

## Example Step: Configuring Spanning Tree Protocols

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Configure the Spanning Tree Protocol on all three routers. This is necessary to avoid the potential bridging loop formed by the triangular architecture of the routers. MSTP is configured on the three routers so the set of VLANs has an independent, loop-free topology. The Layer 2 traffic can be load-shared over 65 independent paths (64 Multiple Spanning Tree Instances [MSTIs] and one Common and Internal Spanning Tree [CIST]), each spanning a set of VLANs. The configuration names, revision level, and VLAN-to-MSTI mapping must match in order to utilize the load-sharing capabilities of MSTP (otherwise, each router will be in a different region).

To configure the Spanning Tree Protocol on all three routers:

1. Configure MSTP on Router 1:

```
[edit]
protocols {
  mstp {
    configuration-name mstp-for-R1-2-3; # The names must match to be in the
      same region
    revision-level 3; # The revision levels must match
    bridge-priority 0; # This bridge acts as root bridge for VLAN 100 and 200
    interface ae1;
    interface ae2;
    msti 1 {
      vlan100; # This VLAN corresponds to MSTP instance 1
    }
    msti 2 {
      vlan200; # This VLAN corresponds to MSTP instance 2
    }
  }
}
```

2. Configure MSTP on Router 2:

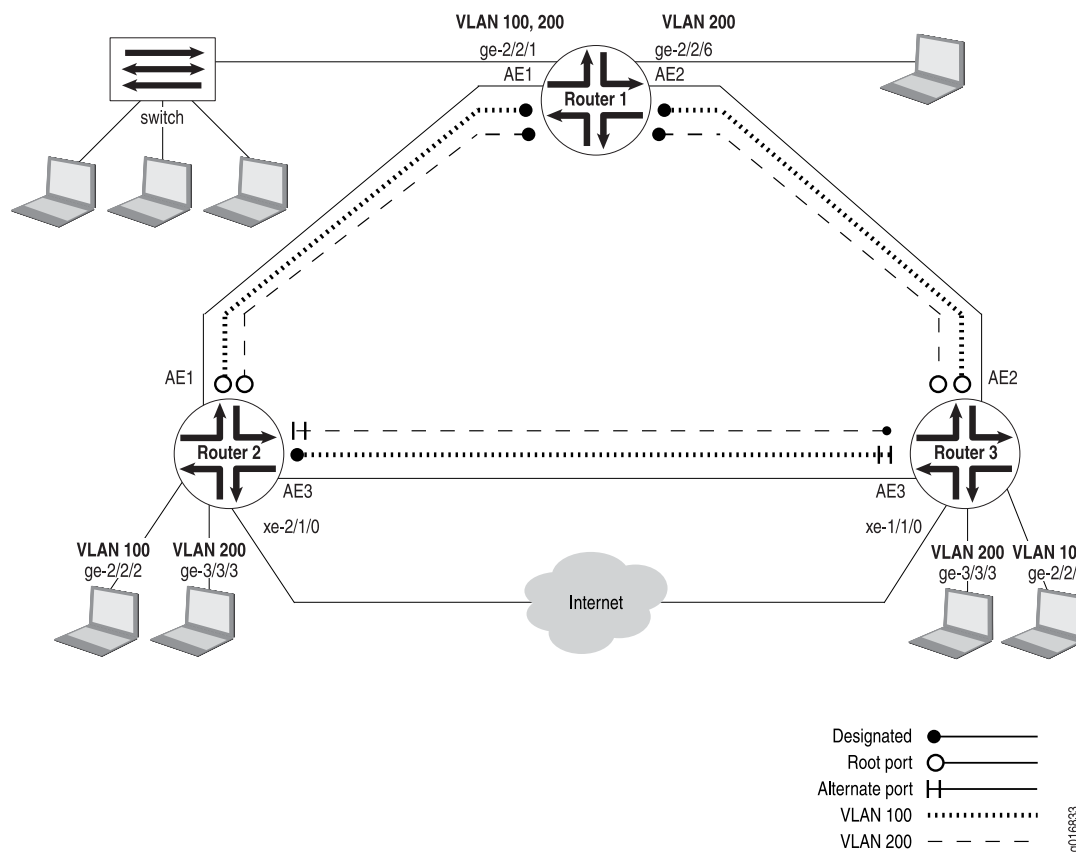
```
[edit]
protocols {
  mstp {
    configuration-name mstp-for-R1-2-3; # The names must match to be in the
      same region
    revision-level 3; # The revision levels must match
    interface ae1;
    interface ae3;
    msti 1 {
      vlan100; # This VLAN corresponds to MSTP instance 1
      bridge-priority 4096; # This bridge acts as VLAN 100 designated bridge on
        # the R2-R3 segment
    }
    msti 2 {
      vlan200; # This VLAN corresponds to MSTP instance 2
    }
  }
}
```

3. Configure MSTP on Router 3:

```
[edit]
protocols {
  mstp {
    configuration-name mstp-for-R1-2-3; # The names must match to be in the
      same region
    revision-level 3; # The revision levels must match
    interface ae2;
    interface ae3;
    msti 1 {
      vlan100; # This VLAN corresponds to MSTP instance 1
    }
    msti 2 {
      vlan200; # This VLAN corresponds to MSTP instance 2
      bridge-priority 4096; # This bridge acts as VLAN 200 designated bridge on
        # the R2-R3 segment
    }
  }
}
```

As a result of this configuration, VLAN 100 and VLAN 200 share physical links, but have different designated ports, root ports, and alternate ports on the three different routers. The designated, root, and alternate ports for the two VLANs on the three routers are shown in Figure 1.

**Figure 1: Designated, Root, and Alternate Ports**



- Related Topics**
- MX Series Ethernet Services Routers Solutions Page
  - Layer 2 Features for a Bridging Environment
  - Example Roadmap: Configuring a Basic Bridge Domain Environment
  - Example Step: Configuring Interfaces and VLAN Tags
  - Example Step: Configuring Bridge Domains
  - Example Step: Configuring Integrated Bridging and Routing

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