**🏛️ Project: Multi-Branch Office Network**

**Scenario**

A small company, **Acme Corp**, has three offices: **Headquarters (HQ)**, a **Sales Office (Sales)**, and a **Warehouse (WH)**. All three must communicate over a Wide Area Network (WAN) simulated by directly connecting the routers.

**Topology Requirements**

| **Element** | **HQ (New York)** | **Sales (London)** | **Warehouse (Tokyo)** | **WAN (Backbone)** |
| --- | --- | --- | --- | --- |
| **Router** | RouterHQ (1941) | RouterSales (1941) | RouterWH (1941) | --- |
| **Switch** | SwitchHQ (2960) | SwitchSales (2960) | SwitchWH (2960) | --- |
| **End Devices** | 2 PCs, 1 Server (HTTP/DNS) | 3 PCs, 1 Laptop | 2 PCs, 1 Printer | --- |
| **Connections** | All wired | All wired | All wired | RouterHQ \to RouterSales \to RouterWH |

**🔢 IP Addressing Scheme**

You must use **three separate private IP address subnets** for the local networks (LANs) and **two separate backbone subnets** for the router-to-router links (WAN).

| **Network Segment** | **Network Address** | **Subnet Mask** | **Default Gateway (Router Interface)** |
| --- | --- | --- | --- |
| **HQ LAN** | 192.168.1.0 | 255.255.255.0 (/24) | 192.168.1.1 |
| **Sales LAN** | 192.168.2.0 | 255.255.255.0 (/24) | 192.168.2.1 |
| **Warehouse LAN** | 192.168.3.0 | 255.255.255.0 (/24) | 192.168.3.1 |
| **HQ \leftrightarrow Sales WAN** | 10.0.0.0 | 255.255.255.252 (/30) | HQ: 10.0.0.1 / Sales: 10.0.0.2 |
| **Sales \leftrightarrow WH WAN** | 10.0.0.4 | 255.255.255.252 (/30) | Sales: 10.0.0.5 / WH: 10.0.0.6 |

**Note:** We use the /30 mask for the WAN links (only 4 addresses: Network, Host 1, Host 2, Broadcast) because it's the most efficient way to connect two routers.

**🗺️ Routing Requirements (The Challenge)**

The core task is to configure **Static Routes** on all three routers so that any device can reach any other device.

**1. RouterHQ Configuration**

RouterHQ needs two static routes:

* **Route 1:** To reach the **Sales LAN (192.168.2.0)**, send traffic to the next-hop IP: 10.0.0.2 (RouterSales's WAN interface).
* **Route 2:** To reach the **Warehouse LAN (192.168.3.0)**, send traffic to the next-hop IP: 10.0.0.2 (RouterSales's WAN interface, as Sales is the only path to the Warehouse).

**2. RouterWH Configuration**

RouterWH needs two static routes:

* **Route 1:** To reach the **Sales LAN (192.168.2.0)**, send traffic to the next-hop IP: 10.0.0.5 (RouterSales's WAN interface).
* **Route 2:** To reach the **HQ LAN (192.168.1.0)**, send traffic to the next-hop IP: 10.0.0.5 (RouterSales's WAN interface).

**3. RouterSales Configuration**

RouterSales acts as the central hub and needs to know about both remote LANs:

* **Route 1:** To reach the **HQ LAN (192.168.1.0)**, send traffic to the next-hop IP: 10.0.0.1 (RouterHQ's WAN interface).
* **Route 2:** To reach the **Warehouse LAN (192.168.3.0)**, send traffic to the next-hop IP: 10.0.0.6 (RouterWH's WAN interface).

**🎯 Verification (Final Test)**

Your project is complete when you can successfully perform the following **ping tests** in Packet Tracer:

1. **PC in HQ LAN** \to **Server in HQ LAN** (Test local connectivity).
2. **PC in HQ LAN** \to **RouterHQ Default Gateway** (Test gateway access).
3. **PC in HQ LAN** \to **PC in Sales LAN** (Test first-hop routing).
4. **PC in HQ LAN** \to **PC in Warehouse LAN** (Test multi-hop routing).