

Brocade HP Spanning-tree Interoperability

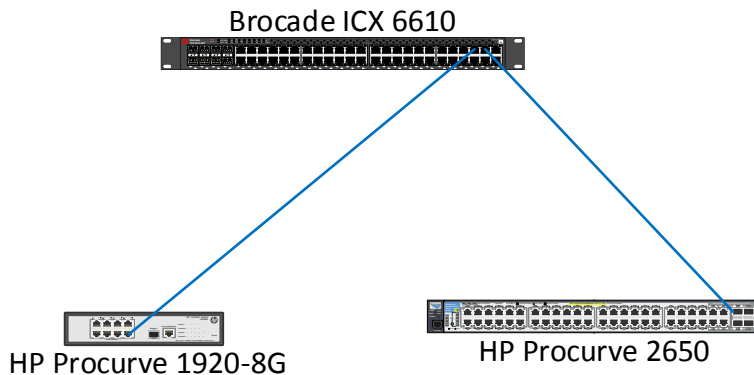
This document show the steps necessary to run IEEE 802.1w (RSTP) in a mixed Brocade and HP switched network. Since spanning-tree needs to be end-to-end in the network for optimal loop prevention, we need to run a version of spanning-tree that is compatible with all the switches in the network. Spanning-tree 802.1d is compatible across most switch vendors and usually on by default, but we want to use a version with faster convergence. RSTP is the best choice, but the standard is not standard across all switch vendors. For this configuration, we will use a Per-VLAN RSTP on both the HP and Brocade switches with the Brocade as the root.

We will set the root priority for the Brocade to 8192 decimal (2000 Hex) and leave the HP as the default 32768 decimal (8000 Hex).

Equipment Used

Model	Software Version
Brocade ICX 6610	FI 8.0.30d
HP Procurve 2650	07.46
HP Procurve 1920-8G	5.20.99 Release 1106

Network Topology



Spanning-tree Status before configuration:

Here you can see the HP 2650 switch is the root:

```
HP_ProCurve_2650      # sh span
Status and Counters - Spanning Tree Information
Protocol Version : RSTP
STP Enabled : Yes
Force Version : RSTP-operation
Switch Priority : 32768           Hello Time : 2
Max Age : 20                     Forward Delay : 15
Topology Change Count : 377
Time Since Last Change : 19 mins
Root MAC Address : 00306e-dd3100
Root Path Cost : 0
Root Port : This switch is root
Root Priority : 32768
Port Type      Cost      Priority State      | Designated Bridge
-----
1  10/100TX  200000  128  Disabled  |
```

Note: Root Path Cost is 0 and the Root MAC Address is the Local MAC.

Brocade Configuration

Here are the current VLANs on the Brocade:

```
SSH@Lab-6610#sh vlan br
System-max vlan Params: Max(4095) Default(64) Current(64)
Default vlan Id :1499
Total Number of Vlan Configured :7
VLANs Configured :10 20 27 30 40 1000 1499
SSH@Lab-6610#
```

Enter enable, then configuration mode.

Enter the following commands:

```
SSH@Lab-6610(config)#vlan 10
SSH@Lab-6610(config-vlan-10)#spanning-tree 802-1w
SSH@Lab-6610(config-vlan-10)#
SSH@Lab-6610(config-vlan-10)#spanning-tree 802-1w priority 8192
SSH@Lab-6610(config-vlan-10)#
SSH@Lab-6610(config-vlan-10)#vlan 20
SSH@Lab-6610(config-vlan-20)#
SSH@Lab-6610(config-vlan-20)#spanning-tree 802-1w
SSH@Lab-6610(config-vlan-20)#
SSH@Lab-6610(config-vlan-20)#spanning-tree 802-1w priority 8192
SSH@Lab-6610(config-vlan-20)#
SSH@Lab-6610(config-vlan-20)#vlan 30
SSH@Lab-6610(config-vlan-30)#
SSH@Lab-6610(config-vlan-30)#spanning-tree 802-1w
SSH@Lab-6610(config-vlan-30)#
SSH@Lab-6610(config-vlan-30)#spanning-tree 802-1w priority 8192
SSH@Lab-6610(config-vlan-30)#
SSH@Lab-6610(config-vlan-30)#vlan 40
SSH@Lab-6610(config-vlan-40)#
SSH@Lab-6610(config-vlan-40)#spanning-tree 802-1w
SSH@Lab-6610(config-vlan-40)#
SSH@Lab-6610(config-vlan-40)#spanning-tree 802-1w priority 8192
SSH@Lab-6610(config-vlan-40)#
```

Note: We set the Priority to 8192 decimal to make this the root switch.

Verify the Spanning-tree configuration on the Brocade:

```
--- VLAN 10 [ STP Instance owned by VLAN 10 ] -----
Bridge IEEE 802.1w Parameters:
Bridge Identifier
hex 2000748ef8e6cc80
Bridge MaxAge 20
Bridge Hello 2
Bridge FwdDly 15
Bridge Force Version Default
tx Hold cnt 3
RootBridge Identifier
hex 2000748ef8e6cc80
RootPath Cost 0
DesignatedBridge Identifier
hex 2000748ef8e6cc80
Root Port Root
Max Age 20
Fwd Dly 15
Hel lo 2
```

Note: The Bridge Identifier is the priority in Hex and the MAC Address and the root cost is 0. You will see this on the HP as the Root MAC Address.

HP Procurve 2650 Configuration

Here are the current VLANs on the HP 2650:

```
HP_ProCurve_2650      # show vlan

Status and Counters - VLAN Information

Maximum VLANs to support : 8
Primary VLAN : Network
Management VLAN :

802.1Q VLAN ID Name          Status
-----
1          DEFAULT_VLAN  Static
10         Network      Static
20         Voice        Static
30         Guest        Static
40         Servers      Static
```

Enter menu at the command line:

Switch Configuration.. -> Spanning Tree Operation

Configure the switch as follows:

```
HP_ProCurve_2650      1-Jan-1990  2:15:00
===== CONSOLE - MANAGER MODE =====
Switch Configuration - Spanning Tree Operation

Protocol Version : RSTP
STP Enabled [No] : Yes
Force Version [RSTP-operation] : RSTP-operation
Switch Priority [8] : 8          Hello Time [2] : 2
Max Age [20] : 20              Forward Delay [15] : 15

Port   Type      Cost      Priority  Edge  Point-to-Point  MCheck
-----
1      10/100TX  200000    8         Yes   Force-True      Yes
2      10/100TX  200000    8         Yes   Force-True      Yes
3      10/100TX  200000    8         Yes   Force-True      Yes
4      10/100TX  200000    8         Yes   Force-True      Yes
5      10/100TX  200000    8         Yes   Force-True      Yes
6      10/100TX  200000    8         Yes   Force-True      Yes

Actions->  Cancel  Edit  Save  Help

Cancel changes and return to previous screen.
Use arrow keys to change action selection and <Enter> to execute action.
```

View the spanning-tree information after configuration.

```
HP_ProCurve_2650      # show span

Status and Counters - Spanning Tree Information

Protocol Version : RSTP
STP Enabled : Yes
Force Version : RSTP-operation

Switch Priority : 32768           Hello Time : 2
Max Age : 20                     Forward Delay : 15

Topology Change Count : 378
Time Since Last Change : 5 secs

Root MAC Address : 748ef8-e6cc80
Root Path Cost : 20000
Root Port : 49
Root Priority : 8192
```

Note the Root Path Cost is 20000 and not 0 and the Root MAC Address is the MAC of the ICX 6610. The priority of the root is 8192 and the root port is 49 (this is the port connecting the ICX and HP 2650).

HP Procurve 1920-8G Configuration

Here are the current VLANs on the HP 1920:

VLAN Summary			
ID	Description	Untagged Membership	Tagged Membership
1	VLAN 0001	GE1/0/1-GE1/0/10	
10	Network		GE1/0/8
20	Voice		GE1/0/8
30	Guest		GE1/0/8
40	Servers		GE1/0/8

Go to: Network -> MSTP -> Global

Here are the Global Configuration settings:

Global MSTP Configuration

Enable STP Globally:	Enable
BPDU Protection:	Disable
Mode:	RSTP
Max Hops:	20
Path Cost Standard:	Legacy

View the spanning-tree information after configuration.

Under Port Summary -> Select your Uplink port.

```
----[Port8(GigabitEthernet1/0/8)][FORWARDING]----
Port Protocol      :enabled
Port Role          :CIST Root Port
Port Priority      :128
Port Cost(Legacy)  :Config=auto / Active=20
Desg. Bridge/Port :8192.748e-f8e6-cc80 / 128.43
Port Edged         :Config=enabled / Active=disabled
Point-to-point    :Config=auto / Active=true
Transmit Limit     :10 packets/hello-time
Protection Type    :None
MST BPDU Format     :Config=auto / Active=legacy
Port Config-
Digest-Snooping   :disabled
Num of Vlans Mapped :5
PortTimes         :Hello 2s MaxAge 20s FwDly 15s MsgAge 0s RemHop 0
BPDU Sent         :5538
                  TCN: 9, Config: 79, RST: 5450, MST: 0
BPDU Received     :6975
                  TCN: 0, Config: 256, RST: 6719, MST: 0
```

Note: This is the Root Port and the Designated Bridge is Priority.MAC-Address (8192.748e-f8e6-cc80). This is the MAC and Priority of the ICX.