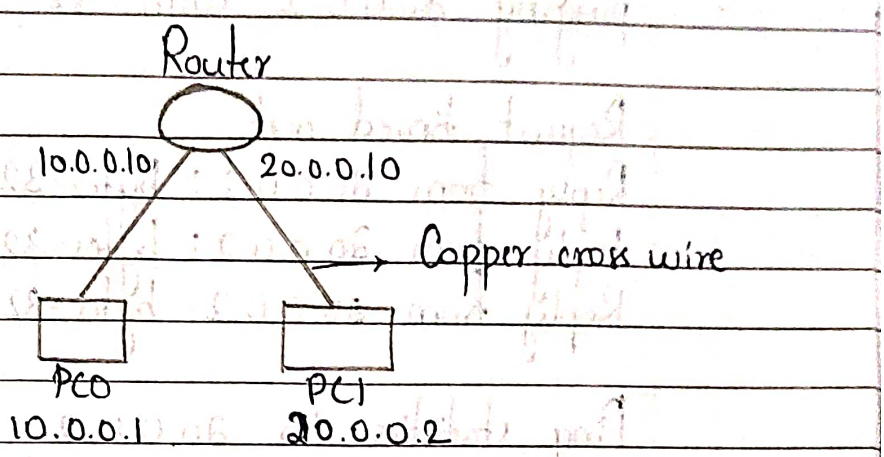
22/6/23

Title - Packet tracing using Router as the connection device.

a) Aim - Configuring default route, static route to the router.

Topology -



Procedure -

1) Select a generic router and two PC as end devices and connect them with copper cross-wire.
2) Set the IP addresses of the PCs with different network IDs.
3) Set gateway in the settings for the two PCs
4) Now, we need to connect router networks with PC gateways.
5) To set network in CLI of router, follow the following steps -
   No → Enable → Config t
   → interface fastethernet 0/0
   → ip address 10.0.0.10 255.0.0.0
   → No shut → Exit
6) Follow the same steps for other PC.
7) To confirm connection, give show ip route command.

8) Now, in command prompt of PC0 ping the second PC PC1.

Result -

ping 20.0.0.2

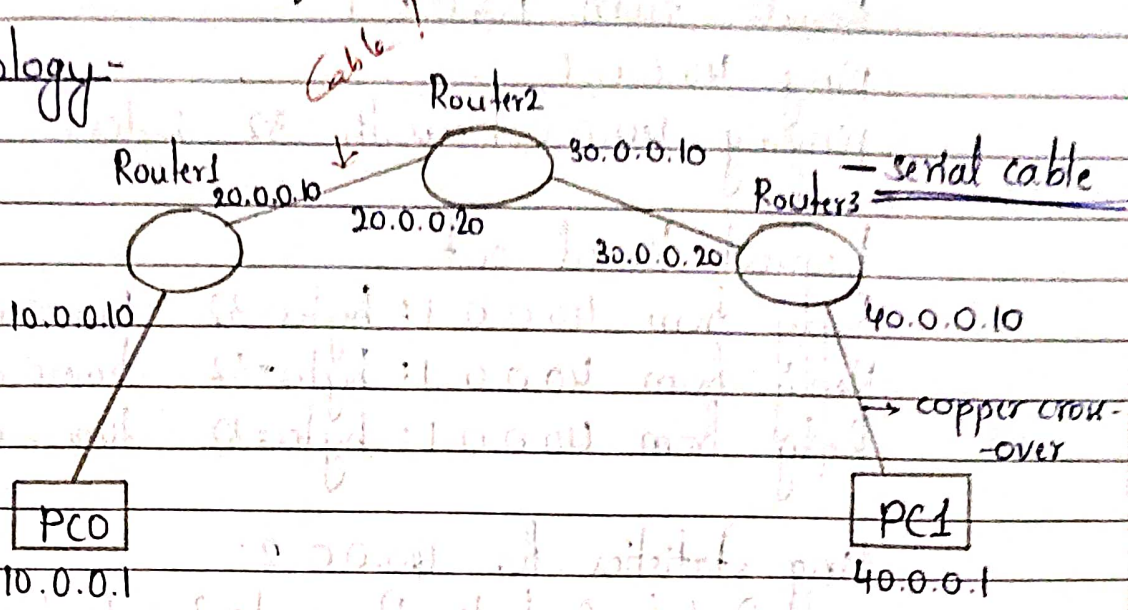
pinging 20.0.0.2 with 32 bytes of data:

Request timed out.
Reply from 20.0.0.2: bytes=32 time=0 ms TTL=12
Reply from 20.0.0.2: bytes=32 time=0ms TTL=12
Reply from 20.0.0.2: bytes=32 time=0ms TTL=12

Ping statistics for 20.0.0.2:
Packets: Sent=4, Received=3, Lost=1
Approximate round trip times in milli-seconds:
Minimum = 0 ms, Maximum=0 ms, Average = 0 m

b) Aim: Configuring default route, static route to a connection of routers.

Topology -



config steps ?

Procedure -

1) Select 3 generic routers and two PC's as end devices. Connect the PC's to different routers with copper cross over and connect both routers to main router with serial cables.
2) Set the IP addresses of PC and gateways.
3) Set the gateway addresses in all the routers taking interface as fastethernet for the PCs and serial for routers.
4) Now, connect the interfaces from other routers with following steps -
   config t → ip route 30.0.0.0 255.0.0.0 20.0.0.20
   ip route 40.0.0.0 255.0.0.0 20.0.0.20
5) Similarly, connect the other PC to interfaces.
6) Check the network connections with show ip route command.

7) Now ping 40.0.0.1 from 10.0.0.1

Result - from 10.0.0.1
ping 40.0.0.1
pinging 40.0.0.1 with 32 bytes:

Request timed out
Reply from 40.0.0.1: bytes=32 time=0 ms TTL=127
Reply from 40.0.0.1: bytes=32 time=0 ms TTL=127
Reply from 40.0.0.1: bytes=32 time=0 ms TTL=127

Ping statistics for 40.0.0.2:
Packets: Sent=4, Received=3, Lost=1
Approximate round trip time in milli-seconds:
Minimum=0 ms, Maximum=0 ms, Average=0 ms

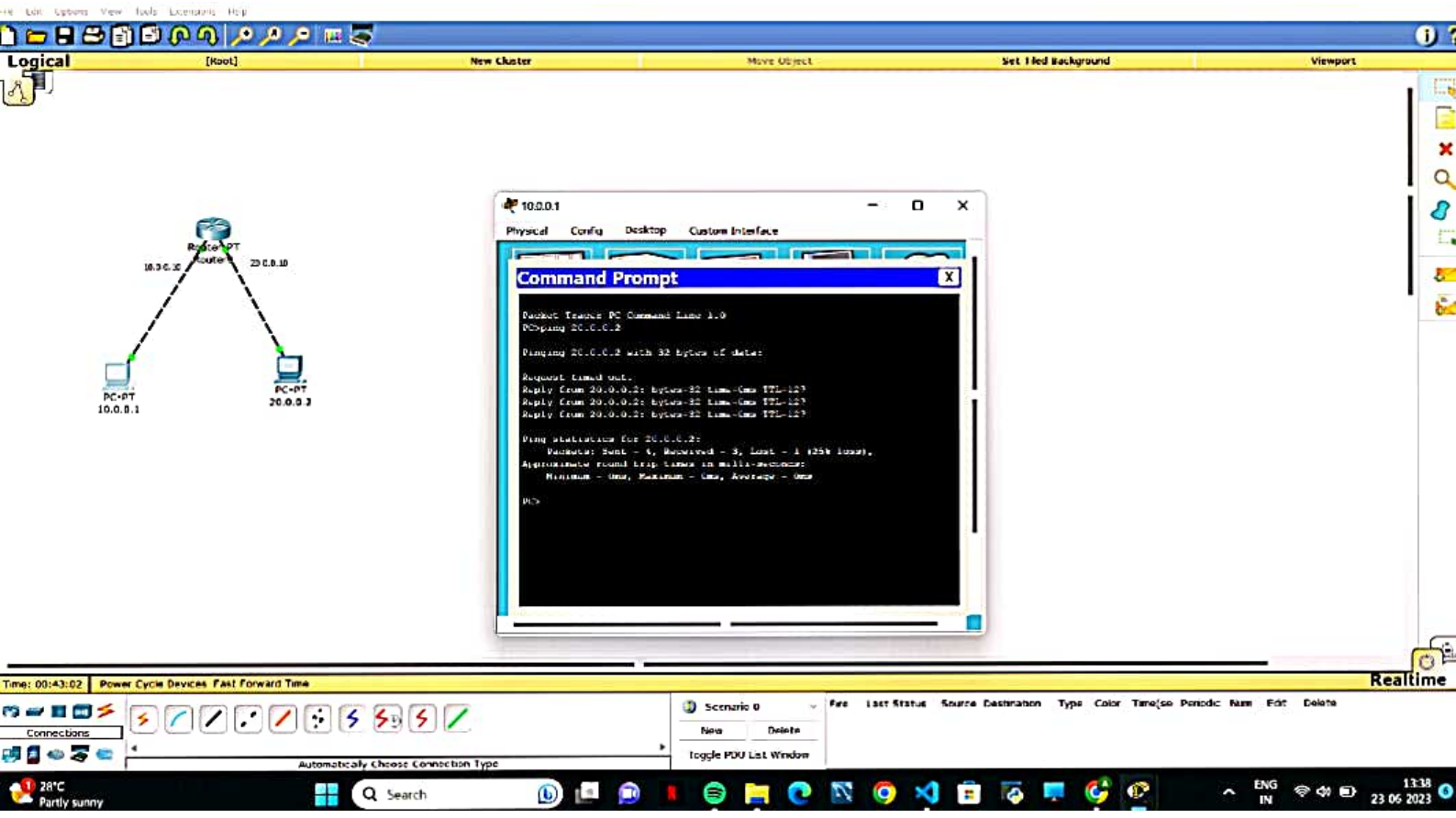
Incomplete
show IP route?
9/10

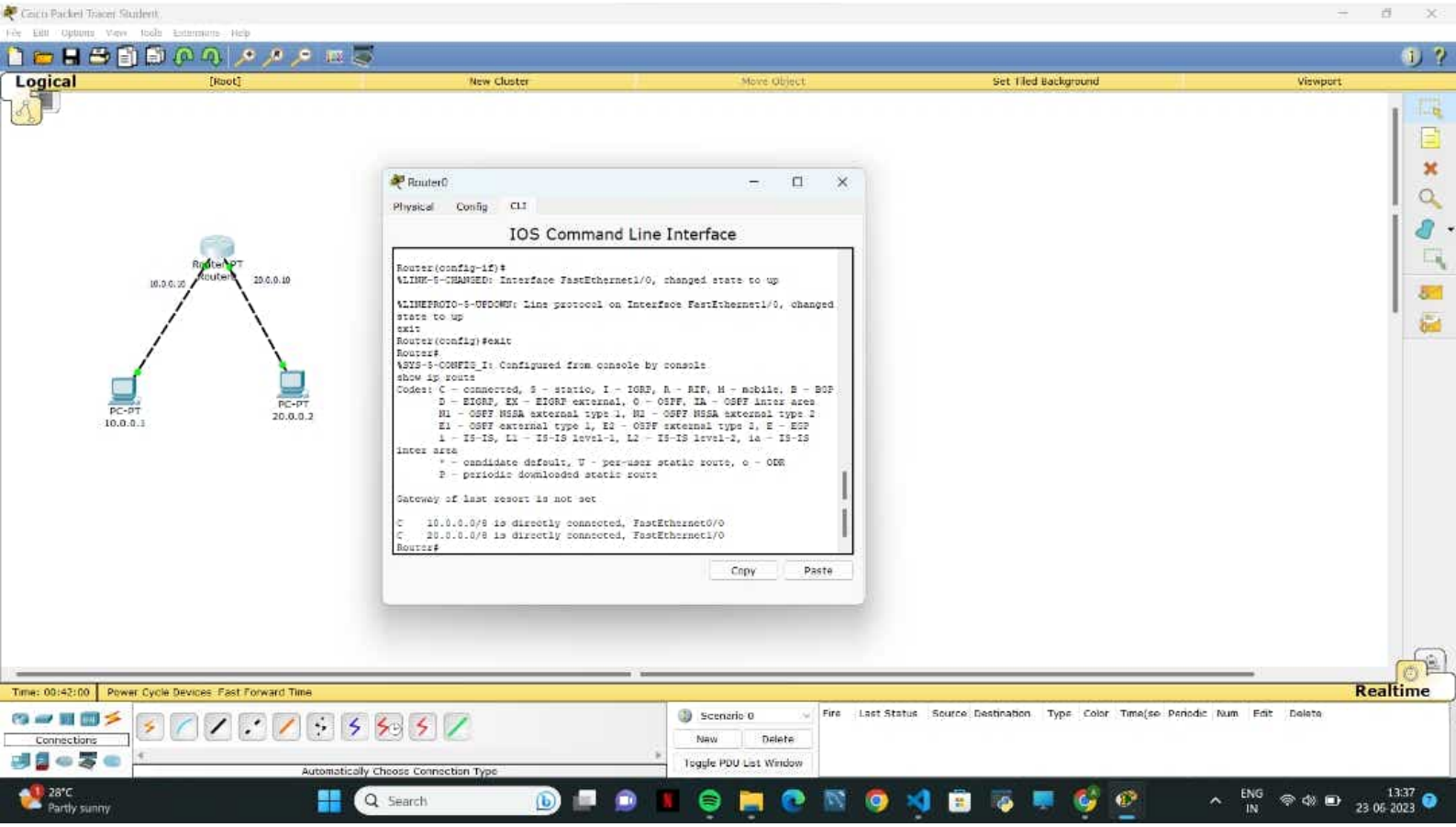
Config-steps:
>enable
config t
interface fastethernet 0/0
IP address 10.0.0.10 225.0.0.0
no shut
exit
interface serial 2/0
IP address 20.0.0.10 225.0.0.0
no shut
exit
show IP route
similarily for router1
>enable

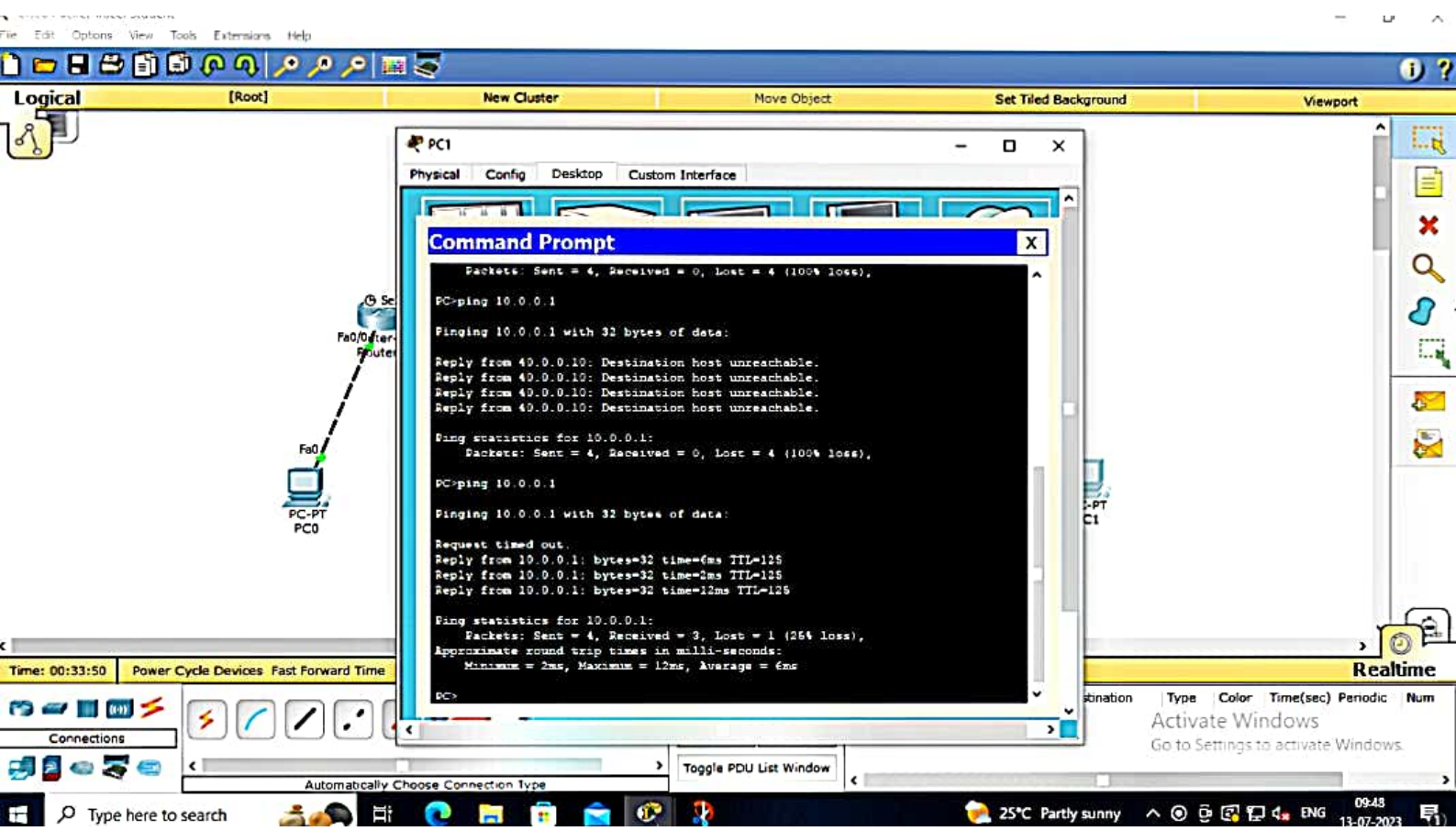
#config t
#interface serial 2/0
#IP address 20.0.0.20 255.0.0.0
#no shut
#exit
#interface serial 3/0
#IP address 30.0.0.10 255.0.0.0
#no shut
#exit
similarly for router-2
>enable
#config t
#interface serial 2/0
#IP address 30.0.0.20 255.0.0.0
#no shut
#exit
#interface fastethernet 0/0
#IP address 40.0.0.10 255.0.0.0
#no shut
#exit
show IP route
now select PC0 end device
desktop → command prompt
PC>ping 40.0.0.1
will be unable to ping to interfere configuration
→CLI
#config t
#IP route 30.0.0.0 255.0.0.0 20.0.0.20
#IP route 40.0.0.0 255.0.0.0 20.0.0.20
#exit
show IP route

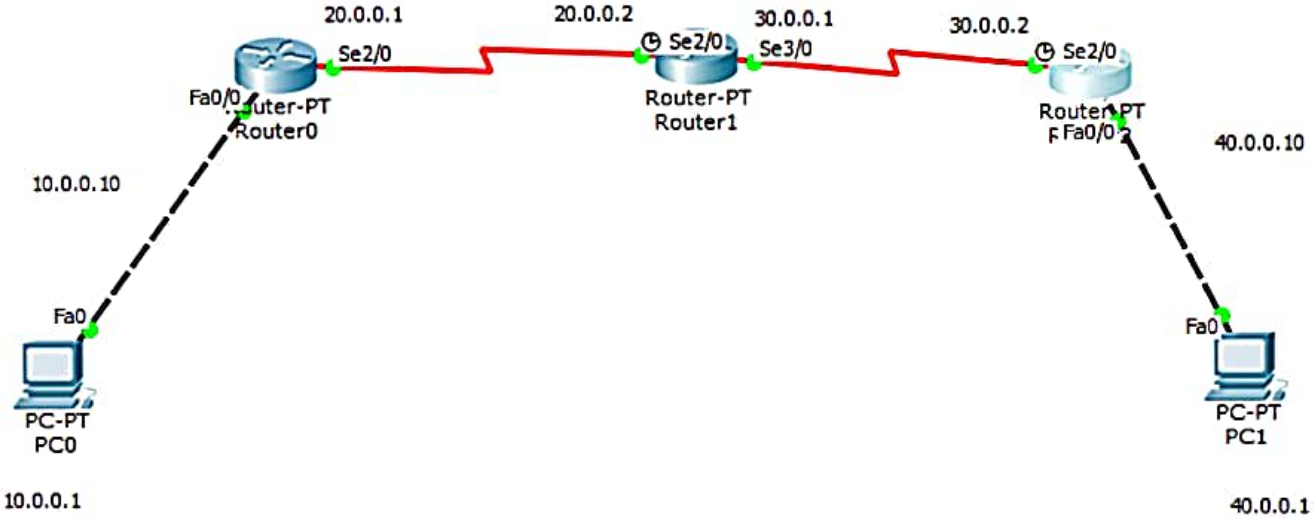
similarly for Router-1
config t
IP route 10.0.0.0 255.0.0.0 20.0.0.10
IP route 40.0.0.0 255.0.0.0 30.0.0.20
exit
show IP route
similarly for Router-2
config t
IP route 10.0.0.0 255.0.0.0 30.0.0.10
IP route 20.0.0.0 255.0.0.0 30.0.0.10
exit

IP Route
for router-0
show IP route
codes: C-connected, S-static, I-IGRP, R-RIP
M-Mobile, B-BGP
D-EIGRP, EX-EIGRP external, O-OSPF, A. OSPF interarea
N1-OSPF NSSA external type1, N2-OSPF NSSA external type2
1-OSPF external type 2, E2-OSPF external type2, E-EGP
i-IS-IS, L1-IS-IS level-1, L2-IS-IS level-2,
ia-IS-IS interarea
*-candidate default, U-per-user static route
O-ODR
P-Periodic downloaded static route
Gateway of last resort is not set
C-10.0.0.0/8 is directly connected, Fast ethernet


Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
10.0.0.10
20.0.0.10
PC-PT
10.0.0.1
PC-PT
20.0.0.2
10.0.0.1
Physical
Config
Desktop
Custom Interface
Command Prompt
Packet Tracer PC Command Line 1.0
PC>ping 20.0.0.2
Pinging 20.0.0.2 with 32 bytes of data:
Request timed out.
Reply from 20.0.0.2: bytes=32 time<1ms TTL=127
Reply from 20.0.0.2: bytes=32 time<1ms TTL=127
Reply from 20.0.0.2: bytes=32 time<1ms TTL=127
Ping statistics for 20.0.0.2:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
PC>
Time: 00:43:02
Power Cycle Devices Fast Forward Time
Realtime
Connections
Automatically Choose Connection Type
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Type
Color
Time(se
Periodic
Num
Edit
Delete
28°C
Partly sunny
Search
ENG
IN
13:38
23-06-2023


Cisco Packet Tracer Student
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Router0
Physical
Config
CLI
IOS Command Line Interface
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
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
C 10.0.0.0/8 is directly connected, FastEthernet0/0
C 20.0.0.0/8 is directly connected, FastEthernet1/0
Router#
Copy
Paste
Router-PT
Router1
10.0.0.10
20.0.0.10
PC-PT
10.0.0.1
PC-PT
20.0.0.2
Time: 00:42:00
Power Cycle Devices
Fast Forward Time
Realtime
Connections
Automatically Choose Connection Type
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Type
Color
Time(se
Periodic
Num
Edit
Delete
28°C
Partly sunny
Search
ENG
IN
13:37
23-06-2023


File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
PC1
Physical
Config
Desktop
Custom Interface
Command Prompt
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
PC>ping 10.0.0.1
Pinging 10.0.0.1 with 32 bytes of data:
Reply from 40.0.0.10: Destination host unreachable.
Reply from 40.0.0.10: Destination host unreachable.
Reply from 40.0.0.10: Destination host unreachable.
Reply from 40.0.0.10: Destination host unreachable.
Ping statistics for 10.0.0.1:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
PC>ping 10.0.0.1
Pinging 10.0.0.1 with 32 bytes of data:
Request timed out.
Reply from 10.0.0.1: bytes=32 time=6ms TTL=125
Reply from 10.0.0.1: bytes=32 time=2ms TTL=125
Reply from 10.0.0.1: bytes=32 time=12ms TTL=125
Ping statistics for 10.0.0.1:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 12ms, Average = 6ms
PC>
Fa0
PC-PT
PC0
Time: 00:33:50
Power Cycle Devices
Fast Forward Time
Realtime
Connections
Automatically Choose Connection Type
Toggle PDU List Window
Type
Color
Time(sec)
Periodic
Num
Activate Windows
Go to Settings to activate Windows.
Type here to search
25°C Partly sunny
ENG
09:48
13-07-2023


20.0.0.1
20.0.0.2
30.0.0.1
30.0.0.2
Se2/0
Se2/0
Se3/0
Se2/0
Fa0/0
Router-PT
Router0
Router-PT
Router1
Router-PT
Fa0/0
40.0.0.10
10.0.0.10
Fa0
Fa0
PC-PT
PC0
PC-PT
PC1
10.0.0.1
40.0.0.1

Router0

Physical | Config | CLI

IOS Command Line Interface

```
Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface fastethernet0/0
Router(config-if)#ip address 10.0.0.10 255.0.0.0
Router(config-if)#no shut

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

Router(config-if)#exit
Router(config)#interface serial 2/0
Router(config-if)#ip address 20.0.0.1 255.0.0.0
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial2/0, changed state to down
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#ip route 0.0.0.0 0.0.0.0 20.0.0.2
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#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

C    10.0.0.0/8 is directly connected, FastEthernet0/0
```

Router1

Physical | Config | CLI

IOS Command Line Interface

```
Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface serial 2/0
Router(config-if)#ip address 20.0.0.2 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

Router(config-if)#exit
Router(config)#i
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
Router(config)#interface serial 3/0
Router(config-if)#ip address 30.0.0.1 255.0.0.0
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial3/0, changed state to down
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#ip route 10.0.0.0 255.0.0.0 20.0.0.1
Router(config)#ip route 40.0.0.0 255.0.0.0 30.0.0.2
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#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
```

Router1

Physical | Config | CLI

IOS Command Line Interface

```
Router(config-if)#ip address 20.0.0.2 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

Router(config-if)#exit
Router(config)#i
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
Router(config)#interface serial 3/0
Router(config-if)#ip address 30.0.0.1 255.0.0.0
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial3/0, changed state to down
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#ip route 10.0.0.0 255.0.0.0 20.0.0.1
Router(config)#ip route 40.0.0.0 255.0.0.0 30.0.0.2
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#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

S    10.0.0.0/8 [1/0] via 20.0.0.1
C    20.0.0.0/8 is directly connected, Serial2/0
Router#
```

Physical | Config | CLI

IOS Command Line Interface

```
Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface serial 2/0
Router(config-if)#ip address 30.0.0.2 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

Router(config-if)#exit
Router(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

Router(config)#interface fastethernet0/0
Router(config-if)#ip address 40.0.0.10 255.0.0.0
Router(config-if)#no shut

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

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

Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#ip route 0.0.0.0 0.0.0.0 30.0.0.1
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#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
```

Router2

Physical | Config | CLI

IOS Command Line Interface

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

Router(config-if)#exit
Router(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

Router(config)#interface fastethernet0/0
Router(config-if)#ip address 40.0.0.10 255.0.0.0
Router(config-if)#no shut

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

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

Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#ip route 0.0.0.0 0.0.0.0 30.0.0.1
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#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 30.0.0.1 to network 0.0.0.0

C    30.0.0.0/8 is directly connected, Serial2/0
C    40.0.0.0/8 is directly connected, FastEthernet0/0
S*   0.0.0.0/0 [1/0] via 30.0.0.1
Router#
```