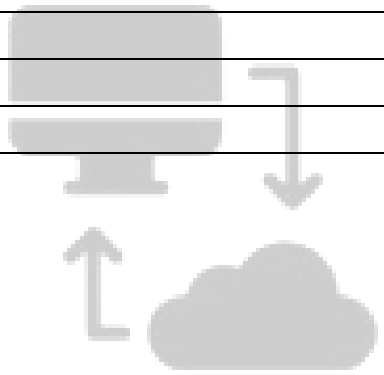
Basic Linux LAB for DevOps



1. BASIC COMMANDS

- ls Listing the file and directory
  syn: # ls <options> <Destination directory>
  example: # ls –l
- man Help
  example: # man ls
- pwd Present working directory
  # pwd
- mkdir Creating Directory
  # mkdir murali
- cd Changing the directory
  # cd murali

To Create a file

- There are four type file creation

- Cat
- Touch
- Vi editor
- nano

Cat Command

it's used to one of the file creation and right now give some content.

- To Create a file
  # cat >murali
  welcome to
  accel it academy
  ^D
- To add a Content
  # cat >>murali
  Vadapalani
  ^D
- To view the content in a file
  # cat murali
  welcome to
  Accel it academy
  Vadapalani
  #

Touch Command

- it's used to Empty file creation.

```
# touch murali
# touch a1 a2 a3        (many files at same time)
```

Gedit Command

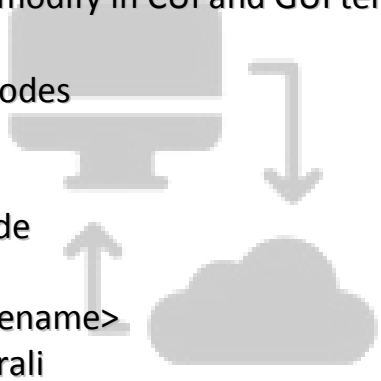
- It's file create and modify in X Windows Terminal

```
#nano <file name>
```

Vi editor

- This type of file create and modify in CUI and GUI terminal mode.
- It's a editing tool.
- We can worked on three modes
    - ESC mode
    - Insert mode
    - Command mode

Syntax : # vi <Filename>
Example : # vi murali



- Esc a – Curser move the next position switch to insert mode.
- Esc i – Curser move to the beginning of the line and switch to insert mode.
- Esc A – Curser move to the end of the line and switch to insert mode.
- Esc o – Insert the new line below the curser position and switch to insert mode.
- Esc O – Insert the new line above the curser position and switch to insert mode.
- Esc r – Replace the single character.
- Esc R – Replace the enter line after the curser position
- Esc s – Deleted current character and switch to insert mode.
- Esc S – Deleted the enter line
- Esc x – To delete a character.
- Esc gg – Move the curser to beginning of the first line.
- Esc GG – Move the curser to the beginning of the lost line.
- Esc w – Move the curser to beginning of the next word.
- Esc d – Move the curser to the beginning of previous word.
- Esc dd – Delete the current line's.
- Esc dw –delete the current word's.

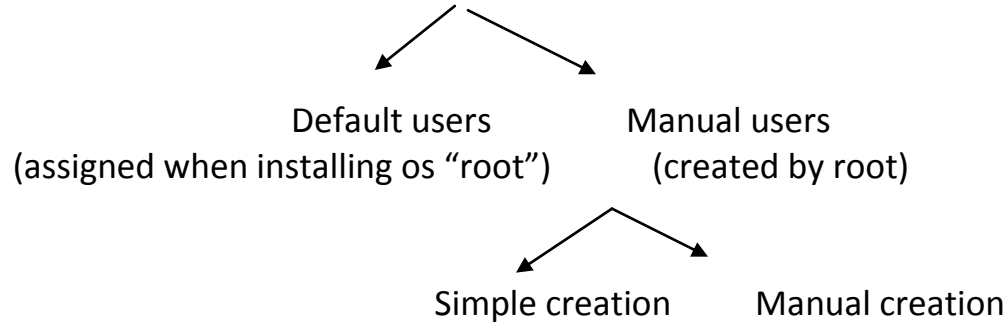
- Esc yy – Copy the current line.
- Esc yw – Copy the current word.
- Esc p – Paste the line and words.
- Esc u –Undo.
- Esc + Ctr + r – Redo.
- Esc : set nu – To display enter line with numbering.
- Esc : q – Quite without save file.
- Esc : q! – Force quite without save file.
- Esc : wq – To save and Quit.
- Esc : wq! – To force save and quit.

Other Basic Commands

- rmdir - To remove the directory
- rm –r - To remove the directory
- rm - To remove the file.
- type cat - To find out the location of the command
- file murali - To view the type of file
- wc - To view the no, of lines (l) , no, of word (w), no, of characters (c) in file
- mv - To move the file
- cp - To copy the file and directory
- head - 10 murali – To view the top 10 lines in a file
- tail – 10 murali - To view the bottom 10 lines in a file
- sort murali - To saw the order wise in a file (numerical(-n) and reverse (-r)
- grep -To search for the string
- aspell –c murali – To check the correct content in a file
- hostname murali – To change the hostname in murali
- exit -To logout M/C
- logout - To logout M/C
- clear - To clear the screen
- who - who logged in to our system currently
- whoami - To show the current user
- tty - To show the current terminals
- echo - To display the typed message
- wall - To send the broadcast message
- Write - To send the message in particular user
- date - To show the date and time
- cal - To show the calendar
- bc - Calculator

2.USERS & GROUPS

USERS Administration



- Linux we can create up to 65535 users.
- Each user will be assign the unique id starting from 0 to 65535.
- User id from 0 to 99 is assigned for build user.
- We can assign the user id from 100 to 65535.
- By default system will assign the user id starting from 500.

User Account Database

#vim /etc/shadow
#vim /etc/passwd

Simple Creation in Terminal

- Syntax : # useradd <username> or
  # adduser <username>
- Example:
  # useradd murali

by default system create:

Home directory : /murali
User ID : 500
Group ID : 500
Shell : /bin/sh

Manual Creation in Terminal

- Syntax : # useradd <options> <username> or
  # adduser <options> <username>
- Example:
  # useradd -u 100 –s /bin/bash murali
- Options :
  -u – To set the user ID.
  -g – To set the group ID.
  -G – To set the secondary group ID.
  -c – Commands.
  -s – To specify the shell (ksh, bash, and t-csh or csh).

ksh Korn shell
bash Bourne again shell
c-sh Turbo compiler shell

- To modify the user accounts:
  # usermod –u 200 –s /bin/bash murali
  to change the user ID (200) and shell (bash) in murali user.
- To deleting an user's:
  # userdel murali (to delete a without home directory)
  # userdel –r murali (to delete a with home directory)
- To set password the user:
  #passwd murali
  New password : *****
  Retype password: *****
- To set without password the user:
  # passwd –d murali (-d means without password).

Group Administration in Terminal

- A group contain similar type of user as it members. (Collection of users called as group)
- The Group Add :
  Syntax : #groupadd [-g GID] group name
  Example : #groupadd –g 100 Linux-Admin
- The Group Modify:
  Syntax : # groupmod [-g new gid] [-n new name] group name
  Example : #groupmod –g 109 –n mail-Admin Linux-Admin
- The Delete a Group:
  Example : #groupdel Linux-Admin

Graphical Mode (User & Group)

On the GNOME desktop
↓
Main menue button (on panel)
↓
PROGRAMS
↓
SYSTEM
↓
User manager

3.FILES PERMISSIONS

- To change the permission to file and directory's

-/- - -/- - - /- - -

Types of the Files

- \- Regular file
- d Directory
- b Block device
- l Linking files
- c Character files

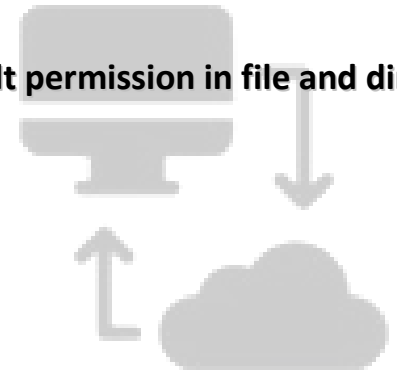
Default permission in file and directory

- File

- / r w -/r - - /r - -

- Directory

d / r w x /r – x /r – x



File permission can be assign two ways

- Symbolic method.
- Numeric 0r Absolute method.

Symbolic Method

- \+ To add a Permission
- \- To remove a permission
- = To assign permission to equal
- U User or Owner
- G Group
- O Other's or Public
- a All (user, group, and other's)

Examples

- To create a file

```
# touch murali
# ls –l
-/ r w - / r - - /r - -
```

- To change the permission

```
Ex 1: # chmod  < Permission>  <file or directory>
# chmod g+wx murali
-/ r w -/r w x /r - -
Ex 2: # chmod a=rw murali

- / r w - /r w - /r w –
```

Numeric or Absolute Method

- Permission can be assigned using numeric word.

4 read	4+2 = 6 = read and write
2 write	4+1 = 5 = read and execute
1 Execute	4+2+1= 7 = read ,write and Execute

Examples

- Syntax :

```
#chmod <permission> <File or Directory >
# chmod  U G O   file or dir
```

- Example:

```
#chmod 742 murali
d/ r w x / r - - /- w -
# chmod 312 murali
- / - w x /- - x / - w –
```

4.FILE COMPRESSION

- To compressing the files.

* gzip :

It's Compressing Linux and Unix based files. It can compress up to 75% of the current files. The Compressed file will be in ".gz" format. Ex:

Ex: "murali.gz"

1. To Compress the file:

Syntax : # gzip <Filename>
Example : # gzip murali

2 To Unzipped the File:

Example : # gunzip murali.gz

3 To View the content in a gzip file :
Example : zcat murali.gz

* bzip2 :

It's Compressing Small based files. It can compress up to 65% of the current files. The Compressed file will be in ".bz2" format. Ex: Ex: "murali.bz2"

1. To Compress the file:

Syntax : # bzip2 <Filename>
Example : # bzip2 murali

2 To Unzipped the File:

Example : # bunzip2 murali.bz2

3 To View the content in a bzip file :
Example : bzcat murali.bz2

tar compression

- To compress a folder with keeping the original folder as it is
- It is same as winzip and winrar in Microsoft

Create a directory and keep files in it

[~]#mkdir aravind
[~]#cd aravind
[aravind]# touch a1 a2 a3

[aravind]# cd ..

To view the size and permissions of directory or file

[~]#ls –ld aravind

Compress the file using tar

[~]# tar cvf naveen.tar aravind *naveen.tar is the name that how you want to change the directory name you can save it as also aravind.tar

To list the all tar files

[~]# tar tvf naveen.tar aravind

[~]#ls

[~]#rm –rf aravind/

[~]#ls

To extract files

[~]# tar xvf naveen.tar

aravind /a1

aravind /a2

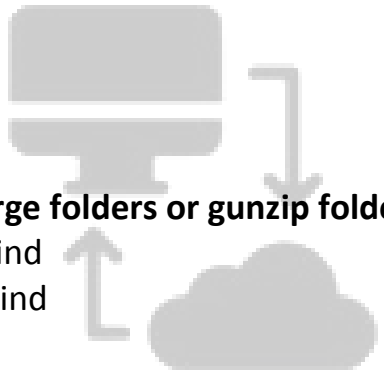
aravind /a3

To compress, list, extract large folders or gunzip folders / More compression

[~]# tar cvzf naveen.tar aravind

[~]# tar tvzf naveen.tar aravind

[~]# tar xvzf naveen.tar



5.Firewall with IP tables

- The Linux kernel contains advanced tools for packet filtering, the process of controlling network packets as they attempt to enter, move through, and exit your system.
- Structure:
  #iptables [-t <table-name>] <command> <chain-name> <parameter-1> <option -1> <parameter –n> <option –n>
- Commands :

Lab Steps

To Add Rules

sudo iptables -A INPUT -p tcp --dport 22 -j ACCEPT
sudo iptables -A INPUT -p tcp --dport 80 -j ACCEPT
sudo iptables -A INPUT -p tcp --dport 80 -j DROP
sudo iptables -A INPUT -p tcp --dport 1023 -j DROP

To delete rule

sudo iptables -D INPUT -p tcp --dport 80 -j DROP
sudo iptables -D INPUT -p tcp --dport 80 -j ACCEPT

Port forwarding

iptables -A PREROUTING -t nat -i <Ethernet port of Nat> -p tcp --dport <nat port> -j DNAT --to <local server ip>:Port number

iptables -A PREROUTING -t nat -i eth0 -p tcp --dport 80 -j DNAT --to 10.0.1.23:80

iptables -D PREROUTING -t nat -i eth0 -p tcp --dport 3389 -j DNAT --to 10.0.1.23:3389

6. APACHE

Apache Web Server

- The name Apache appeared during the early development of the software because it was
  " a-patchy" server.
- Port Number : 80
- Package Name : httpd
- Daemon Name : httpd
- To Configuration File
  " /etc/httpd/conf/httpd.conf "

Lab Steps

- To check the package
  # rpm –qa httpd*
- To config the service file
  # vi /etc/httpd/conf/httpd.conf
  1032 line: servername murali.king.com.
- To Create or Put in html file
  # cd /var /www/html
  # vi index.html (don't change the html name)
  <html>
  <head> <title> test </title>
- To update the service
  # service httpd restart

IN UBUNTU

sudo apt install apache2
service apache2 status
service apache2 start

Document Root be in
/etc/apache2/sites-availble/<sitename>.conf/
Change the document root folder if needed.

Installing PHP

sudo apt-get install php -y
Then install common PHP extensions such as GD, MySQL, and so forth.

sudo apt-get install -y php-{bcmath,bz2,intl,gd,mbstring,mcrypt,mysql,zip} && sudo apt-get install libapache2-mod-php -y

7.SENDMAIL
Send mail

- It's used to mail purpose.

Lab Steps:

1. To Check the package
   # rpm –qi sendmail*
2. To modify the access file
   # vi /etc/mail/access
   murali.king.com RELAY
   local host RELAY
   127.0.0.1 RELAY
   10.0.0.9 RELAY

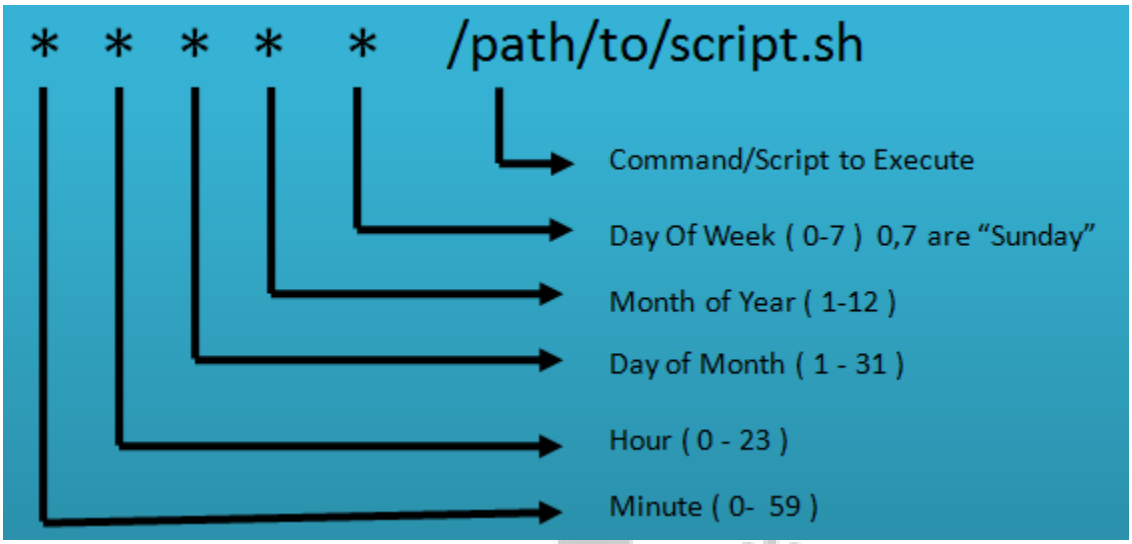
3. To config the service file
   # cd /etc/mail
   #vi sendmail.mc
   line 123 : Local _Domain (' murali.king.com')
4. To change
   # m4 sendmail.mc> /etc/sendmail.cf
5. To check
   # pgrep –l sendmail
6. To config the xinetd file
   #cd /etc/xinetd.d
   # vi imaps
   Disables = yes (u are change ' no ')
   #vi imap
   Disables = yes (u are change ' no ')
   # vi ipop2 and ipop2 and ipops3
   Disables = yes (u are change ' no ')
7. To update the service
   # service sendmail restart
   # service xinted restart

Result :

1. To send the mail to murali
   # mail murali (murali mean user)
   u are enter the some one test
2. To check the mail so login to murali user
   # mail

8.Crontab

crontab –l → To show sheduled jobs running
crontab –e → to edit jobs



CTRL –D to save jobs
Then Check the Jobs.
crontab –l

----------End of the LABS----------