BASIC LINUX COMMAND

AMIT DAHAT

Project Engineer

NIELIT DELHI CENTER

Agenda

- ✓ Introduction to Linux
- ✓ Advantage of Linux
- ➢ Difference between Linux & Windows
- ➢ Linux System Login
- ➢ Linux basics Command

- System Information
- Files & Directories
- User Management
- File Permission
- Linux Networking
- Linux commands
- Linux Editor
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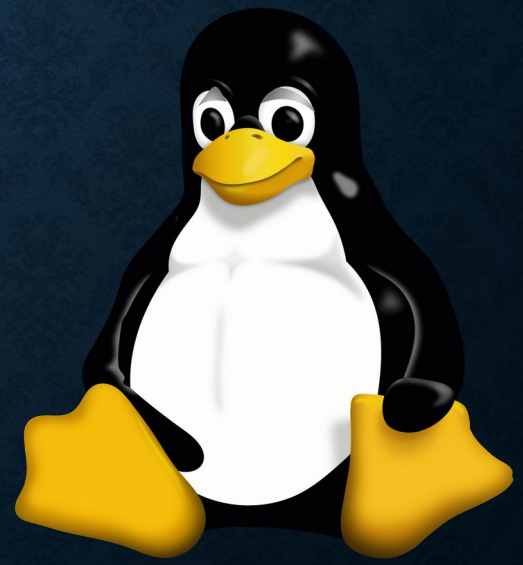
What is Linux ?

- **Linux** is a Unix-like, open source and community-developed **operating system** (OS) for computers, servers, mainframes, mobile devices and embedded devices.
- Linux is extensively used in most of the devices and servers, including the 500 most powerful supercomputers of the world as per 2017 statics.
- When Linux Kernels is bundled with Operating System Software and shipped together, that is called a Linux Distributer.

Below is a list of most popular Linux distributions:

- Ubuntu Linux
- Linux Mint
- Fedora
- Debian
- SUSE



Advantage of Linux

- **Open Source Operating System**

>Being open-source, anyone with programming knowledge can modify it. It gives us the freedom to run the program, freedom to change the code according to our use, freedom to redistribute its copies, and freedom to distribute copies, which are modified by users.

- **Free**

>The Linux operating systems now offer millions of programs/applications and Linux softwares to choose from, most of them are free!

- **Highly Secure**

>Once you have Linux installed you no longer need an antivirus! Linux is a highly secure system. More so, there is a global development community constantly looking at ways to enhance its security. With each upgrade, the OS becomes more secure and robust

- **Easy to Learn**

>It is easy to learn Linux for beginners

- **Portable**

>Linux is a flexible OS, as, it can be used for desktop applications, embedded systems, and server applications.

DIFFERENCE BETWEEN LINUX & WINDOWS

Linux

- Linux is a open source operating system.
- Linux is free of cost.
- No need to Antivirus.
- Portable
- CLI Based

Windows

- Windows are the not the open source operating system.
- While it is costly.
- Need Antivirus.
- Not Portable
- GUI based.

LINUX COMMANDS

Linux System Login

1)Root

On Linux root is a particular user account. By default, the root user has access to all commands, files, services on an Linux operating system. It is also known as the root account, root user and the superuser.Its perform admin task.

-To become root user type:

sudo –i #It ask root user's password

-When promoted provide your password

-After successful login, the $ prompt would change to # to indicate that you logged in as root user on Linux.

-To exit from root

exit

logout

2) **Login as user**

$ su – user_name # It ask user password

Basic Linux Command

#	Root user promt
$	User working promt.
pwd	Present Working Directory.
date	Display Current Date & time.
cal 2020	Perticular year Calender.
Which	Command Location.
Clear	Clear Screen.
Help $date --help	Shows usage summary for that command.
History	All command That You used
Echo echo "Hello World!" > my_files.txt	This command will echo whatever you provide it
Whatis $whatis date	One line description about the command

1) System Information.

uname	Displays system information
uname -r	Displays kernel release information
uptime	Displays how long the system has been running including load average
hostname	Shows the system hostname
hostname -i	Displays the IP address of the system
last reboot	Shows system reboot history
date	Displays current system date and time
time	Query and change the System clock
cal	Displays the current calendar month and day
lsb_release -a	Displays Os version of the system
whoami	Displays who you are logged in as
lscpu	Displays CPU information

2) Files & Directory

ls
$ ls helloworld.txt

This command will list the content of a directory

ls –la or ls -ltr (permision)

This command will list all the content of a directory including the hidden files and directories.

mkdir
$ mkdir example

This command will create a new directory, provided it doesn't exists

mkdir -p
$ mkdir -p example/hello/world

This command will create nested directories.

rmdir
$ rmdir red

This command will remove/delete an existing directory, provided it is empty

cd
$ cd /temp

This command is used to change directory

Cd ..
$ cd .. Or Cd -

This command will take us one level up the directory tree

touch filename
$ touch hello.txt hello1.txt hello2.txt

This command will creates a new file.

Continue...

rm –f filename
$ rm hello.txt , rm –f hello.txt , rm *
rm -i file.txt

This command forcefully deletes a file.

warns the user before deleting the files

rm –rf directory
$ rm -rf example

This command forcefully and recursively deletes a directory along with its content.

Copy
$ cp file1 file2 or
cp file* backup (backup is dir)

$ cp –r dir1 dir2

This command copies the content of file **file1** into file **file2**.

This command copies the content of directory **dir1** into directory **dir2**

Move
mv - rename files and directories
$ mv hello.txt hi.txt

We can use mv command to rename files and directories

mv - move files and directories
$ mv /example/hello.txt /awesome/

We can also use mv command to move files and directories

Cat Command
$ cat /etc/passwd
cat /etc/passwd >> tailing.txt

cat command allows us to create single or multiple files, view contain of file, concatenate files and redirect output in terminal or files

$ cat test cat phonebook | sort

It will display contents of test file in terminal

$ cat >test2

We will create a file called **test2** file and allow to write

$ cat -n song.txt

Display Line Numbers in File

head filename
$ head fruits.txt head -5 /etc/passwd

This command will print the first 10 lines of a file

tail filename
$ tail fruits.txt tail -5 /etc/passwd

This command will print the last 10 lines of a file

pwd
$ pwd

This command will show present working directory.

Wget
$ wget http://ftp.gnu.org/gnu/wget/wget-1.5.3.tar.gz

This command is used to download files from the web

3) User Management

a) adduser: add a user to the system.

$ adduser user_name

useradd -m -c 'Serena Williams' serena (with description)

b) passwd: set the new user's initial password

$ passwd user_name

c) userdel: delete a user account and related files.

$ userdel user_name

d) addgroup: add a group to the system.

$ addgroup group_name

usermod -a -G groupname username

sudo gpasswd -d username groupname

e) delgroup: remove a group from the system.

$ delgroup group_name

f) User Information

$ /etc/passwd

g) Group Information

$/etc/group (group information)

e) User Encrypted passwords

$ /etc/shadow

File Permission

Changing file/directory permissions with 'chmod' command.

We can use the '**chmod**' command which stands for 'change mode'. Using the command, we can set permissions (read, write, execute) on a file/directory for the owner, group and the world.

Syntax

$ chmod permission filename

Octal	Decimal	Permission	Representation
000	0 (0+0+0)	No Permission	---
001	1 (0+0+1)	Execute	--x
010	2 (0+2+0)	Write	-w-
011	3 (0+2+1)	Write + Execute	-wx
100	4 (4+0+0)	Read	r--
101	5 (4+0+1)	Read + Execute	r-x
110	6 (4+2+0)	Read + Write	rw-
111	7 (4+2+1)	Read + Write + Execute	rwx

Chmod in action

chmod 644 sample.txt

We wish to give Read + Write (4+2) permissions to the owner, Read (4) permissions to the group and others.

chmod 744 helloworld.sh

We have given Read + Write + Execute (4+2+1) permissions to the Owner, Read (4) permission to the group and Read (4) permission to the others.

chmod 777 sample.txt

We have given Full Read + Write + Execute (4+2+1) permissions to the Owner, Group and the Others.

Symbolic Representation

The symbolic representation used for three different types of users is as follows:

- u is used for user/owner
- g us used for group
- o is used for others

5) Filter Commands in Linux

a)Grep : grep is used to search a particular information from a text file.

$ grep java sample.txt

$ grep tester /etc/passwd

b)Pipe : The Pipe is a command in Linux that lets you use two or more commands such that output of one command serves as input to the next. The symbol '|' denotes a pipe.

$ cat demo.txt | grep name

$ cat demo.txt | grep head -3

c)Wc : wc stands for word count. As the name implies, it is mainly used for counting purpose. It is used to find out number of lines, word count.

$ wc <option> sample.txt
$ wc –l sample.txt
$ wc –w sample.txt

6) Linux Networking

ping

To check connectivity between two nodes

$ ping

ifconfig

Display and manipulate route and network interfaces.

$ ifconfig

wget

The wget command is a command line utility for downloading files from the Internet

$ wget copy_link_location

Ip address

Display Ip address

$ ip addr

netstat

Netstat is command which list out all network connection on system like tcp, udp and port.

$ netstat

last

login history to identify whoever logged into the system recently.

$ last

7) Compress Or Backup in Linux

a)Man pages:
Man pages are online references manuals, each of which covers a specific Linux command. A typical man page covers the synopsis, description, and examples for the command in question. The synopsis shows you the structure of a command.
$ man ls

b) Zip file
ZIP is a compression and file packaging utility for Unix. Each file is stored in single .zip {.zip-filename} file with the extension .zip.
$ zip sample.zip sample.txt

c) Unzip file
Unzip will list, test, or extract files from a ZIP archive, commonly found on Unix systems
$ unzip sample.zip.

d) tar
The Linux "**tar**" stands for tape archive, This command use for Backup.
$ tar –cvf delhi.tar delhi # C- Create Archive # V- Verbose show tar progress
$ tar –xvf delhi.tart # X- Extract Archive # F- Filename

e) Find
Find command lets you search for files in a directory as well as its sub-directories.
$ find . –name sample.txt or $ find /home/ -name sample.txt or $ find . -type d
find . -name "*.txt"

8) Vi Editor

Vi (Vi Improved) popular text editor on Unix-like operating systems. It can be used to edit all kinds of plain text and program files and create new files.

a) Create vi file
$ vi sample.txt

b) Get into the vim
Type I for (Insert mode) now you can type inside vim.

c) Get out from vim
After editing type esc (escap)
if you don’t want to save changes type :q
if you want to save changes type :w
If you want to save changes and quit type :wq!

Vim editor is most important command line tool with the help of that we can edit configuration file as well as program file.

9) Shell Script

A shell script is a text file that contains a sequence of commands for a UNIX-based operating system. The shell is the operating system's command-line interface(CLI) and interpreter for the set of commands.
Shell is a UNIX term for an interface between a user and an operating system service.
Operations performed by shell scripts include file manipulation, program execution, and printing text.

Steps in creating a Shell Script:

1) Create a file using a **vi** editor(or any other editor). Name script file with **myscript.sh**
2) Start the script with **#! /bin/sh**
3) Write some code.
4) Save the script file as myscript.sh
5) Give Permission with chmod 777 myscript.sh
5) For **executing** the script type **./filename.sh**

"#!" is an operator called shebang which directs the script to the interpreter location.
So, if we use"#! /bin/sh" the script gets directed to the shell.

Sample Shell Script Code

```
#!/bin/sh
echo Enter your name
read name
echo “Welcome $name to Delhi Nielit Center“
```

Here is a Output of the script –

```
$./myscript.sh
Enter your name
User
Welcome User to Delhi Nielit Center
```

10) apt-get command

Apt-get (Advance Packaging Tool) apt-get is a command-line tool which helps in handling packages in **Linux**.
It allows users and system administrator to easily install, update, remove or search software packages on a systems.

a) Install a Package with apt-get
To install a package called tree just run the below command it will automatically find and install all required dependencies for tree.
$ apt-get install tree -y

b) Removing a Package with apt-get
To remove a package completely with their all dependencies, just run the following command
$ apt-get remove tree -y

c) Update with Apt-get
To update your system completely with all dependencies or you have outdated version of package and you want to update it to the latest stable version.
$ apt-get update -y or $ apt-get update Apache2

THANK YOU !

Any Question ?