

CCNP BCMSN Notes - Advanced Spanning Tree Protocol

Rapid STP (RSTP) RSTP was developed to provide a faster converging alternative to STP, and is defined in IEEE 802.1w. Like STP, RSTP can be applied as a single instance or per VLAN. A root is elected by lowest bridge ID, as in 802.1D STP. RSTP provides its own set of port roles: **Root port** - Same as in 802.1D
Designated port - Same as in 802.1D
Alternate port - A port with an alternate, less desirable path to root
Backup port - A port which provides an alternate, less desirable path to a segment which already has a designated port RSTP defines port states based on what action is taken on incoming frames: **Discarding** - Frames are dropped, no addresses are learned (replaces 802.1D disabled, blocking and listening states) **Learning** - Frames are dropped, but addresses are learned **Forwarding** - Frames are forwarded RSTP defines a new version of BPDU (v2) which is backward-compatible with 802.1D. BPDUs are sent out from every switch at hello time intervals; a neighbor is assumed down if three intervals are missed. If an RSTP switch detects a traditional (version 0) BPDU on a port, that port changes to operate in 802.1D mode. Port types: **Edge port** - A port to which a single host connects; identified by enabling PortFast; loses its edge status upon receipt of a BPDU
Root port - The port with the best path to root; alternates can be identified as well
Point-to-point port - A designated port connected directly to another switch; only full-duplex ports are eligible by default **RSTP Synchronization** All non-edge ports begin in the discarding state. Proposal messages are used to determine the root port of a segment based on bridge priorities. When a switch receives a proposal message on a port, it moves all other non-edge ports to the discarding state until it sends an agreement to the sender of the proposal. When an agreement is reached, the ports on both ends of the link begin forwarding. This method of proposal/agreement handshakes allows the synchronization process to complete much faster than traditional STP, as no timers are needed. Topology change BPDUs are sent only when a non-edge port transitions to forwarding. **RSTP Configuration** RSTP is enabled by configuring Rapid PVST:

```
Switch(config)# spanning-tree mode rapid-pvst
```

Half-duplex links to other switches can be administratively designated as point-to-point links:

```
Switch(config)#
```


MST Configuration Enabling MST: ` ` `Switch(config)# spanning-tree mode mst`]

Creating an MST region: ` ` `Switch(config)# spanning-tree mst configuration`
`Switch(config-mst)# name <name>`
`Switch(config-mst)# revision <revision>`
`Switch(config-mst)# instance <instance ID> vlan <VLAN list>`

] View pending changes before they are applied: ` ` `Switch(config-mst)# show pending`