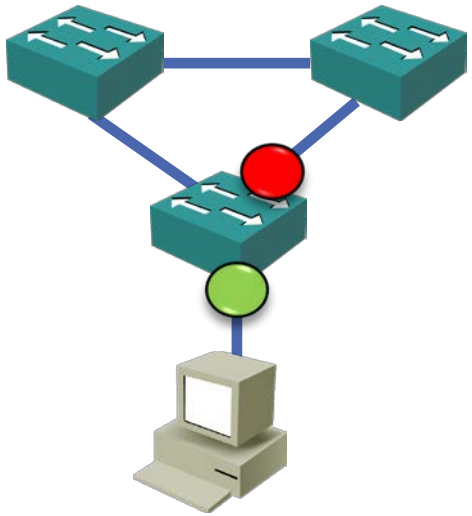
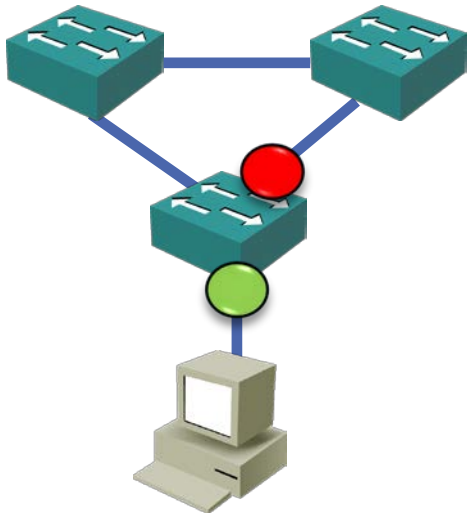
Spanning Tree Portfast

- When a port becomes active, it takes Spanning Tree 30 seconds by default to ensure it will not form a loop and transition it to the forwarding state
- A device needs at least two bridged LAN connections to form a layer 2 loop
- There isn't really any need for end hosts to wait 30 seconds before forwarding
- You can make a port you are sure will never form a loop transition to a forwarding state immediately when it becomes active by enabling Portfast



Spanning Tree Portfast Configuration

```
SW1(config)# interface f0/10
SW1(config-if)# spanning-tree portfast

SW1(config)# spanning-tree portfast default
```



PortFast on Trunk Ports

- PortFast Ports are typically access ports connected to end hosts
- Trunk ports are typically connected to other switches and should not have PortFast enabled
- However, switch ports connected to some specialized hosts such as Router-On-A-Stick or virtualized hosts such as VMware are configured as trunk ports to carry multiple VLANs, and should also be configured as PortFast ports

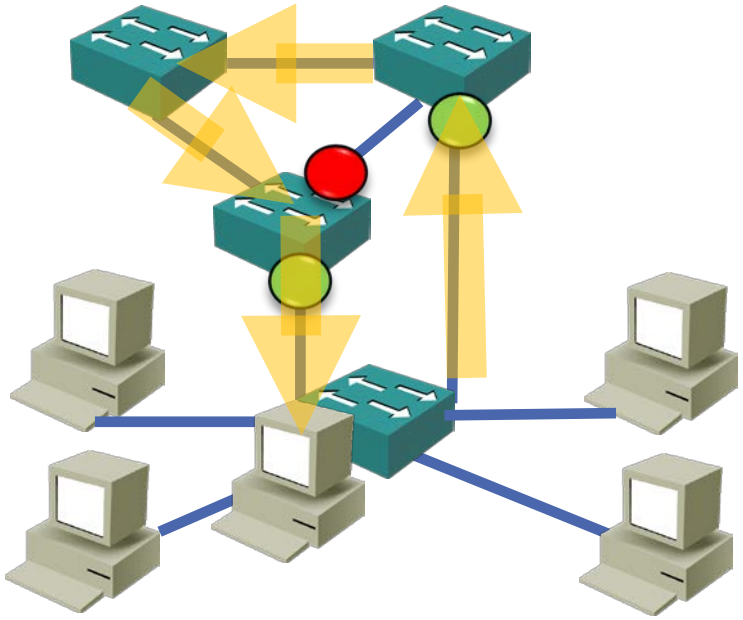
PortFast on Trunk Ports (Cont.)

- Trunk ports must be configured with '`spanning-tree portfast trunk`'

```
Switch(config-if)#spanning-tree portfast
%Warning: portfast should only be enabled on ports connected to a single host.
Connecting hubs, concentrators, switches, bridges, etc... to this interface when
portfast is enabled, can cause temporary bridging loops. Use with CAUTION

%Portfast has been configured on GigabitEthernet0/1 but will only
 have effect when the interface is in a non-trunking mode.

Switch(config-if)#spanning-tree portfast trunk
```

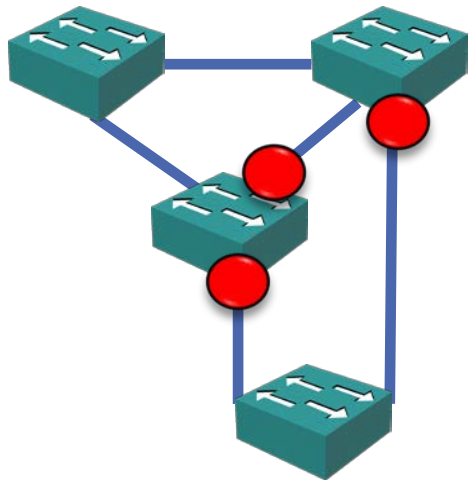
Spanning Tree BPDU Guard

- It is best practice to enable Portfast for end hosts which will not form a loop
- Spanning Tree still runs when Portfast is enabled
- If a loop is created on a Portfast port it can take time for Spanning Tree to detect this and block the port. A broadcast storm can occur in this time and crash switches
- A loop can be caused by users adding devices to the network or changing cabling



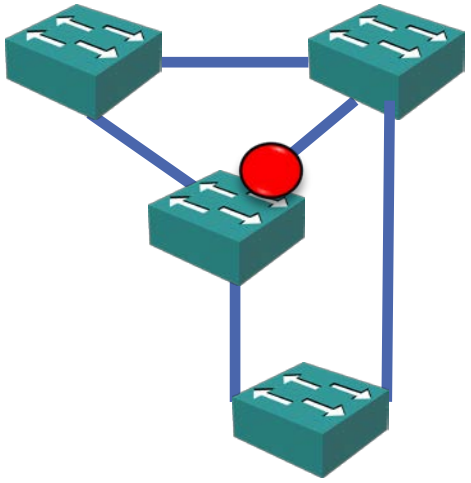
Spanning Tree BPDU Guard (Cont.)

- You can enable BPDU Guard on Portfast ports to guard against this happening
- If a BPDU is received on the port it will be error disabled (shut down) immediately
- Switches send BPDUs, end hosts do not



Spanning Tree BPDU Guard Configuration

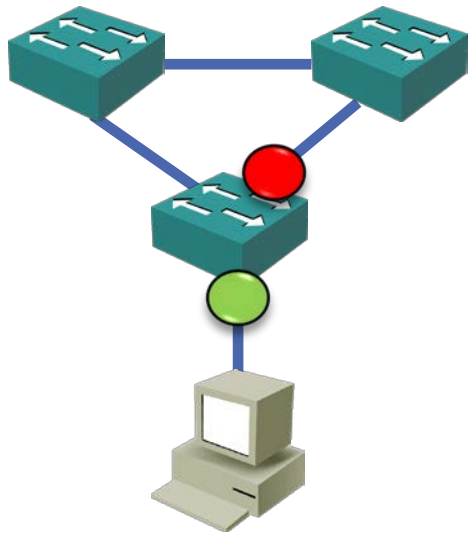
```
SW1(config)# interface f0/10
SW1(config-if)# spanning-tree portfast
SW1(config-if)# spanning-tree bpduguard enable

SW1(config)# spanning-tree portfast bpduguard default
```



Bringing Errdisabled Ports Back Online

- Correct the issue then run ‘shutdown’ and ‘no shutdown’ to bring an error disabled port back into service

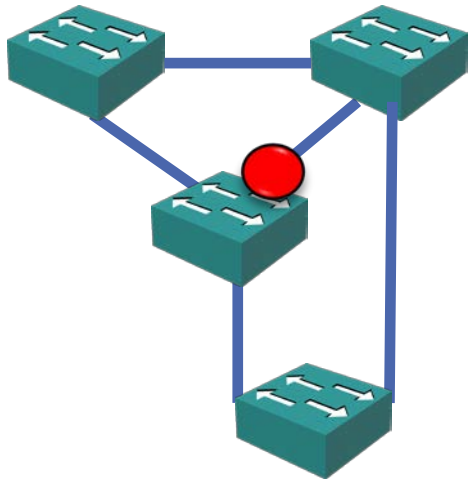
```
SW1(config)# interface f0/10
SW1(config-if)# shutdown
SW1(config-if)# no shutdown
```



Bringing Errdisabled Ports Back Online (Cont.)

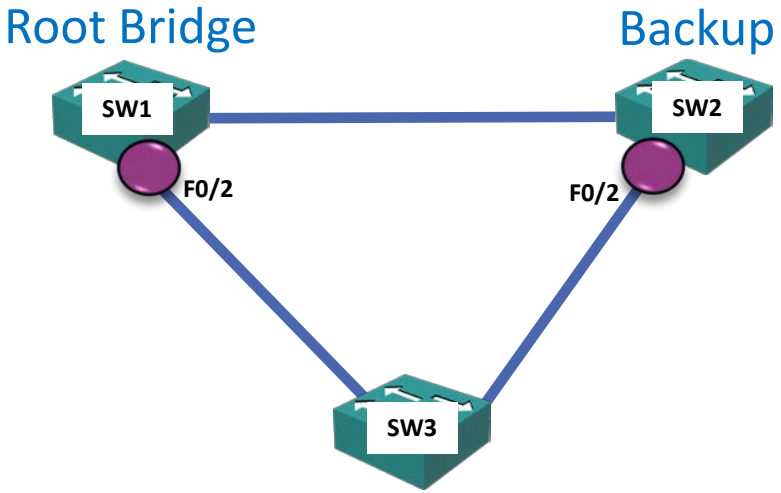
- You can alternatively configure error disable recovery to automatically bring ports back into service after a time period in seconds
- This is not recommended because it will cause the port to flap up and down until the cause is corrected

```
SW2(config)# errdisable recovery cause bpduguard
SW2(config)# errdisable recovery interval 30
```



Spanning Tree Root Guard

- Spanning Tree Root Guard prevents an unintended switch from becoming the root bridge
- If a port where Root Guard is enabled receives BPDU's that are superior than the current root bridge, it will transition the port to 'root-inconsistent' and not forward any traffic over the port
- Once the issue is corrected and superior BPDUs stop coming in, the port will transition through normal STP states




```
SW1(config)#interface fa0/2
SW1(config-if)#spanning-tree guard root

SW2(config)#interface fa0/2
SW2(config-if)#spanning-tree guard root
```