

Experiment No: 04

Experiment Name: Routing based on OSPF

Objective:

Since we're going to transfer packet through Routers. we'll design a simple network diagram using " CISCO Packet Tracer".

In this experiment we'll test a simple packet transfer from one PC to another. The circuit contains 3 Routers with delta connection with switch connected to each router & some PCs connected to each switch. We'll configure the routers via command line interface and evaluate packet transfer (ICMP packet) for OSPF routing algorithm.

Design procedure:

Here a simple network connection using Routers connected via a delta connection:

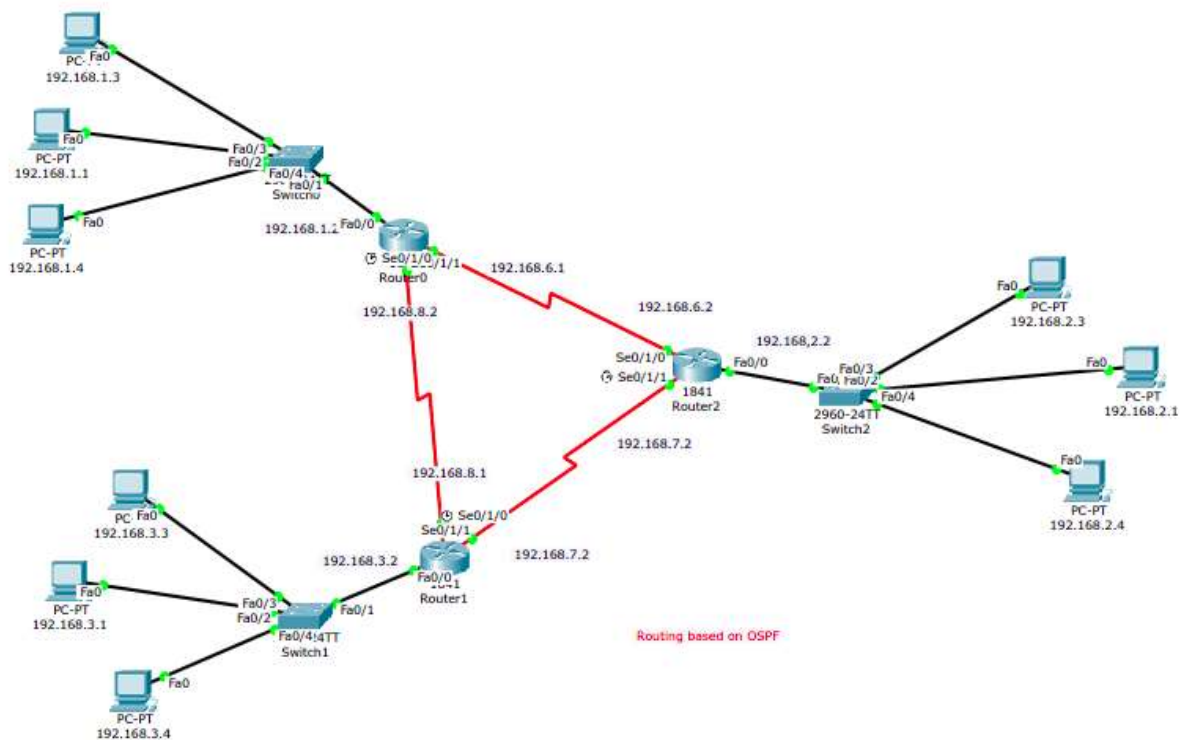


Illustration 1: Delta Connected Routers with switch connect to each

The above figure shows the connection among PCs & routers.

Details procedure of router, End Device configuration:

1. End Device IP address configure: These are sample configuration, not all end-device configuration have shown,

⑩ Device 1

The screenshot shows a window titled "IP Configuration" with a close button (X) in the top right corner. The window has a tabbed interface with tabs labeled "Physical", "Config", "Desktop", "Attributes", and "Software/Services". The "Config" tab is selected. Inside the window, there are two main sections: "IP Configuration" and "IPv6 Configuration".

IP Configuration:

- ☐ DHCP
- ☒ Static
- IP Address: 192.168.0.101
- Subnet Mask: 255.255.255.0
- Default Gateway: 192.168.0.1
- DNS Server: 8.8.8.8

IPv6 Configuration:

- ☐ DHCP
- ☐ Auto Config
- ☒ Static
- IPv6 Address: [Empty field] / [Empty field]
- Link Local Address: FE80::2D0:FFFF:FEBC:348C
- IPv6 Gateway: [Empty field]
- IPv6 DNS Server: [Empty field]

At the bottom left of the window, there is a "Top" button with a small square icon next to it.

Illustration

2: Device 1 IP configuration

⑩ Device 2

192.168.3.101

Physical Config Desktop Attributes Software/Services

IP Configuration X

IP Configuration

☐ DHCP ☒ Static

IP Address 192.168.3.101

Subnet Mask 255.255.255.0

Default Gateway 192.168.3.1

DNS Server 8.8.8.8

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address /

Link Local Address FE80::2D0:D3FF:FEE7:6D6C

IPv6 Gateway

IPv6 DNS Server

☐ Top

Illustration 3:

Device 2 IP configuration

⑩ Device 3

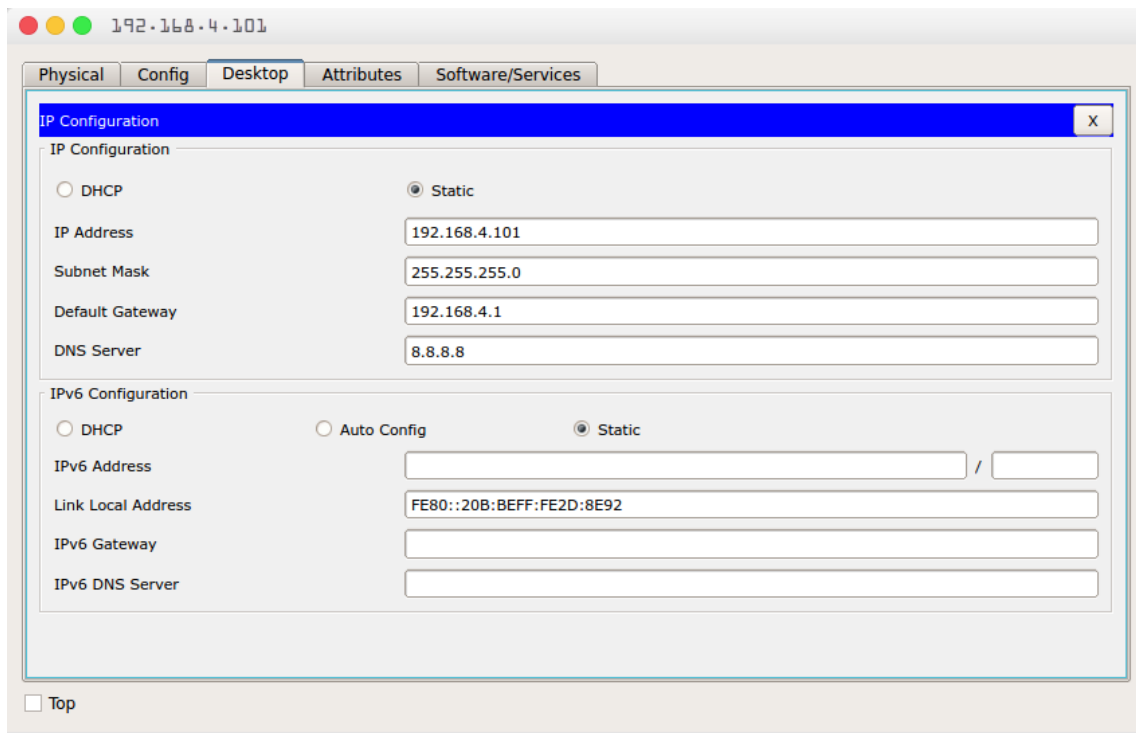


Illustration 4:

Device 3 IP configuration

2. Router configuration with CLI: Each Router requires two step to be fully functional, first step we assign IP-addresses relative to each router. The second step we fix the OSPF area assigning. The router configuration for each router is as follows:

⑩ **Router:1**

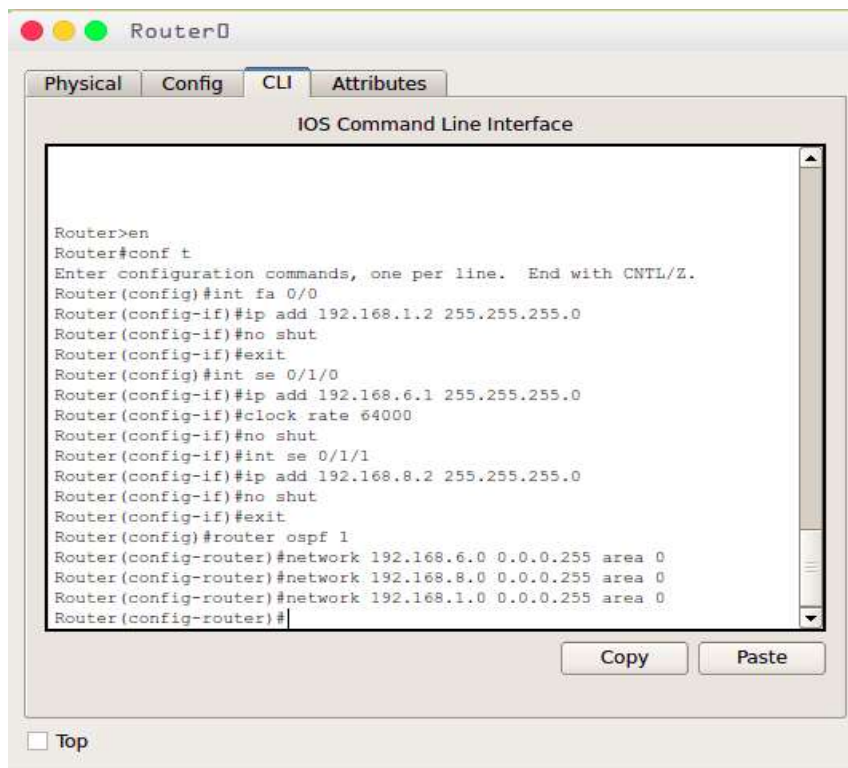


Illustration 5: Router-1

Configuration

⑩ Router:2

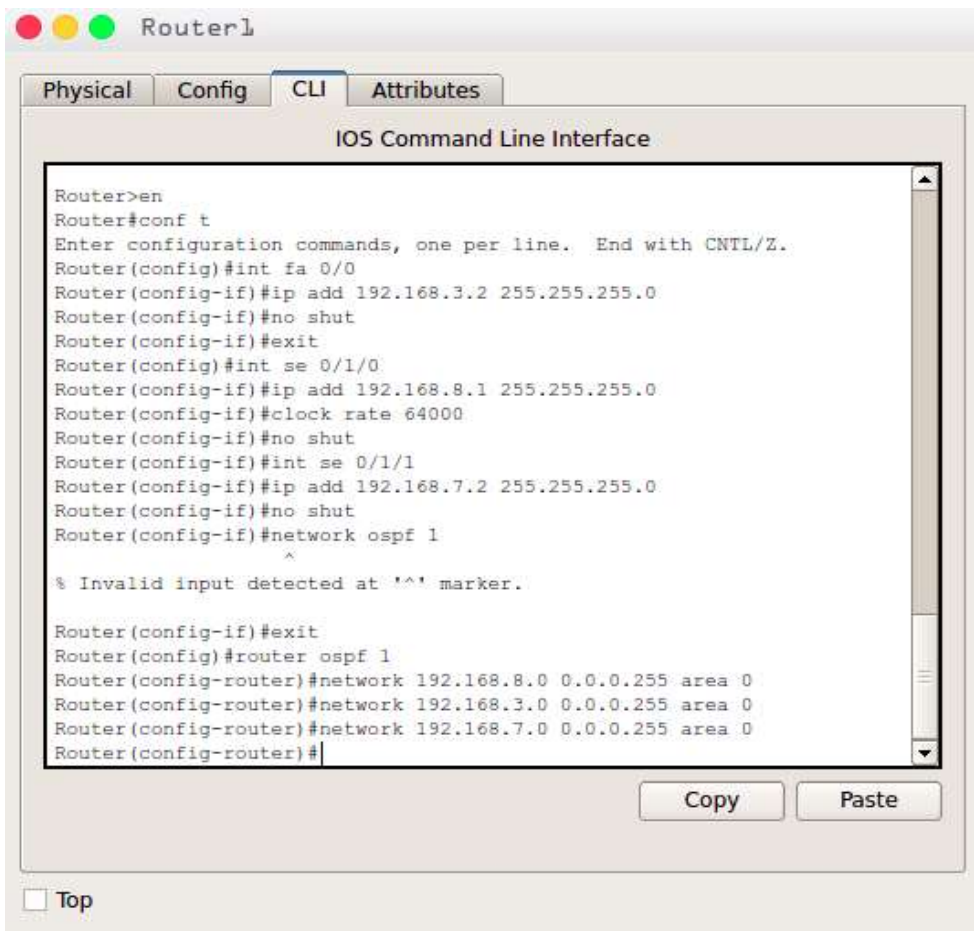


Illustration 6: Router-2

Configuration

⑩ Router:3

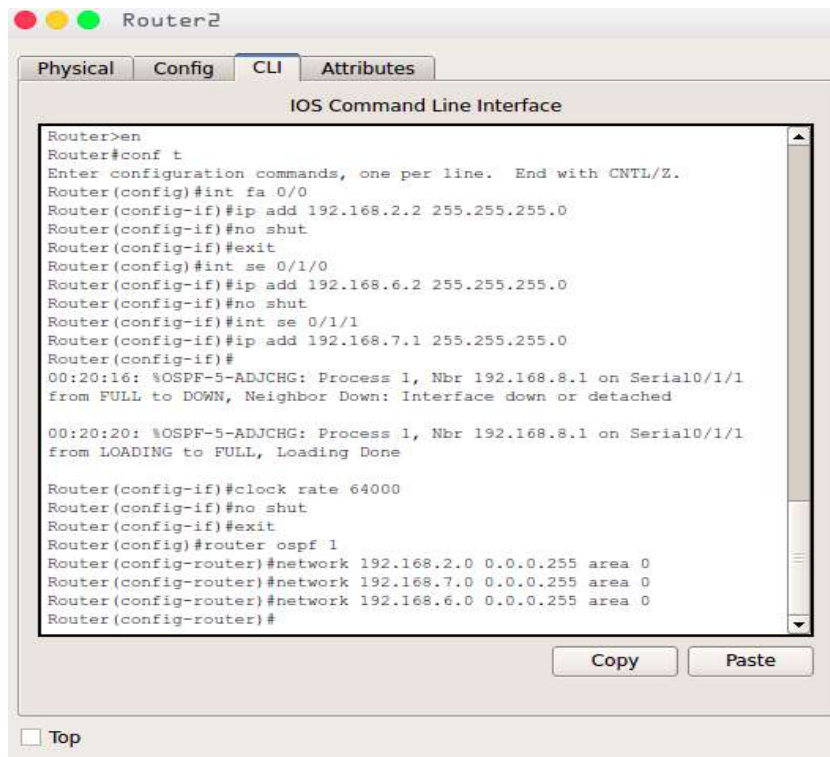


Illustration 7: Router-3 Configuration

3. Packet transferring between two Device.

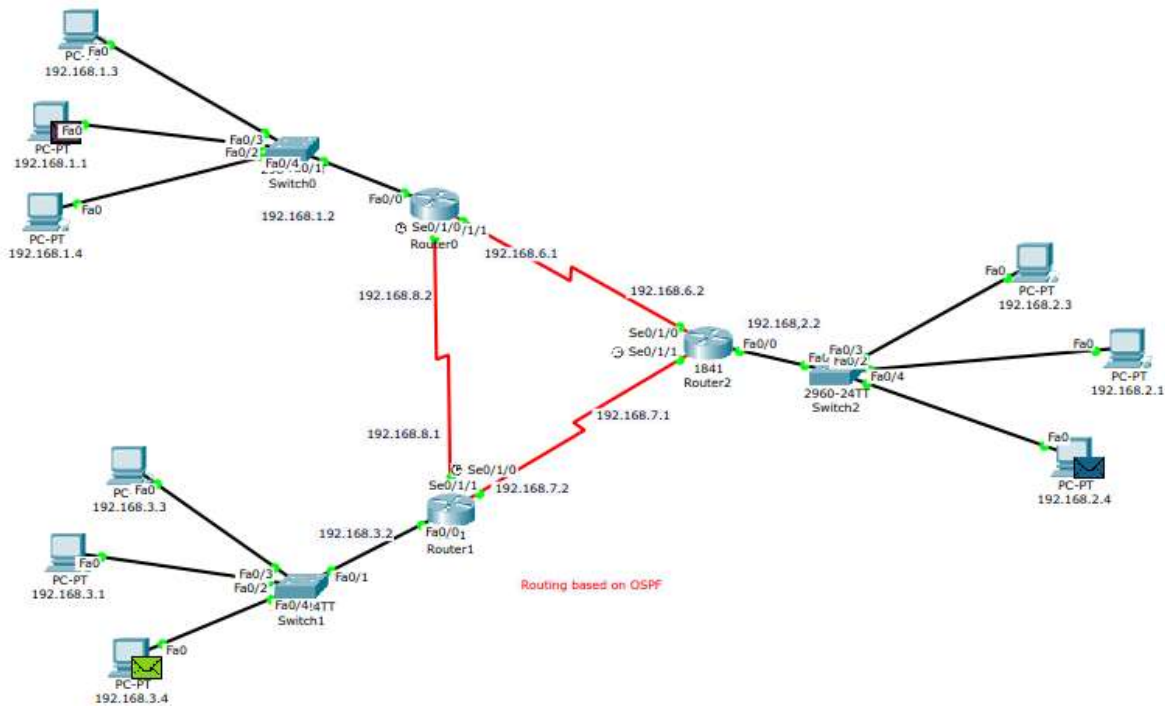


Illustration 8: Initiating packet transfer

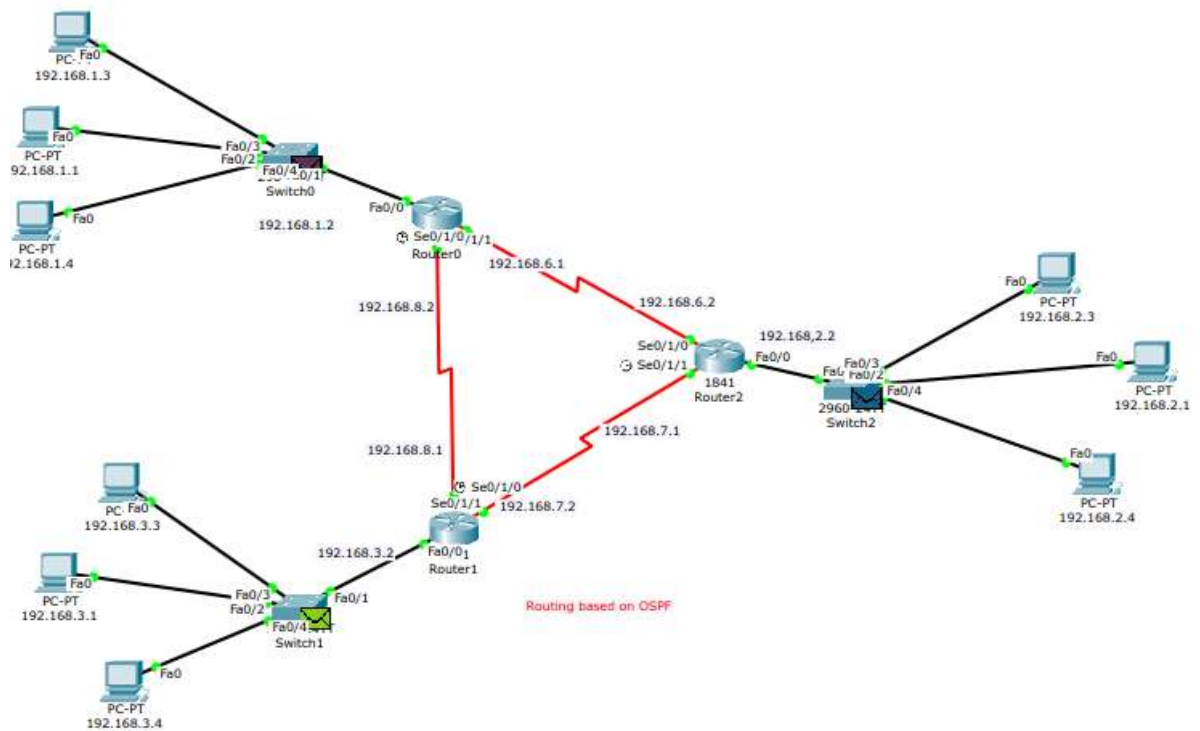
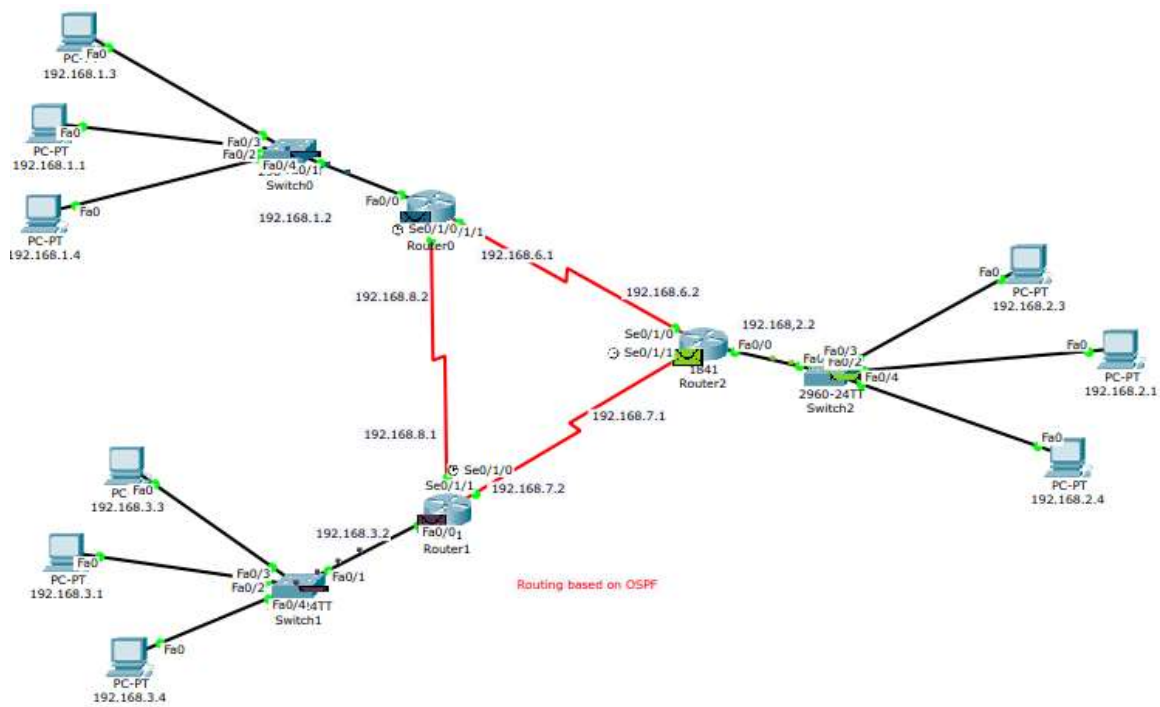


Illustration 9: Packet Transferred to Switch



Illustration

10: Packet Transferred to relevant routers

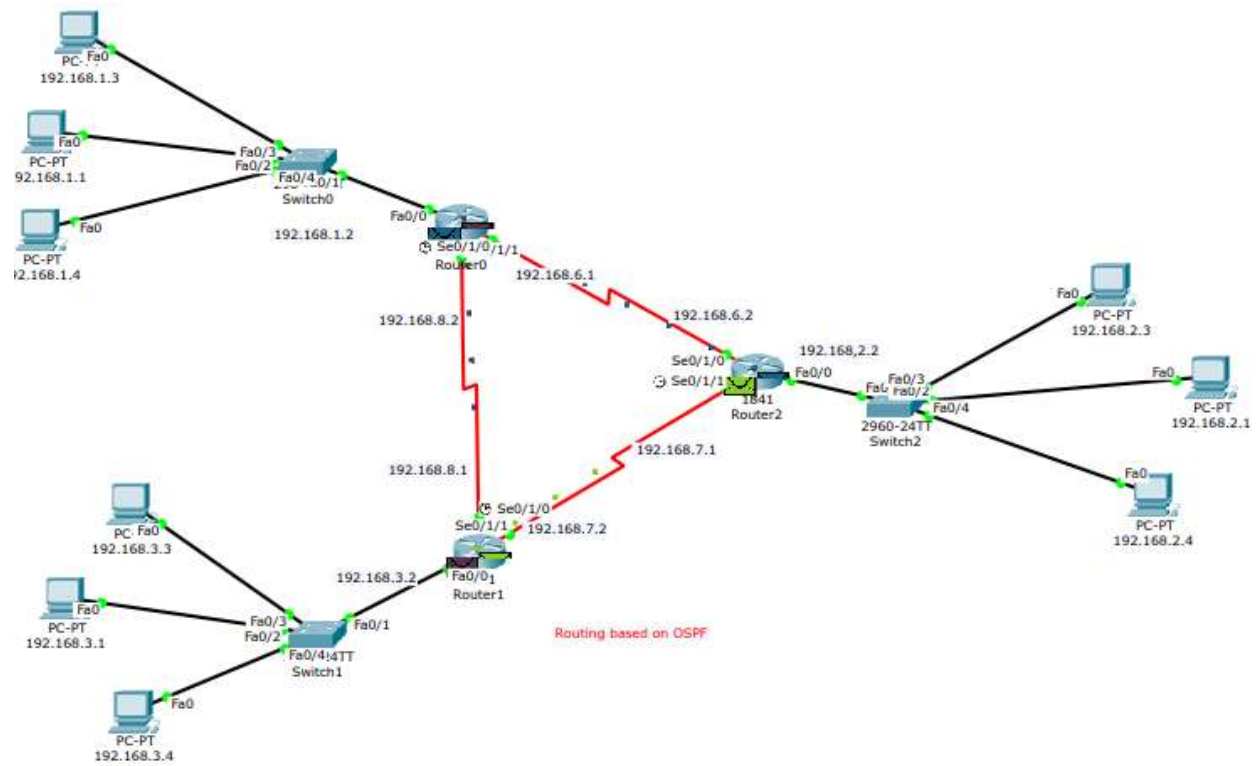


Illustration 11: Packets transferred to destination network's routers