

SPANNING TREE - PART 1

packetlife.net

Spanning Tree Protocols

	Legacy STP	PVST	PVST+	RSTP	RPVST+	MST
Algorithm	Legacy ST	Legacy ST	Legacy ST	Rapid ST	Rapid ST	Rapid ST
Defined By	802.1D-1998	Cisco	Cisco	802.1w, 802.1D-2004	Cisco	802.1s, 802.1Q-2003
Instances	1	Per VLAN	Per VLAN	1	Per VLAN	Configurable
Trunking	N/A	ISL	802.1Q, ISL	N/A	802.1Q, ISL	802.1Q, ISL

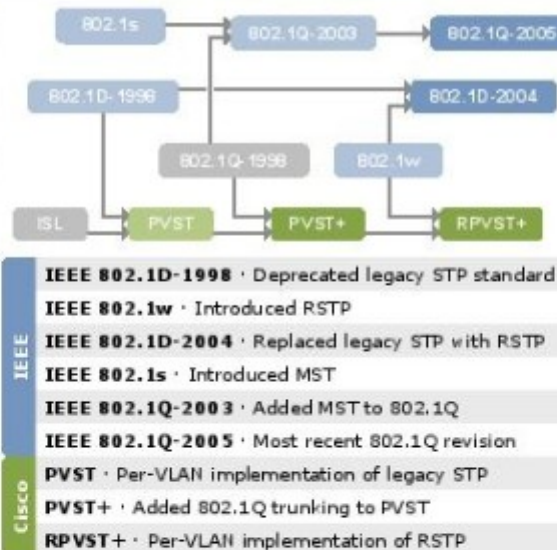
Spanning Tree Instance Comparison



BPDU Format

Field	Bits
Protocol ID	16
Version	8
BPDU Type	8
Flags	8
Root ID	64
Root Path Cost	32
Bridge ID	64
Port ID	16
Message Age	16
Max Age	16
Hello Time	16
Forward Delay	16
Default Timers	
Hello	2s
Forward Delay	15s
Max Age	20s

Spanning Tree Specifications



Link Costs

Bandwidth	Cost
4 Mbps	250
10 Mbps	100
16 Mbps	62
45 Mbps	39
100 Mbps	19
155 Mbps	14
622 Mbps	6
1 Gbps	4
10 Gbps	2
20+ Gbps	1

Port States

Legacy ST	Rapid ST
Disabled	Discarding
Blocking	Listening
Learning	Learning
Forwarding	Forwarding

Port Roles

Legacy ST	Rapid ST
Root	Root
Designated	Designated
Blocking	Alternate
	Backup

Spanning Tree Operation

- Determine root bridge**
The bridge advertising the lowest bridge ID becomes the root bridge
- Select root port**
Each bridge selects its primary port facing the root
- Select designated ports**
One designated port is selected per segment
- Block ports with loops**
All non-root and non-designated ports are blocked