

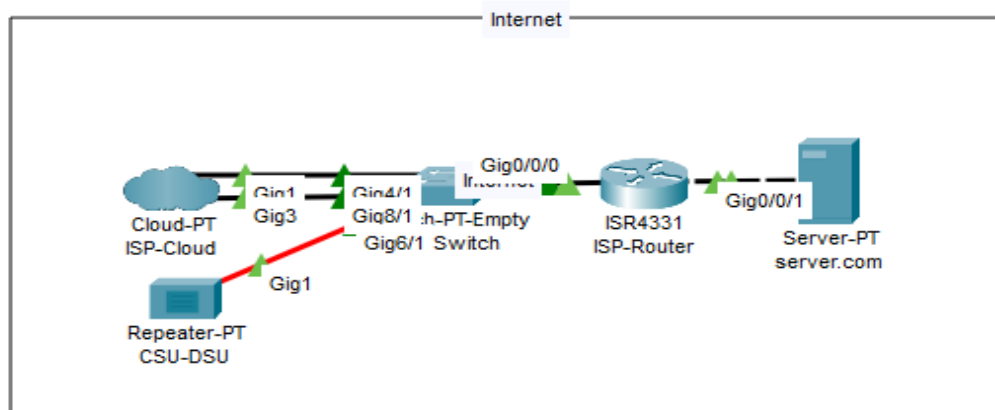
Performance Assessment – Multiple Routers

This Performance Assessment will assess your understanding of the first two Packet Tracer Guided Practices for this week. You will be performing similar tasks but using different equipment with less direction.

In this Performance Assessment you will be connecting and configuring a small subnetted network with multiple routers. You will use Packet Tracer in this Performance Assessment.

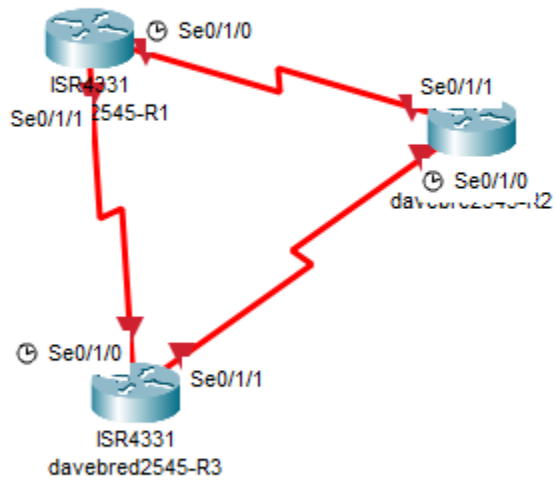
Task 1 – Adding three routers

You will start with the network shown below that is given to you in the packet tracer file in this practice. You will connect to the CSU-DSU later in this practice. For now, you can select the network below and drag it to the corner of your Packet Tracer desktop.



You will be using three **4331 routers** instead of three 4321 routers. You will need to perform the same tasks you did previously in the Guided Practice (add serial modules, connect them together using serial cables, label each, etc.).

Once you have connected and labeled your three 4331 routers, take a screenshot.

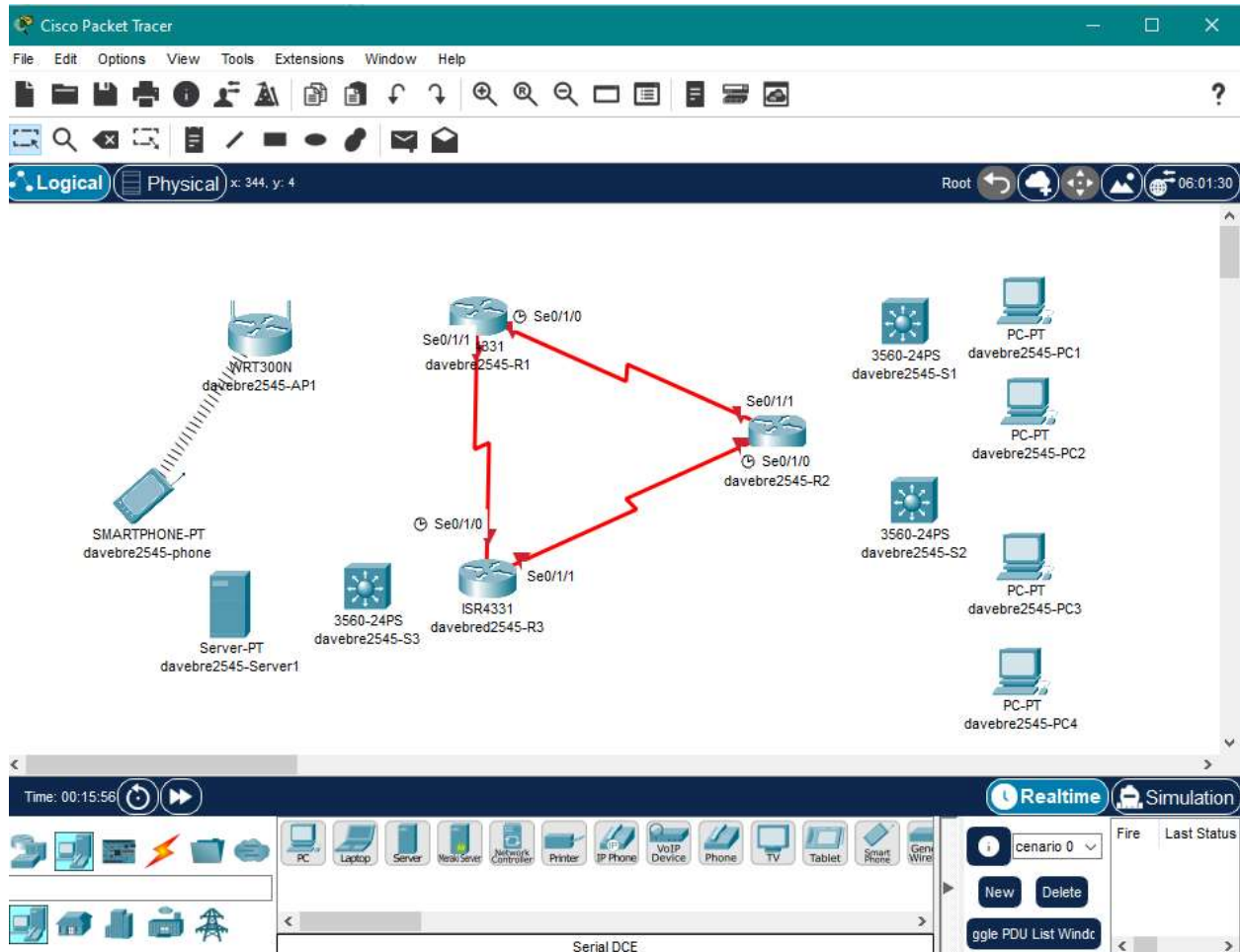


Deliverables for Task 1

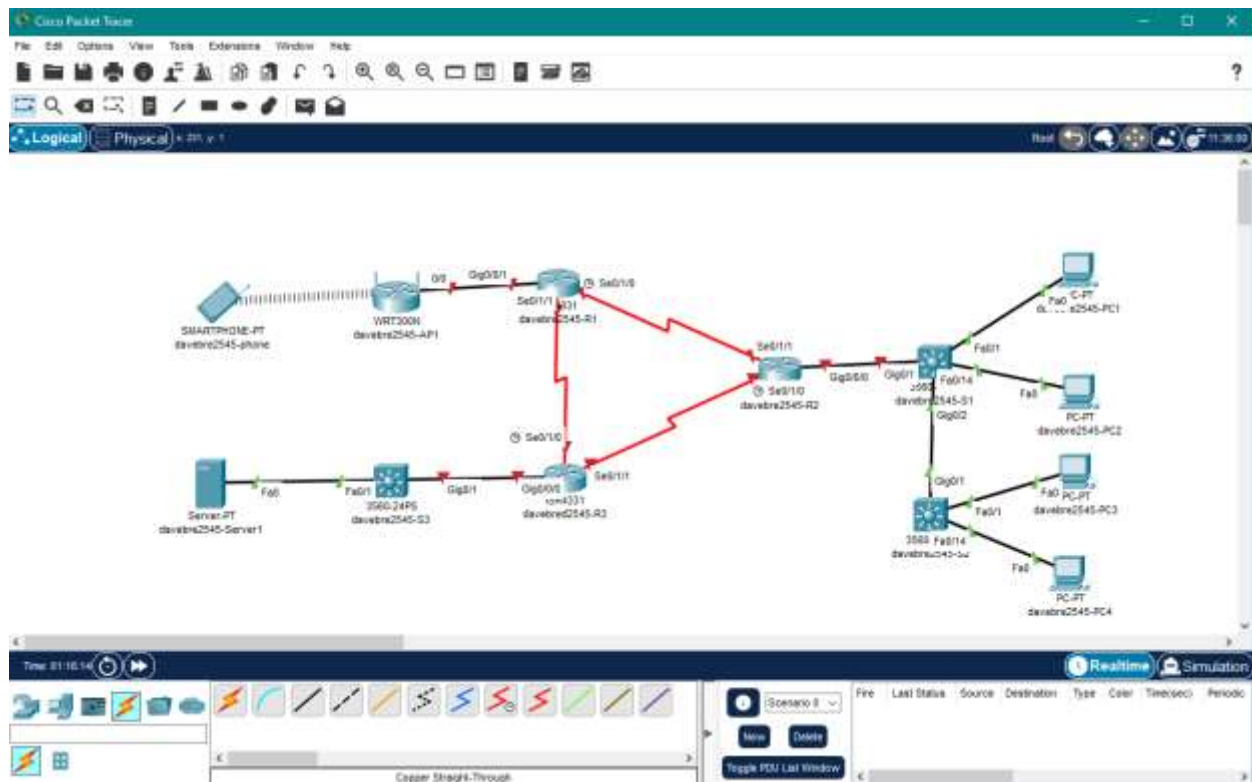
- Screenshot of your routers connected and labeled.

Task 2 – Adding additional devices

In this task we add additional equipment- drag and drop the rest of the equipment for the network onto the desktop. There will be three **3560 switches**, four PCs, a server, a WRT300N wireless router and a smart phone in addition to the three routers. Update the labels of each device to be your studentID followed by the type of device.



Connect the devices the same way you did previously in the Guided Practice. Take a screenshot of your network labeled and connected.



Deliverables for Task 2

- Screenshot of your network labeled and connected.

Task 3– Configure the network

In this task we will configure the devices. We will need to bring up the router interfaces to a usable state and assign IP addresses to them. Make sure to reference the previous Guided Practice that provided details in regard to configuring the devices.

We will configure the S1 and S2 switches with VLANs and trunks. We will keep the S3 switch with its “default” settings.

Using the table below, configure your devices.

Any time you see a ____ replace it with the number assigned to you by your instructor. Any time you see a ###, determine the number.

System	Port	Connect To	IP address	Subnet Mask	Clock Rate
<studentID>-R1	Se0/1/0	R2	10.____.2.1	255.255.255.252	500000
studentID>-R1	Se0/1/1	R3	10.____.2.10	255.255.255.252	
<studentID>-R1	G0/0/1	Wi-Fi Router	10.____.1.97	255.255.255.224	
studentID>-R1	G0/0/0	CSU/DSU	11.0.0.____	255.255.255.0	
studentID>-R2	Se0/1/0	R3	10.____.2.###	255.255.255.###	500000
studentID>-R2	Se0/1/1	R1	10.____.2.###	255.255.255.###	
studentID>-R2	G0/0/0.10	S1	10.____.1.1	255.255.255.224	
studentID>-R2	G0/0/0.20	S1	10.____.1.33	255.255.255.224	
studentID>-R3	Se0/1/0	R1	10.____.2.9	255.255.255.252	500000
studentID>-R3	Se0/1/1	R2	10.____.2.###	255.255.255.###	
studentID>-R3	G0/0/0	S3	10.____.1.65	255.255.255.224	

Once you configure all of the interfaces in the table above, run a **show ip interface brief** on each router to show each interface configured. Take a screenshot.

Configure the clock rate for the DCE ends of each link between the routers. Take a screenshot of each.

Configure the VLANs and trunks on the switches. We will be configuring VLANs and trunks on the S1 and S2 switches. Take note of the **switchport trunk encapsulation dot1q** command that is required to configure a trunk on the 3560 switches. Here is an example of configuring the VLANs and trunks on S1 below.

```

S1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
S1(config)#interface range fa0/1-11
S1(config-if-range)#switchport mode access
S1(config-if-range)#switchport access vlan 10
% Access VLAN does not exist. Creating vlan 10
S1(config-if-range)#interface range fa0/12-24
S1(config-if-range)#switchport mode access
S1(config-if-range)#switchport access vlan 20
% Access VLAN does not exist. Creating vlan 20
S1(config-if-range)#interface range g0/1-2
S1(config-if-range)#switchport trunk encapsulation dot1q
S1(config-if-range)#switchport mode trunk

S1(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/2, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/2, changed state to up
S1(config-if-range)#

```

Verify the S1 and S2 switches are configured the VLANs and trunks on each switch in the running-configuration. Scroll down to the bottom to show the trunks configured. Take a screenshot of each.

Configure DHCP pools on R1, R2 and R3 routers. Keep in mind that you will use your assigned number for the third octet here as you have previously.

```

R1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#ip dhcp pool mypool
R1(dhcp-config)#network 10.50.1.96 255.255.255.224
R1(dhcp-config)#default-router 10.50.1.97
R1(dhcp-config)#dns-server 11.1.1.10
R1(dhcp-config)#

```

```

R2(config)#ip dhcp pool mypool
R2(dhcp-config)#network 10.50.1.0 255.255.255.224
R2(dhcp-config)#default-router 10.50.1.1
R2(dhcp-config)#dns-server 11.1.1.10
R2(dhcp-config)#ip dhcp pool mypool2
R2(dhcp-config)#network 10.50.1.32 255.255.255.224
R2(dhcp-config)#default-router 10.50.1.33
R2(dhcp-config)#dns-server 11.1.1.10
R2(dhcp-config)#

```

```

R3#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#ip dhcp pool mypool
R3(dhcp-config)#network 10.50.1.64 255.255.255.224
R3(dhcp-config)#default-router 10.50.1.65
R3(dhcp-config)#dns-server 11.1.1.10
R3(dhcp-config)#

```

Verify the PCs, server and the WRT300N wireless router all have valid IP addresses via DHCP. Take a screenshot of each.

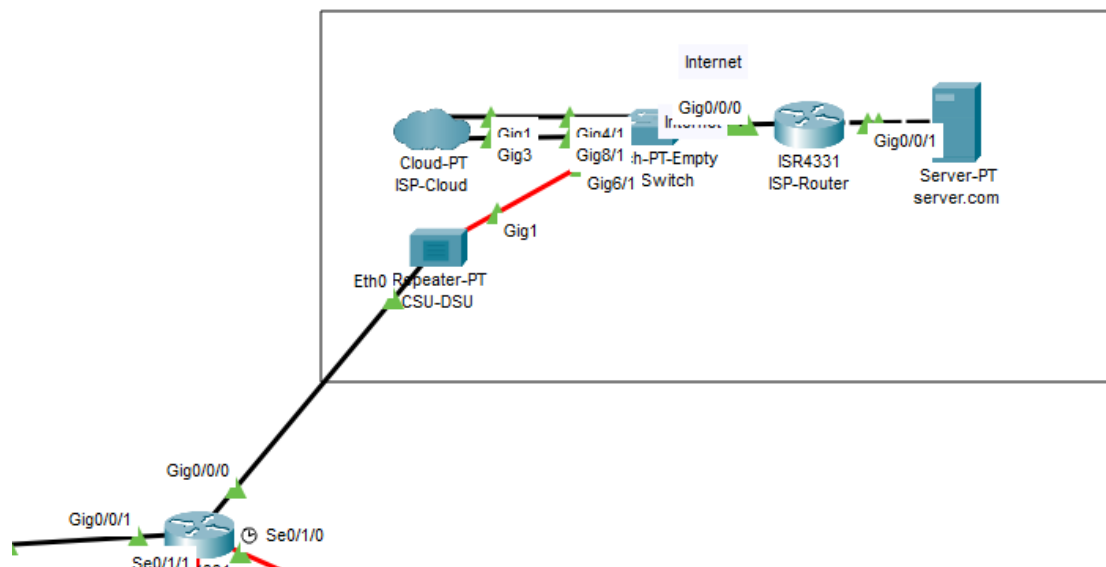
Deliverables for Task 3

- Screenshots of show ip interface brief for each router showing configured interfaces.
- Screenshots of clock rate configured on the R1, R2 and R3 routers.
- Screenshot of show running-configuration on the S1 and S2 switches showing VLANs and trunks.
- Screenshot of the PCs, server and WRT300N wireless router showing valid IP addresses via DHCP.

Task 4– Configure static routes and test connectivity

In this task you will connect the R1 router to the CSU-DSU of the Internet network, configure static routing on the R1, R2 and R3 routers and then test connectivity.

Connect G0/0/0 of the R1 router to the CSU-DSU with a straight-through cable. Take a screenshot.



Configure a static route on the R1 router to the Internet network. With the static route below we are telling the router how to get to any network that starts with 11, and in order to get to it send to the IP address 11.0.0.254.

```
R1(config)#ip route 11.0.0.0 255.0.0.0 11.0.0.254
R1(config)#
```

You should now be able to ping from the R1 router to the Internet server. Take a screenshot.

```

R1#ping 11.1.1.10

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 11.1.1.10, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 0/10/24 ms

R1#

```

Configure static routes on the R1, R2 and R3 routers so our devices can communicate with each other. We will configure default routes that “point” out Se0/1/0.

```

R1(config)#ip route 0.0.0.0 0.0.0.0 Se0/1/0
R1(config)#

```

```

R2(config)#ip route 0.0.0.0 0.0.0.0 Se0/1/0
R2(config)#

```

```

R3(config)#ip route 0.0.0.0 0.0.0.0 Se0/1/0
R3(config)#

```

Run a show ip route on each router and take a screenshot. Here is an example from the R2 router. Take a screenshot of each.

```

R2#show ip route
Codes: L - local, C - connected, S - static, 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 0.0.0.0 to network 0.0.0.0

    10.0.0.0/8 is variably subnetted, 8 subnets, 3 masks
C       10.50.1.0/27 is directly connected, GigabitEthernet0/0/0.10
L       10.50.1.1/32 is directly connected, GigabitEthernet0/0/0.10
C       10.50.1.32/27 is directly connected, GigabitEthernet0/0/0.20
L       10.50.1.33/32 is directly connected, GigabitEthernet0/0/0.20
C       10.50.2.0/30 is directly connected, Serial0/1/1
L       10.50.2.2/32 is directly connected, Serial0/1/1
C       10.50.2.4/30 is directly connected, Serial0/1/0
L       10.50.2.5/32 is directly connected, Serial0/1/0
S*     0.0.0.0/0 is directly connected, Serial0/1/0

R2#

```

Now test connectivity between your devices. Ping from PC1 to PC4. Ping from PC2 to the server. Ping from PC3 to the Internet server. Take screenshots.

Deliverables for Task 4

- Screenshot of G0/0/0 of the R1 router connected to the CSU-DSU with a straight-through cable.
- Ping from the R1 router to the Internet server.
- Screenshot of R1, R2 and R3 routing tables.
- Screenshot of ping from PC1 to PC4.
- Screenshot of ping from PC2 to the server.
- Screenshot of ping from PC3 to the Internet server.