10 – UserAuthentication

Work on user accounts:

useradd

☐ **useradd** is a command in Linux that is used to add user accounts to system.

☐ It is just a symbolic link to **adduser** command in Linux and the difference between both of them is that useradd is a native binary compiled with system whereas adduser is a Perl script which uses useradd binary in the background.

☐ When we run the '**useradd**' command in the Linux terminal, it performs the following major things:

o It edits **/etc/passwd**, **/etc/shadow**, **/etc/group** and **/etc/gshadow** files for the newly created user accounts.

o Creates and populates a home directory for the new user.

o Sets permissions and ownerships to the home directory.

☐ **Syntax:**

o **sudo adduser tmapp**

passwd tmapp

retype passwd tmapp

☐ This asks the user to enter the new password and confirm password

Name:

Roll no:

Tel phone:

Mobile:

Other:

userdel

 userdel command in Linux system is used to delete a user account and related files.

 This command basically modifies the system account files, deleting all the entries which refer to the username LOGIN.

 It is a low-level utility for removing the users.

 Syntax: sudo userdel tmapp

 Important Options used along with userdel:

o **-f:** This option forces the removal of the specified user account. It doesn't matter

that the user is still logged in. It also forces the *userdel* to remove the user's home
directory and mail spool, even if another user is using the same home directory or
even if the mail spool is not owned by the specified user.

o **-r:** Whenever we are deleting a user using this option then the files in the user's
home directory will be removed along with the home directory itself and the
user's mail spool. All the files located in other file systems will have to be
searched for and deleted manually.

o **-Z :** This option remove any SELinux(Security-Enhanced Linux) user mapping
for the user's login.

usermod

usermod command or modify user is used to change the properties of a user.

After creating a user we have to sometimes change their attributes like password or login directory etc.

To change the home directory of a user

o **usermod -d /home/newfolder existinguser**

LDAP:

☐ Lightweight Directory Access Protocol (LDAP) is a standard protocol designed to
manage and access hierarchical directory information over a network.

☐ It can be used to store any kind of information, though it is most often used as a
centralized authentication system or for corporate email and phone directories.

☐ Use phpLDAPadmin, a web interface for viewing and manipulating LDAP information.

13 – Storage Management

Basic Commands for Storage Partitions

fdisk

☐ fdisk is used to check the partitions on a disk. The fdisk command can display the partitions and details like file system type. However it does not report the size of each partitions.

sudofdisk -l

☐ Each device is reported separately with details about size, seconds, id and individual partitions.

df

☐ df is not a partitioning utility, but prints out details about only mounted file systems.

☐ The list generated by df even includes file systems that are not real disk partitions.

df -h

df -h | grep ^/dev

pydf

☐ pydf is an improved version of df, written in python. Prints out all the hard disk partitions in a easy to read manner.

pydf

☐ pydf is limited to showing only the mounted file systems.

lsblk

☐ Lists out all the storage blocks, which includes disk partitions and optical drives.

☐ Details include the total size of the partition/block and the mount point if any.

☐ Does not report the used/free disk space on the partitions.

lsblk

☐ If there is no MOUNTPOINT, then it means that the file system is not yet mounted. For cd/dvd this means that there is no disk.

☐ lsblk is capbale of displaying more information about each device like the label and model. Check out the man page for more information

blkid

☐ Prints the block device (partitions and storage media) attributes like uuid and file system type. Does not report the space on the partitions.

sudo blkid

Logical Volume Management (LVM)

☐ **LVM**, or Logical Volume Management, is a storage device management technology that gives users the power to pool and abstract the physical layout of component storage devices for easier and flexible administration.

☐ The main advantages of LVM are increased abstraction, flexibility, and control.

☐ Logical volumes can have meaningful names like "databases" or "root-backup".

☐ Volumes can be resized dynamically as space requirements change and migrated between physical devices within the pool on a running system or exported easily.

☐ LVM also offers advanced features like snapshotting, striping, and mirroring.

LVM Storage Management Structures

LVM functions by layering abstractions on top of physical storage devices. The basic layers that LVM uses, starting with the most primitive, are.

☐ **Physical Volumes**:

LVM utility prefix: pv

Description: Physical block devices or other disk-like devices (for example, other devices created by device mapper, like RAID arrays) are used by LVM as the raw building material for higher levels of abstraction. Physical volumes are regular storage devices. LVM writes a header to the device to allocate it for management.

☐ **Volume Groups**:

LVM utility prefix: vg

Description: LVM combines physical volumes into storage pools known as volume groups. Volume groups abstract the characteristics of the underlying devices and function as a unified logical device with combined storage capacity of the component physical volumes.

☐ **Logical Volumes**:

LVM utility prefix: lv

Description: A volume group can be sliced up into any number of logical volumes. Logical volumes are functionally equivalent to partitions on a physical disk, but with much more flexibility. Logical volumes are the primary component that users and applications will interact with. Each volume within a volume group is segmented into small, fixed-size chunks called **extents**. The size of the extents is determined by the volume group (all volumes within the group conform to the same extent size).