



# Managing Network Spanning Trees

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This chapter describes, the IEEE 802.1d Spanning Tree Protocol (STP), and how to use and configure Cisco's proprietary spanning-tree protocols, Per VLAN Spanning Tree (PVST), Multiple Spanning Tree (MSTP), and Multi-Instance Spanning Tree Protocol (MISTP) in a Campus network. It contains the following sections:

- [Understanding Spanning Tree Protocol, page 10-1](#)
- [Spanning Tree Recommendation Reports, page 10-5](#)
- [Spanning Tree Reports: STP Visualizer, page 10-14](#)
- [Generating Reports and Configuring STP on the Network, page 10-19](#)
- [Spanning Tree Filters, page 10-60](#)

## Understanding Spanning Tree Protocol

Spanning Tree Protocol (STP) is a link management protocol that provides path redundancy while preventing undesirable loops in the network. Hence, STP is a loop-prevention protocol.

It is a technology that allows Bridges to communicate with each other to discover physical loops in the network. The protocol then specifies an algorithm that Bridges can use to create a loop-free logical topology.

In other words, STP creates a tree structure of loop-free leaves and branches that spans the entire Layer 2 network.

To provide path redundancy STP spans all switches in an extended network. STP forces certain redundant data paths into a standby (*blocked*) state.

This section describes the specific functions available to you when you use spanning-tree protocols. STP uses a distributed algorithm that selects one Bridge of a redundantly connected network as the root of a Spanning Tree-connected active topology.

STP assigns roles to each port depending on what the port's function is in the active topology. Port roles are:

- Root—Forwarding port that is elected for the spanning-tree topology
- Designated—Forwarding port that is elected for every switched LAN segment
- Alternate—Blocked port providing an alternate path to the root port in the Spanning Tree
- Backup—Blocked port in a loopback configuration

Designated, Alternate, and Backup states are specific to MST.

The switches that have ports with these assigned roles are called the root or designated switches.

In Ethernet networks, only one active path may exist between any two stations. Multiple active paths between stations can cause loops in the network.

When loops occur, some switches recognize the same stations on more than one side of the switch. This situation causes the forwarding algorithm to malfunction allowing the duplicate frames to be forwarded.

The Spanning Tree algorithms provide path redundancy by defining a tree that spans all of the switches in an extended network and then forces certain redundant data paths into a standby (*blocked*) state.

At regular intervals, the switches in the network send and receive Spanning Tree BPDUs that they use to identify the path.

If one network segment becomes unreachable, or if the Spanning Tree costs change, the Spanning Tree algorithm reconfigures the Spanning Tree topology and reestablishes the link by activating the standby path.

The Spanning Tree operation is transparent to end stations, which do not detect whether they are connected to a single LAN segment or a switched LAN of multiple segments.

STP provides these advantages:

- Detection and elimination of loops
- Capability to automatically detect failed active paths and to utilize alternate paths
- User-configurable parameters that enable a network administrator to fine-tune the algorithm's performance

These sections describe the following Spanning Tree Protocols in brief:

- [Per VLAN Spanning Tree Protocol, page 10-3](#)
- [Multiple Spanning Tree Protocol, page 10-3](#)
- [Multiple Instance Spanning Tree Protocol, page 10-4](#)

## Per VLAN Spanning Tree Protocol

Per VLAN Spanning Tree Protocol maintains a separate instance of STP for each individual VLAN configured in the network.

It allows a VLAN trunk to be forwarding for some VLANs while blocking for other VLANs. Since PVST treats each VLAN as a separate network, it has the ability to load balance traffic (at layer 2). It does this by forwarding some VLANs on one trunk and other VLANs on another trunk without causing a Spanning Tree loop.

## Multiple Spanning Tree Protocol

Multiple Spanning Tree uses IEEE's RSTP as base Spanning Tree Protocol. MST uses only one BPDU for all instances.

A disadvantage of PVST is that it adds a lot of overhead to your switching equipment. If a switch is configured to use MST, it must ascertain which of its neighbors are using which type of STP.

It does this by configuring switches into common MST regions, where every switch in a region runs MST with compatible parameters. You can map a group of VLANs to instance.

In most networks, a single MST region is sufficient, although you can configure more than one region. Within the region, all switches must run the instance of MST that is defined by the following attributes:

- MST configuration name (32 characters)
- MST configuration revision number (0 to 65535)
- MST instance-to-VLAN mapping table (4096 entries)

## Multiple Instance Spanning Tree Protocol

Multiple Instance Spanning Tree Protocol (MISTP) allows you to group multiple VLANs under a single instance of Spanning Tree (an MISTP instance).

An MISTP instance is a virtual logical topology that is defined by a set of bridge and port parameters. When you map VLANs to an MISTP instance, this virtual logical topology becomes a physical topology.

Each MISTP instance has its own root switch and a different set of forwarding links, that is, different bridge and port parameters.

Each MISTP instance root switch propagates the information that is associated with it to all other switches in the network. This process maintains the network topology. This is because it ensures that each switch has the same information about the network.

MISTP builds MISTP instances by exchanging MISTP BPDUs with peer entities in the network. MISTP uses one BPDU for each MISTP instance

An MISTP instance can have any number of VLANs that are mapped to it, but a VLAN can be mapped only to a single MISTP instance.

You can move a VLAN (or VLANs) in an MISTP instance to another MISTP instance if it has converged.

# Spanning Tree Recommendation Reports

Campus Manager 4.0.3 Recommendation Reports aid deployment of Spanning Trees in the network. The following reports are available:

- [Spanning Tree Reports: Optimal Root Recommendation Report, page 10-5](#)
- [Spanning Tree Reports: Number of Instances Recommendation Report, page 10-8](#)
- [Spanning Tree Reports: Instance Reduction Recommendation Report, page 10-10](#)
- [Spanning Tree Reports: VLAN to Instance Mapping Recommendation Report, page 10-12](#)

## Spanning Tree Reports: Optimal Root Recommendation Report

The Optimal Root Recommendation Report allows you to compute the optimal root in a switch cloud running Per VLAN STP, Cisco MISTP, or IEEE 802.1s.

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- Step 1** Invoke Switch Cloud Map View from Topology Services.
- Step 2** Select any of the following:
- **Reports > Per VLAN STP Recommendations > Optimal Root Recommendation**
  - **Reports > Cisco MISTP Recommendations > Optimal Root Recommendation**
  - **Reports > IEEE 802.1s Recommendations > Optimal Root Recommendation**

The Optimal Root Recommendation window appears.

**Step 3** In the Computation Criteria, select a computation type.

[Table 10-1](#) lists three computation types and their descriptions.

**Table 10-1** *Computation Types*

Field	Description
Least Depth	<p>Computes depth from each node in the switch cloud.</p> <p>Selects the root so that the Spanning Tree that is formed has minimum depth.</p>
Least Cost	<p>Computes depth from each node in the switch cloud.</p> <p>Computes maximum edge node cost for all the nodes by assuming current node as root node.</p> <p>The node with minimum value for maximum edge node is considered the optimal root.</p>
Traffic Data	<p>Computes a Spanning Tree, which provides optimal path for given percentage of traffic or selected nodes.</p>

If you select Traffic Data, go to [Step 4](#), else go to [Step 5](#).

**Step 4** Select a traffic data source from the Traffic Details ([Table 10-2](#)).

**Table 10-2** *Traffic Details*

Field	Description
Data Source	<p>Select either of the following network traffic data sources:</p> <ul style="list-style-type: none"> <li>• NAM—Select this option if you use Cisco Network Analysis Modules to collect data.</li> <li>• Netflow Collector 3.6—Select this option if you use NetFlow FlowCollector to collect data.</li> </ul>
Traffic File Name	Enter the NAM or NetFlow traffic data filename.

**Step 5** Click **Compute**.

The Recommended Roots table lists the optimal root devices.

- Step 6** Select a device, and click **Highlight in Map** to highlight the device icon in Switch Cloud Map.
- Step 7** Click **Close** to close the Optimal Root Recommendation window.
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## Interpreting Optimal Root Recommendation

The Optimal Root Recommendation report helps you to select the best root for your network using any of the three methods:

- Least Depth

Use this method to compute better overall convergence. Convergence time is based on the distance to the boundary nodes. The node with the least path cost to boundary nodes is recommended as optimal root.

A device farther from the boundary nodes takes longer to propagate the topology change that has occurred than another node that is near the boundary nodes in the same switched environment.

This directly affects the convergence time of the switched or bridged network. After this root is selected, you can make suitable adjustments to forward the delay timer of the Spanning Tree protocol to take advantage of faster convergence.

- Least Cost

The node with the least cumulative cost to all other nodes is recommended as root according to this method. When the Spanning Tree root is computed based on this method, it provides a better path between nodes in the switched environment assuming equal traffic distributions.

In the case of unbalanced switched environment where core switch A is connected to 10 other distribution switches and another core switch B is connected to only 5 of the distribution switches, this algorithm will suggest A as root as compared to B.

Five switches that are not directly connected to B should take a longer path to other nodes if B is selected as root. If A is selected as root this problem could be avoided.

- Traffic Data

In a switched or bridged network environment, when Spanning Tree is computed, the aim is to eliminate loops. Owing to this it may not provide the shortest possible path between every node to every other node.

Based on the traffic pattern a particular device may provide optimal path for a greater percentage of traffic than another.

For example, a switched network containing nodes—A, B, C, D, and E. Overall traffic is 95% localized between a set of nodes {A, B, and C}. Ideally, you should select a node for root that provides the shortest path between A, B, and C. This is regardless of whether it provides shortest path from D or E to any other nodes.

In some cases you may not be able to get the shortest path between A, B, and C when trying to find the optimal root. In such cases, a root that provides most optimal path between A, B, and C is chosen.

## Spanning Tree Reports: Number of Instances Recommendation Report

The Number of Instances Recommendation Report allows you to compute the number of instances in a switch cloud running Cisco MISTP or IEEE 802.1s.

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**Step 1** Invoke Switch Cloud Map View from Topology Services.

**Step 2** Select either of the following:

- **Reports > Cisco MISTP Recommendations > Instance Recommendation**
- **Reports > IEEE 802.1s Recommendations > Instance Recommendation**

The Number of Instance Recommendation window appears.

- Step 3** In the Computation Techniques area, select a computation type.  
**Table 10-3** lists two computation techniques and their description.

**Table 10-3** *Computation Techniques*

Field	Description
Max instances for better link utilization	Computes the optimal number of Spanning Tree instances that can be run on the given switched network for optimizing network link resources
Min instances for better CPU utilization	Computes the optimal number of Spanning Tree instances that can be run on the given switched network for optimizing device CPU resources.

- Step 4** Click **Compute**.  
The Recommended Number of Instances appears in the Results area.
- Step 5** Select a value from the Select Instance drop-down list.
- Step 6** Click **Highlight in Map** to highlight the device icon in Switch Cloud Map.
- Step 7** Click **Close** to close the Number of Instances Recommendation window.

## Interpreting Number of Instances Recommendation

The number of instance recommendation is made based on two methods:

- Max instances for better link utilization method  
Use this method to compute better balanced link utilization.  
We recommend that you use the number of instances that is the least common multiplier of all the independent redundant paths, as the maximum number of instances.
- Min instances for better CPU utilization  
Use this method to compute a minimum number of instances so that CPU utilization is minimum.  
We recommend that the number of instances, which results in the maximum number of independent redundant paths is recommended.

## Spanning Tree Reports: Instance Reduction Recommendation Report

The Instances Reduction Recommendation Report allows you to compute the number of instances in a switch cloud running Cisco MISTP or IEEE 802.1s.

**Step 1** Invoke Switch Cloud Map View from Topology Services.

**Step 2** Select either of the following:

- **Reports > Cisco MISTP Recommendations > Instance Reduction Recommendation**
- **Reports > IEEE 802.1s Recommendations > Instance Reduction Recommendation**

The Instance Reduction Recommendation window appears.

**Step 3** In the Computation Techniques area, select a computation type.

[Table 10-4](#) lists two computation techniques and their description.

**Table 10-4** *Computation Techniques*

Field	Description
Sub-tree Reduction	Determine if one or more Spanning Tree instances are mergeable if the instances have a supertree–subtree relationship.
Conditional Reduction	Determines the Spanning Tree instances that can be merged based on the forwarding topology of the network.

**Step 4** Click **Compute**.

The Recommended Number of Instances is displayed in the table.

**Table 10-5** *Instance Reduction Results*

Field	Description
Instance	Instance ID.
Mergeable Instances	Comma separated list of instance IDs which can be merged.

- Step 5** Select a row, and click **Highlight in Map** to highlight the instances in Switch Cloud Map.
- Step 6** Click **Close** to close the Instance Reduction Recommendation window.
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## Interpreting Instance Reduction Recommendation

You can use the Instance Reduction Recommendations if your network contains multiple Spanning Tree instances that share the same forwarding topology.

The Recommendation report allows you to determine Spanning Tree instances. These instances can be merged into a shared instance without any impact on convergence or operation.

Fewer instances help you to optimize the utilization of memory and CPU resources of the switches. Instance reduction recommendation is made based on two methods:

- Sub tree reduction method

Use this method to determine Spanning Tree instances, which can be merged when the switched network has an instance that spans across different sets of switches as compared to another instance.

For example, instance A is considered a sub-tree of instance B if all the forwarding and blocking paths of instance A are in the same state in instance B. Instance A is a sub-tree of instance B if the forwarding and blocking paths of instance A exactly matches that of instance B.

If the above case is satisfied, the report recommends merging of the two STP instances.

- Conditional reduction method

Use this method to determine the Spanning Tree instances, which can be merged when the switched network has instances that share forwarding paths and root.

## Spanning Tree Reports: VLAN to Instance Mapping Recommendation Report

The Number of Instances Recommendation Report allows you to compute the optimum number of VLANs to instances in a switch cloud running Cisco MISTP or IEEE 802.1s.

**Step 1** Invoke Switch Cloud Map View from Topology Services.

**Step 2** Select either of the following:

- **Reports > Cisco MISTP Recommendations > VLAN to Instance Mapping Recommendation.**
- **Reports > IEEE 802.1s Recommendations > VLAN to Instance Mapping Recommendation.**

The VLAN to Instance Mapping Recommendation window appears.

**Step 3** In the Computation Metrics area, select a metric type. [Table 10-6](#) lists the four computation techniques and their description.

**Table 10-6** Computation Techniques

Field	Description
Number of VLANs	Select a device (reference device), Spanning Tree instance, that has least number of VLANs mapped to it.
Optimal path for select devices	Select multiple devices to find the Spanning Tree instance with least sub-optimality.
Least instance load	Select only one device (reference device). It recommends the Spanning Tree with least load.
Least instance load for selected devices	Select multiple devices. It recommends the Spanning Tree instance with the least traffic.

If you select Least instance load or Least instance load for selected devices, go to [Step 4](#), else go to [Step 5](#).

**Step 4** Select a traffic data source from the Traffic Type drop-down list in the Traffic Details area. [Table 10-7](#) lists the two types of data sources supported.

**Table 10-7**      **Traffic Details**

Field	Description
Traffic Type	Select either of the following network traffic data sources: <ul style="list-style-type: none"> <li>NAM—Select this option if you use Cisco Network Analysis Modules to collect data.</li> <li>Netflow Collector 3.6—Select this option if you use NetFlow FlowCollector to collect data.</li> </ul>
File	Enter the NAM or NetFlow traffic data filename.

**Step 5**    Click **Compute**.

The Recommended Instance ID is displayed in the VLAN Instance Recommendation area.

**Step 6**    Select a device, and click **Highlight in Map** to highlight the device icon in Switch Cloud Map.

**Step 7**    Click **Close** to close the VLAN Instance Mapping Recommendation window.

## Interpreting VLAN to Instance Mapping Recommendation

The number of instance recommendation is made based on four methods:

- Number of VLANs

Use this method when the traffic or load on each of the VLANs is almost the same. This method assumes that an instance with least number of VLANs is optimal for mapping to a new VLAN. Hence, the Spanning Tree instances with the least number of VLANs mapped to it is recommended.

- Optimal path for select devices

You can provide the information on devices, which will be part of the new VLAN to be created. This method determines the optimal path for various available instances for the selected devices.

- Least instance load  
The projected traffic of the new VLAN you selected is used, and the instance which has least overall traffic is recommended.
- Least instance load for selected devices  
This method assumes that the devices you selected will be part of the new VLAN. Based on this information, the instance with the least load, which is spread across the devices you selected is recommended.

## Spanning Tree Reports: STP Visualizer

The STP Visualizer allows you to test changes to STP settings before you enforce them on a network.

To view the STP Visualizer:

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**Step 1** Invoke Switch Cloud Map View from Topology Services.

**Step 2** Select **Reports > STP Visualizer**.

The Spanning Tree Visualizer window appears.

**Step 3** From the Select Instance ID field, click **Select**.

Depending on the Spanning Tree Protocol the device is running, one of the following appears:

- If the device is running PVST, the Select Instance dialog box appears. Go to [Step 4](#).
- If the device is running MST, the Select Region dialog box appears. Go to [Step 5](#).
- If the device is running MISTP, the Select Instance dialog box appears. Go to [Step 6](#).

**Step 4** Enter the required information as described in [Table 10-8](#).

**Table 10-8** *Selecting PVST or VLAN in Switch Clouds*

Field	Description	Usage Notes
Select instance by type	Select desired criteria: <ul style="list-style-type: none"> <li>VLAN Name</li> <li>VLAN ID</li> </ul>	To view the valid values for the VLAN Name or VLAN ID field, click the drop-down arrow.
What	Enter the desired string	Use this field to narrow the number of matches by entering part or all of the VLAN Name or VLAN ID.
Matches	Lists VLANs that match the specified criteria.	Select the desired VLAN from the list of matches.

To view the devices in the VLAN Region, click **Select**. The ID of the selected Spanning Tree instance is displayed in the Selected Instance ID field.

**Step 5** Enter the required information as described in [Table 10-9](#).

**Table 10-9** *Selecting MST in Switch Clouds*

Field	Description	Usage Notes
Select instance by region	Select desired criteria: <ul style="list-style-type: none"> <li>All Regions</li> <li>Region Name</li> </ul>	To view the valid values for the region field, click the drop-down arrow.
What	Enter the desired string	Use this field to narrow the number of matches by entering the region name (partially or fully).
Matches	Lists instances that match the specified criteria.	Select the desired STP instance from the list of matches.

To view the Spanning Tree details of an MST Instance in the Network Topology View window, click **Select**. The ID of the selected Spanning Tree instance is displayed in Selected Instance ID field.

**Step 6** Enter the required information as described in [Table 10-10](#).

**Table 10-10** *Selecting MISTP Instances in Switch Clouds*

Field	Description	Usage Notes
Select instance by region	Select desired criteria: <ul style="list-style-type: none"> <li>All Instances</li> <li>Instance Name</li> </ul>	To view the valid values for the instance field, click the drop-down arrow.
What	Enter the desired string	Use this field to narrow the number of matches by entering part or all of the instance name.
Matches	Lists instances that match the specified criteria.	Select the desired instance from the list of matches.

To view the Spanning Tree details of an MIST Instance in the Network Topology View window, click **Select**. The ID of the selected Spanning Tree instance is displayed in Selected Instance ID field.

The devices in the VLAN instance appear in a table. [Table 10-11](#) lists the fields in the table, their description, and usage notes for editable fields.

**Table 10-11** *Port Details*

Field <sup>1</sup>	Description	Usage Notes
Device Name	Name of the device.	This field is not configurable.
IP Address	Displays the IP address of the device.	This field is not configurable.
Port	Displays the port name.	This field is not configurable. In case of device priority, this field displays <i>NA</i> .
Type	Displays the Spanning Tree type: <ul style="list-style-type: none"> <li>Bridge priority of the device</li> <li>Port Priority or Cost or the port</li> </ul>	This field is not configurable.

**Table 10-11** *Port Details (continued)*

Field <sup>1</sup>	Description	Usage Notes
Existing	Lists the current port priority or cost value.	This field is not configurable.
New*	Lists the new port priority or cost that you have entered.	Enter a new value.

1. Field marked with asterisk is editable.

To edit values of fields marked with an asterisk:

- a. Select rows.  
The selected rows are highlighted in the Edit Here section.
- b. To change the value of a field, do either of the following:
  - Double click the current value, and enter a new value,  
Or
  - Select a value from the drop-down list.  
The new values are displayed, highlighted in pink.
- c. Click **Compute**.

## Interpreting STP Visualizer

The STP Visualizer allows you to:

- Try different Spanning Tree settings offline before you configure them on the network.
- Change settings and highlight devices on the Topology Map.

## STP Visualizer Notes

STP Visualizer cannot suggest the correct configuration in the following scenarios:

- If any of the devices in the switch cloud does not support the required MIB (for example CISCO-STP-EXTENSIONS-MIB). In this case you may need to upgrade some of the device images to solve this issue.
- There are device families such as Cisco Catalyst 2900XL and Catalyst 3500XL, which do not support the CISCO-STP-EXTENSIONS-MIB. An error may appear, if these devices are present in the switch cloud.
- If there are SNMP request timeouts during discovery of devices, STP Visualizer may not be able to proceed with the computation due to incomplete information about the devices. To resolve the problem, you may need to select these devices and rediscover.
- If you are using SNMPv3, not all devices running SNMPv3 support context names for getting required Spanning Tree information from the devices. Only a few later images of Catalyst 6500 series devices support this feature. You may need to use SNMPv2 or SNMPv1 to resolve this problem.

# Generating Reports and Configuring STP on the Network

You can generate reports and configure STP on switch clouds for the following:

- [Reporting and Configuring PVST Port, page 10-19](#)
- [Reporting and Configuring MST Port, page 10-24](#)
- [Reporting and Configuring MISTP Port, page 10-30](#)
- [Reporting and Configuring PVST Device, page 10-34](#)
- [Reporting and Configuring MST Device, page 10-39](#)
- [Reporting and Configuring MISTP Device, page 10-44](#)
- [Reporting and Configuring MST Instance, page 10-48](#)
- [Reporting and Configuring MISTP Instance, page 10-50](#)
- [Reporting and Configuring PVST Trunk, page 10-52](#)
- [Reporting and Configuring MST Trunk, page 10-55](#)
- [Reporting and Configuring MISTP Trunk, page 10-58](#)

## Reporting and Configuring PVST Port

To configure PVST port on a switch cloud:

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- Step 1** From the Summary View, select **Reports > Spanning Tree Configuration**.  
The Spanning Tree Configuration page appears.
  - Step 2** Select the **Port** tab.  
The Spanning Tree Port Configuration page appears.
  - Step 3** Select **PVST** from the Spanning Tree Type drop-down list.
  - Step 4** From the Spanning Tree Instance field, click **Select**.  
The Select Instance dialog box appears.

**Step 5** Enter the required information as described in the [Table 10-12](#).

**Table 10-12** *Selecting Spanning Tree Instances in Switch Clouds*

Field	Description	Usage Notes
Select instance by type	Select either criteria: <ul style="list-style-type: none"> <li>• VLAN Name</li> <li>• VLAN ID</li> </ul>	To view the valid values for the VLAN Name or VLAN ID field, click the drop-down arrow.
What	Enter the desired string	Use this field to narrow the number of matches by entering part or all of the VLAN Name or VLAN ID.
Matches	Lists VLANs that match the specified criteria.	Select the desired VLAN from the list of matches.

**Step 6** Click **Select** to view the devices in the VLAN Instance.

The devices in the VLAN instance appear in a table. [Table 10-13](#) lists the fields in the table, their description, and usage notes for editable fields.

**Table 10-13** *PVST Port Details*

Field <sup>1</sup>	Description	Usage Notes
Device Name	Name of the device.	This field is not configurable.
IP Address	IP address of the device.	This field is not configurable.
Port	Port number used for bridge forwarding.	This field is not configurable.
isLink	Displays a check mark if the port is a link port.	This field is not configurable.
State	State of the port. The possible states are: <ul style="list-style-type: none"> <li>• Blocking</li> <li>• Forwarding</li> <li>• Disabled</li> </ul>	This field is not configurable.

Table 10-13 PVST Port Details (continued)

Field <sup>1</sup>	Description	Usage Notes
Cost <sup>*</sup>	Port cost value.	<p>The STP port path cost default value is derived from the media speed of a LAN interface.</p> <ul style="list-style-type: none"> <li>If there are redundant paths, STP considers port cost when selecting a LAN interface to place that into a forwarding state.</li> </ul> <p>You can assign lower cost values to LAN interfaces that you want STP to maintain in a forwarding state.</p> <ul style="list-style-type: none"> <li>If all LAN interfaces have the same cost value, STP puts the LAN interface with the lowest LAN interface number in the forwarding state and blocks other LAN interfaces.</li> </ul> <p>The possible cost range is 0 through 65535 (the default is media specific).</p> <p>STP uses the port cost value when the LAN interface is configured as an access port and uses VLAN port cost values when the LAN interface is configured as a trunk port.</p>
Priority <sup>*</sup>	Port priority.	<ul style="list-style-type: none"> <li>If there are redundant paths, STP considers port priority when selecting a LAN port to put into the forwarding state.</li> </ul> <p>Priority is taken into account after examining cost and sending bridge ID. That is, if the cost and bridge ID is the same, priority is considered.</p> <ul style="list-style-type: none"> <li>If all LAN ports have the same priority value, STP puts the LAN port with the lowest LAN port number in the forwarding state and blocks other LAN ports.</li> </ul>

Table 10-13 PVST Port Details (continued)

Field <sup>1</sup>	Description	Usage Notes
Designated Bridge	<p>Bridge ID for the designated bridge.</p> <p>The Designated Bridge provides the minimum root path cost on a LAN.</p> <p>Also, it is the only bridge allowed to forward frames to and from the LAN for which it is the designated bridge.</p>	This field is not configurable.
Designated Port	ID of the port that connects a LAN to the designated bridge.	This field is not configurable.
PortFast*	<p>State of the PortFast Interface Configuration feature:</p> <p>Enable or Disable.</p>	<p>Select a value from the drop-down list.</p> <p>When enabled, PortFast causes a switch or trunk port interface to enter the Spanning Tree forwarding state immediately, bypassing the listening and learning states.</p>
Loop Guard*	<p>State of the Loop Guard feature:</p> <p>Enable or Disable.</p>	<p>Select a value from the drop-down list.</p> <p>When enabled, Loop Guard works on non-designated ports and does not allow the port to become designated via max_age expiry.</p>
BPDU Guard*	<p>State of the BPDU guard feature:</p> <p>Enabled, Disabled or Default.</p>	<p>Select a value from the drop-down list.</p> <p>When enabled, BPDU Guard feature prevents loops by moving a nontrunking port into an errdisable state when a BPDU is received on that port.</p> <p>When the BPDU Guard feature is enabled on the switch, Spanning Tree shuts down PortFast-configured interfaces that receive BPDUs, instead of putting them into the Spanning Tree blocking state.</p>

Table 10-13 PVST Port Details (continued)

Field <sup>1</sup>	Description	Usage Notes
BPDU Filter*	State of the BPDU filter feature: Enabled, Disabled or Default.	Select a value from the drop-down list.  When enabled, BPDU filtering allows you to avoid transmitting BPDUs on a port, usually connected to an end system.  When you enable PortFast on the switch, Spanning Tree places ports in the forwarding state immediately, instead of going through the listening, learning, and forwarding states.
Root Guard*	State of the Root Guard feature: Enable or Disable.	Select a value from the drop-down list.  When enabled, Root Guard does not allow the port to become non-designated.

1. Fields marked with asterisk are editable.

- To edit values of fields marked with an asterisk:
  - Select rows, and uncheck **Read-only**.  
The selected rows are highlighted in the Edit Here section.
- To change the value of a field, do either of the following:
  - Double click the current value, and enter a new value  
or
  - Select a value from the drop-down list.  
The new values are displayed, highlighted in pink.

**Step 7** Click **Configure** to make changes to the devices.

Or

Click **Reset** to return to the previous values without making any changes.

## Reporting and Configuring MST Port

To configure MST port on a switch cloud:

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- Step 1** From the Summary View, select **Reports > Spanning Tree Configuration**.  
The Spanning Tree Configuration page appears.
- Step 2** Select the Port tab.  
The Spanning Tree Port Configuration page appears.
- Step 3** Select **MST** from the Spanning Tree Type drop-down list.
- Step 4** From the Spanning Tree Instance field, click **Select**.  
The Select Instance dialog box appears.
- Step 5** Enter the required information as described in the [Table 10-14](#).

**Table 10-14** *Selecting Spanning Tree Instances in Switch Clouds*

Field	Description	Usage Notes
Select instance by region	Select desired criteria: <ul style="list-style-type: none"> <li>All Regions</li> <li>Region Name</li> </ul>	To view the valid values for the region field, click the drop-down arrow.
What	Enter the desired string	Use this field to narrow the number of matches by entering part or all of the region name.
Matches	Lists instances that match the specified criteria	Select the desired STP instance from the list of matches.

- To view the devices in the VLAN Region, click **Select**.  
The devices running the selected MST instance appear in a table. [Table 10-15](#) lists the fields in the table, their description, and usage notes for editable fields.

**Table 10-15**     *MST Port Details*

Field <sup>1</sup>	Description	Usage Notes
Device Name	Name of the device	This field is not configurable.
IP Address	IP address of the device	This field is not configurable.
Port	Port number used for bridge forwarding	This field is not configurable.
isLink	Displays a check mark if the port is a link port	This field is not configurable.
LinkType	<p>Link type of the port. The possible link types are:</p> <ul style="list-style-type: none"> <li>• Point-to-point link</li> <li>• Shared medium</li> </ul> <p>By default, the switch derives the link type of a port from the duplex mode.</p> <p>A full-duplex port is considered as a point-to-point link while a half-duplex configuration is assumed to be on a shared link.</p>	This field is not configurable.

Table 10-15 MST Port Details (continued)

Field <sup>1</sup>	Description	Usage Notes
Cost <sup>*</sup>	Port cost value	<p>The STP port path cost default value is derived from the media speed of a LAN interface.</p> <ul style="list-style-type: none"> <li>If a loop occurs, STP considers port cost when selecting a LAN interface to place that into the forwarding state.</li> </ul> <p>You can assign lower cost values to LAN interfaces that you want STP to select first and higher cost values to LAN interfaces that you want STP to select last.</p> <ul style="list-style-type: none"> <li>If all LAN interfaces have the same cost value, STP puts the LAN interface with the lowest LAN interface number in the forwarding state and blocks other LAN interfaces.</li> </ul> <p>The possible cost range is 0 through 65535 (the default is media specific).</p> <p>STP uses the port cost value when the LAN interface is configured as an access port and uses VLAN port cost values when the LAN interface is configured as a trunk port.</p>

Table 10-15 MST Port Details (continued)

Field <sup>1</sup>	Description	Usage Notes
Priority <sup>*</sup>	Port priority	<ul style="list-style-type: none"> <li>• If a loop occurs, STP considers port priority when selecting a LAN port to put into the forwarding state.</li> </ul> <p>You can assign higher priority values to LAN ports that you want STP to select first and lower priority values to LAN ports that you want STP to select last.</p> <ul style="list-style-type: none"> <li>• If all LAN ports have the same priority value, STP puts the LAN port with the lowest LAN port number in the forwarding state and blocks other LAN ports.</li> </ul>
State	State of the port. The possible states are: <ul style="list-style-type: none"> <li>• Blocking</li> <li>• Forwarding</li> <li>• Disabled</li> </ul>	This field is not configurable.
Role	Port state. The possible states are: <ul style="list-style-type: none"> <li>• Root</li> <li>• Designated</li> <li>• Alternate</li> <li>• Backup</li> <li>• Disabled</li> </ul> <p>MST assigns port roles as follows:</p> <ul style="list-style-type: none"> <li>• Root port or designated port role includes the port in the active topology.</li> <li>• Alternate port or backup port role excludes the port from the active topology.</li> </ul>	This field is not configurable.

**Table 10-15** *MST Port Details (continued)*

Field <sup>1</sup>	Description	Usage Notes
Designated Bridge	<p>Bridge ID for the designated bridge.</p> <p>The Designated Bridge provides the minimum root path cost on a LAN.</p> <p>Also, it is the only bridge allowed to forward frames to and from the LAN for which it is the designated bridge.</p>	This field is not configurable.
Designated Port	ID of the port that connects a LAN to the designated bridge	This field is not configurable.
PortFast*	<p>State of the PortFast Interface Configuration feature:</p> <p>Enabled or Disabled</p>	<p>Select a value from the drop-down list.</p> <p>When enabled, PortFast causes a switch or trunk port interface to enter the Spanning Tree forwarding state immediately, bypassing the listening and learning states.</p>
Loop Guard*	<p>State of the Loop Guard feature:</p> <p>Enable or Disable.</p>	<p>Select a value from the drop-down list.</p> <p>When enabled, Loop Guard works on non-designated ports and does not allow the port to become designated via max_age expiry.</p>
BPDU Guard*	<p>State of the BPDU Guard feature:</p> <p>Enabled, Disabled or Default.</p>	<p>Select a value from the drop-down list.</p> <p>When enabled, BPDU Guard feature prevents loops by moving a nontrunking port into an enable state when a BPDU is received on that port.</p> <p>When the BPDU Guard feature is enabled on the switch, Spanning Tree shuts down PortFast-configured interfaces that receive BPDUs, instead of putting them into the Spanning Tree blocking state.</p>

Table 10-15 MST Port Details (continued)

Field <sup>1</sup>	Description	Usage Notes
BPDU Filter*	State of the BPDU filter feature: Enabled, Disabled or Default.	Select a value from the drop-down list.  When enabled, BPDU filtering allows you to avoid transmitting BPDUs on a port, usually connected to an end system.  When you enable PortFast on the switch, Spanning Tree places ports in the forwarding state immediately, instead of going through the listening, learning, and forwarding states.
Root Guard*	State of the Root Guard feature: Enabled or Disabled.	Select a value from the drop-down list.  When enabled, Root Guard does not allow the port to become non-designated.

1. Fields marked with asterisk are editable.

- To edit values of fields marked with an asterisk, select rows, and uncheck **Read-only**.

The selected rows are highlighted in the Edit Here section.

- To change the value of a field, do either of the following:
  - Double click the current value, and enter a new value,
  - or
  - Select a value from the drop-down list.

The new values appear, highlighted in pink.

**Step 6** Click **Configure** to make changes to the devices.

Or

Click **Reset** to return to the previous values without making any changes.

## Reporting and Configuring MISTP Port

To configure MISTP port on a switch cloud:

- 
- Step 1** From the Summary View, select **Reports > Spanning Tree Configuration**.  
The Spanning Tree Configuration page appears.
- Step 2** Select the Port tab.  
The Spanning Tree Port Configuration page appears.
- Step 3** Select **MISTP** from the Spanning Tree Type drop-down list.
- Step 4** From the Spanning Tree Instance field, click **Select**.  
The Select Instance dialog box appears.
- Step 5** Enter the required information as described in the [Table 10-16](#).

**Table 10-16** *Selecting Spanning Tree Instances in Switch Clouds*

Field	Description	Usage Notes
Select device by instance	Select desired criteria: <ul style="list-style-type: none"> <li>All Instances</li> <li>Instance Name</li> </ul>	To view the valid values for the instance field, click the drop-down arrow.
What	Enter the desired string	Use this field to narrow the number of matches by entering part or all of the instance name.
Matches	Lists instances that match the specified criteria.	Select the desired instance from the list of matches.

- To view the devices in the VLAN Instance, click **Select**.  
The devices running the selected MIST instance appear in a table.  
[Table 10-17](#) lists the fields in the table, their description, and usage notes for editable fields.

Table 10-17 *MISTP Port Details*

Field <sup>1</sup>	Description	Usage Notes
Device Name	Name of the device	This field is not configurable.
IP Address	IP address of the device	This field is not configurable.
Port	Port number used for bridge forwarding	This field is not configurable.
isLink	Displays a check mark if the port is a link port	This field is not configurable.
State	State of the port. The possible states are: <ul style="list-style-type: none"> <li>• Blocking</li> <li>• Forwarding</li> <li>• Disabled</li> </ul>	This field is not configurable.
Cost <sup>*</sup>	Port cost value	<p>The STP port path cost default value is derived from the media speed of a LAN interface.</p> <ul style="list-style-type: none"> <li>• If a loop occurs, STP considers port cost when selecting a LAN interface to place that into the forwarding state.</li> </ul> <p>You can assign lower cost values to LAN interfaces that you want STP to select first and higher cost values to LAN interfaces that you want STP to select last.</p> <ul style="list-style-type: none"> <li>• If all LAN interfaces have the same cost value, STP puts the LAN interface with the lowest LAN interface number in the forwarding state and blocks other LAN interfaces. The possible cost range is 0 through 65535 (the default is media specific).</li> </ul> <p>STP uses the port cost value when the LAN interface is configured as an access port and uses VLAN port cost values when the LAN interface is configured as a trunk port.</p>

Table 10-17 MISTP Port Details (continued)

Field <sup>1</sup>	Description	Usage Notes
Priority <sup>*</sup>	Port priority	<ul style="list-style-type: none"> <li>If a loop occurs, STP considers port priority when selecting a LAN port to put into the forwarding state.</li> </ul> <p>You can assign higher priority values to LAN ports that you want STP to select first and lower priority values to LAN ports that you want STP to select last.</p> <ul style="list-style-type: none"> <li>If all LAN ports have the same priority value, STP puts the LAN port with the lowest LAN port number in the forwarding state and blocks other LAN ports.</li> </ul>
Designated Bridge	<p>Bridge ID for the designated bridge.</p> <p>The Designated Bridge provides the minimum root path cost on a LAN.</p> <p>Also, it is the only bridge allowed to forward frames to and from the LAN for which it is the designated bridge.</p>	This field is not configurable.
Designated Port	ID of the port that connects a LAN to the designated bridge.	This field is not configurable.
PortFast <sup>*</sup>	<p>State of the PortFast Interface Configuration feature:</p> <p>Enabled or Disabled.</p>	<p>Select a value from the drop-down list.</p> <p>When enabled, PortFast causes a switch or trunk port interface to enter the Spanning Tree forwarding state immediately, bypassing the listening and learning states.</p>
Loop Guard <sup>*</sup>	<p>State of the Loop Guard feature:</p> <p>Enable or Disable.</p>	<p>Select a value from the drop-down list.</p> <p>When enabled, Loop Guard works on non-designated ports and does not allow the port to become designated via max_age expiry.</p>

Table 10-17 MISTP Port Details (continued)

Field <sup>1</sup>	Description	Usage Notes
BPDU Guard*	State of the BPDU Guard feature: Enabled, Disabled or Default.	Select a value from the drop-down list.  When enabled, BPDU Guard feature prevents loops by moving a nontrunking port into an errdisable state when a BPDU is received on that port.  When the BPDU Guard feature is enabled on the switch, Spanning Tree shuts down PortFast-configured interfaces that receive BPDUs, instead of putting them into the Spanning Tree blocking state.
BPDU Filter*	State of the BPDU Filter feature: Enabled, Disabled or Default.	Select a value from the drop-down list.  When enabled, BPDU filtering allows you to avoid transmitting BPDUs on a port, usually connected to an end system.  When you enable PortFast on the switch, Spanning Tree places ports in the forwarding state immediately, instead of going through the listening, learning, and forwarding states.
Root Guard*	State of the Root Guard feature: Enabled or Disabled.	Select a value from the drop-down list.  When enabled, Root Guard does not allow the port to become non-designated.

1. Fields marked with asterisk are editable.

- To edit values of fields marked with an asterisk, select rows, and uncheck **Read-only**.  
The selected rows are highlighted in the Edit Here section.
- To change the value of a field, do either of the following:
  - Double click the current value, and enter a new value,
  - or
  - Select a value from the drop-down list.
 The new values appear, highlighted in pink.

**Step 6** Click **Configure** to make changes to the devices.

Or

Click **Reset** to return to the previous values without making any changes.

---

## Reporting and Configuring PVST Device

To configure PVST device on a switch cloud:

**Step 1** From the Summary View, select **Reports > Spanning Tree Configuration**.

The Spanning Tree Configuration page appears.

**Step 2** Select the Device tab.

The Spanning Tree Device Configuration page appears.

**Step 3** Select **PVST** from the Spanning Tree Type drop-down list.

PVST details appear in text boxes. [Table 10-18](#) lists the displayed fields and descriptions.

**Table 10-18** PVST Details

Field	Description
Root Bridge	IP address of the switch.
Forward Delay	Forward Delay timer. This determines how long each of the listening and learning states last before the port begins forwarding.
HelloTime	Hello timer. This is the number of seconds between STP configuration messages. The HelloTime determines how often the network device broadcasts hello messages to other network devices.
Max Age	Maximum age timer. This determines the amount of time protocol information received on a port is stored by the network device.

**Step 4** From the Spanning Tree Instance field, click **Select**.

The Select Instance dialog box appears.

**Step 5** Enter the required information as described in the [Table 10-19](#).

**Table 10-19** *Selecting Spanning Tree Instances in Switch Clouds*

Field	Description	Usage Notes
Select instance by type	Select desired criteria: <ul style="list-style-type: none"> <li>VLAN Name</li> <li>VLAN ID</li> </ul>	To view the valid values for the VLAN Name or VLAN ID field, click the drop-down arrow.
What	Enter the desired string	Use this field to narrow the number of matches by entering part or all of the VLAN Name or VLAN ID.
Matches	Lists VLANs that match the specified criteria.	Select the desired VLAN from the list of matches.

- To view the devices in the VLAN Instance, click **Select**.

The devices in the VLAN instance appear in a table. [Table 10-20](#) lists the fields in the table, their description, and usage notes for editable fields.

**Table 10-20** *PVST Device Details*

Field <sup>1</sup>	Description	Usage Notes
Device Name	Name of the device.	This field is not configurable.
IP Address	IP address of the device.	This field is not configurable.
Root ID	ID of the bridge assumed to be root. On initialization, each bridge assumes itself as root.	This field is not configurable.
Root Port	ID of the port, which is closest to the root.	This field is not configurable.

Table 10-20 PVST Device Details (continued)

Field <sup>1</sup>	Description	Usage Notes
Cost Mode	<p>Type of Spanning Tree path cost mode configured on the device.</p> <p>Applies to all STP instances running on the device.</p> <p>When you change, the path cost of all ports are reassigned to the default path cost values based on the new Spanning Tree path cost mode and ports' speed. The possible values are:</p> <ul style="list-style-type: none"> <li>• Short—Short cost is specified by 802.1d</li> <li>• Long—Long cost is specified by 802.1t</li> </ul>	This field is not configurable.
Root Cost	Cost of the root.	This field is not configurable.
Extended SysID <sup>*</sup>	<p>State of the extended system ID feature on the switch:</p> <p>Enable, Disabled, or Unknown</p>	Select a value from the drop-down list.
Priority <sup>*</sup>	Port priority.	<ul style="list-style-type: none"> <li>• If a loop occurs, STP considers port priority when selecting a LAN port to put into the forwarding state.</li> </ul> <p>You can assign higher priority values to LAN ports that you want STP to select first and lower priority values to LAN ports that you want STP to select last.</p> <ul style="list-style-type: none"> <li>• If all LAN ports have the same priority value, STP puts the LAN port with the lowest LAN port number in the forwarding state and blocks other LAN ports.</li> </ul>

**Table 10-20** *PVST Device Details (continued)*

Field <sup>1</sup>	Description	Usage Notes
Backbone Fast <sup>*</sup>	State of the BackboneFast feature: Enabled or Disabled.	Select a value from the drop-down list.
Uplink Fast <sup>*</sup>	State of the UplinkFast feature: Enabled or Disabled.	Select a value from the drop-down list. When enabled, UplinkFast feature dramatically decreases the convergence time of the STP in the event of the failure of an uplink on an access switch.
Loop Guard <sup>*</sup>	State of the Loop Guard feature: Enable or Disable.	Select a value from the drop-down list. When enabled, Loop Guard works on non-designated ports and does not allow the port to become designated via max_age expiry.
PortFast Global <sup>*</sup>	State of the PortFast Global Configuration feature: Enabled or Disabled.	Select a value from the drop-down list. When enabled, PortFast causes a switch or trunk port to enter the Spanning Tree forwarding state immediately, bypassing the listening and learning states. If you configure the default on each port, this setting applies to interfaces.

Table 10-20 PVST Device Details (continued)

Field <sup>1</sup>	Description	Usage Notes
BPDU Filter*	State of the BPDU Filter feature: Enabled, Disabled or Default.	Select a value from the drop-down list.  When enabled, BPDU filtering allows you to avoid transmitting BPDUs on a port, usually connected to an end system.  When you enable PortFast on the switch, Spanning Tree places ports in the forwarding state immediately, instead of going through the listening, learning, and forwarding states.
BPDU Guard*	State of the BPDU Guard feature: Enabled, Disabled or Default.	Select a value from the drop-down list.  When enabled, BPDU Guard feature prevents loops by moving a nontrunking port into an errdisable state when a BPDU is received on that port.  When the BPDU guard feature is enabled on the switch, Spanning Tree shuts down PortFast-configured interfaces that receive BPDUs, instead of putting them into the Spanning Tree blocking state.

1. Fields marked with asterisk are editable.

- To edit values of fields marked with an asterisk, select rows, and uncheck **Read-only**.  
The selected rows are highlighted in the Edit Here section.
- To change the value of a field, do either of the following:
  - Double click the current value, and enter a new value,
  - or
  - Select a value from the drop-down list.
 The new values are displayed, highlighted in pink.

**Step 6** Click **Configure** to make changes to the devices.

Or

Click **Reset** to return to the previous values without making any changes.

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## Reporting and Configuring MST Device

To configure MST port on a switch cloud:

**Step 1** From the Summary View, select **Reports > Spanning Tree Configuration**.

The Spanning Tree Configuration page appears.

**Step 2** Select the Device tab.

The Spanning Tree Device Configuration page appears.

**Step 3** Select **MST** from the Spanning Tree Type drop-down list.

MST details appear in text boxes. [Table 10-21](#) lists the displayed fields and descriptions.

**Table 10-21** *MST Details*

Field	Description
Root Bridge	IP address of the switch.
Forward Delay	Forward delay timer. This determines how long each of the listening and learning states last before the port begins forwarding.
HelloTime	Hello timer. This is the number of seconds between STP configuration messages.  The HelloTime determines how often the network device broadcasts hello messages to other network devices.
Max Age	Maximum age timer. This determines the amount of time protocol information received on a port is stored by the network device.

**Step 4** From the Spanning Tree Instance field, click **Select**.

The Select Instance dialog box appears.

**Step 5** Enter the required information as described in [Table 10-22](#).

**Table 10-22** *Selecting Spanning Tree Instances in Switch Clouds*

Field	Description	Usage Notes
Select instance by region	Select desired criteria: <ul style="list-style-type: none"> <li>All Regions</li> <li>Region Name</li> </ul>	To view the valid values for the region field, click the drop-down arrow.
What	Enter the desired string	Use this field to narrow the number of matches by entering part or all of the region name.
Matches	Lists instances that match the specified criteria	Select the desired STP instance from the list of matches.

- To view the devices in the Instance, click **Select**.

The devices in the instance appear in a table. [Table 10-23](#) lists the fields in the table, their description, and usage notes for editable fields.

**Table 10-23** *MST Device Details*

Field <sup>1</sup>	Description	Usage Notes
Device Name	Name of the device.	This field is not configurable.
IP Address	IP address of the device.	This field is not configurable.
Root ID	ID of the bridge assumed to be root. Upon initialization, the bridge assumes that it is root.	This field is not configurable.
Root Port	Port ID of the port, which is closest to the root.	This field is not configurable.

Table 10-23 MST Device Details (continued)

Field <sup>1</sup>	Description	Usage Notes
Cost Mode	<p>Type of Spanning Tree path cost mode configured on the device.</p> <p>Applies to all STP instances running on the device.</p> <p>When you change the value, the path cost of all ports are reassigned to the default path cost values based on the new Spanning Tree path cost mode and ports' speed. The possible values are:</p> <ul style="list-style-type: none"> <li>• Short—Short cost is specified by 802.1d</li> <li>• Long—Long cost is specified by 802.1t</li> </ul>	This field is not configurable.
Root Cost	Cost of the root.	This field is not configurable.
Extended SysID <sup>*</sup>	<p>State of the extended system ID feature on the switch:</p> <p>Enable, Disabled, or Unknown</p>	Select a value from the drop-down list.
Priority <sup>*</sup>	Device priority	<p>The device with the lowest bridge identifier is considered the highest priority bridge and becomes the root bridge. By default, the bridge priority is set to 32768.</p> <p>Use the bridge priority command to set the priority that the bridge Spanning Tree uses to choose the root bridge in the network. The range for bridge priority is 0 to 65535.</p>

**Table 10-23**      *MST Device Details (continued)*

Field <sup>1</sup>	Description	Usage Notes
Region Name <sup>*</sup>	Alphanumeric configuration name assigned to the MST region that the switch is part of.	Enter a new name in the field to change the region name.  For two or more switches to be in the same MST region, they must have the same VLAN-to-instance map, the same configuration revision number, and the same configuration name.
Region Revision <sup>*</sup>	MST configuration revision number (0 to 65535).	Enter a new value in the field to change the revision number.  For two or more switches to be in the same MST region, they must have the same VLAN-to-instance map, the same configuration revision number, and the same configuration name.
Max. Hop Count	Number of hops in an MST region after which a BPDU is discarded, and the information held for a port is aged.  (1 to 40; default is 20).	This field is not configurable.
VLANs	List of VLANs that form part of the MST region.	This field is not configurable.
Loop Guard <sup>*</sup>	State of the Loop Guard feature:  Enable or Disable.	Select a value from the drop-down list.  When enabled, Loop Guard works on non-designated ports and does not allow the port to become designated via max_age expiry.
PortFast Global <sup>*</sup>	State of the PortFast Global Configuration feature:  Enabled or Disabled.	Select a value from the drop-down list.  When enabled, PortFast causes a switch or trunk port to enter the Spanning Tree forwarding state immediately, bypassing the listening and learning states.

Table 10-23 MST Device Details (continued)

Field <sup>1</sup>	Description	Usage Notes
BPDU Filter*	State of the BPDU filter feature: Enabled, Disabled or Default.	Select a value from the drop-down list.  When enabled, BPDU filtering allows you to avoid transmitting BPDUs on a port, usually connected to an end system.  When you enable PortFast on the switch, Spanning Tree places ports in the forwarding state immediately, instead of going through the listening, learning, and forwarding states.
BPDU Guard*	State of the BPDU Guard feature: Enabled, Disabled or Default.	Select a value from the drop-down list.  When enabled, BPDU Guard feature prevents loops by moving a nontrunking port into an errdisable state when a BPDU is received on that port.  When the BPDU Guard feature is enabled on the switch, Spanning Tree shuts down PortFast-configured interfaces that receive BPDUs, instead of putting them into the Spanning Tree blocking state.

1. Fields marked with asterisk are editable.

- To edit values of fields marked with an asterisk, select rows, and uncheck **Read-only**.  
The selected rows are highlighted in the Edit Here section.
- To change the value of a field, do either of the following:
  - Double click the current value, and enter a new value,
 or
  - Select a value from the drop-down list.
 The new values appear, highlighted in pink.

**Step 6** Click **Configure** to make changes to the devices.

Or

Click **Reset** to return to the previous values without making any changes.

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## Reporting and Configuring MISTP Device

To configure MISTP port on a switch cloud:

**Step 1** From the Summary View, select **Reports > Spanning Tree Configuration**.

The Spanning Tree Configuration page appears.

**Step 2** Select the Device tab.

The Spanning Tree Device Configuration page appears.

**Step 3** Select **MISTP** from the Spanning Tree Type drop-down list.

MISTP details appear in text boxes. [Table 10-24](#) lists the displayed fields and descriptions.

**Table 10-24** *MISTP Details*

Field	Description
Root Bridge	IP address of the switch.
Forward Delay	Forward Delay timer. This determines how long each of the listening and learning states last before the port begins forwarding.
HelloTime	Hello timer. This is the number of seconds between STP configuration messages. The HelloTime determines how often the network device broadcasts hello messages to other network devices.
Max Age	Maximum age timer. This determines the amount of time protocol information received on a port is stored by the network device.

**Step 4** From the Spanning Tree Instance field, click **Select**.

The Select Instance dialog box appears.

**Step 5** Enter the required information as described in the [Table 10-25](#).

**Table 10-25** *Selecting Spanning Tree Instances in Switch Clouds*

Field	Description	Usage Notes
Select device by instance	Select desired criteria: <ul style="list-style-type: none"> <li>All Instances</li> <li>Instance Name</li> </ul>	To view the valid values for the instance field, click the drop-down arrow.
What	Enter the desired string	Use this field to narrow the number of matches by entering part or all of the instance name.
Matches	Lists instances that match the specified criteria.	Select the desired instance from the list of matches.

- To view the devices in the MISTP instance, click **Select**.

The devices in the instance appear in a table. [Table 10-26](#) lists the fields in the table, their description, and usage notes for editable fields.

**Table 10-26** *MISTP Device Details*

Field <sup>1</sup>	Description	Usage Notes
Device Name	Name of the device.	This field is not configurable.
IP Address	IP address of the device.	This field is not configurable.
Root ID	ID of the bridge assumed to be root. Upon initialization, the bridge assumes that it is root.	This field is not configurable.
Root Port	Port ID of the port, which is closest to the root.	This field is not configurable.

Table 10-26 MISTP Device Details (continued)

Field <sup>1</sup>	Description	Usage Notes
Cost Mode	<p>Type of Spanning Tree path cost mode configured on the device.</p> <p>Applies to all STP instances running on the device.</p> <p>When you change the value, the path cost of all ports will be reassigned to the default path cost values based on the new Spanning Tree path cost mode and ports' speed. The possible values are:</p> <ul style="list-style-type: none"> <li>• Short—Short cost is specified by 802.1d</li> <li>• Long—Long cost is specified by 802.1t</li> </ul>	This field is not configurable.
Root Cost	Cost of the root.	This field is not configurable.
Extended SysID <sup>*</sup>	<p>State of the extended system ID feature on the switch:</p> <p>Enable, Disabled, or Unknown</p>	Select a value from the drop-down list.
Priority <sup>*</sup>	Port priority.	<ul style="list-style-type: none"> <li>• If a loop occurs, STP considers port priority when selecting a LAN port to put into the forwarding state.</li> </ul> <p>You can assign higher priority values to LAN ports that you want STP to select first and lower priority values to LAN ports that you want STP to select last.</p> <ul style="list-style-type: none"> <li>• If all LAN ports have the same priority value, STP puts the LAN port with the lowest LAN port number in the forwarding state and blocks other LAN ports.</li> </ul>

Table 10-26 MISTP Device Details (continued)

Field <sup>1</sup>	Description	Usage Notes
Backbone Fast*	State of the BackboneFast feature: Enabled or Disabled.	Select a value from the drop-down list.
Uplink Fast*	State of the UplinkFast feature: Enabled or Disabled.	Select a value from the drop-down list. When enabled, UplinkFast feature dramatically decreases the convergence time of the STP in the event of the failure of an uplink on an access switch.
Loop Guard*	State of the Loop Guard feature: Enable or Disable.	Select a value from the drop-down list. When enabled, loop guard works on non-designated ports and does not allow the port to become designated via max_age expiry.
PortFast Global*	State of the PortFast Global Configuration feature: Enabled or Disabled.	Select a value from the drop-down list. When enabled, PortFast causes a switch or trunk port to enter the Spanning Tree forwarding state immediately, bypassing the listening and learning states.
BPDU Filter*	State of the BPDU filter feature: Enabled, Disabled or Default.	Select a value from the drop-down list. When enabled, BPDU filtering allows you to avoid transmitting BPDUs on a port, usually connected to an end system. When you enable PortFast on the switch, Spanning Tree places ports in the forwarding state immediately, instead of going through all states.
BPDU Guard*	State of the BPDU Guard feature: Enabled, Disabled or Default.	Select a value from the drop-down list. When enabled, BPDU Guard feature prevents loops by moving a nontrunking port into an errdisable state when a BPDU is received on that port. When the BPDU Guard feature is enabled on the switch, Spanning Tree shuts down PortFast-configured interfaces that receive BPDUs, instead of putting them into the Spanning Tree blocking state.

1. Fields marked with asterisk are editable.

- To edit values of fields marked with an asterisk, select rows, and uncheck **Read-only**.

The selected rows are highlighted in the Edit Here section.

- To change the value of a field, do either of the following:
  - Double click the current value, and enter a new value,
  - or
  - Select a value from the drop-down list.

The new values appear, highlighted in pink.

**Step 6** Click **Configure** to make changes to the devices.

Or

Click **Reset** to return to the previous values without making any changes.

---



**Note**

Preferred VLANs are available only on Cisco Catalyst switches running Catalyst operating system.

---

## Reporting and Configuring MST Instance

To configure MST instance on a switch cloud:

---

**Step 1** From the Summary View, select **Reports > Spanning Tree Configuration**.

The Spanning Tree Configuration page appears.

**Step 2** Select the Instance tab.

The Spanning Tree Port Instance Configuration page appears.

**Step 3** Select **MST** from the Spanning Tree Type drop-down list.

**Step 4** From the Device field, click **Select**.

The Select Device dialog box appears.

**Step 5** Enter the required information as described in the [Table 10-27](#).

**Table 10-27** *Selecting Devices in Switch Clouds*

Field	Description	Usage Notes
Select device by filter	Select desired criteria: <ul style="list-style-type: none"> <li>Name</li> <li>Device IP</li> <li>SysName</li> </ul>	To view the valid values for the filter field, click the drop-down arrow.
What	Enter the desired string	Use this field to narrow the number of matches by entering part or all of the name, IP address or system name.
Matches	Lists devices that match the specified criteria.	Select the desired device from the list of matches.

- To view the MST instances that are running on the device, click **Select**.  
The instance and VLAN appear in a table. [Table 10-28](#) lists the fields in the table, their description, and usage notes for editable fields.

**Table 10-28** *MST Instance Details*

Field <sup>1</sup>	Description	Usage Notes
Instance	MST instance that the device is part of.	This field is not configurable.
VLANS *	VLANS that are mapped to the instance.	Select a value from the drop-down list.

1. Fields marked with asterisk are editable.

- To edit the instance to VLAN mapping, select the particular instance, and uncheck **Read-only**.

The selected rows are highlighted in the Edit Here section.

- To change the value of a field, do either of the following:
  - Double click the current value, and enter a new value,

Or

- Select a value from the drop-down list.

The new values are displayed, highlighted in pink.

**Step 6** Click **Configure** to make changes to the devices.

Or

Click **Reset** to return to the previous values without making any changes,.

---

## Reporting and Configuring MISTP Instance

To configure MISTP instance on a switch cloud:

---

**Step 1** From the Summary View, select **Reports > Spanning Tree Configuration**.

The Spanning Tree Configuration page appears.

**Step 2** Select the Instance tab.

The Spanning Tree Port Instance Configuration page appears.

**Step 3** Select **MISTP** from the Spanning Tree Type drop-down list.

**Step 4** From the Device field, click **Select**.

The Select Device dialog box appears.

**Step 5** Enter the required information as described in [Table 10-29](#).

**Table 10-29** *Selecting Devices in Switch Clouds*

Field	Description	Usage Notes
Select device by filter	Select desired criteria: <ul style="list-style-type: none"> <li>Name</li> <li>Device IP</li> <li>SysName</li> </ul>	To view the valid values for the filter field, click the drop-down arrow.
What	Enter the desired string	Use this field to narrow the number of matches by entering part or all of the name, IP address or system name.
Matches	Lists devices that match the specified criteria.	Select the desired device from the list of matches.

**Step 6** To view the MST instances that are running on the device, click **Select**.

The instance and VLAN appear in a table. [Table 10-30](#) lists the fields in the table, their description, and usage notes for editable fields.

**Table 10-30** *MISTP Instance Details*

Field <sup>1</sup>	Description	Usage Notes
Instance	MISTP instance that the device is part of.	This field is not configurable.
VLANS <sup>*</sup>	VLANS that the device is part of.	Select a value from the drop-down list.

1. Fields marked with asterisk are editable.

- To edit the instance to VLAN mapping, select the particular instance, and uncheck **Read-only**.

The selected rows are highlighted in the Edit Here section.

- To change the value of a field, do either of the following:
  - Double click the current value, and enter a new value,or
  - Select a value from the drop-down list.

The new values are displayed, highlighted in pink.

**Step 7** Click **Configure** to make changes to the devices.

Or

Click **Reset** to return to the previous values without making any changes.

---

## Reporting and Configuring PVST Trunk

To configure PVST trunk on a switch cloud:

---

**Step 1** From the Summary View, select **Reports > Spanning Tree Configuration**.

The Spanning Tree Configuration page appears.

**Step 2** Select the Trunk tab.

The Spanning Tree Port Trunk Configuration page appears.

**Step 3** Select **PVST** from the Spanning Tree Type drop-down list.

**Step 4** From the Device field, click **Select**.

The Select Device dialog box appears.

**Step 5** Enter the required information as described in the [Table 10-31](#).

**Table 10-31**      *Selecting Devices in Switch Clouds*

Field	Description	Usage Notes
Select device by filter	Select desired criteria: <ul style="list-style-type: none"> <li>• Name</li> <li>• Device IP</li> <li>• SysName</li> </ul>	To view the valid values for the filter field, click the drop-down arrow.
What	Enter the desired string	Use this field to narrow the number of matches by entering part or all of the name, IP address or system name.
Matches	Lists devices that match the specified criteria.	Select the desired device from the list of matches.

The instance and VLAN appear in a table. [Table 10-32](#) lists the fields in the table, their description, and usage notes for editable fields.

**Table 10-32**      *PVST Trunk Details*

Field <sup>1</sup>	Description	Usage Notes
Device Name	Name of the device.	This field is not configurable.
IP Address	IP address of the device.	This field is not configurable.
Port	Trunk port on the device.	This field is not configurable.

Table 10-32 PVST Trunk Details (continued)

Field <sup>1</sup>	Description	Usage Notes
isTrunk	Displays a check mark if the port is a trunk port.	This field is not configurable.
Preferred VLANs *	Preferred VLANs the trunk port is configured for.	<p>Preferred VLANs are VLANs you prefer to keep in forwarding mode on a trunk link. You can do this by setting the port instance cost of these VLANs to be lower than the other VLANs.</p> <p>When port instance cost is lowered these instances are made forwarding on the trunk as against the other.</p> <p>You can load balance VLAN traffic across multiple trunk links.</p> <p>For example, if you want to have some VLANs to use only a particular trunk link, you can lower their STP cost so that they are preferred over that link.</p>

1. Fields marked with asterisk are editable.

- Uncheck **Read-only**, and select the trunk port.  
The selected rows are highlighted in the Edit Here section.
- Select the trunk port, and enter the VLANs that have to be preferred in the Edit Here section.
- To change the value of a field, do either of the following:
  - Double click the current value, and enter a new value,
  - or
  - Select a value from the drop-down list.
 The new values appear, highlighted in pink.

- Step 6** Click **Configure** to make changes to the devices.  
Or  
Click **Reset** to return to the previous values without making any changes.
- 



**Note** Preferred VLANs are available only on Cisco Catalyst switches running Catalyst operating system.

---

## Reporting and Configuring MST Trunk

To configure MST trunk on a switch cloud:

---

- Step 1** From the Summary View, select **Reports > Spanning Tree Configuration**.  
The Spanning Tree Configuration page appears.
- Step 2** Select the **Trunk** tab.  
The Spanning Tree Port Trunk Configuration page appears.
- Step 3** Select **MST** from the Spanning Tree Type drop-down list.
- Step 4** From the Device field, click **Select**.  
The Select Device dialog box appears.
- Step 5** Enter the required information as described in [Table 10-33](#).

**Table 10-33**     *Selecting Devices in Switch Clouds*

Field	Description	Usage Notes
Select device by filter	Select desired criteria: <ul style="list-style-type: none"> <li>• Name</li> <li>• Device IP</li> <li>• SysName</li> </ul>	To view the valid values for the filter field, click the drop-down arrow.
What	Enter the desired string	Use this field to narrow the number of matches by entering part or all of the name, IP address or system name.
Matches	Lists devices that match the specified criteria.	Select the desired device from the list of matches.

The instance and VLAN appear in a table. [Table 10-34](#) lists the fields in the table, their description, and usage notes for editable fields.

**Table 10-34**     *MST Trunk Details*

Field <sup>1</sup>	Description	Usage Notes
Device Name	Name of the device.	This field is not configurable.
IP Address	IP address of the device.	This field is not configurable.
Port	Port number used for bridge forwarding.	This field is not configurable.

Table 10-34 MST Trunk Details (continued)

Field <sup>1</sup>	Description	Usage Notes
isTrunk	Displays a check mark if the port is a trunk port.	This field is not configurable.
Preferred Instance *	Preferred instances the trunk port is configured for.	<p>Preferred VLANs are VLANs you prefer to keep in forwarding mode on a trunk link. You can do this by setting the port instance cost of these VLANs to be lower than the other VLANs.</p> <p>When port instance cost is lowered, these instances are made forwarding on the trunk as against the other.</p> <p>You can load balance VLAN traffic across multiple trunk links.</p> <p>For example, if you want to have some VLANs to use only a particular trunk link, then you can lower their STP cost so that they are preferred over that link.</p>

1. Fields marked with asterisk are editable.

- Uncheck **Read-only**, and select the trunk port.  
The selected rows are highlighted in the Edit Here section.
- Select the trunk port, and enter the VLANs that have to be preferred in the Edit Here section.
- To change the value of a field, do either of the following:
  - Double click the current value, and enter a new value,
  - or
  - Select a value from the drop-down list.
 The new values appear, highlighted in pink.

**Step 6** Click **Configure** to make changes to the devices.

Or

Click **Reset** to return to the previous values without making any changes.

## Reporting and Configuring MISTP Trunk

To configure MISTP trunk on a switch cloud:

- 
- Step 1** From the Summary View, select **Reports > Spanning Tree Configuration**.  
The Spanning Tree Configuration page appears.
- Step 2** Select the Trunk tab.  
The Spanning Tree Port Trunk Configuration page appears.
- Step 3** Select **MST** from the Spanning Tree Type drop-down list.
- Step 4** From the Device field, click **Select**.  
The Select Device dialog box appears.
- Step 5** Enter the required information as described in [Table 10-35](#).

**Table 10-35** *Selecting Devices in Switch Clouds*

Field	Description	Usage Notes
Select device by filter	Select desired criteria: <ul style="list-style-type: none"> <li>Name</li> <li>Device IP</li> <li>SysName</li> </ul>	To view the valid values for the filter field, click the drop-down arrow.
What	Enter the desired string	Use this field to narrow the number of matches by entering part or all of the name, IP address or system name.
Matches	Lists devices that match the specified criteria.	Select the desired device from the list of matches.

The instance and VLAN appear in a table. [Table 10-36](#) lists the fields in the table, their description, and usage notes for editable fields.

Table 10-36 MST Trunk Details

Field <sup>1</sup>	Description	Usage Notes
Device Name	Name of the device.	This field is not configurable.
IP Address	IP address of the device.	This field is not configurable.
Port	Port number used for bridge forwarding.	This field is not configurable.
isTrunk	Displays a check mark if the port is a trunk port.	This field is not configurable.
Preferred Instance *	Preferred instances the trunk port is configured for.	<p>Preferred VLANs are VLANs you prefer to keep in forwarding mode on a trunk link. You can do this by setting the port instance cost of these VLANs to be lower than the other VLANs.</p> <p>When port instance cost is lowered these instances are made forwarding on the trunk as against the other.</p> <p>You can load balance VLAN traffic across multiple trunk links. For example, if you want to have some VLANs to use only a particular trunk link, then you can lower their STP cost so that they are preferred over that link.</p>

1. Fields marked with asterisk are editable.

- Uncheck **Read-only**, and select the trunk port.  
The selected rows are highlighted in the Edit Here section.
- Select the trunk port, and enter the VLANs that have to be preferred in the Edit Here section.
- To change the value of a field, do either of the following:
  - Double click the current value, and enter a new value,
  - or
  - Select a value from the drop-down list.
 The new values appear, highlighted in pink.

**Step 6** Click **Configure** to make changes to the devices.

Or

Click **Reset** to return to the previous values without making any changes.

---

**Note**

Preferred VLANs are available only on Cisco Catalyst switches running Catalyst operating system.

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## Spanning Tree Filters

Topology Map provides two filters for STP enabled devices or links. These filters are available in the topology maps for Switch Clouds under LAN Edge View.

- [STP Inconsistency, page 10-60](#)
- [Spanning Tree, page 10-61](#)

## STP Inconsistency

If your network has incorrect configurations, STP stops functioning and you may lose connectivity. STP Inconsistency detects these incorrect configurations in your network and changes the state to *inconsistent* for corresponding ports, thus preventing the ports from affecting the network.

When you select the filter, Topology View highlights the link and device associated with that specific STP inconsistency.

STP inconsistencies are computed during each data collection. Devices in the switched clouds are polled when the filter is applied.

Topology Map provides four filters under STP Inconsistency:

- Loop ([Viewing STP Loop Inconsistency, page 10-61](#))
- PVID ([Viewing STP PVID Inconsistency, page 10-61](#))
- Root ([Viewing STP Root Inconsistency, page 10-62](#))
- Type ([Viewing STP Type Inconsistency, page 10-62](#))

## Spanning Tree

These filters are based on the Spanning Tree details of devices. When you select the filter, topology map lists the Spanning Tree Instances applicable to all the switches in the selected switch cloud. Topology Map provides three filters under Spanning Tree:

- IEEE 802.1s Instance ([Viewing Spanning Tree per IEEE 802.1s Instance, page 10-63](#))
- Cisco MIST Instance ([Viewing Spanning Tree per Cisco MISTP Instances, page 10-64](#))
- VLAN ([Viewing VLANs in Switch Clouds, page 10-65](#))

### Viewing STP Loop Inconsistency

To view STP loop inconsistencies in switch clouds:

- 
- Step 1** Invoke Switch Cloud Map View from Topology Services.
- Step 2** Select **Topology Filters > STP Inconsistency > Loop**.  
The link and devices with loop inconsistencies appear.
- 

### Viewing STP PVID Inconsistency

To view STP PVID inconsistencies in switch clouds:

- 
- Step 1** Invoke Switch Cloud Map View from Topology Services.
- Step 2** Select **Topology Filters > STP Inconsistency > PVID**.  
The link and devices with PVID inconsistencies appear.
-

## Viewing STP Root Inconsistency

To view STP root inconsistencies in switch clouds:

---

**Step 1** Invoke Switch Cloud Map View from Topology Services.

**Step 2** Select **Topology Filters > STP Inconsistency > Root**.

The link and devices with root inconsistencies are displayed.

---

## Viewing STP Type Inconsistency

To view STP type inconsistencies in switch clouds:

---

**Step 1** Invoke Switch Cloud Map View from Topology Services.

**Step 2** Select **Topology Filters > STP Inconsistency > Type**.

The link and devices with type inconsistencies are displayed.

---

## STP Filters in Switch Cloud View

Spanning Tree Filter is available in Switch Cloud Maps in Topology Services. Spanning Tree information in a switch cloud provides a better picture of the Spanning Tree than displaying Spanning Tree information in the VTP domain map.

Sometimes, the Spanning Tree root might not be part of VTP domain. The availability of STP Filters on Switch Cloud View resolves this problem.

When you select the filter, it displays the list of Spanning Tree Instances that are applicable to all switches in the switch cloud, in a popup dialog box.

The following information is provided for the selected Spanning Tree Instance in the Topology Map:

- Port states (forwarding or blocking) of Switches
- Highlighted Root Bridge.

## Viewing Spanning Tree per IEEE 802.1s Instance

You can specify the IEEE 802.1s instances by searching for the instance number. To do this:

- 
- Step 1** From a Network Topology View, select **Topology Filters > Spanning Tree > IEEE 802.1s Instance**.
- The Select Instance window appears.
- Step 2** Enter the required information as described in [Table 10-37](#).

**Table 10-37** *Selecting IEEE 802.1s Instances in Switch Clouds*

Field	Description	Usage Notes
Select instance by region	Select desired criteria: <ul style="list-style-type: none"> <li>All Regions</li> <li>Region Name</li> </ul>	To view the valid values for the region field, click the drop-down arrow.
What	Enter the desired string	Use this field to narrow the number of matches by entering part or all of the region name.
Matches	Lists instances that match the specified criteria.	Select the desired STP instance from the list of matches.

- Step 3** To view the Spanning Tree details of an IEEE 802.1s Instance in the Network Topology View window, click **Select**.
-

## Viewing Spanning Tree per Cisco MISTP Instances

You can specify the MISTP instances by searching for the instance name.

To do this:

- 
- Step 1** From a network topology view, select **Topology Filters > Spanning Tree > Cisco MISTP Instance**.
- The Select Instance window appears.
- Step 2** Enter the required information as described in [Table 10-38](#).

**Table 10-38** *Selecting Cisco MIST Instances in Switch Clouds*

Field	Description	Usage Notes
Select device by instance	Select desired criteria: <ul style="list-style-type: none"> <li>All Instances</li> <li>Instance Name</li> </ul>	To view the valid values for the instance field, click the drop-down arrow.
What	Enter the desired string	Use this field to narrow the number of matches by entering part or all of the instance name.
Matches	Lists instances that match the specified criteria.	Select the desired instance from the list of matches.

- Step 3** To view the Spanning Tree details of an MISTP Instance in the Network Topology View window, click **Select**.
-

## Viewing VLANs in Switch Clouds

You can specify VLANs by searching for the instance name.

- 
- Step 1** From a Network Topology View, select **Topology Filters > Spanning Tree > VLAN**.
- The Select VLAN window appears.
- Step 2** Enter the required information as described in [Table 10-39](#).

**Table 10-39** *Selecting VLANs in Switch Clouds*

Field	Description	Usage Notes
Select VLAN	Select desired criteria: <ul style="list-style-type: none"> <li>• VLAN Name</li> <li>• VLAN ID</li> </ul>	To view the valid values for the VLAN field, click the drop-down arrow.
What	Enter the desired string	Use this field to narrow the number of matches by entering part or all of the VLAN name or ID.
Matches	Lists the VLANs that match the specified criteria.	Select the desired name or ID from the list of matches.

To view the Spanning Tree details of the VLAN in the Network Topology View window, click **Select**.

---

