

# Tutorial – 1

21\_AIE\_211

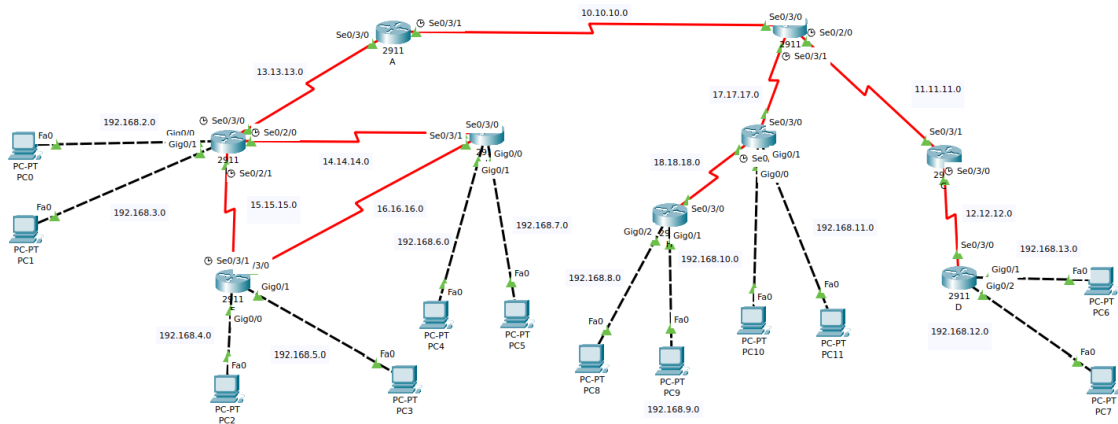
## Introduction to Computer Networks– SEM-IV Professor – Ganga Gowri

Submitted By: Vikhyat Bansal [CB.EN.U4AIE21076]



**AMRITA**  
**VISHWA VIDYAPEETHAM**  
—DEEMED TO BE UNIVERSITY—

# NETWORK



## Device Configuration Table

| Device   | Interface          | IP Address   | Subnet Mask   | Default Gateway |
|----------|--------------------|--------------|---------------|-----------------|
| Router A | Se 0/3/0           | 13.13.13.1   | 255.0.0.0     | N.A             |
|          | Se 0/3/1           | 10.10.10.1   | 255.0.0.0     | N.A             |
| Router B | Se 0/3/0           | 10.10.10.2   | 255.0.0.0     | N.A             |
|          | Se 0/2/0           | 11.11.11.1   | 255.0.0.0     | N.A             |
|          | Se 0/3/1           | 17.17.17.1   | 255.0.0.0     | N.A             |
| Router C | Se 0/3/0           | 12.12.12.1   | 255.0.0.0     | N.A             |
|          | Se 0/3/1           | 11.11.11.2   | 255.0.0.0     | N.A             |
| Router D | GigabitEthernet0/1 | 192.168.13.1 | 255.255.255.0 | N.A             |
|          | GigabitEthernet0/2 | 192.168.12.1 | 255.255.255.0 | N.A             |

|          |                    |              |               |     |
|----------|--------------------|--------------|---------------|-----|
|          | Se 0/3/0           | 12.12.12.2   | 255.0.0.0     | N.A |
| Router G | GigabitEthernet0/0 | 192.168.10.1 | 255.255.255.0 | N.A |
|          | GigabitEthernet0/1 | 192.168.11.1 | 255.255.255.0 | N.A |
|          | Se 0/3/0           | 17.17.17.2   | 255.0.0.0     | N.A |
|          | Se 0/3/1           | 18.18.18.1   | 255.0.0.0     | N.A |
| Router H | GigabitEthernet0/1 | 192.168.9.1  | 255.255.255.0 | N.A |
|          | GigabitEthernet0/2 | 192.168.8.1  | 255.255.255.0 | N.A |
|          | Se 0/3/0           | 18.18.18.2   | 255.0.0.0     | N.A |
| Router F | GigabitEthernet0/0 | 192.168.2.1  | 255.255.255.0 | N.A |
|          | GigabitEthernet0/1 | 192.168.3.1  | 255.255.255.0 | N.A |
|          | Se 0/2/0           | 14.14.14.1   | 255.0.0.0     | N.A |
|          | Se 0/2/1           | 15.15.15.1   | 255.0.0.0     | N.A |
|          | Se 0/3/0           | 13.13.13.2   | 255.0.0.0     | N.A |

|          |                    |             |               |             |
|----------|--------------------|-------------|---------------|-------------|
| Router I | GigabitEthernet0/0 | 192.168.7.1 | 255.255.255.0 | N.A         |
|          | GigabitEthernet0/1 | 192.168.6.1 | 255.255.255.0 | N.A         |
|          | Se 0/3/0           | 14.14.14.2  | 255.0.0.0     | N.A         |
|          | Se 0/3/1           | 16.16.16.2  | 255.0.0.0     | N.A         |
| Router E | GigabitEthernet0/0 | 192.168.4.1 | 255.255.255.0 | N.A         |
|          | GigabitEthernet0/1 | 192.168.5.1 | 255.255.255.0 | N.A         |
|          | Se 0/3/0           | 16.16.16.1  | 255.0.0.0     | N.A         |
|          | Se 0/3/1           | 15.15.15.2  | 255.0.0.0     | N.A         |
| PC 0     | FastEthernet0      | 192.168.2.2 | 255.255.255.0 | 192.168.2.1 |
| PC 1     | FastEthernet0      | 192.168.3.2 | 255.255.255.0 | 192.168.3.1 |
| PC 2     | FastEthernet0      | 192.168.4.2 | 255.255.255.0 | 192.168.4.1 |
| PC 3     | FastEthernet0      | 192.168.5.2 | 255.255.255.0 | 192.168.5.1 |
| PC 4     | FastEthernet0      | 192.168.6.2 | 255.255.255.0 | 192.168.6.1 |

|       |               |              |               |              |
|-------|---------------|--------------|---------------|--------------|
| PC 5  | FastEthernet0 | 192.168.7.2  | 255.255.255.0 | 192.168.7.1  |
| PC 6  | FastEthernet0 | 192.168.13.2 | 255.255.255.0 | 192.168.13.1 |
| PC 7  | FastEthernet0 | 192.168.12.2 | 255.255.255.0 | 192.168.12.1 |
| PC 8  | FastEthernet0 | 192.168.8.2  | 255.255.255.0 | 192.168.8.1  |
| PC 9  | FastEthernet0 | 192.168.9.2  | 255.255.255.0 | 192.168.9.1  |
| PC 10 | FastEthernet0 | 192.168.10.2 | 255.255.255.0 | 192.168.10.1 |
| PC 11 | FastEthernet0 | 192.168.12.2 | 255.255.255.0 | 192.168.11.1 |

### Routing Implementation in CLI : OSPF Routing

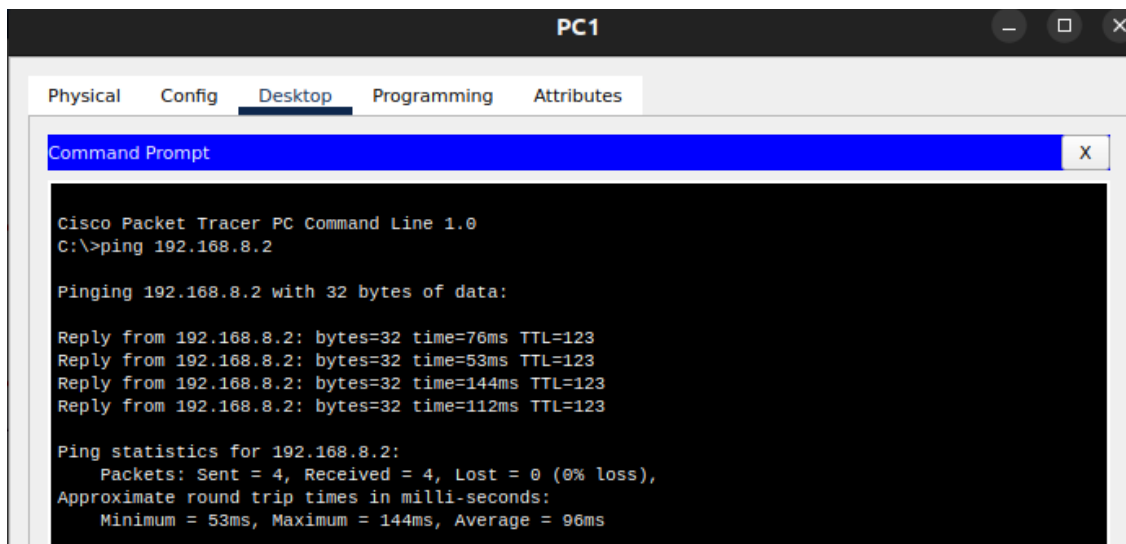
| Device   | Configuration Step | CLI Command   |
|----------|--------------------|---|
| Router A | OSPF               | Enable<br>Configure terminal<br>Router ospf 1<br>Network 13.13.13.0 0.0.0.255 area 10<br>Network 10.10.10.0 0.0.0.255 area 0  |
| Router B | OSPF               | Enable<br>Configure terminal<br>Router ospf 1<br>Network 17.17.17.0 0.0.0.255 area 20<br>Network 10.10.10.0 0.0.0.255 area 0<br>Network 11.11.11.0 0.0.0.255 area 0 |

|          |      |   |
|----------|------|---|
| Router C | OSPF | Enable<br>Configure terminal<br>Router ospf 1<br>Network 12.12.12.0 0.0.0.255 area 30<br>Network 11.11.11.0 0.0.0.255 area 0  |
| Router D | OSPF | Enable<br>Configure terminal<br>Router ospf 1<br>Network 12.12.12.0 0.0.0.255 area 30<br>Network 192.168.12.0 0.0.0.255 area 30<br>Network 192.168.13.0 0.0.0.255 area 30   |
| Router G | OSPF | Enable<br>Configure terminal<br>Router ospf 1<br>Network 17.17.17.0 0.0.0.255 area 20<br>Network 18.18.18.0 0.0.0.255 area 20<br>Network 192.168.10.0 0.0.0.255 area 20<br>Network 192.168.11.0 0.0.0.255 area 20                                       |
| Router H | OSPF | Enable<br>Configure terminal<br>Router ospf 1<br>Network 18.18.18.0 0.0.0.255 area 20<br>Network 192.168.8.0 0.0.0.255 area 20<br>Network 192.168.9.0 0.0.0.255 area 20   |
| Router F | OSPF | Enable<br>Configure terminal<br>Router ospf 1<br>Network 13.13.13.0 0.0.0.255 area 10<br>Network 14.14.14.0 0.0.0.255 area 10<br>Network 15.15.15.0 0.0.0.255 area 10<br>Network 192.168.2.0 0.0.0.255 area 10<br>Network 192.168.3.0 0.0.0.255 area 10 |

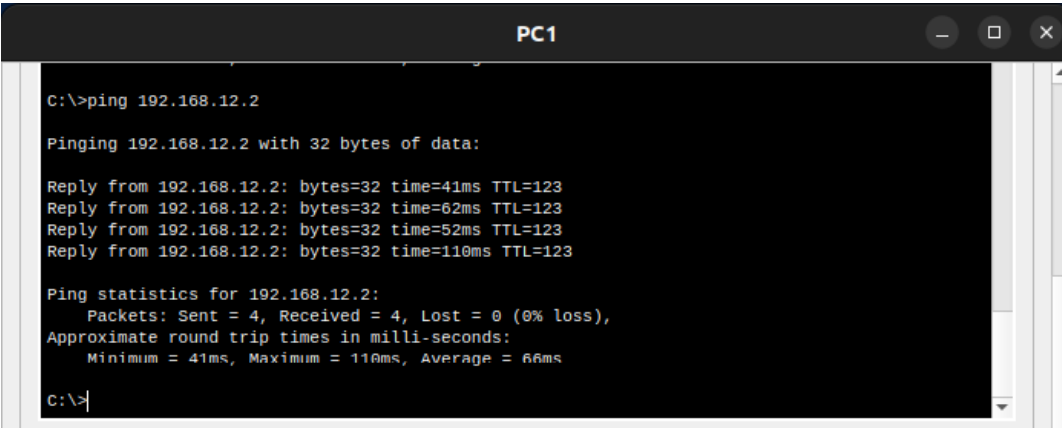
|          |      |   |
|----------|------|---|
| Router I | OSPF | Enable<br>Configure terminal<br>Router ospf 1<br>Network 14.14.14.0 0.0.0.255 area 10<br>Network 15.15.15.0 0.0.0.255 area 10<br>Network 192.168.6.0 0.0.0.255 area 10<br>Network 192.168.7.0 0.0.0.255 area 10 |
| Router E | OSPF | Enable<br>Configure terminal<br>Router ospf 1<br>Network 15.15.15.0 0.0.0.255 area 10<br>Network 16.16.16.0 0.0.0.255 area 10<br>Network 192.168.4.0 0.0.0.255 area 10<br>Network 192.168.5.0 0.0.0.255 area 10 |

## Ping Results Screenshot

From Area 10 to Area 20 (ping 192.168.8.2 using 192.168.3.2 (PC 1))



From Area 10 to Area 30 (ping 192.168.12.2 using 192.168.3.2 (PC 1))



```
C:\>ping 192.168.12.2

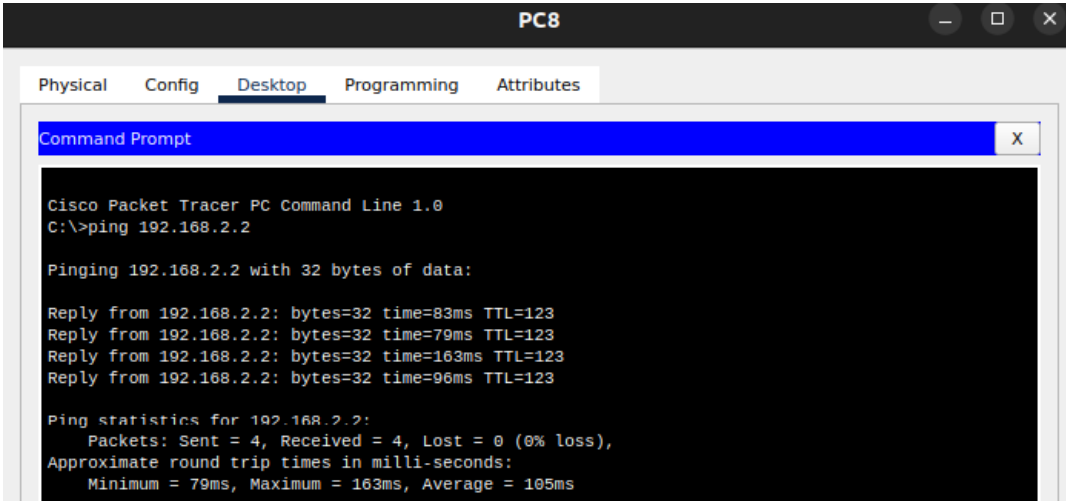
Pinging 192.168.12.2 with 32 bytes of data:

Reply from 192.168.12.2: bytes=32 time=41ms TTL=123
Reply from 192.168.12.2: bytes=32 time=62ms TTL=123
Reply from 192.168.12.2: bytes=32 time=52ms TTL=123
Reply from 192.168.12.2: bytes=32 time=110ms TTL=123

Ping statistics for 192.168.12.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 41ms, Maximum = 110ms, Average = 66ms

C:\>
```

From Area 20 to Area 10 (ping 192.168.2.2 using 192.168.8.2 (PC 8))



```
Physical  Config  Desktop  Programming  Attributes

Command Prompt

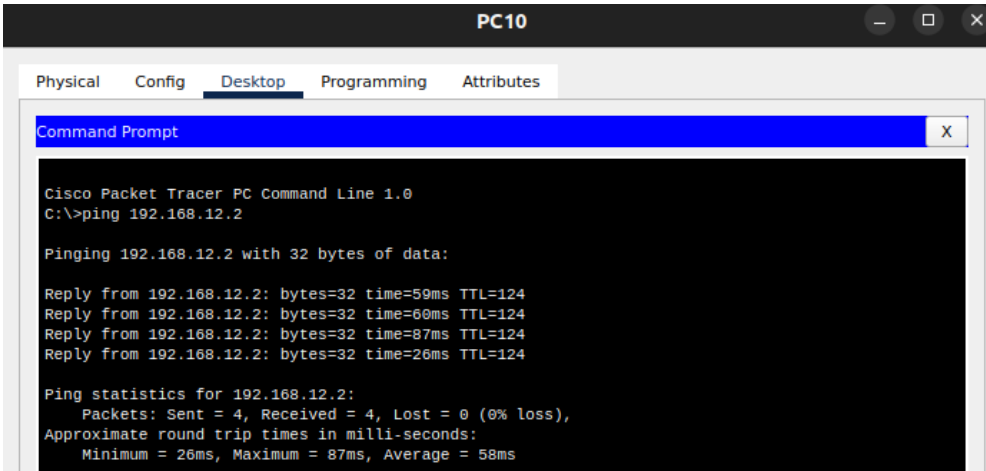
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.2.2

Pinging 192.168.2.2 with 32 bytes of data:

Reply from 192.168.2.2: bytes=32 time=83ms TTL=123
Reply from 192.168.2.2: bytes=32 time=79ms TTL=123
Reply from 192.168.2.2: bytes=32 time=163ms TTL=123
Reply from 192.168.2.2: bytes=32 time=96ms TTL=123

Ping statistics for 192.168.2.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 79ms, Maximum = 163ms, Average = 105ms
```

From Area 20 to Area 30 (ping 192.168.12.2 using 192.168.10.2 (PC 10))



```
Physical  Config  Desktop  Programming  Attributes

Command Prompt

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.12.2

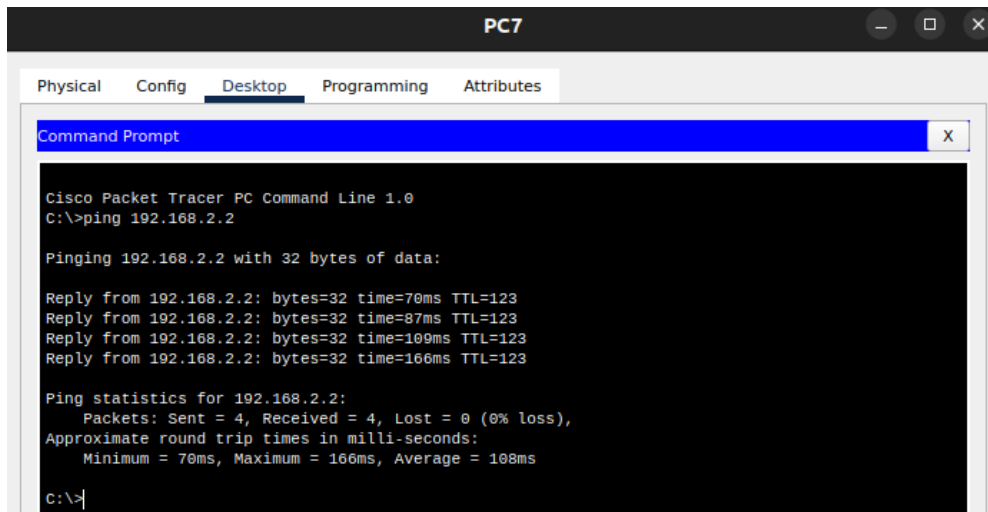
Pinging 192.168.12.2 with 32 bytes of data:

Reply from 192.168.12.2: bytes=32 time=59ms TTL=124
Reply from 192.168.12.2: bytes=32 time=60ms TTL=124
Reply from 192.168.12.2: bytes=32 time=87ms TTL=124
Reply from 192.168.12.2: bytes=32 time=26ms TTL=124

Ping statistics for 192.168.12.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 26ms, Maximum = 87ms, Average = 58ms
```



From Area 30 to Area 10 (ping 192.168.2.2 using 192.168.12.2 (PC 7))



The screenshot shows the 'PC7' window in Cisco Packet Tracer. The 'Desktop' tab is selected, displaying a 'Command Prompt' window. The command prompt shows the execution of the command 'ping 192.168.2.2'. The output indicates that the ping was successful, with 4 packets sent and received, 0% loss, and an average round trip time of 108ms.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.2.2

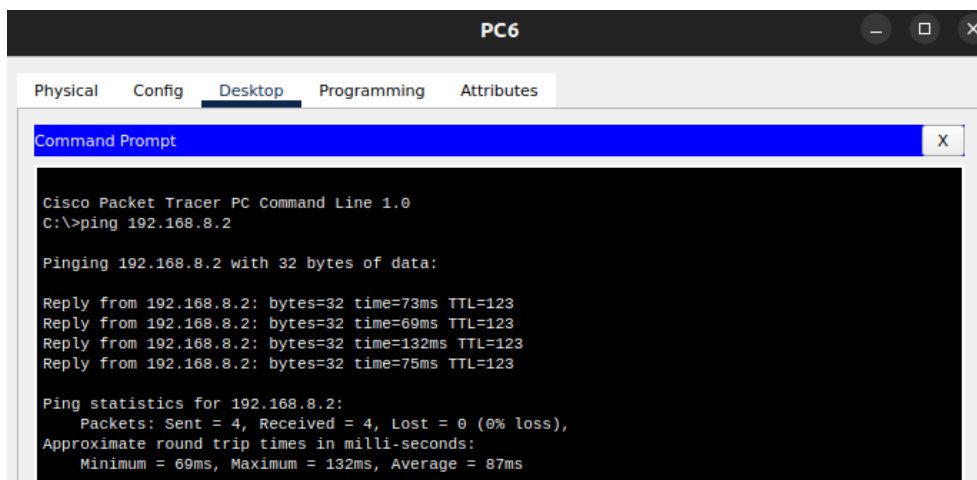
Pinging 192.168.2.2 with 32 bytes of data:

Reply from 192.168.2.2: bytes=32 time=70ms TTL=123
Reply from 192.168.2.2: bytes=32 time=87ms TTL=123
Reply from 192.168.2.2: bytes=32 time=109ms TTL=123
Reply from 192.168.2.2: bytes=32 time=166ms TTL=123

Ping statistics for 192.168.2.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 70ms, Maximum = 166ms, Average = 108ms

C:\>
```

From Area 30 to Area 20 (ping 192.168.8.2 using 192.168.13.2 (PC 6))



The screenshot shows the 'PC6' window in Cisco Packet Tracer. The 'Desktop' tab is selected, displaying a 'Command Prompt' window. The command prompt shows the execution of the command 'ping 192.168.8.2'. The output indicates that the ping was successful, with 4 packets sent and received, 0% loss, and an average round trip time of 87ms.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.8.2

Pinging 192.168.8.2 with 32 bytes of data:

Reply from 192.168.8.2: bytes=32 time=73ms TTL=123
Reply from 192.168.8.2: bytes=32 time=69ms TTL=123
Reply from 192.168.8.2: bytes=32 time=132ms TTL=123
Reply from 192.168.8.2: bytes=32 time=75ms TTL=123

Ping statistics for 192.168.8.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 69ms, Maximum = 132ms, Average = 87ms
```

[Link of the CPT-OSPF\(Routing\) FILE](#)

THANK YOU!!