14th Mar, 2023

Linux Vs Windows

**1. Open Source**

**2. Security**

- CLI (command line interface) , in Linux by default GUI is disabled

- Softwares Download (user permissions are so strict or limited in linux)

client OS - WINDOWS (the laptop org provides for emplooyee)

server OS - LINUX (this is where our applications are hosted)

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**Distributions in Linux**

Windows dis- Windows - 11, 10, 8, 7 2000, 98 .....

Linux -

UNIX (Open Source code)

Amazon Linux

RedHat Linux

CentOS

Ubuntu

Fedora

Debian

SUSE

Solaris

IBMaix

HP

Oracle

Ck

How to che the linux distribution?

>>cat /etc/os-release

PRETTY\_NAME="Amazon Linux 2"

**Basic Commands**

>>ifconfig - pvt IP

>>curl ifconfig.me - public IP

>>clear - clear the screen

>>cat - read the file

>>whoami - which user we are currently working as

>>pwd - present working Dir

>>ls - list contents of current dir

>>cd - change directory

>>sudo -i - switch to root (sudo su -)

HOME DIRECTORY IS (~)

>> cd ~

**Directory Structure in Linux**

>>cd /

home root etc dev boot bin sbin tmp var usr mnt opt

**Path Strategy**

1. go to test2

>>cd /root/test2 ; pwd - /root/test2

2. go to test3

a. cd /home/test1/test3 ; pwd - /home/test1/test3 (absolute path)

b. cd ../../home/test1/test3 ; pwd - /home/test1/test3 (relative path)

c. cd / ; pwd - /

cd home ; pwd - /home

cd test1 ; pwd - /home/test1

cd test3 ; pwd - /home/test1/test3

/ - base dir (:C/ Drive in windows)

home - Everyuser has a deafult home dir in "/home" with name same as username (Desktop of user)

root - home dir of root user

etc - all the system settings and application settings are stored here

dev - all the devices connected to my server

boot - kerneel and boot time requirements

bin - Binaries (programs of the commands)

sbin - system Binaries

tmp - system purpose (auto-deletion of conents not used for over 30 days)

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**Creating Files and Directories**

**Creating Directories**

mkdir <dir-name>

rmdir - removes empty dir

rm -rf dir - (r-recursively, f-forcefully)

Creating files

1. touch

2. cat

3. vi editor

vim

nano

1. touch file - create an empty file

2. cat file - read the conents

cat > file - to write the data, also over-writes the existing data

cat >> file - to append the data

3. vi editor

works on three modes

a. Escape mode (default mode)

b. Insert mode (editing mode) ---INSERT---

c. Command mode (save/discard changes) :

Insert Mode - i,I,a,A,o,O

i - start insterting from the current position

a - start insterting from the one step current position

I - start insterting from the beginning of the line

A - start insterting from the ending of the line

o - Insert a new line below the current line

O - Insert a new line above the current line

Escape Mode - Esc key

G - go to last line

gg - go to first line

yy - copy the line

p - paste the copied line

dd - delete the current line

u - undo the previous action

ctrl+r - re-do the previous action

Command Mode - :

:wq! (:-command mode, w-write/save, q-quit/close, !-forcefully)

:q!

:wq

:q

:set nu (give a temporary numbering to the lines )

:se nonu

cp file1 file2 (flie1- path of source file , file2- pathe of dest file )

mv file1 file2 (same as above , and alos rename the file)

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**User management**

useradd user - create a new user

- uid

- username

- gid

- groupname

- home dir

id user - check whether the user is present

passwd user - to set the password for the user A screenshot of a login screen

Description automatically generated with low confidence

userdel user - remove the user

how to check all the users in the server ?

>>cat /etc/passwd

how to check all the group in the server ?

>>cat /etc/group

groupadd group - create a new group

how to PasswordAuthentication (Provide login access) to the users ?

>>vi /etc/ssh/sshd\_config

edit (PasswordAuthentication no to yes)

>>systemctl restart sshd

how to provide sudo access to the users?

>>vi /etc/sudoers

add at EOF (user ALL=(ALL) ALL)

Tasks

1. How to provide password less sudo access to a user in linux?

vi /etc/sudoers

<user\_name> ALL=(ALL) NOPASSWD:ALL

2. How to provide sudo acces for user in linux to specific commands? (limited sudo access)

ex: user should be able to add users but not delete or anything else

execute (sudo useradd user)

lakshman ALL=(ALL) /sbin/useradd

3. How to restrict user to run certain commands (pwd, ls ,cd, mkdir, touch etc) commands that are in /usr/bin/

<https://www.thegeekdiary.com/how-to-disable-a-specific-command-for-a-specific-user-in-linux/>

1.Check location of the command using which (>> which mkdir)

2.Check current permissions for the command using getfacl "path to command"

>> getfacl /usr/bin/mkdir

# file: /usr/bin/mkdir

# owner: root

# group: root

user::rwx

group::r-x

other::r-x

3. Add an access control rule for the user john:

>>/bin/setfacl -m u:john:--- /bin/mkdir

4. View the updated access control:

# getfacl /bin/mkdir

getfacl: Removing leading '/' from absolute path names

# file: bin/mkdir

# owner: root

# group: root

user::rwx

user:john:---

group::r-x

mask::rwx

other::r-x

5. Test the setting:

# su - john

$ mkdir

-bash: /bin/mkdir: Permission denied

To check the logs and audits

>>cat /var/spool/mail/root

>>cat /var/log/audit/audit.log

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**Permissions & Ownerships**

drwxrwxr-x 2 anil anil 6 Mar 20 13:36 dir1

drwxrwxr-x 2 shiva shiva 6 Dec 31 02:22 dir1

Permission hardlink ownerships size Time Stamp Name

(u)rwx (7) (g)rwx (7) (o)r-x (5)

user owner permissions group owner permissions all other user permissions

r (read) - 4

w (write) - 2

x (execute) - 1

getent group groupname (to check all the users in the group)

cat /etc/passwd (list out all the users)

cat /etc/group (list out all the groups)

chmod 777 item (to alter the permissions)

usermod -G group user (to add a user to group)

usermod -aG group user (add user to a new group without exiting from any other group )

usermod -g group user (to change the default group of the user)

chown user item (change the user owner)

chgrp group item (change the group owner)

chown uid/user:gid/group item

groups (which all group the current working user is available in)

gpasswd -d user group (to remove a user from group)

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**Managing Applications**

Windows - .exe

.zip

Linux - .rpm (redhat package managers)

- .zip/.jar/.tar

- binaries

- yum (yellowdog updater modified) - package manager in Redhat family

ex:- yum install/remove pkg

apt install/remove pkg (ubuntu, debian)

wget - to download content from internet

curl - check url (to check th communication or availability)

along with -o option it is also capable of downloading content.

systemctl status pkg

systemctl start pkg

systemctl stop pkg

systemctl restart pkg

systemctl enable pkg

before after

httpd started disbale stopped

docker started enabled started

jenkins stopped enabled stopped

**Cloning using ssh**

https://www.youtube.com/watch?v=CLkl40efxuA

ssh-keygen -t rsa -f "name for key"

**Install Maven**

https://www.tecmint.com/install-apache-maven-on-centos-7/

Find a file in linux all directiories

>>find / -name filename