SEMtech!

Network Topology Test

Bus Topology:

1. What happens to the network if the main bus cable encounters a fault?
   - A) Only the nodes before the fault are affected.
   - B) Only the nodes after the fault are affected.
   - C) The entire network stops functioning.
   - D) The network automatically reroutes data.
2. Which of the following is a primary advantage of a bus topology?
   - A) High fault tolerance
   - B) Minimal cable required for connection
   - C) No signal regeneration required
   - D) Easy to add additional nodes without affecting the network
3. How are devices connected in a bus topology?
   - A) Each device is connected to two other devices in a loop.
   - B) Each device is connected directly to every other device.
   - C) Devices are connected to a central hub.
   - D) Devices are connected to a single central cable.

Star Topology:

1. In a star topology, what impact does the failure of a peripheral node (not the hub) have on the network?
   - A) The entire network goes down.
   - B) Only the failed node is affected.
   - C) The hub automatically connects to another node.
   - D) Half of the network goes down.
2. Why might a star topology require more cable than a bus topology?
   - A) Because it has more nodes.
   - B) Due to the centralized nature of connection to the hub.
   - C) Because it requires double the amount of cable for redundancy.
   - D) Because the cables have to be thicker and longer.
3. Which device is central to a star topology's design and functionality?
   - A) Repeater
   - B) Modem
   - C) Hub or switch
   - D) Bridge

Ring Topology:

1. What method is commonly used to transmit data in a ring topology?
   - A) Token passing
   - B) Packet switching

- C) Direct broadcast
- D) Carrier sensing

2. How does a ring topology handle a situation where one node fails?
    - A) The network remains unaffected.
    - B) The network will fail unless there is a bypass mechanism.
    - C) Data immediately starts flowing in the opposite direction.
    - D) The central hub takes over the data routing.
3. In a ring topology, to reach a destination node, how does data typically travel?
    - A) Directly to the central hub and then to the destination
    - B) Through every node in sequence until it reaches the destination
    - C) Directly to the destination without passing through other nodes
    - D) Randomly until it happens upon the destination node

Mesh Topology:

1. What is a key characteristic of a full mesh topology?
    - A) All nodes are connected to a central device.
    - B) Nodes operate in a peer-to-peer fashion.
    - C) Each node is connected to every other node.
    - D) Data is sent in one direction around the nodes.
2. Which of the following is a disadvantage of a mesh topology?
    - A) Low redundancy
    - B) Limited number of nodes
    - C) High costs and complexity
    - D) Slow data transfer speeds
3. How does a mesh topology enhance network reliability?
    - A) By providing multiple paths for data between any two nodes
    - B) By having a central hub that manages network traffic
    - C) By limiting the distance data must travel
    - D) By using a token system to manage data packets

Tree Topology:

1. Which topology combines characteristics of both star and bus topologies?
    - A) Ring
    - B) Mesh
    - C) Tree
    - D) Hybrid
2. What is a significant vulnerability of tree topology?
    - A) The failure of end nodes affects the entire network.
    - B) It cannot support high amounts of data traffic.
    - C) If the root node fails, it can disable the entire network.
    - D) It is more susceptible to cable failure than other topologies.
3. What aspect of tree topology allows for efficient network management and scalability?
    - A) Redundant connections
    - B) Centralized monitoring
    - C) Hierarchical structure
    - D) Peer-to-peer communication

Hybrid Topology:

1. Why would an organization choose a hybrid topology over a basic topology?
    - A) To simplify their network design
    - B) To reduce the cost of network setup
    - C) To accommodate different departmental needs
    - D) To limit the network size
2. Which of the following best describes a hybrid topology?
    - A) A combination of two or more different topologies
    - B) A network with a circular data flow
    - C) A single central hub with nodes connected to it
    - D) Direct connections between all nodes
3. What is a potential downside to using a hybrid topology in a network?
    - A) It cannot support modern networking equipment.
    - B) It is less secure than using a single topology.
    - C) It can become quite complex to design and manage.
    - D) It is incompatible with wireless technology.

Point-to-Point Topology:

1. Which scenario is most suitable for a point-to-point topology?
    - A) Connecting two offices in different locations
    - B) Building a large-scale corporate network
    - C) Creating a network for a conference event
    - D) Linking numerous devices in a single room
2. What is the main advantage of a point-to-point topology?
    - A) It is highly scalable.
    - B) It is easy to troubleshoot and maintain.
    - C) It requires no additional hardware.
    - D) It offers the highest redundancy.
3. How does a point-to-point topology typically affect network traffic between the two connected nodes?
    - A) Increases traffic congestion
    - B) Decreases bandwidth
    - C) Has no impact on traffic or performance
    - D) Provides dedicated bandwidth, thus enhancing performance

These questions are designed to test the students' understanding of the theoretical aspects of network topologies, their practical applications, and the implications for network design.

Here are the answers to the quizzes for each network topology:

Bus Topology:

1. C) The entire network stops functioning.
2. B) Minimal cable required for connection.
3. D) Devices are connected to a single central cable.

Star Topology:

1. B) Only the failed node is affected.
2. B) Due to the centralized nature of connection to the hub.
3. C) Hub or switch.

Ring Topology:

1. A) Token passing.
2. B) The network will fail unless there is a bypass mechanism.
3. B) Through every node in sequence until it reaches the destination.

Mesh Topology:

1. C) Each node is connected to every other node.
2. C) High costs and complexity.
3. A) By providing multiple paths for data between any two nodes.

Tree Topology:

1. C) Tree.
2. C) If the root node fails, it can disable the entire network.
3. C) Hierarchical structure.

Hybrid Topology:

1. C) To accommodate different departmental needs.
2. A) A combination of two or more different topologies.
3. C) It can become quite complex to design and manage.

Point-to-Point Topology:

1. A) Connecting two offices in different locations.
2. B) It is easy to troubleshoot and maintain.
3. D) Provides dedicated bandwidth, thus enhancing performance.

These answers reflect the foundational knowledge of network topologies that would be expected from students who have been taught this material.