

Understanding STP for EX-series Switches

EX-series switches provide Layer 2 loop prevention through Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), and VLAN Spanning Tree Protocol (VSTP). The default spanning-tree protocol for EX-series switches is RSTP. RSTP provides faster convergence times than STP. However, some legacy networks require the slower convergence times of basic STP.

If your network includes 802.1D 1998 bridges, you can remove RSTP and explicitly configure STP. See *Configuring STP (CLI Procedure)*. When you explicitly configure STP, the EX-series switches use the IEEE 802.1D 2004 specification, force version 0. This configuration runs a version of RSTP that is compatible with the classic, basic STP. If you use VLANs, you should enable VSTP and use it on your network. See *Understanding VSTP for EX-series Switches*.

You can use the same operational commands (`show spanning-tree bridge` and `show spanning-tree interface`) to check the status of your spanning-tree configuration, regardless of which spanning-tree protocol has been configured.

STP uses bridge protocol data unit (BPDU) packets to exchange information with other switches. BPDUs send hello packets out at regular intervals to exchange information across bridges and detect loops in a network topology. There are two types of BPDUs:

- Configuration BPDUs: Contain configuration information about the transmitting switch and its ports, including switch and port MAC addresses, switch priority, port priority, and port cost.
- Topology Change Notification (TCN) BPDUs: When a bridge needs to signal a topology change, it starts to send TCNs on its root port. The designated bridge receives the TCN, acknowledges it, and generates another one for its own root port. The process continues until the TCN reaches the root bridge.

STP uses the information provided by the BPDUs to elect a root bridge, identify root ports for each switch, identify designated ports for each physical LAN segment, and prune specific redundant links to create a loop-free tree topology. All leaf devices calculate the best path to the root device and place their ports in blocking or forwarding states based on the best path to the root. The resulting tree topology provides a single active Layer 2 data path between any two end stations.

Related Topics

- [Understanding MSTP for EX-series Switches](#)
- [Understanding RSTP for EX-series Switches](#)
- [Understanding VSTP for EX-series Switches](#)

