

Introduction to Computer Networks

Project

Task: Design an advanced network using Packet Tracer based on the requirements specified below.

Scenario: **Tech Innovators Inc.** has two office buildings (Alpha & Beta) on the same campus in Alexandria. Each building has its own network, but the two networks are interconnected since they belong to the same company. Devices in both buildings must be able to communicate with each other.

Requirements:

1. Alpha Building:

- **Wired Network:**
 - 10 employees, 10 using Desktop PCs.
 - Shared resources: File server and Printer.
- **Wireless Network:**
 - 5 employees using Laptops.
- **DHCP Server:** Configure a DHCP server

2. Beta Building:

- **Wired Network:**
 - Application server running Project Management, Sales, and Customer Support software.
 - CTO, Sales Manager, and Customer Support Lead connected to the wired network.
 - Shared resource: Printer.
- **Wireless Network:**
 - 4 employees using Laptops or tablets.
- **DHCP Server:** Configure a DHCP server

3. Network Segmentation:

- Wireless networks in each building must be secured.
- Ensure subnets can communicate with each other.

4. IP Addressing:

- All devices, except shared resources and router interfaces, must be assigned IP addresses using DHCP.
- Avoid IP address overlaps for the subnets.
- Use the IP address range assigned to your group

5. Interconnectivity:

- Configure the network to ensure devices on different subnets can communicate.

6. Use wireless Access Points and not Wireless Routers for Wireless Networks

For each project group, the network address for Tech Innovators Inc is as shown in the table below:

GROUP #	NETWORK ID
1	128.0.128.0/17
2	128.1.0.0/17
3	128.1.128.0/17
4	128.2.0.0/17
5	128.2.128.0/17
6	128.3.0.0/17
7	128.3.128.0/17
8	128.4.0.0/17
9	128.4.128.0/17
10	128.5.0.0/17
11	128.5.128.0/17
12	128.6.0.0/17
13	128.6.128.0/17

Based on the table above, group 1 would use the network address **128.0.128.0/17** for Tech Innovators Inc. Please note that subnets must be created based on the network address of Tech Innovators Inc.

What to Submit on Canvas:

- Network diagram created using Packet Tracer
- One page document detailing the following in table form.
 - Network ID
 - IP address range of each network(Starting Host IP, End Host IP)
 - Broadcast address
 - Subnet mask

[illegible]