

# Spanning Tree

Attribut	STP	PVST	PVST+	RSTP	RPVST+	MST
Algorithmus	Legacy ST	Legacy ST	Legac ST	Rapid ST	Rapid ST	Rapid ST
Standard	802.1D-1998	Cisco	Cisco	802.1w, 802.1D-2004	Cisco	802.1s, 802.1Q-2003
Instanzen	1	1 pro VLAN	1 pro VLAN	1	1 pro VLAN	1-mehre
Trunk	-	ISL	802.1Q, ISL	-	802.1Q, ISL	802.1Q, ISL

## Link-Kosten

Speed	Kosten
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

## Priorität

1. 0 (Notfall Wert für neu Root-Bridge)
2. 4096 (tiefester Wert bei Normaler Konfiguration)
3. 8192
4. 12288
5. 20480
6. 24576

7. 28672
8. 32768 (Standard Wert)
9. 36864
10. 40960
11. 45056
12. 49152
13. 53248
14. 57344
15. 61440 (Maximal Wert)

## Bridge-ID

Die Bridge-ID ist wie folgt Zusammengesetzt: 4 Bit Priorität + 12 System ID (VLAN) + 48 Bit MAC-Adresse

## Pfadentscheidung

1. Bridge mit der tiefsten ID wird Root-Bridge.
2. Switches mit den tieferen Pfadkosten zur Root-Bridge.
3. Switches mit der tieferen ID.
4. Tiefste Portnummer.

## Konfiguration RSTP, RPVST+

Beispiel SpanningTree

### Switch 1

```
SW1#conf t
SW1(config)spanning-tree mode rapid-pvst
SW1(config)spanning-tree vlan 1 priority 4096
SW1(config)interface range FastEthernet0/1-24
SW1(config-if)spanning-tree portfast
SW1(config-if)spanning-tree guard loop
SW1(config-if)spanning-tree guard root
SW1(config-if)spanning-tree bpduguard enable
```

```
SW1(config-if)spanning-tree bpdufilter enable
SW1(config-if)description Client
SW1(config-if)interface range GigabitEthernet0/1-2
SW1(config-if)no spanning-tree portfast
SW1(config-if)spanning-tree guard root
SW1(config-if)description Uplink
SW1(config-if)do wr
```

## Switch 2

```
SW2#conf t
SW2(config)spanning-tree mode rapid-pvst
SW2(config)spanning-tree vlan 1 priority 32768
SW2(config)interface range FastEthernet0/1-24
SW2(config-if)spanning-tree portfast
SW2(config-if)spanning-tree guard loop
SW2(config-if)spanning-tree guard root
SW2(config-if)spanning-tree bpduguard enable
SW2(config-if)spanning-tree bpdufilter enable
SW2(config-if)description Client
SW2(config-if)interface range GigabitEthernet0/1-2
SW2(config-if)no spanning-tree portfast
SW2(config-if)description Uplink
SW2(config-if)do wr
```

## Switch 3

```
SW3#conf t
SW3(config)spanning-tree mode rapid-pvst
SW3(config)spanning-tree vlan 1 priority 32768
SW3(config)interface range FastEthernet0/1-24
SW3(config-if)spanning-tree portfast
SW3(config-if)spanning-tree guard loop
SW3(config-if)spanning-tree guard root
SW3(config-if)spanning-tree bpduguard enable
SW3(config-if)spanning-tree bpdufilter enable
SW3(config-if)description Client
```

```
SW3(config-if) interface range GigabitEthernet0/1-2
SW3(config-if) no spanning-tree portfast
SW3(config-if) description Uplink
SW3(config-if) do wr
```

# Troubleshooting

```
show spanning-tree [summary | detail | root]
show spanning-tree [interface | vlan]
show spanning-tree mst [...]
```

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