COMPUTER NETWORKS (CN)

LAB 5 ASSIGNMENT

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CSE AIML A

3rd Year

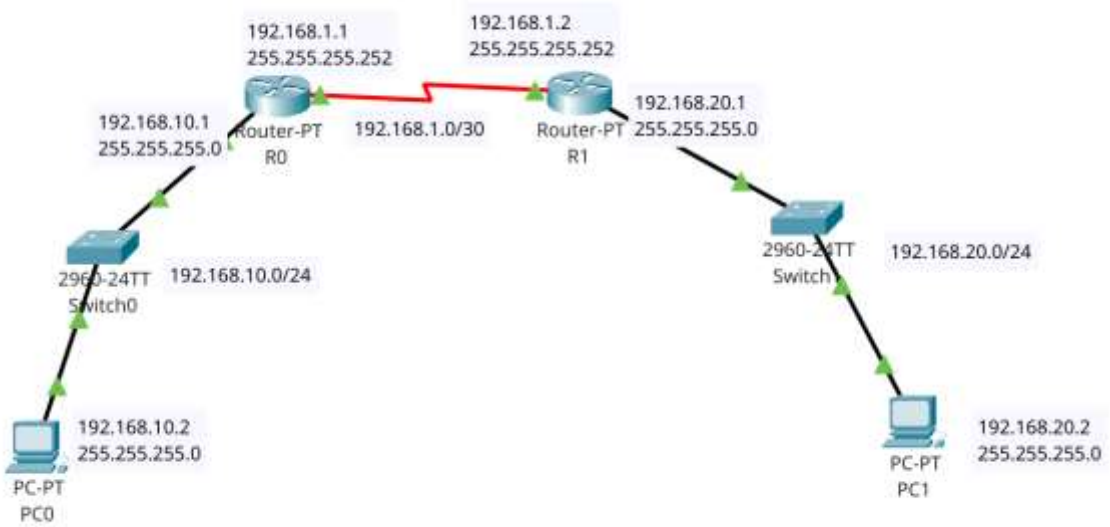
Objective

- To configure static and default routing on routers to enable communication between different network segments.
- Using cisco packet tracer, to create a network with multiple routers and PCs, and configure routing to ensure proper data transfer.

Steps taken to set up the network

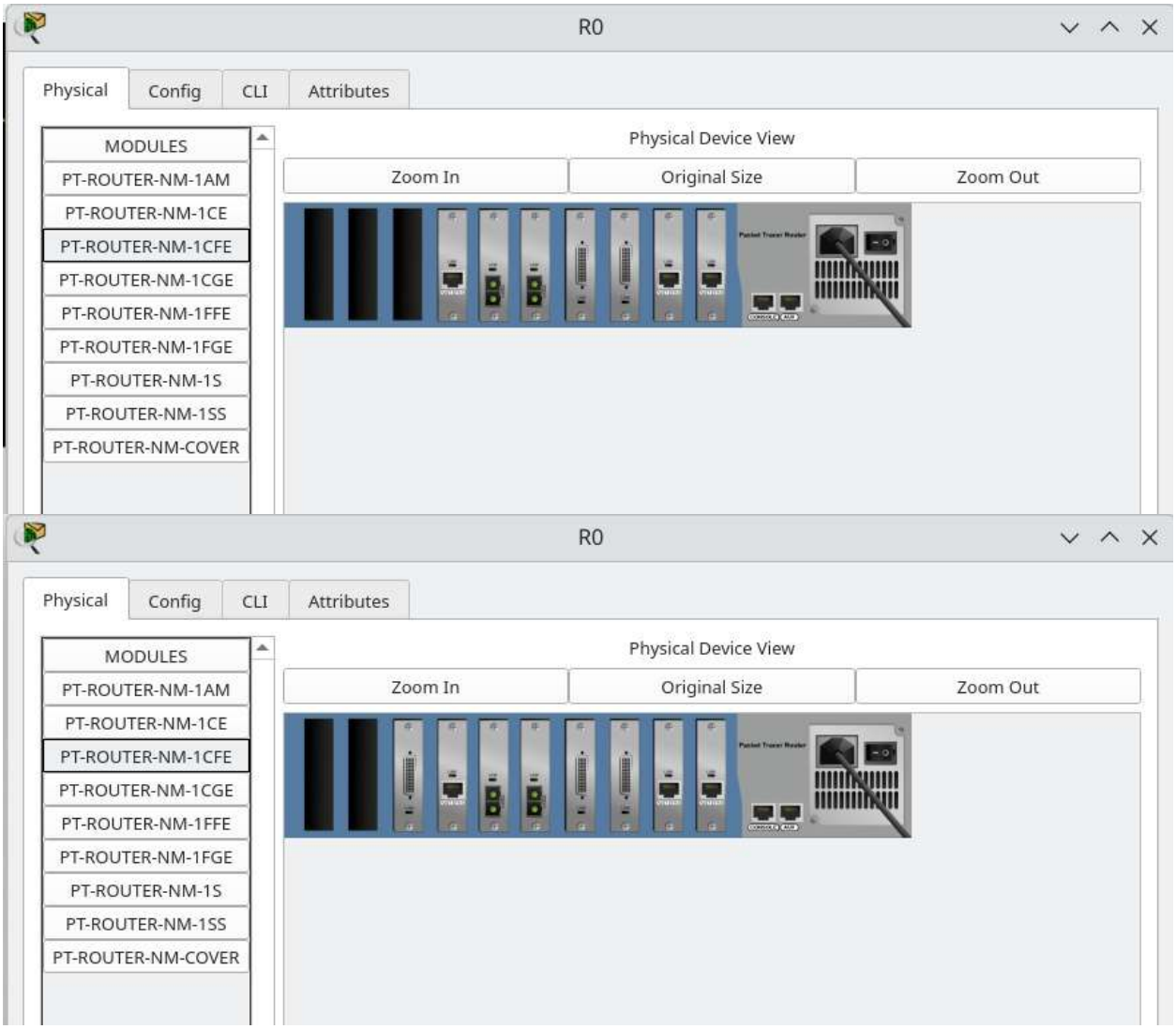
Step 1:

Select and drag required network devices (2 Router-PTs, 2 2960-24TT Switches) and end devices (2 PC-PTs).



Step 2:

Open Routers and add PT-ROUTER-NM-1CFE and PT-ROUTER-NM-1S Modules.



Step 3:

Connect the cables (Straight through cables for different devices) and Serial DCE (between routers).

Step 4:

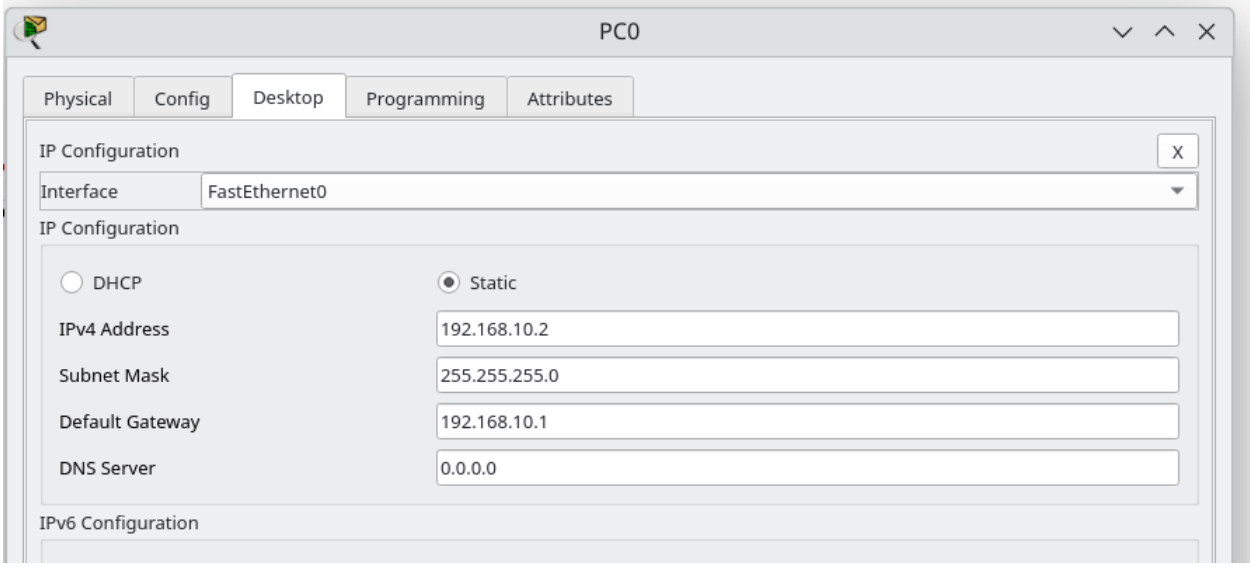
Open the routers CLI and type in the following commands (R0)

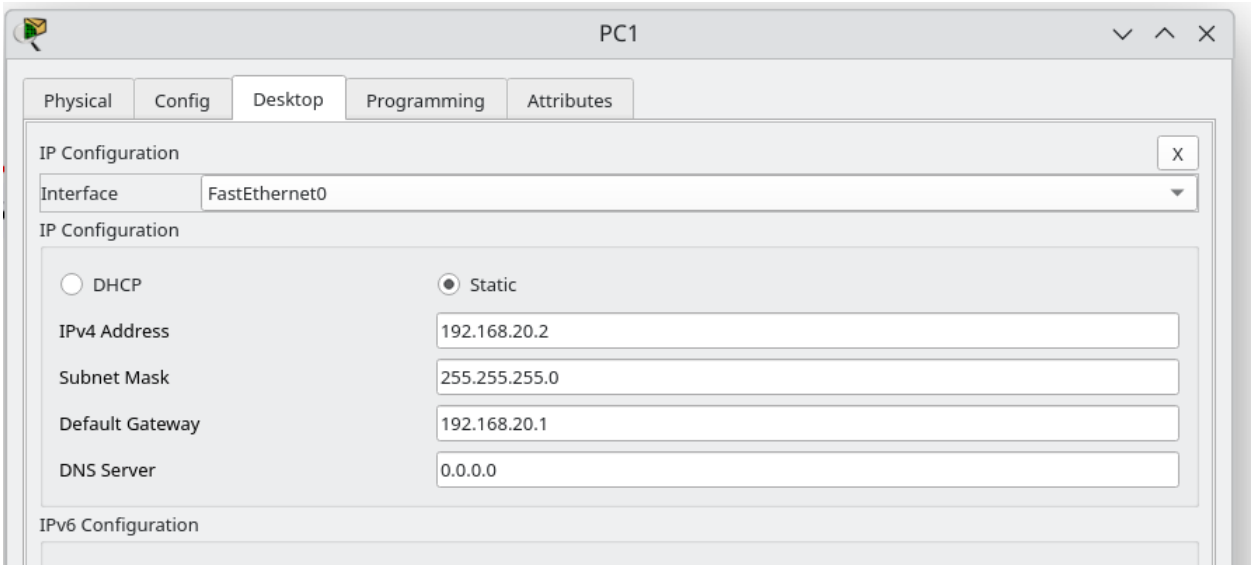
```
Router>enable
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int fa 0/0
Router(config-if)#ip address 192.168.20.1 255.255.255.0
Router(config-if)#no shut

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

Router(config-if)#exit
Router(config)#int se2/0
Router(config-if)#ip address 192.168.1.2 255.255.255.252
Router(config-if)#no shut

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

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

Router(config-if)#exit
Router(config)#
```

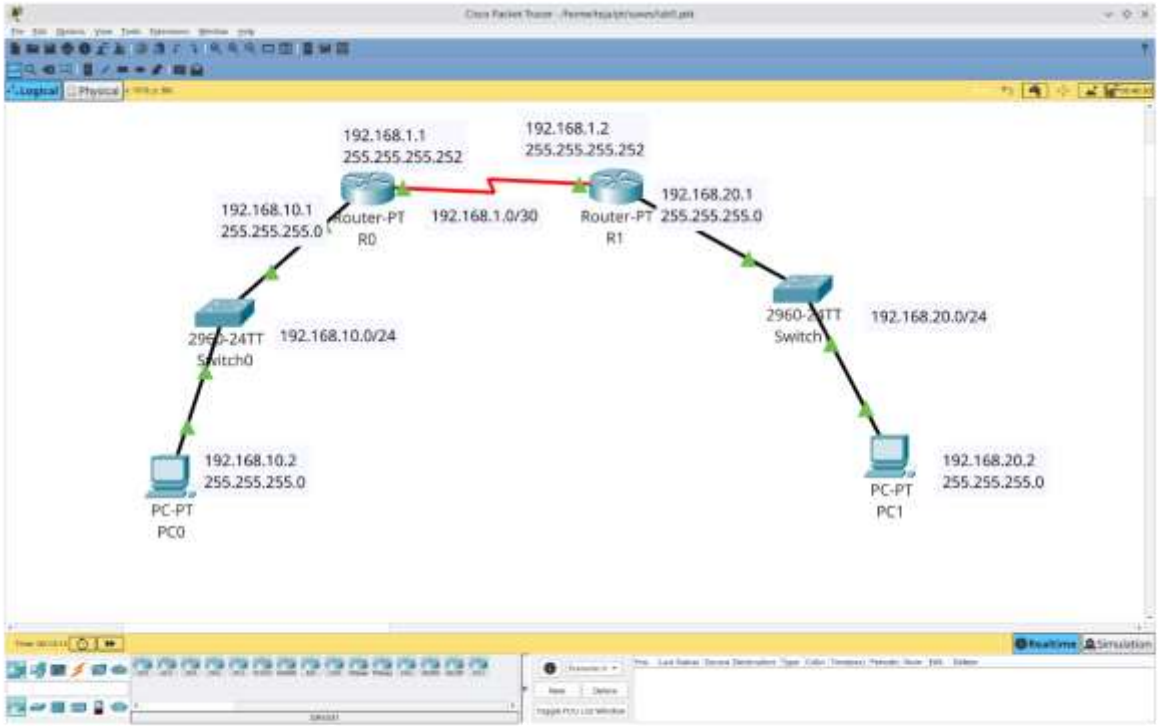
Similarly do it for R1.

Step 5:

Configure IP addresses for PC1 and PC2







Step 6:

Configure Static Routing and Default Routing for Routers.

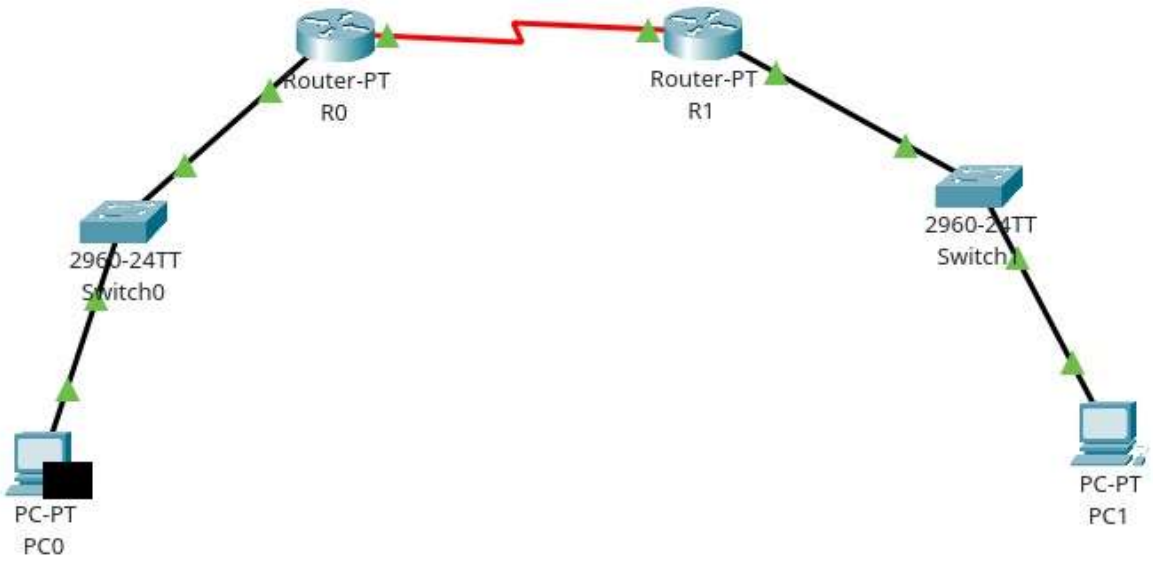
```
Router(config-if)#do show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external 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

     192.168.1.0/30 is subnetted, 1 subnets
C       192.168.1.0 is directly connected, Serial2/0
C    192.168.10.0/24 is directly connected, FastEthernet0/0

Router(config-if)#ip route 192.168.20.0 255.255.255.0 192.168.1.2
Router(config)#do 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

     192.168.1.0/30 is subnetted, 1 subnets
C       192.168.1.0 is directly connected, Serial2/0
C    192.168.10.0/24 is directly connected, FastEthernet0/0
S    192.168.20.0/24 [1/0] via 192.168.1.2

Router(config)#ip route 0.0.0.0 0.0.0.0 192.168.1.1
%Invalid next hop address (it's this router)
Router(config)#ip route 0.0.0.0 0.0.0.0 192.168.1.2
Router(config)#do 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 192.168.1.2 to network 0.0.0.0

     192.168.1.0/30 is subnetted, 1 subnets
C       192.168.1.0 is directly connected, Serial2/0
C    192.168.10.0/24 is directly connected, FastEthernet0/0
S    192.168.20.0/24 [1/0] via 192.168.1.2
S*   0.0.0.0/0 [1/0] via 192.168.1.2
```

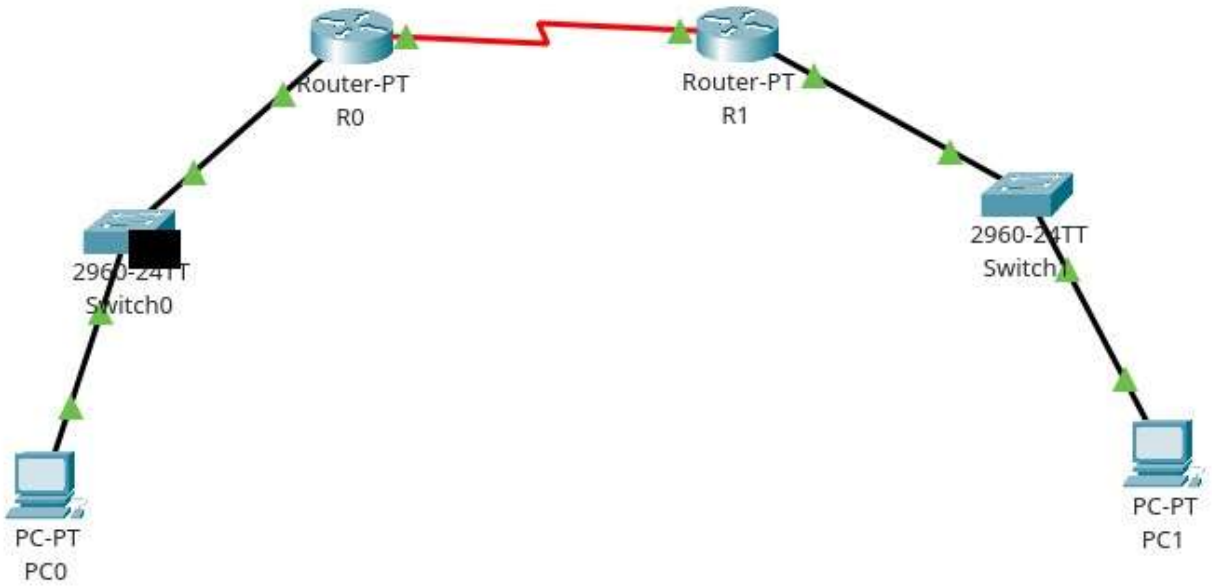
This is for R0, Implement the similar for R1 (default and static pointing to R0).

Simulation:

Pinging PC1 from PC0

ICMP ECHO RESPONSE:


Router-PT
R0
Router-PT
R1
2960-24TT
Switch0
2960-24TT
Switch1
PC-PT
PC0
PC-PT
PC1


Router-PT
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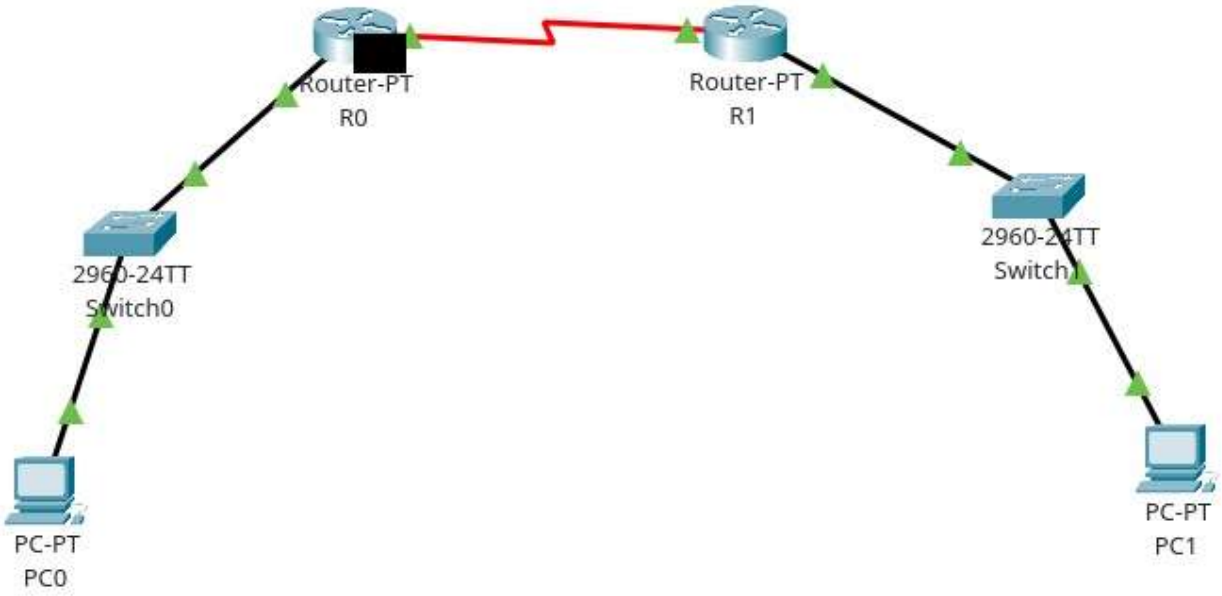
Router-PT
R1
2960-24TT
Switch0
2960-24TT
Switch1
PC-PT
PC0
PC-PT
PC1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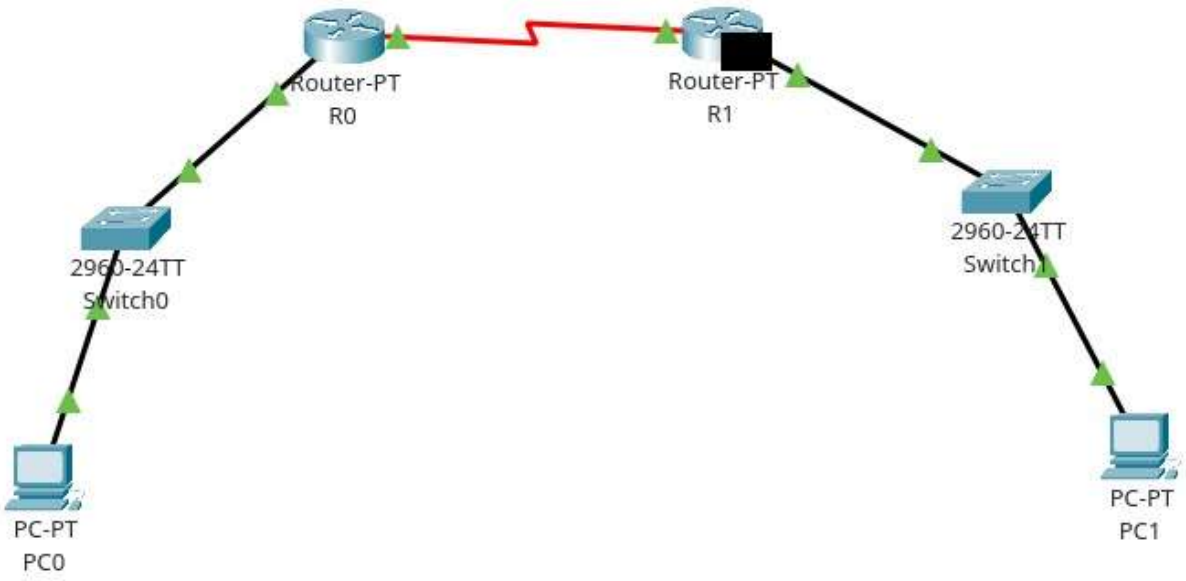
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R1
2960-24TT
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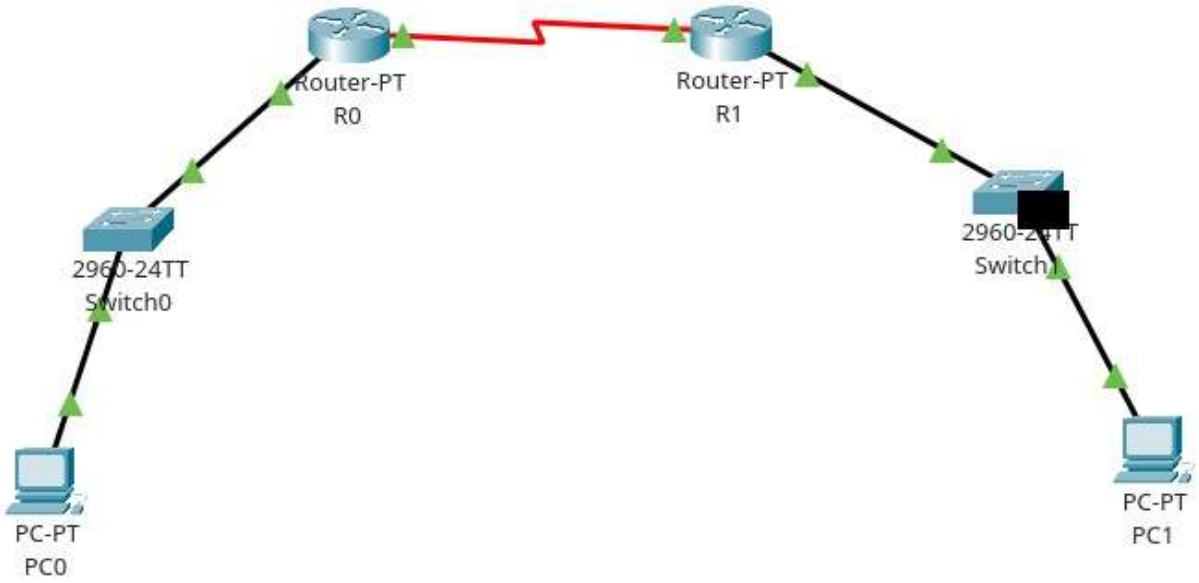
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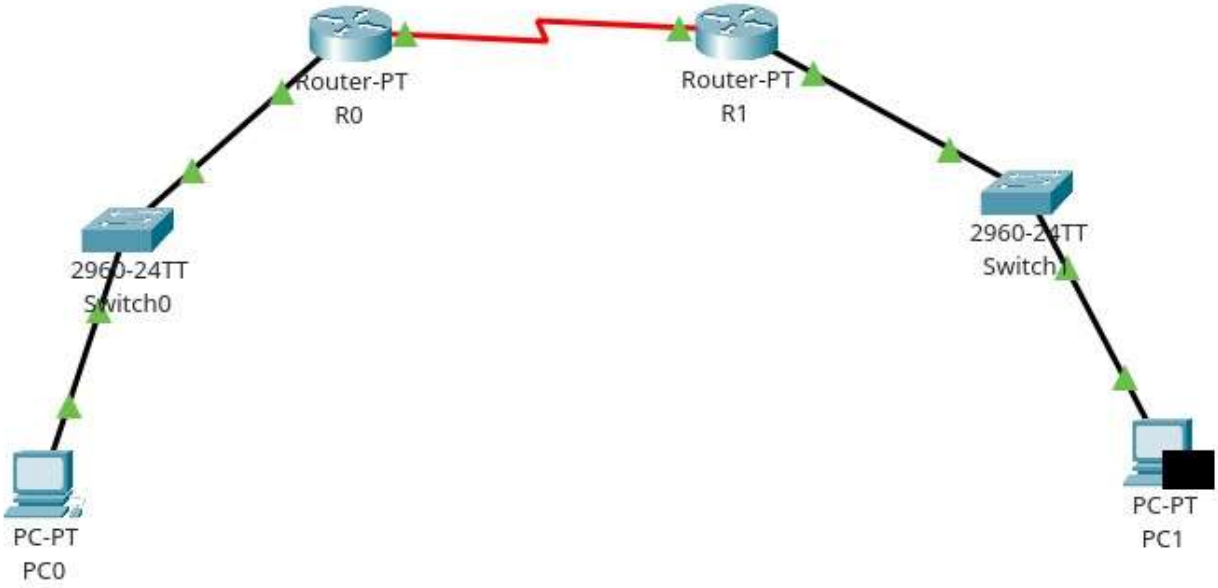
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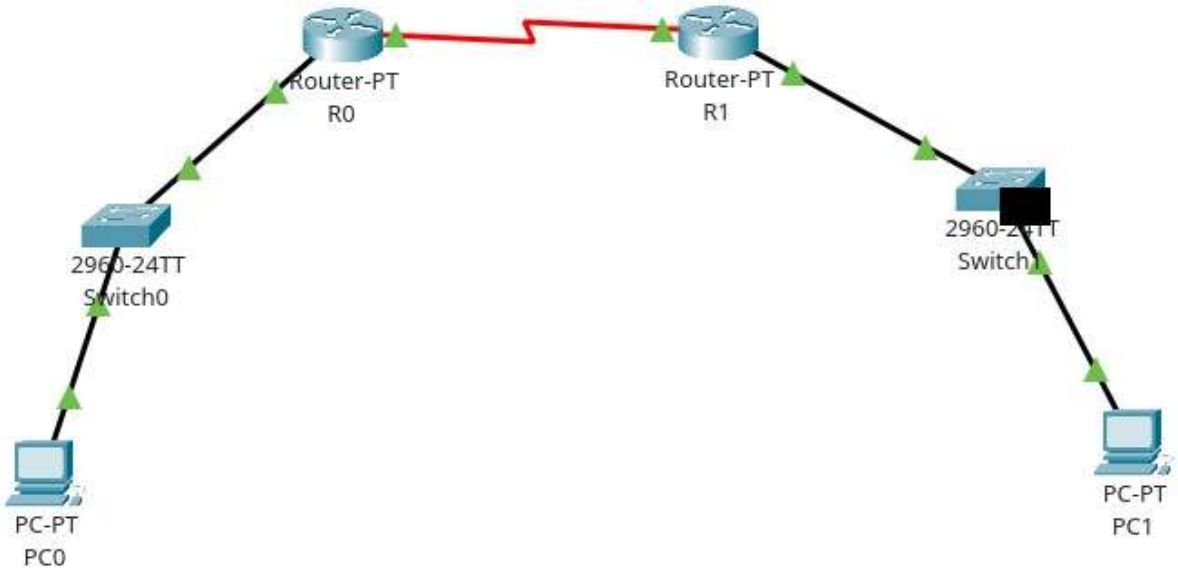

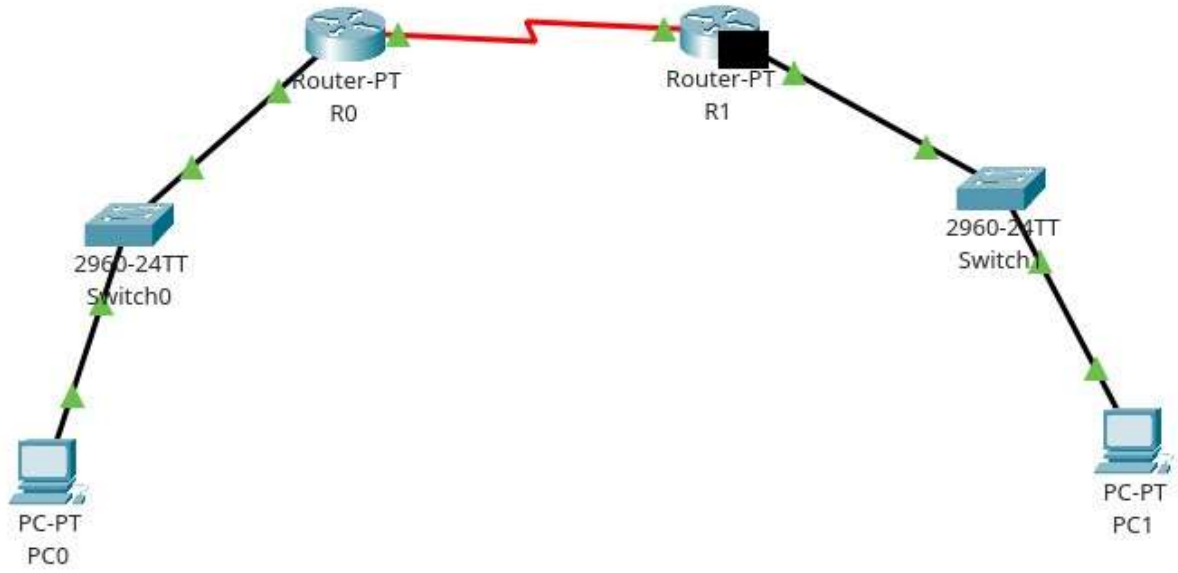

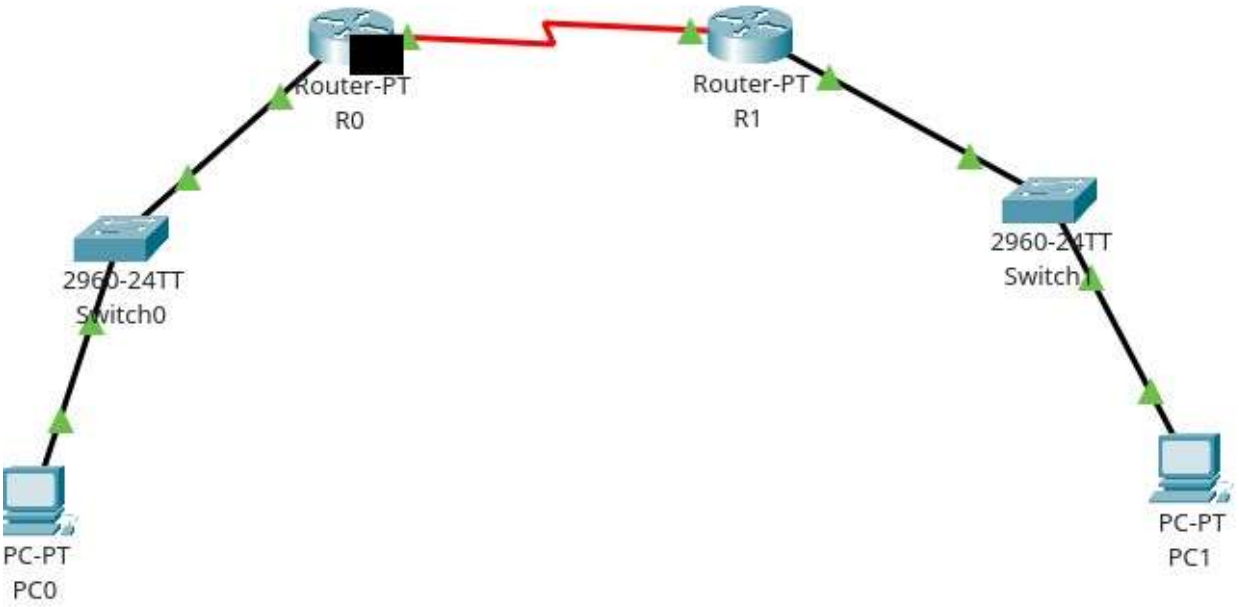
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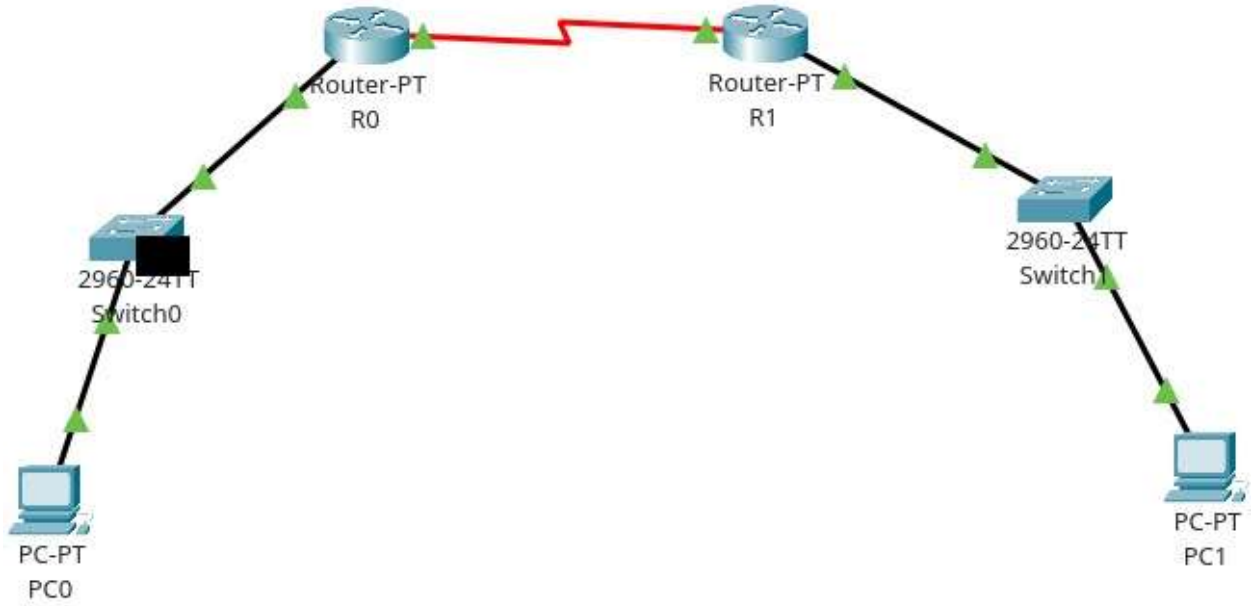
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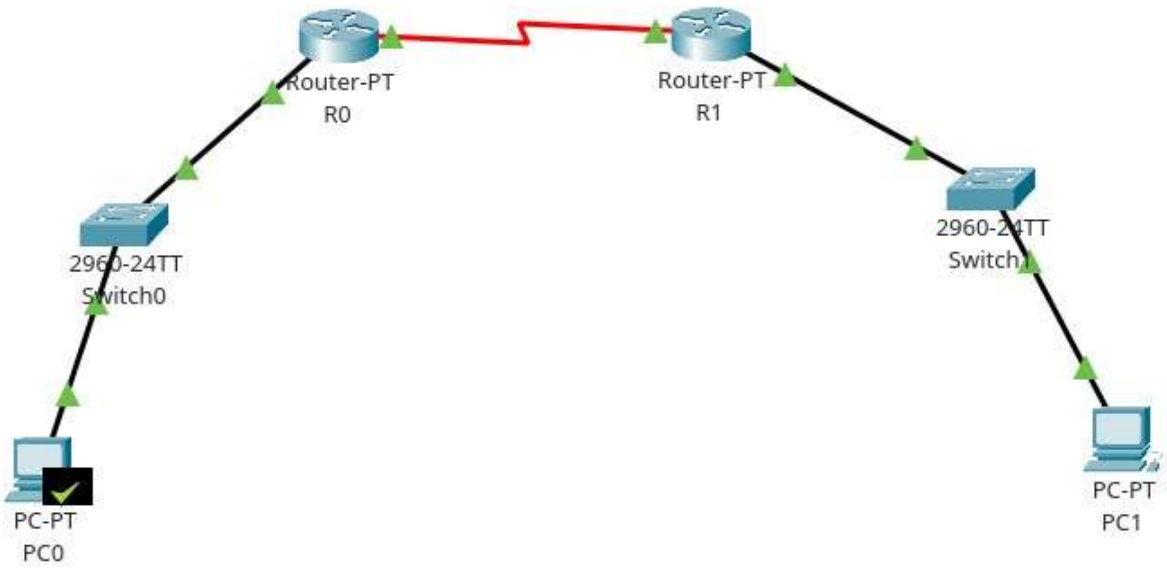
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