

Lab #4 : Network topologies

Communication Networks
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Academic Year : 2025/2026
Duration : 1 session

Objectives :

- Understand how the different network topologies
- Understand the difference between the different network topology.

Exercise #1 :

A. General questions about network topologies :

1. What is the difference between bus, fully-connected and star topologies ?

Your Answer :

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B. Consider the following 5 PCs.

1. Open Packet Tracer
2. Add 5 PCs.
3. Assign IP addresses and Masks to the 5 PCs according to the following table.

PC	IP address	Mask
PC0	10.10.10.1	255.0.0.0
PC1	10.10.10.2	255.0.0.0
PC2	10.10.10.3	255.0.0.0
PC3	10.10.10.4	255.0.0.0
PC4	10.10.10.5	255.0.0.0

4. Add the necessary and make the appropriate configuration :
 - a. To connect between the 5 PCs using star topology.
 - b. To connect between the 5 PCs using fully connected topology (you can add network ports to the PCs).
5. For each situation in step 4,
 - a. Test connectivity
 - b. Add 2 laptops.
 - c. Set up their IP and their mask as in section 3
 - d. Add the adequate device
 - e. And connect the 2 laptops to the network
6. Questions regarding star topology :
 - a. What happens if the switch fails?
 - b. What happens if one cable fails?
 - c. Is this topology scalable?
7. Questions regarding star fully connected :
 - a. Why is mesh used in WAN/backbone networks?
 - b. Is fully connected scalable?