

An abstract graphic consisting of several thin, white, parallel lines that originate from the lower-left quadrant and extend towards the upper-right corner of the slide. The lines are slightly curved and vary in length, creating a sense of movement and depth against the blue gradient background.

A SIMPLE NETWORK IN AN OFFICE

Georgescu Marius-Daniel

Project Description

In this project, I am going to set up and configure a simple LAN in an office using **Cisco Packet Tracer**.

With this work, I learned and understood the basic functionality and configurations of switches and routers, as well as the principles of a Local Area Network.

Our office is structured in 2 departments: Finance Department and HR Department, each one being represented by a sub-network of our LAN.

Starting Configurations

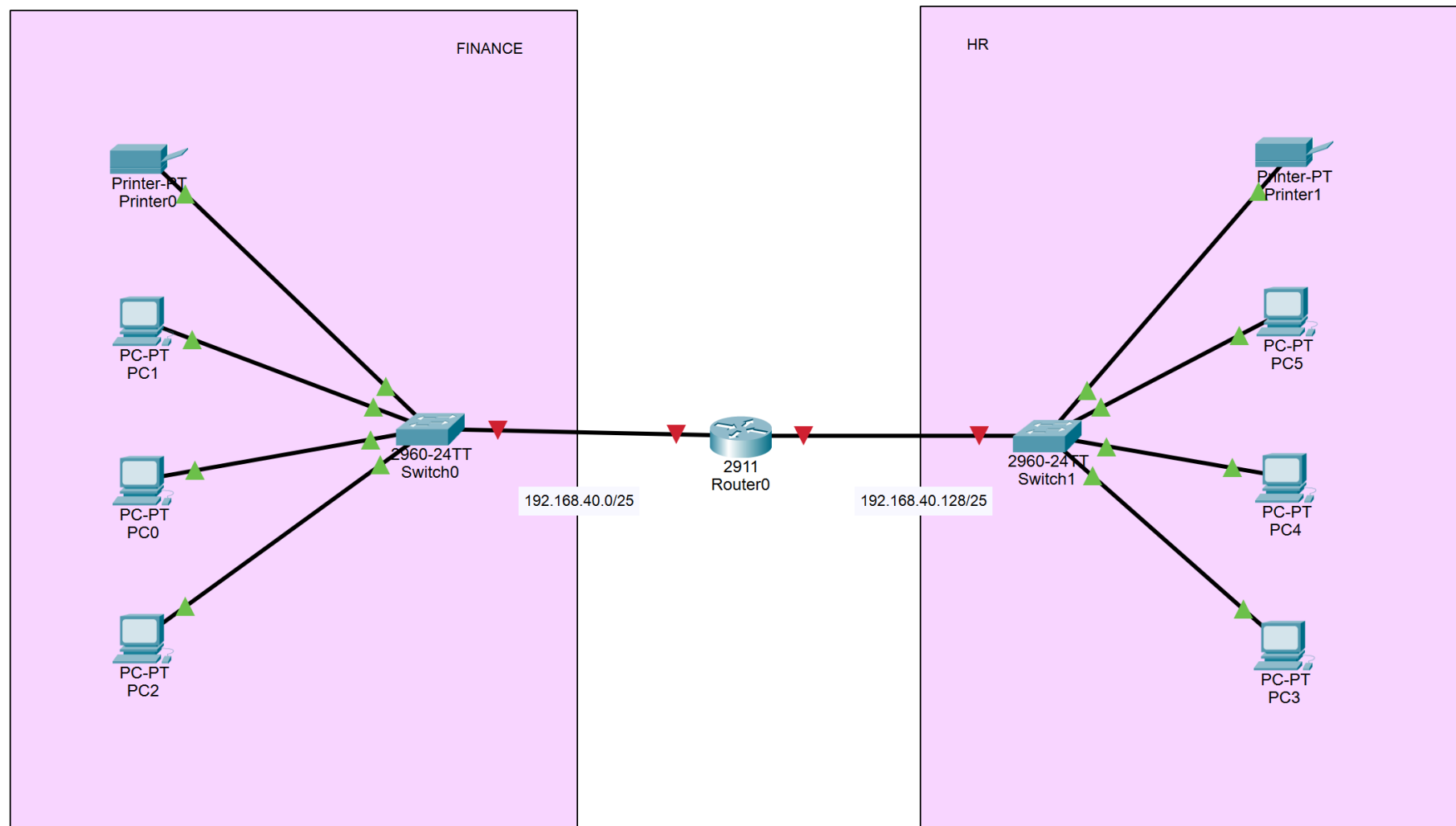
The network address will be **192.168.40.x**. Since we have 2 departments, we'll only have 2 subnets.

Therefore, the subnet mask for this address will be **255.255.255.128**.

For the 1st subnet, the network address is **192.168.40.0**, the range of valid hosts is **192.168.40.1 – 192.168.40.126**, and the broadcast address will be **192.168.40.127**.

For the 2nd subnet, the network address is **192.168.40.128**, the range of valid hosts is **192.168.40.129 – 192.168.40.254**, and the broadcast address will be **192.168.40.255**.

Network's structure



A screenshot of the network's structure

Router's setup and configuration

For this LAN to work, we now need to configure the router, which means that we need to turn on its interfaces and assign them an IP address.

```
Router>enable
```

```
Router#config t
```

```
Router#config terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
Router(config)#interface range gig0/0-1
```

```
Router(config-if-range)#no shutdown
```

```
do wr
```

```
Router(config-if-range)#exit
```

```
Router(config)#interface gig0/0
```

```
Router(config-if)#ip address 192.168.40.1 255.255.255.128
```

```
Router(config-if)#exit
```

```
Router(config)#interface gig0/1
```

```
Router(config-if)#ip address 192.168.40.129 255.255.255.128
```

```
Router(config-if)#do wr
```

These are the commands that I have used to configure the router.

Devices configuration

1st. subnet (Finance Department)

All devices in this subnetwork will have assigned the IP addresses from **192.168.40.2/25** to **192.168.40.5/25**, with the **255.255.255.128** subnet mask.

Their default gateway will be **192.168.40.1/25**, which is the router's interface they are connected to.

2nd. subnet (HR Department)

All devices in this subnetwork will have assigned the IP addresses from **192.168.40.130/25** to **192.168.40.133/25**, with the **255.255.255.128** subnet mask.

Their default gateway will be **192.168.40.129/25**, which is the router's interface they are connected to.

Working Test

In the end, we need to see if the 2 subnetworks can communicate with each other, so we can have a working LAN.

To do this, we have to use the „ping” command. For this test, we’ll ping PC1 to PC4, which has the IP address of 192.168.40.131/25.

```
C:\>ping 192.168.40.131

Pinging 192.168.40.131 with 32 bytes of data:

Reply from 192.168.40.131: bytes=32 time<1ms TTL=127
Reply from 192.168.40.131: bytes=32 time<1ms TTL=127
Reply from 192.168.40.131: bytes=32 time<1ms TTL=127
Reply from 192.168.40.131: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.40.131:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms|
```

PC1 sends packets to PC4, and PC4 replies back, so the network is working.