**Network document**

**Overview**

This project is a basic network setup designed to connect multiple PCs and a router through a central switch. Each PC is assigned a unique IP address within the same subnet, allowing them to communicate with each other and access the network through a default gateway configured on a router. The project serves as a foundational example of LAN connectivity and basic IP addressing.

**Network Diagram**

**A computer network diagram with a few computer servers

Description automatically generated with medium confidence**

**Network Topology**

**Devices**

1. **Router** (ISR 4331)
2. **Switch** (2960-24TT Switch)
3. **PCs**:
   * PC-Rouen
   * PC-Camille
   * PC-Renaud

**Physical Connections**

* **Router**: Connected to Switch on interface Gig0/0/0.
* **Switch**:
  + Connects to Router (Gig0/0/0) on Fa0/4.
  + Connects to PC-Rouen on Fa0/1.
  + Connects to PC-Camille on Fa0/2.
  + Connects to PC-Renaud on Fa0/3.

**Logical IP Configuration**

Each PC and router interface is assigned an IP address within the 192.168.10.0/24 subnet. The default gateway for each PC is set to the router's IP address.

**PC-Rouen**

* **IP Address**: 192.168.10.10
* **Subnet Mask**: 255.255.255.0
* **Default Gateway**: 192.168.10.1

**PC-Camille**

* **IP Address**: 192.168.10.11
* **Subnet Mask**: 255.255.255.0
* **Default Gateway**: 192.168.10.1

**PC-Renaud**

* **IP Address**: 192.168.10.12
* **Subnet Mask**: 255.255.255.0
* **Default Gateway**: 192.168.10.1

**Router0 (Router Interface Gig0/0/0)**

* **IP Address**: 192.168.10.1
* **Subnet Mask**: 255.255.255.0

**Project Setup Instructions**

1. **Connect Devices**: Connect each PC and the router to the switch on the specified ports as shown in the topology.
2. **Assign IP Addresses**:
   * On each PC, go to the IP configuration settings and assign the IP address, subnet mask, and default gateway as specified in the logical IP configuration section.
   * On the router, configure the interface Gig0/0/0 with the IP address 192.168.10.1 and the subnet mask 255.255.255.0.
3. **Verify Connectivity**:
   * Use the ping command to test connectivity between PCs and between each PC and the router. For example, from PC-Rouen, ping 192.168.10.11 (PC-Camille) and 192.168.10.1 (Router).
   * Successful responses to the ping commands indicate that the network is configured correctly.

**Troubleshooting Tips**

* **Check Cabling**: Ensure each device is connected to the correct port on the switch.
* **Verify IP Configuration**: Make sure each PC has the correct IP address, subnet mask, and default gateway.
* **Ping the Gateway**: If a PC cannot reach another PC, try pinging the default gateway (router). This helps determine if the issue is with the router or between PCs.
* **Interface Status**: Ensure all interfaces on the switch and router are up and running. On the router, use show ip interface brief to check the interface status.

**Conclusion**

This simple network project provides a foundational setup for understanding basic LAN configuration, IP addressing, and connectivity testing. It can be expanded by adding more PCs, implementing VLANs, or introducing routing protocols for more complex network requirements.