Virtualization

The process of separating a software from the hardware

Hypervisor works as an interface between VMs and the host machine

Type 1 Hypervisor is installed on machine with no host OS already installed whereas Type 2 sits on top of a host OS.

Linux Architecture

Hardware >Kernel > Shell >Applications/Utilities

Kernel – Drivers and Libraries

Shell – Interface between users and Kernel (CLI)

\*\* insert distribution hierarchy \*\*

File systems – how to control, store and retrieve data

Windows: FAT, FAT32, NTFS

Linux: EXT4, EXT3, BTRFS, XFS

Hidden files/directories start with “.”

File system tree starts with “/”

Linux Shell – Text interface to your computer often referred to as command line or terminal

CTRL + T / ALT + CTRL + T - Shortcuts to open

Popular text editors - vi, nano, gedit

Permissions of a file/directory:

Permissions – Owner – Group – File Size – Last Modified

d if it is a directory – Permission - Owner of file – Group – Others

drwxrwxrwx

chmod to make changes to the permissions of a file:

chmod “***binary representation” “file name”***

e.g.

r w x| r w x |r w x

4 2 1| 4 2 1| 4 2 1

7 7 7

Chmod 777 to give all permissions

chown – change owner

Grep – used to narrow down results and show lines which include only what you have asked for

***Command*** | grep ***term***

Find users – cat /etc/passwd

Name: Pointer to password: Group ID: User\_Name (you defined during installation): Room number: Work number: Home number: Home directory (/home/cyber/bin/) language used (bash)

Find passwords - /etc/shadow (Needs sudo as you won’t have the permissions to perform this task)

Advanced Package Tool – apt

sudo apt-get update – Updates the database of packages

sudo apt-get upgrade – Upgrades the actual packages

sudo apt-get install ***Package*** – installs requested package

sudo apt remove --purge ***Package*** – completely removes package

Processes

ps – Gives us processes

ps -ef – Gives us processes and the files using them

UID – User ID

PID – Process ID

PPID – Parent Process ID

Sudo kill ***PID*** – kills process

top – shows current processes with live information like CPU %

CTRL + C stops monitoring processes

Where to find logs:

Authorization Log - /var/log/auth.log

Daemon Log - /var/log/daemon.log

Debug Log - /var/log/debug

Kernel Logs - /var/log/kern.log

System Logs - /var/log/syslog

Application Logs - /var/log

If you want to read large files easier use:

more ***file\_name*** – this will put the file into pages you can read easier.

Q ends more command

tall file\_name – this will only display the last 10 lines of the file

tall -f will turn it into a monitoring version which will automatically show changes

User management:

Sudo adduser ***username*** – Creates new user

Will prompt you for a password for the account and the full name.

Su ***username*** – switch user that’s logged in

Passwd – change your password

Sudo usermod -aG sudo ***username*** – Adds user to a group

Sudo deluser ***username*** ***group***

Passwd -S – status of password

Passwd -Sa – status of all account passwords

Sudo passwd -d ***username*** – Delete password so user can’t log in

sudo deluser ***username*** – Delete user account

Scripts in Linux:

Nano ***file\_name.sh*** – opens file in nano

./filename.sh – execute file

***Variable\_Name*** = “***variable***” – Set a variable

$***Variable\_Name*** – to use variable

Read -p “Please type something …” ***Variable\_Name*** – take input to create variable

Read -s -p “Please type something …” ***Variable\_Name*** – take input for variable without showing input on terminal

Echo “***Text***” – Displays text

Touch ***file\_name*** – create file

Command > ***file\_name*** – overwrites to file

Command >> ***file\_name*** – appends to file

$PWD – used for putting location into a script

mkdir ***Directory\_name*** – make directory