Assignment - 1

Linux Boot Processes :-

It include 4 phases, and they are

(i) **Bootstrap phase**

It is a sequence of events responsible for loading the linux operating system into memory. transforming your hardware into a functional computing powerhouse.

(ii) **Boot Loader Phase**

It is critical piece of software running on an system.

It provide an interface for users to load an OS and application.

(iii) **Kernal Phase**

control is given to Kernel which is the central part all your OS and act as mediator of hardware and software components.

Kernel once loaded into the RAM it always resides on RAM until the machine is shutdown. Once the Kernel starts the first thing it does is executing **init processes**.

(iv) **Initialization Process**

init process is the root / parents process of all the process which run under linux. The first process it runs is a script after which checks

all the system properties, hardware, display, load kernel modules, file system, file system mounting. Script are executed to start / stop various process to run the system and make it functional.

Network configuration using Linux

IP : To display the IP address using the hostname commands.

dig : (Domain Information Groper). It is a linux command line utility that performs DNS lookup by querying name servers & displaying the result to you.

nslookup : It is used to query DNS server and get information about domain names and their corresponding IP address.

netstat : It prints network connection, routing tables interface statistics and multicast memberships.

It is used to diagnose network issue and service problem.

nmcli : It is a command line tool which is used for controlling network manager.

It is used to display network device status. Create, edit active / deactive and delete network connections.

route : This command provides information about the network routes configured on your system.

Storage Management

(i) Master Boot Record (MBR)

> The boot sector is also refferred to as the MBR.

> It contain the partition tab. which store information on which primary partition have been created on the hard disk so that it can then use this information to start the machine.

(ii) ext 3 File System

> It prevent loss of data integrity in the event that an unclean system shutdown occurs.

> It allows you to choose the type and level of protection that your data receives.

(iii) Network File System (NFS)

> It is a protocol that allows you to set up storage locations on your network.
> By using NFS users & programs can access files on remote system almost as if they were local files.

(iv) Samba

> It is open-source utility that enables files sharing between machines running on a single network.
> It enable linux machine to share files with machine running different Os.

(v) NTFS New technology file system

> It is also sometimes called the new technology file system.
> It is a process that the window NT OS uses for storing, organizing and finding files on a hard disk efficiently.

Cloud and Virtualization

1) OVF and OVA template
- The OVA is a newer version of the OVF format
- OVF is built function several files.
- OVA is comprised of files that were bundled together.

2) Container Technology and - Docker Basics
- Container uses an init system that can manages multiple process.
- This means entire application can run as one.

Docker Basics
- Docker technology encourges applications to be broken data into their sperate process and provide the tools to do that.

3) Types of cloud
> cloud is based operating system designed to give shared hosting providers a more stables and secure OS.

(i) Public cloud → It managed by the third parties which provide cloud service over the internet to the public.

These servis are available as pay-as-you-go billing.

2) Private cloud → They are distributed system that work on public infrastructure and provide the users with dynamic provisioning of computing resources.

Private cloud providers are HP data, Ubuntu microsoft etc.

3) Hybrid cloud → It is a heterogeneous distributed system formed by combining facilities of the public cloud and private cloud.

The major drawback of private deployment is the inability to scale on-demand and efficiently address peak loads.

4) community cloud → They are distributed systems created by integrating the services of different clouds to address the specific needs of an industry or business sector.

But sharing responsibilities among the organizations is differents.

The infrastructure is shared between organizations that have shared concerns or tasks.

5. Multi cloud → The use of multiple cloud computing services from different providers which allows organization to use the best suited services for their specific needs and avoid vendor lock-in.

This allow organization to take advantage of the different features and capabilities offered by different cloud providers.

Network Address Translation (NAT)

It enables your network to use one set of IP address for internal traffic and a second set of address for external traffic.

It is private network can communicate with devices on a public network without the need for each device to have its own unique IP address.

Types :-

(i) static NAT
(ii) dynamic NAT
(iii) Port address PAT

Software Management

1. Red Hat Package Manager (RPM)
> It is an open source program for installing uninstalling and managing software packages in Linux.
> It was developed on basis of the linux standard base.

2. Advanced Package Tool (APT)
> It used to manage linux software packages.
> The apt command line tool provides a higher user interface for and users with ini commands, resulting. behaviour, & security features.

3. Tar.gz and .tgz packages
> It used to package file together for backup or distribution purpose.
> It contain multiple files also called as tarball

4. Curl and Wget
> curl upload and download resources,
> wget primarily downloads files.

User and Group Management commands

useradd - creates new user
usermod - modify user info
userdel - delete user
passwd - change password
whoami - who am i
groupmod - modify group name, id, password
groupdel - delete group
su - start a subshell
id - display user UID and group GID and groups.
/etc/passwd - password file format
/etc/shadow - encrypted password
/etc/group files - group files format

Service Management

> **systemd**

It is a system that is designed specifically for the linux kernel. It replace the system init process to become the first process with PID = 1, which get executed in user space during the linux start-up process.

Th:

Systemctl and service commands

They both are vital and extremely similarly with systemctl being a more versatile and powerful command.

It allows users to configure and interact with system services but they belong to different initialization system.

Scheduling and Automation

1. Cron

It is an unattended program that run continuously in the background and wakeup to handle periodic service requests when required.

2. Job control command

- It is feature of the ~~xxxxxxxx~~ linux shell that allows you to manage multiple processes or within a single shell session.
- Fg command is a key part of job control.

3. Kill command

- It is used to send a signal to process, typically to terminate it.

It can use it by specifying the process ID (PID)