Interconnection between core switches and routers



Overview

This can be achieved by using a router or a Layer 3 switch, which acts as a gateway between VLANs, allowing traffic to pass between them.

Key Takeaways

Core switches and routers are interconnected using a combination of Layer 2 trunks and Layer 3 routed links to ensure high-speed, redundant, and efficient network traffic flow.

Core Concepts

Core switches operate primarily at Layer 2 but often include Layer 3 capabilities, enabling them to handle inter-VLAN routing and high-speed switching within the network backbone. Routers operate at Layer 3, directing traffic between different networks and managing IP-based routing decisions. The interconnection between these devices is critical for maintaining network performance, redundancy, and scalability.

Typical Interconnection Strategies

Layer 3 Routed Links Between Core Switches Core switches are often connected using Layer 3 point-to-point links with unique VLAN interfaces (SVIs) and IP addresses. This approach reduces broadcast traffic and avoids spanning tree protocol (STP) issues while allowing efficient routing between cores. Each link can be dedicated to a specific VLAN for routing purposes, ensuring isolation and simplified troubleshooting.

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Layer 2 Trunk Connections In addition to Layer 3 links, Layer 2 trunks are used between core switches to carry multiple VLANs, enabling communication for access VLANs and providing a path for VLAN traffic that requires Layer 2 adjacency. Rapid-PVST or MSTP can be implemented to manage STP and prevent loops, with primary and secondary root bridges defined for stability. Redundant Connections to Routers Each core switch should connect to WAN or edge routers using separate Layer 3 links.

This ensures high availability and allows routing protocols like OSPF or BGP to dynamically select optimal paths.

HSRP or VRR

P can be deployed to provide a virtual gateway IP for hosts, aligning with the spanning tree topology to optimize traffic flow.

VLAN and I

P Planning Assigning dedicated VLANs for point-to-point links between cores and routers simplifies routing and reduces the risk of broadcast storms. Inter-VLAN routing can be handled either on the core switches (if Layer 3 capable) or on dedicated routers, depending on network design and performance requirements.

Best Practices

Use Layer 3 links for core-to-core connections to minimize STP complexity and improve convergence times. Maintain redundant paths to routers and between core switches for fault tolerance. Implement routing protocols (OSPF, EIGRP, or BGP) to dynamically manage traffic and failover.

Align HSRP/VRRP configurations with the Layer 2 topology to ensure optimal gateway availability. Monitor and segment traffic using VLANs to maintain security and performance.

Summary

The interconnection between core switches and routers combines Layer 3 routed links for backbone routing and Layer 2 trunks for VLAN traffic, supported by redundancy and high-availability protocols. This design ensures efficient data flow, minimizes broadcast issues, and provides a scalable and resilient network infrastructure suitable for enterprise environments.

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Article Content

Interconnections: Bridges, Routers, Switches, and ...

This can be achieved by using a router or a Layer 3 switch, which acts as a gateway between VLANs, allowing traffic to pass between them.

What is optimal way to connect two core switch/routers

All edge switches and WAN routers are connected to both core 4507s. We have a Port-Group of two wires connecting the core switches together, and we built a VLAN interface (with an IP

Switches, Routers and Networks

How do all of these network types and requirements fit together? A packet switch consists of a routing engine (table look-up), a switch scheduler, and a switch fabric. The routing engine looks-up the

Network Devices as Real Infrastructure: Hubs, Repeaters, Bridges ...

This post is a practical, engineering-minded walkthrough of the most common network devices you''ll encounter: hub, repeater, bridge, switch, router, and gateway.

Access vs. Distribution vs. Core Switch Comparison Guide

Distribution Layer Switches: Positioned between the access and core layers, distribution switches aggregate traffic from multiple access switches. They are typically Layer 3 devices responsible for

Network Devices

It is a networking device combining bridge and router functions, operating at both the Data Link and Network layers of the OSI model. It can route known protocols (like TCP/IP).

L3 or L2 Link between Core Switches

You can keep a routed interconnection between your core routers to carry the core-to-core traffic, and at the same time, you can have the VLAN and SVIs created for your cluster.

Configuring Interconnection Interfaces and Routes for the Core Switch ...

In this example, Internet access traffic of users passes through the BRAS, and then reaches the egress network of the firewall through the core switch. Traffic passing through the BRAS is classified into

Is a core switch the same as a router?

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A core switch receives the data packets, defines their route, and passes them through routing protocols like this Enhanced Interior Gateway Routing Protocol (EIGRP).

Networking''s Fantastic Four: Understanding Hubs, Switches, Bridges,

The partnership between switches and routers is the foundation of every modern network. While hubs and bridges are now historical footnotes, understanding the roles of switches and routers

Router in Computer Networks

Switching Fabric: The core of the router connecting input ports to output ports. Can be implemented via: Memory switching: CPU copies packets to output ports. Bus switching: Single bus

Data Center Power Crisis 2026: The Grid Bottleneck

The primary bottleneck has decisively shifted from securing IT hardware (like servers and routers) to securing fundamental access to power. Structural

Hub vs. Switch: What''s the Difference?

You can connect an Ethernet switch directly to your router by plugging it into the router''s Ethernet port. Explore the differences between hubs and switches, including the features of each,

NoC_SoC-Interconnection_Structures-1.pdf

The document discusses network-on-chip (NoC) architectures and their significance in system-on-chip (SoC) design, emphasizing the limitations of traditional bus-based systems and the advantages of

Switches, Routers and Networks

An interconnection network is strictly non-blocking if requests for routes are always granted under the rule of arbitrary route selection, wide-sense non-blocking if there exists an algorithm for route

Router & Switch Layers: Enterprise Network Components | BizTech

Data Center Core Switch/Router Devices Depending on the size of the building, number of users and amount of traffic sent offsite, some network managers may build their data center network with a

Dynamic Routing Approach between Core-Switch and WAN-Routers

Hi, I''ve a design or let''s say an implementation question regarding the attached approach! Two routers (one acting as primary and the other as backup only) are connected to core

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L3 or L2 Link between Core Switches

Routing between the core switches will then be through this L2 interconnection and through the SVIs. What is even possible, and what I would recommend, is to actually use a

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

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