System and Network Administration Linux based

Lecture 4- Week 2,

April, 2020.

Recap of First Week Lectures

- Introduction to OS
- History of OS
- Comparison of OS
- Introduction to Linux OS

Agenda for Today

- **LINUX INSTALLATION**
- **Installing Ubuntu with VMWare Player or VirtualBox**
- **What is the Filesystem**

What is virtualization?

- **What is VMWare Player?**
  - VMware Player is a virtualization software package supplied free of charge by VMware, Inc.
- **What is virtualization?**
  - Virtualization allows us to run one operating system(Guest OS) to run on another operating system(Host OS).

Installing Ubuntu with VMWare Player ...

- Installing Ubuntu with VMWare Player

  The Steps involved are :

  1) Download & install VMWare Player.
  2) Download Ubuntu
  3) Install Ubuntu with VMWare Player.

What is a Partition?

- Partitioning is a means to divide a single hard drive into many logical drives.
- A partition is a contiguous set of blocks on a drive that are treated as an independent disk.
- A partition table is an index that relates sections of the hard drive to partitions.

Why have multiple partitions?

- Reduce the risk of system failure in case a partition becomes full.
- Running processes or users can consume so much disk space that the operating system no longer has room on the hard drive for its bookkeeping operations. This will lead to disaster.
- By separating space, you ensure that things other than the operating system die when allocated disk space is exhausted.

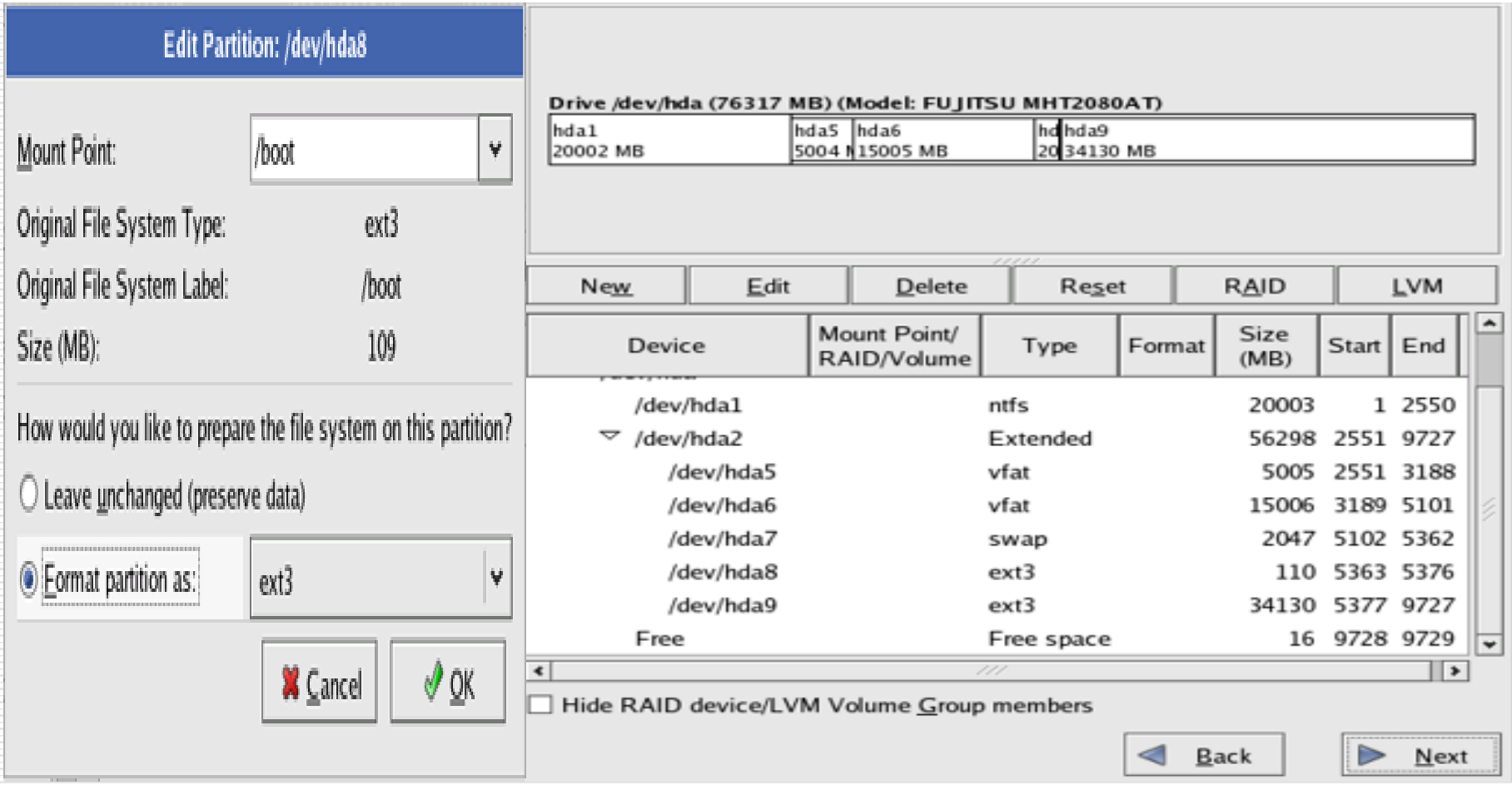
Partition Fields

- **Device/Directory:** This field displays the partition's device/directory name.
- **Start:** This field shows the sector on your hard drive where the partition begins.
- **End:** This field shows the sector on your hard drive where the partition ends.
- **Size:** This field shows the partition's size (in MB).
- **Type:** This field shows the partition’s filesystem type (for example, ext2, ext3, or ext4 and so on).

Partition Fields ...

- **A filesystem** is a way of storing, organizing and accessing files (directories) on a storage device. In Linux, the popular filesystems are **ext2**,**ext3** and **ext4** file systems
- **Mount Point:** A mount point is the location within the directory hierarchy at which a volume exists; the volume is "mounted" at this location. This field indicates where the partition will be mounted.
- For example, Enter the partition mount point.
  - if the partition is the root partition, enter /;
  - if the partition is the boot partition, enter /boot and so on.

Mount Point


Edit Partition: /dev/hda8
Mount Point:
/boot
Original File System Type:
ext3
Original File System Label:
/boot
Size (MB):
109
How would you like to prepare the file system on this partition?
Leave unchanged (preserve data)
Format partition as:
ext3
Cancel
OK
Drive /dev/hda (76317 MB) (Model: FUJITSU MHT2080AT)
hda1
20002 MB
hda5
hda6
15005 MB
hda9
34130 MB
New
Edit
Delete
Reset
RAID
LVM
Device
Mount Point/ RAID/Volume
Type
Format
Size (MB)
Start
End
/dev/hda1 ntfs 20003 1 2550
/dev/hda2 Extended 56298 2551 9727
/dev/hda5 vfat 5005 2551 3188
/dev/hda6 vfat 15006 3189 5101
/dev/hda7 swap 2047 5102 5362
/dev/hda8 ext3 110 5363 5376
/dev/hda9 ext3 34130 5377 9727
Free Free space 16 9728 9729
Hide RAID device/LVM Volume Group members
Back
Next

Types of Linux Filesystem

A standard Linux Distribution provides the choice of partitioning disk with the file formats listed below, each of which has special meaning associated with it.

- ext2
- ext3
- ext4
- jfs
- ReiserFS
- XFS
- Btrfs

ext2 - Second Extended Filesystem

- Ext, implemented in Linux in 1992.
- ext2 is the second extended filesystem.
- Default filesystem in many Linux distros for many years.
- Developed by Remi Card in January 1993
  - Maximum file size: 16GB - 2TB
- Ext2 does not have Journaling Concept
- Maximum number of files: 10^18

ext3 - Second Extended Filesystem

- ext3 is fully compatible with its previous version, i.e. ext2 filesystem
- Developed by Stephen Tweedie 2001
  - Journaled filesystem.
  - Maximum file size: 16GiB - 2TiB
  - Maximum volume/filesystem size: 2TiB - 32TiB
  - Maximum filename length: 255 bytes
- Maximum number of files: Variable

ext4 - Second Extended Filesystem

- The ext4 filesystem, developed as an extension to ext3
- In most modern distros, the default filesystem is ext4.
- Developed by Mingming Cao, Andreas Dilger, and many other developers of Linux (from.org) in October 2008

ext4 - Second Extended Filesystem

- Journaled filesystem
  - Performance enhancements over its predecessor (ext3)
  - Maximum file size: 16TB
  - Maximum volume/filesystem size:

    1EIB (exabyte)

    - (1Eib = 1024PiB, 1PiB = 1024TiB, 1TiB = 1024GiB)
  - Maximum filename length: 255 bytes
  - Maximum number of files: 4 billion

Class Assignment # 01

Due Date: Within 10 days right after today's class

- Deliverable: 2-3 pages pdf file

- Late assignment or wrong file names may not be marked.
  - Name of the file: BSIT-V-Morg/Eve-bsit xxxx

*bsitxxxx represents your Class roll number

- Assignment copy case = that will be punished -10 solid Marks.

Class Assignment # 01

What is the file system and how Linux file system different from the Windows file system and Explain the characteristics of the following file stem;

- JFS, Reiser FS
- XFS, Btrfs

Ubuntu Installation on VMWare Player

- Lecture Continued in next class.