

Core switch connects to Layer 3



AI Overview

A core switch operates at Layer 3 to route traffic between subnets and VLANs, connecting distribution switches to form the high-speed backbone of a network. Role of a Core Switch in Layer 3 Networking A core switch is a high-capacity, high-performance device positioned at the top of a hierarchical network, forming the backbone that interconnects distribution switches and aggregates traffic from multiple access layers. Unlike access switches, which primarily operate at Layer 2 to connect end-user devices, core switches perform Layer 3 routing, examining IP addresses and using routing tables to forward packets between different subnets or VLANs. This allows seamless communication across the network while maintaining ultra-low latency and high throughput.

Connection to Distribution and Access Layers

In a typical three-tier network model:

- Access Layer:** Connects end devices like PCs, printers, and wireless access points, mainly operating at Layer 2.
- Distribution Layer:** Aggregates traffic from access switches, enforces policies such as Quality of Service (QoS) and Access Control Lists (ACLs), and performs inter-VLAN routing.
- Core Layer:** The core switch connects distribution switches, providing high-speed, reliable transport of aggregated traffic across the network. It focuses on fast packet forwarding rather than complex policy enforcement to avoid bottlenecks. The core switch uses hardware-accelerated routing via ASICs to handle large volumes of traffic efficiently, enabling wire-speed routing between VLANs and subnets. Redundancy mechanisms like VRRP or HSRP ensure high availability, allowing a secondary core switch to take over instantly if the primary fails.

Key Considerations

- High Throughput:** Core switches support high-speed uplinks, often ranging from 10G to 400G Ethernet, to handle aggregated traffic.
- Minimal Policy Enforcement:** To maintain low latency, core switches offload complex routing policies and ACLs to distribution switches.
- Scalability and Reliability:** Core switches are designed for modular expansion, hot-s...

Article Content

Should I add a layer 3 core switch or just use the router I have

My plan is to leave the existing switches as distribution layer switches and have them all connect to one layer 3 core switch, each with 10GB fiber, and then have that core switch connected to the router for

Core, Distribution, and Access Layer Explained with Examples ...

The access layer: Where users meet the network The access layer is where end-user devices connect to the network. This includes workstations, phones, printers, wireless access points,

layer 3 connection between core and distribution switch

Hello everyone, Could someone please guide me on how to set up a layer 3 connection between a distribution layer and core layer switch? The way I understand is that in order to set up a

Access vs. Distribution vs. Core Switch Comparison Guide

Core Layer Switches: As the high-speed backbone, core switches connect distribution layer switches and handle massive traffic volumes with ultra-low latency and maximum reliability. They are

Two-tier and three-tier switch architectures

Core-layer switches make up the top layer or core of the network. The aggregation or distribution switches are the intermediary layer between the core and access layers. The lowest tier is the

What Is Core Switch?

A Layer 2 core switch operates primarily at the data link layer and forwards traffic based on MAC addresses. A Layer 3 core switch operates at the network layer and can perform routing

What Is a Core Switch? Network Backbone Architecture Guide

To achieve backbone speeds, a core switch must operate at Layer 3 of the OSI model, bridging the gap between traditional MAC-based switching and IP-based routing.

What Is a Core Switch in a Network?

Core switches are optimized for high-speed routing and forwarding, operating at Layer 3 of the network model. They feature high-speed uplinks but have a lower port density because they

Layer 2 or 3 between core and distribution? : r/networking

Currently we have distribution switches on each floor that connect to access switches and have dual uplinks to core switches. Distribution switches are all L2, and we route between VLANs using SVIs

Build Your Skills: The three-layer hierarchical model

The most important consideration at the Core layer is speed, because devices at the Core layer must perform switching between the switch blocks at very high speeds.

L3 or L2 Link between Core Switches

We could connect one firewall to each CORE switch via an access port, configuring VRRP between the two firewalls so they can talk across that L2 link. We would route directly to the VIP

Which Layer Is the Core Switch Really In? 2026 L2 vs L3 Practical Guide

A core switch is a high-capacity switch that integrates with the other switches and acts as a backbone of the network. Usually, complex network systems at the offices and data centers utilize

Adding a Core Switch with Layer 3

Yes, a layer 3 switch is much better at routing vlan traffic vs a firewall. Yes, you'll need to add routes to your local subnets on the firewall. On the core switch you can use a single static route

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LAN Topologies

Layer 3 services for wired network hosts are moved from the core to VSX pairs of aggregation switches. A pair of core switches joins the aggregation switches together using high

What is the Cisco Three-Layered Hierarchical Model?

LikeLikedUnlike Reply abirdflying 13 years ago The access layer is the point that connects end users to the network as hub, switch.---->portfast The distribution layer provides routing, packet filtering, WAN

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What is a Core Switch?

Layer 3 switching in a core switch refers to its ability to perform routing functions at the network layer (Layer 3) of the OSI model. This means the switch can examine the IP addresses of

L3 or L2 Link between Core Switches

Those new distribution switches will have L3 redundant connections to the CORE switches running EIGRP so this will provide us high availability and load balancing.

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://umele-pestovani.eu>

Email: info@umele-pestovani.eu

Phone: +49 152 287 6349

Address: Neue Mainzer Straße 66-68, 60311 Frankfurt am Main, Germany

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