Router Network Configuration and Verification

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Contents

Router Network Configuration and Verification

Step 1: Checking Directly Connected Networks

To verify the directly connected networks on each router, follow these steps:

- Access each router in **privileged EXEC mode**.
- Run the following command:

```
show ip route
```

- Note the directly connected networks displayed in the routing table.

Router A

- Execute show ip route
- Identify directly connected networks

```
A>
A>
A>en
A#show 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

     10.0.0.0/30 is subnetted, 1 subnets
C       10.1.0.0 is directly connected, Serial2/0
     192.168.10.0/26 is subnetted, 1 subnets
C       192.168.10.0 is directly connected, FastEthernet0/0

A#
```
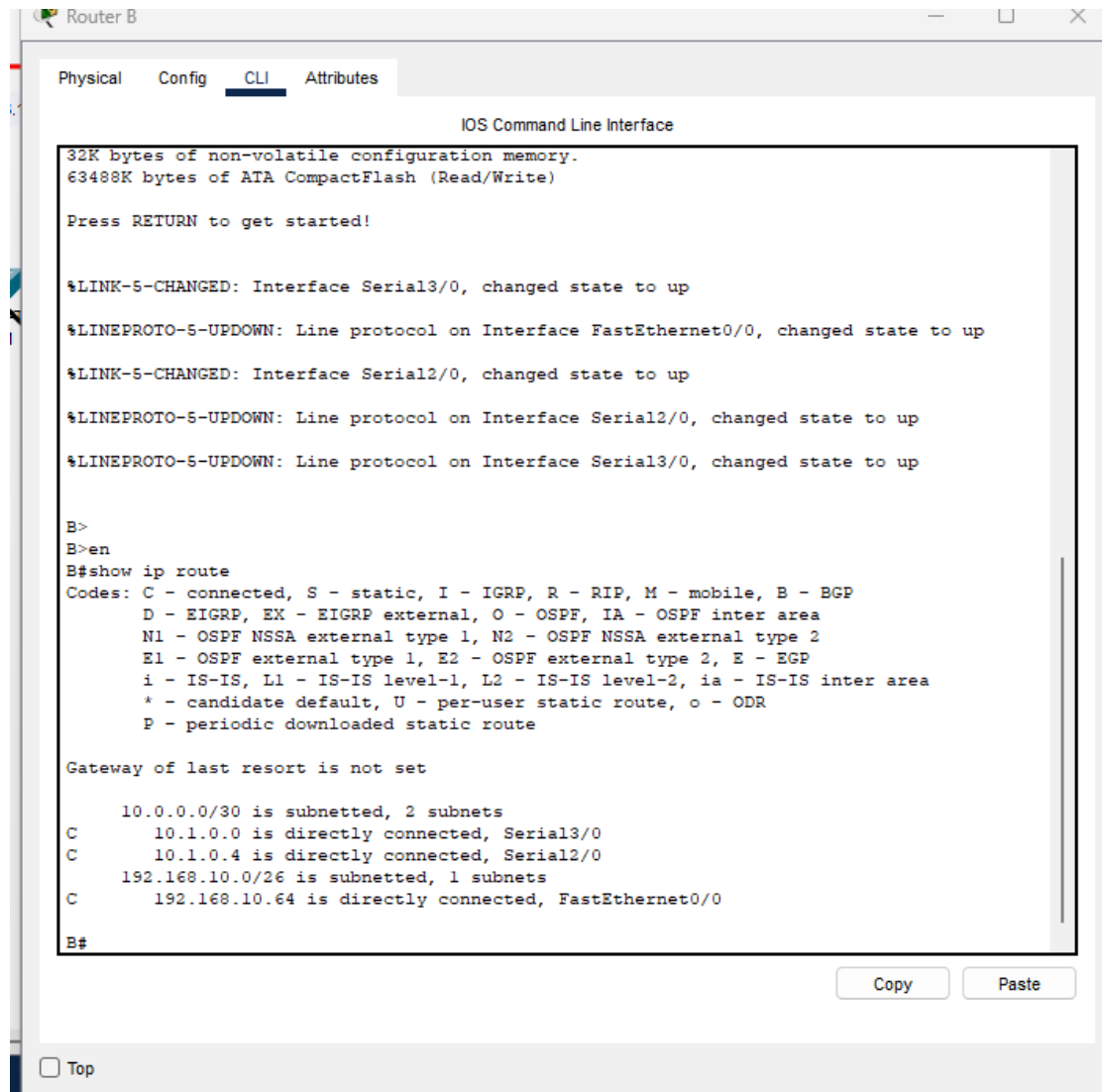
Copy   Paste

Router B

- Execute show ip route
- Identify directly connected networks

Router C

- Execute show ip route

- Identify directly connected networks

Steps to configure

Commands :

```
Router>enable
Router# Configure terminal
Router (config)#router RIP
Router (config-router)# version 2
        -router)# no auto-summary
        -router)# network x.x.x.x
             )# network x.x.x.x
```

iQ

- Enter privileged EXEC mode:
  Command : enable

- Enter global configuration mode
  Command : configure terminal

- Enable RIPv2
  Enter RIP configuration mode:
  Command: router rip

- Enable version 2

  Command : version 2

- Disable automatic route summarization

  Command : no auto-summary

- Configure RIP Networks

  Command : network <ip address of directly connected networks>

Router A

```
        P - periodic downloaded static route

Gateway of last resort is not set

     10.0.0.0/30 is subnetted, 1 subnets
C       10.1.0.0 is directly connected, Serial2/0
     192.168.10.0/26 is subnetted, 1 subnets
C       192.168.10.0 is directly connected, FastEthernet0/0

A#config t
Enter configuration commands, one per line.  End with CNTL/Z.
A(config)#roter RIP
             ^
% Invalid input detected at '^' marker.

A(config)#router rip
A(config-router)#version 2
A(config-router)#no auto-summery
                        ^
% Invalid input detected at '^' marker.

A(config-router)#no auto-summery
                        ^
% Invalid input detected at '^' marker.

A(config-router)#no auto-summary
A(config-router)#network 10.1.0.0
A(config-router)#nwrwork 192.168.10.0
                  ^
% Invalid input detected at '^' marker.

A(config-router)#network 192.168.10.0
A(config-router)#
```
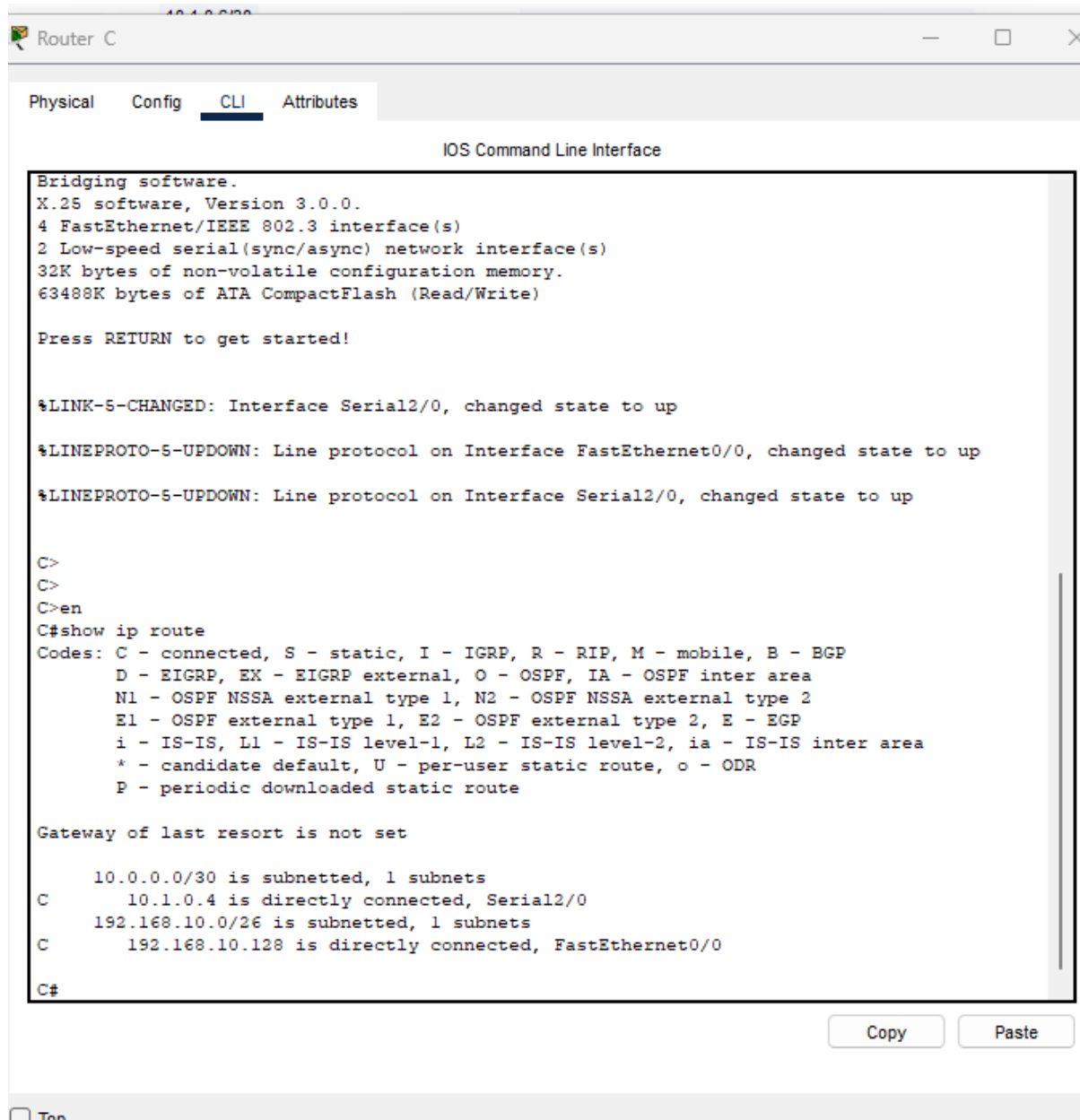
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Router B

Physical   Config   CLI   Attributes

IOS Command Line Interface

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

%LINK-5-CHANGED: Interface Serial2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up


B>
B>en
B#show 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

     10.0.0.0/30 is subnetted, 2 subnets
C       10.1.0.0 is directly connected, Serial3/0
C       10.1.0.4 is directly connected, Serial2/0
     192.168.10.0/26 is subnetted, 1 subnets
C       192.168.10.64 is directly connected, FastEthernet0/0

B#config t
Enter configuration commands, one per line.  End with CNTL/Z.
B(config)#router RIP
B(config-router)#version 2
B(config-router)#no auto-summary
B(config-router)#network 10.1.0.0
B(config-router)#network 10.1.0.4
B(config-router)#network 192.168.10.64
B(config-router)#
```
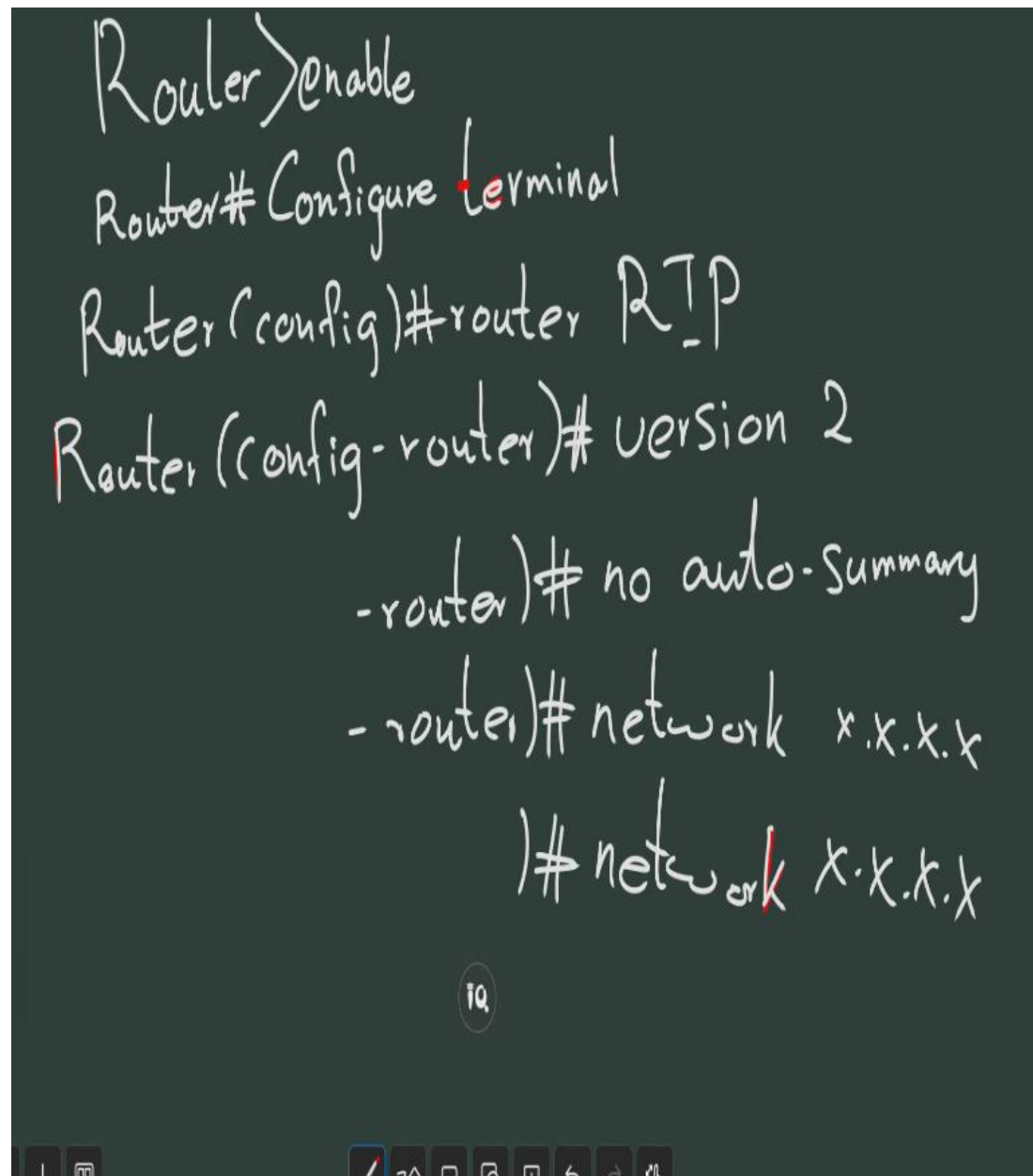
Router C

Physical   Config   CLI   Attributes

IOS Command Line Interface

```
C con0 is now available




Press RETURN to get started.








C>
C>
C>en
C#config t
Enter configuration commands, one per line.  End with CNTL/Z.
C(config)#router RIP
C(config-router)#version 2
C(config-router)#no auto-summary
C(config-router)#network 10.1.0.4
C(config-router)#network 192.169.10.128
C(config-router)#
```

Copy   Paste

```
C>show ip route rip
     10.0.0.0/30 is subnetted, 2 subnets
R        10.1.0.0 [120/1] via 10.1.0.5, 00:00:07, Serial2/0
     192.168.10.0/26 is subnetted, 3 subnets
R        192.168.10.0 [120/2] via 10.1.0.5, 00:00:07, Serial2/0
R        192.168.10.64 [120/1] via 10.1.0.5, 00:00:07, Serial2/0

C>show ip protocol
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 18 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
  Interface              Send  Recv  Triggered RIP  Key-chain
  Serial2/0               22
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
          10.0.0.0
          192.169.10.0
Passive Interface(s):
Routing Information Sources:
          Gateway         Distance       Last Update
          10.1.0.5            120        00:00:22
Distance: (default is 120)
C>
```

Add a banner

Command : banner motd # *the banner you want type inside this symbols* #

```
C>config t
         ^
% Invalid input detected at '^' marker.

C>en
C#confi g
        ^
% Invalid input detected at '^' marker.

C#config t
Enter configuration commands, one per line.  End with CNTL/Z.
C(config)#banner motd *Authorized users Only*
C(config)#exit
C#
%SYS-5-CONFIG_I: Configured from console by console

C#exit
t
```

Verifying Connectivity Using Ping

To check connectivity between routers:

1. Use the **ping** command from one router to another.

2. Example command:

ping <destination IP>

3. Ensure packets are successfully sent and received.

4. If the ping fails, check routing configurations and interface statuses.

Configuring Default Routing on Router B

- Default routes are used when routers are not directly connected to an ISP but need a route to unknown destinations.
- To configure a default route on Router B, use the following command

```
ip route 0.0.0.0 0.0.0.0 <next-hop IP>
```

Or

```
ip route 0.0.0.0 0.0.0.0 <exit-interface>
```

- This ensures Router B forwards packets to a specific next-hop router.
- Default routes are particularly useful when Router B is not directly connected to an ISP but needs to route traffic through another router.

```
A(config)#ip route 0.0.0.0 0.0.0.0 10.1.0.2

A#config t
Enter configuration commands, one per line.  End with CNTL/Z.
A(config)#ip route 0.0.0.0 0.0.0.0 10.1.0.2
A(config)#default-information originate
                       ^
% Invalid input detected at '^' marker.

A(config)#router rip
A(config-router)#version 2
A(config-router)#default-information originate
A(config-router)#exit
A(config)#exit
A#
%SYS-5-CONFIG_I: Configured from console by console

A#exit
```

```
A>show 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 10.1.0.2 to network 0.0.0.0

     10.0.0.0/30 is subnetted, 2 subnets
C       10.1.0.0 is directly connected, Serial2/0
R       10.1.0.4 [120/1] via 10.1.0.2, 00:00:14, Serial2/0
     192.168.10.0/26 is subnetted, 2 subnets
C       192.168.10.0 is directly connected, FastEthernet0/0
R       192.168.10.64 [120/1] via 10.1.0.2, 00:00:14, Serial2/0
S*   0.0.0.0/0 [1/0] via 10.1.0.2

A>
```

Router B

```
B>en
B#config t
Enter configuration commands, one per line.  End with CNTL/Z.
B(config)#ip route 0.0.0.0 0.0.0.0 10.1.0.6
B(config)#exit
B#
%SYS-5-CONFIG_I: Configured from console by console
exit


B>show 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 10.1.0.6 to network 0.0.0.0

     10.0.0.0/30 is subnetted, 2 subnets
C       10.1.0.0 is directly connected, Serial3/0
C       10.1.0.4 is directly connected, Serial2/0
     192.168.10.0/26 is subnetted, 2 subnets
R       192.168.10.0 [120/1] via 10.1.0.1, 00:00:08, Serial3/0
C       192.168.10.64 is directly connected, FastEthernet0/0
S*   0.0.0.0/0 [1/0] via 10.1.0.6

B>
```