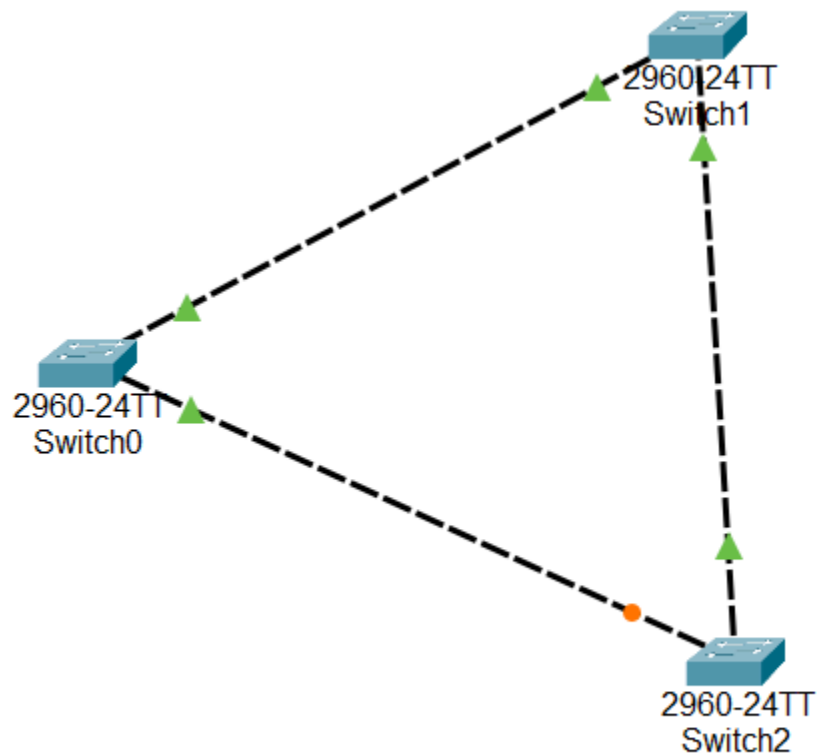# CSEC 744: Network Security

Name   : Shriram Karpoora Sundara Pandian Course

Title   : BPDU guard, root guard

Lab   : 5

Step 1 : First Connecting three switch :

Step 2： Configuring IP address for Switch 1 which is VLAN IP and enabling the root guard on the port other than the port connecting to switch 2 which is fa0/2-24

```
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#interface vlan 1
Switch(config-if)#ip address 192
                              ^
% Invalid input detected at '^' marker.

Switch(config-if)#ip address 192.168.1.1 255.255.255.0
Switch(config-if)#no shutdown

Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up

Switch(config-if)#exit
Switch(config)#interface range fa0/2-24
Switch(config-if-range)#spanning-tree guard root
Switch(config-if-range)#exit
Switch(config)#
```

Step 3 : Enabling Portfast globally and configuring bpdu guard to all the ports except the port connecting to switch 2 and getting the err disable state :

```
Switch(config-if)#exit
Switch(config)#interface range fa0/2-24
Switch(config-if-range)#spanning-tree guard root
Switch(config-if-range)#exit
Switch(config)#spanning-tree portfast bpduguard default
Switch(config)#interface range fa0/2-24
Switch(config-if-range)#spanning-tree bpduguard enable
Switch(config-if-range)#exit
Switch(config)#
```

```
Switch(config-if-range)#exit
Switch(config)#%SPANTREE-2-BLOCK_BPDUGUARD: Received BPDU on port FastEthernet0/2 with BPDU
Guard enabled. Disabling port.

%PM-4-ERR_DISABLE: bpduguard error detected on 0/2, putting 0/2 in err-disable state

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to administratively down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down
```

We can already the see the red marks between switch 1 and
switch 3 :
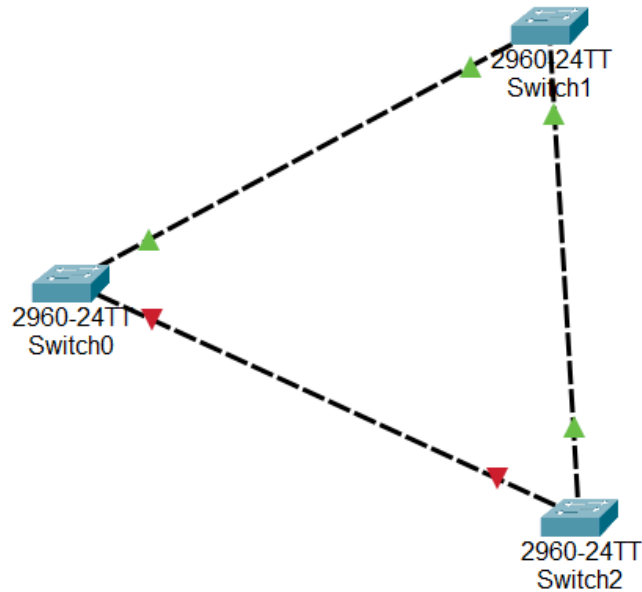
Step 4 : Enabling trunk port between switch 1 and switch 2 :

```
Switch(config)#
Switch(config)#interface fa0/1
Switch(config-if)#switchport mode trunk

Switch(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up

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

Step 5 : Enabling spanning tree on vlan 1 and writing to the memory.

```
Switch(config-if)#exit
Switch(config)#spanning-tree vlan 1
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#write memory
Building configuration...
[OK]
Switch#exit
```

Switch 2

Step 1 : Configuring VLAN 1 and ip address with enabling root guard on all ports expect the port connecting to switch 1

```
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#int vlan 1
Switch(config-if)#ip address 192.168.1.2 255.255.255.0
Switch(config-if)#exit
Switch(config)#int vlan 1
Switch(config-if)#ip address 192.168.1.2 255.255.255.0
Switch(config-if)#no shutdown

Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up

Switch(config-if)#exitr
                  ^
% Invalid input detected at '^' marker.

Switch(config-if)#exit
Switch(config)#int range fa0/2-24
Switch(config-if-range)#spanning-tree guard root
Switch(config-if-range)#exit
```

Step 2 : Configuring portfast, and enable bpdu guard except switch 1.

```
Switch(config)#int range fa0/2-24
Switch(config-if-range)#spanning-tree guard root
Switch(config-if-range)#exit
Switch(config)#spanning-tree portfast bpduguard default
Switch(config)#interface range f0/2-24
Switch(config-if-range)#spanning-tree bpduguard enable
Switch(config-if-range)#%SPANTREE-2-BLOCK_BPDUGUARD: Received BPDU on port FastEthernet0/2 with
BPDU Guard enabled. Disabling port.

%PM-4-ERR_DISABLE: bpduguard error detected on 0/2, putting 0/2 in err-disable state

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to administratively down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down
```

Step 3 : Enabling Trunk port with switch 1 and enabling spanning tree and saving it.

```
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#exit
Switch(config)#interface fa0/1
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit
Switch(config)#spanning-tree vlan 1
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#write memory
Building configuration...
[OK]
Switch#
```

Switch 3 :

```
Switch>
Switch>enable
Switch#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#interface vlan 1
Switch(config-if)#ip address 192.168.1.3 255.255.255.0
Switch(config-if)#no shutdown

Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

Switch(config-if)#exit
Switch(config)#
```
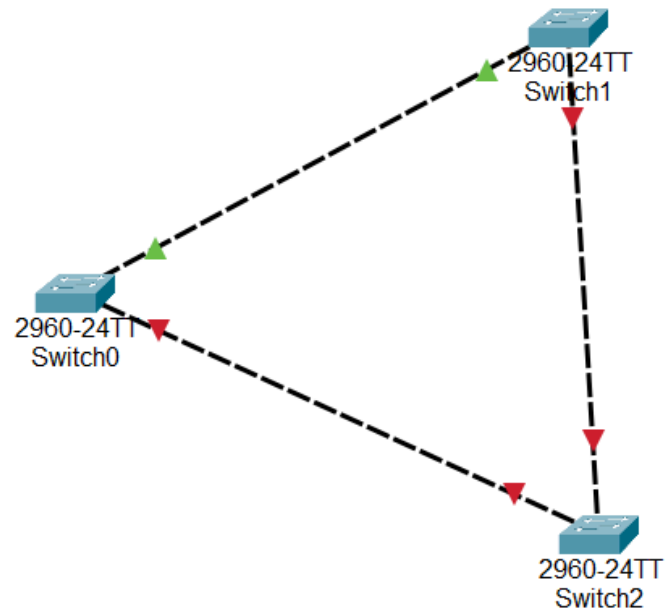
```
Switch>
Switch>
Switch>enable
Switch#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#interface vlan 1
Switch(config-if)#ip address 192.168.1.3 255.255.255.0
Switch(config-if)#no shutdown

Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

Switch(config-if)#exit
Switch(config)#interface range fa0/1-24
Switch(config-if-range)#spanning-tree guard root
Switch(config-if-range)#exit
Switch(config)#spanning-tree portfast bpduguard default
Switch(config)#interface range fa0/1-24
Switch(config-if-range)#spanning-tree bpduguard enable
Switch(config-if-range)#exit
Switch(config)#interface fa0/2
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit
Switch(config)#spanning-tree vlan 1
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#write memory
Building configuration...
[OK]
Switch#
```
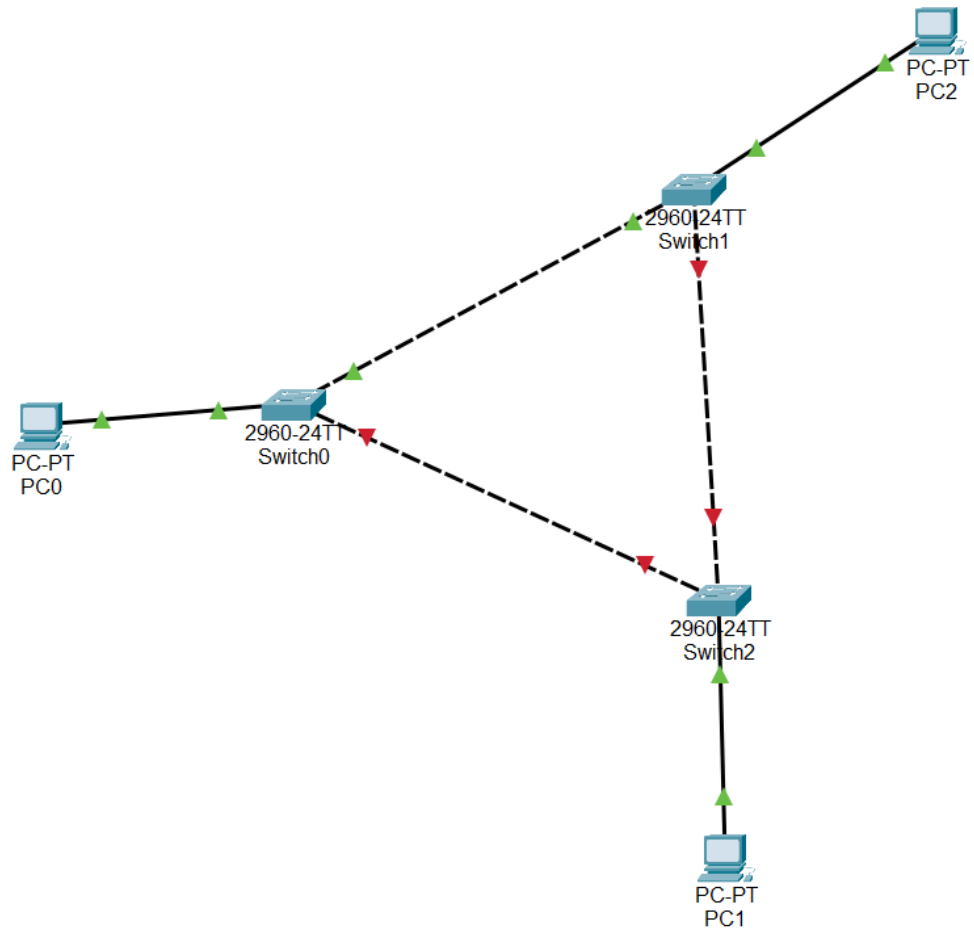
How it looks after configuring :

2960 24TT
Switch1

2960-24TT
Switch0

2960-24TT
Switch2

After configuring everything, pc with switch

Simulation :

PC-PT
PC2

2960-24TT
Switch1

PC-PT
PC0

2960-24TT
Switch0

2960-24TT
Switch2

PC-PT
PC1