**TECH**

**MAHINDRA**

**TECHNICAL INTERVIW QUESTIONS**

Q1. What are the two types of transmission technology available?

**Ans.** The two types of transmission technology are – **broadcast** and **point-to-point**.

Q2. What is a ‘subnet’?

**Ans.** A ‘**subnet’** is a generic term for a section of a large network, usually separated by a bridge or a router.

Q3. What is DNS?

**Ans.** The **Domain Name System (DNS)** is a central part of the Internet, providing a way to match names (a website you’re seeking) to numbers (the address for the website). Anything connected to the Internet – laptops, tablets, mobile phones, and websites – has an Internet Protocol (IP) address made up of numbers.

Q4. Explain ‘hidden shares’.

**Ans.** **A hidden or an administrative share** is a network share that is not visible when viewing another computer’s shares.

Q5. How many layers are there in the OSI model? Name them

**Ans.** There are 7 layers – physical, data link, network, transport, session, presentation, and application.

Q6. What is a ‘client’ and ‘server’ in a network?

**Ans.** **Clients** and **servers** are separate logical entities that work together over a network to accomplish a task.

Q7. What are the different ways to exchange data?

**Ans.**

Simplex

Half-duplex

Full-duplex

Q8. What is a ‘frame relay’ and in which layer does it operate?

**Ans.** **A frame relay** is a packet-switching technology. It operates in the data link layer.

## **Q9. What is a MAC address?**

**Ans.** **A MAC (Media Access Control)**address is the 48-bit hardware address of a LAN card and is usually stored in the ROM of the network adapter card and is unique.

## **Q9. What are the perquisites to configure a server?**

**Ans.**

LAN card should be connected

Root (partition on which window is installed) should be in NTFS format

Server should be configured with a static IP address

## **Q10. What is ‘beaconing’?**

**Ans.** **Beaconing** is the process that allows a network to self-repair networks problems.

## **Q11. Differentiate between ‘attenuation’, ‘distortion’, and ‘noise’.**

**Ans.** When a signal travels through a medium, it loses some of its energy due to the resistance of the medium. This loss of energy is called **attenuation**.

When a signal travels through a medium from one point to another, it may change the form or shape of the signal. This is known as **distortion**.

**Noise** is unwanted electrical or electromagnetic energy that degrades the quality of signals and data.

## **Q12. What is an IP address?**

**Ans.** An **Internet Protocol** address (IP address) is a numerical label assigned to each device (e.g., computer, printer) participating in a computer network that uses the Internet Protocol for communication.

## **Q13. Differentiate between a ‘bit rate’ and ‘baud rate’.**

**Ans.** **A bit rate** is the number of bits transmitted during one second, whereas, **baud rate** refers to the number of signal units per second that are required to represent those bits.

Baud rate = bit rate / N, where N is the no. of bits represented by each signal shift.

## **Q14. What is ‘bandwidth’?**

**Ans.** The limited range of frequency of signals that a line can carry is called the **bandwidth**.

## **Q15. What is Project 802?**

**Ans.** It is a project started by IEEE to set standards to enable intercommunication between equipment from a variety of manufacturers.

## **Q16. What is ICMP?**

**Ans.** **ICMP (Internet Control Message Protocol)** is a network layer protocol of the TCP/IP suite used by hosts and gateways to send notification of datagram problems back to the sender.

## **Q17. What are the major types of networks?**

**Ans.**

Server-based network

Peer-to-peer network

## **Q18. What are the important topologies for networks?**

**Ans.** There are three important topologies – **Star, Bus**and**Ring.**

## **Q19. Differentiate between static IP addressing and dynamic IP addressing.**

**Ans.** In **static IP addressing**, a computer (or another device) is configured to always use the same IP address, whereas in **dynamic IP addressing**, the IP address can change periodically and is managed by a centralised network service

## **Q20. What is a LAN?**

**Ans.** LAN stands for Local Area Network and it refers to the connection between computers and other network devices, located in proximity to each other.

## **Q21. What are routers?**

**Ans.** Routers connect two or more network segments. These intelligent network devices store information in its routing table such as paths, hops and bottlenecks. They determine the most accurate data transfer paths and operate in Open Systems Interconnection (OSI) Network Layer.

## **Q22. What is data encapsulation?**

**Ans.** Data encapsulation is the process of breaking down information into smaller manageable chunks before their transmission across the network.

## **Q23. What is VPN?**

**Ans.** VPN stands for Virtual Private Network. This is a connection method for adding security and privacy to private and public networks, such as Wi-Fi Hotspots and Internet. VPNs helps in establishing a secure dial-up connection to a remote server.

## **Q24. How can you secure a computer network?**

**Ans.** There are a number of ways to achieve this.

Install reliable and updated anti-virus program across the network

Ensure firewalls are setup and configured properly

Monitor firewall performance

User authentication

Update passwords regularly, every quarter

Create a virtual private network (VPN)

## **Q25. What are proxy servers and how do they protect computer networks?**

**Ans.** Proxy servers prevent external users to identify the IP addresses of an internal network. They make a network virtually invisible to external users, who cannot identify the physical location of a network without knowledge of the correct IP address.

## **Q26. What are Nodes and Links?**

**Ans.**

Nodes – Devices or data points on a larger network are known as nodes. They are individual parts of a larger data structure and contain data. They also link other nodes.

Links- A link is the physical and logical network component for interconnecting hosts or nodes in a network. It is a physical communication medium such as coaxial cable or optical fiber.

## **Q27. What is SLIP?**

**Ans.** SLIP or Serial Line Interface Protocol was developed during the early UNIX days and it is used for remote access.

## **Q28. What is TCP/IP?**

**Ans.** TCP/IP is the short form of Transmission Control Protocol / Internet Protocol. It is a set of protocol layers designed to facilitate data exchange on heterogeneous networks.

## **Q29. What common software problems lead to network defects?**

**Ans.** It can be any or a combination of –

Application conflicts

Client server problems

Configuration error

Protocol mismatch

Security issues

User policy & rights issues

## **Q30. What is client/server network?**

**Ans.** In client/server network, one or more computers act as servers. Servers offer a centralized repository of resources such as printers and files. Client refers to workstation that have an access to the server.

## **Q31. Describe networking.**

**Ans.** Networking facilitates data communication between computers and peripherals, and it is done through wired cabling or wireless links.

## **Q32. Why is encryption on a network important?**

**Ans.** Encryption is the process of changing data from its original readable format to an unreadable format, thus ensuring network security. It requires the user to use a secret key or password to decrypt the data.

## **Q33. What are the types of errors?**

**Ans.** There are two categories of errors –

Single-bit error – One-bit error per data unit

Burst error – Two or more bits errors per data unit

## **Q34. What is a client server model?**

**Ans.** Client-server model is a distributed communication framework of network processes. This framework is distributed among service requestors, clients and service providers.

## **Q35. What is TELNET?**

**Ans.** TELNET is a client-service protocol on the Internet or local area network, allowing a user to log on to a remote device and have an access to it.

Q36. What is a link?

**Ans.**  A link is a physical or a logical component of a network which interconnects devices or nodes.

Q37. What is a node?

**Ans.**  A node is a point of connection within a network for systematic data transmission. A computer or printer or any other type of device capable of sending and receiving data through a network can be called a node.

Q38. What is a gateway?

**Ans**. Basically, a gateway is a node of network that can be used as an entrance into some other network. Being a piece of hardware, it is not the same as a default gateway.

Q39.  What is Routing?

**Ans**. Routing is the process of establishing the routes that data packets take on their way to a particular destination. Routing is done with a router, basically a device used to select a path for traffic in a network, or between or across multiple networks. This network topology depends on a setup of hardware, to effectively relay data.

Q40. What is the purpose of data link layer in TCP/IP or OSI layer?

**Ans.**  Data-Link layer is responsible for transporting data within a network. The Data-link layer packages the higher-layer data into frames. This packaging process is referred to as framing or encapsulation. Data-Link layer has 2 sublayers.

Logical Link Control (LLC) sublayer

Media Access Control (MAC) sublayer

Q41. What are the key advantages of using switches?

**Ans.**  Switches interpret the bits in the received frame so that they can typically send the frame out of the one required port, rather than all other ports. They don’t create a single shared bus like hubs.

Q42. When does network congestion occur?

**Ans.**  A network congestion basically happens when applications send more data than the network devices (e.g., [routers](http://www.linfo.org/router.html) and switches) can handle or accommodate. Thereby causing buffers on these devices to fill up and sometimes overflow.

Q43. What is a ‘Window’ in networking terms?

**Answer**: Window is basically a method of controlling the flow of [packet](https://searchnetworking.techtarget.com/definition/packet)s between two network hosts or computers. In a network, window “announcements” are sent by the receiving system to the transmitting system. It is a way of acknowledging data receipt to inform current buffer size to the transmitting system.

Q44. What are the two flags used in the core handshake of a typical TCP connection establishment?

**Ans.** The two flags used in the core handshake of a typical TCP connection establishment are SYN and ACK.

Q45. What are the features of an IP access list?

**Ans.**  There are three different kinds of access lists. These are standard, extended and named. Benefits of IP access lists include the following:

Authenticate incoming rsh and rcp requests

Block unwanted traffic or users

Control access to vty

Identify or classify traffic for QoS features

Limit debug command output

Provide bandwidth control

Provide NAT control

Reduce the chance of DoS attacks

Restrict the content of routing updates

Trigger dial

Q46. What is the access list range for extended IP, extended XNS, and extended VINES?

**Ans.** For Cisco devices, the extended IP access list range is 100 – 199 and 2000–2699.

The extended XNS access list range is 500–599.

The extended VINES access list range is 101–200.

Q47. How will you use a linked list to simulate 3 TCP/IP packets?

**Ans.**  In order to use a linked list to simulate 3 TCP/IP packets, all the packets should have a source IP, a destination IP, and some data (at least 20 characters).

Step 1: We need to search the packets one by one for suspicious IP (that starts with 000).

Step 2: We will then check the data for cipher, subtract 1 from ASCII of first 8 to see if “JOHN JAY” is the data.

Step 3: Our program should ideally simulate processing six packets in 2 groups of 3.

Step 4: Then we have to check all 3 packets (or nodes) and change the IP and data in each one and check again. Instead of a linked list, a QUEUE can be used, provided the QUEUE contains the same data.

## Q48. How is a TCP connection made?

**Ans.**  A TCP connection is made as follows:

Step1: Sender and receiver synchronize so that a connection is made. The operating systems at both ends stay informed that a connection is established.

Step2: Then the sender starts transmitting data. It also gets acknowledgments. A timer is started as soon as the sender starts sending data.

Step3: If the sender has not received any acknowledgement even after the timer exceeds its limit, then it retransmits the data.

Step4: In case of windowing, if the buffer on the receiver is full, the receiver sends a stop signal to the sender. The sender stops transmitting data.

Step5: Then after processing all data, the receiver sends a go signal to the sender. Then, the sender starts transmitting data again. This is in case of windowing.

## Q49. What is a firewall and what is the security level in an ASA firewall?

**Ans.** Firewall is a layer or device placed between a trusted and an untrusted network. Its function is to deny or permit traffic access traveling into and out of the network. So, it is a protective layer that blocks unauthorized access by users on both sides of the firewall.

ASA Firewall Security Level can be 0-100. 100 is the highest security level on an ASA firewall and it represents the most trusted Zone. On the other hand, 0 is the lowest security level on an ASA Firewall.

## Q50. What is the Cisco default TCP session timeout?

**Ans.** TCP session timeout for Cisco is 1 minute. The connection slots are freed approximately 60 seconds after a normal connection close sequence. This can be configured to some other setting as per requirement. A global idle timeout duration can be set for the connection and translation slots of various protocols. If slots are not used for idle times specified, resources get returned in order to free pool.

## Q51. Which command enables failover in an ASA firewall?

**Ans.**  The command is ‘Failover’.

## Q52. What is a transparent firewall?

**Ans.** A transparent firewall acts as a line of the layer between 2 devices. Transparent firewalls easily deploy existing networks. Transparent firewalls also let in layer 3 traffic from higher security levels to lower security levels without access lists.

## Q53. Which LAN switching method is used in Cisco Catalyst 5000?

**Ans.**  Cisco Catalyst 5000 basically uses the store-and-forward switching method. The entire frame gets stored into buffers and a CRC check is performed before deciding whether or not the data frame.

## Q54. What are the different memories used in a Cisco router?

**Answer**: There are 3 types of memories used in a Cisco router namely:

NVRAM – to store the startup configuration file

DRAM – to store the configuration file which gets executed

Flash Memory – to store Cisco IOS.

## Explain how cut-through LAN switching works.

**Ans.**  Cut-Through LAN switching can be explained like this. When the router receives a data frame, it immediately sends it out again and forwards the same to the next network, as soon as it reads the destination address.

## Q55. Any particular reason for leaving your current job?

**Ans.**  I feel I am ready for a new stage and newer challenges in my career. I would like to continue growing as well as learn from my field. I have never been this confident about taking up more tasks and additional responsibilities. I don’t get too many complex opportunities to tackle in my current job role, especially related to protocols like OSPF, EIGRP, BGP and UDP. I am sure this role will surely present me with the opportunities to handle them.

## Q56. How would you explain an IP address to a layman?

**Ans.** Every machine connected to the Internet has a unique number assigned to it. This is an IP address. Without this unique number or tag on your machine, you will not be able to communicate with other users, computers and devices on the Internet.

In other words, IP address is like a telephone number, as it is unique and identifies a way to reach you exclusively. Hope I made myself clear.

## Q57. Why do you want to join this company?

**Ans.** Yours is a reputed organization and a global leader in high-end technology products and services. I truly admire this company’s rich value driven work culture. Besides, I am a huge fan of the present CEO. I came to know that he started his career as a software developer at a small firm. Moreover, the career graphs of your senior leadership team members are highly motivating. They signify that anyone ready to work hard and remain persistent, can easily grow in this organization.

## Q58. Did you apply for a position at some other company? Or What other companies are you interviewing with?

**Ans.**  I believe I am still at a very early stage of job search. I’ve applied for a number of openings but this position particularly seems the most exciting to me. Honestly, your job description is a good fit for my skill sets and knowledge. Besides, I haven’t received a call from any other organization as good as this, yet.

## Q59. Do you have any prior experience as a network engineer?

**Answer for an experienced applicant:** I am a Microsoft Certified Solutions Expert with 2 years of relevant experience as a network engineer. I started my career as a help desk support officer. Due to lack of challenges on the job, I had to switch over to Cisco and networking. As of today, I am in love with what I do for a living as a networking engineer. Every single day brings forth newer opportunities to learn at work. From these challenges, I get to pick up the latest technology. I would like to add that I have completed both Cisco Certified Network Associate (CCNA) and Cisco Certified Network Professional (CCNP) certifications last year.