**Networking Questions Series**

**Q #26) Differentiate Communication and Transmission?**

**Answer:** Through Transmission the data gets transferred from source to destination (only one way). It is treated as the physical movement of data.

Communication means the process of sending and receiving data between two media (data is transferred between source and destination in both ways).

**Q #27) Describe the layers of the OSI model?**

**Answer:** OSI model stands for Open System Interconnection It is a framework that guides the applications on how they can communicate in a network.

**OSI model has seven layers. They are listed below,**

1. **Physical Layer**: Deals with transmission and reception of unstructured data through a physical medium.

2. **Data Link Layer:** Helps in transferring error-free data frames between nodes.

3. **Network Layer:** Decides the physical path that should be taken by the data as per the network conditions.

4. **Transport Layer:** Ensures that the messages are delivered in sequence and without any loss or duplication.

5. **Session Layer:** Helps in establishing a session between processes of different stations.

6. **Presentation Layer:** Formats the data as per the need and presents the same to the Application layer.

7. **Application Layer:** Serves as the mediator between Users and processes of applications.

**Q #28) Explain various types of networks based on their sizes?**

**Answer:** The size of the network is defined as the geographic area and the number of computers covered in it. **Based on the size of the network they are classified as below:**

1. **Local Area Network (LAN):** A network with a minimum of two computers to a maximum of thousands of computers within an office or a building is termed as LAN. Generally, it works for a single site where people can share resources like printers, data storage, etc.

2. **Metropolitan Area Network (MAN):** It is larger than LAN and used to connect various LANs across small regions, a city, campus of colleges or universities, etc which in turn forms a bigger network.

3. **Wide Area Network (WAN):** Multiple LANs and MAN’s connected together form a WAN. It covers a wider area like a whole country or world.

**Q #29) Define various types of Internet connections?**

**Answer: There are three types of Internet connections. They are listed below:**

1. **Broadband Connection:** This type of connection gives continuous high-speed Internet. In this type, if we log off from the Internet for any reason then there is no need to log in again. **For Example,** Modems of cables, Fibres, wireless connection, satellite connection, etc.

2. **Wi-Fi:** It is a wireless Internet connection between the devices. It uses radio waves to connect to the devices or gadgets.

3. **WiMAX:** It is the most advanced type of Internet connection which is more featured than Wi-Fi. It is nothing but a high-speed and advanced type of broadband connection.

**Q #30) A few important terminologies we come across networking concepts?**

**Answer: Below are a few important terms we need to know in networking:**

 **Network:** A set of computers or devices connected together with a communication path to share data.

 **Networking:** The design and construction of a network are termed as networking.

 **Link:** The physical medium or the communication path through which the devices are connected in a network is called a Link.

 **Node:** The devices or the computers connected to the links are named as nodes.

 **Router/Gateway:** A device/computer/node that is connected to different networks is termed as a Gateway or Router. The basic

difference between these two is that Gateway is used to control the traffic of two contradictory networks whereas the router controls the traffic of similar networks.

 **The router** is a switch that processes the signal/traffic using routing protocols.

 **Protocol:** A set of instructions or rules or guidelines that are used in establishing communications between computers of a network is called Protocol.

 **Unicasting:** When a piece of information or a packet is sent from a particular source to a specified destination then it is called Unicasting.

 **Anycasting:** Sending the datagrams from a source to the nearest device among the group of servers that provide the same service as the source is termed as Anycasting.

 **Multicasting:** Sending one copy of data from a single sender to multiple clients or receivers (selected clients) of the networks which are in need of such data.

 **Broadcasting:** Sending a packet to each device of the network is termed as broadcasting.

**Q #31) Explain the characteristics of networking?**

**Answer: The main characteristics of networking are mentioned below:**

 **Topology:** This deals with how the computers or nodes are arranged in the network. The computers are arranged physically or logically.

 **Protocols:** Deals with the process of how computers communicate with one another.

 **Medium:** This is nothing but the medium used by computers for communication.

**Q #32) How many types of modes are used in data transferring through networks?**

**Answer: Data transferring modes in computer networks are of three types. They are listed below,**

1. **Simplex:** Data transferring which takes place only in one direction is called Simplex. In Simplex mode, the data gets transferred either from sender to receiver or from receiver to sender. **For Example,** Radio signal, the print signal given from computer to printer, etc.

2. **Half Duplex:** Data transferring can happen in both directions but not at the same time. Alternatively, the data is sent and received. **For Example,** Browsing through the internet, a user sends the request to the server and later the server processes the request and sends back the web page.

3. **Full Duplex:** Data transferring happens in both directions that too simultaneously. **For Example,** Two-lane roads where traffic flows in both directions, communication through telephone, etc.

**Q #33) Name the different types of network topologies and brief their advantages?**

**Answer:** Network Topology is nothing but the physical or logical way in which the devices (like nodes, links, and computers) of a network are arranged. Physical Topology means the actual place where the elements of a network are located.

Logical Topology deals with the flow of data over the networks. A link is used to connect more than two devices of a network. And more than two links located nearby form a topology.

**Network topologies are classified as below:**

1. **Bus Topology:** In Bus Topology, all the devices of the network are connected to a common cable (also called as the backbone). As the devices are connected to a single cable, it is also termed as Linear Bus Topology.

The advantage of bus topology is that it can be installed easily. And the disadvantage is that if the backbone cable breaks then the whole network will be down.

**b) Star Topology:** In Star Topology, there is a central controller or hub to which every node or device is connected through a cable. In this topology, the devices are not linked to each other. If a device needs to communicate with the other, then it has to send the signal or data to the central hub. And then the hub sends the same data to the destination device.

The advantage of the star topology is that if a link breaks then only that particular link is affected. The whole network remains undisturbed. The

main disadvantage of the star topology is that all the devices of the network are dependent on a single point (hub). If the central hub gets failed, then the whole network gets down.

1. **Ring Topology:** In Ring Topology, each device of the network is connected to two other devices on either side which in turn forms a loop. Data or Signal in ring topology flow only in a single direction from one device to another and reaches the destination node.

The advantage of ring topology is that it can be installed easily. Adding or deleting devices to the network is also easy. The main disadvantage of ring topology is the data flows only in one direction. And a break at a node in the network can affect the whole network.

1. **d) Mesh Topology:** In a Mesh Topology, each device of the network is connected to all other devices of the network. Mesh Topology uses Routing and Flooding techniques for data transmission.

The advantage of mesh topology is if one link breaks then it does not affect the whole network. And the disadvantage is, huge cabling is required and it is expensive.

**Q #34) What is the full form of IDEA?**

**Answer:** IDEA stands for International Data Encryption Algorithm.

**Q #35) Define Piggybacking?**

**Answer:** In data transmission, if the sender sends any data frame to the receiver then the receiver should send the acknowledgment to the sender. The receiver will temporarily delay (waits for the network layer to send the next data packet) the acknowledgment and hooks it to the next outgoing data frame, this process is called Piggybacking.

**Q #36) In how many ways the data is represented and what are they?**

**Answer:** Data transmitted through the networks’ comes in different ways like text, audio, video, images, numbers, etc.

 **Audio:** It is nothing but the continuous sound which is different from text and numbers.

 **Video:** Continuous visual images or a combination of images.

 **Images:** Every image is divided into pixels. And the pixels are represented using bits. Pixels may vary in size based on image resolution.

 **Numbers:** These are converted into binary numbers and are represented using bits.

 **Text:** Text is also represented as bits.

**Q #37) What is the full form of ASCII?**

**Answer:** ASCII stands for American Standard Code for Information Interchange.

**Q #38) How a Switch is different from a Hub?**

**Answer:** Below are the differences between a Switch and a Hub,

**Below given snapshot clearly explains the difference:**



**Q #39) Define Round Trip Time?**

**Answer:** The time taken for a signal to reach the destination and travel back to the sender with the acknowledgment is termed as Round Trip Time (RTT). It is also called Round Trip Delay (RTD).

**Q #40) Define Brouter?**

**Answer:** Brouter or Bridge Router is a device that acts as both a bridge and a router. As a bridge, it forwards data between the networks. And as a router, it routes the data to specified systems within a network.

**Q #41) Define Static IP and Dynamic IP?**

**Answer:** When a device or computer is assigned a specified IP address then it is named as Static IP. It is assigned by the Internet Service Provider as a permanent address.

Dynamic IP is the temporary IP address assigned by the network to a computing device. Dynamic IP is automatically assigned by the server to the network device.

**Q #42) How VPN is used in the corporate world?**

**Answer:** VPN stands for Virtual Private Network. With the help of a VPN, remote users can securely connect to the organization’s network. Corporate companies, educational institutions, government offices, etc use this VPN.

**Q #43) What is the difference between Firewall and Antivirus?**

**Answer:** Firewall and Antivirus are two different security applications used in networking. A firewall acts as a gatekeeper which prevents unauthorized users to access the private networks as intranets. A firewall examines each message and blocks the same which are unsecured.

Antivirus is a software program that protects a computer from any malicious software, any virus, spyware, adware, etc.

**Note:** A Firewall cannot protect the system from viruses, spyware, adware, etc.

**Q #44) Explain Beaconing?**

**Answer:** If a network self-repair its problem then it is termed as Beaconing. Mainly, it is used in the token ring and FDDI (Fiber Distributed Data Interface) networks. If a device in the network is facing any problem, then it notifies the other devices that they are not receiving any signal. Likewise, the problem gets repaired within the network.

**Q #45) Why the standard of an OSI model is termed as 802.xx?**

**Answer:** The OSI model was started in the month of February in 1980. So it is standardized as 802.XX. This ‘80’ stands for the year 1980 and ‘2’ represents the month of February.

**Q #46) Expand DHCP and describe how it works?**

**Answer:** DHCP stands for Dynamic Host Configuration Protocol.

DHCP is used to assign IP addresses automatically to the devices over the network. When a new device is added to the network, it broadcasts a message stating that it is new to the network. Then the message is transmitted to all the devices of the network.

Only the DHCP server will react to the message and assigns a new IP address to the newly added device of the network. With the help of DHCP, IP management became very easy.

**Q #47) How can a network be certified as an effective network? What are the factors affecting them?**

**Answer: A network can be certified as an effective network based on below-mentioned factors:**

 **Performance:** A network’s performance is based on its transmitted time and response time. The factors affecting the performance of a network are hardware, software, transmission medium types and the number of users using the network.

 **Reliability:** Reliability is nothing but measuring the probability of failures occurred in a network and the time taken by it to recover from it. The factors affecting the same are the frequency of failure and recovery time from failure.

 **Security:** Protecting the data from viruses and unauthorized users. The factors affecting the security are viruses and users who do not have permission to access the network.

**Q #48) Explain DNS?**

**Answer:** DNS stands for Domain Naming Server. DNS acts as a translator between domain names and IP addresses. As humans remember names, the computer understands only numbers. Generally, we assign names to websites and computers like Gmail.com, Hotmail, etc. When we type such names the DNS translates it into numbers and executes our requests.

Translating the names into numbers or IP address is named as a Forward lookup.

Translating the IP address to names is named as a Reverse lookup.

**Q #49) Define IEEE in the networking world?**

**Answer:** IEEE stands for the Institute of Electrical and Electronic Engineer. This is used to design or develop standards that are used for networking.

**Q #50) What is the use of encryption and decryption?**

**Answer:** Encryption is the process of converting the transmission data into another form that is not read by any other device other than the intended receiver.

Decryption is the process of converting back the encrypted data to its normal form. An algorithm called cipher is used in this conversion process.

**Q #51) Brief Ethernet?**

**Answer:** Ethernet is a technology that is used to connect computers all over the network to transmit the data between each other.

**For Example,** if we connect a computer and laptop to a printer, then we can call it as an Ethernet network. Ethernet acts as the carrier for the Internet within short distance networks like a network in a building.

The main difference between the Internet and Ethernet is security. Ethernet is safer than the Internet as Ethernet is a closed-loop and has only limited access.

**Q #52) Explain Data Encapsulation?**

**Answer:** Encapsulation means adding one thing on top of the other thing. When a message or a packet is passed through the communication network (OSI layers), every layer adds its header information to the actual packet. This process is termed as Data Encapsulation.

**Note:** Decapsulation is exactly the opposite of encapsulation. The process of removing the headers added by the OSI layers from the actual packet is termed as Decapsulation.

**Q #53) How are networks classified based on their connections?**

**Answer:** Networks are classified into two categories based on their connection types. **They are mentioned below:**

 **Peer-to-peer networks (P2P):** When two or more computers are connected together to share resources without the use of a central server is termed as a peer-to-peer network. Computers in this type

of network act as both server and client. It is generally used in small companies as they are not expensive.

 **Server-based networks:** In this type of network, a central server is located to store the data, applications, etc of the clients. The server computer provides the security and network administration to the network.

**Q #54) Define Pipelining?**

**Answer:** In Networking, when a task is in progress another task gets started before the previous task is finished. This is termed as Pipelining.

**Q #55) What is an Encoder?**

**Answer:** Encoder is a circuit that uses an algorithm to convert any data or compress audio data or video data for transmission purposes. An encoder converts the analog signal into the digital signal.

**Q #56) What is a Decoder?**

**Answer:** Decoder is a circuit that converts the encoded data to its actual format. It converts the digital signal into an analog signal.

**Q #57) How can you recover the data from a system which is infected with a Virus?**

**Answer:** In another system (not infected with a virus) install an OS and antivirus with the latest updates. Then connect the HDD of the infected system as a secondary drive. Now scan the secondary HDD and clean it. Then copy the data into the system.

**Q #58) Describe the key elements of the protocol?**

**Answer: Below are the 3 key elements of the protocol:**

 **Syntax:** It is the format of the data. That means in which order the data is displayed.

**Semantics:** Describes the meaning of the bits in each section.

 **Timing:** At what time the data is to be sent and how fast it is to be sent.

**Q #59) Explain the difference between baseband and broadband transmission?**

**Answer:**

 **Baseband Transmission:** A single signal consumes the whole bandwidth of the cable.

 **Broadband Transmission:** Multiple signals of multiple frequencies are sent simultaneously.

**Q #60) Expand SLIP?**

**Answer:** SLIP stands for Serial Line Interface Protocol. SLIP is a protocol used for transmitting IP datagrams over a serial line.