#### Module 3 [Network Configuration]

**Topic: Local area networking**

##### Assignment level Basic:

1. What is Network?

Answer:-

A network is a group of two or more computer systems, which are linked together. It also consists of a collection if computers, printers, scanner and other devices that are connected together.

1. What is Internet & Intranet?

Answer:-

WHAT IS INTERNET?

The Internet is a vast network that connects computers all over the world. Through the Internet, people can share information and communicate from anywhere with an Internet connection.

WHAT IS INTRANET?

An intranet is a private network contained within an enterprise that is used to securely share company information and computing resources among employees.

##### Assignment level Intermediate:

1. How many types of Network we used?

Answer:-

There are 5 types of network

* LAN
* MAN
* CAN
* PAN
* WAN

1. Different between LAN & PAN?

Answer:-

* LAN
  + - LAN stands for local area network. It is used to network computers within a limited space like an office or school by using the network media.
* PAN
  + - PAN is a personal area network which is referred to the interconnection of information technology devices mostly upto 10 meters. These interconnected devices might include laptops, mobile phones, printers or other computer devices. It is also known as wireless personal area network(WPAN).

##### Assignment level advance:

1. Explain LAN?

Answer:-

A local area network (LAN) is a collection of devices connected together in one physical location, such as a building, office, or home. A LAN can be small or large, ranging from a home network with one user to an enterprise network with thousands of users and devices in an office or school.

1. What are different types of LAN devices?

Answer:-

These are the types of Local area networks and different types of devices.

• Peer to Peer (P2P) LAN

• Token ring LAN

• Token bus LAN

• Wired LAN

• Cloud-management LAN

• Public internet

• Wired end user devices

• Mobile end-user devices

#### Topic: configured Network

##### Assignment Level Basic

1. What is configured network?

Answer:-

Network configuration is the process of assigning network settings, policies, flows, and controls. In a virtual network, it's easier to make network configuration changes because physical network devices appliances are replaced by software, removing the need for extensive manual configuration.

1. How do we configure network?

Answer:-

These types of follows to configuration the network.

• Ip address-for identification.

• Password-for added security.

• Channel and band selection-to improve performance.

• Default gateway-to make the device visible to network management tools.

• Neighbor discovery-for added visibility.

##### Assignment level Intermediate.

1. How to check the ip address?

Answer:-

: These type of follow to step and check Ip address.

Select Start > Settings > Network & Internet >Wi-Fi and then select the Wi-Fi network you’re connected to.

Under Properties, look for your IP address listed next to IPv4 address.

1. How to check the ip address through cmd?

Answer:-

1. Ans: From the desktop, navigate through; Logo > type "cmd.exe" in the "Start Search" dialog box. A command prompt window will appear.

2. At the prompt, type "ipconfig". All IP information for all network adapters in use by Windows will be displayed.

1. How can we enter static address in network adapter?

Answer:-

These type of follow by the direction.

1. Select Internet Protocol Version 4 (TCP/IPv4) > and click Properties.

2. Select Use the following IP address. ...

3. Your Ethernet adapter is now configured with static IP 192.168.0.210 and the access point web interface is accessible at http://192.168.0.100.

##### Assignment Level Advanced

1. Do a practical to release the packets from the adapter.
2. Do a practical to renew the lease of the ip address.

Answer:-

* Go to "Start > Run" and type " cmd "
* then select "OK"
* Type " ipconfig /release " and press "Enter"
* Once the prompt returns, type " ipconfig /renew ", then hit "Enter"
* Finally, type " exit "
* then press "Enter" to close the window.

1. Do a practical to check the connectivity to the google.

Answer:-

* Open a command prompt or terminal on your computer
* Type ping 8.8.8.8
* Press Enter
* If you are getting replies back then your connectivity is good.

#### Topic: Wireless networking

##### Assignment level Basic:

* 1. [What is the difference between WEP and WPA?](https://www.proprofsdiscuss.com/q/1709494/what-is-the-difference-between-wep-and-wpa)

Answer:-

WPA (Wi-Fi Protected Access) is a wireless security protocol released in 2003 to address the growing vulnerabilities of its predecessor, WEP. The WPA Wi-Fi protocol is more secure than WEP, because it uses a 256-bit key for encryption, which is a major upgrade from the 64-bit and 128-bit keys used by the WEP system

* 1. What is Wireless Network?

Answer:-

A wireless network refers to a computer network that makes use of Radio Frequency (RF) connections between nodes in the network. Wireless networks are a popular solution for homes, businesses, and telecommunications networks

##### Assignment level Intermediate:

1. What is a wireless network connection?

Answer:-

A wireless network refers to a computer network that makes use of Radio Frequency (RF) connections between nodes in the network. Wireless networks are a popular solution for homes, businesses, and telecommunications networks

1. What are the basic concepts of networking?

Answer:-

A wireless network refers to a computer network that makes use of Radio Frequency (RF) connections between nodes in the network. Wireless networks are a popular solution for homes, businesses, and telecommunications networks

##### Assignment level advance:

1. What do you need to know about networking?

Answer:-

Below are several core concepts in computer networking that a networking professional would be required to know:

• LAN vs. WAN.

• Clients and servers.

• DNS lookup & IP addresses.

• Ethernet.

• Default gateway.

• Routers and switches.

1. How do you explain computer networking?

Answer:-

Computer networking refers to interconnected computing devices that can exchange data and share resources with each other.

#### Topic: Wireless networking

##### Assignment level Basic:

1. [What is the difference between WEP and WPA?](https://www.proprofsdiscuss.com/q/1709494/what-is-the-difference-between-wep-and-wpa)

Answer:-

WPA (Wi-Fi Protected Access) is a wireless security protocol released in 2003 to address the growing vulnerabilities of its predecessor, WEP. The WPA Wi-Fi protocol is more secure than WEP, because it uses a 256-bit key for encryption, which is a major upgrade from the 64-bit and 128-bit keys used by the WEP system.

1. What is Wireless Network?

Answer:-

A wireless network refers to a computer network that makes use of Radio Frequency (RF) connections between nodes in the network. Wireless networks are a popular solution for homes, businesses, and telecommunications networks

##### Assignment level Intermediate:

1. What is a wireless network connection?

Answer:-

A wireless network refers to a computer network that makes use of Radio Frequency (RF) connections between nodes in the network. Wireless networks are a popular solution for homes, businesses, and telecommunications networks

1. What are the basic concepts of networking?

Answer:-

A wireless network refers to a computer network that makes use of Radio Frequency (RF) connections between nodes in the network. Wireless networks are a popular solution for homes, businesses, and telecommunications networks

##### Assignment level advance:

1. What do you need to know about networking?

Answer:-

Below are several core concepts in computer networking that a networking professional would be required to know:

• LAN vs. WAN.

• Clients and servers.

• DNS lookup & IP addresses.

• Ethernet.

• Default gateway.

• Routers and switches.

1. How do you explain computer networking?

Answer:-

Computer networking refers to interconnected computing devices that can exchange data and share resources with each other.

#### Topic: THE Internet

##### Assignment level Basic:

1. What do you mean by the term URL?

Answer:-

A URL (Uniform Resource Locator) is a unique identifier used to locate a resource on the Internet. It is also referred to as a web address. URLs consist of multiple parts -- including a protocol and domain name -- that tell a web browser how and where to retrieve a resource.

End users use URLs by typing them directly into the address bar of a browser or by clicking a hyperlink found on a webpage, bookmark list, in an email or from another application.

1. Term which is used to see web pages is called what?

Answer:-

A browser is a software program that allows users to view web pages. A browser is also known as a web browser or Internet browser.

##### Assignment level Intermediate:

1. In the Ethernet which topology is used?

Answer:-

Bus topology is used with Ethernet. The most used network topology is this one. Bus and star topologies, as well as coax, twisted-pair, or fibre optic cable, are options.

1. Set of rules and regulations while working on internet, which term is used?

Answer:-

Protocol are the rules that we follow while on the internet. In simplest of terms, Protocol is a set a rule devised for effective communication between two electronic devices

##### 

##### Assignment level advance:

1. What do you mean by RAS?

Answer:-

Reliability, availability and serviceability (RAS) is a set of related attributes that must be considered when designing, manufacturing, purchasing and using a computer product or component. The term was first used by IBM to define specifications for its mainframes and originally applied only to hardware.

1. What are the main search engines to get more website URL on Internet?

Answer:-

Ther are more search engines are available.

• Google.

• Microsoft Bing.

• Yahoo.

• Baidu.

• Yandex.

• DuckDuckGo.

• Ask.com.

• Ecosia.

1. What does the PROTOCOL consist of?

Answer:-

protocol, in computer science, a set of rules or procedures for transmitting data between electronic devices, such as computers.

#### Topic: Virtualization

##### Assignment level Basic:

1. What is Virtualization

Answer:-

Virtualization is a technology that allows multiple operating systems (OS) or applications to run on a single physical computer or server, sharing the underlying hardware resources. It creates a virtual or simulated environment, often referred to as a "virtual machine" (VM) or "container," which mimics the functionality of a physical computer.

1. What is the Difference between Full Virtualization and Para Virtualization?

Answer:-

Full virtualization and paravirtualization are two different approaches to virtualization, each with its own set of characteristics and use cases.

**Key Differences:**

**Guest OS Modification:** Full virtualization allows unmodified guest operating systems, while paravirtualization requires guest OS modifications.

**Performance:** Paravirtualization typically offers better performance due to reduced overhead, whereas full virtualization may have higher overhead.

**Compatibility:** Full virtualization supports a wider range of guest operating systems since it doesn't require modifications, while paravirtualization is limited to guest OSes that have been adapted for it.

**Isolation:** Full virtualization provides stronger isolation between guest OSes because they are unaware of each other's presence. In paravirtualization, guest OSes have some awareness of each other and the hypervisor.

##### Assignment level Intermediate:

1. What is Hyper-visor?

Answer:-

A hypervisor, also known as a virtual machine monitor (VMM), is a software or hardware component that creates and manages virtual machines (VMs) in a virtualized environment. Its primary role is to abstract and control the physical hardware resources of a computer or server, allowing multiple guest operating systems to run concurrently on the same physical machine. The hypervisor creates a layer of abstraction between the hardware and the virtual machines, ensuring that each VM operates as if it has exclusive access to the underlying hardware resources.

1. What are different hypervisors available in Linux?

Answer:-

Linux provides several hypervisors or virtualization solutions that allow you to create and manage virtual machines (VMs) on Linux-based systems. These hypervisors can be broadly categorized into two main types: Type 1 (bare-metal) and Type 2 (hosted) hypervisors. Here are some of the popular hypervisors available for Linux:

**Type 1 Hypervisors (Bare-Metal Hypervisors):**

**1. KVM (Kernel-based Virtual Machine):** KVM is a Linux kernel module that turns the host system into a hypervisor. It allows you to run multiple virtual machines with various guest operating systems. KVM is well-integrated into the Linux kernel and is known for its performance and security. Tools like QEMU are often used in conjunction with KVM to manage virtual machines.

**2. Xen:** Xen is a mature and powerful open-source hypervisor that supports both paravirtualization and hardware-assisted virtualization. It provides a stable and efficient virtualization platform and is used by various cloud providers. Xen can be used as a standalone hypervisor or integrated into Linux distributions.

**Type 2 Hypervisors (Hosted Hypervisors):**

**1. VirtualBox:** Oracle VM VirtualBox is a popular open-source virtualization software that runs on Linux and other platforms. It is a type 2 hypervisor that allows you to create and manage VMs on your Linux desktop or server. VirtualBox is known for its user-friendly interface and support for a wide range of guest operating systems.

**2. VMware Workstation:** VMware Workstation is a commercial type 2 hypervisor that offers advanced features for creating and managing VMs on Linux desktop systems. It provides a user-friendly interface and is often used for software development and testing.

**3.** **Virt-Manager:** Virt-Manager is a graphical management tool for virtualization on Linux systems, primarily using KVM as the underlying hypervisor. It provides a user-friendly interface for creating and managing VMs and is commonly used on Linux desktops.

1. **QEMU:** While QEMU can also be used in conjunction with KVM for type 1 virtualization, it can be used as a standalone type 2 hypervisor as well. QEMU is a versatile emulator that can run a wide variety of guest operating systems on Linux.
2. What is Virtualization and what are its types?

Answer:-

Virtualization is a technology that allows multiple operating systems (OS) or applications to run on a single physical computer or server, sharing the underlying hardware resources. It creates a virtual or simulated environment, often referred to as a "virtual machine" (VM) or "container," which mimics the functionality of a physical computer.

There are several types of virtualization, each catering to different use cases and requirements:

**1. Hardware Virtualization (Server Virtualization):**

- Type 1 Hypervisor (Bare-Metal):

This type of hypervisor runs directly on the physical hardware without the need for a host operating system. It provides high performance and isolation.

- Type 2 Hypervisor (Hosted): Type 2 hypervisors run on top of a host operating system. They are typically used for development and testing scenarios.

**2. Operating System Virtualization (Containerization):**

- Containers: Containers are lightweight, OS-level virtualization instances that share the host OS's kernel but have isolated user spaces. Docker and Kubernetes are popular containerization technologies.

- Linux Containers (LXC): LXC is a Linux-based OS virtualization method that offers a compromise between traditional virtualization and containers. It provides isolation at the OS level while sharing the kernel.

**3. Application Virtualization:**

- Application virtualization decouples software applications from the underlying OS and hardware, allowing them to run on various systems without installation. Examples include Wine (for running Windows applications on Linux) and Java Virtual Machines (JVMs).

**4. Storage Virtualization:**

- Storage virtualization abstracts physical storage resources and presents them as a single, manageable pool. It enables features like data migration, replication, and snapshotting.

**5. Network Virtualization:**

- Network virtualization abstracts network resources to create multiple virtual networks on a single physical network infrastructure. It is often used in software-defined networking (SDN) and cloud environments.

**6. Desktop Virtualization (VDI - Virtual Desktop Infrastructure):**

- Desktop virtualization allows multiple user desktop environments to run on a single server or cloud infrastructure. Users access their virtual desktops remotely.

**7. Memory Virtualization:**

- Memory virtualization technologies manage memory resources to improve efficiency and enable dynamic allocation of memory to virtual machines.

**8. GPU Virtualization:**

- GPU virtualization allows multiple virtual machines or applications to share the resources of a single physical GPU, which is crucial for graphics-intensive workloads, gaming, and AI/ML applications.

##### Assignment level advance:

* 1. Name the components that are used in VMware infrastructure What is benefits of Virtualization?

Answer:-

Some of the key components and products in the VMware infrastructure are:

1. VMware vSphere: This is the core virtualization platform that includes several components:

- VMware ESXi: A bare-metal hypervisor that runs directly on the physical hardware.

- vCenter Server: Centralized management and monitoring of virtualized environments.

- vSphere Client: A web-based interface for managing virtual machines and infrastructure.

2. VMware vCenter Server: It is a central management platform for vSphere environments. It provides features like VM management, performance monitoring, and resource allocation.

3. VMware vSAN (Virtual Storage Area Network): Software-defined storage solution that aggregates local or direct-attached storage devices into a single, shared datastore, improving storage efficiency and performance.

4. VMware NSX: A network virtualization and security platform that enables the creation of virtual networks and micro-segmentation for enhanced security.

5. VMware Horizon: A virtual desktop infrastructure (VDI) solution that allows organizations to deliver virtualized desktops and applications to end-users.

6. VMware vRealize Suite: A set of cloud management tools for automating and managing cloud and infrastructure resources.

7. VMware Cloud Foundation: An integrated software stack that combines compute virtualization (vSphere), storage virtualization (vSAN), and network virtualization (NSX) to provide a complete hyper-converged infrastructure solution.

8. VMware Cloud Director: A cloud service delivery platform for service providers to manage and deliver cloud services to customers.

9. VMware Workspace ONE: A unified endpoint management and digital workspace platform for secure access to applications and data from any device.

10. VMware Tanzu: A portfolio of products and services for building, managing, and running containerized applications and Kubernetes clusters.

**Benefits of VMware Infrastructure:**

1. Resource Consolidation

2. Isolation and Security

3. Flexibility and Scalability

4. Disaster Recovery

5. Management and Automation

6. High Availability

7. Cost Savings

8. Performance

9. Application Mobility

10. Ecosystem and Support