Switching Enhancements Playbook

# 1. Purpose

The purpose of this step is to strengthen the Layer 2 switching environment with enhancements that improve stability, security, and redundancy. Switching features such as STP, EtherChannel, PortFast, BPDU Guard, and Storm Control ensure that the network can handle loops, redundant paths, and potential misconfigurations while maintaining performance and minimizing downtime. These configurations bring the design closer to enterprise best practices.

# 2. Switching Enhancements – Playbook

## Step 1: Spanning Tree Protocol (STP)

- Set HQ-SW1 as the root bridge for key VLANs (10, 20, 30):  
  
spanning-tree vlan 10,20,30 priority 24576  
  
Verify with: show spanning-tree vlan 10

## Step 2: EtherChannel

- Bundle redundant links between HQ-SW1 and HQ-SW2 into Port-Channel 1.  
  
On HQ-SW1:  
interface range fa0/2 - 3  
 switchport mode trunk  
 channel-group 1 mode desirable  
  
On HQ-SW2:  
interface range fa0/2 - 3  
 switchport mode trunk  
 channel-group 1 mode auto  
  
Verify with: show etherchannel summary

## Step 3: PortFast & BPDU Guard

- Enable PortFast on all access ports to speed up PC boot.  
- Use BPDU Guard to prevent rogue switches from being connected.  
  
interface range fa0/5 - 24  
 spanning-tree portfast  
 spanning-tree bpduguard enable  
  
Verify with: show spanning-tree summary

## Step 4: Storm Control (Optional)

- Prevent broadcast/multicast storms on access ports.  
  
interface range fa0/5 - 24  
 storm-control broadcast level 10.00  
 storm-control multicast level 10.00

# 3. Explanation

Switching enhancements improve stability, redundancy, and security at Layer 2. Spanning Tree Protocol ensures a loop-free topology and prevents broadcast storms when redundant links exist. EtherChannel bundles multiple physical links into one logical channel, improving bandwidth and resiliency. PortFast reduces host boot-up delays, while BPDU Guard protects against unauthorized switches. Storm Control adds a safeguard against excessive broadcast or multicast traffic. Together, these measures create a resilient and enterprise-ready switching environment.