Networking Interview Questions and Answers

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Networking is a very vast field. A person having clear concepts, knowledge of basic terminologies as well as practical knowledge in the field can be successful.

Here are 46 networking interview questions and answers given for your interview preparation and to clear the basic concepts of networking.

1. What is Network?

It is a system where a set of computers or physical devices are connected by using single transmission technology. The computers/physical devices can communicate with each other in a network. They can also send and receive information in that particular network.

2. Where are destination and source address located in a frame?

The packet header includes destination and source addresses.

3. What format is used for an internet packet?

The internet layer defines an official packet format and protocol called IP (Internet Protocol). The job of the internet layer is to deliver IP packets where they are supposed to go.

4. A network administrator needs audio and video service for his network. He has to send or receive data at the same data rate. Which type of ATM would quality service specification be applied there? Give example?

To facilitate the transport of audio and video data across emerging Asynchronous Transfer Mode (ATM) networks, a simple, low cost, audio/video ATM appliance, the AVATAR, has been developed. This appliance is capable of handling uncompressed bidirectional audio and NTSC video connections.

5. A network administrator wants to build a tunnel between sites offices. How will he build using the private virtual network?

To establishes a private network that can send data securely between these two locations or networks through a "tunnel." A VPN tunnel connects the two PCs or networks and allows data to be transmitted over the Internet as if it were still within those networks.

6. How can we compute the shortest path in WAN?

We use Dijkstra's algorithm to compute shortest path from each node to every other node.

7. What type of switching technique is used in WAN?

WANs can use circuit-switching or packet-switching techniques. To span long distances or many computers, networks must replace shared medium with packet switches. Each switch moves an entire packet from one connection to another. That's why they are called packet switches.

8. What type of topology used in Ethernet?

Traditional Ethernet employs a bus topology, meaning that all devices or hosts on the network use the same shared communication line.

9. Difference between LAN and WAN

In LAN network occupies the smaller area like a room a floor or a building. In WAN, network occupies larger areas like cities & countries. The Internet is a Wide Area Network.

10. What is a bridge?

A bridge is a hardware device also used to connect two LAN segments to extend a LAN. A typical bridge has two NICs, a CPU a memory and a ROM. It only runs the code stored in its ROM.

11. Defines simplex and full-duplex connection?

Some connection-oriented technologies provide **full duplex** while other allow on the simplex connection. To communicate using a **simplex design** a pair of computers must establish two connections one from computer A to computer B and another from computer B to A.

12. What is Multi-casting?

It works like broadcasting however it does not forward frames automatically to the CPU. The interface hardware is programmed in advance to accept certain frames that have a multicast address as the destination address.

13. What is FDDI?

Fiber distributed data interconnect (FDDI) is another ring technology. Its most important features are i) It uses fiber optics between stations and transmits data at 100Mbps, ii) It uses a pair of fibers to form two concentric rings.

14. Define 802.11 Wireless LAN and CSMA?

IEEE 802.11 is standard wireless LAN that uses radio signals at 2.4GHz. Its data rate is 11Mbps. The older devices use radio signals at 900MHz and data rate of 2Mbps. Bluetooth specifies a wireless LAN for short distances. It uses shared medium and radio waves instead of coaxial cable.

15. What is static and dynamic routing?

Static routing is the simplest form of routing, but it is a manual process. Dynamic routing protocols are supported by software applications running on the routing device (the router) which dynamically learn network destinations and how to get to them and also advertise those destinations to other routers.

16. What are disadvantages of Repeaters?

Repeaters do not recognize frame formats, they just amplify and retransmit the electrical signal. If a collision or error occurs in one segment, repeaters amplify and retransmit also the error onto the other segments.

17. What is 10base T?

One of several adaptations of the Ethernet (IEEE 802.3) standard for Local Area Networks (LANs). The 10Base-T standard (also called Twisted Pair Ethernet) uses a twisted-pair cable with maximum lengths of 100 meters.

18. Briefly describe the working structure of thick Ethernet.

It uses thick coax cable. AUI cable (or transceiver or drop cable) connects from NIC to a transceiver. AUI cable carries digital signal from NIC to transceiver. The transceiver generates an analog signal on the coax cable. The wires in AUI carry digital signals power and other control signals. Thick Ethernet also requires terminators to avoid signal reflectance.

19. What is the difference between Cells and Packets?

ATM designers chose cells over packets because of the following reasons:

- Cells are not variable length and memory management for them is simpler. Handling variable length packets leads to memory fragmentation.
- Variable length packets require hardware to accommodate the largest possible packet, and thus to detect the end of the packet. With cells, bits can just be counted as they arrive.
- The length of time required to send a variable length packet is variable and requires complicated interrupt scheme to detect completion of the transmission. QoS can't be guaranteed with variable length packets as easily as it can with fixed length cells.

20. What is the difference between the physical and logical topologies?

Physical Topology: The way that the workstations are connected to the network through the actual cables that transmit data -- the physical structure of the network -- is called the physical topology. It depends on the wiring scheme.

Logical Topology: The logical topology, in contrast, is the way that the signals act on the network media, or the way that the data passes through the network from one

device to the next without regard to the physical interconnection of the devices. We can say that it is defined by the specific network technology.

21. What is meant by Bridges STARTUP and STEADY State?

When a bridge first boots the address lists are empty (startup state). The bridge forwards frames to the other segment if it cannot find its destination address in its lists. After some time when the bridge has received at least one frame from every computer, it has the lists built (steady state) it forwards frames as far it is necessary.

22. What is the concept of packet switches?

To span long distances or many computers, networks must replace shared medium with packet switches. Each switch moves an entire packet from one connection to another. That's why they are called packet switches. A packet switch consists of a small computer with network interfaces, a memory and a program dedicated to packet switching function.

23. Define Vector-Distance Algorithm.

Packet switches wait for next update message and they iterate through entries in a message. If an entry has the shortest path to the destination, insert source as next hop to the destination and record distance as distance from next hop to destination plus distance from this switch to next hop.

24. What is the concept of store and forward technology?

STORE AND FORWARD: Data delivery from one computer to another is accomplished through store and forward technology. In this technology, packet switch stores incoming packet and also forwards that packet to another switch or computer.

For this purpose, packet switch has internal memory into which it can hold packet if an outgoing connection is busy. Packets for each connection held on a queue.

25. How can a bridge know whether to forward frames?

The bridges configure themselves automatically to decide which bridge will forward broadcast frames and which bridge will not. The bridges communicate with each other on the network and use Distributed Spanning Tree (DST) algorithm to decide which bridge will not forward frames if a cycle occurs.

26. Compare connection-oriented and connectionless Service.

- In connection-oriented protocol, authentication is needed while this is not a case in the connectionless protocol.
- In connection-oriented protocol, we have to establish a connection between sender and receiver while this is not a case in the connectionless protocol.
- Example of connection-oriented protocol is TCP and the example of a connectionless protocol is UDP, Internet.
- TCP is a connection-oriented protocol, it makes a connection and checks whether the data is received, and resends if it is not. UDP is a connectionless protocol, it does not guarantee delivery by first connecting and checking whether data is received.

27. ABC Company has a huge network of systems and switches. A task is given to IT Officer that if some link goes the entire network works smoothly. Which routing method will be used?

Distributed routing method is better for this purpose because Distributed routing relies on each node to compute its own routing table and build the required connections with

its neighbors. Ideally, the network operation, status, and architecture of each node is transparent. Distributed routing is more flexible than centralized routing because each node handles its own routing. The result is often improved system performance.

28. Describe permanent virtual circuits (PVC).

ATM can provide customers with virtual circuits that look like traditional leased digital circuits. Such permanent virtual circuits (PVC) last as long as the customer pay the periodic fee for its use. The forwarding tables are automatically restored after the power of equipment failure. The forwarding table entries for such permanent VC's are statically configured, the terms used by Telco's for this is provisioning. Provisioning requires two steps: 1. To determine a complete path (that is, identify the switches that will be used). 2. To choose appropriate VPI/VCI for each step in the path, and configure each adjacent pair of switches (easy, since each switch rewrites the VCI/VPI).

29. Give a comparison of wiring Schemes.

The wiring schemes are compared as follows: Separate transceiver allows computers to be powered off or disconnected from the network without disrupting other communication. The transceiver may be located in an inconvenient place, so finely malfunction transceiver can be hard. In another case, thin coax cable takes a minimum of cable. Disconnecting one computer (on one loose connection) can disrupt entire network. Hub wiring centralizes electronics and connections. It makes management easier. Bottom line 10Base-T is most popular because of lowest cost.

30. How can Switched Virtual Network be established?

ESTABLISHING AN SVC: The computer sends a connection request to the switch to which it is attached. Software in the switch finds a network path to the destination and

sends along the connection request. Each pair of switches in the path communicates to choose a VPI/VCI for their tables. Once the connection is established by the destination, a message is sent back to the originating computer to indicate the SVC is ready. If any switch or the destination computer does not agree to set up the VC, an error message is sent back and the SVC is not established.

31. We have two satellite locations, at first location one bridge is configured and at a second location, 2 bridges are configured. Which location performed will be faster?

Satellite locations with two bridges configured will perform faster. The brigade also had to provide power to virtually all of its East Timor assets. Setting up the satellite system, for example, required supplying power to both the communications station and the users' computers. A bridge that has multiple ports is known as a networking switch. Both bridges and switches are capable of directing traffic to specific network addresses instead of broadcasting the data to all devices on a network segment. This functionality makes the bridge or switches a more advanced networking device over a hub or repeater.

32. "To achieve a hierarchy, OSPF allows an autonomous system to be partitioned for routing purposes". Does this feature make OSPF more complex or powerful?

OSPF allows an autonomous system to be partitioned for routing purposes which make it complex but More powerful.

33. Why does IPv6 use separate Extension Headers?

IPv6 use separate Extension Headers. Fragmentation information is kept in the separate extension header. Each fragment has base header and (inserted) fragmentation header. Entire datagram including original header may be fragmented.

34. Write down the comparison of Distance- vector, and Link – state algorithm?

DISTANCE-VECTOR ROUTING:

- It is very simple to implement.
- Packet switch updates its own routing table first.
- It is used in RIP.

LINK-STATE ALGORITHM:

- It is much more complex.
- Switches perform independent computations.
- It is used in OSPF.

35. Write down characteristics of Routing Information Protocol(RIP)

It has the following characteristics:

- It is used for routing within an autonomous system (IGP).
- It uses UDP for all message transmissions.
- It can be used to advertise default route propagation. An organization can use RIP to install a default route in each router.
- It uses distance vector algorithm.
- RIP allows hosts to listen passively and update its routing table

36. Describe some features of IPV6.

- IPV6 addresses are 128 bits.

- The header format is entirely different.

- Additional information is stored in optional extension headers, followed by data.

- Flow label and quality of service allow audio and video applications to establish appropriate connections.

- New features can be added more easily. So it is extensible.

37. Comparison between TCP/IP reference model and ISO reference model?

- The main differences between the two models are as follows:
- TCP/IP combines the presentation and session layer issues into its application layer.
- TCP/IP combines the OSI data link and physical layers into the network access layer.
- TCP/IP appears to be a simpler model and this is mainly due to the fact that it has fewer layers.

38. What is Address Resolution?

Mapping between a protocol address and a hardware address is called Address Resolution. A host or router uses address resolution when it needs to send a packet to another computer on the same physical network. A computer never resolves the address of a computer that attaches to a remote network. In the figure below a simple Internet with routers R1 & R2 connecting three physical networks is shown each network has two host computers attached.

39. What is meant by massage oriented interface in UDP

UDP offers application programs a Message-Oriented Interface. It does not divide messages into packets for transmission and does not combine messages for delivery.

40. Why is TCP called an end to end protocol?

It provides application-to-application communication. Applications can request a connection. TCP connections are called Virtual Connections. They are created by software only. Internet does not provide software or hardware support for the connections. TCP software modules on two computers create an illusion of a connection.

41. Where should an ICMP message be sent?

ICMP message is sent in response to incoming datagrams with problems. ICMP message is not sent for ICMP message.

42. Describe the process of routing packets.

Routing is the act of moving information across an internetwork from a source to a destination.

43. Which type of NAT fails if an application uses the IP addresses instead of domain name? And why?

Twice NAT fails if an application uses the IP addresses instead of Domain Name. Because Basic NAT does not work well for communication initiated from the Internet. Twice NAT allows a site to run servers. It requires the DNS to interact with the NAT device.

44. What is the functionality of address resolution software in layering?

Address resolution software hides ugly details and allows generality in upper layers.

45. Name the six services provided by TCP

Following are the services provided by TCP:

- Connection-oriented service
- Point-to-point
- Complete reliability
- Full-duplex communication
- Stream interface
- Reliable connection startup
- Graceful connection shutdown

46. What is the meaning of Facilities for Transit Routing as a characteristic of the Border Gateway Protocol?

Facilities For Transit Routing classifies each AS as a transit system if it agrees to pass traffic through, or as a stub system if it does not BGP, allows a corporation to classify itself as a stub even if it is multi-homed (refuse to accept transit traffic).