IFT 266 Introduction to Network Information Communication Technology (ICT)

Lab 31

IPv6 DHCP through VLAN Setup and Configuration

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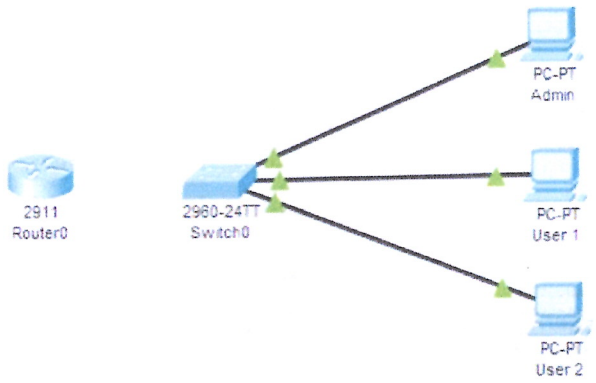
After you complete each step, put a '√' or 'x' in the completed box

1. Set up the following topology in packet tracer.



Admin PC will be in VLAN 10 and the users will be in VLAN 20.

Switch and router will need to be configured before being connected

Admin PC connects to switch port Fa0/1 via straight through cable

User PCs connect to switch port Fa0/13 and Fa0/14 via straight through cable

Completed ☒

2. We will now setup the VLANs on the switch with the following command.

```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#exit
Switch(config)#vlan 20
Switch(config-vlan)#exit
Switch(config)#
```

Completed ☒

3. Now let's look at the VLANS that you just setup by using 'show vlan' command

```
Switch#show vlan

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                                Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                                Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                                Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                                Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                                Gig0/1, Gig0/2
10   VLAN0010                         active
20   VLAN0020                         active
1002 fddi-default                     active
1003 token-ring-default               active
1004 fddinet-default                  active
1005 trnet-default                    active

VLAN Type  SAID       MTU   Parent RingNo BridgeNo Stp  BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1    enet  100001     1500  -      -      -        -    -        0      0
10   enet  100010     1500  -      -      -        -    -        0      0
20   enet  100020     1500  -      -      -        -    -        0      0
```

Completed ☒

4. We will now configure the switch so that Port (interface) 1 will be configured to use VLAN 10. A specific port range (13 – 24) will be assigned for VLAN 20. Time can be saved if the range command is used to configure multiple ports.

```
Switch(config)#int fa0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10
Switch(config-if)#
Switch(config-if)#
Switch(config-if)#int range fa0/13-24
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 20
Switch(config-if-range)#exit
Switch(config)#exit
Switch#
```

Completed ☒

5. Now we will check to see if the ports have been properly configured by using the 'show vlan' command.

```
Switch#show vlan

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Fa0/2, Fa0/3, Fa0/4, Fa0/5
                                                Fa0/6, Fa0/7, Fa0/8, Fa0/9
                                                Fa0/10, Fa0/11, Fa0/12, Gig0/1
                                                Gig0/2
10   VLAN0010                         active    Fa0/1
20   VLAN0020                         active    Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                                Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                                Fa0/21, Fa0/22, Fa0/23, Fa0/24
1002 fddi-default                     active
1003 token-ring-default               active
1004 fddinet-default                  active
1005 trnet-default                    active

VLAN Type  SAID       MTU   Parent RingNo BridgeNo Stp  BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1    enet  100001     1500  -      -      -        -    -        0      0
10   enet  100010     1500  -      -      -        -    -        0      0
20   enet  100020     1500  -      -      -        -    -        0      0
1002 fddi  101002     1500  -      -      -        -    -        0      0
```

Completed

6. Next we will need to configure a port for trunking. Two gigabit Ethernet connections exist on the switch that are not being utilized for host systems. gigabitEthernet 0/1 will be the port we utilize for trunking.

```
Switch(config)#int g0/1
Switch(config-if)#switchport mode trunk
Switch(config-if)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
Switch#
```

Completed

7. Now that the switch has been configured, you will need to configure the router. The IPv6 prefix we will be using is 2001:db8:abcd:2140::

   Run the following commands to commands to enable unicast routing and configure the admin dhcp pool:

```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#ipv6 unicast-routing
Router(config)#ipv6 dhcp pool admin
Router(config-dhcpv6)#dns-server 1:1:1:1::
Router(config-dhcpv6)#prefix-delegation pool admin
Router(config-dhcpv6)#domain-name admin
Router(config-dhcpv6)#exit
Router(config)#
```

   Repeat the process (except enabling unicast-routing) to create a 'user' dhcp pool.

   Completed ☒

8. Once the pools have been created, they must be assigned addresses. In this case, we will be assigning each pool to separate subnets (2140/2141). Run the following commands to assign addresses to the IPv6 pools.

```
Router(config)#
Router(config)#
Router(config)#ipv6 local pool admin 2001:db8:abcd:2140::1/64 64
Router(config)#ipv6 local pool user 2001:db8:abcd:2141::1/64 64
Router(config)#
```

   Completed ☒

9. Now that the pools and addresses are established, the interface must be configured. Each interface can be split into sub interfaces to support different VLANS. Use the following commands to configure the VLAN 10 sub interface:

```
Router(config)#int g0/0.10
Router(config-subif)#encapsulation dot1Q 10
Router(config-subif)#ipv6 address FE80::1 link-local
Router(config-subif)#ipv6 address 2001:db8:abcd:2140::1/64
Router(config-subif)#ipv6 enable
Router(config-subif)#ipv6 dhcp server admin
Router(config-subif)#exit
Router(config)#
```

   Repeat the same steps for VLAN 20 using the user dhcp server

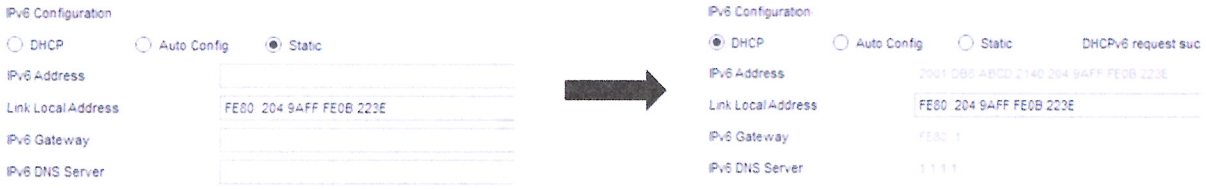
   Completed ☒

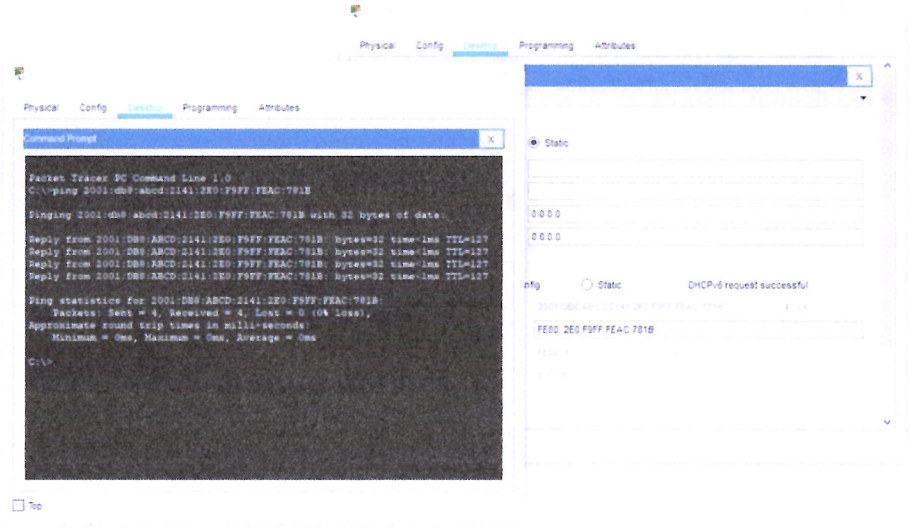
10. You'll notice that the connections remain red when the router (port g0/0) and switch (port g0/1) are connected. This is because the router port needs to be enabled. Once enabled, you should also see the sub interfaces change state to up.

```
Router(config)#int g0/0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet0/0.10, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.10, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet0/0.20, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.20, changed state to up
```

Completed ☒

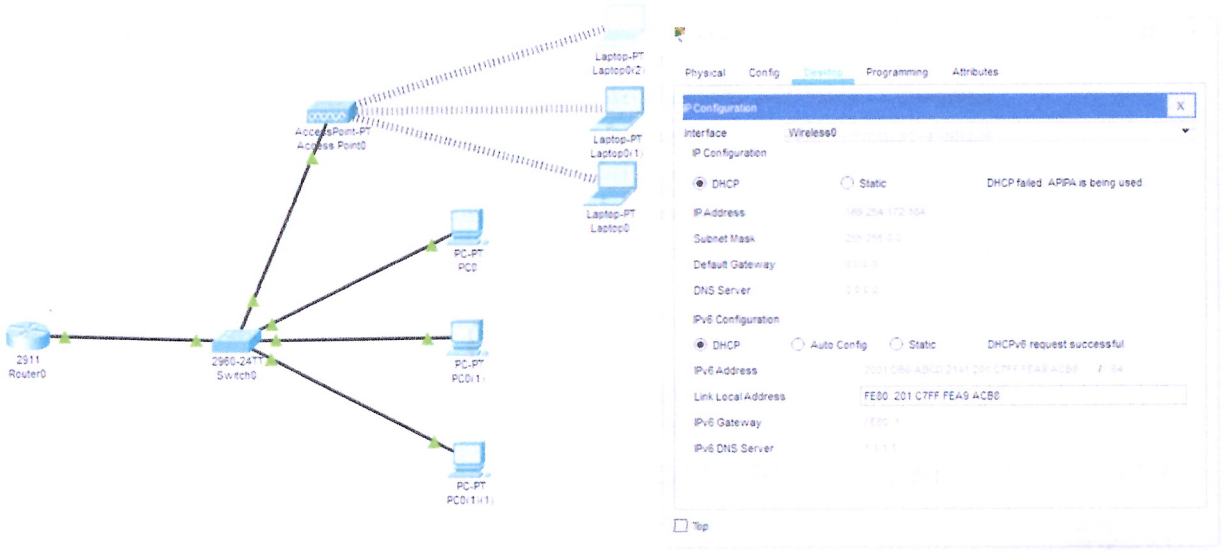
11. You should now be able to obtain a DHCP address on each PC and be able to ping.





Completed ☒

12. If future network devices need to be added to the user network, they simply need to be connected to an open port in the assigned range. Once connected, they will obtain the same VLAN connection as the other user computers.



Completed ☒