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Super Quiz 2 Study Guide

Chapter 13: Topology

Bus topology

- A bus topology is a type of computer connected to a standard shared cable. It is the simplest, most connected to every computer on the network by a single cable.
- All nodes are connected in a T-shape to the Bus, and the end of the Bus has a terminal to prevent signal reflection. Because it shares a communication channel bus, only one computer sends data packets at a time. It is a passive photology.
- **Advantages** are simple to control traffic, low cost, and easy to scale.
- **The disadvantage** is that an increased number of nodes reduces communication efficiency due to increased collision. It is difficult to find where the problem arises.

Ring topology

- A ring topology is a type of computer connected to a cable that forms an annular structure. Logical tokens (token: a control signal that a line is not in use) affect this communication. Token passing prevents conflicts in packets. It has an active network.
- **Advantages** are good communication efficiency because data is reliably sent. There is no bottleneck. It serves as a repeater for each computer, providing good communication with fewer signal degeneration.
- **The disadvantage** is that a failure of one node becomes a total failure. Network expansion and structural change are complex.

Star topology

- A star is a type of connection of a computer to a cable section bifurcated from a single point or hub.
- The cable from the computer connects in a centralized form through a central hub or switch. The signal is transmitted to all computers via the hub. Cable twisted-pair cable (TP) or fiber-optic cables. It is an Ethernet communication method.
- **Advantages** provide fault tolerance. It can be managed centrally. It is convenient to expand and manage. The **disadvantage** is that as the number of nodes increases, packet collisions increase sharply, resulting in inefficiency. If a hub or switch fails, the whole thing goes down.

Mesh topology

- A mesh topology is a network topology in which each node relieves data for the network. All mesh nodes collaborate on the distribution of data within the network. It can be applied to both wireless and wired networks.
- **Advantages** are the strongest and safest against disability. Because there are multiple paths to the destination, data can be transmitted through different directions even if one place fails. It has availability and efficiency because it exploits the fastest of several routes to the destination.

- **The disadvantage** is that large networks are always the most expensive to install and have difficulty managing networks due to the massive amount of network lines and the state of equipment.

Chapter 29

Section 1

- **Phishing -** Masquerading as a well-known site such as a bank to obtain a user's personal information, typically an account number and access code
- **Misrepresentation** - Making false or exaggerated claims about goods or services, or delivering fake or inferior products
- **Scams Various** - forms of trickery intended to deceive naive users into investing money or abetting a crime
- **Denial of Service** - Intentionally blocking a particular Internet site to prevent or hinder business activities and commerce
- **Loss of Control** - An intruder gains control of a user's computer and uses the computer to perpetrate a crime
- **Loss of Data Loss** - of intellectual property or other valuable proprietary business information

Section 2

- **Wiretapping** - Making a copy of packets as they traverse a network to obtain information
- Replay Sending packets captured from a previous session (e.g., a password packet from a previous login)
- **Buffer Overflow** - Sending more data than a receiver expects in order to store values in variables beyond the buffer
- **Address Spoofing** - Faking the IP source address in a packet to trick a receiver into processing the packet
- **Name Spoofing** - Using a misspelling of a well-known name or poisoning a name server with an incorrect binding
- **DoS and DDoS Flooding** - a site with packets to prevent the site from successfully conducting normal business
- **SYN Flood** - Sending a stream of random TCP SYN segments to exhaust a receiver's set of TCP connections
- **Password Breaking** - Automated systems that guess a password or a decryption key or to gain unauthorized access
- **Port Scanning** - Attempting to connect to each possible protocol port on a host to find a vulnerability
- **Packet Interception** - Removing a packet from the Internet which allows substitution and man-in-the middle attacks

Section 3

- **Data Integrity**. Integrity refers to protection from change: is the data that arrives at a receiver identical to the data that was sent?
- **Data Availability**. Availability refers to protection against disruption of service: does data remain accessible for legitimate uses?
- **Data Confidentiality**. Confidentiality refers to protection against unauthorized data access (e.g., via snooping or wiretapping): is data protected against unauthorized access?

- **Privacy**. Privacy refers to the ability of a sender to remain anonymous: is the sender's identity revealed?

Questions

1. Which personal area network technology uses one frequency band and has a max speed of 721 kpbs?
   a. **Bluetooth 2.0**
   b. ZigBee
   c. Ultra-Wideband
   d. Wireless USB
2. Which network topology would be most suitable for a small business interested in maintaining low costs?
   a. Mesh Topology
   b. Star Topology
   c. Ring Topology
   d. **Bus Topology**
3. On what layer of the internet model does Transfer Control Protocol operate?
   a. Layer 3
   b. **Layer 2**
   c. Layer 4
   d. Layer 1
4. Which of the following are header fields for TCP?
   a. **Sequence Number**
   b. **Checksum**
   c. Protocol Number
   d. Ip address
5. What is the term for using multiple frequencies to send data increasing performance and tolerating interference for wireless?
   a. Frequency Stacking
   b. Broadband
   c. **Spread Spectrum**
   d. Wide Area Network