Brocade ICX and Nortel Spanning-tree Integration

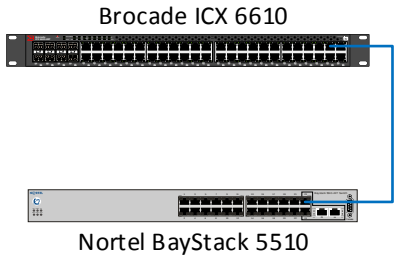
This document show the steps necessary to run IEEE 802.1w (RSTP) in a mixed Brocade and Nortel switched network. Since spanning-tree needs to be end-to-end in the network for optimal loop prevention, we need to run a version of spanning-tree that is compatible with all the switches in the network. Spanning-tree 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 single instance of RSTP on both the Nortel 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 Nortel as the default 32768 decimal (8000 Hex).

Equipment Used

Model	Software Version
Brocade ICX 6610	FI 8.0.30d
Nortel BayStack 5510	5.0.7.016

Network Topology



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Spanning-tree Status before configuration:

Here you can see the Nortel switch is the root:

```
            Spanning Tree Switch Settings

            STP Group: [ 1 ]


 STP Mode:                  STPG (Nortel MSTP)
 Bridge Priority:           8000
 Designated Root:           8000000F065B2C01
 Root Port:                 0
 Root Path Cost:            0
 Hello Time:                2 seconds
 Maximum Age Time:          20 seconds
 Forward Delay:             15 seconds
 Bridge Hello Time:         2 seconds
 Bridge Maximum Age Time:   20 seconds
 Bridge Forward Delay:      15 seconds
```

Note: Root cost is 0.

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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)#
SSH@Lab-6610(config)#spanning-tree single 802-1w
SSH@Lab-6610(config)#
SSH@Lab-6610(config)#spanning-tree single 802-1w priority 8192
SSH@Lab-6610(config)#
SSH@Lab-6610(config)#spanning-tree single 802-1w force 0
SSH@Lab-6610(config)#
SSH@Lab-6610(config)#
```

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

Verify the Spanning-tree configuration on the Brocade:

```
SSH@Lab-6610#show 802-1w

--- VLAN 4094 [ STP Instance owned by VLAN 4094 ] ---------------------------

Bridge IEEE 802.1W Parameters:

Bridge            Bridge Bridge Bridge Force    tx
Identifier        MaxAge Hello  FwdDly Version  Hold
hex               sec    sec    sec             cnt
2000748ef8e6cc80  20     2      15     STP mode 3

RootBridge        RootPath  DesignatedBri-   Root   Max Fwd Hel
Identifier        Cost      dge Identifier   Port   Age Dly lo
hex                         hex                     sec sec sec
2000748ef8e6cc80  0         2000748ef8e6cc80 Root   20  15  2

Port IEEE 802.1W Parameters:
```

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 Nortel as the designated root.

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Nortel Configuration

Here are the current VLANs on the Nortel:

```
                        VLAN Display by Port

                    Port:       [ 23 ]
                    PVID:       1
                    Port Name:  Port 23
   VLANs        VLAN Name                  VLANs        VLAN Name
---------  ----------------            ---------  ----------------
    1      VLAN #1
    10     Network
    20     Voice
    27     vADC
    30     Guest
    40     Servers
```

Enter the command line from the Nortel menu:

Enter enable, then configuration mode.

Enter the following commands:

```
5510-24T(config)#
5510-24T(config)#spanning-tree op-mode rstp
New operational mode RSTP will take effect upon reset
5510-24T(config)#boot
Reboot the unit(s) (y/n) ?
5510-24T(config)#boot
Reboot the unit(s) (y/n) ? yRebooting . . .
```

Note: boot will reboot the system.

When the system reboots, view the spanning-tree configuration.

```
5510-24T#
5510-24T#show spanning-tree rstp status
Designated Root:        20:00:74:8E:F8:E6:CC:80
Stp Root Cost:          20000
Stp Root Port:          23
Stp Max Age:            20 seconds
Stp Hello Time:         2 seconds
Stp Forward Delay Time: 15 seconds
5510-24T#
```

Or from the menu:

```
            Spanning Tree Switch Settings

            STP Group:      CIST


 STP Mode:                  IEEE 802.1w
 Bridge Priority:           8000
 Designated Root:           2000748EF8E6CC80
 Root Port:                 23
 Root Path Cost:            20000
 Hello Time:                2 seconds
 Maximum Age Time:          20 seconds
 Forward Delay:             15 seconds
 Bridge Hello Time:         2 seconds
 Bridge Maximum Age Time:   20 seconds
 Bridge Forward Delay:      15 seconds
 Tx Hold Count:             3
 Default Path Cost Type:    32 Bits
```

Priority = 2000 (HEX) or 8192 (DEC)

MAC Address = 748EF8E6CC80

Note the root cost is 20000 and not 0 and the Designated Root is the Priority and MAC of the ICX 6610.