

Article Overview

A Layer 2 core switch is a high-capacity switch operating at the data link layer (Layer 2) that serves as the backbone of a network, forwarding traffic based on MAC addresses while connecting distribution and access layers.

Definition and Functionality

A Layer 2 switch operates at the Data Link layer (Layer 2) of the OSI model, using MAC addresses to forward Ethernet frames between devices on the same network segment. It maintains a MAC address table to map devices to specific ports, enabling efficient frame delivery and minimizing collisions within LANs. Layer 2 switches can also support VLANs, allowing logical segmentation of the network without changing the physical layout. When a Layer 2 switch is deployed as a core switch, it functions as the central backbone of a hierarchical network. It connects multiple distribution layer switches and ensures high-speed, low-latency forwarding of large volumes of traffic across the network. Unlike access switches, which connect end devices, the core switch primarily handles inter-switch traffic and ensures that data flows efficiently to the lower layers.

Role in Network Architecture

In a typical three-tier network model:

- o Core Layer: The Layer 2 core switch acts as the backbone, aggregating traffic from distribution switches and forwarding it to other parts of the network. It is optimized for high throughput and reliability.
- o Distribution Layer: Layer 2 switches at this layer collect traffic from access switches, perform selective forwarding, and reduce congestion before sending data to the core.
- o Access Layer: Connects end devices like computers, IP phones, and cameras, often using Layer 3 switches for routing between VLANs.

Key Features

- o MAC-based forwarding: Directs frames using the MAC address table.
- o VLAN support: Enables logical segmentation of the network.
- o High capacity: Designed to handle large volumes of traffic without bottlenecks.
- o Low latency: Operates near wire speed, ensuring minimal delay in frame forwarding.
- o Scalability: Can integrate with multiple distribution switches to support network growth.

When to Use a Layer 2 Core Switch

Core Switch Layer 2

Layer 2 core switches are suitable for networks where:

- o The network primarily requires high-speed LAN switching without complex routing.
- o VLAN segmentation is needed, but inter-VLAN routing is handled elsewhere (e.g., by Layer 3 distribution switches).
- o The network backbone must aggregate traffic from multiple distribution switches efficiently.
- o Low-latency, high-throughput performance is critical for data centers or campus networks . In summary, a Layer 2 core switch combines the high-capacity backbone role of a core switch with the MAC-based forwarding and VLAN capabilities of a Layer 2 switch, making it ideal for large-scale LAN environments where routing is minimal or handled at higher layers.

A core switch is the backbone of a large-scale network, designed to handle massive volumes of traffic with ultra-low latency and

Small business implementations: Collapsed core Small to medium businesses don't need the same scale, but they can

This article focuses on the hierarchical internetworking and core switch vs access switch differences. We also

9-Tbps/chassis switching capacity DNA Center, SD-Access, E-LLW This is the next generation of modular Gigabit and Multigigabit

We are planning to introduce distribution switches to migrate the L2 boundary to those switches instead of the CORE

A core switch is a high-capacity, high-performance Layer 3 switch positioned at the physical backbone of an

In this layer, the layer 2 switches are installed to distribute the data packets to the addressed group of access devices. The layer 2

Because all links between the core and distribution switches are routed Layer 3 transit links,

Managed vs. Unmanaged Switches: Which Belong Where? Before comparing layers, it's crucial to understand the

Massive, high-capacity core switches often deliberately offload complex policy routing,

Distribution Layer Switches: Positioned between the access and core layers, distribution switches aggregate traffic from multiple

Core Switch Layer 2

Datacenter core layer. The followings must be considered whether to implement a core layer of the datacenter.
Regulatory discipline

Learn how to choose the right network switches for your enterprise. Explore Layer 2 and

Configure Two-Tier core switches as a VSX pair for Layer 2 aggregation of the data center

This is done via a high-speed communication forwarding route and as a result, the core layer switch application has

To enable traffic, you must establish a core switch in the physical core layer. The core switch plays the leading role

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