

# **Jahangirnagar University**

**Department of Computer Science & Engineering**



**Course Code: CSE-402**

**Course Title: Computer Networking Laboratory**

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## Experiment No: 03

### Experiment Name: Configuring of a Router from CLI.

## Introduction:

In this experiment we will configure routers in between some networks to connect to further network via routing table where network and hop will be mentioned. When sending a packet this routers will recognize which hop to jump to send a packet.

## Description:

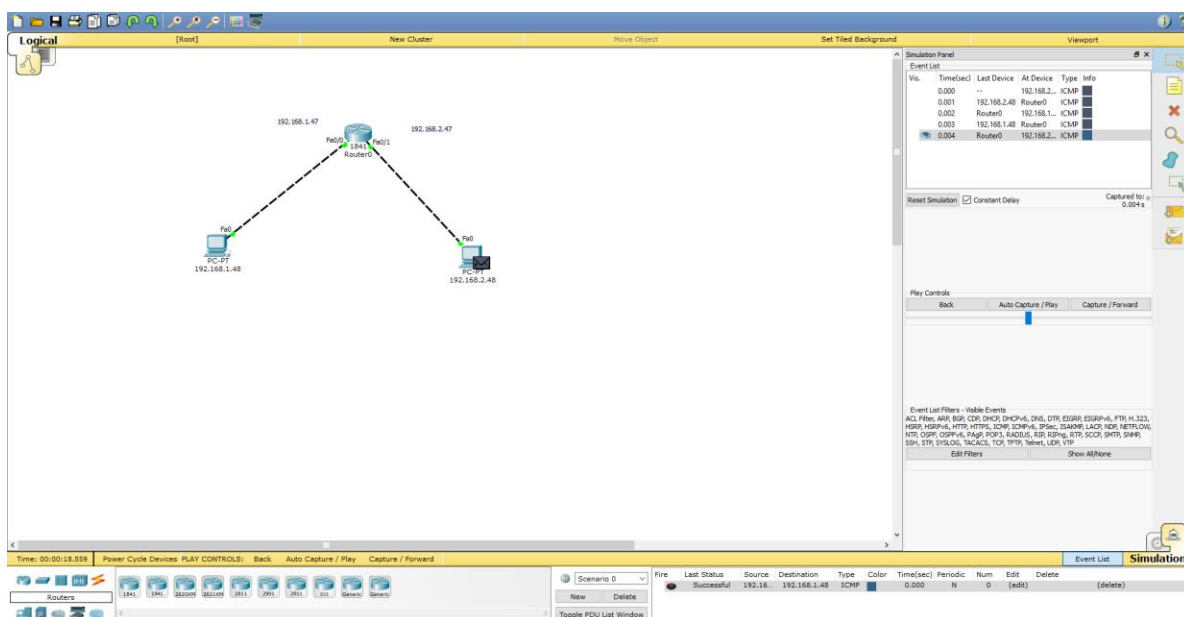
We used cisco packet tracer for simulation. Several computer devices are connected through the routers and different IP addresses were assigned to them. Then a packet is sent through them to check the characteristics of routers we created a hop table to access networks that are far from the routers to pass the packets.

## Simulation:

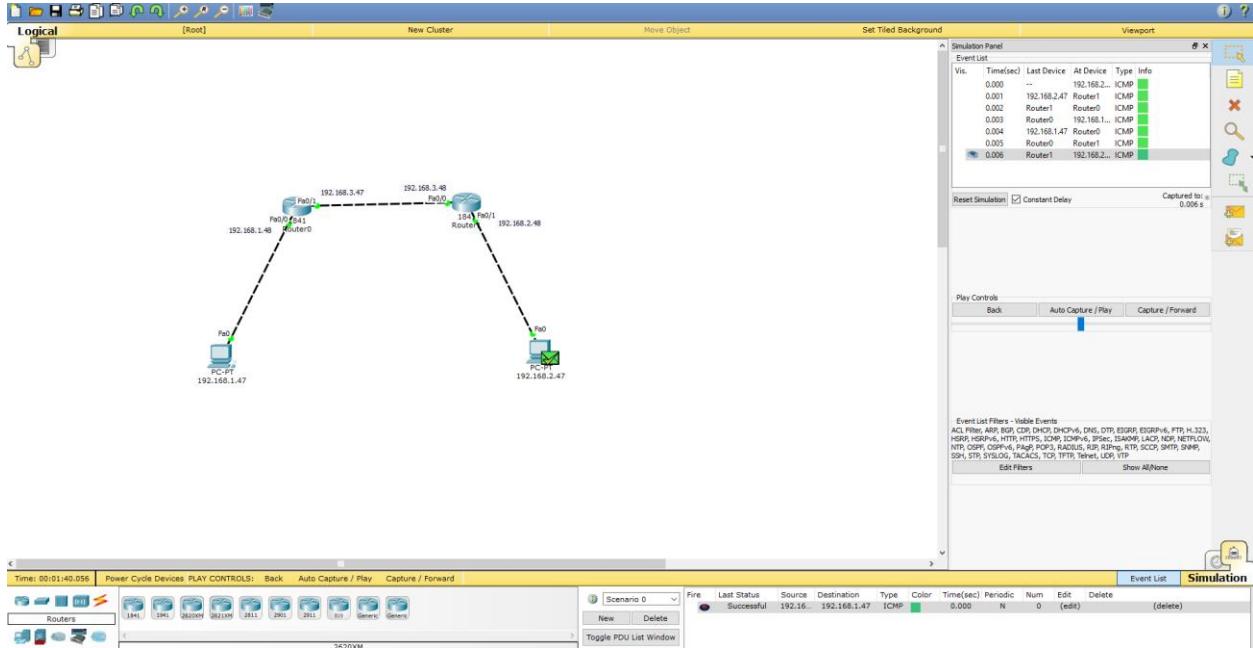
### Router:

Routers are small electronic devices that join multiple computer networks together using either wired or wireless connections. In technical terms, a router is a Layer 3 network gate way device, meaning that it connects two or more networks and that the router operates at the network layer of the OSI model.

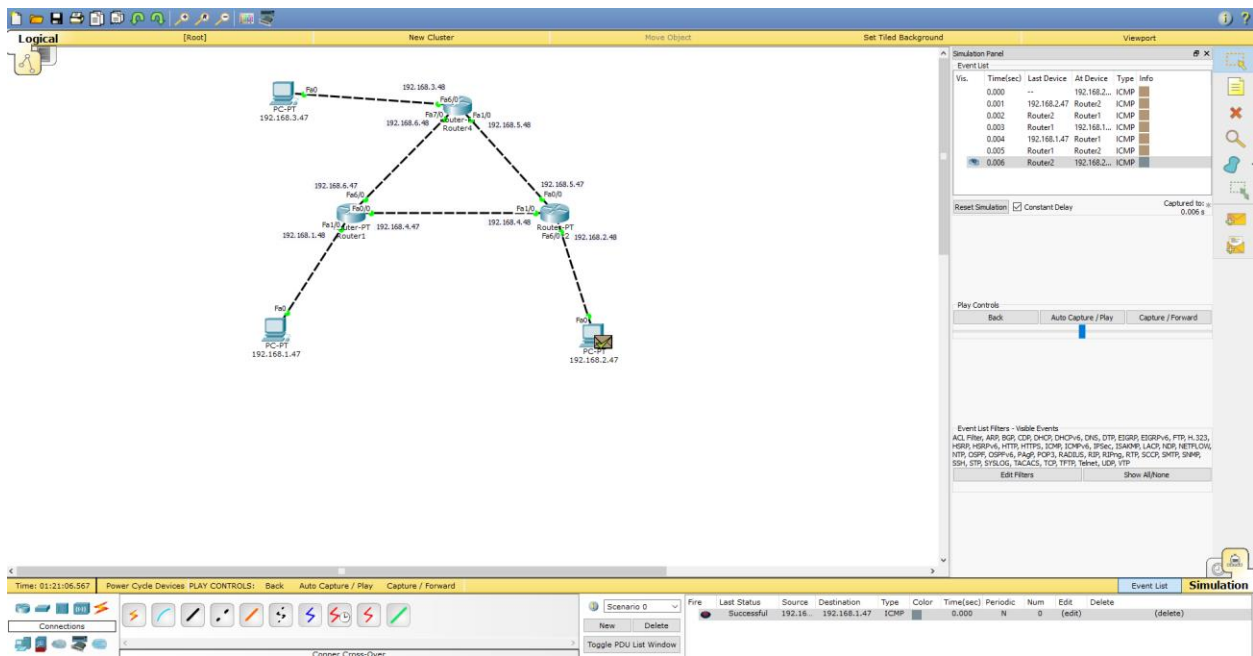
### 1. One Router:



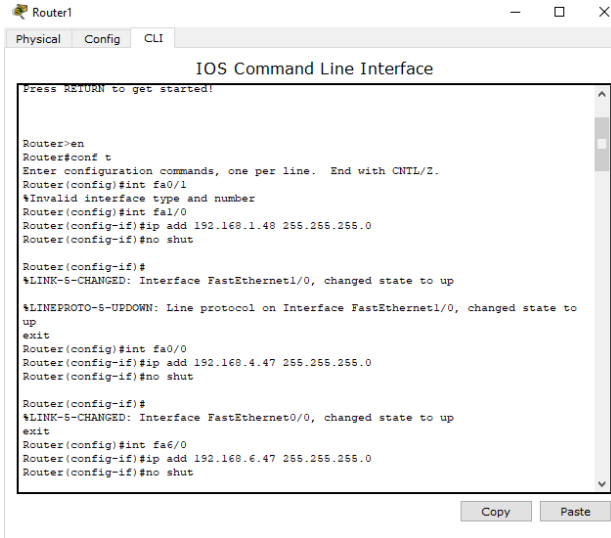
## 2. Multiple Router:



## 3. Multiple Router in a Circle:



- Configure CLI For Router 1:



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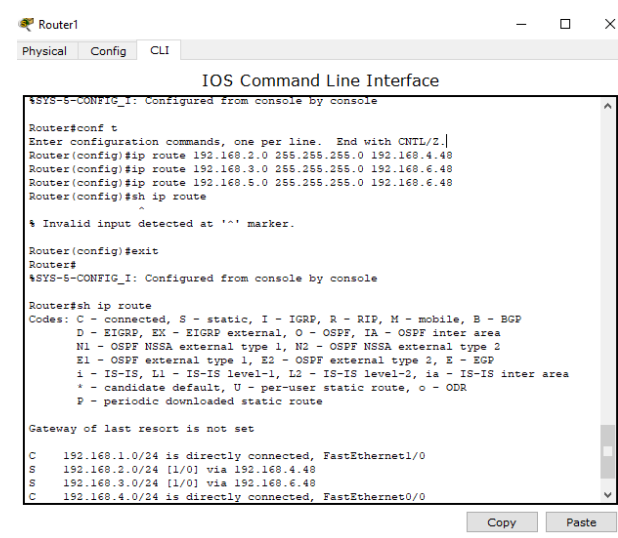
Router1
Physical Config CLI
IOS Command Line Interface
Press RETURN to get started!

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int fa0/1
Router(config)#int fa1/0
Router(config-if)#ip add 192.168.1.48 255.255.255.0
Router(config-if)#no shut

Router(config-if)#
%LINK-S-CHANGED: Interface FastEthernet1/0, changed state to up
%LINEPROTO-S-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
exit
Router(config)#int fa0/0
Router(config-if)#ip add 192.168.4.47 255.255.255.0
Router(config-if)#no shut

Router(config-if)#
%LINK-S-CHANGED: Interface FastEthernet0/0, changed state to up
exit
Router(config)#int fa6/0
Router(config-if)#ip add 192.168.6.47 255.255.255.0
Router(config-if)#no shut
Copy Paste

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Router1
Physical Config CLI
IOS Command Line Interface
$SYS-5-CONFIG_I: Configured from console by console

Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 192.168.2.0 255.255.255.0 192.168.4.48
Router(config)#ip route 192.168.3.0 255.255.255.0 192.168.6.48
Router(config)#ip route 192.168.5.0 255.255.255.0 192.168.6.48
Router(config)#sh ip route

% Invalid input detected at '^' marker.

Router(config)#exit
Router#
$SYS-5-CONFIG_I: Configured from console by console

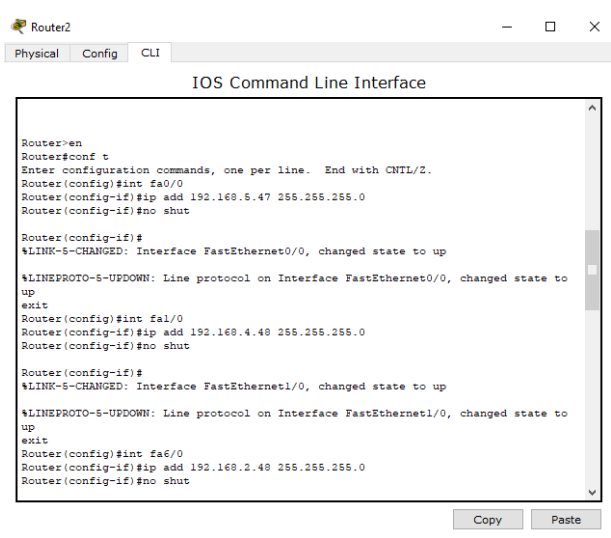
Router#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is not set

C 192.168.1.0/24 is directly connected, FastEthernet1/0
S 192.168.2.0/24 [1/0] via 192.168.4.48
S 192.168.3.0/24 [1/0] via 192.168.6.48
C 192.168.4.0/24 is directly connected, FastEthernet0/0
Copy Paste

```

- Configure CLI For Router 2:



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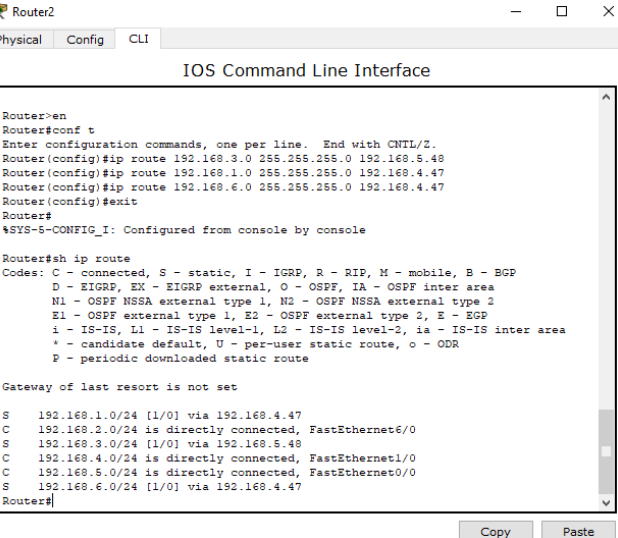
Router2
Physical Config CLI
IOS Command Line Interface

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int fa0/0
Router(config-if)#ip add 192.168.5.47 255.255.255.0
Router(config-if)#no shut

Router(config-if)#
%LINK-S-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-S-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
exit
Router(config)#int fa1/0
Router(config-if)#ip add 192.168.4.48 255.255.255.0
Router(config-if)#no shut

Router(config-if)#
%LINK-S-CHANGED: Interface FastEthernet1/0, changed state to up
%LINEPROTO-S-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
exit
Router(config)#int fa6/0
Router(config-if)#ip add 192.168.2.48 255.255.255.0
Router(config-if)#no shut
Copy Paste

```



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Router2
Physical Config CLI
IOS Command Line Interface

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 192.168.3.0 255.255.255.0 192.168.5.48
Router(config)#ip route 192.168.1.0 255.255.255.0 192.168.4.47
Router(config)#ip route 192.168.6.0 255.255.255.0 192.168.4.47
Router(config)#exit
Router#
$SYS-5-CONFIG_I: Configured from console by console

Router#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is not set

S 192.168.1.0/24 [1/0] via 192.168.4.47
C 192.168.2.0/24 is directly connected, FastEthernet6/0
S 192.168.3.0/24 [1/0] via 192.168.5.48
C 192.168.4.0/24 is directly connected, FastEthernet1/0
C 192.168.5.0/24 is directly connected, FastEthernet0/0
S 192.168.6.0/24 [1/0] via 192.168.4.47
Router#
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```

- **Configure CLI For Router 4:**

**Router4** | Physical | Config | CLI

IOS Command Line Interface

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Router>conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int fa0/0
Router(config-if)#ip add 192.168.6.48 255.255.255.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet6/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet6/0, changed state to up
exit
Router(config)#int fa0/1
Router(config-if)#ip add 192.168.6.47 255.255.255.0
% 192.168.6.0 overlaps with FastEthernet6/0
Router(config-if)#ip add 192.168.6.48 255.255.255.0
% 192.168.6.0 overlaps with FastEthernet6/0
Router(config-if)#ip add 192.168.6.49 255.255.255.0
% 192.168.6.0 overlaps with FastEthernet6/0
Router(config-if)#exit
Router(config)#int fa1/0
Router(config-if)#ip add 192.168.5.48 255.255.255.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up
exit
Router(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up

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**Router4** | Physical | Config | CLI

IOS Command Line Interface

```

Press RETURN to get started.

Router>en
Router#con f
% Ambiguous command: "con f"
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 192.168.1.0 255.255.255.0 192.168.6.47
Router(config)#ip route 192.168.2.0 255.255.255.0 192.168.6.47
Router(config)#ip route 192.168.4.0 255.255.255.0 192.168.6.47
Router(config)#sh ip route
^
% Invalid input detected at '^' marker.

Router(config)#exit
Router#sh ip route

```

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## Discussion:

We can see that the Router sends the packet the required path mentioned in the route table. People tend to get benefit from a router for forwarding a packet to a different network. A router is better for connecting different networks. After using a router we can easily use a hub, switch, PC for any other connection and for any other communication.