

How to select and configure the core switch in the data center



Overview

How to Choose Core Switches for Data Center Learn how to choose core switches for data center networks based on throughput, latency, Wired Core | Validated.

Key Takeaways

Configuring a core switch in a data center involves setting up Layer 3 routing, redundancy, VLANs, inter-switch links, and management connectivity to ensure high availability and scalability. Core Switch Placement and Architecture

The core switch serves as the high-speed fabric connecting aggregation modules and providing a gateway to external networks such as WAN, Internet, or campus core . It is recommended to place core switches centrally in the rack layout to meet cable distance requirements and simplify connectivity to access and aggregation layers . In large data centers, a pair of core switches is typically deployed for redundancy, often using MLAG or VSX to appear as a single logical switch .

Layer 3 Routing and VLAN Configuration

All links connecting the core are usually Layer 3 interfaces, often 10 GigE or higher, to support high throughput . Steps include:

- Create VLANs for different segments of the data center.
- Assign IP addresses to VLAN interfaces for routing.

- Distribute VLANs to aggregation and access switches.
 - Configure routing protocols (OSPF, BGP, or static routes) between core, aggregation, and upstream networks .
- Redundancy and High Availability

To ensure continuous operation:

- Use HSRP, VRRP, or MLAG for active-active or active-standby configurations .
- Connect core switches with inter-switch links (ISL), ideally using diverse line cards or ports to prevent single points of failure .
- Dual-homing aggregation and access switches to both core switches ensures gateway redundancy .

Port Assignments and Connectivity

- Assign uplink ports from core to aggregation switches starting from port 1, maintaining consistent port numbering across switches for easier management .
- Reserve the last ports for inter-core links to maintain redundancy.
- Ensure distance limitations are observed for the chosen media (fiber or copper) between switches .

Management Network

- Deploy a dedicated out-of-band (OOB) management LAN for automation, orchestration, and monitoring .
- Connect core switches to the management network using their OOB management ports.
- Plan an IP subnet large enough to accommodate all switch and host management interfaces.

Best Practices

- Document all connections and port assignments.
- Use consistent VLAN and IP addressing schemes.
- Test redundancy protocols and failover scenarios before production deployment.
- Consider future scalability, including additional aggregation modules or higher port density . By following these steps, a core switch can be configured to provide high-speed, resilient, and scalable connectivity for a modern data center.

Article Content

Enterprise Campus Network Core Switch Selection FAQ: Expert

Selecting the right core switch for an enterprise campus network requires balancing throughput, high availability, optical

Core Switch Configuration Guide

This document outlines the configuration steps for a core switch in a server room, including connecting via serial cable, assigning

How to plan for a campus core switch refresh: Basic requirements

Growing traffic demands are putting more pressure on campus core Ethernet switches. Here in the first part of this

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