

NETWORKING INTERVIEW QUESTIONS

1. What are 10Base2, 10Base5 and 10BaseT Ethernet LANs

10Base2—An Ethernet term meaning a maximum transfer rate of 10 Megabits per second that uses baseband signaling, with a contiguous cable segment length of 100 meters and a maximum of 2 segments.

10Base5—An Ethernet term meaning a maximum transfer rate of 10 Megabits per second that uses baseband signaling, with 5 continuous segments not exceeding 100 meters per segment.

10BaseT—An Ethernet term meaning a maximum transfer rate of 10 Megabits per second that uses baseband signaling and twisted pair cabling.

2. Explain the difference between an unspecified passive open and a fully specified passive open

An unspecified passive open has the server waiting for a connection request from a client. A fully specified passive open has the server waiting for a connection from a specific client.

3. Explain the function of Transmission Control Block

A TCB is a complex data structure that contains a considerable amount of information about each connection.

4. Explain a Management Information Base (MIB)

A Management Information Base is part of every SNMP-managed device. Each SNMP agent has the MIB database that contains information about the device's status, its performance, connections, and configuration. The MIB is queried by SNMP.

5. Explain anonymous FTP and why would you use it

Anonymous FTP enables users to connect to a host without using a valid login and password. Usually, anonymous FTP uses a login called anonymous or guest, with the password usually requesting the user's ID for tracking purposes only. Anonymous FTP is used to enable a large number of users to access files on the host without having to go to the trouble of setting up logins for them all. Anonymous FTP systems usually have strict controls over the areas an anonymous user can access.

6. Explain a pseudo tty

A pseudo tty or false terminal enables external machines to connect through Telnet or rlogin. Without a pseudo tty, no connection can take place.

7. Explain REX

What advantage does REX offer other similar utilities?

8. What does the Mount protocol do?

The Mount protocol returns a file handle and the name of the file system in which a requested file resides. The message is sent to the client from the server after reception of a client's request.

9. Explain External Data Representation

External Data Representation is a method of encoding data within an RPC message, used to ensure that the data is not system-dependent.

10. Explain the Network Time Protocol?

11. BOOTP helps a diskless workstation boot. How does it get a message to the network looking for its IP address and the location of its operating system boot files?

BOOTP sends a UDP message with a subnetwork broadcast address and waits for a reply from a server that gives it the IP address. The same message might contain the name of the machine that has the boot files on it. If the boot image location is not specified, the workstation sends another UDP message to query the server.

12. Explain a DNS resource record

A resource record is an entry in a name server's database. There are several types of resource records used, including name-to-address resolution information. Resource records are maintained as ASCII files.

13. What protocol is used by DNS name servers?

DNS uses UDP for communication between servers. It is a better choice than TCP because of the improved speed a connectionless protocol offers. Of course, transmission reliability suffers with UDP.

14. Explain the difference between interior and exterior neighbor gateways

Interior gateways connect LANs of one organization, whereas exterior gateways connect the organization to the outside world.

15. Explain the HELLO protocol used for

The HELLO protocol uses time instead of distance to determine optimal routing. It is an alternative to the Routing Information Protocol.

16. What are the advantages and disadvantages of the three types of routing tables?

The three types of routing tables are fixed, dynamic, and fixed central. The fixed table must be manually modified every time there is a change. A dynamic table changes its information based on network traffic, reducing the amount of manual maintenance. A fixed central table lets a manager modify only one table, which is then read by other devices. The fixed central table reduces the need to update each

machine's table, as with the fixed table. Usually a dynamic table causes the fewest problems for a network administrator, although the table's contents can change without the administrator being aware of the change.

17. Explain a TCP connection table

18. Explain source route

It is a sequence of IP addresses identifying the route a datagram must follow. A source route may optionally be included in an IP datagram header.

19. Explain RIP (Routing Information Protocol)

It is a simple protocol used to exchange information between the routers.

20. Explain SLIP (Serial Line Interface Protocol)

It is a very simple protocol used for transmission of IP datagrams across a serial line.

21. Explain Proxy ARP

It is using a router to answer ARP requests. This will be done when the originating host believes that a destination is local, when in fact it lies beyond the router.

22. Explain OSPF

It is an Internet routing protocol that scales well, can route traffic along multiple paths, and uses knowledge of an Internet's topology to make accurate routing decisions.

23. Explain Kerberos

It is an authentication service developed at the Massachusetts Institute of Technology. Kerberos uses encryption to prevent intruders from discovering passwords and gaining unauthorized access to files.

24. Explain a Multi-homed Host

It is a host that has multiple network interfaces and that requires multiple IP addresses is called a Multi-homed Host.

25. Explain NVT (Network Virtual Terminal)

It is a set of rules defining a very simple virtual terminal interaction. The NVT is used in the start of a Telnet session.

26. Explain Gateway-to-Gateway protocol

It is a protocol formerly used to exchange routing information between Internet core routers.

27. Explain BGP (Border Gateway Protocol)

It is a protocol used to advertise the set of networks that can be reached within an autonomous system. BGP enables this information to be shared with the autonomous system. This is newer than EGP (Exterior Gateway Protocol).

28. Explain autonomous system

It is a collection of routers under the control of a single administrative authority and that uses a common Interior Gateway Protocol.

29. Explain EGP (Exterior Gateway Protocol)

It is the protocol the routers in neighboring autonomous systems use to identify the set of networks that can be reached within or via each autonomous system.

30. Explain IGP (Interior Gateway Protocol)

It is any routing protocol used within an autonomous system.

31. Explain Mail Gateway

It is a system that performs a protocol translation between different electronic mail delivery protocols.

32. Explain wide-mouth frog

Wide-mouth frog is the simplest known key distribution center (KDC) authentication protocol.

33. What are Digrams and Trigrams

The most common two letter combinations are called as digrams. e.g. th, in, er, re and an. The most common three letter combinations are called as trigrams. e.g. the, ing, and, and ion.

34. Explain silly window syndrome

It is a problem that can ruin TCP performance. This problem occurs when data are passed to the sending TCP entity in large blocks, but an interactive application on the receiving side reads 1 byte at a time.

35. Explain region

When hierarchical routing is used, the routers are divided into what we call regions, with each router knowing all the details about how to route packets to destinations within its own region, but knowing nothing about the internal structure of other regions.

36. Explain multicast routing

Sending a message to a group is called multicasting, and its routing algorithm is called multicast routing.

37. Explain traffic shaping

One of the main causes of congestion is that traffic is often busy. If hosts could be made to transmit at a uniform rate, congestion would be less common. Another open loop method to help manage congestion is forcing the packet to be transmitted at a more predictable rate. This is called traffic shaping.

38. Explain packet filter

Packet filter is a standard router equipped with some extra functionality. The extra functionality allows every incoming or outgoing packet to be inspected. Packets meeting some criterion are forwarded normally. Those that fail the test are dropped.

39. Explain virtual path

Along any transmission path from a given source to a given destination, a group of virtual circuits can be grouped together into what is called path.

40. Explain virtual channel

Virtual channel is normally a connection from one source to one destination, although multicast connections are also permitted. The other name for virtual channel is virtual circuit.

41. Explain logical link control

One of two sublayers of the data link layer of OSI reference model, as defined by the IEEE 802 standard. This sublayer is responsible for maintaining the link between computers when they are sending data across the physical network connection.

42. Why should you care about the OSI Reference Model

It provides a framework for discussing network operations and design.

43. Explain the difference between routable and non- routable protocols

Routable protocols can work with a router and can be used to build large networks. Non-Routable protocols are designed to work on small, local networks and cannot be used with a router

44. Explain MAU

In token Ring , hub is called Multistation Access Unit(MAU).

45. Explain 5-4-3 rule

In a Ethernet network, between any two points on the network, there can be no more than five network segments or four repeaters, and of those five segments only three of segments can be populated.

46. Explain the difference between TFTP and FTP application layer protocols

The Trivial File Transfer Protocol (TFTP) allows a local host to obtain files from a remote host but does not provide reliability or security. It uses the fundamental packet delivery services offered by UDP.

The File Transfer Protocol (FTP) is the standard mechanism provided by TCP / IP for copying a file from one host to another. It uses the services offered by TCP and so is reliable and secure. It establishes two connections (virtual circuits) between the hosts, one for data transfer and another for control information.

47. Explain the range of addresses in the classes of internet addresses

Class A 0.0.0.0 - 127.255.255.255

Class B 128.0.0.0 - 191.255.255.255

Class C 192.0.0.0 - 223.255.255.255

Class D 224.0.0.0 - 239.255.255.255

Class E 240.0.0.0 - 247.255.255.255

48. Explain the minimum and maximum length of the header in the TCP segment and IP datagram

The header should have a minimum length of 20 bytes and can have a maximum length of 60 bytes.

49. Explain difference between ARP and RARP

The address resolution protocol (ARP) is used to associate the 32 bit IP address with the 48 bit physical address, used by a host or a router to find the physical address of another host on its network by sending a ARP query packet that includes the IP address of the receiver. The reverse address resolution protocol (RARP) allows a host to discover its Internet address when it knows only its physical address.

50. Explain ICMP

ICMP is Internet Control Message Protocol, a network layer protocol of the TCP/IP suite used by hosts and gateways to send notification of datagram problems back to the sender. It uses the echo test / reply to test whether a destination is reachable and responding. It also handles both control and error messages.

51. What are the data units at different layers of the TCP / IP protocol suite

The data unit created at the application layer is called a message, at the transport layer the data unit created is called either a segment or an user datagram, at the network layer the data unit created is called the datagram, at the data link layer the datagram is encapsulated in to a frame and

finally transmitted as signals along the transmission media.

52. Explain Project 802

It is a project started by IEEE to set standards that enable intercommunication between equipment from a variety of manufacturers. It is a way for specifying functions of the physical layer, the data link layer and to some extent the network layer to allow for interconnectivity of major LAN protocols.

It consists of the following:

802.1 is an internetworking standard for compatibility of different LANs and MANs across protocols.

802.2 Logical link control (LLC) is the upper sublayer of the data link layer which is non-architecture-specific, that is remains the same for all IEEE-defined LANs.

Media access control (MAC) is the lower sublayer of the data link layer that contains some distinct modules each carrying proprietary information specific to the LAN product being used. The modules are Ethernet LAN (802.3), Token ring LAN (802.4), Token bus LAN (802.5).

802.6 is distributed queue dual bus (DQDB) designed to be used in MANs.

53. Explain Bandwidth

Every line has an upper limit and a lower limit on the frequency of signals it can carry. This limited range is called the bandwidth.

54. Difference between bit rate and baud rate.

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. $\text{baud rate} = \text{bit rate} / N$ where N is no-of-bits represented by each signal shift.

55. Explain MAC address

The address for a device as it is identified at the Media Access Control (MAC) layer in the network architecture. MAC address is usually stored in ROM on the network adapter card and is unique.

56. Explain attenuation

The degeneration of a signal over distance on a network cable is called attenuation.

57. Explain cladding

A layer of a glass surrounding the center fiber of glass inside a fiber-optic cable.

58. Explain RAID

A method for providing fault tolerance by using multiple hard disk drives.

59. Explain NETBIOS and NETBEUI

NETBIOS is a programming interface that allows I/O requests to be sent to and received from a remote computer and it hides the networking hardware from applications. NETBEUI is NetBIOS extended user interface. A transport protocol designed by Microsoft and IBM for the use on small subnets.

60. Explain redirector

Redirector is software that intercepts file or prints I/O requests and translates them into network requests. This comes under presentation layer.

61. Explain Beaconing

The process that allows a network to self-repair network problems. The stations on the network notify the other stations on the ring when they are not receiving the transmissions. Beaconing is used in Token ring and FDDI networks.

62. Explain terminal emulation, in which layer it comes

Telnet is also called as terminal emulation. It belongs to application layer.

63. Explain frame relay, in which layer it comes

Frame relay is a packet switching technology. It will operate in the data link layer.

64. What do you mean by "triple X" in Networks

The function of PAD (Packet Assembler Disassembler) is described in a document known as X.3. The standard protocol has been defined between the terminal and the PAD, called X.28; another standard protocol exists between the PAD and the network, called X.29. Together, these three recommendations are often called "triple X"

65. Explain SAP

Series of interface points that allow other computers to communicate with the other layers of network protocol stack.

66. Explain subnet

A generic term for section of a large networks usually separated by a bridge or router.

67. Explain Brouter

Hybrid devices that combine the features of both bridges and routers.

68. How Gateway is different from Routers

A gateway operates at the upper levels of the OSI model and translates information between two completely different network architectures or data formats.

69. What are the different type of networking / internetworking devices

Repeater: Also called a regenerator, it is an electronic device that operates only at physical layer. It receives the signal in the network before it becomes weak, regenerates the original bit pattern and puts the refreshed copy back in to the link.

Bridges: These operate both in the physical and data link layers of LANs of same type. They divide a larger network in to smaller segments. They contain logic that allow them to keep the traffic for each segment separate and thus are repeaters that relay a frame only the side of the segment containing the intended recipient and control congestion.

Routers: They relay packets among multiple interconnected networks (i.e. LANs of different type). They operate in the physical, data link and network layers. They contain software that enable them to determine which of the several possible paths is the best for a particular transmission.

Gateways:

They relay packets among networks that have different protocols (e.g. between a LAN and a WAN). They accept a packet formatted for one protocol and convert it to a packet formatted for another protocol before forwarding it. They operate in all seven layers of the OSI model.

70. Explain mesh network

A network in which there are multiple network links between computers to provide multiple paths for data to travel.

71. Explain passive topology

When the computers on the network simply listen and receive the signal, they are referred to as passive because they don't amplify the signal in any way. Example for passive topology - linear bus.

72. What are the important topologies for networks

BUS topology:

In this each computer is directly connected to primary network cable in a single line.

Advantages:

Inexpensive, easy to install, simple to understand, easy to extend.

STAR topology:

In this all computers are connected using a central hub.

Advantages:

Can be inexpensive, easy to install and reconfigure and easy to trouble shoot physical problems.

RING topology:

In this all computers are connected in loop.

Advantages:

All computers have equal access to network media, installation can be simple, and signal does not degrade as much as

in other topologies because each computer

regenerates it.

73. What are major types of networks and explain

Server-based network

Peer-to-peer network

Peer-to-peer network, computers can act as both servers sharing resources and as clients using the resources.

Server-based networks provide centralized control of network resources and rely on server computers to provide security and network administration

74. Explain Protocol Data Unit

The data unit in the LLC level is called the protocol data unit (PDU). The PDU contains of four fields a destination service access point (DSAP), a source service access point (SSAP), a control field and an information field. DSAP, SSAP are addresses used by the LLC to identify the protocol stacks on the receiving and sending machines that are generating and using the data. The control field specifies whether the PDU frame is a information frame (I - frame) or a supervisory frame (S - frame) or a unnumbered frame (U - frame).

75. Explain difference between baseband and broadband transmission

In a baseband transmission, the entire bandwidth of the cable is consumed by a single signal. In broadband transmission, signals are sent on multiple frequencies, allowing multiple signals to be sent simultaneously.

76. What are the possible ways of data exchange

(i) Simplex (ii) Half-duplex (iii) Full-duplex.

77. What are the types of Transmission media

Signals are usually transmitted over some transmission media that are broadly classified in to two categories.

Guided Media:

These are those that provide a conduit from one device to another that include twisted-pair, coaxial cable and fiber-optic cable. A signal traveling along any of these media is directed and is contained by the physical limits of the medium. Twisted-pair and coaxial cable use metallic that accept

and transport signals in the form of electrical current. Optical fiber is a glass or plastic cable that accepts and transports signals in the form of light.

Unguided Media:

This is the wireless media that transport electromagnetic waves without using a physical conductor. Signals are broadcast either through air. This is done through radio communication, satellite communication and cellular telephony.

78. Explain point-to-point protocol

A communications protocol used to connect computers to remote networking services including Internet service providers.

79. What are the two types of transmission technology available

(i) Broadcast and (ii) point-to-point

80. Difference between the communication and transmission.

Transmission is a physical movement of information and concern issues like bit polarity, synchronization, clock etc. Communication means the meaning full exchange of information between two communication media.

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