Monday, December 1, 2025 5:09 PM

SPANNING TREE PROTOCOL (STP) : PART 2

STP STATES

STP Port State	Stable/Transitional
Blocking	Stable
Listening	Transitional
Learning	Transitional
Forwarding	Stable

- ROOT / DESIGNATED PORTS remain STABLE in a FORWARDING state
- NON-DESIGNATED PORTS remain STABLE in a BLOCKING state
- LISTENING and LEARNING are TRANSITIONAL states which are passed through when an interface is activated, or when a BLOCKING PORT must transition to a FORWARDING state due to a change in network topology.

1) BLOCKING / STABLE

- NON-DESIGNATED PORTS are in a BLOCKING state
- Interfaces in a BLOCKING state are effectively disabled to prevent loops
- Interfaces in a BLOCKING state do NOT Send/Receive regular network traffic

- Interfaces in a BLOCKING state do NOT forward STP BPDUs
- Interfaces in a BLOCKING state do NOT learn MAC ADDRESSES

2) LISTENING / TRANSITIONAL

- After the BLOCKING state, interfaces with the DESIGNATED or ROOT role enter the LISTENING state
- ONLY DESIGNATED or ROOT PORTS enter the LISTENING state (NON-DESIGNATED PORTS are ALWAYS BLOCKING)
- The LISTENING state is 15 seconds long by Default. This is determined by the FORWARD DELAY TIMER
- Interfaces in a LISTENING state do NOT Send / Receive regular network traffic
- Interfaces in a LISTENING state ONLY Forward/Receive STP BPDUs
- Interfaces in a LISTENING state does NOT learn MAC ADDRESSES from regular traffic that arrives on the interface

3) LEARNING / TRANSITIONAL

- After the LISTENING state, a DESIGNATED or ROOT port will enter the LEARNING state
- The LEARNING state is 15 seconds long by Default. This is determined by the FORWARD DELAY TIMER (same one used for both LISTENING and LEARNING states)
- Interfaces in a LEARNING state do NOT Send / Receive regular network traffic
- Interfaces in a LEARNING state ONLY Sends/Receives STP BPDUs
- Interfaces in a LEARNING state learns MAC ADDRESSES from regular traffic that arrives on the interface

4. FORWARDING / STABLE

- ROOT and DESIGNATED PORTS are in a FORWARDING state
- A PORT in the FORWARDING state operate as NORMAL

- A PORT in the FORWARDING state Sends/Receives regular network traffic
- A PORT in the FORWARDING state Sends/Receives STP BPDUs
- A PORT in the FORWARDING state learns MAC ADDRESSES