

How to reduce the need to partition VLANs on core switches



Overview

VLAN segmentation, executed through managed switches, divides a physical network into multiple logical networks.

Key Takeaways

You can reduce VLAN partitioning on core switches by using VLAN pruning, Multiple Spanning Tree (MST) instances, Private VLANs (PVLANS), VRFs, and ACL-based traffic control.

VLAN Pruning
VLAN pruning allows you to restrict VLAN traffic to only the switches that need it, reducing unnecessary broadcast traffic and improving network efficiency. By configuring trunk ports to carry only required VLANs, you prevent all VLAN traffic from traversing every link, which reduces congestion and simplifies management. This is particularly effective in large networks where many VLANs exist but not all are needed on every switch .

Multiple Spanning Tree (MST) Instances

MST enables you to group multiple VLANs into a single spanning tree instance, reducing the number of spanning tree calculations and improving convergence times. For example, VLANs 5-10 can be assigned to one MST instance, which decreases the complexity of the network topology and reduces the need for separate VLANs on the core switch .

Private VLANs (PVLANS)

PVLANs allow you to isolate hosts within the same VLAN while still providing access to shared resources like a router or firewall. This reduces the need to create multiple VLANs for security purposes, as compromised hosts can be restricted from communicating with other hosts while still accessing necessary services .

Virtual Routing and Forwarding (VRFs)

VRFs create separate Layer 3 routing domains on the same physical switch, similar to how VLANs segment Layer 2 traffic. By using VRFs, you can maintain logical separation without creating numerous VLANs, and ACLs can be applied between VRFs to control inter-domain traffic .

ACL-Based Traffic Control

Instead of creating multiple VLANs for security, you can apply ACLs on SVIs or VRFs to control which hosts or subnets can communicate. This approach allows you to maintain fewer VLANs while still enforcing strict access policies, reducing the overhead of managing many VLANs .

Best Practices

- Limit VLANs on trunks: Only allow VLANs that are required on each trunk link.
- Use VTP pruning: Ensure VLAN information is only propagated to switches that need it.
- Combine methods: Use MST, PVLANs, and ACLs together to reduce VLAN count while maintaining security and performance.
- Evaluate network design: Sometimes a topology change or hardware upgrade can reduce the need for excessive VLAN segmentation . By implementing these strategies, you can simplify core switch configuration, reduce broadcast traffic, and maintain security without relying on a large number of VLANs.

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Virtual LAN (VLAN)

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Step-by-Step Guide to Configuring VLANs for Network

The step-by-step instructions for creating VLANs and assigning ports are clear, making it

Solved: Too many VLANs in the switch

I works with others switches and all have configured vtp mode transparent so I have to create one vlan in each of

Options for Vlan segmentation

I have been given the task of "segmenting" the vlans and controlling what can talk to what between the vlans. My core

Solved: Configure Core Switch | Experts Exchange

To recap You have a Switch 1 that is acting as a Core Switch and Distribution Switch
You have 4 Switches 2 - 5 that

What Is VLAN in IT and Networking?

At its core, a VLAN setup is a logical, software-based segmentation of a physical network. Unlike traditional LANs,

Can someone explain conceptually how VLAN's are supposed to be

If they are on separate vlans how are they supposed to be able to talk to each other? Obviously the clients need to be able to access

VLAN How To: Segmenting a small LAN

Not at all. VLANs are relatively simple, yet they offer a wide variety of options and capabilities to improve your network. VLAN, or

how to configure vlan on cisco core switch

Please help me 100K sub / @tankirivann Hi everyone, in this video we are going to

How to divide VLAN? 6 ways to divide VLAN.

How to divide VLAN 1. Port-based divide VLAN This is the most commonly used VLAN division method, and it is also

How to configure two Core switches in a network with inter-vlan routing ...

Dear All, Hi Friends, I have two 3750 switches. I configured inter-vlan routing between three vlans which are

VLAN Configuration and Why You Don't Need It

That's where VLANs (Virtual LANs) come in, enabling you to segment traffic logically without requiring separate physical

move vlans off firewall to core switch

10.10.40.0/24 → 10.10.10.254 The firewall only knows how to talk to the switch on the directly connected 10.10.10.x network, which is

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What is VLAN (Virtual Local Area Network)?

What is VLAN? Discover how Virtual LANs segment networks, boost security, and improve performance—plus how to implement

best practices

I just don't have enough knowledge or experience to convince myself one way or the other. My network consists of a core layer and

VLAN Basics: What VLANs Are, Why They Exist, and How to Use

To apply VLANs across multiple switches (or to a router), you need to understand VLAN tagging explained and the

Step-by-Step Guide to Implementing VLANs with Network Hardware

A successful VLAN implementation starts with a detailed assessment of network requirements, ensuring each VLAN

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