

## **TOPIC : LINUX**

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### **Introduction to Linux**

Linux is an open-source operating system that is based on the Unix operating system. It is widely used for servers, desktops, and embedded systems due to its stability, security, and flexibility. Linux is available in various distributions (distros), such as Ubuntu, CentOS, Fedora, and Debian, each catering to different user needs.

### **Basic Linux Commands**

Below are some commonly used Linux commands along with their descriptions:

#### **File and Directory Management Commands**

ls lists files and directories. pwd displays the current working directory. cd changes the current directory. mkdir creates a new directory. rmdir removes an empty directory. rm removes a file. rm -r removes a directory and its contents. cp copies files and directories. mv moves or renames files and directories.

#### **File Viewing and Editing Commands**

cat displays the contents of a file. less views file content page by page. nano edits a file using the nano text editor. vim opens a file in the Vim text editor.

#### **File Permission and Ownership Commands**

chmod changes file permissions. chown : changes file ownership. ls -l displays file permissions and ownership details.

#### **Process Management Commands**

ps displays currently running processes. top shows active processes and system resource usage. kill terminates a process by its Process ID (PID). killall <process\_name> kills all processes with the given name. htop is an interactive process viewer.

#### **Networking Commands**

ifconfig displays network configuration (deprecated, use ip a). ip a shows network interfaces and IP addresses. ping <hostname/IP> checks network connectivity. netstat -tulnp displays active network connections. curl fetches data from a URL. wget downloads files from the internet.

#### **User Management Commands**

whoami displays the current user. id shows user and group IDs. adduser creates a new user. passwd changes user password. deluser deletes a user.

## **Disk Management Commands**

df -h displays disk space usage in human-readable format. du -sh shows the size of a directory. mount mounts a file system. umount unmounts a file system.

## **System Monitoring and Performance Commands**

uptime displays system uptime. free -m shows memory usage. vmstat reports system performance statistics. iostat displays CPU and I/O statistics.

## **Package Management Commands**

Debian-based systems (Ubuntu, Debian): apt update updates package lists. apt upgrade upgrades installed packages. apt install installs a package. apt remove removes a package.

Red Hat-based systems (CentOS, Fedora): yum update updates packages. yum install installs a package. yum remove removes a package.

## **Compression and Archiving Commands**

tar -cvf archive.tar creates a tar archive. tar -xvf archive.tar extracts a tar archive. gzip compresses a file using gzip. gunzip <file.gz> decompresses a gzip file.