Root Bridge Core Layer Switch



Overview

This lesson explains how to configure the spanning-tree root bridge on Cisco IOS using root primary/secondary or priority.

Key Takeaways

The root bridge is typically placed on a Core Layer switch to optimize network stability and minimize spanning-tree path costs. What is a Root Bridge? The Root Bridge is the central switch in a Spanning Tree Protocol (STP) topology that prevents Layer 2 loops by determining which ports forward or block traffic.

It is elected based on the lowest Bridge ID, which combines a configurable priority value and the switch's MAC address. The root bridge does not route all traffic; instead, it serves as a reference point for calculating the shortest path from all other switches, ensuring a loop-free network. Why Place the Root Bridge on the Core Layer?

In hierarchical network designs, the Core Layer acts as the central backbone connecting distribution and access layers. Placing the root bridge on a core switch provides several advantages: Shortest Path for Most Traffic: Since most inter-VLAN or inter-switch traffic traverses the core, having the root bridge there minimizes the number of hops and reduces latency. Simplified Redundancy Management: Core switches are typically more robust and have redundant links, making them ideal candidates for primary and secondary root bridges in case of failures.



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Consistent ST

P Topology: Centralizing the root bridge in the core ensures predictable port roles (root ports, designated ports) across the network.

VLAN Considerations

With Per VLA

N Spanning Tree (PVST), each VLAN can have its own root bridge. While the core is often the best choice, in some cases, placing a root bridge closer to high-traffic devices (e.g., on a distribution switch) can optimize performance for specific VLANs. This is particularly useful when traffic is mostly local and does not traverse the core.

Configuration

On Cisco switches, you can configure a root bridge using: Automatic primary root: spanning-tree vlan X root primaryManual priority setting: spanning-tree vlan X priority Lower priority values increase the likelihood of a switch becoming the root bridge.

Key Points

Traffic does not have to pass through the root bridge; it only serves as a reference for STP path calculations. Changing the root bridge can temporarily block ports while STP recalculates the loop-free topology, which may impact network performance for a short period. Dual root bridges (primary and secondary) are recommended for redundancy, typically both located in the core layer.

In summary, placing the root bridge on a Core Layer switch ensures optimal path selection, network stability, and easier management of redundant links, while PVST allows flexibility for VLAN-specific optimization.

Article Content

Spanning Tree Root Bridge Configuration

This lesson explains how to configure the spanning-tree root bridge on Cisco IOS using root primary/secondary or priority.

What is a Root Bridge?

The Root Bridge is central to the Spanning Tree Protocol (STP), preventing Layer 2 network loops. It serves as the main switch in an STP topology, with other switches calculating the

Enhance STP with Root Guard

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This document describes the Spanning Tree Protocol (STP) root guard feature that enhance switched network reliability and manageability.

STP Root Bridge Election Explained: Priority, MAC

The Root Bridge is the central reference point in an STP topology. All switches calculate the shortest path to this root bridge to determine their port

Configure STP Root Bridge on Cisco Catalyst Switches

Learn how to configure the root bridge on Cisco switches using priority commands. Includes design guidance and common configuration mistakes.

STP Topology Tuning > Advanced STP Tuning | Cisco Press

In this sample chapter from CCNP and CCIE Enterprise Core ENCOR 350-401 Official Cert Guide, you will review techniques for configuring a switch to be guaranteed as the root bridge or as a backup

5.2.5 Packet Tracer

In this activity, the switches are “out of the box” without any configuration. You will manipulate the root bridge election so that the core switches are chosen before the distribution or

How to Configure Cisco Switch as Root Bridge | Easy!

In this article, we will examine how to configure the Root Bridge between three Cisco Switches using Cisco Packet Tracer.

Determining the RSTP/STP Root Bridge on an MS

In order to identify which MS switch is the Root Bridge, navigate to Switch > Monitor > Switches and select the desired switch. In the switch status area, take note of

Best way to set root bridge

Hello, A few questions regarding setting the root bridge... What is the Cisco recommended way to set the root bridge for several vlans? In our

STP root bridge and Layer 2 Switch

Hi Everyone, I have quick question about STP Root bridge The device is not Cisco device Sw1 is layer 2 switch with data vlan 10 Sw2 is layer 2 switch with multiple vlans Sw3 is Core Layer 3

Spanning Tree Root Bridge Election on Cisco Switches

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The Root Bridge Election Since Spanning Tree selects paths pointing towards and away from the Root Bridge for forwarding traffic along, the Root Bridge acts as a center point of the LAN. Best practice is

Need help -

Hi Experts, Today i have checked root bridge of a network topology of our client''s. It is showing root bridge as an access layer switch. That topology is like below access --> Distribution -->

What Role Does the Root Bridge Play? How Does STP Ensure

Network administrators should never leave Root Bridge election to chance. By manually configuring a switch with a lower priority value, you can force it to become the Root Bridge, ensuring

What is a Core Switch | Functions and Difference over Normal Switch

What is a core switch and how it works? This article builds the basics of this kind of switch for the ones who don''t know anything about it. What is a Core Switch? It is a powerful

How to Configure Root Bridge on Cisco Switch | GNS3 Guide!

Conclusion How to Configure a Layer 2 Switch on the Network as a Root Bridge on GNS3 In a computer network, the Root Bridge for Cisco Switch is vital for sending data. Thus, it figures out

How STP Works? | Learn How to Select a Root Bridge!

Learn how STP (Spanning Tree Protocol) works on switches. Discover how the STP protocol selects Root, Designated, and Blocked ports!

Spanning Tree Priority: Root Primary and Root Secondary

STP Root Primary and Root Secondary Configuration Based on the diagram above, we need to manually configure the core switch as the root bridge as they have higher bandwidth and better

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