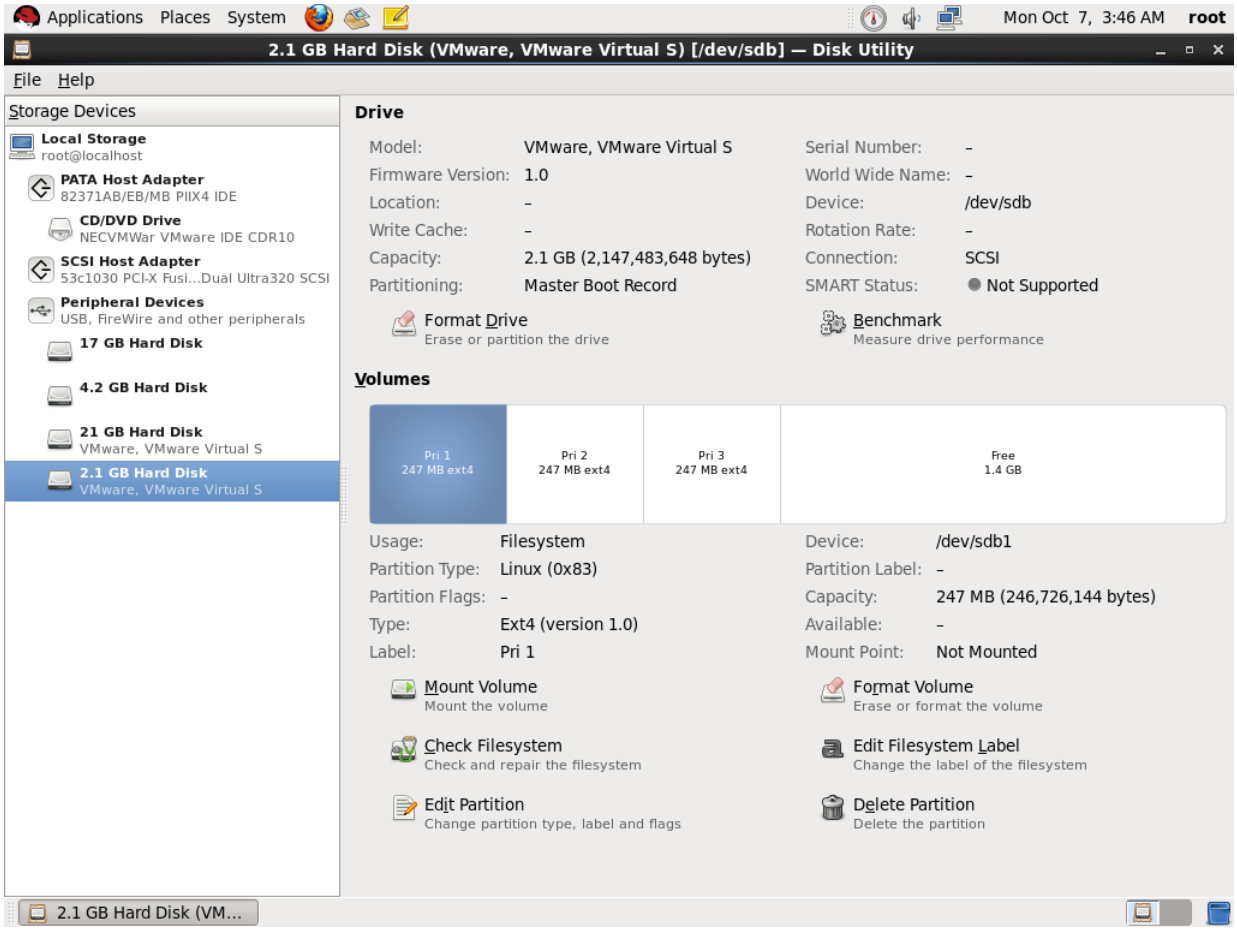


2. Key in 0.25GB for a first partition as shown and click create.

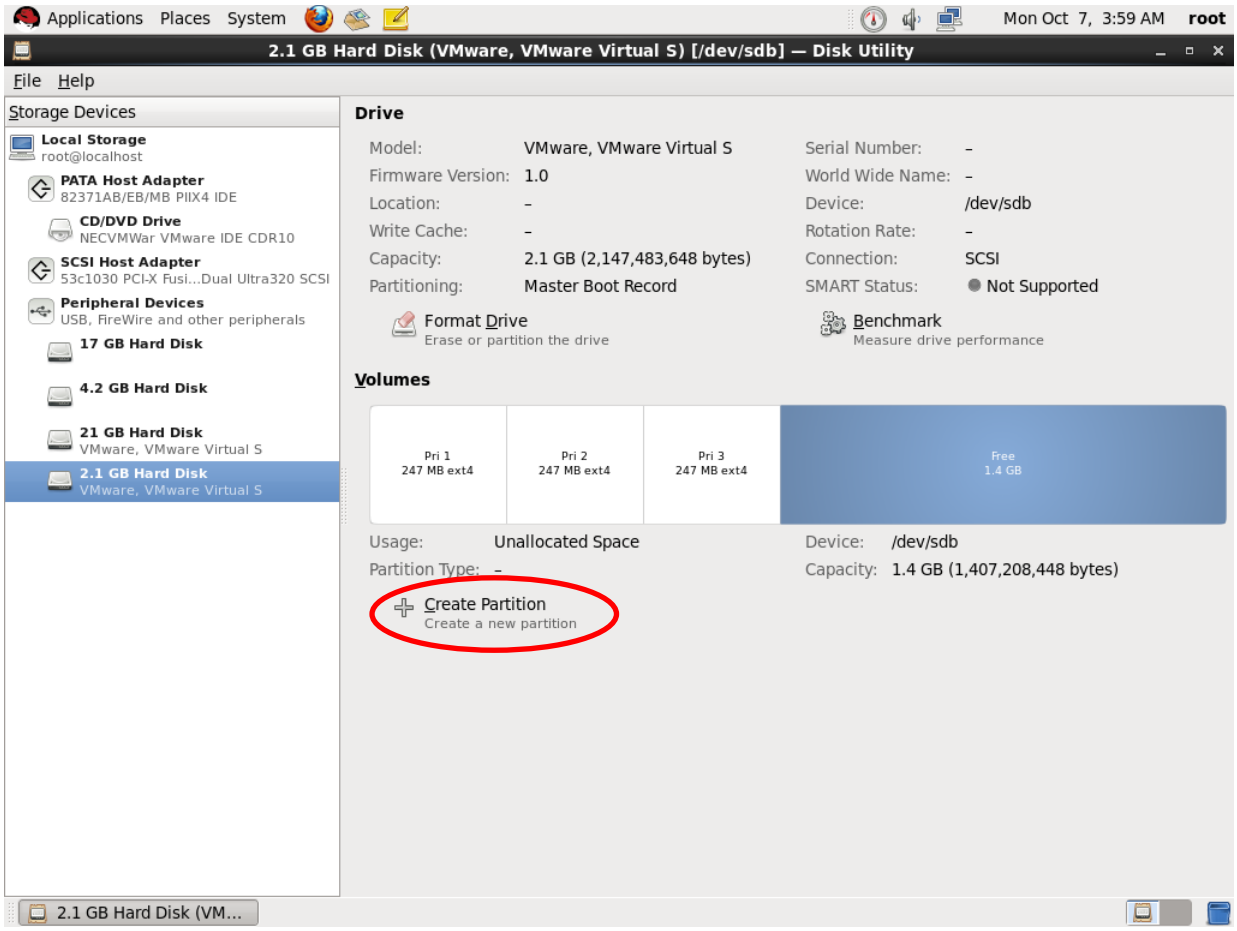



Applications Places System
Mon Oct 7, 3:44 AM root
2.1 GB Hard Disk (VMware, VMware Virtual S) [/dev/sdb] — Disk Utility
File Help
Storage Devices
Local Storage
root@localhost
PATA Host Adapter
82371AB/EB/MB PIIX4 IDE
CD/DVD Drive
NECVMWar VMware IDE CDR10
SCSI Host Adapter
53c1030 PCI-X Fusi...Dual Ultra320 SCSI
Peripheral Devices
USB, FireWire and other peripherals
17 GB Hard Disk
4.2 GB Hard Disk
21 GB Hard Disk
VMware, VMware Virtual S
2.1 GB Hard Disk
VMware, VMware Virtual S
Drive
Model: VMware, VMware Virtual S
Firmware Version: 1.0
Location: –
Write Cache: –
Capacity: 2.1 GB (2,147,483,648 bytes)
Partitioning: Master Boot Record
Serial Number: –
World Wide Name: –
Device: /dev/sdb
Rotation Rate: –
Connection: SCSI
SMART Status: Not Supported
Format Drive
Erase or partition the drive
Benchmark
Measure drive performance
Volumes
Pri 1
247 MB ext4
Free
1.9 GB
Usage: Filesystem
Partition Type: Linux (0x83)
Partition Flags: –
Type: Ext4 (version 1.0)
Label: Pri 1
Device: /dev/sdb1
Partition Label: –
Capacity: 247 MB (246,726,144 bytes)
Available: –
Mount Point: Not Mounted
Mount Volume
Mount the volume
Format Volume
Erase or format the volume
Check Filesystem
Check and repair the filesystem
Edit Filesystem Label
Change the label of the filesystem
Edit Partition
Change partition type, label and flags
Delete Partition
Delete the partition
2.1 GB Hard Disk (VM...

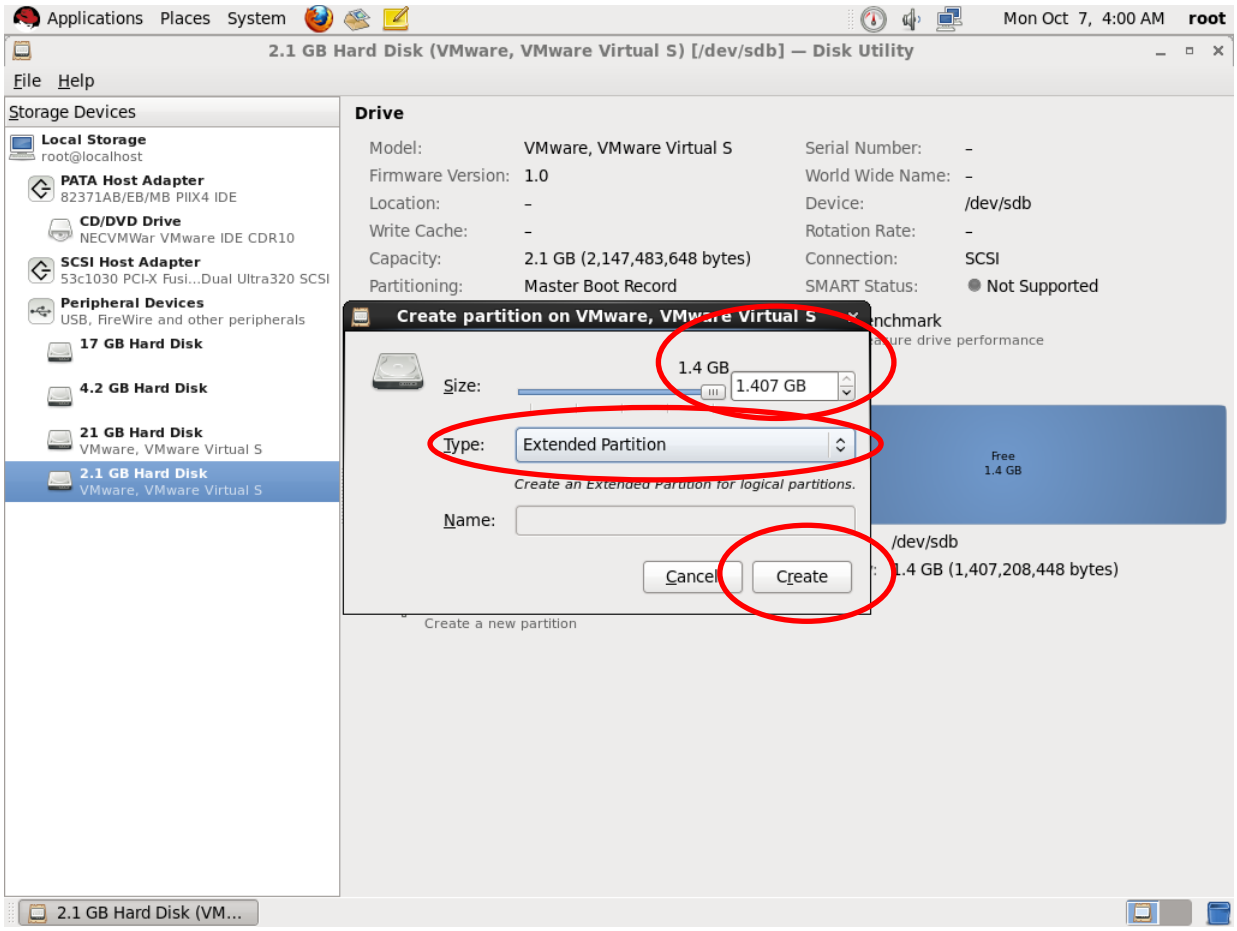
6. Likewise, create Pri 2 and Pri 3 partitions, each 0.25GB, using the same way.



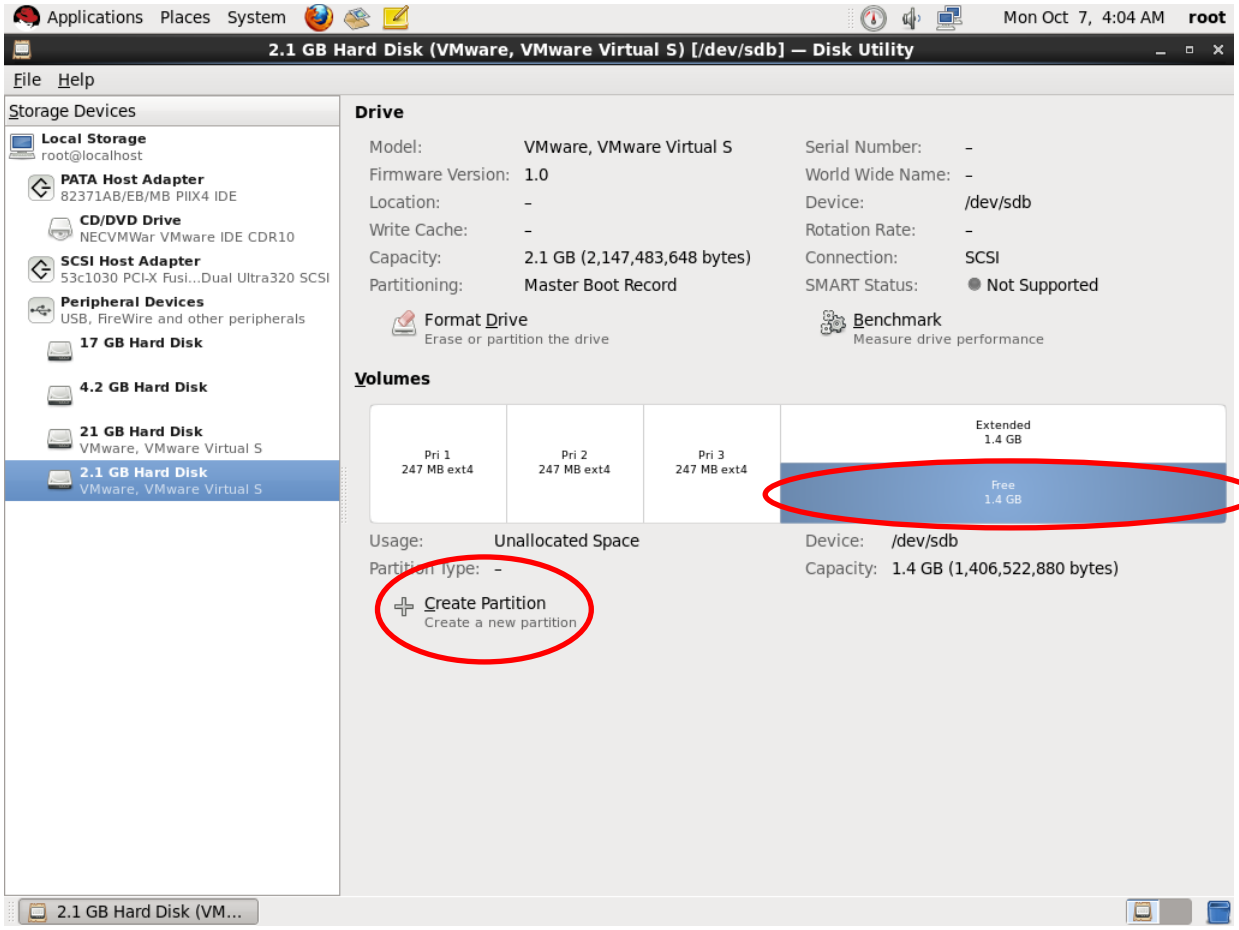
7. For a MBR scheme, we would need to create an extended partition to have more than 4 usable partitions on the disk. To create an extended partition, click on Create Partition button as shown.



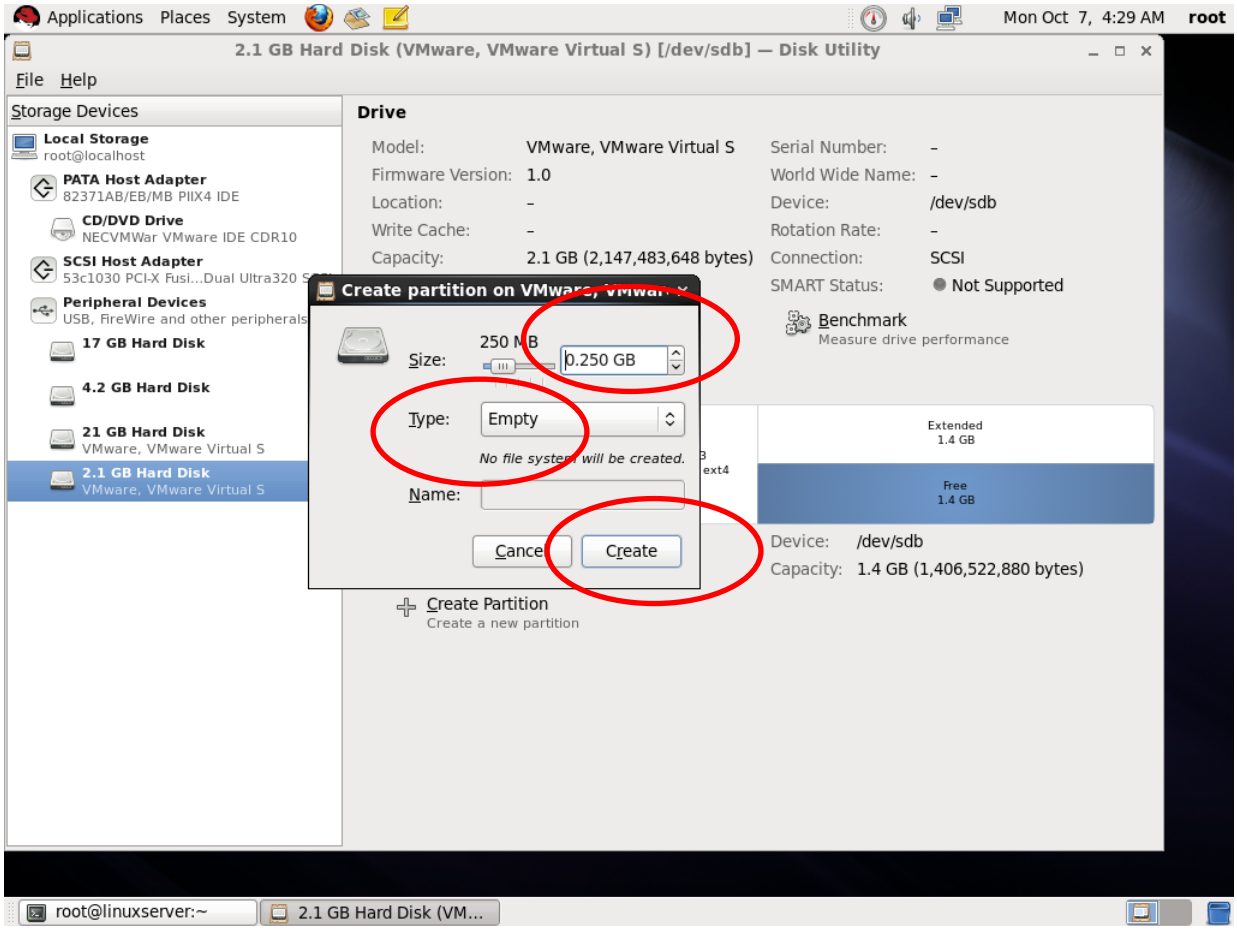
For the type, select **Extended** partition in the drop-down box.



We have now created an extended partition to contain logical partitions. Click on the free partition space below the extended partition map. To create logical partitions, click on create partition button.

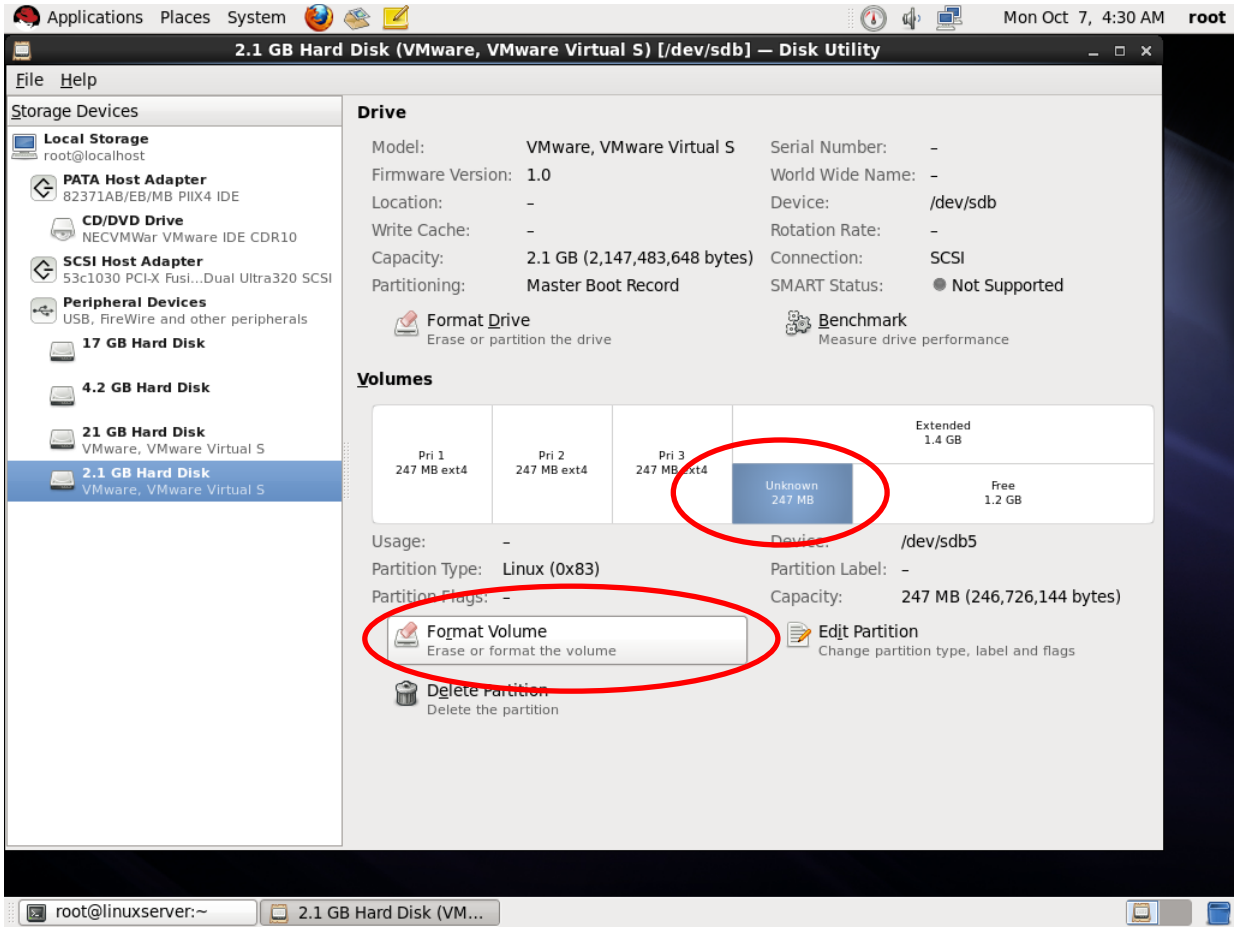

Applications Places System
Mon Oct 7, 4:04 AM root
2.1 GB Hard Disk (VMware, VMware Virtual S) [/dev/sdb] — Disk Utility
File Help
Storage Devices
Local Storage
root@localhost
PATA Host Adapter
82371AB/EB/MB PIIX4 IDE
CD/DVD Drive
NECVMWar VMware IDE CDR10
SCSI Host Adapter
53c1030 PCI-X Fusi...Dual Ultra320 SCSI
Peripheral Devices
USB, FireWire and other peripherals
17 GB Hard Disk
4.2 GB Hard Disk
21 GB Hard Disk
VMware, VMware Virtual S
2.1 GB Hard Disk
VMware, VMware Virtual S
Drive
Model: VMware, VMware Virtual S
Firmware Version: 1.0
Location: –
Write Cache: –
Capacity: 2.1 GB (2,147,483,648 bytes)
Partitioning: Master Boot Record
Serial Number: –
World Wide Name: –
Device: /dev/sdb
Rotation Rate: –
Connection: SCSI
SMART Status: Not Supported
Format Drive
Erase or partition the drive
Benchmark
Measure drive performance
Volumes
Pri 1
247 MB ext4
Pri 2
247 MB ext4
Pri 3
247 MB ext4
Extended
1.4 GB
Free
1.4 GB
Usage: Unallocated Space
Partition Type: –
Device: /dev/sdb
Capacity: 1.4 GB (1,406,522,880 bytes)
Create Partition
Create a new partition
2.1 GB Hard Disk (VM...

Type in the values as shown

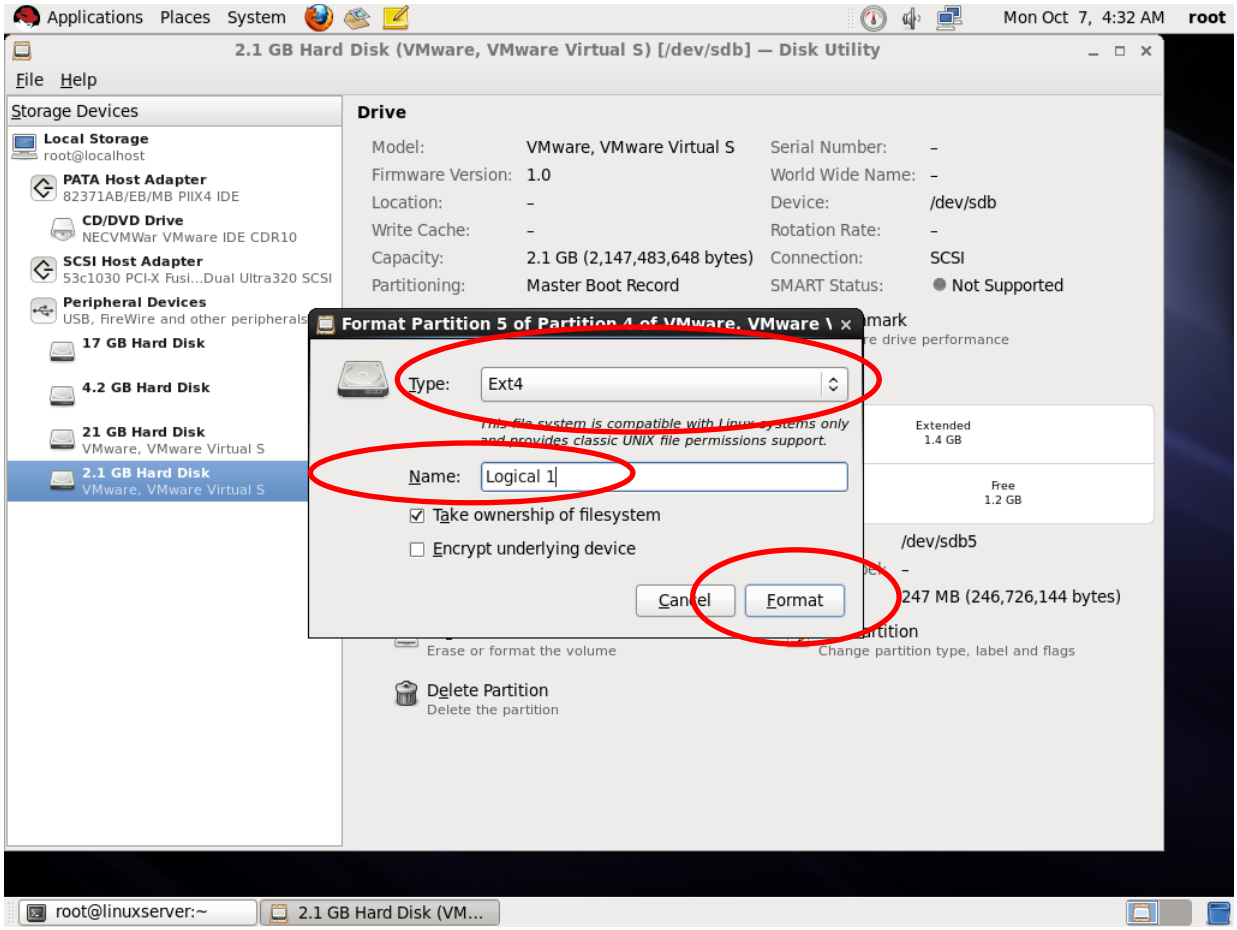


Next select the Unknown Partition and Format Volume.

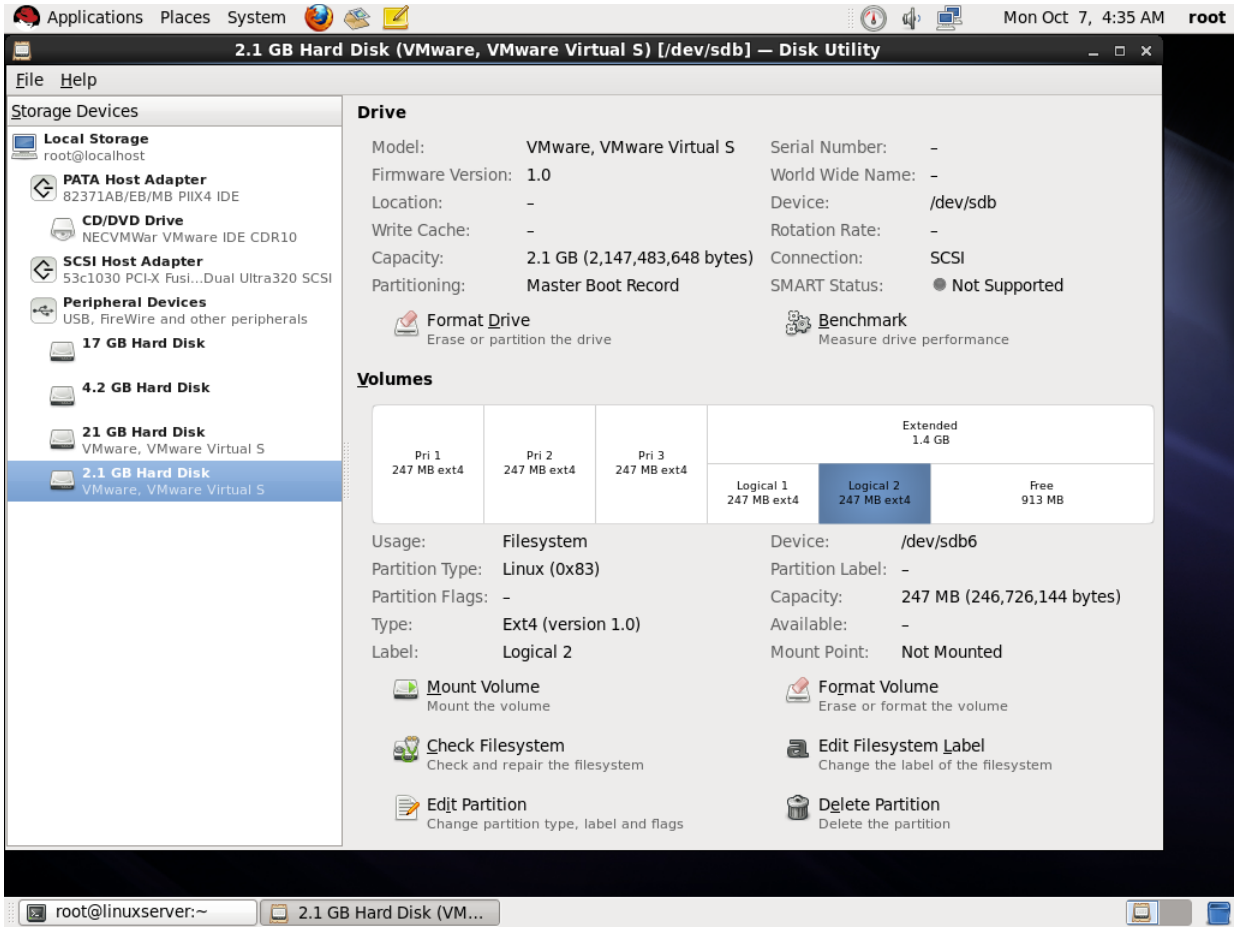
If you receive any error message here, restart the server and try again.



Type in the following values below, to create a logical partition, with ext4 file system.

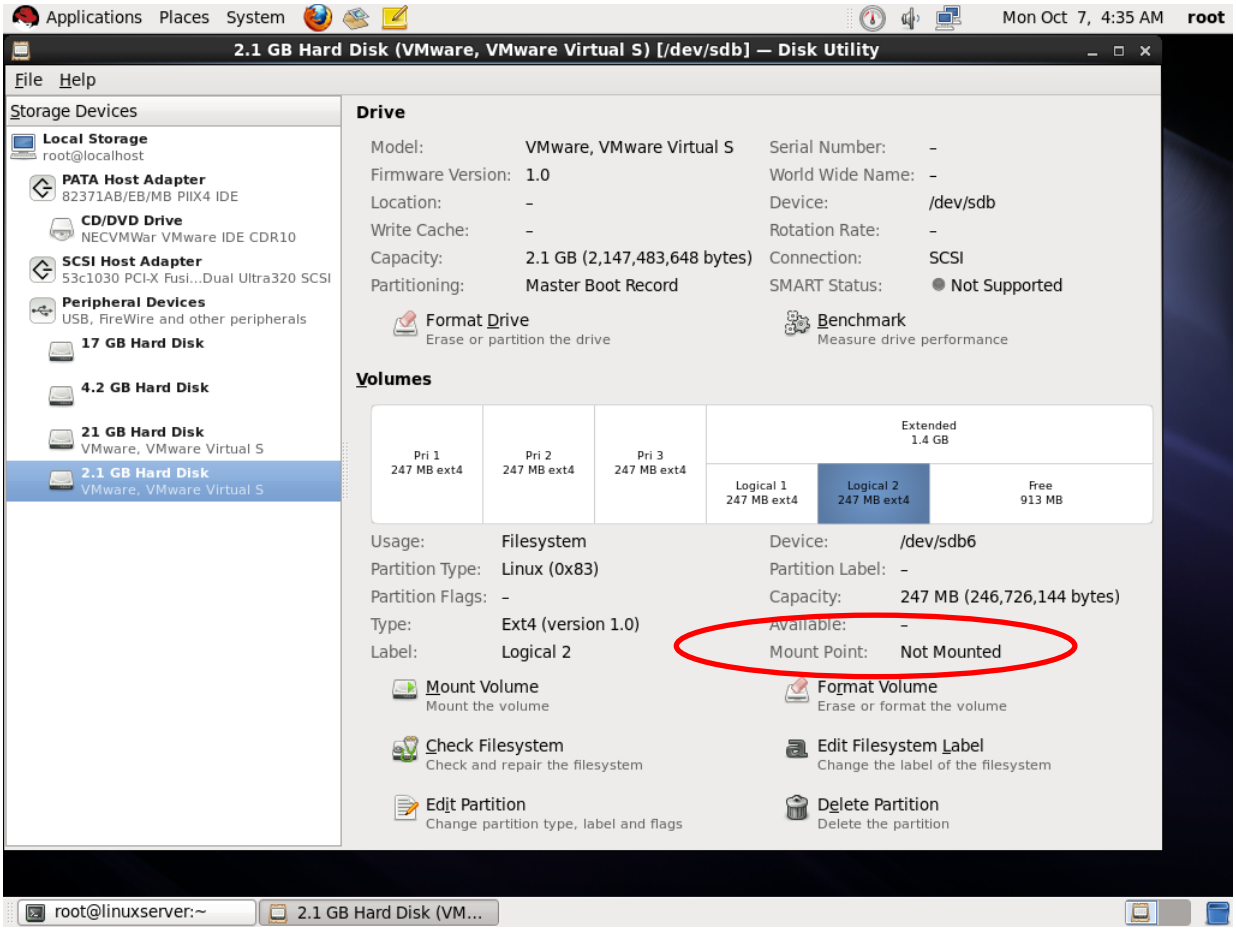


Likewise repeat the above steps to create another logical partition called Logical 2 (0.25GB).

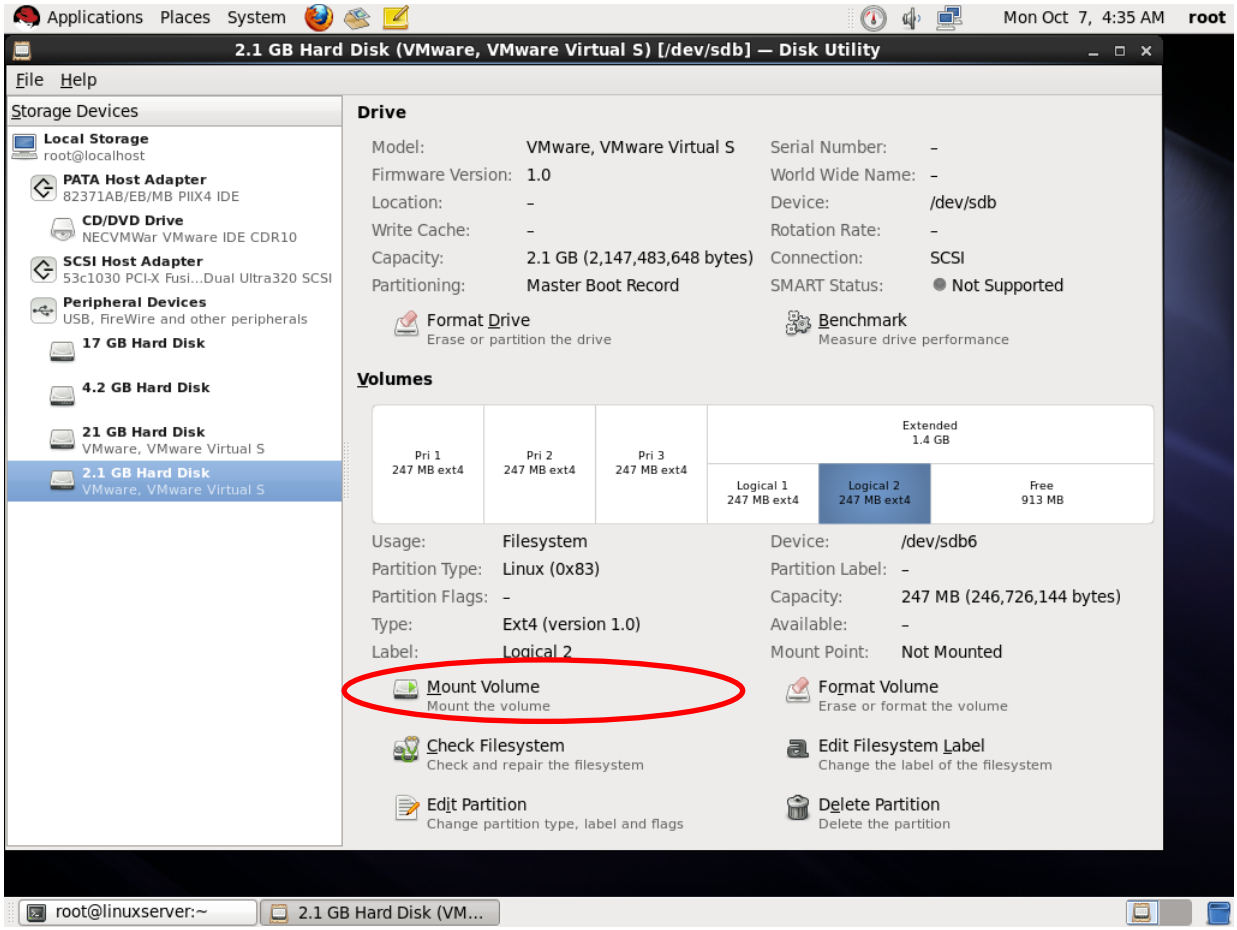


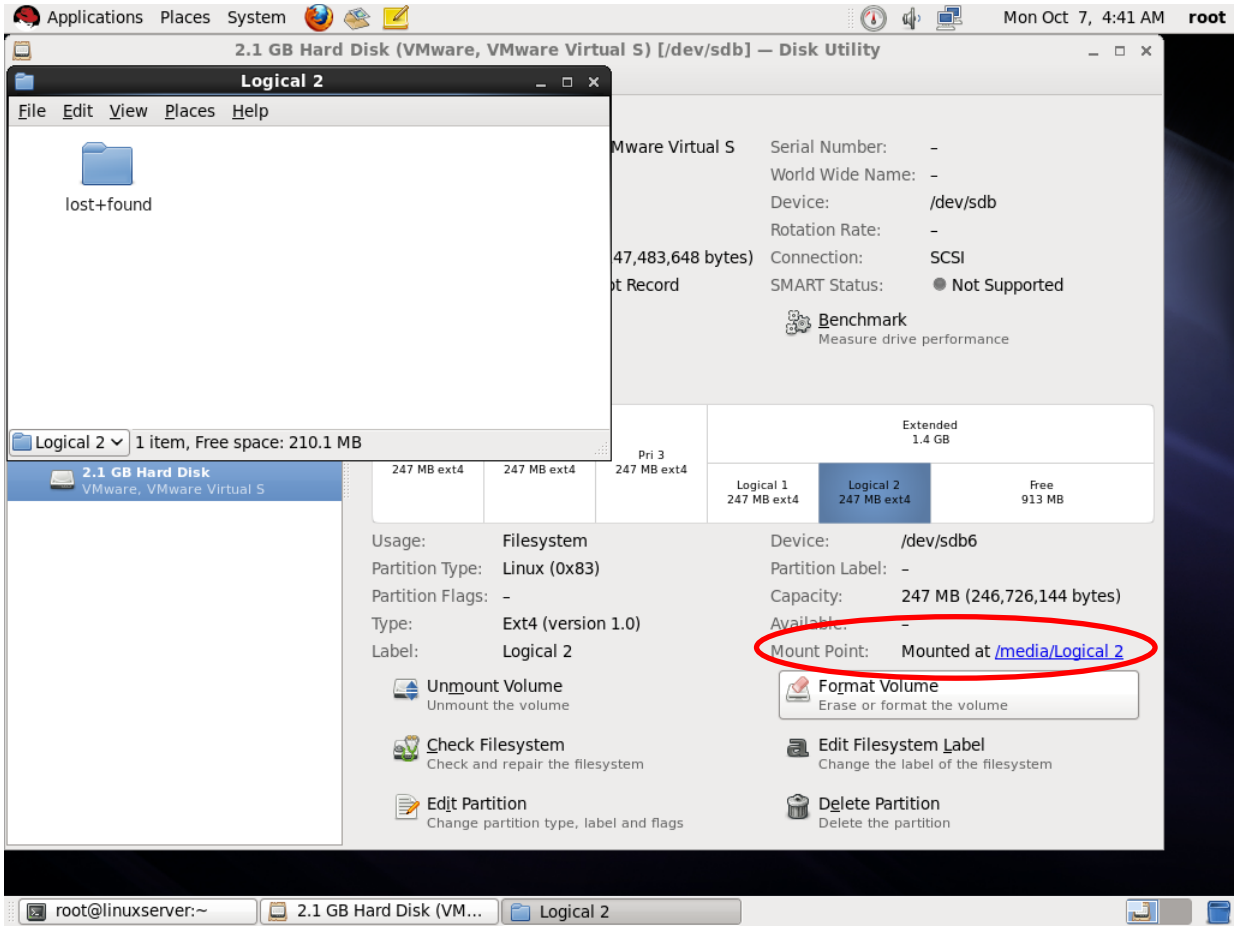
Objective 3 - Mounting a partition on the Linux file system

1. So far, we have created partitions with ext4 file systems. We still cannot use them until we have mounted them onto our VM. If we click on any of our primary or logical partitions, notice that they are not mounted.



2. To mount a partition, simply click on the Mount volume button as shown.





Remember, we must always mount a partition before we can use/access it.

Exercise 8C

Add a third hard disk to the server – 4 GB, SCSI type. Create 2 Partitions, each 2 GB and mount them as Apple and Orange. Open the File Browser to display them. What are the drive device name and partition device names?

END OF LAB