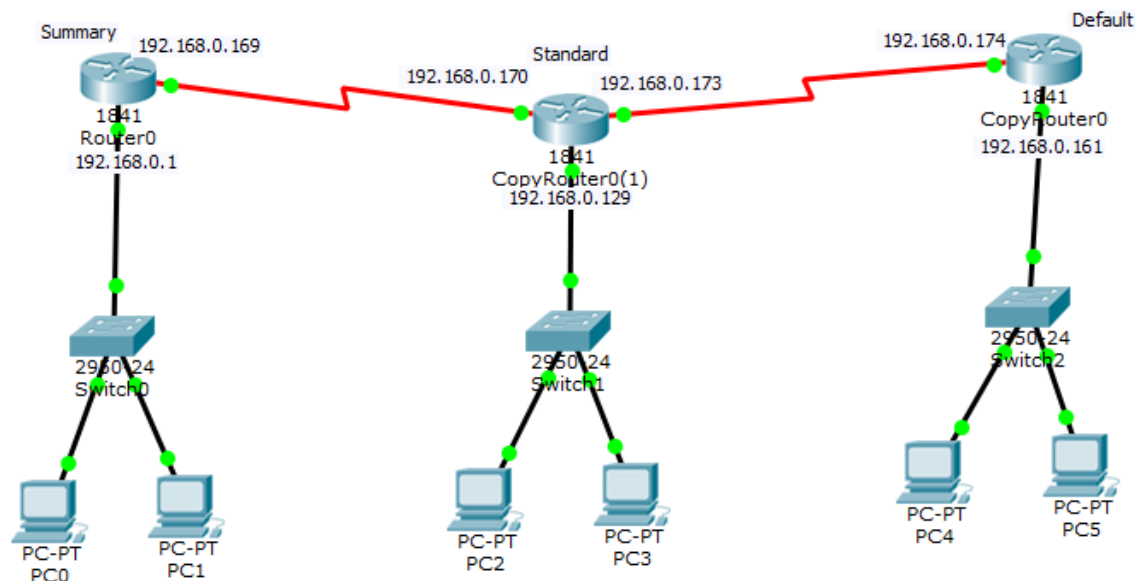


Project Name: Implementation of Static (Standard, Summary, Floating, Default) and Dynamic Routing Using VLSM from 192.168.0.0/24 IP Address.

VLSM Table

Network No	Network Address	1 st Usable Address	2 nd Usable Address	Last Usable Address	Broadcast Address	Subnet Mask
1	192.168.0.0/25	192.168.0.1	192.168.0.2	192.168.0.126	192.168.0.127	255.255.255.128
2	192.168.0.128/27	192.168.0.129	192.168.0.130	192.168.0.158	192.168.0.159	255.255.255.224
3	192.168.0.160/29	192.168.0.161	192.168.0.162	192.168.0.166	192.168.0.167	255.255.255.248
4	192.168.0.168/30	192.168.0.169		192.168.0.170	192.168.0.171	255.255.255.252
5	192.168.0.172/30	192.168.0.173		192.168.0.174	192.168.0.175	255.255.255.252
6	192.168.0.176/30	192.168.0.177		192.168.0.178	192.168.0.179	255.255.255.252

Connection Diagram of Network



PC Configuration

- 1st usable address is used as default gateway
- 2nd usable address is used for 1st pc IP address
- Last usable address is used for 2nd pc IP address

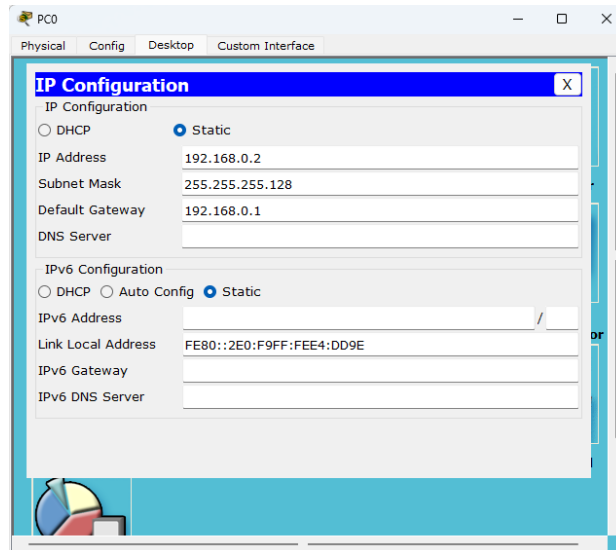


Fig. IP Configuration for PC0

Router Configuration

```
Router(config-if)#ip address 192.168.0.1 255.255.255.128
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

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

Fig. CLI command for configuring router 0

Summary Static Routing in Router 0

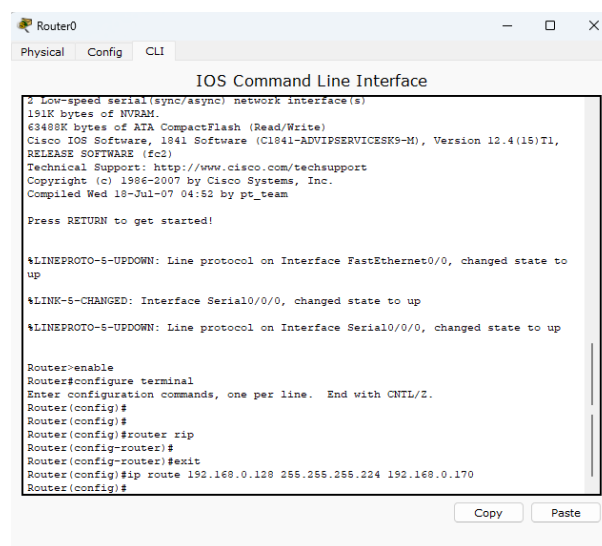
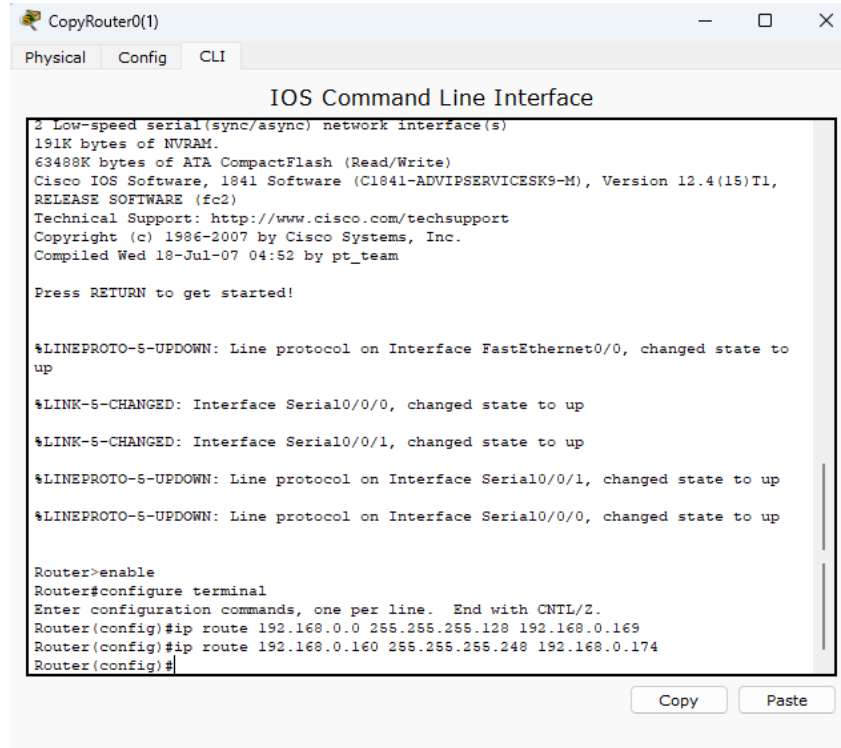


Fig. Summary routing with 192.168.0.128/26 and mask 255.255.255.192

Standard Static Routing in Router 1



The screenshot shows the IOS Command Line Interface for CopyRouter0(1). The interface displays system information, including hardware details and software version. It then shows the configuration of interfaces and the setup of static routes. The user has entered the 'enable' command, configured the terminal, and entered three static routes: 192.168.0.0/24 to 255.255.255.128, 192.168.0.169, and 192.168.0.174.

```
CopyRouter0(1)
Physical Config CLI

IOS Command Line Interface

2 Low-speed serial(sync/async) network interface(s)
191K bytes of NVRAM.
63488K bytes of ATA CompactFlash (Read/Write)
Cisco IOS Software, 1841 Software (C1841-ADVIPSERVICESK9-M), Version 12.4(15)T1,
RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2007 by Cisco Systems, Inc.
Compiled Wed 18-Jul-07 04:52 by pt_team

Press RETURN to get started!

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

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

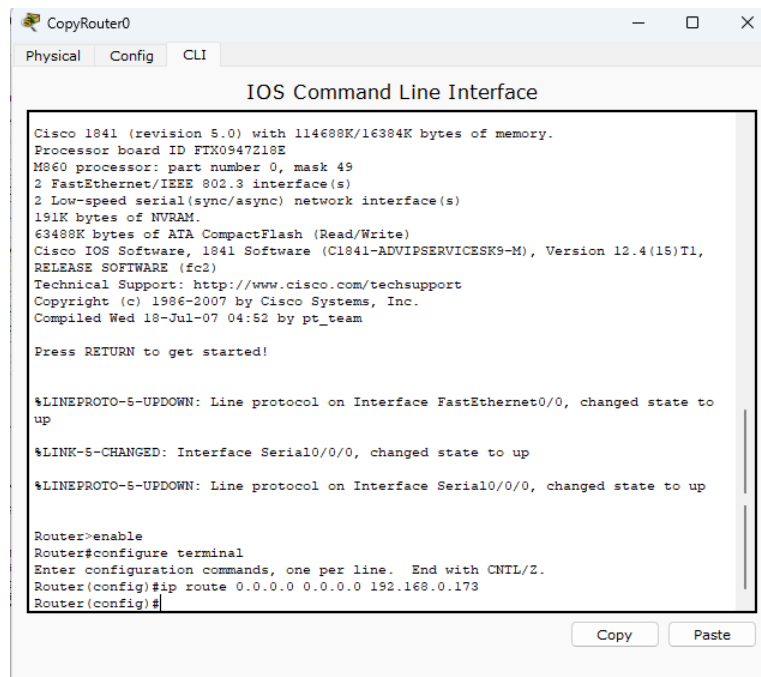
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

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

Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 192.168.0.0 255.255.255.128 192.168.0.169
Router(config)#ip route 192.168.0.160 255.255.255.248 192.168.0.174
Router(config)#
```

Fig. Standard routing in router1

Default Static Routing in Router 2



The screenshot shows the IOS Command Line Interface for CopyRouter0. The interface displays system information, including hardware details and software version. It then shows the configuration of interfaces and the setup of a default static route. The user has entered the 'enable' command, configured the terminal, and entered a default static route: 0.0.0.0/0 to 192.168.0.173.

```
CopyRouter0
Physical Config CLI

IOS Command Line Interface

Cisco 1841 (revision 5.0) with 114688K/16384K bytes of memory.
Processor board ID FTX0947218E
M860 processor: part number 0, mask 49
2 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
191K bytes of NVRAM.
63488K bytes of ATA CompactFlash (Read/Write)
Cisco IOS Software, 1841 Software (C1841-ADVIPSERVICESK9-M), Version 12.4(15)T1,
RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2007 by Cisco Systems, Inc.
Compiled Wed 18-Jul-07 04:52 by pt_team

Press RETURN to get started!

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

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

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

Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 0.0.0.0 0.0.0.0 192.168.0.173
Router(config)#
```

Fig. Default routing in router 2

Verifying the network by pinging the IP address

```
PC>ping 192.168.0.2

Pinging 192.168.0.2 with 32 bytes of data:

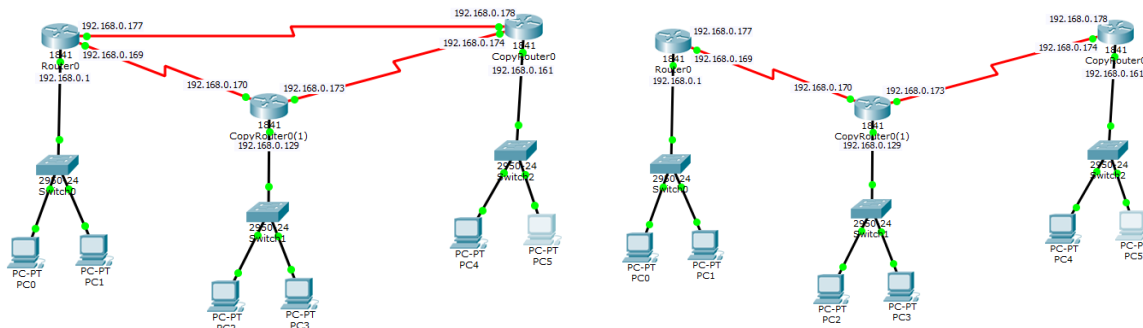
Reply from 192.168.0.2: bytes=32 time=3ms TTL=125
Reply from 192.168.0.2: bytes=32 time=24ms TTL=125
Reply from 192.168.0.2: bytes=32 time=3ms TTL=125
Reply from 192.168.0.2: bytes=32 time=3ms TTL=125

Ping statistics for 192.168.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 3ms, Maximum = 24ms, Average = 8ms

PC>
```

Fig. Pinging from PC4 to PC0

Floating Static Routing



Verifying the network by trace routing

```
PC>tracert 192.168.0.2

Tracing route to 192.168.0.2 over a maximum of 30 hops:

  1  0 ms    3 ms    0 ms    192.168.0.161
  2  1 ms    1 ms    1 ms    192.168.0.173
  3  1 ms    2 ms    0 ms    192.168.0.177
  4  0 ms    17 ms   2 ms    192.168.0.2

Trace complete.

PC>
```

```
PC>tracert 192.168.0.2

Tracing route to 192.168.0.2 over a maximum of 30 hops:

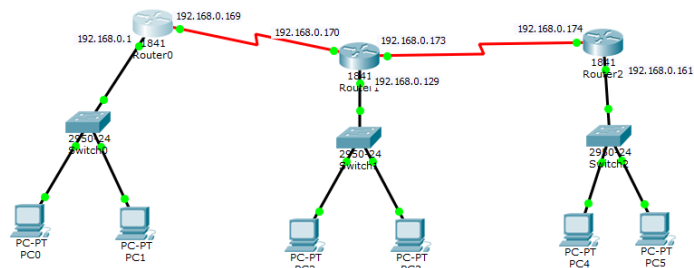
  1  1 ms    1 ms    0 ms    192.168.0.161
  2  2 ms    0 ms    0 ms    192.168.0.173
  3  5 ms    1 ms    1 ms    192.168.0.169
  4  2 ms    0 ms    1 ms    192.168.0.2

Trace complete.

PC>
```

Fig. Showing different route for PC 5 to PC0

Dynamic Routing



Router Configuration

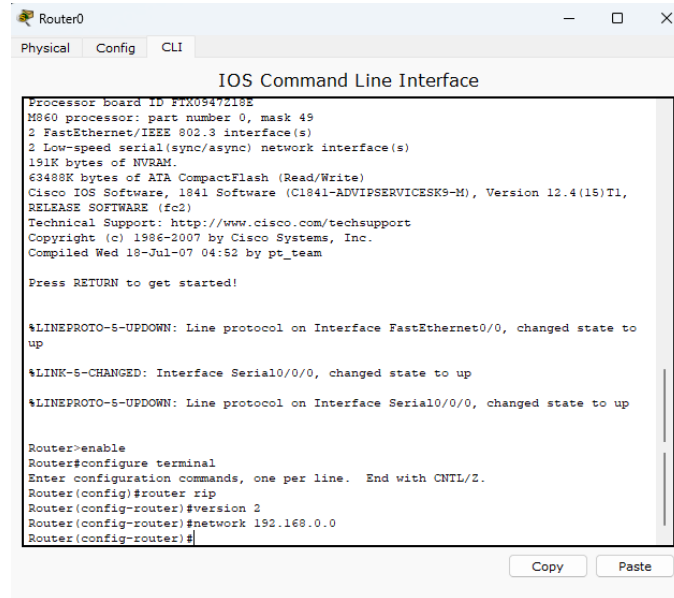


Fig. Router configuration for RIP version 2

Verifying the network by pinging the IP address

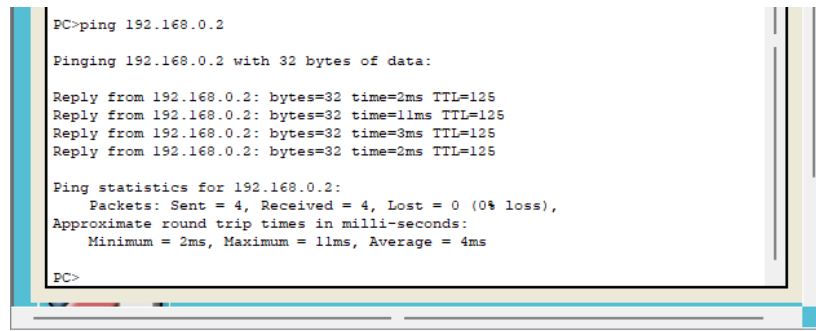


Fig. Pinging from PC5 to PC0