

OUTCOMES

Upon the completion of this session, the learner will be able to

- ★ Understand various network topologies such as bus, star, ring, mesh and hybrid.
- ★ Understand the advantages and disadvantages of each topology.

NETWORK TOPOLOGY

Arrangement of nodes of a computer network.

Topology = Layout.



PHYSICAL TOPOLOGY AND LOGICAL TOPOLOGY

Physical Topology – Placement of various nodes.

Logical topology – Deals with the data flow in the network.



NETWORK TOPOLOGY

★ Bus

★ Ring

★ Star

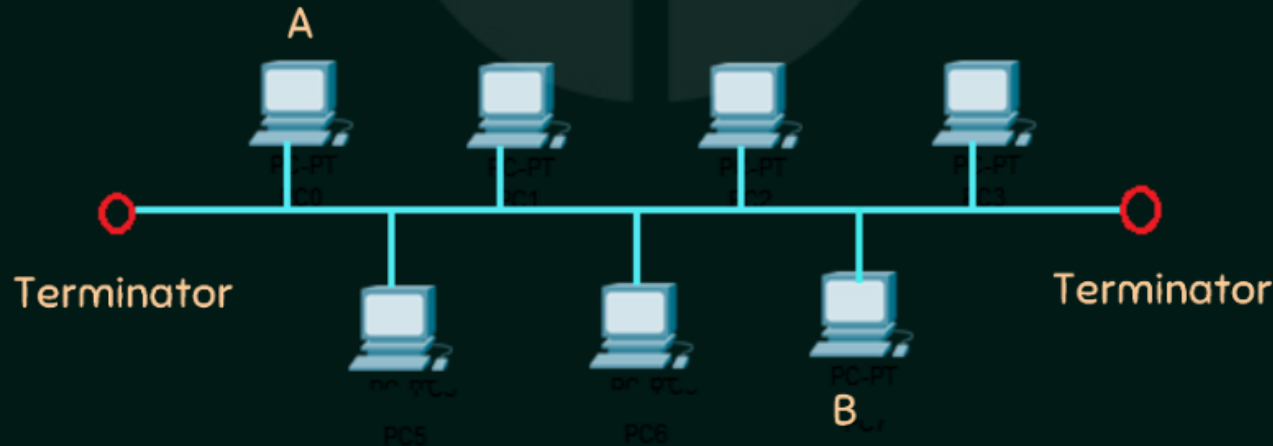
★ Mesh

★ Hybrid



BUS TOPOLOGY

- ★ All data transmitted between nodes in the network is transmitted over this **common transmission medium** and is able to be received by all nodes in the network simultaneously.
- ★ A signal containing the address of the intended receiving machine travels from a source machine in **both directions** to all machines connected to the bus until it finds the intended recipient.



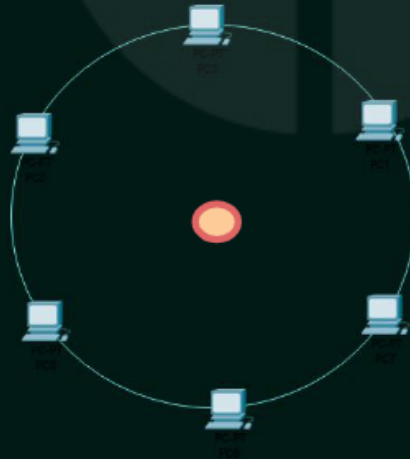
BUS TOPOLOGY

Advantages	Disadvantages
Only one wire – Less expensive.	Not fault tolerant (No redundancy).
Suited for temporary network.	Limited cable length.
Node failures does not affect others.	No security.



RING TOPOLOGY

- ★ A ring topology is a bus topology in a closed loop.
- ★ Peer-to-Peer LAN topology.
- ★ Two connections: one to each of its nearest neighbors.
- ★ Unidirectional.
- ★ Sending and receiving data takes place with the help of a **TOKEN**.

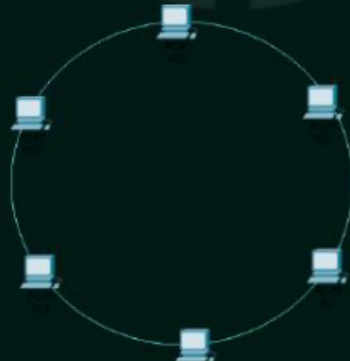


RING TOPOLOGY



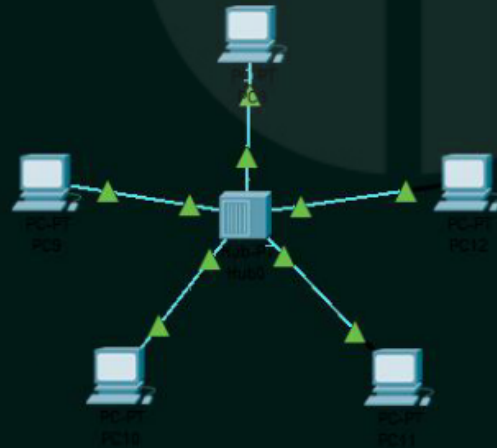
RING TOPOLOGY

Advantages	Disadvantages
Performance better than Bus topology.	Unidirectional. Single point of failure will affect the whole network.
Can cause bottleneck due to weak links.	↑ in load – ↓ in performance.
All nodes with equal access.	No security.



STAR TOPOLOGY

- ★ Every node is connected to a central node called a hub or switch.
- ★ Centralized Management.
- ★ All traffic must pass through the hub or switch.

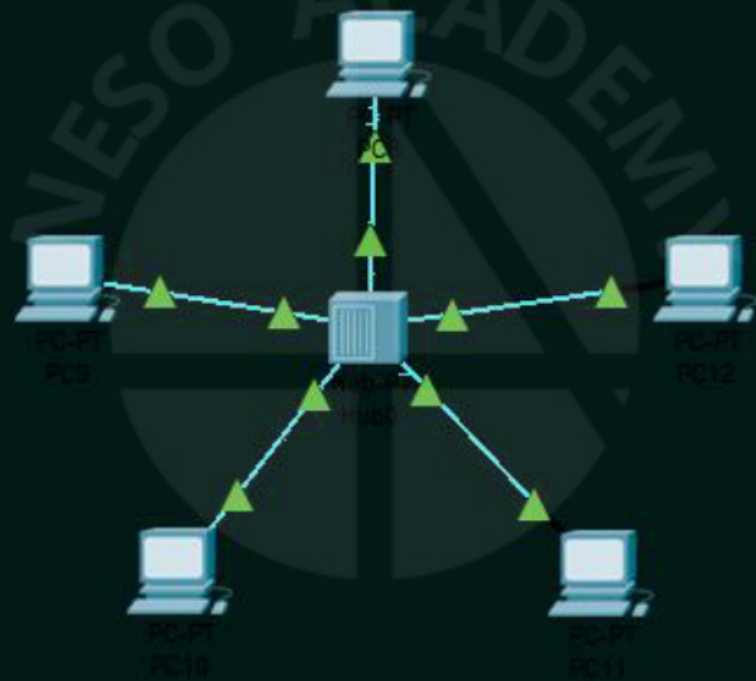


STAR TOPOLOGY

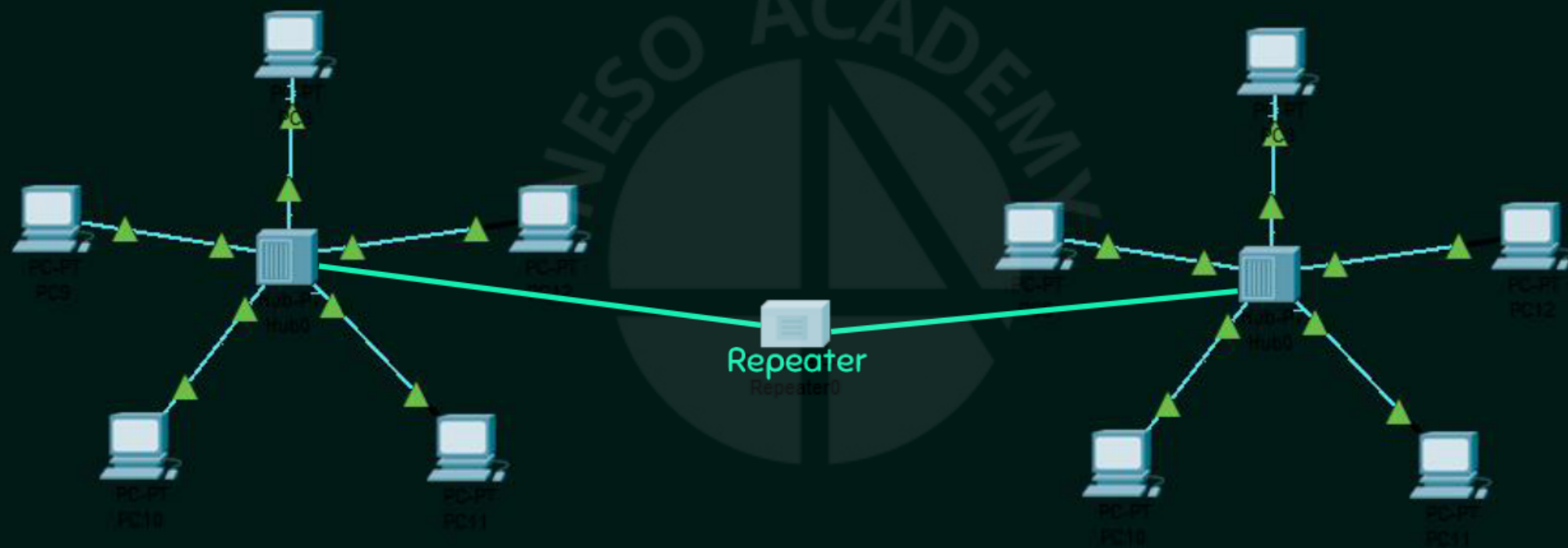
Advantages	Disadvantages
Easy to design and implement.	Single point of failure affects the whole network.
Centralized administration.	Bottlenecks due to overloaded switch/Hub.
Scalable.	Increased cost due to switch/hub.



STAR TOPOLOGY



EXTENDED STAR TOPOLOGY



MESH TOPOLOGY

- ★ Each node is directly connected to every other nodes in the network.
- ★ Fault tolerant and reliable.

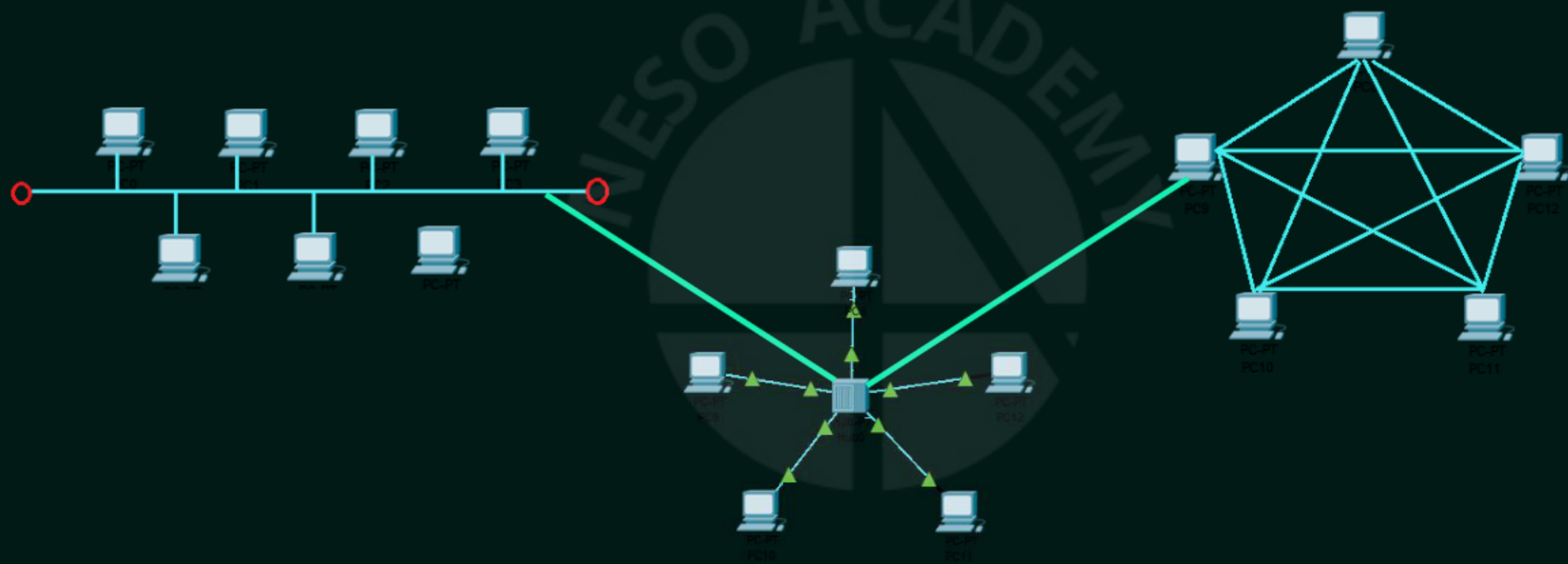


MESH TOPOLOGY

Advantages	Disadvantages
Fault tolerant.	Issues with broadcasting messages.
Reliable.	Expensive and impractical for large networks.



FIND THE TOPOLOGY??



HYBRID TOPOLOGY

