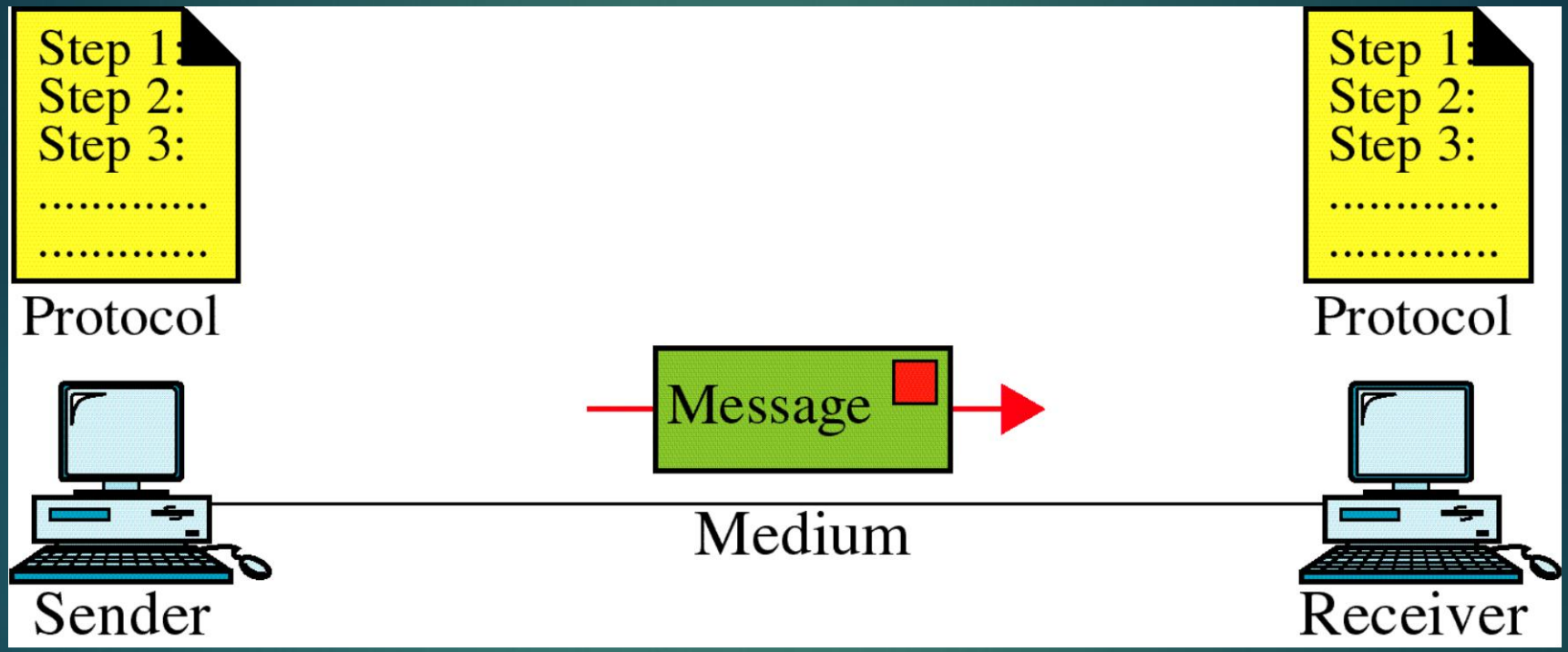
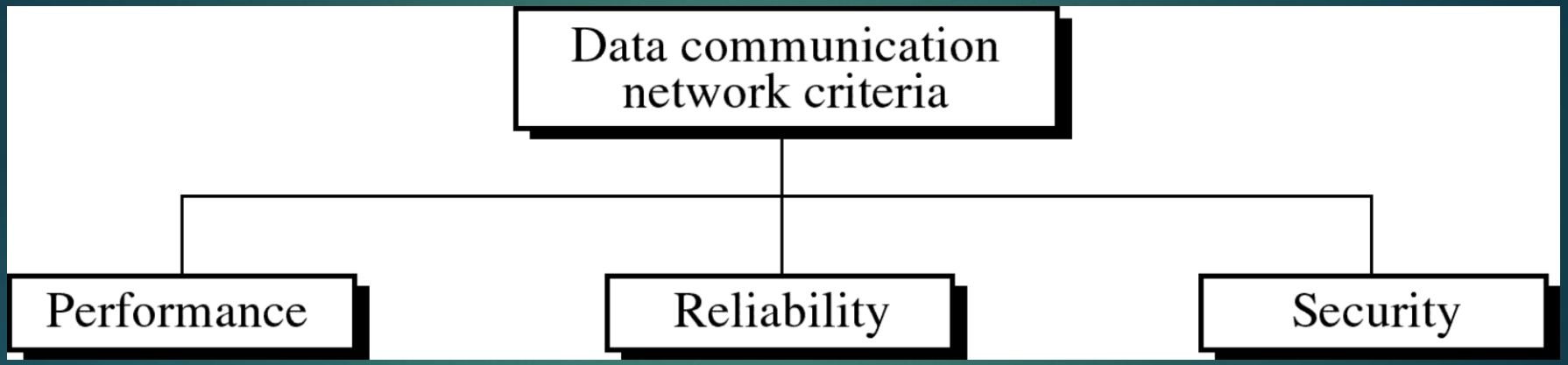
UNIT I
NETWORK AND SERVICES

- Data Communication
- Networks
- Protocols and Standards
- Standard Organizations

- By:Sucheta Raut

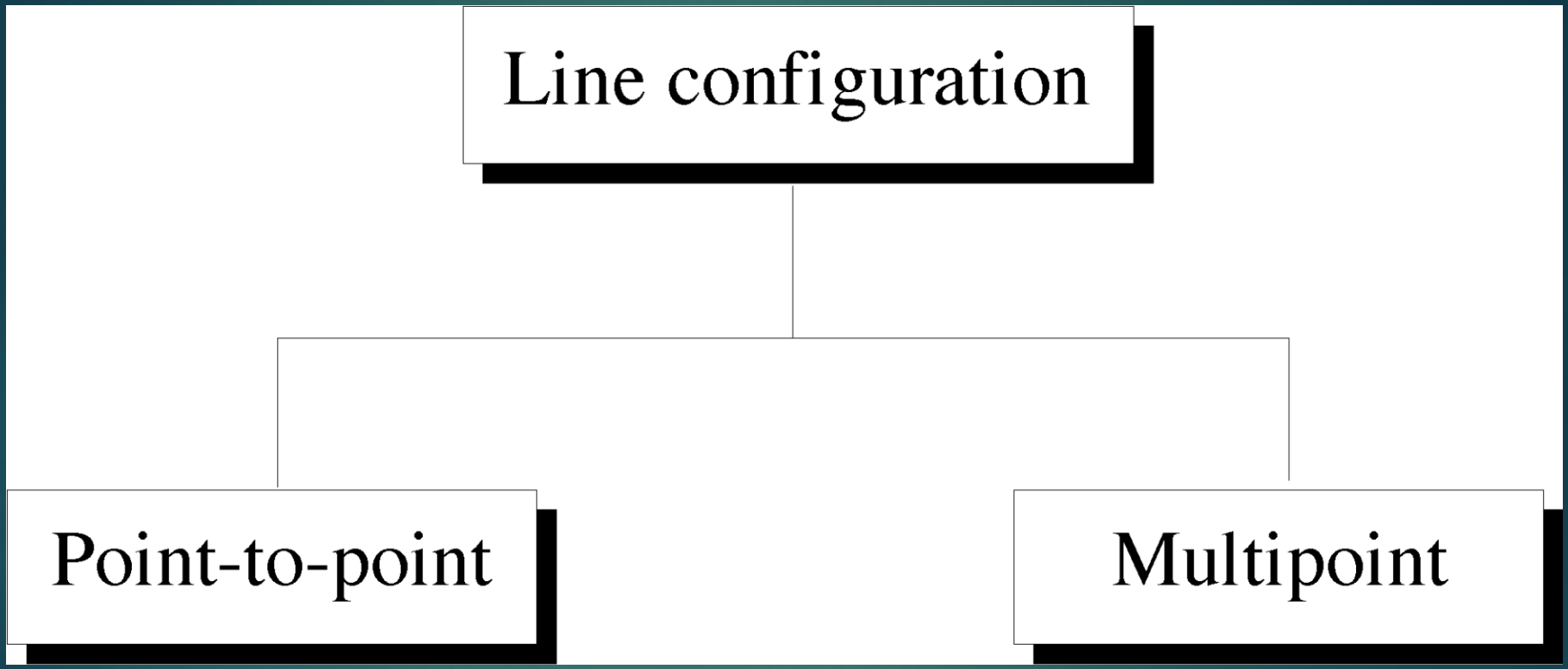
Data Communication System Components

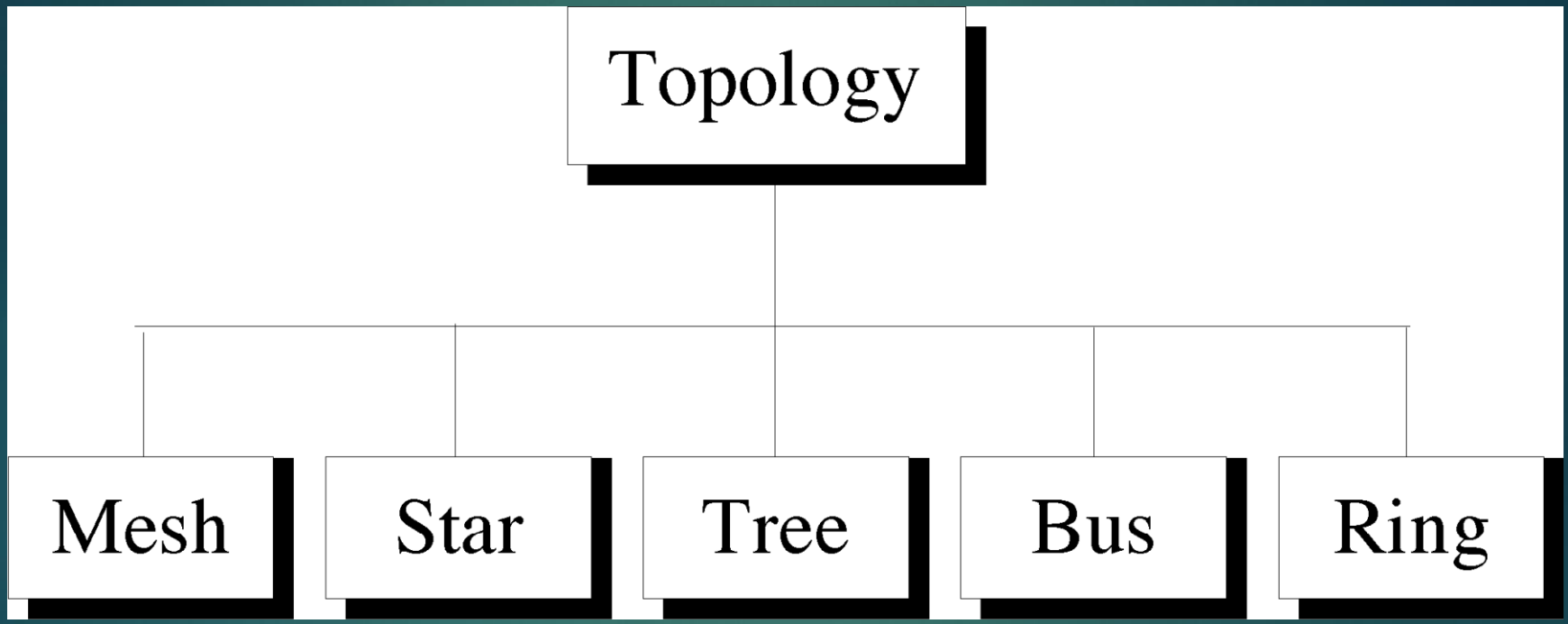



Data communication network criteria
Performance
Reliability
Security

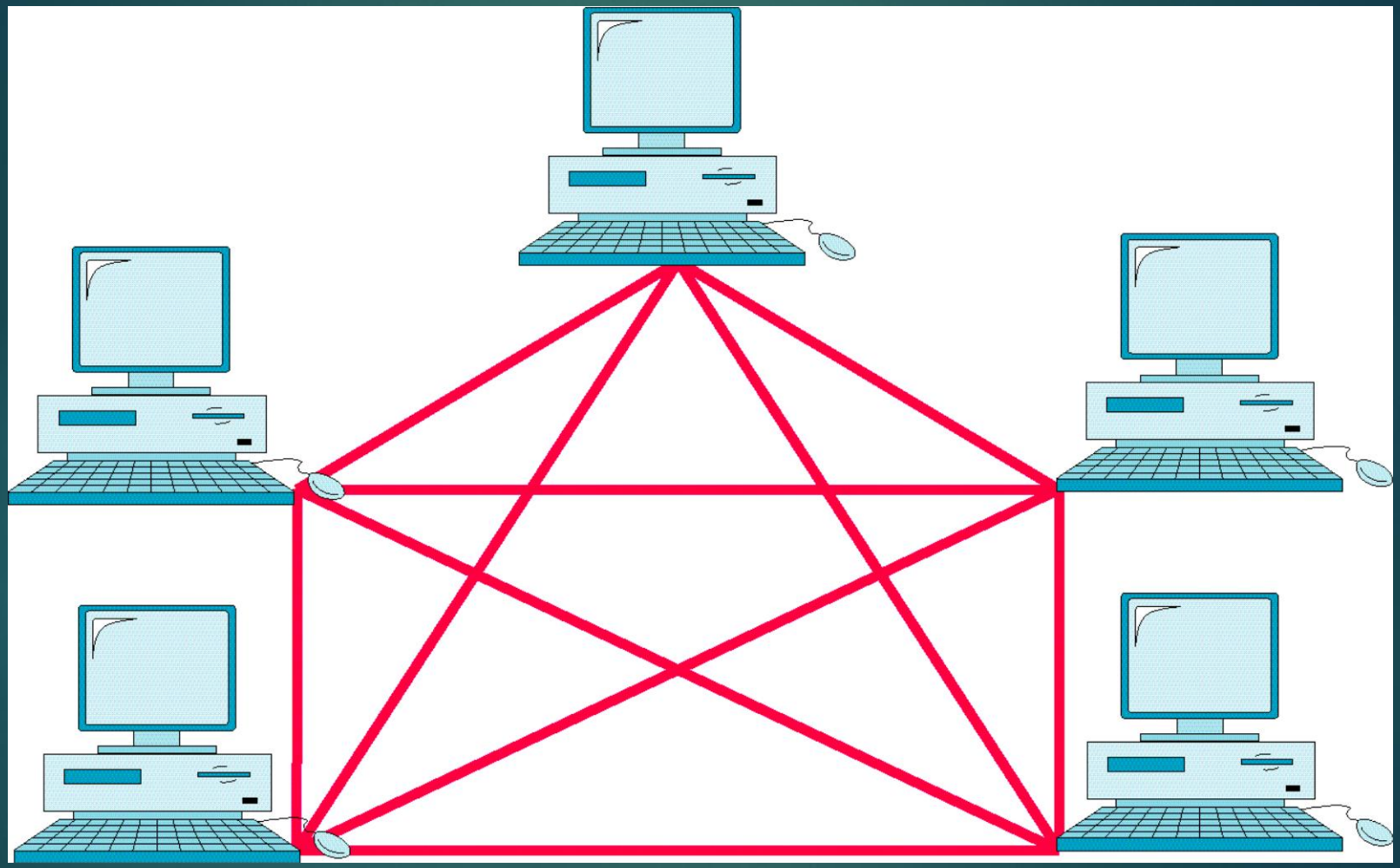
Basic Concepts

- Line Configuration
- Topology
- Transmission Mode
- Categories of Networks
- Internetworks

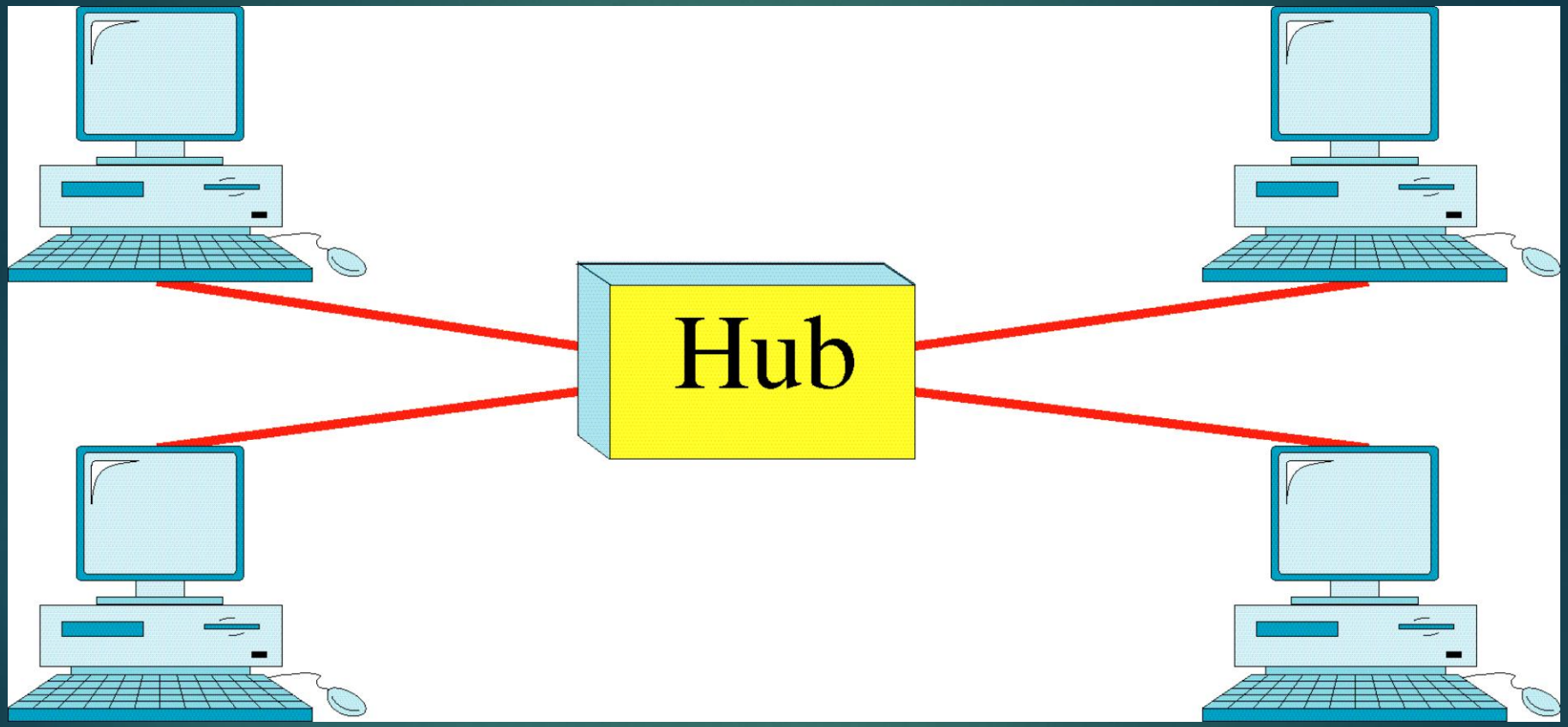

Line configuration
Point-to-point
Multipoint


Topology
Mesh
Star
Tree
Bus
Ring

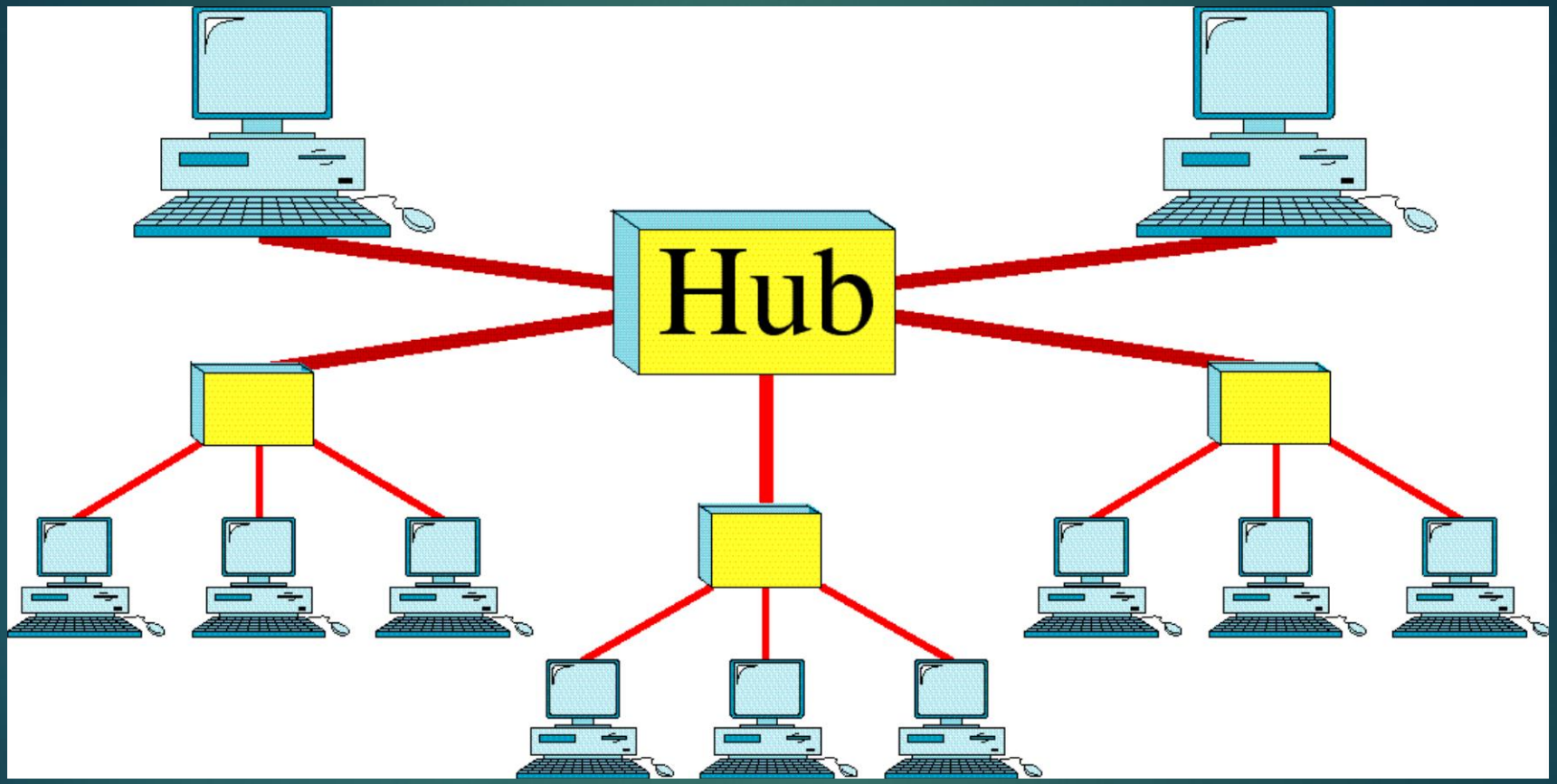
Mesh Topology



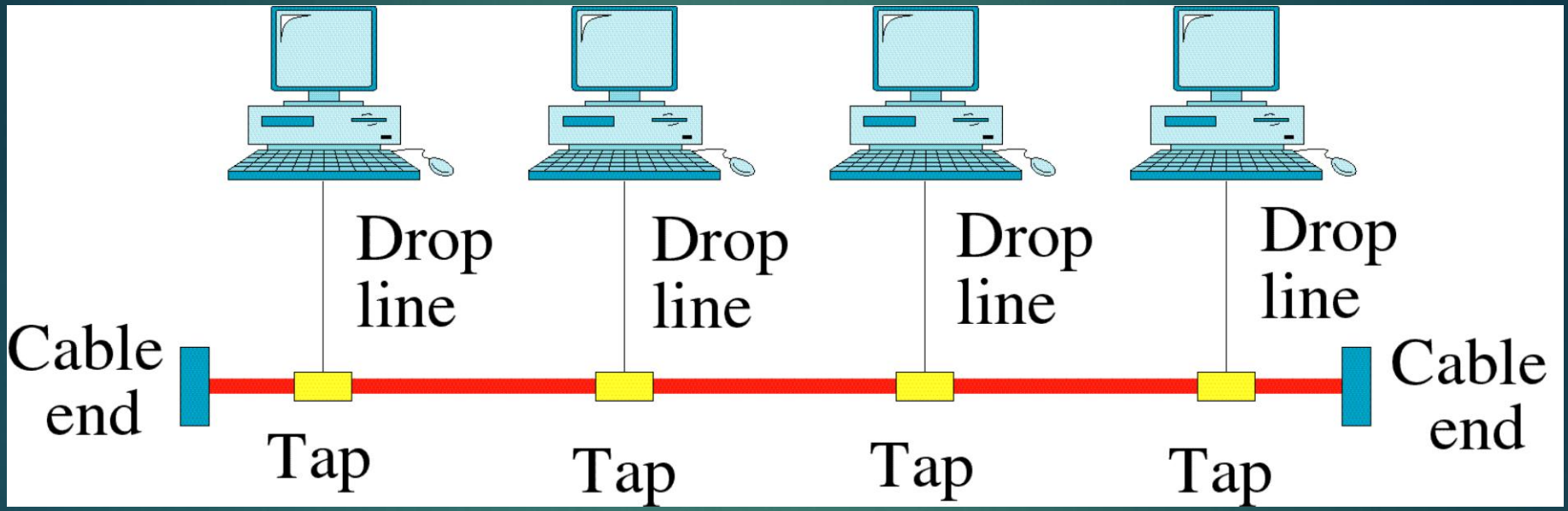
Star Topology



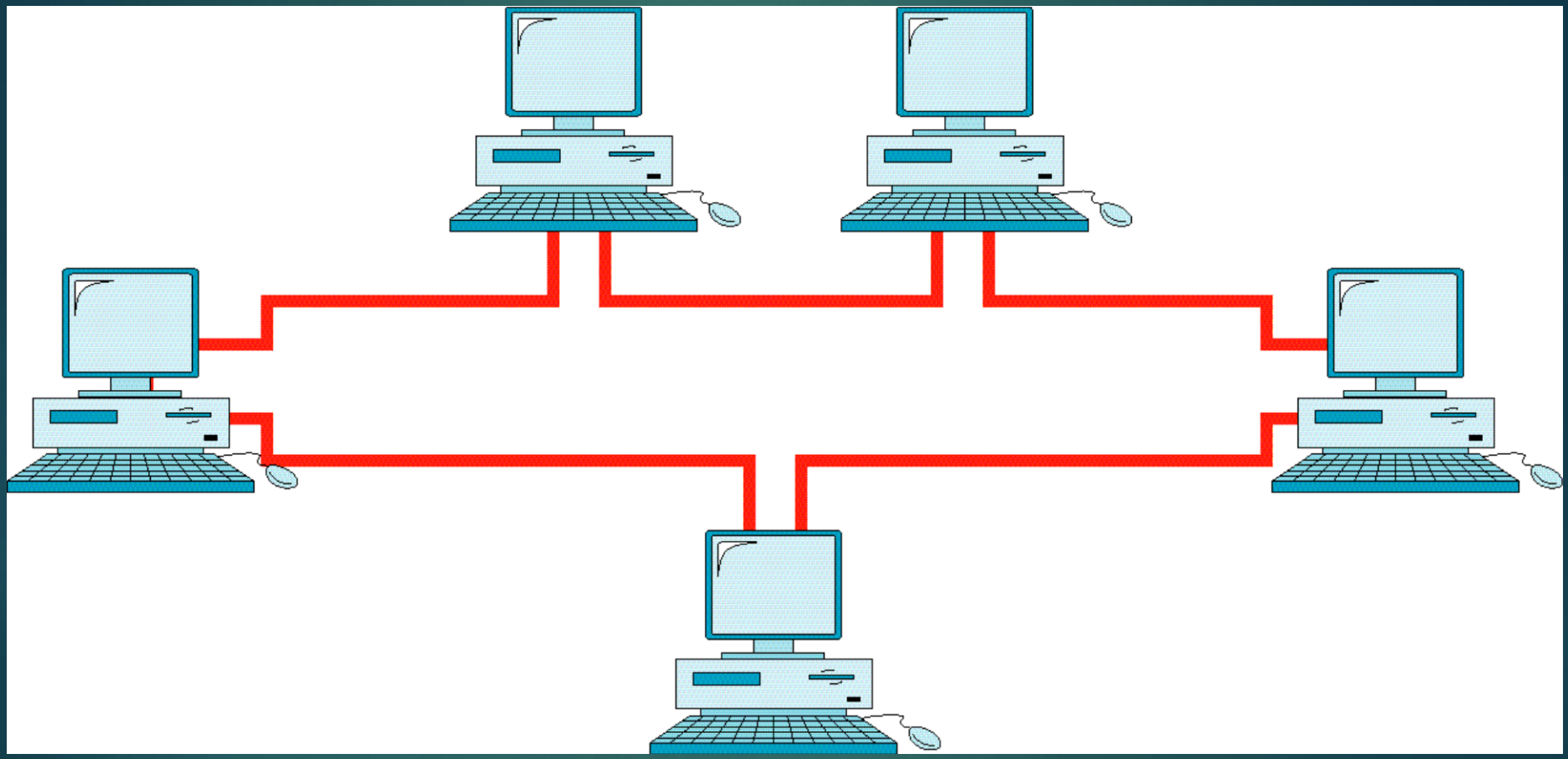
Tree Topology



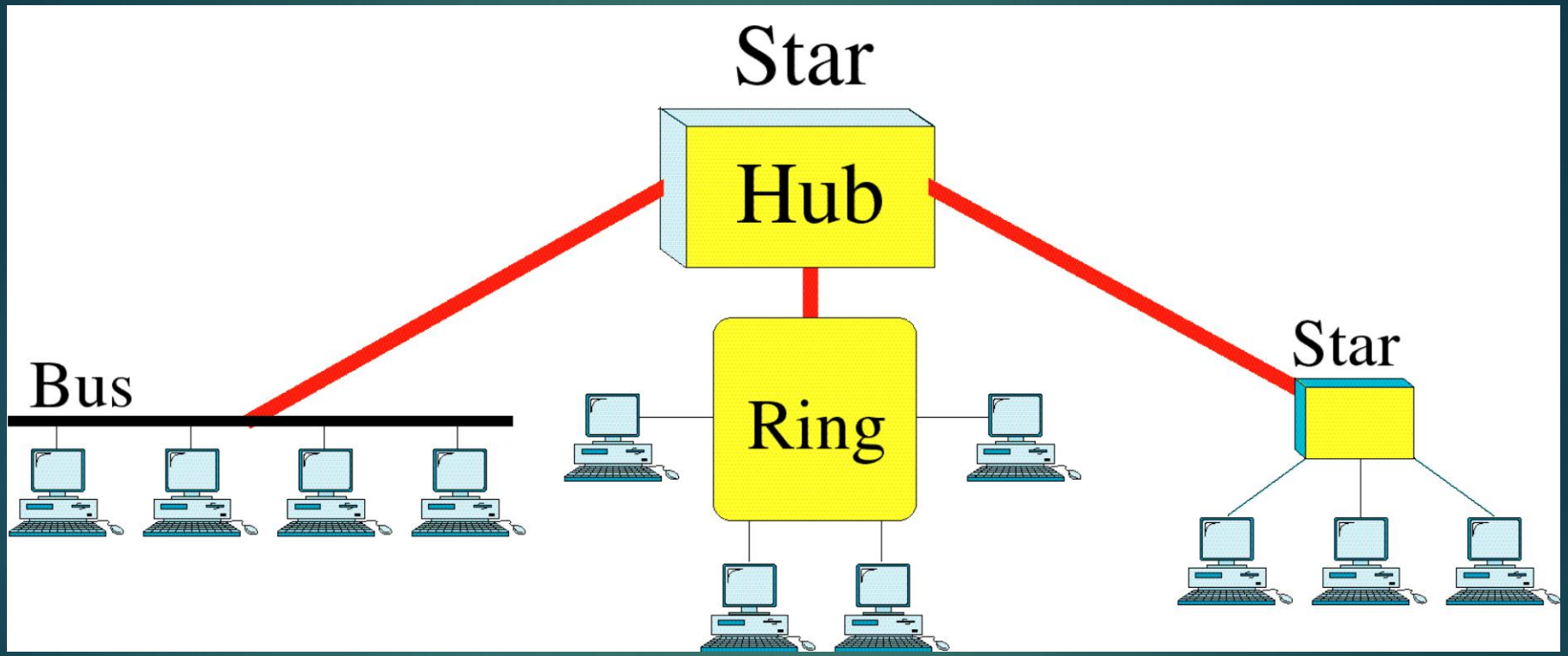
Bus Topology

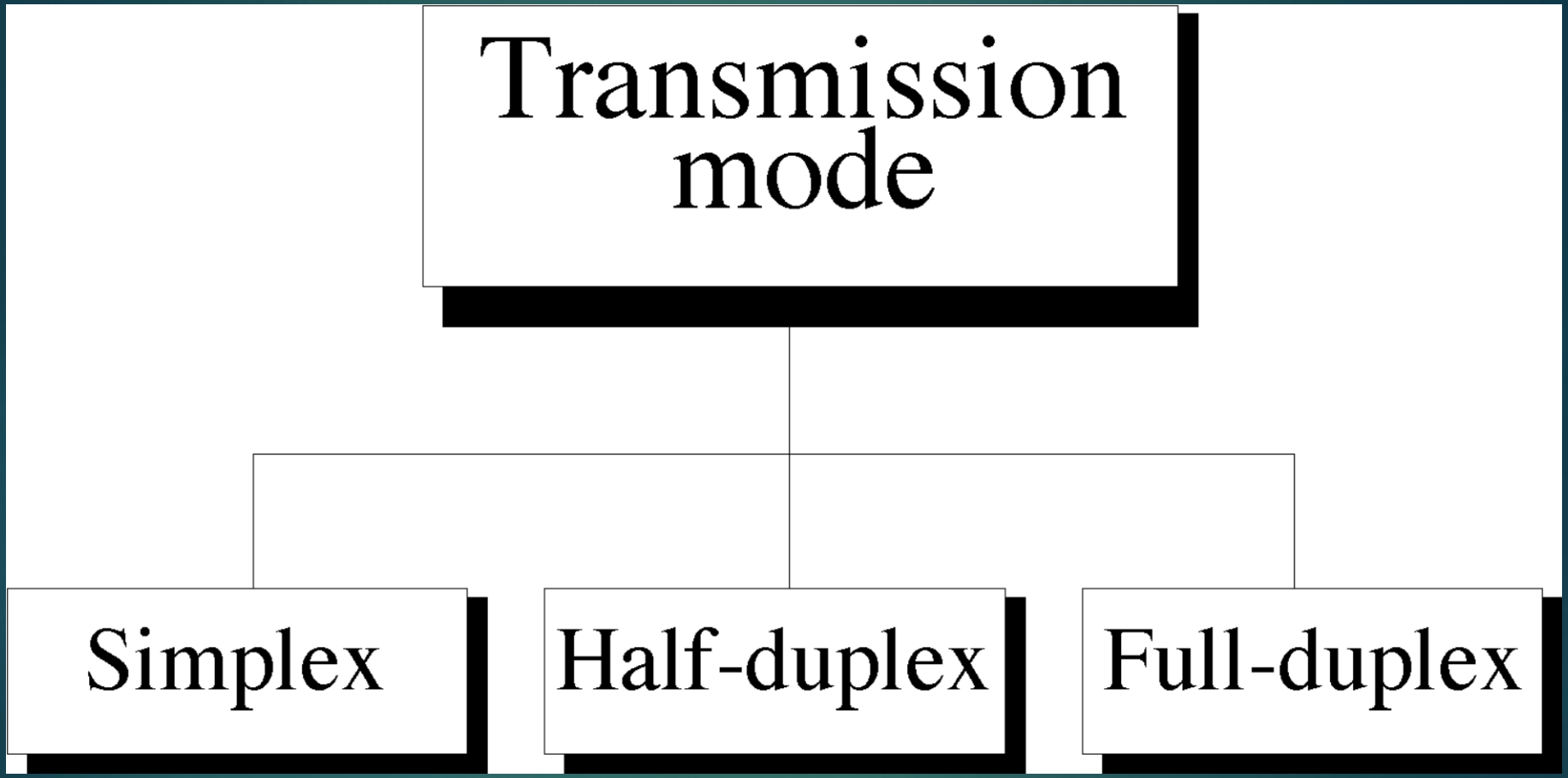


Ring Topology

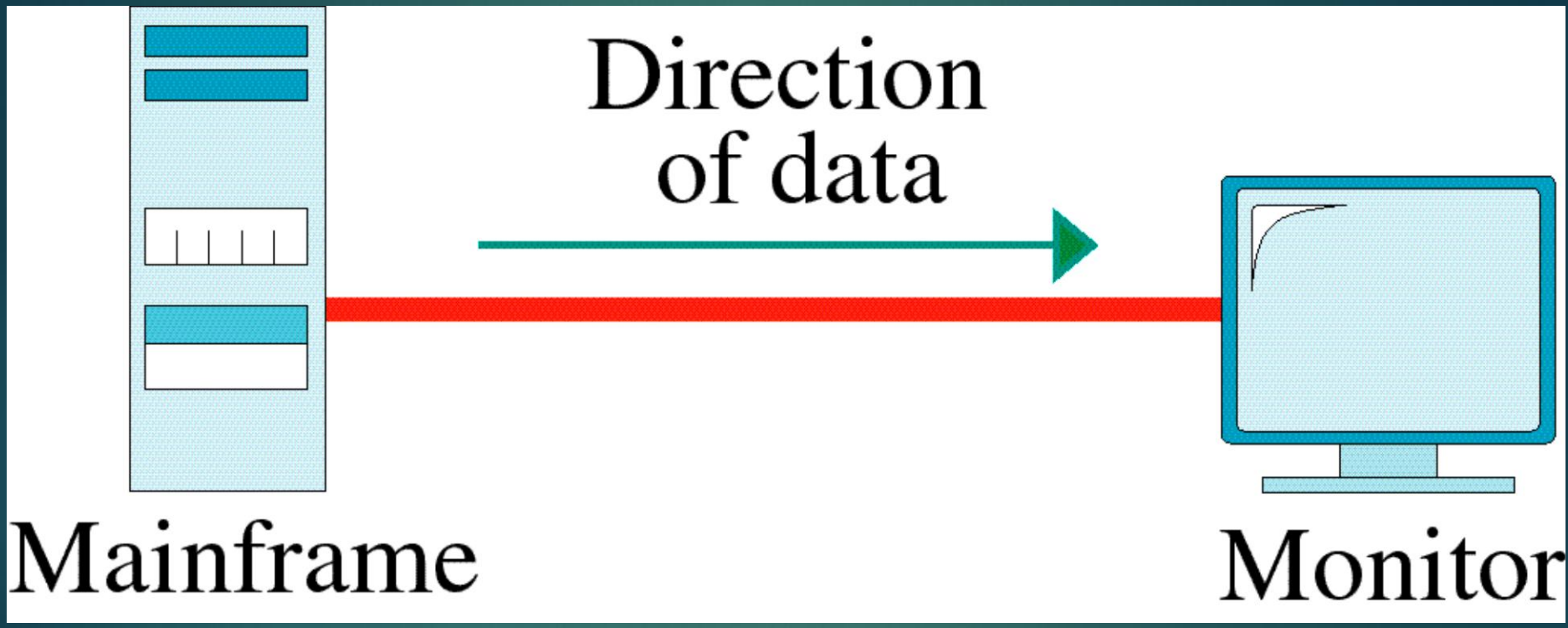


Hybrid Topology

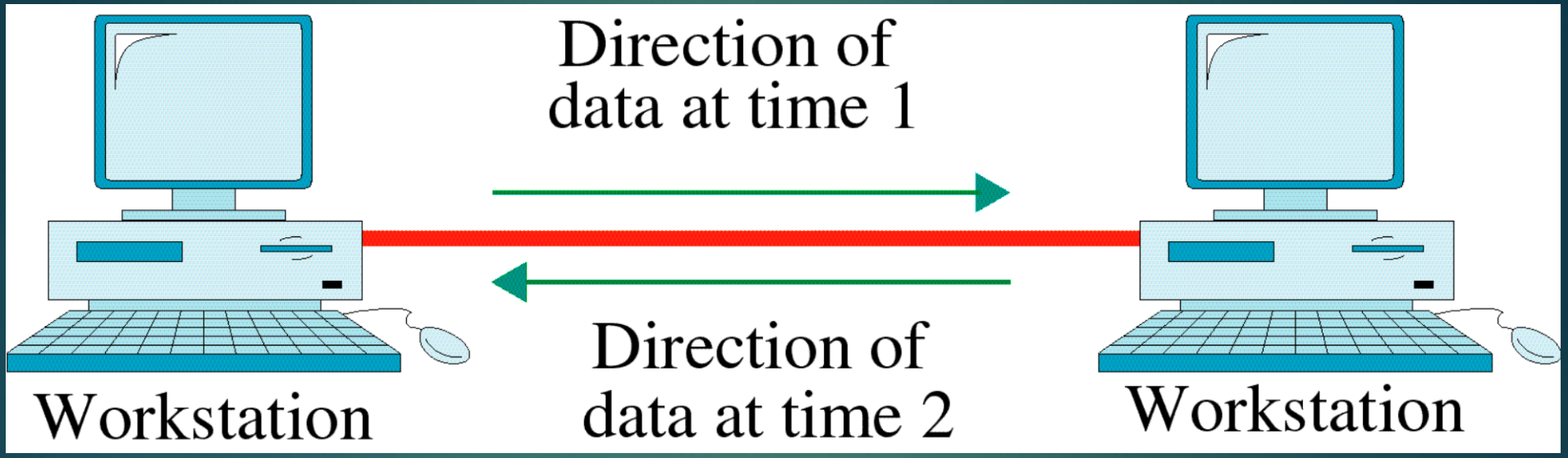



Transmission mode
Simplex
Half-duplex
Full-duplex

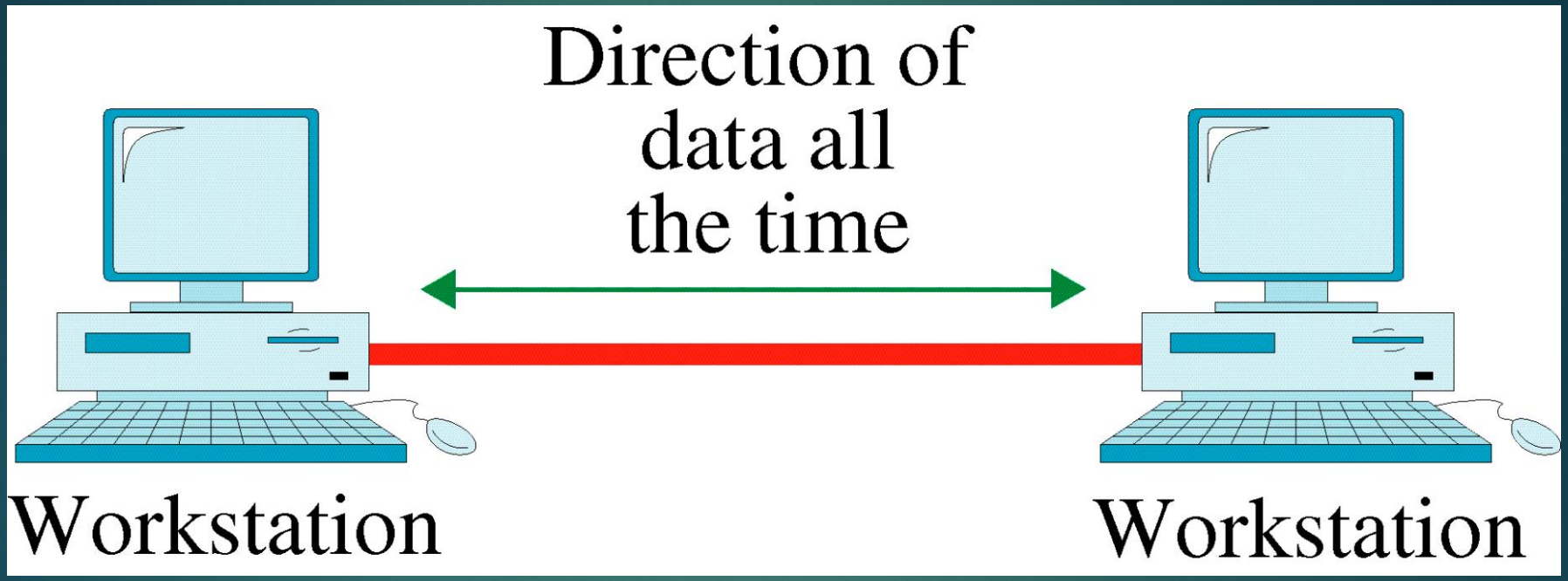
Simplex

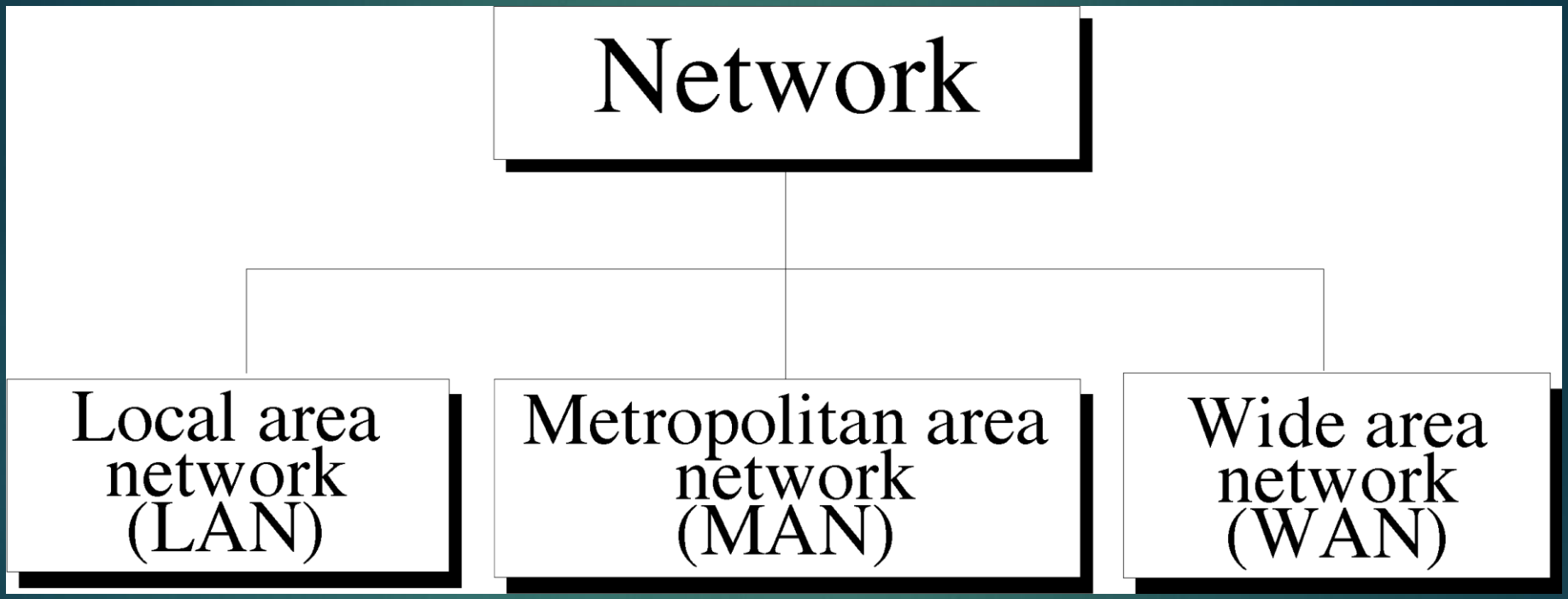


Half-Duplex

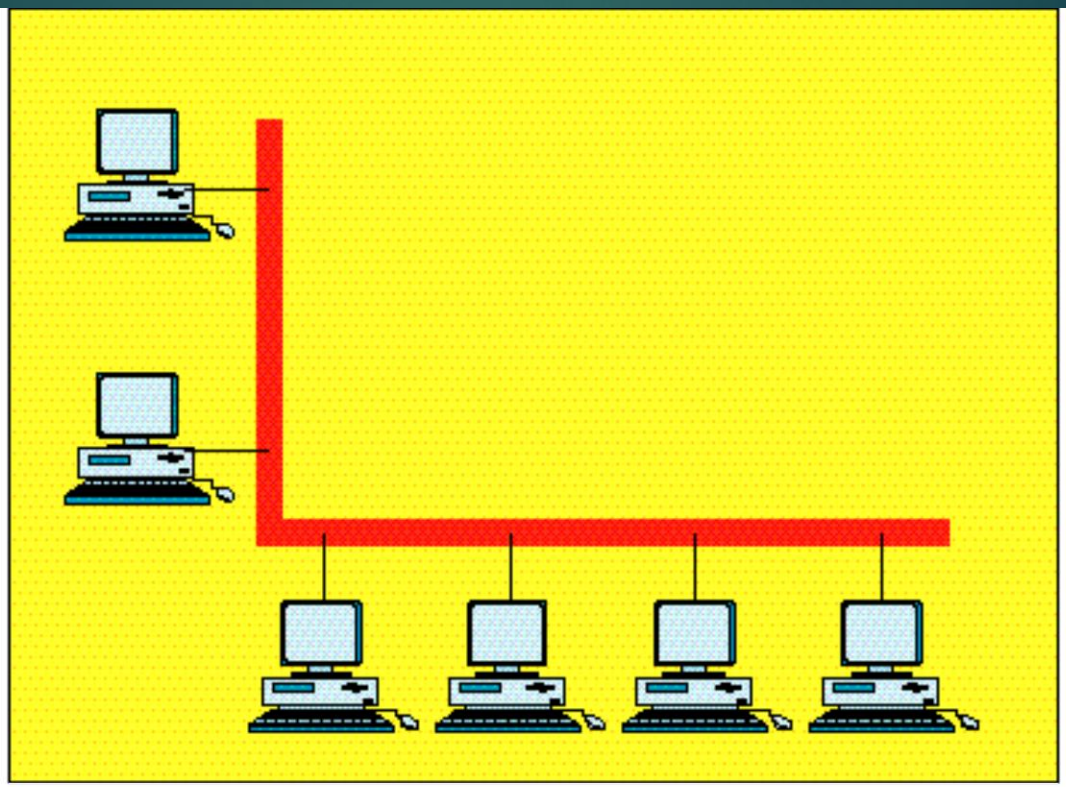

Direction of
data at time 1
Direction of
data at time 2
Workstation
Workstation

Full-Duplex



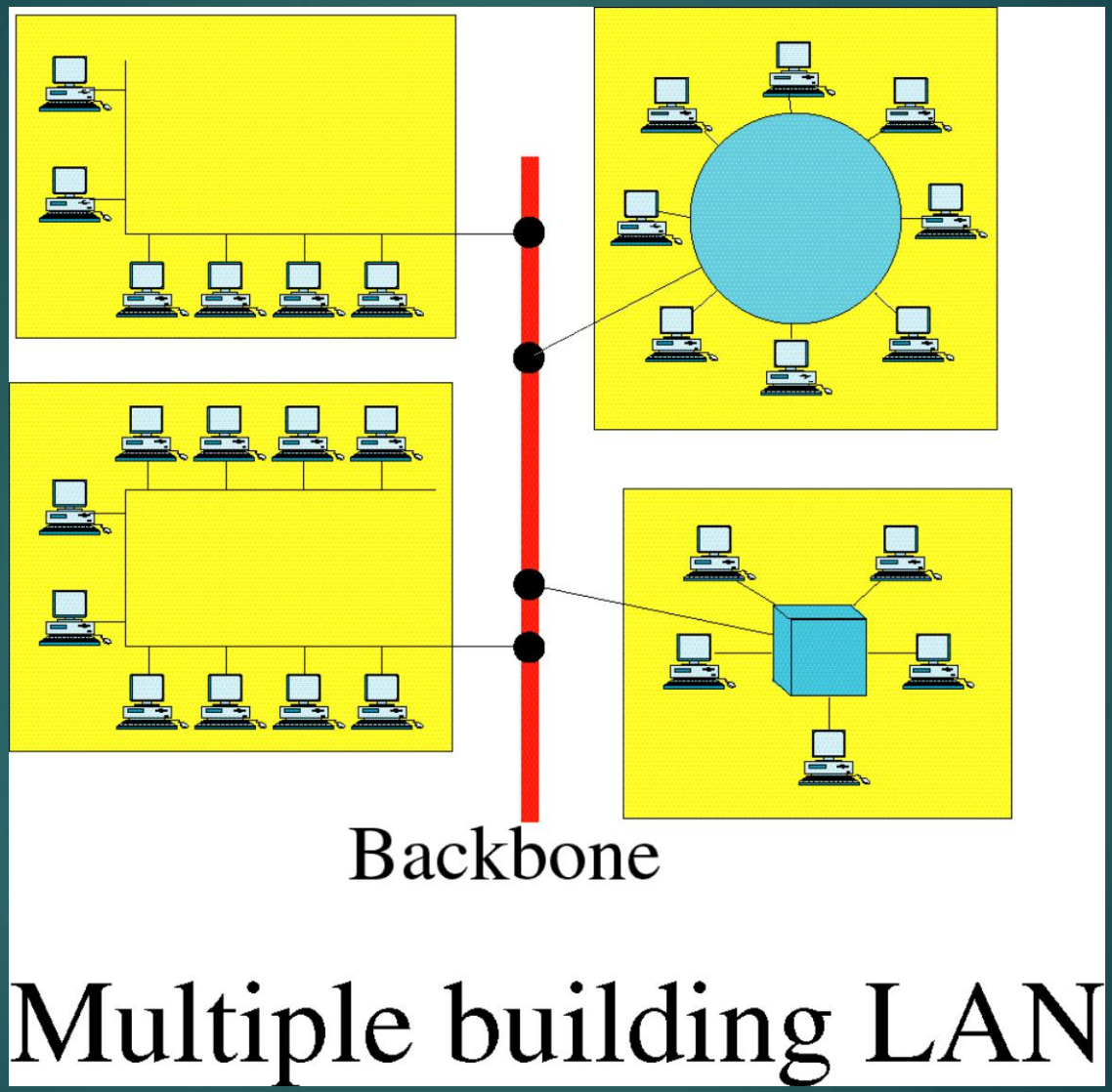

Network
Local area network (LAN)
Metropolitan area network (MAN)
Wide area network (WAN)

Local Area Network

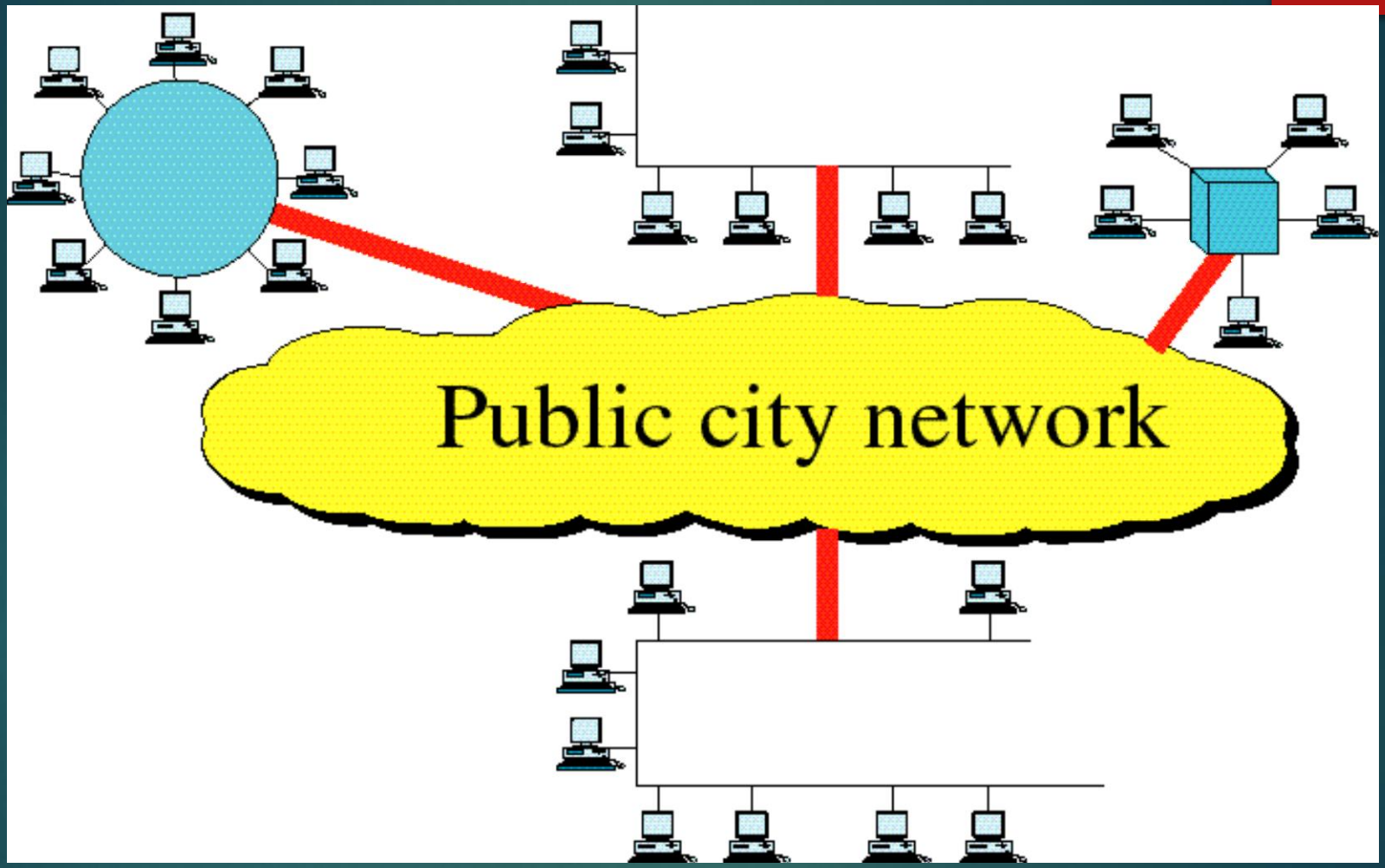


Single building LAN

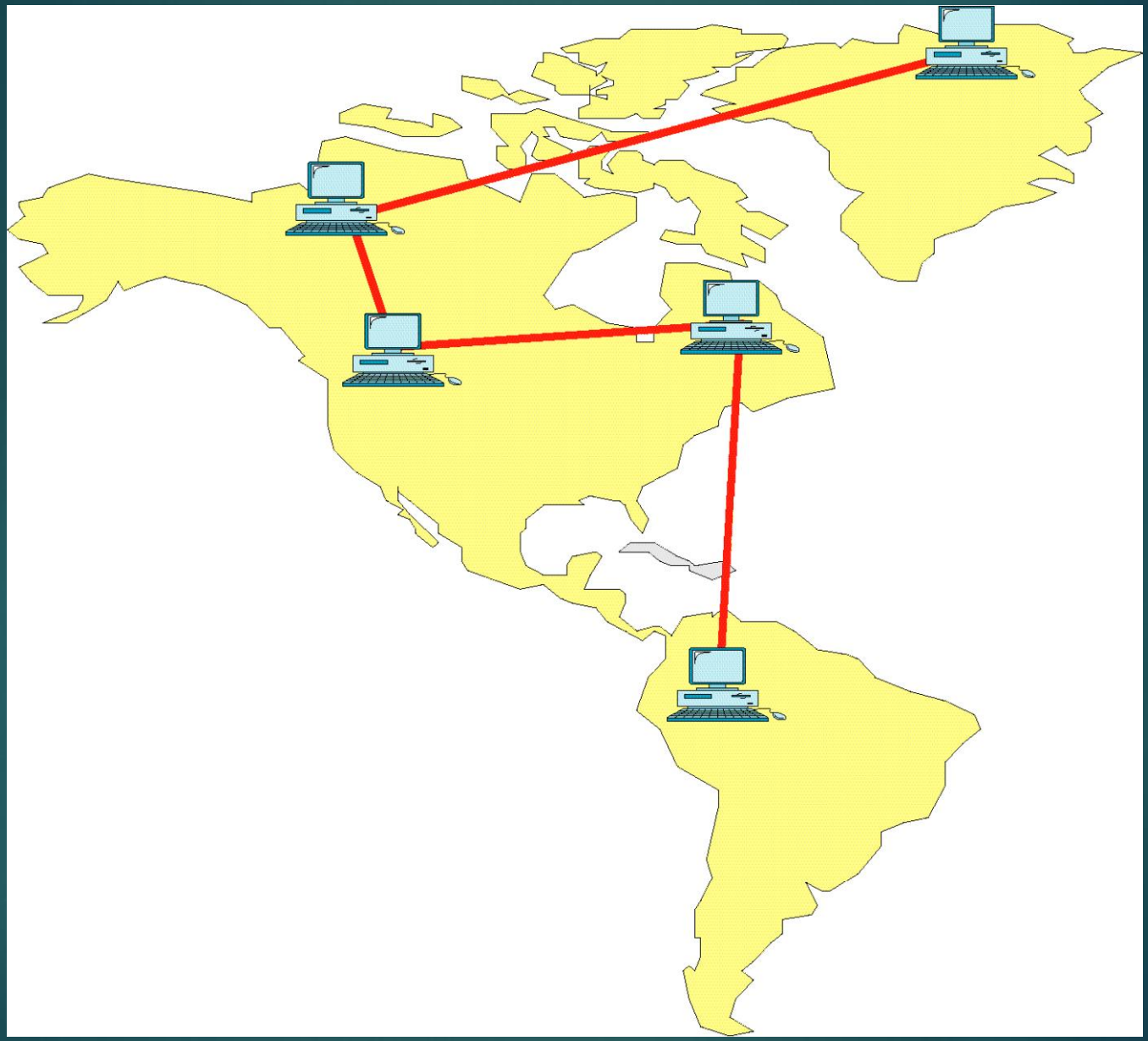
Local Area Network



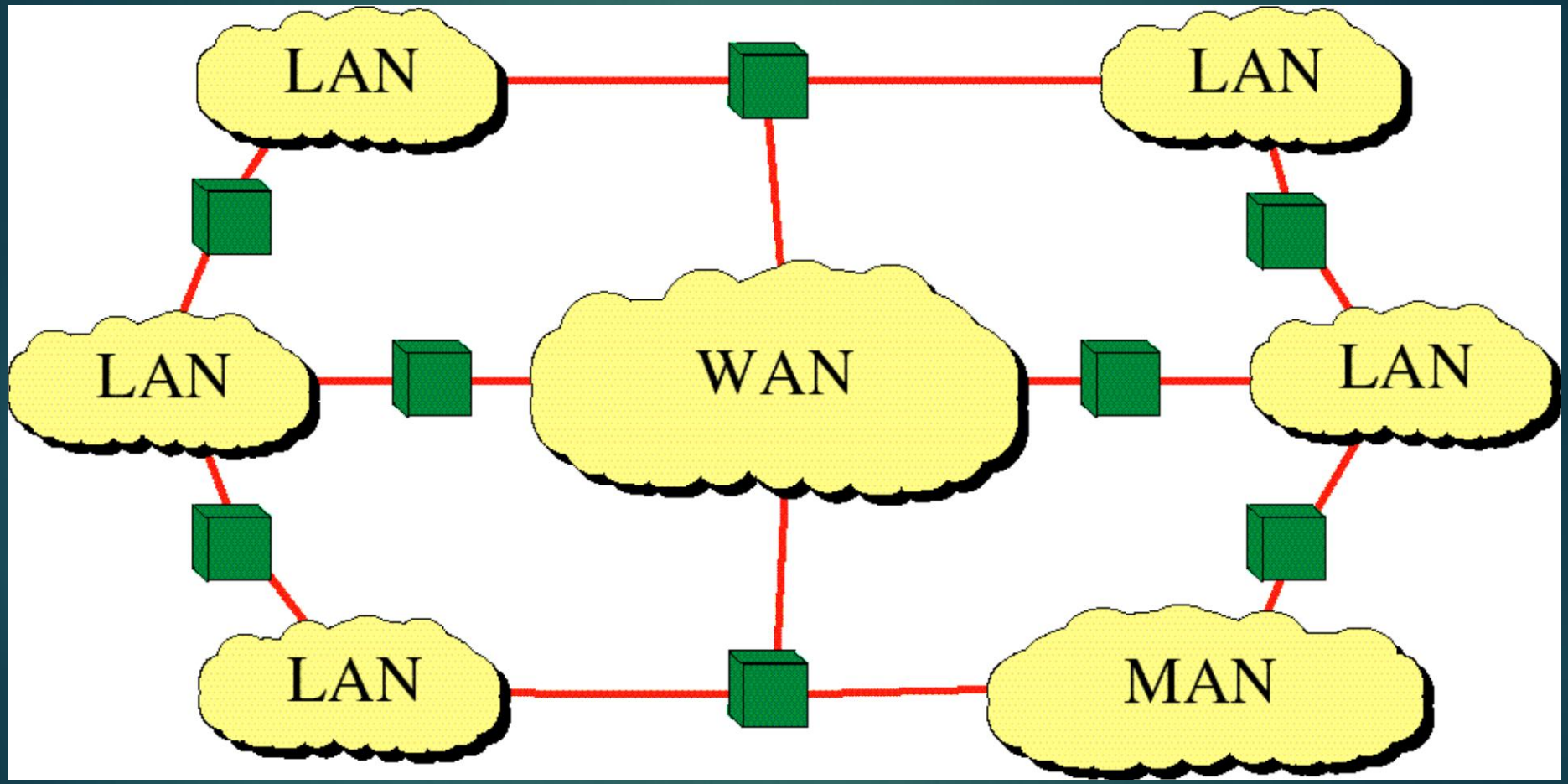
Metropolitan Area Network



Wide Area Network



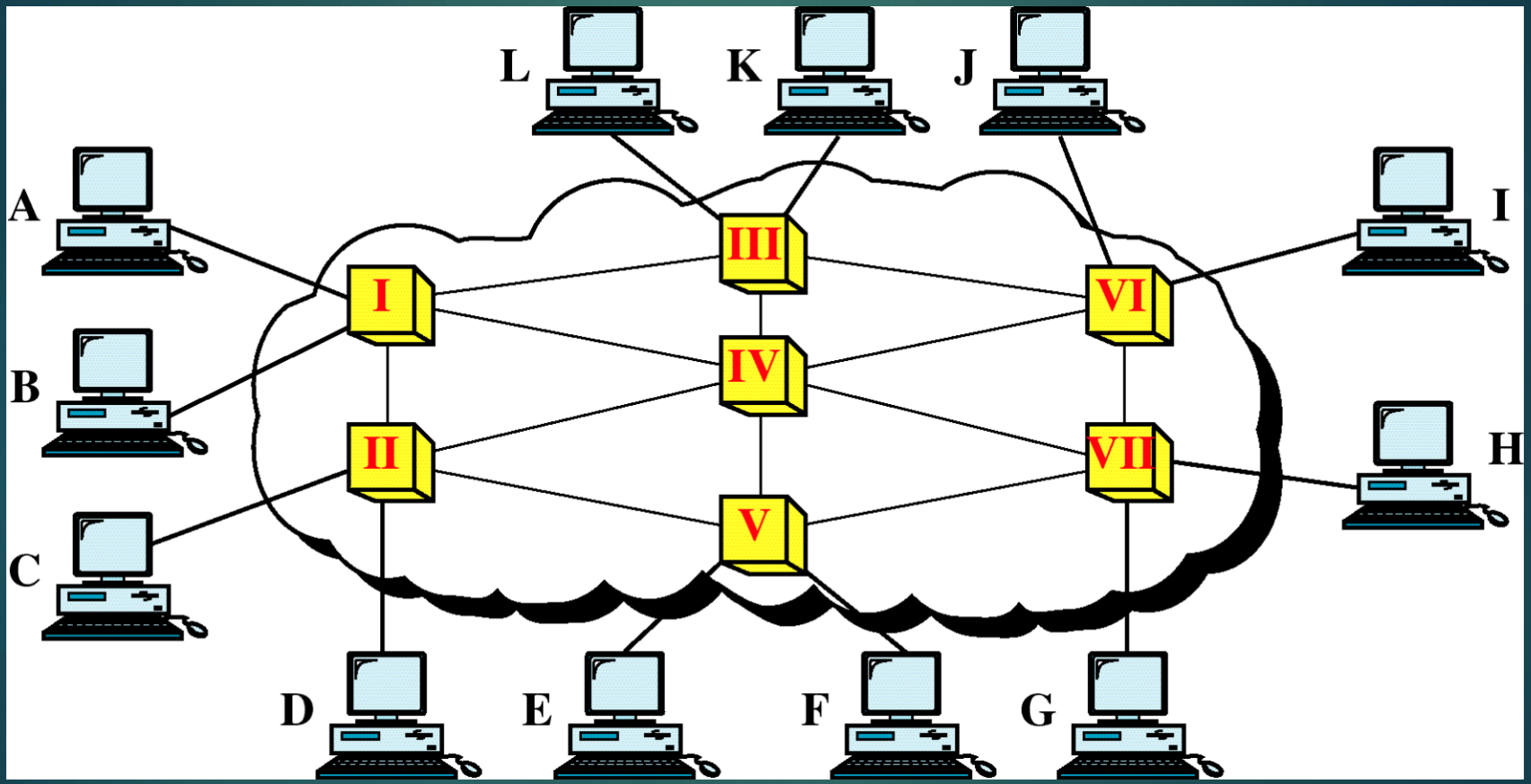
Internetwork (Internet)

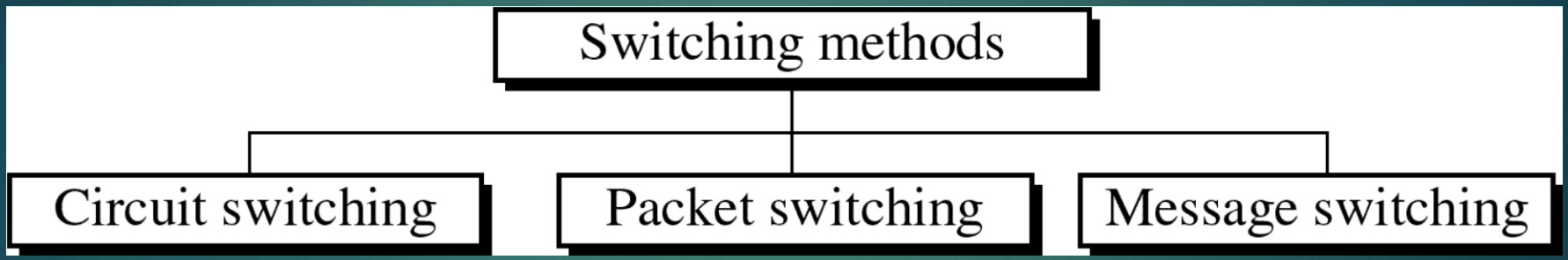


Switching

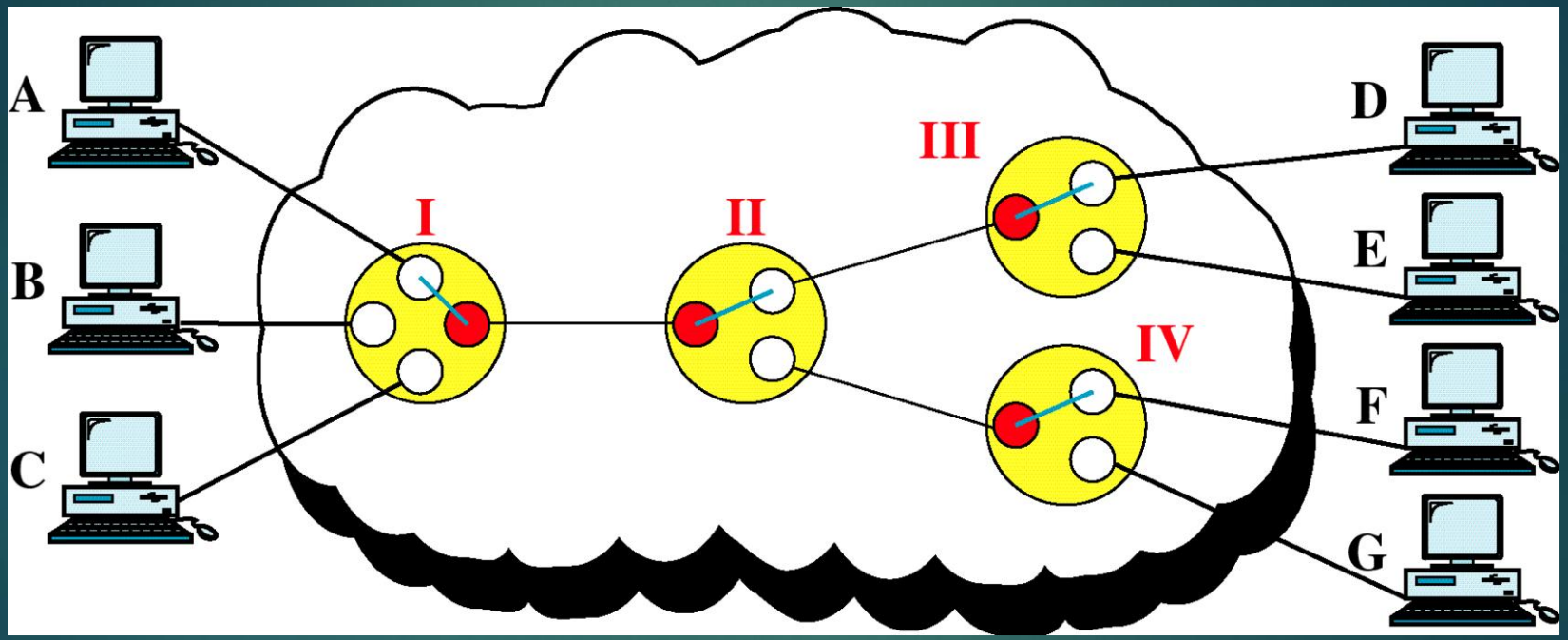
- Circuit Switching
- Packet Switching
- Message Switching

Switched Network

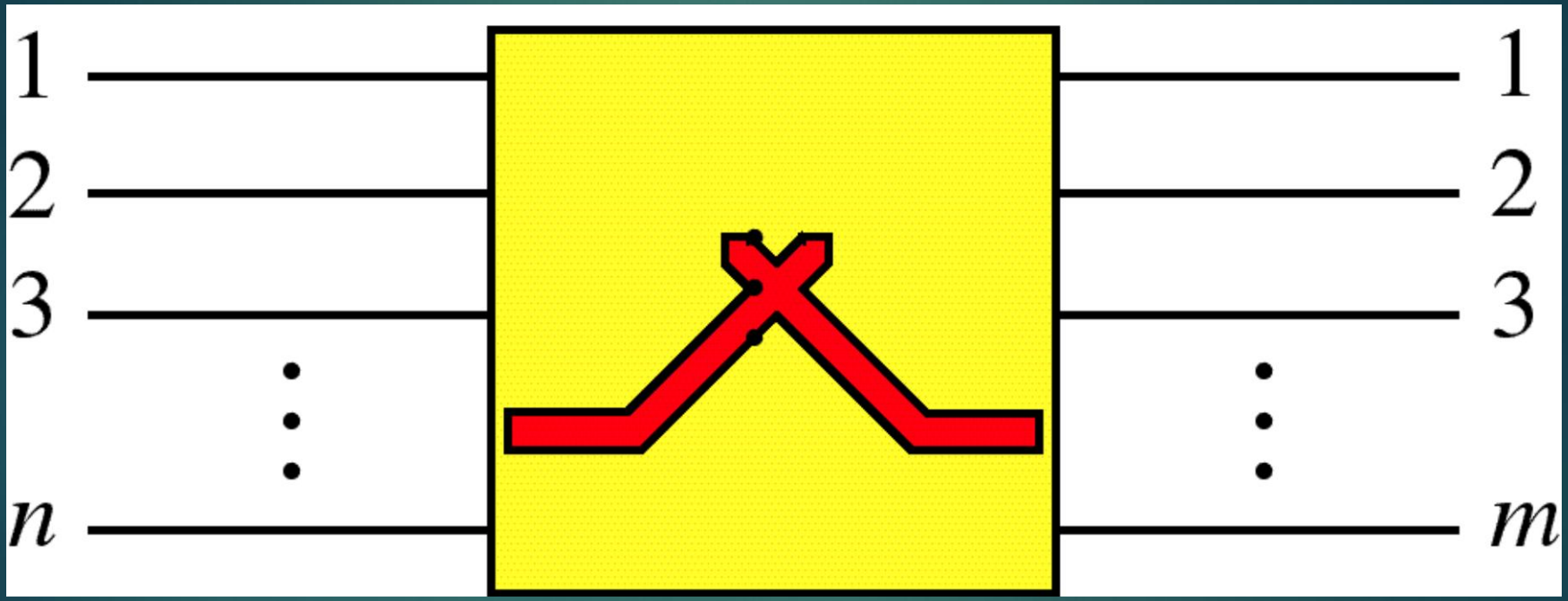



Switching methods
Circuit switching
Packet switching
Message switching

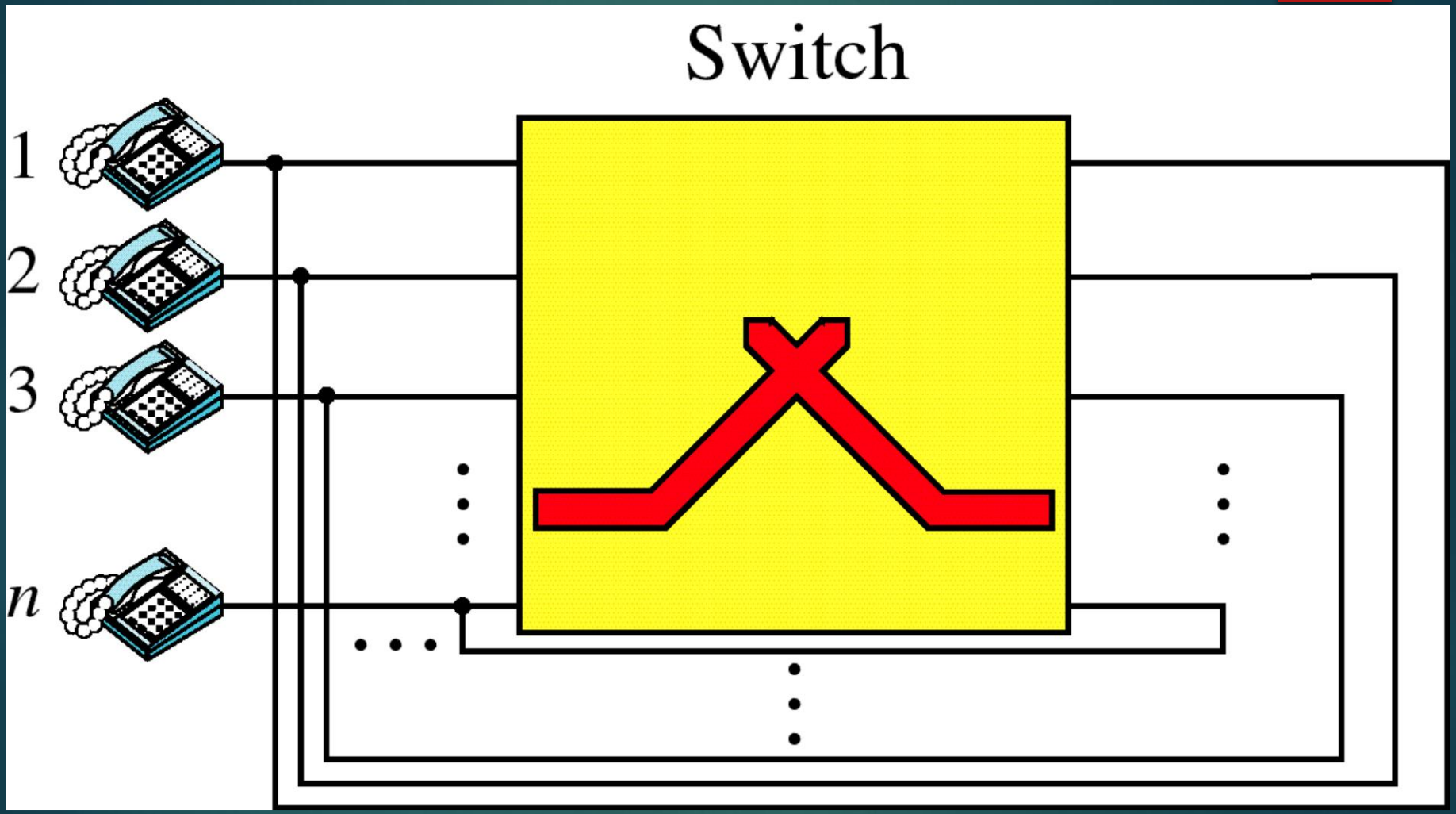
Circuit-Switched Network

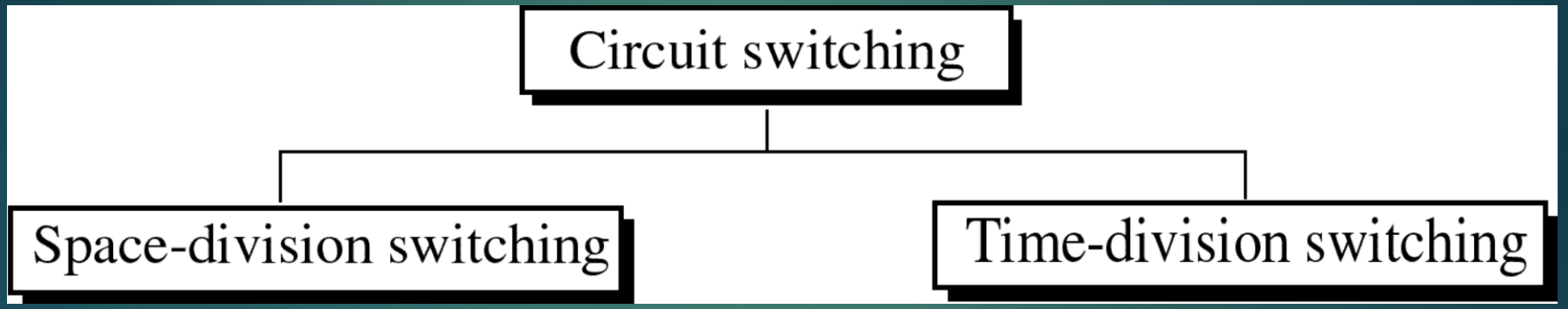


Switch

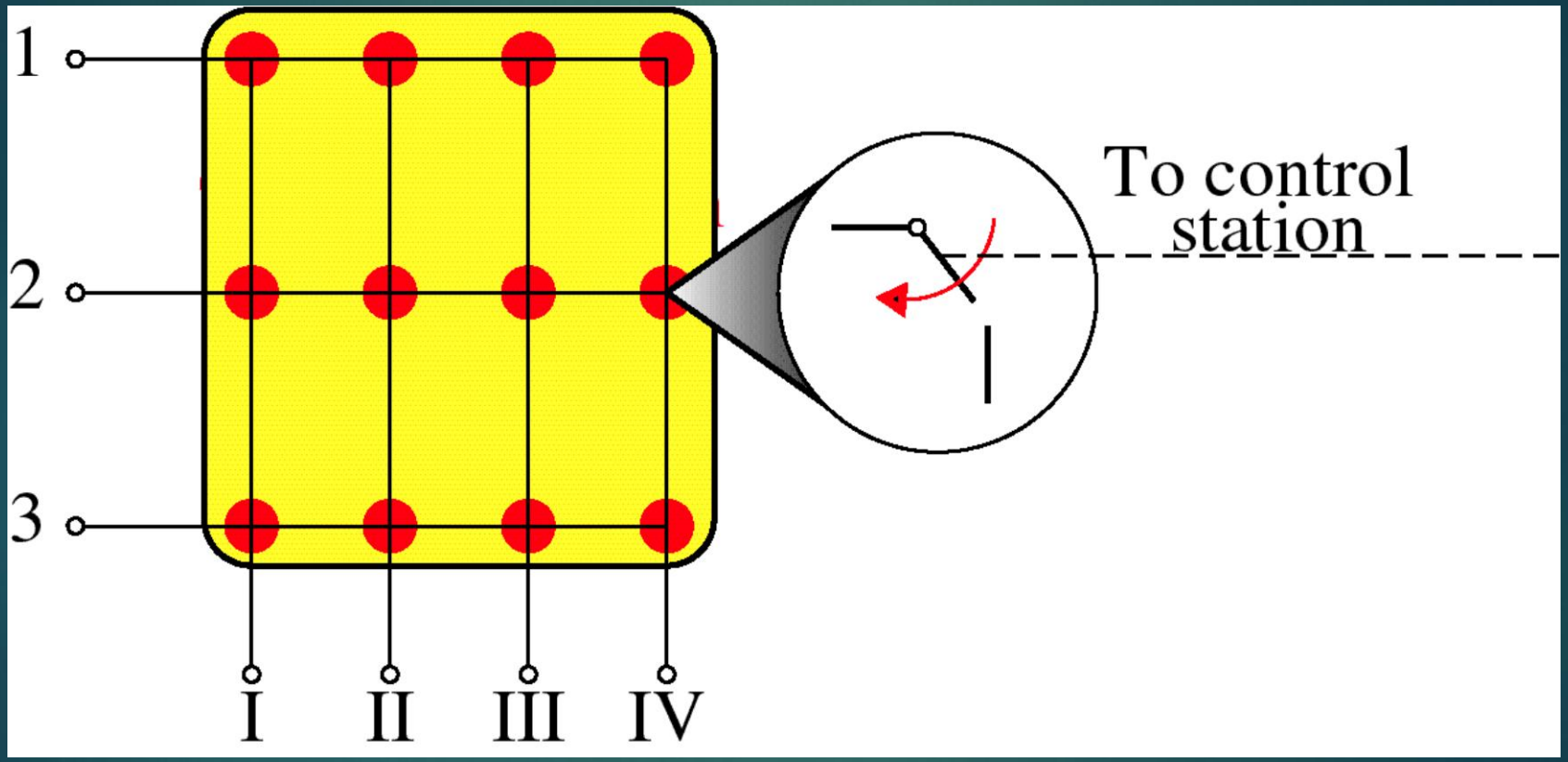


Folded Switch

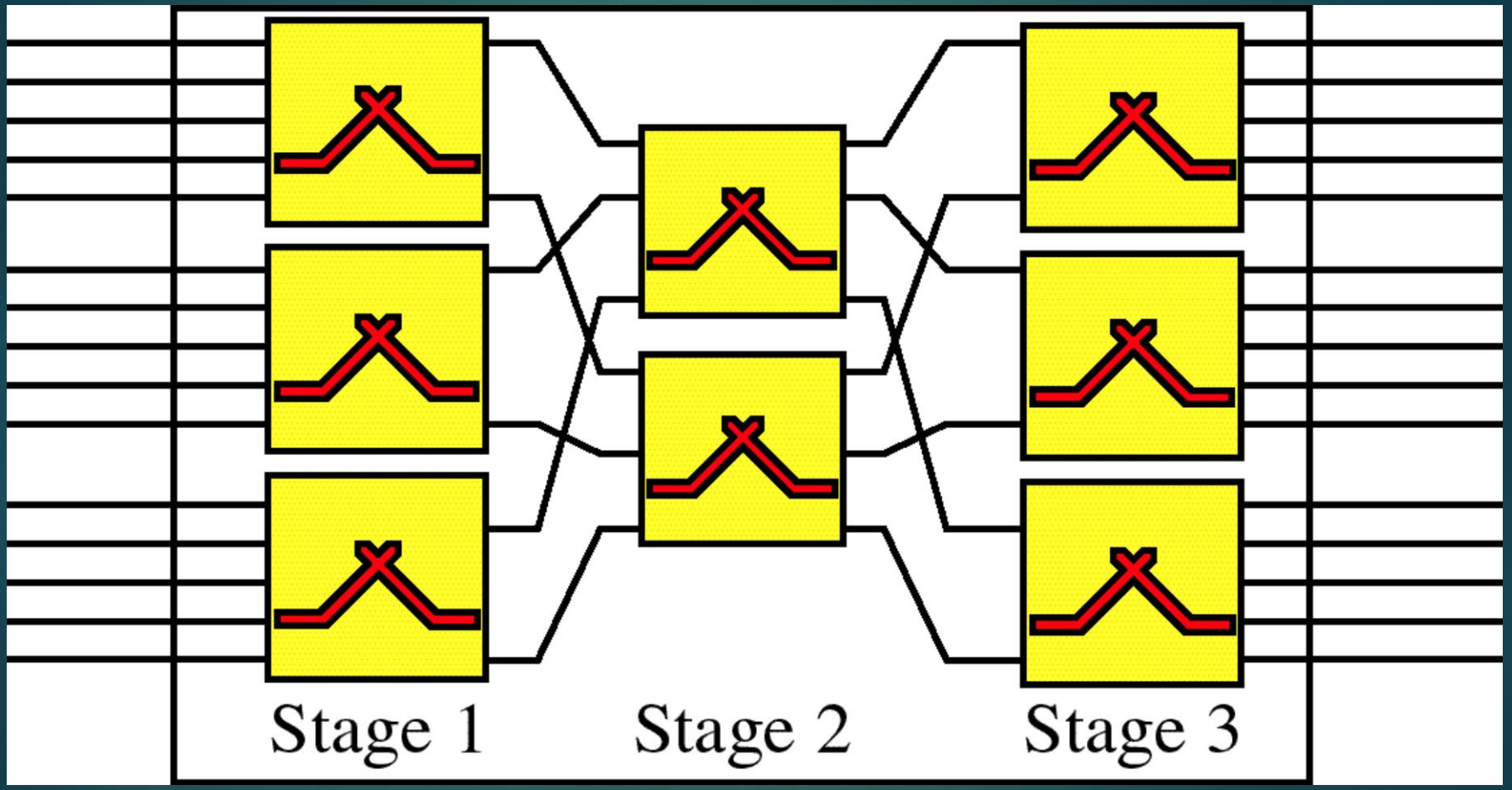



Circuit switching
Space-division switching
Time-division switching

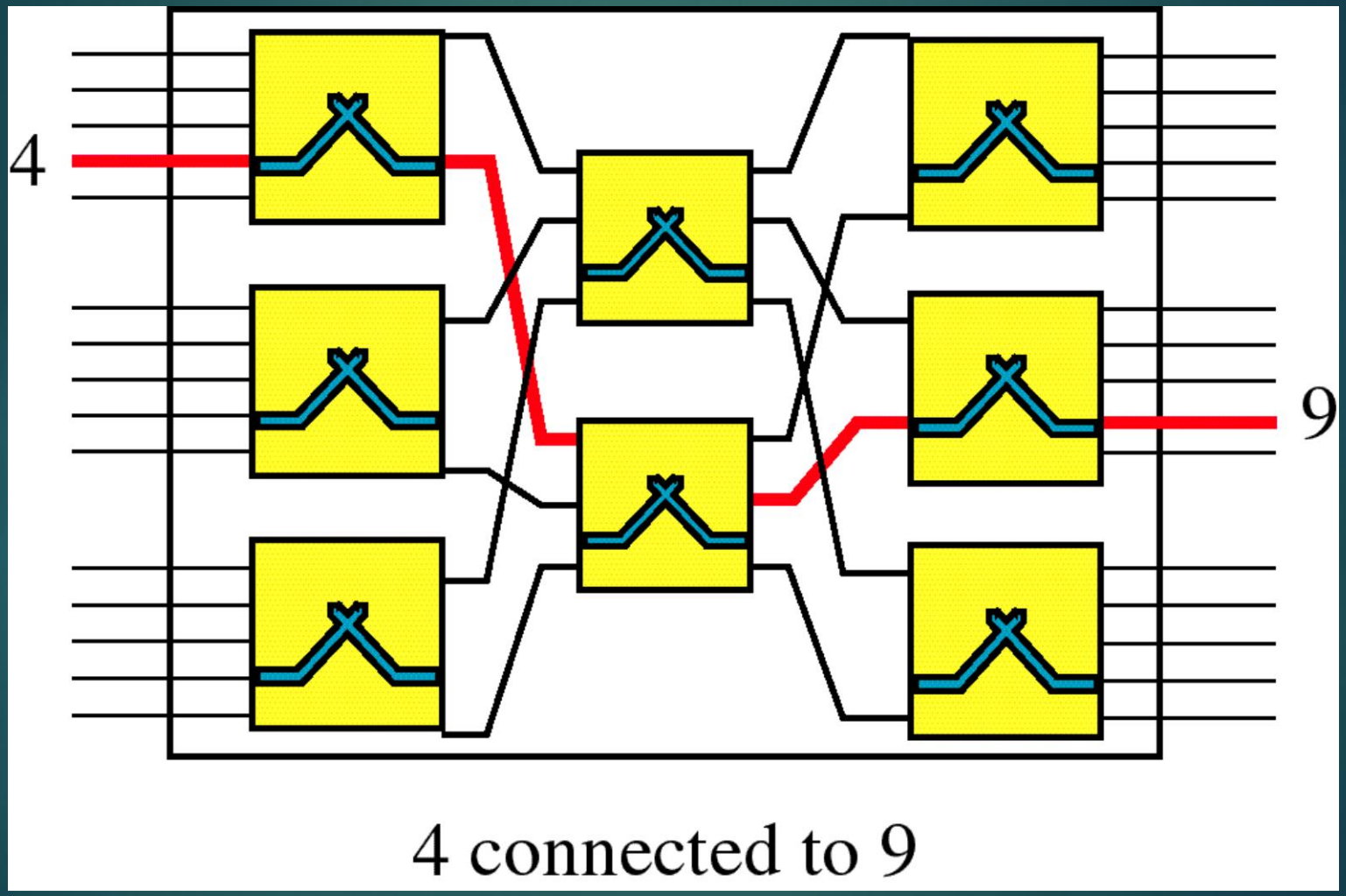
Crossbar Switch



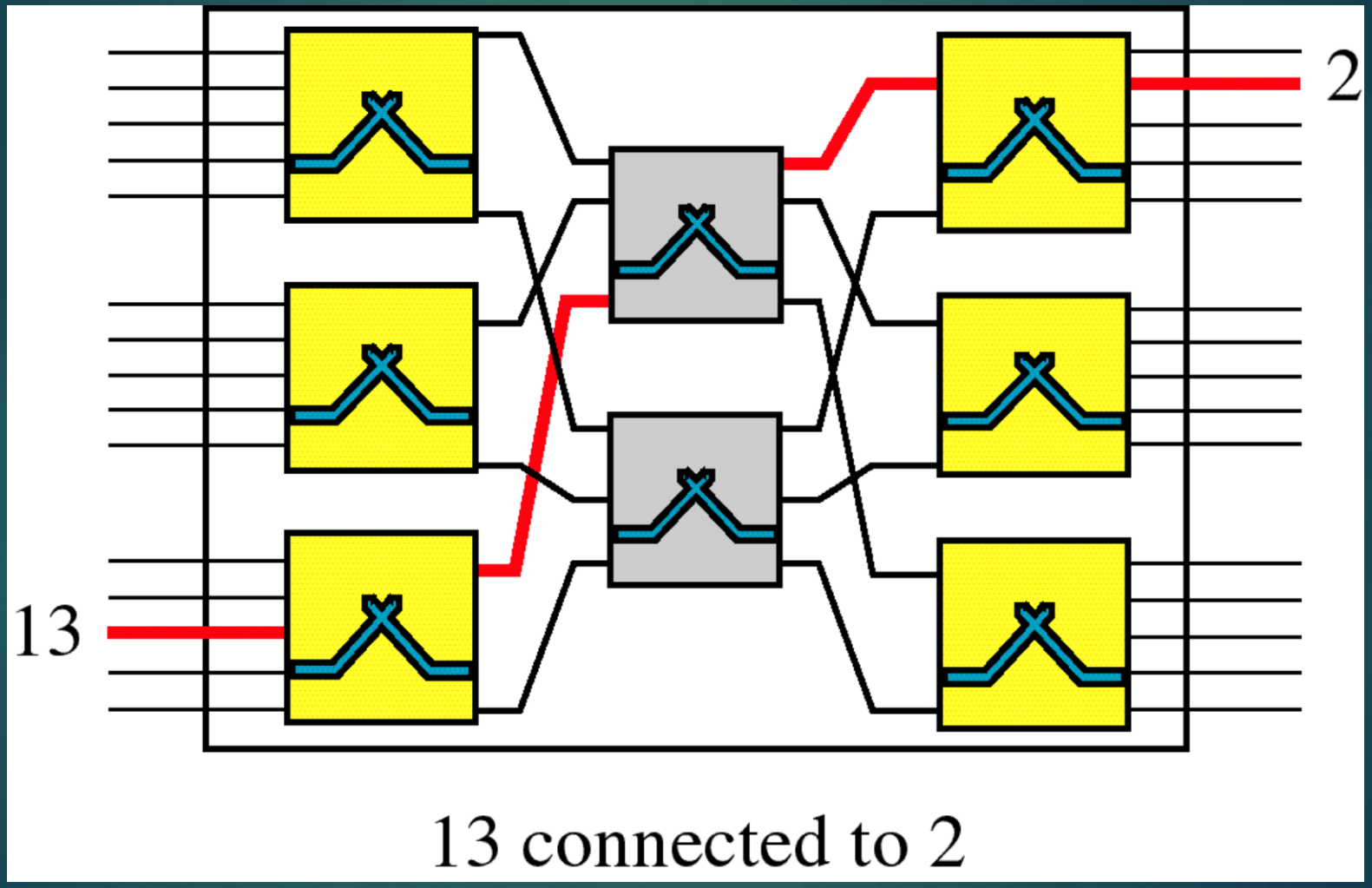
Multistage Switch



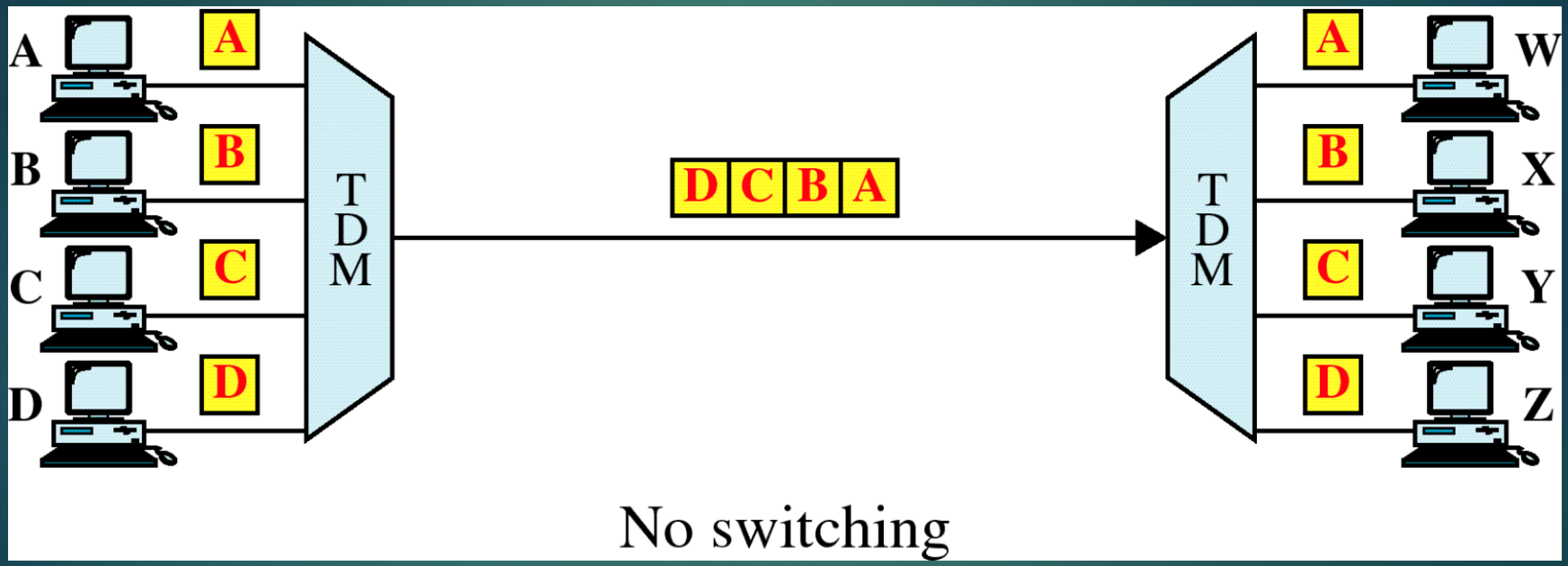
Switching Path



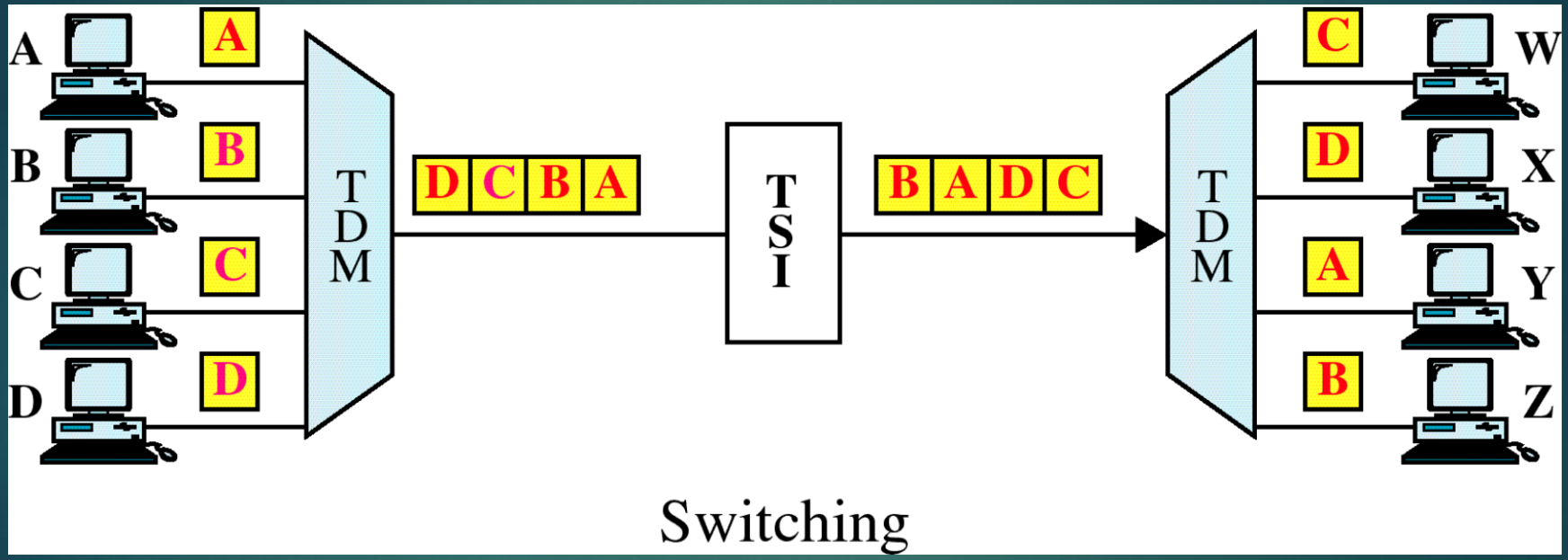
Switching Path



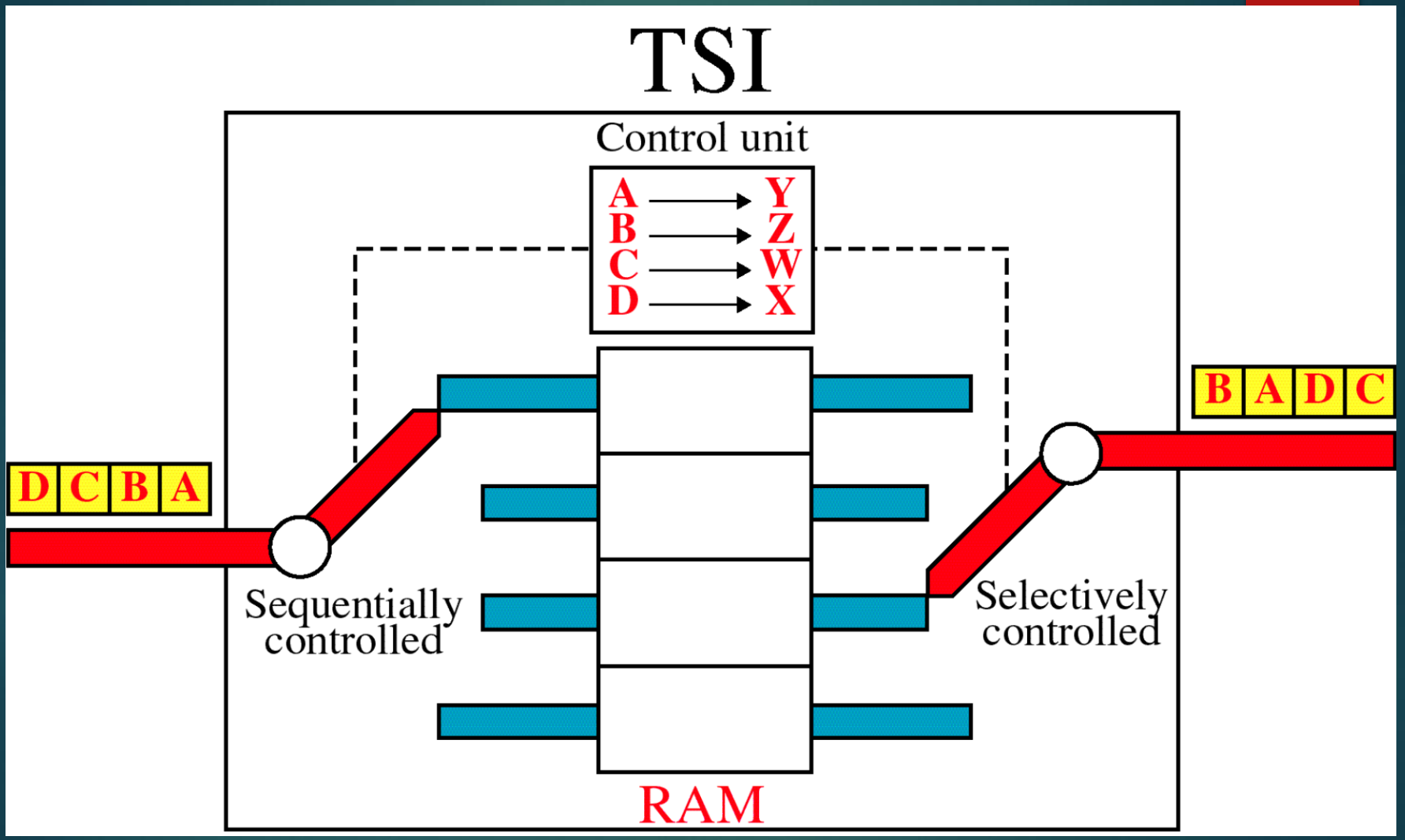
TDM without TSI



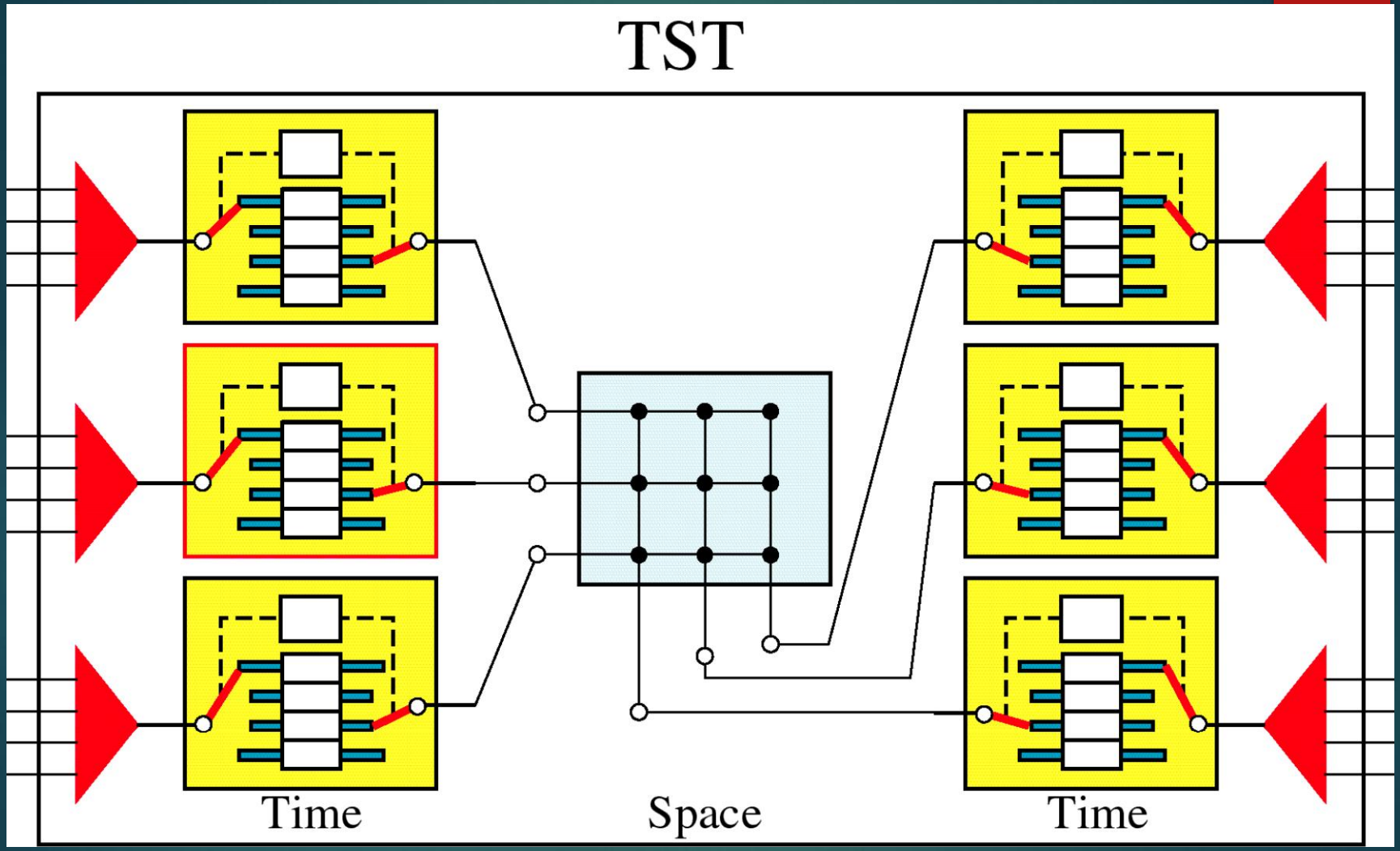
TDM with TSI

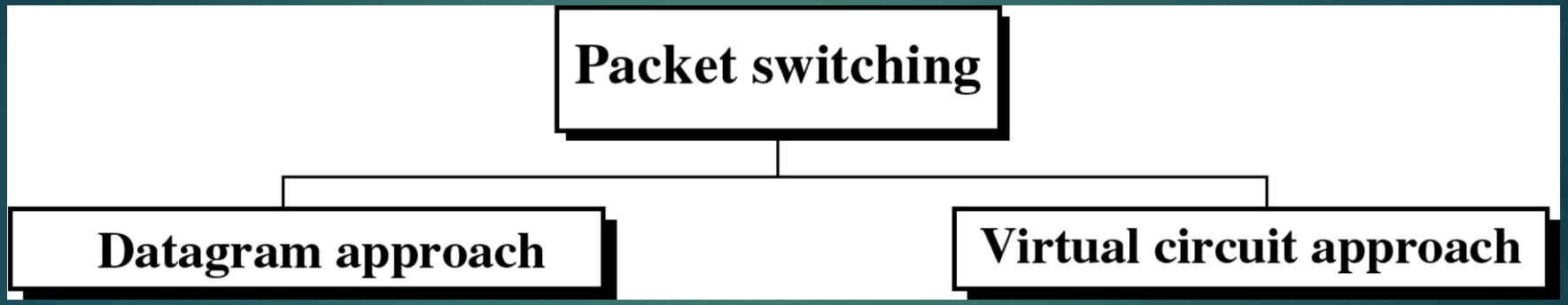


Time-Slot Interchange

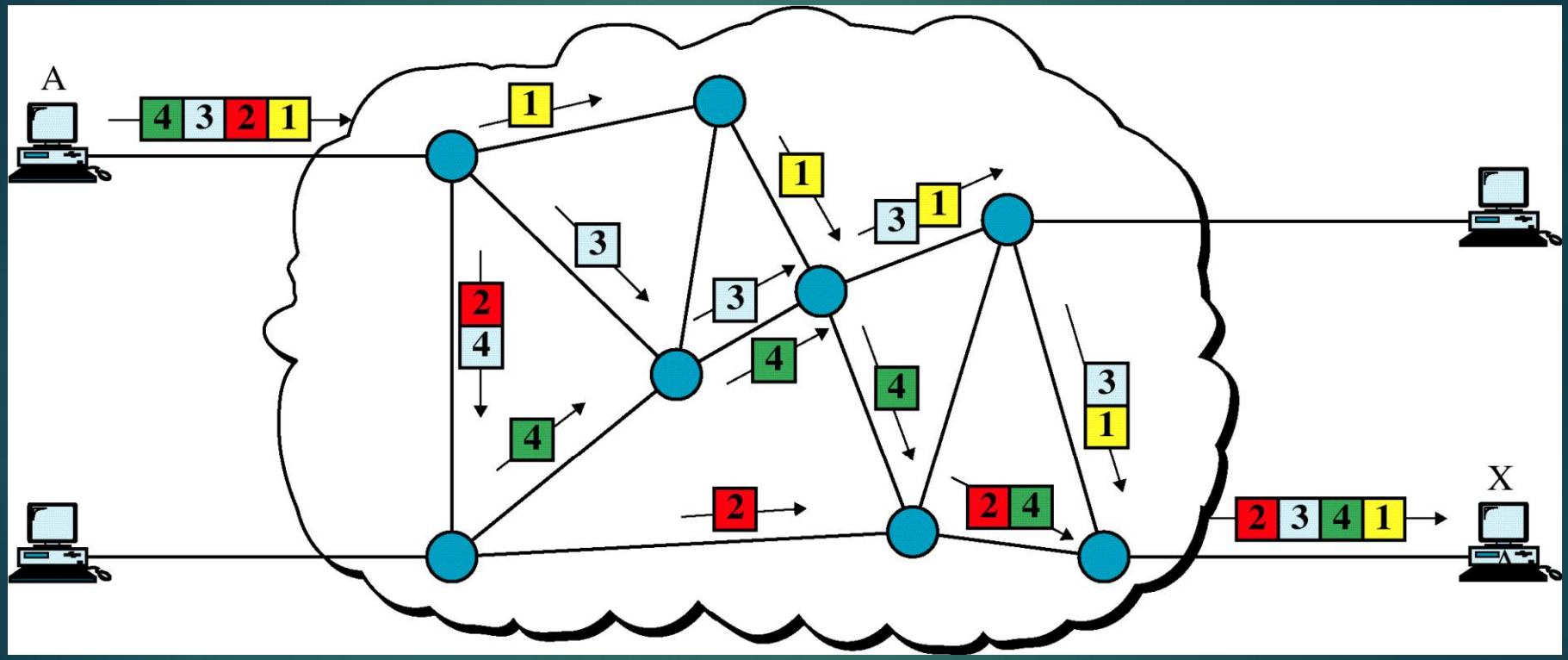


TST Switch

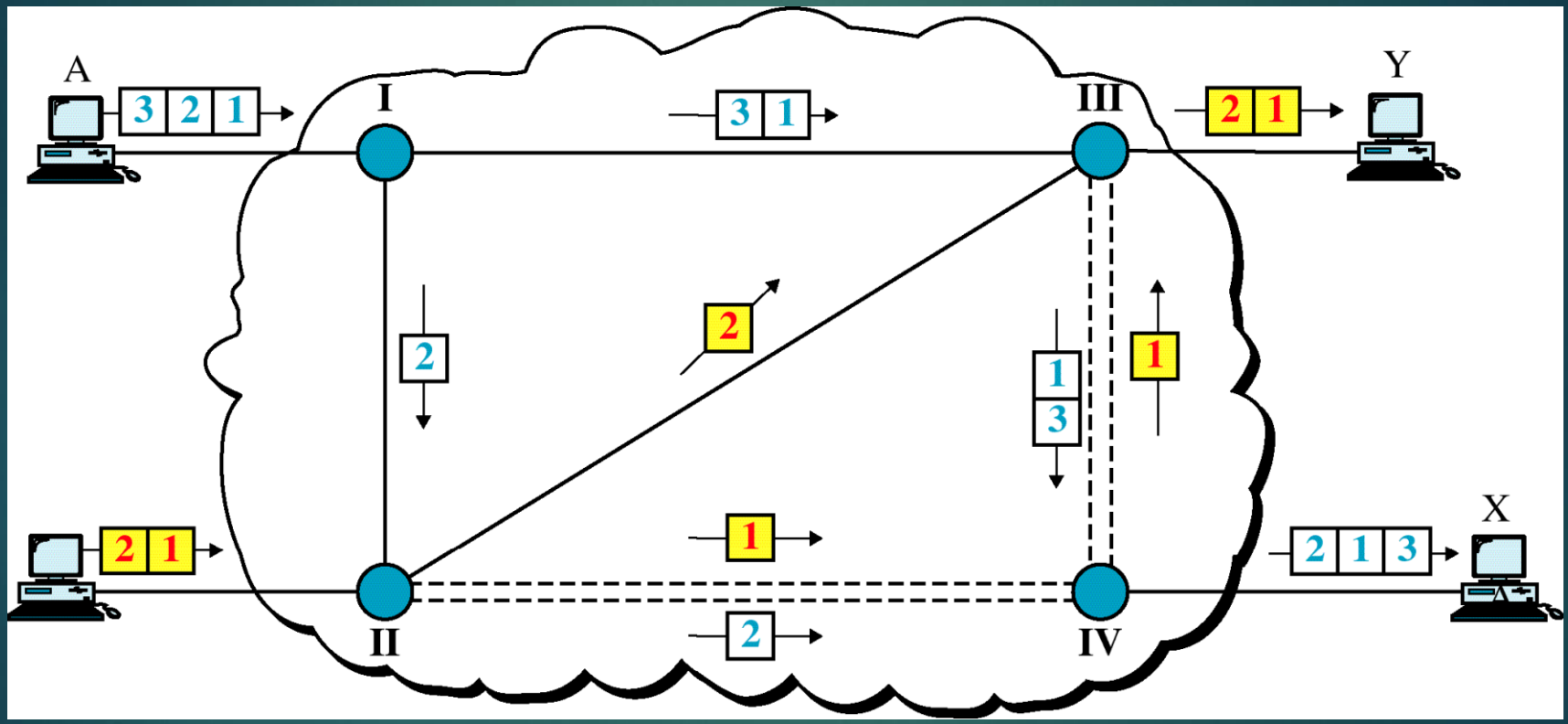



Packet switching
Datagram approach
Virtual circuit approach

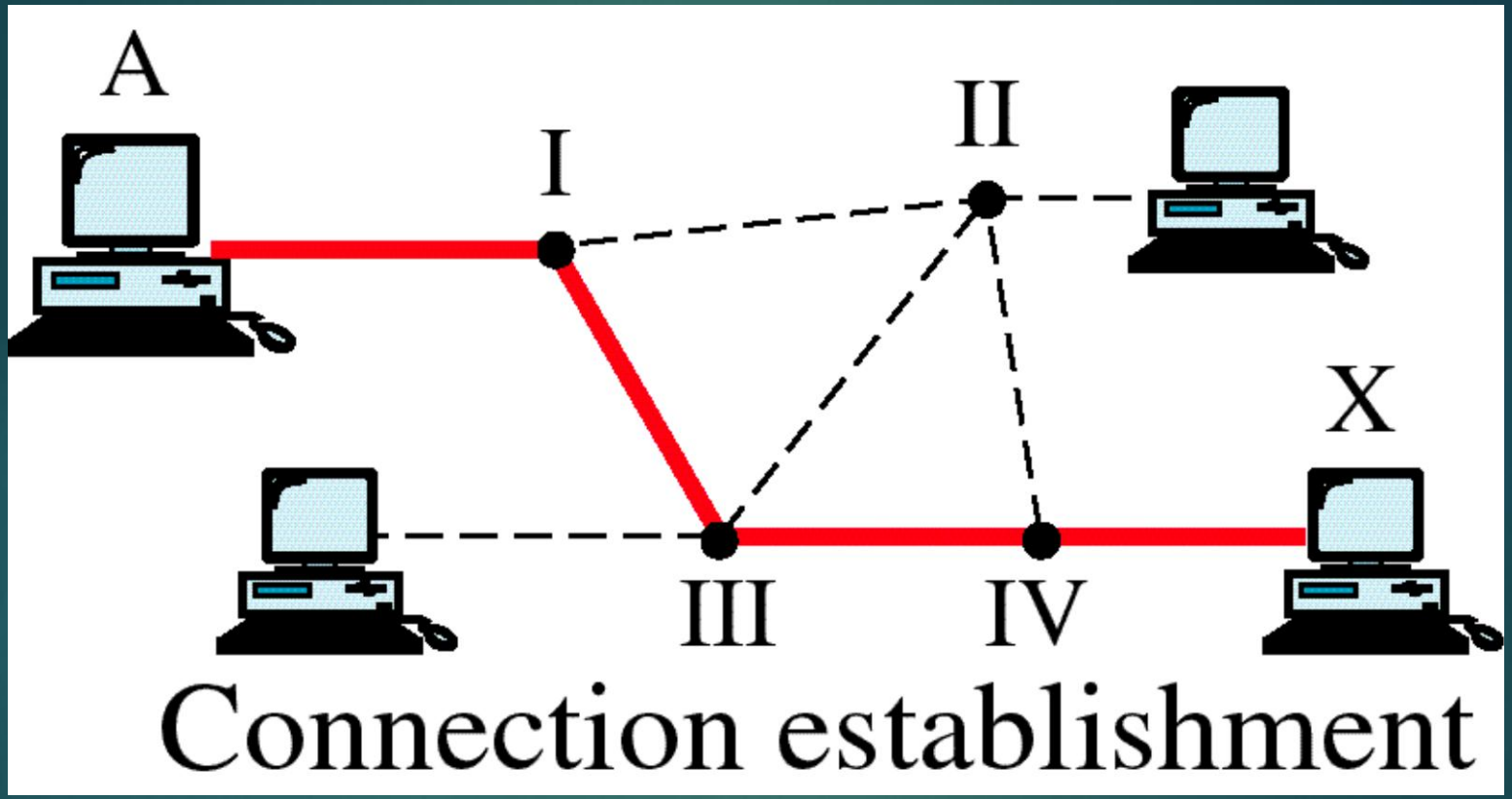
Datagram Approach



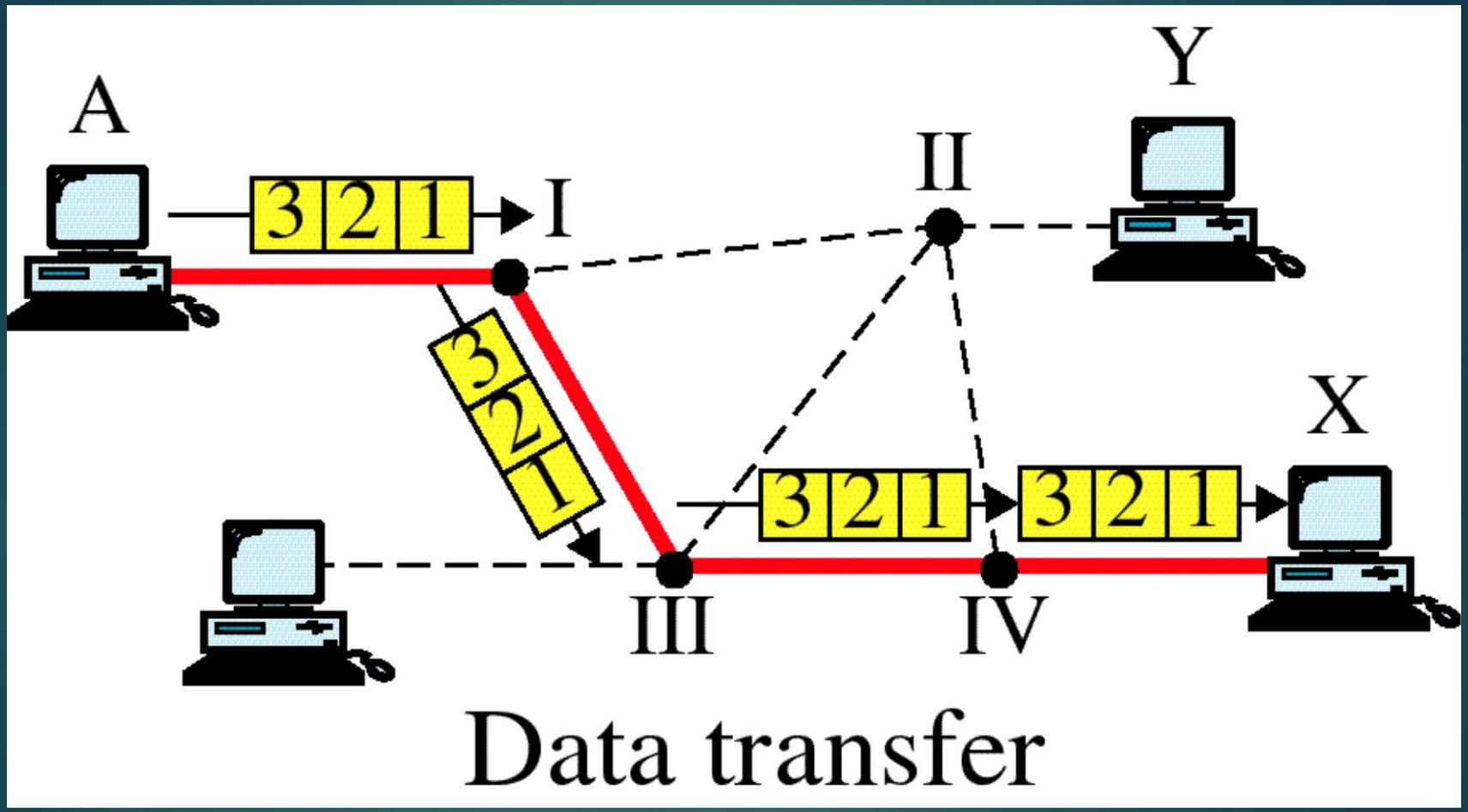
Datagram Approach, Multiple Channels



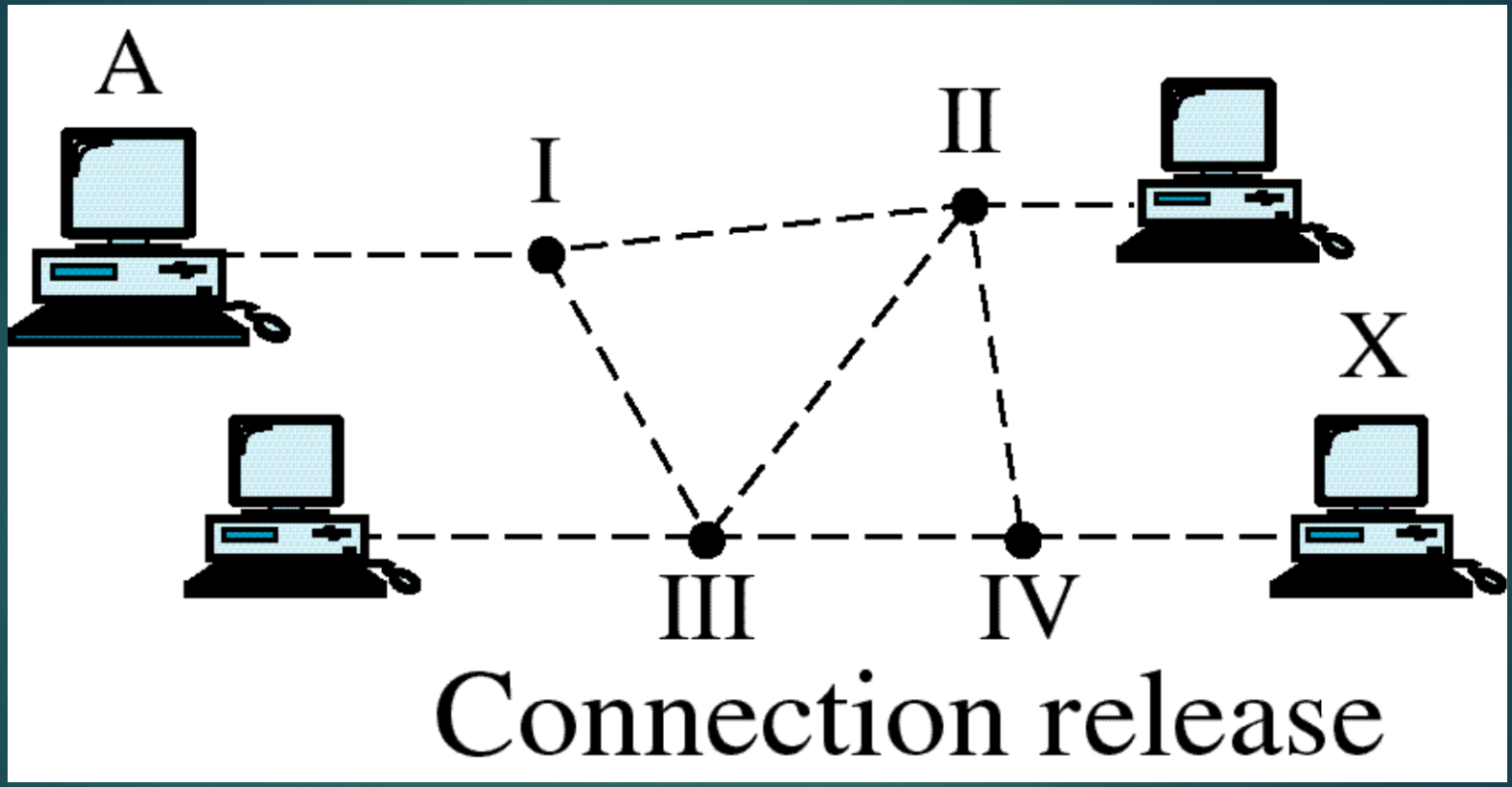
Switched Virtual Circuit



Switched Virtual Circuit



Switched Virtual Circuit



Message Switching

