

Required Learning Outcomes

Explore the Network

1. Globally Connected Data
2. LANs, WANs
3. The Network as a Platform
4. Distributed Processing
5. Network Criteria
6. Physical Structures
7. Network Models
8. Categories of Networks
9. The Changing Network Environment

THE INTERNET

1. A Brief History
2. The Internet Today

PROTOCOLS AND STANDARDS

3. Protocols
4. Standards
5. Standards Organizations
6. Internet Standards

LAYERED TASKS

1. Sender, Receiver, and Carrier
2. Hierarchy
3. THE OSI MODEL
4. Layered Architecture
5. Peer-to-Peer Processes
6. Encapsulation

LAYERS IN THE OSI MODEL

1. Physical Layer
2. Data Link Layer
3. Network Layer
4. Transport Layer
5. Session Layer
6. Presentation Layer
7. Application Layer
8. Summary of Layers

TCP/IP PROTOCOL SUITE

Physical and Data Link Layers .1
Network Layer .2
Transport Layer.3
Application Layer .4
ADDRESSING
Physical Addresses .1
Logical Addresses .2
Port Addresses .3
Specific Addresses .4

GUIDED MEDIA

1. Twisted-Pair Cable
 2. Coaxial Cable
- Fiber-Optic Cable

UNGUIDED MEDIA: WIRELESS

1. Radio Waves
2. Microwaves
3. Infrared

CIRCUIT-SWITCHED NETWORKS

1. Three Phases
2. Efficiency
3. Delay
4. Circuit-Switched Technology in Telephone Networks

DATAGRAM NETWORKS

1. Routing Table
2. Efficiency
3. Delay
4. Datagram Networks in the Internet

VIRTUAL-CIRCUIT NETWORKS

1. Addressing
2. Three Phases
3. Efficiency
3. Delay in Virtual-Circuit Networks

<p>4. Circuit-Switched Technology in WANs</p> <p>STRUCTURE OF A SWITCH</p> <p>1. Structure of Circuit Switches</p> <p>Structure of Packet Switches</p>
<p>CONNECTING DEVICES</p> <p>1. Passive Hubs</p> <p>2. Repeaters</p> <p>3. Active Hubs</p> <p>4. Bridges</p> <p>5. Two-Layer Switches</p> <p>6. Routers</p>
<p>7. Three-Layer Switches</p> <p>8. Gateway</p> <p>BACKBONE NETWORKS</p> <p>1. Bus Backbone</p> <p>2. Star Backbone</p> <p>3. Connecting Remote LANs</p>
<p>VIRTUAL LANs</p> <p>1. Membership</p> <p>2. Configuration</p> <p>3. Communication Between Switches</p> <p>4. IEEE Standard</p> <p>5. Advantages</p> <p>Review Questions</p>
<p>INTRODUCTION</p> <p>1 Nodes and Links</p> <p>2 Services</p> <p>3 Two Categories of Links</p> <p>4 Two Sublayers</p> <p>LINK-LAYER ADDRESSING</p> <p>Three Types of addresses</p>
<p>2 Address Resolution Protocol (ARP)</p> <p>An Example of Communication</p>
<p>IPv4 ADDRESSES</p> <p>1. Address Space</p> <p>2. Notations</p> <p>3. Classful Addressing</p>
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