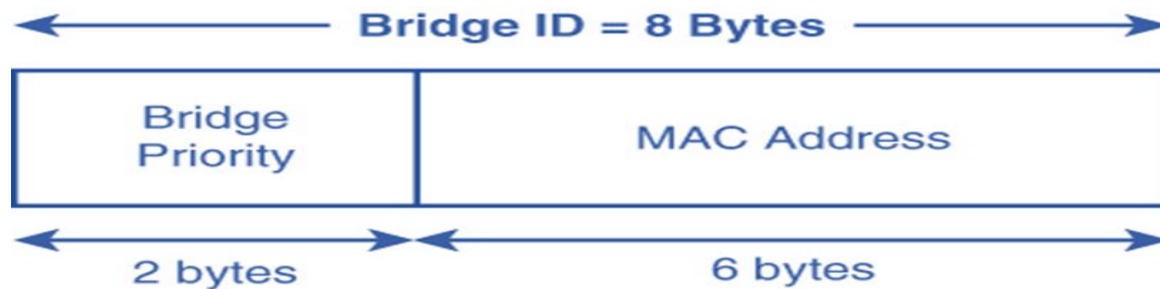


STP Terminologies:

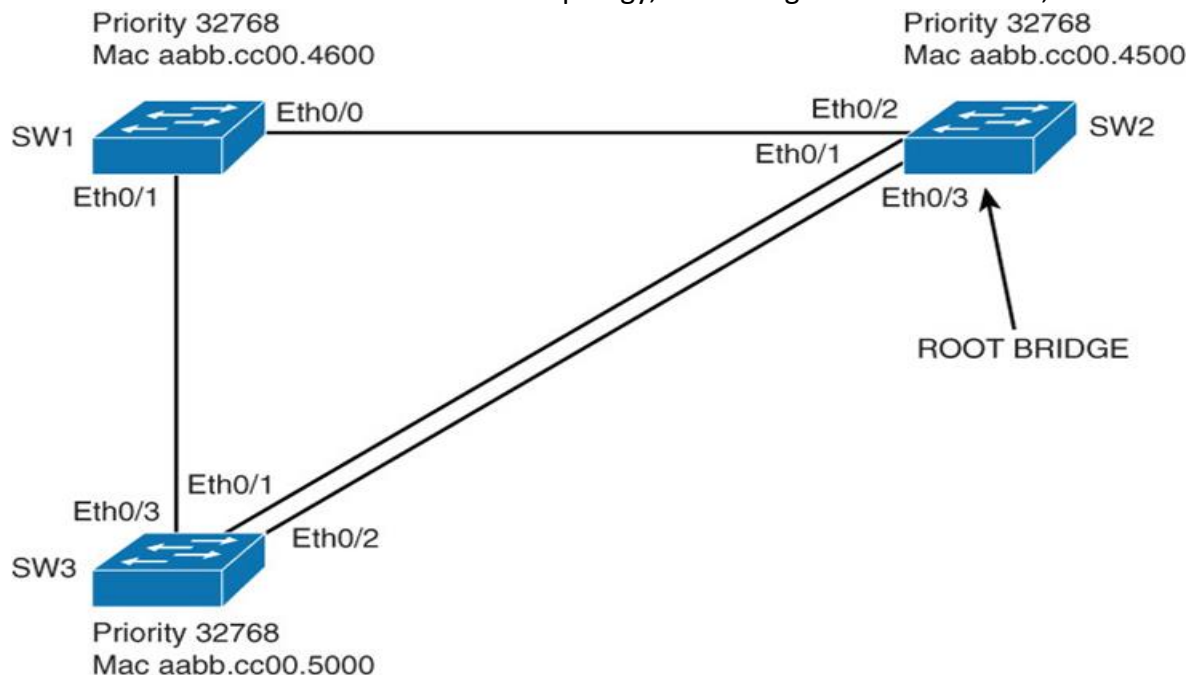
Switch Priority:

- o By default, all Cisco Switches has a Bridge Priority or Switch Priority value of 32,768.
- o Bridge Priority value decides which Switch can become Root Bridge (Root Switch).
- o Switch with lowest Bridge Priority (Switch Priority) Value will become the Root Switch.



Root Bridge:

- o Root Bridge is the starting point of the Spanning Tree Protocol STP network topology.
- o STP uses two parameters, bridge priority and MAC addresses of participating switches.
- o A Cisco Switch that has the lowest bridge priority value, is elected as the root bridge.
- o If bridge priority is same in all switches, switch which has lowest MAC address is elected.
- o By default, the bridge priority or switch priority value is set to 32768 in all Cisco Switches.
- o Unless change this value, Switch that has lowest MAC address is elected as Root Bridge.
- o If want specific switch to be elected as Root Bridge, can set bridge priority value less than.
- o Selection process of the Root Bridge happens each time when a network change occurs.
- o Like new switch is added in network topology, or existing switch is removed, or Root failed.

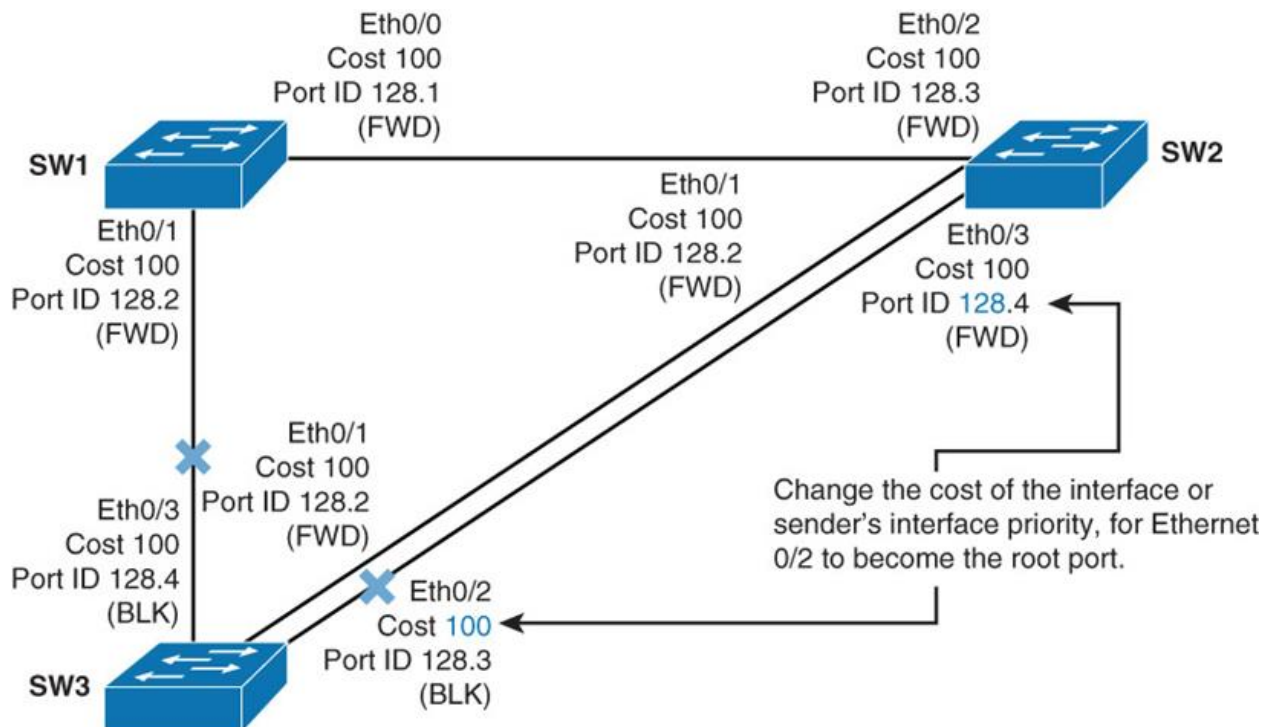


Non-Root Bridge:

- o Except Root Bridge, all remaining switches of network are considered as Non-Root Bridges.
- o Non-Root Bridges receive updates from Root Bridge & update their STP databases relatively.

Port Priority:

- o Each port of a Switch has a Port Priority value associated with it, **128** by default.
- o **Gi0/1 128.25 P2P**: Gi0/1 is the interface 128 is default value and 25 is port number.
- o P2P means Point-to-point (Full Duplex) and Shr means Shared (Half Duplex) like hub.



```
SW1# show spanning-tree vlan 1
```

```
VLAN0001
Spanning tree enabled protocol ieee
Root ID    Priority    32769
Address    aabb.cc00.0100
This bridge is the root
Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec

Bridge ID  Priority    32769 (priority 32768 sys-id-ext 1)
Address    aabb.cc00.0100
Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
Aging Time 300 sec
```

Interface	Role	Sts	Cost	Prio.Nbr	Type
Et0/0	Desg	FWD	100	128.1	P2p
Et0/1	Desg	FWD	100	128.2	P2p
Et0/2	Desg	FWD	100	128.3	P2p
Et0/3	Desg	FWD	100	128.4	P2p
Et1/0	Desg	FWD	100	128.5	P2p





Path Cost:

- o Based on connected media link, STP assigns a value to each port of the network.
- o This assign value to connected media link or port is known as the port cost value.
- o STP uses this value to choose the single best path available between two switches.
- o The Root Port is calculated by using the lowest accumulated Path Cost Value.
- o The Root Port is lowest accumulated path cost value to reach the Root Switch.
- o The Spanning Tree cost value is inversely proportional to the associated bandwidth.
- o Therefore, a path with low-cost value is more preferable than path with high cost value.

Bandwidth	Short Old Cost	Long New Cost
10 Mbps	100	2,000,000
100 Mbps	19	200,000
1 Gbps	4	20,000
10 Gbps	2	2,000
20 Gbps	1	1,000
100 Gbps	1	200
1 Tbps	1	20
10 Tbps	1	2

Interface	Role	Sts	Cost	Prio.Nbr	Type
Gi5/1	Desg	LRN	4	128.5	P2p
Fa6/1	Desg	FWD	19	128.4	P2p
Fa8/1	Desg	FWD	19	128.2	P2p
Et9/1	Desg	FWD	100	128.1	P2p

STP	RSTP
Disabled (Shutdown by Admin)	Discarding (Blocking data frame)
Blocking (Blocked redundant link)	
Listing (Listing the data frame)	Learning (Building CAM table)
Learning (Creating CAM table)	
Forwarding (Converged, Data flow allowed)	Forwarding (Converged, Data flow allowed)

State	Type	Forwards STP Frames (BPDU)	Forwards User Data Frames	Learns MAC Addresses	LED Color on Switch.
Blocking	Stable	YES	NO	NO	
Listening	Transitional	YES	NO	NO	
Learning	Transitional	YES	NO	YES	
Forwarding	Stable	YES	YES	YES	
Disabled	Stable	NO	NO	NO	OFF