Differnet flavours of linux:

* Redhat (RHEL) - owner is IBM . for testing purpose he will use centos once it is success then only he will implement on Redhat .centos used for testing purpose.
* Centos
* Fedora
* Ubuntu
* Solaris
* IBM linux.
* Oracle linux.

IN Rhel we have 8 os versions.

* RHEL 5 - kernel version – 2.6.18
* RHEL 6 - Kernal version --2.6.32
* RHEL 7 -- 3.10
* Latest is RHEL – 8 -- 4.14

To know RHEL version

Uname -a To see all information

( a means all ) -- displays entire data ,, os version , ip address , kernel , along with 64 bit or 32

To know os version

#Uname -r – r means run time environment

# Sudo su - to become as a root

# ls -l --ls means list l means long list

If permissions starts with d then it is directory

If permissions starts with – then it is file

# touch ravi

# mkdir dhoni (**To create directory )**

# Cd dhoni/ - we are in dhoni now, **cd** is to enter in to directory

# Pwd – where we are now

# ls -l -- prints the content randomly

# ls -lhrt -- recently created will be at bottom ---- h means human redable format., r – means revers, t- time stamp

Cd ..

If we want to add some data :

vi ravi

I – insert mode

ESC

Wq

Should not use ! while changing configuration files, it wont show the errors

Cat ravi - to display the content

> Ravi -- erases all the data in ravi

For every server there are mandatory things ip and hostname:

* To know ip:

If config -a

Ip a

* To know hostname

# Hostname

# Tail -3 filename – display last 3 lines

# Tail -- by default it displays 10 lines

To display top content of file

# Head -5 ravi

# Head filename

Less ravi or more ravi -- to see content of file page by page or line by line

# Id – with which user u logged in

# Who am I - with which user u logged in

Su - means switch user

Useradd rakesh

Su rakesh -- it wont change ur present working directory

Exit

logout

Su -ravi - the present working directory will change

Opt belongs to root

logout

Sudo su - -- now you became as root user (Sudo – switch user do)

How to start service

Service sshd status

Service sshd start

Service sshd stop

* If we want changes permenently do changes in configuration files

What is diff b/w ssh and telent:

* ssh username@ipadress --- connecet to the server ex: ssh root@ipadress
* If we want to connecet to another server then it will expect password of that server.
* Ssh encrypts the password, telenet wont encrypt the password. -----------

Port NUBERS:

20 – for FTP - (data connection establish)

21 – for FTP – ( transfer the data )

22 – for ssh

23 – for telenet

25 – for smtp

53 – DNS

67 - DHCP

80 - http

443 - https

2049 – for NFS ( network file system)

123 – NTPD – network time protocol ( if many servers are running they need to run on same tme)

143 – for IMAP

3306 – for MYSQL

How to copy a file?

* Cp source destination

If you want to tranfer a file or directory from one server to other

# scp source destination (SCP - secure copy)

Lets say lapgty01:- contains /home/ravi

lapgty02:/tmp -- there is tmp folder , if u want to copy from ravi to tmp then use below command

After loggin to server - lapgty01

# scp /home/ravi lapgty02:/tmp ( lapgty02 – it is a server

# rsync : it copies only modified data where as SCP copies the entire data.

**Standard file system:**

**What ever we do it must be stored under this, these are the fixed file system:**

**Thse are Default os file systems :**

/ --

/boot -- kernel info is saved under /boot

/tmp

/usr

/var

/home

/opt

# du -sh -- (du - diskusage s- size h – human readable format ) - to check diskusage

# du -sm -- display in MB

# du – sg

How to see the mouted file system:

**# df -h ( d**isk file system in human readable format)

# du -hp ( files system details)

# du -sh \* | tail ( disk usage details)

Different ways to shut down the server:

* Poweroff
* Halt
* Shutdown -h 0
* Init 0

Different ways to reboot the server:

* Reboot
* Shutdown -r 0
* Init 6

**Rename the file name :**

# mv vira virat --- mv is the command to rename the file name vira is already wrong existing file name ,, virat is the new command.

**Configuration file of ssh:**

* Cat /etc/ssh/sshd\_config
* How can we restrict root user to login – yes/no
* Click no

If a line starts with # then it is commented .

To look for a particular word or file we use GREP command

cat ravi | grep -i DHONI -- i is to ignore case sentive

# cat ravi | egrep -i "ravi|virat" ---to search more than one word we use egrep,

Permissions and owner ship:

-rw- r-- r--

r – 4 - read

w – 2 - write

x – 1 - execute

dir – 755 default permission for newly created directory

file – 644 default permission for newly created file

1. owner 2)group 3) others

I want to change permissions .

Chmod -R 700 /root/dr

To change ownership

Chown ravi:root dr -- to change owner

Chown :ravi dr --- to change group

Techmint ,greekdiary, nixcraft -- for linux.

-------------------------------------------------------------------------------------

**User management:**

In real time 2 users :-

Local users

Domian users : create users give credintails we can login

LDAP : create users give credintails we can login.

*Config file for user management:-*

* **/etc/passwd** - contains user information, Total 7 fields are there in this file

ravi:x:1001:1001::/home/ravi:/bin/bash

1st field is username

2nd field is x -- user called hari we haven’t set pass , I set the password , when u set pass , kernel encrypt pass and saved in etc shadow file

3rd - 1001 - userid

4th - 1001 – Gid – group id

5th field is comment

6th is home directory of user

7th is shell - 3types of shells – csh , ksh, bash -- most of the people uses bash coz user friendly.

# useradd -u 503 -g 503 -s /bin/bash -c "dba" -d /opt/kalyany kalyan

Kalyan came and asked to change some things ,

Like comment , and so then

Usermod -d /home/kalyany kalyan --- now we changed directory.

Usermod -s /bin/ksh -c “devops” kalyan

Cat /etc/password |grep kalyan

I created user how to know user created or not ?

* Useradd Lokesh
* Id Lokesh -- by using id command we come to know
* To set passwd: useradd Lokesh
* passwd -S Lokesh - we can see password status (-s means status) -- it shows PS(password set) or ( LK – means locked )
* - userdel username – (to delete a user)
* Even though it is deleted home directory exists – to check ( ls -ld /home/Lokesh)
* userdel -rf Lokesh - to delete along with home directory
* **/etc/shadow** -if we set password then it saves in shadow file
* $1 -MD5
* $5 – SHA256
* $6 – SHA512

Lokesh: .D/:18301:m:M:w:i:E

m- min nof days

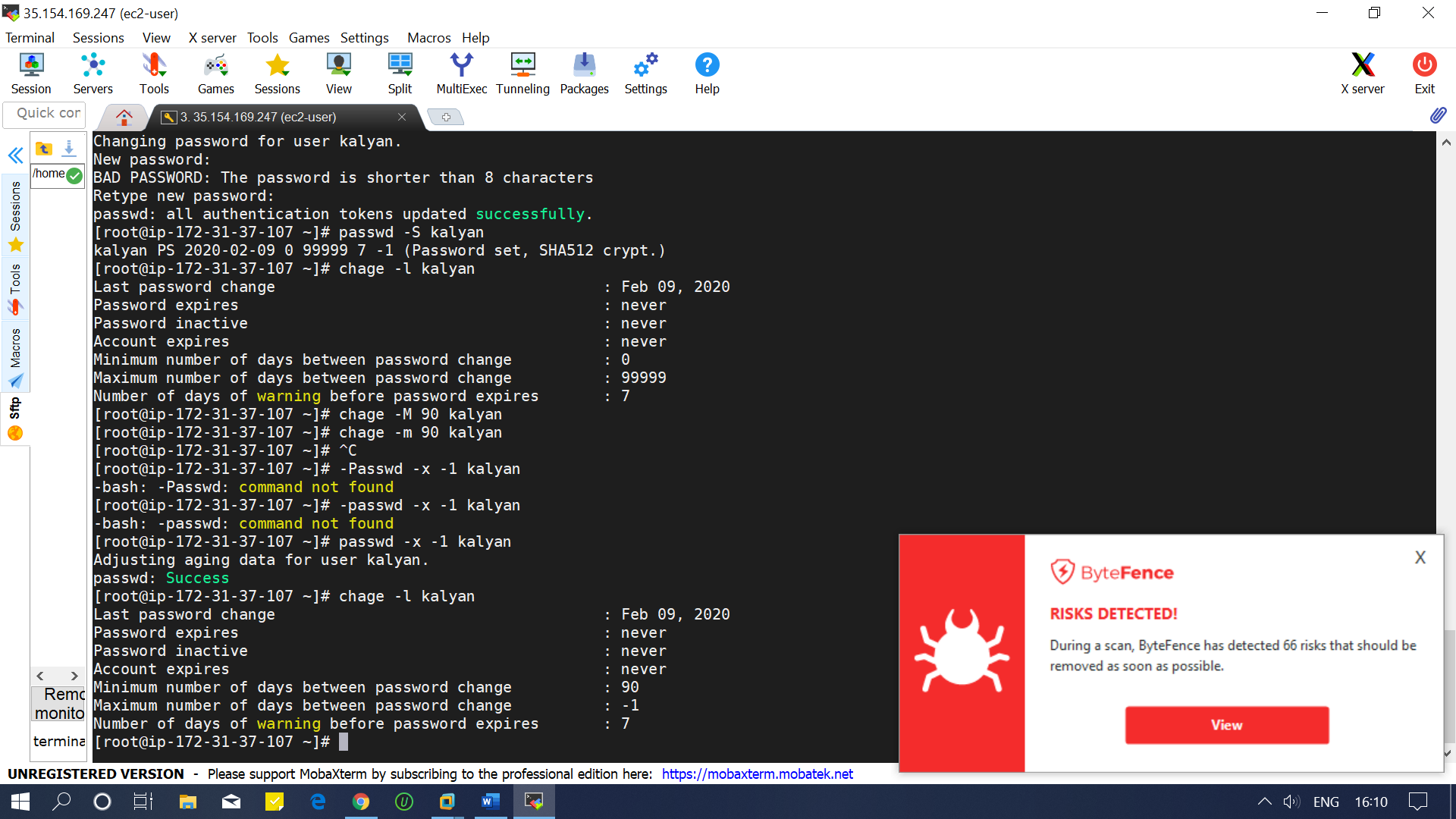
I - measn Inactive

E - means expire

1970 jan 1st

2020 feb 02

* # chage -l kalyan gives the whole details of password ,when expires those nd all
* ]# chage -M 90 kalyan
* # chage -m 90 kalyan
* # chage -w 9 kalyan
* # chage -E 2020-02-09 kalyan -- on that date it expires
* # passwd -x -1 kalyan - password never expires



Usermod -L kayan - to lock user

Usermod -U kalyan - to unloack user

Passwd -S kalyan

stat ravi -displays when it has been modified and who did that

[root@ip-172-31-37-107 ~]# stat ravi

File: ravi

Size: 29 Blocks: 8 IO Block: 4096 regular file

Device: ca02h/51714d Inode: 4671465 Links: 1

Access: (0600/-rw-------) Uid: ( 0/ root) Gid: ( 0/ root)

Context: unconfined\_u:object\_r:admin\_home\_t:s0

Access: 2020-02-09 08:58:03.335747517 +0000

Modify: 2020-02-09 08:57:51.854884639 +0000

Change: 2020-02-09 09:11:41.297993880 +0000

Birth: -

[root@ip-172-31-37-107 ~]#

* **/etc/group**

**INODE:**

It is the unique number like Permissions owner ship size of the file , time stamp etc

ls -li Lokesh -- to display inode number

**softlink and hardlink:**

# ln -s originalfilename softlinkfilename-s

softlink is the shortcut of original file

if we delte original file , we lost the file, if we delete softlink file we can access data from originfile.

Inodes are differnet

**Hard link** is the mirror copy of original file

# Ln original file hardlinkfilename

-Ln f4 f4-h

Ls -li f4-h

**Process management :**

* # Uptime - to know how long sever is up and running, how many users logged in and load avg
* # w -- who logged in and what are they doing
* Load average: LA shouldn’t be more than no of cpu
* How to check no of cpus are there
* # top after executing top command just click any button we can see cpus
* # cat /proc/cpuinfo
* # cat /proc/cpuinfo | grep processor | wc -l -- here using grep and counting

Tasks = no of processes

Process states :

* R – running process
* T – termination ( stopped process
* S – slepping process
* Z – Zombie process -- it is a process in which successfully terminated , but its status did not updated to parent process.
* init is the 1st process – should not kill this
* mem : #freespace -m ( m means it displays in MB’s)- wecan see how much used how much free
* #swap: swap memory : if memory is full , we need some memory to run processes , so there will be predefined memory allocated that is swap
* Kill – kill is a command to kill the process id.
* # Kill -9 pid --it directly kills the process , it wont bother about child
* # Kill -15 pid -- it kills the child process and then parent process.
* # Ps -ef :
* # Ps aux | head -3 – to see process information -user process id , how much memory it consuming and process states.

**SAR : system activity report**

If we execute sar cmd each and every second

# sar | head -7

# sar 2 5 --- it shows for every 2 seconds and 5 times depending on value we give

If we want 2 days or for last 30 days value we get

Cd /var/log/sa/

Pwd

Ll

/var/log/sa -- it have for past last 30 days logs .

# sar -f /var/log/sa/sa09 -- we can change value in place of 09. --- to get logs

22-02-20

Acess management:

/etc/sudoers

Syntax:

Username ALL=(ALL) ALL - it asks the passwd of particular user

Java ALL=(ALL) NOPASSWD: ALL – it wont ask passwd , ALL means to gives access to all commands.

# Which cat – displays full path of any command ,, if u want to give for two commands give ,

Suddenly 5 persons came to team , if we want to give access to all of them

We ask windows team to add users in AD and we add them to group

* If we want to give access to group then

# %groupname ALL=(ALL) ALL

**TAR:- Tape archive**

**Syntax:** # tar -cvf destination source :- source : which file u r trying to Tar -- create a tarfile

Ex: /tmp/ks-script-JYFex1.log – 200k -\*d

# tar -xvf source -c destination :- extract a tar file

Ex: tar -xvf ks-scrpit-JYFexl.tar -c /tmp/

Ex: tar -tvf ks-script-JYFexl.tar

# tar -tvf tarfilename.tar :- to see content of tar file

How can I see how many disks attached to server

# fdisk -l

**File systems:**

**We have different types of filesystems:**

ext2,ext3,ext4,xfs,nfs,samba,iso9660 - ext2 is no one using - nfs :network file system.

1.standard filesystem

2. logical volume management (LVM)

How to see attached disks in the server – fdisk -l

**How to do partition :-**

Primary partition we normally do

fdisk /dev/xvda

M

N

Give the size : +2gb

We seedisk created which is raw disk

Create a directory and connect the disk so that people can use

# mkdir /ravi

We need to mount

mkfs ext3 /dev/ xvda1 -- we need to format

# mount -t ext3 /dev/xvda1 /ravi : ravi is a directory

# df -h : to see mounted file systems

1. Standard fss
2. # fdisk -l : to see attached disks in the server
3. fdisk /dev/xvdf
4. N- new partition
5. P- primary t partition
6. Wq
7. # mkfs.ext3 /dev/xvdf1
8. # mkdir /ravi
9. # mount -t ext3 /dev/xvdf1 /ravi
10. # df -h

File system config file:

/etc/fstab : under t

filesystem mountpoint filesystemtype mountoptions fsck dump mount point is on which directory we have mounted ,,,,,, fsck for every 180 days it will check if there is 0 it wont check

**/dev/xvdg /ravi ext3 default 0 0**

**Enter in to vi /etc/fstab**

**/dev/xvdg /ravi ext3 default 0 0 :if we wont do this , once reboot it goes.**

* **I need one fixed mount point but I want to extend volume**

**So LVM came in to picture : if we create volume with standard partition we cant extend so we use LVM**

**2. LVM**

**/dev/xvdh**

Pv – physical volume

Vg – volume group

Lv – logical volume

# fdisk -l -- we can see newly added disks

**# pvcreate /dev/xvdh**

**# pvs**

**# vgcreate vg00 /dev/xvdh**

**#vgs**

**# lvcreate -L +2G -n lv00 vg00 (-n lv00 - indicates name)**

**#lvs**

**# mkfs.ext3 /dev/mapper/vg00-lv00 - we have formatted**

**We have to create a directory**

**# mkdir /rcb**

**# mount -t ext3 /dev/mapper/vg00-lv00 /rcb**

**We have done the following**

**If we have a space in VG:**

**Raw disk – 100 gb**

**1st one is Raw disk**

**pv =100gb**

**vg=98gb**

**lv = 2gb**

**Mountpoint**

**#lvextend -L +2G /dev/mapper/vg00-lv00**

**To update the kernel that we have done the above change use below cmd**

**# resize2fs /dev/mapper/vg00-lv00**

**If we don’t have a space in VG ---- then attach another volume**

**pv =100gb**

**vg=100gb -- now vg left with 96 gb**

**lv = 4gb**

**we are creating an PV , we are extending the VG**

To reduce:

LV reduce

1. Unmount the file system

# umount /directory :- ex: umount /rcb

1. Run the file system check (fsck) – to check file systes are consistent are not
2. #e2fsck -f /dev/mapper/vg00-lv00
3. #resize2fs /dev/mapper/vg00-lv00 5G -- I informed kernel that I am reducing
4. lvreduce -L 5G /dev/mapper/vg00-lv00
5. mount -t ext3 /dev/mapper/vg00-lv00 /rcb

**HISTORY**

**1 user add ravi**

**2 user addravi**

**3 useradd ravi**

**4 which cat/**

**5 which cat**

**6 cat /etc/sudoers**

**7 df -hTp**

**8 df -htp**

**9 fdisk -l**

**10 # tar -xvf source -c destination**

**11 fdisk /dev/xvdf**

**12 m**

**13 fdisk -l**

**14 fdisk /dev/xvda**

**15 fdisk -l**

**16 fdisk /dev/xvda**

**17 fdisk -l**

**18 mkdir ram**

**19 mkfs.ext3 /dev/xvda2**

**20 vi /etc/fstab**

**21 fisk -l**

**22 fdisk -l**

**23 pv create /dev/xvdf**

**24 pvcreate /dev/xvdf**

**25 pvs**

**26 vgcreate vg00 /dev/xvdf**

**27 vgs**

**28 lvcreate -L +2G -n lv00**

**29 lvcreate -L +2G -n lv00 vg00**

**30 lvs**

**31 mkfs.ext3 /dev/mapper/vg00-lv00**

**32 mkdir /rcb**

**33 mount -t ext3 /dev/mapper/vg00-lv00 /rcb**

**34 df -hTp**

**35 df -htp**

**36 df -hTP**

**37 #lvextend -L +2G /dev/mapper/vg00-lv00**

**38 df -hTP**

**39 resize2fs**

**40 df -hTP**

**41 resize2fs /dev/mapper/vg00-lv00**

**42 df -hTP**

**43 fdisk -l**

**44 pvcreate /dev/xvdg**

**45 vgextend vg00 /dev/xvdg**

**46 vgs**

**47 lvextend -L +6g /dev/mapper/vg00-v00**

**48 lvextend -L +6g /dev/mapper/vg00-lv00**

**49 df -hTP**

**50 umount /rcb**

**51 df -hTP**

**52 e2fsck -f /dev/mapper/vg00-lv00**

**53 4.Resize2fs /dev/mapper/vg00-lv00 5GB**

**54 esize2fs /dev/mapper/vg00-lv00 5GB**

**55 resize2fs /dev/mapper/vg00-lv00 5GB**

**56 resize2fs /dev/mapper/vg00-lv00 5G**

**57 lvreduce -L 5G /dev/mapper/vg00-lv00**

**58 mount -t ext3 /dev/apper/vg00-lv00 /rcb**

**59 mount -t ext3 /dev/mapper/vg00-lv00 /rcb**

**60 history**

**PACKAGE MANAGEMENT:**

**#rpm -qa - to display all packages. (qa- query all) rpm – redhat package manger. ( rpm -qa | wc -l)**

**#rpm -ivh package name -- to install a package ( ivh – install verbos human readable format)**

# rpm -Uvh package name -- to update the package name

# rpm -ev package name -- to delete the package

# rpm -qR package name -- ( to install a package

# rpm -ivh --nodeps pkgname -- ( to download the package with out dependiences or ignoring them)

# rpm -Uvh --nodeps pkgname ( to upgrade a package by ignoring dependencies)

------------Yum (yellodog update modifier)--------------------------

# yum install package pckgname ( it install all packages along with dependencies)

# yum update pkgname ( to update a package)

# yum remove pkgname

# yum install pkgname -y ( no need to click yes)

# yum check-update ( it contacts central repository , redhat vendor updates to central repository,)—to know which all packages are ready to update)

# yum update -y ( what are all packages ready to update gets updated,, it takes all). – to do patching

Post execting above command we need to reboot.

For every quarter we need to do patching.

Config file of yum---- cat /etc/yum.conf

Yum Repository configuration fille - cat /etc/yum.repos.d/xxxx.repo (xxxx -🡪 this is our wish name , should end with .repo,,, /etc/yum.repos.d/ -- this is path)

[redhat-repo] --it is unique name

name=redhatrepo

baseurl=file://lapmrp90:/tmp/redhat/// ( lapmrp90 --it is a server where it connects to redhat vendor )

gpgcheck=0

enabled=1

[redhat-repo] --it is unique name

name=redhatrepo

baseurl=file:///lapmrp90:/tmp/redhat ( lapmrp90 --it is a server where it connects to redhat vendor ) -- this is a file

baseurl=ftp://lapmrp90:/tmp/redhat

baseurl=http://lapmrp90:/tmp/redhat

gpgcheck=0

enabled=1

**# yum list install -- display all installed packages**

**# Yum update -y**

**Task Scheduler:**

**crontab :**

**configuraon file : cat /etc/crontab**

**crond - this is a service for crontab**

min hours DOM MONTH DOW (Script or command you want to execute)

0-59 0-23 1-31 1-12 0-6 df-hTP 9 if I want to excecute df-htp

10 17 23 02 \* halt

34 14 15 08 \* ravi.ah

30 15 \* 8-14 0 ravi.sh ( I want toexecut on second Sunday) in 8-14 whenver Sunday comes this script executes, 0 is for sunday

Ex: (Today I want to execute at 5-10 pm

02-23

Halt )

Ex: (I want to execute one script at aug15 2:34 pm ravi.sh)

Ls -ld ravi

To execute script sh ravi.sh

If month starts with sunday

1Sunday

2Sunday 9

3Sunday 10

4sunday

5sunday

6sunday

7sunday

8Sunday

9Sunday 9

10Sunday 10

11sunday

12sunday

13sunday

14sunday

1-7 1st week

8-14 2nd week

15-21 3rd week

--

Nov – 3rd Sunday 11:34 pm

34 23 15-21 11 6 ravi.sh ( 6th is Saturday)

Crontab -l -- to display

Crontab -e -- to give entries

I want to execute a script in 2 to 3 inevery 10 min

\*/10 2-3

These are the os file systems , where we can save data belongs to os only.

/

/boot --kernal wil save here

/usr

/var -for each and everything happening in server one log should be written , to save all those logs

/home

/opt

/tmp – any user can write any data under this,, so this have permissions as 777 , any user can write

t- means sticky bit

if you enable sticky bit

to avoid deltetion of file except root and own user , we enable this sticky bit

* to enable sticky bit we should mention 1 infront of esxisting permissions

Ex: chmod 1644 f1

[root@ip-172-31-9-94 tmp]# chmod 1644 f1

[root@ip-172-31-9-94 tmp]# ls -ld f1

-rw-r--r-T 1 root root 0 Feb 23 10:25 f1

Swap :

free -m : to see memory information

How to allocate swap space

Fdisk -l

Partition

Change the partition id

Mkswap /dev/xvdf1 -- swap is the filesystem type , earlier we used ext3

Swapon /dev/xvdf1

Swapon -s to verify

Or free -m

If id is 82 then it is swap partion

If id is 83 then it is primary partition

If id is 5 then it is extended partition

Dff b/w rpm and yum : rpm we need to install all dependencies , for yum no need

SELinux : ( secure Linux)

Iptables are one type of firewalls

SELinux : ( secure Linux) : we have 3 types of SELINUX modes

1. enforce
2. permissive
3. disabled

config file for selinux : /etc/selinux/config

enforce : if u set selinux mode in enforcing , based on pre requisites it wont allow root user also,, se linux is disabled most of the time

# getenforce – tosee selinux status

# sestatus -- this also to check status

If the mode is permissive , it allow unauthorized user but it writesa log

#setenforce 1 -- enables permission

# setenforce0 --disables permission

Vi /etc/selinux/config -- to change inside the config file

Reboot – to reboot the server

# Find – way to find the files with name

# find / -iname ravi

I want to display the files which ends with .txt

# find / -mtime -10 : gives files modified in ast 10 days

To know commands executed successfully or not - # echo $?

echo $$ -- to show existing

# echo $SHELL -- to know existing shell

( 61 cd /opt/

62 pwd

63 touch ravi

64 cd

65 find / -iname ravi

66 cd /tmp/

67 touch ravi.txt

68 cd /opt/

69 touch virat.txt

70 find / -iname \*.txt

71 cd

72 find / -iname \*.txt

73 find / -iname \*.txt | ec -l

74 find / -iname \*.txt | wc -l

75 ~]# find / -mtime -10

76 find / -mtime -10

77 echo $?

78 echo $SHELL

79 echo $$)