

## Exercise – 10 MULTIAREA OSPF

### Aim

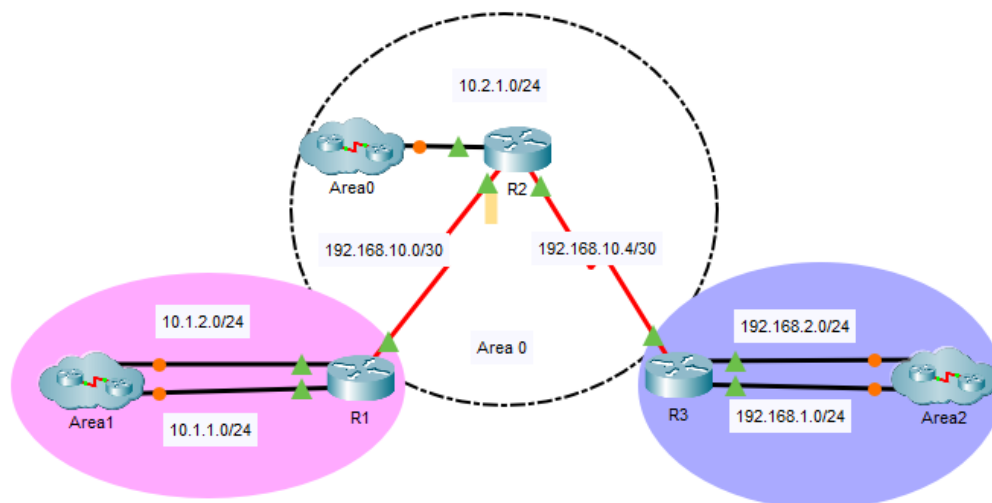
To Configuring multiarea OSPF

### Pre-requisite:

Open Shortest Path First (OSPF) protocol

### Procedure:

1. From the Network Devices category, select routers, and from the devices drag 3 routers into the workspace.
2. Select the three PT-cloud from multiarea emulation and connect them to the routers.
3. Connect routers using serial DTE cables.



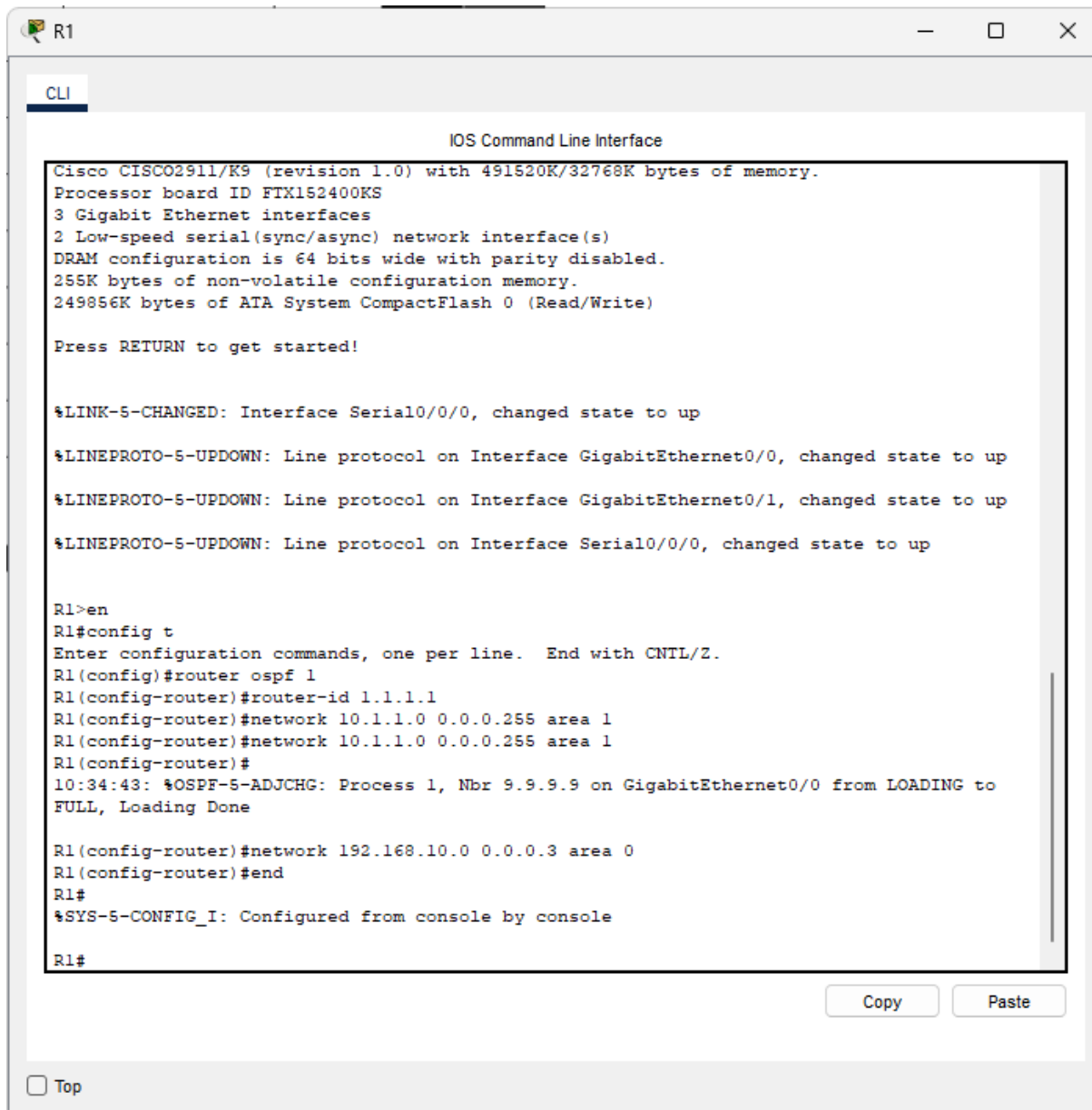
4. Assign the ip addresses from the address table given below

### Addressing Table

Device	Interface	IP Address	Subnet Mask	OSPFv2 Area
R1	G0/0	10.1.1.1	255.255.255.0	1
	G0/1	10.1.2.1	255.255.255.0	1
	S0/0/0	192.168.10.2	255.255.255.252	0
R2	G0/0	10.2.1.1	255.255.255.0	0
	S0/0/0	192.168.10.1	255.255.255.252	0
	S0/0/1	192.168.10.5	255.255.255.252	0
R3	G0/0	192.168.2.1	255.255.255.0	2
	G0/1	192.168.1.1	255.255.255.0	2
	S0/0/1	192.168.10.6	255.255.255.252	0

5. Configure the OSPF on router R1

- router ospf 1
- router-id 1.1.1.1
- network 10.1.1.0 0.0.0.255 area 1
- network 10.1.1.0 0.0.0.255 area 1
- network 192.168.10.0 0.0.0.3 area 0



The screenshot shows a Cisco IOS Command Line Interface window for router R1. The window title is "R1" and it has standard window controls. The CLI shows the following sequence of commands and outputs:

```
Cisco CISCO2911/K9 (revision 1.0) with 491520K/32768K bytes of memory.
Processor board ID FTX152400KS
3 Gigabit Ethernet interfaces
2 Low-speed serial(sync/async) network interface(s)
DRAM configuration is 64 bits wide with parity disabled.
255K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)

Press RETURN to get started!

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

R1>en
R1#config t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#router ospf 1
R1(config-router)#router-id 1.1.1.1
R1(config-router)#network 10.1.1.0 0.0.0.255 area 1
R1(config-router)#network 10.1.1.0 0.0.0.255 area 1
R1(config-router)#
10:34:43: %OSPF-5-ADJCHG: Process 1, Nbr 9.9.9.9 on GigabitEthernet0/0 from LOADING to
FULL, Loading Done

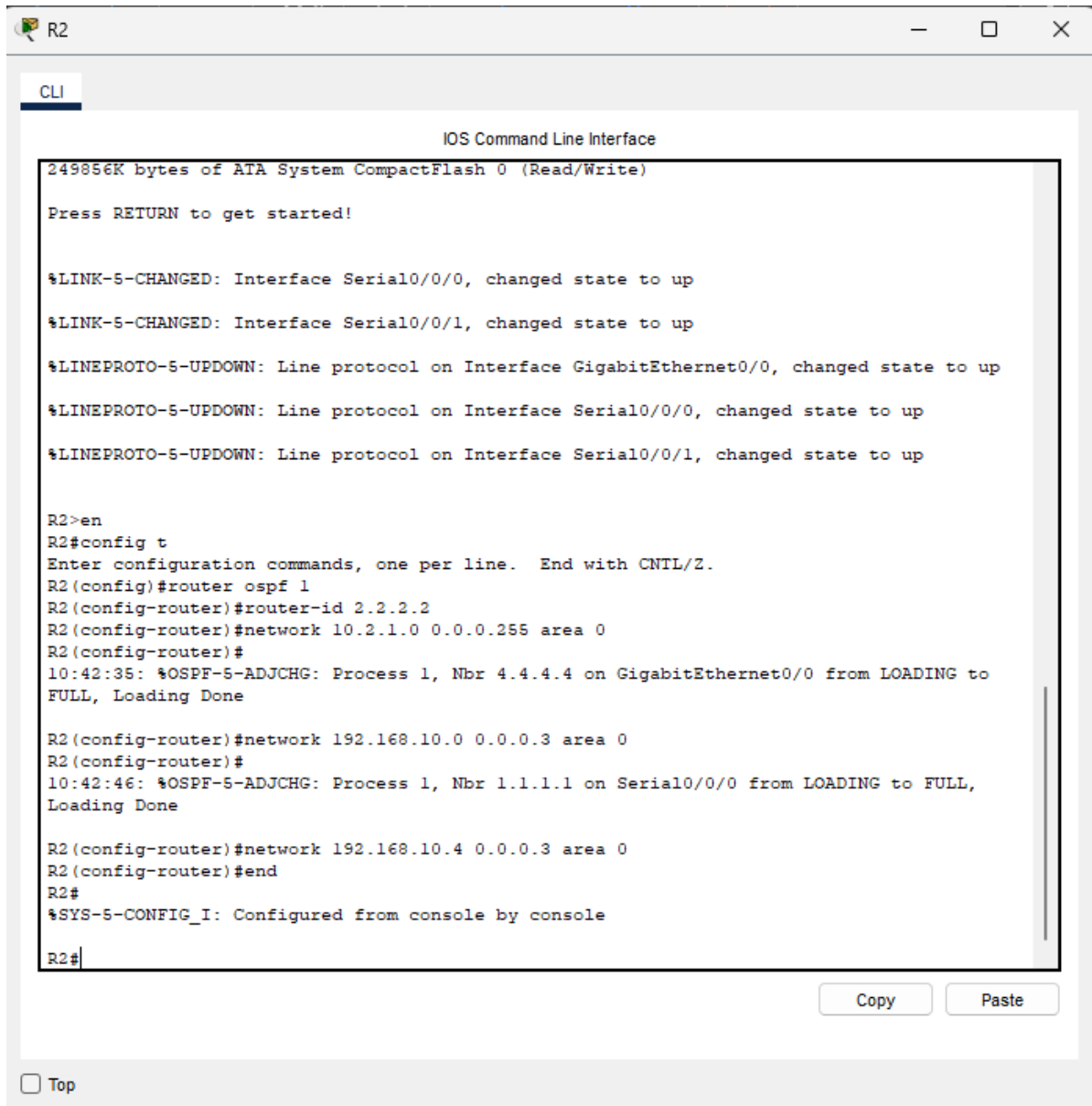
R1(config-router)#network 192.168.10.0 0.0.0.3 area 0
R1(config-router)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#
```

At the bottom of the CLI window, there are "Copy" and "Paste" buttons. Below the CLI window, there is a "Top" button with a checkbox next to it.

6. Configure the OSPF on router R2 using the following the commands

- router ospf 1
- router-id 2.2.2.2
- network 10.2.1.0 0.0.0.255 area 0
- network 192.168.10.0 0.0.0.3 area 0
- network 192.168.10.4 0.0.0.3 area 0



The screenshot shows a Cisco IOS Command Line Interface (CLI) window for router R2. The window title is "R2" and it has standard window controls. A tab labeled "CLI" is active. The main text area displays the following output and commands:

```
249856K bytes of ATA System CompactFlash 0 (Read/Write)
Press RETURN to get started!

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

R2>en
R2#config t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router ospf 1
R2(config-router)#router-id 2.2.2.2
R2(config-router)#network 10.2.1.0 0.0.0.255 area 0
R2(config-router)#
10:42:35: %OSPF-5-ADJCHG: Process 1, Nbr 4.4.4.4 on GigabitEthernet0/0 from LOADING to FULL, Loading Done

R2(config-router)#network 192.168.10.0 0.0.0.3 area 0
R2(config-router)#
10:42:46: %OSPF-5-ADJCHG: Process 1, Nbr 1.1.1.1 on Serial0/0/0 from LOADING to FULL, Loading Done

R2(config-router)#network 192.168.10.4 0.0.0.3 area 0
R2(config-router)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#
```

At the bottom right of the CLI window, there are "Copy" and "Paste" buttons. Below the CLI window, there is a "Top" button with a checkbox next to it.

7. Configure the OSPF on router R3 using the following the commands

- router ospf 1
- router-id 3.3.3.3
- network 192.168.2.0 0.0.0.255 area 2
- network 192.168.1.0 0.0.0.255 area 2
- network 192.168.10.4 0.0.0.3 area 0

```
R3
CLI
IOS Command Line Interface

Press RETURN to get started!

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

R3>en
R3#config t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router ospf 1
R3(config-router)#router-id 3.3.3.3
R3(config-router)#network 192.168.2.0 0.0.0.255 area 2
R3(config-router)#network 192.168.1.0 0.0.0.255 area 2
R3(config-router)#
10:44:30: %OSPF-5-ADJCHG: Process 1, Nbr 6.6.6.6 on GigabitEthernet0/0 from LOADING to FULL, Loading Done
10:44:35: %OSPF-5-ADJCHG: Process 1, Nbr 7.7.7.7 on GigabitEthernet0/1 from LOADING to FULL, Loading Done

R3(config-router)#
R3(config-router)#network 192.168.10.4 0.0.0.3 area 0
R3(config-router)#
10:45:05: %OSPF-5-ADJCHG: Process 1, Nbr 2.2.2.2 on Serial0/0/1 from LOADING to FULL, Loading Done

R3(config-router)#end
R3#
%SYS-5-CONFIG_I: Configured from console by console

R3#
```

Copy Paste

☐ Top

8. Run the ping command from router R1 to check the connection.

- ping 192.168.1.2
- ping 192.168.2.2
- ping 10.2.1.2

```
R1>ping 192.168.1.2
^
% Invalid input detected at '^' marker.

R1>ping 192.168.1.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 4/9/15 ms

R1>ping 192.168.2.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.2.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 10/13/15 ms

R1>ping 10.2.1.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.2.1.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 5/8/10 ms

R1>
```

## Conclusion

We have successfully configured multi area OSPF using cisco packet tracer.