Campus Network Core Switch Configuration



Overview

Configuring the Core Switch In this scenario, IP addresses of the interfaces connecting the core switch to the BRASs and firewalls and OSPF need to be conf.

Key Takeaways

A campus network core switch should be configured with VLANs, interconnection interfaces, routing protocols like OSPF, DHCP services, and redundancy to ensure scalable, secure, and resilient network operations.

Core Switch Role and Design

The core switch serves as the backbone of the campus network, interconnecting aggregation and access layers, and providing connectivity to WAN or egress routers. It must support high throughput, low latency, and redundancy to maintain continuous network availability. Core switches often operate at Layer 3, enabling routing between VLANs and supporting dynamic routing protocols like OSPF for failover and inter-building connectivity.

Interface and VLAN Configuration

Interconnection with Aggregation and Firewalls: Create VLANs for each interconnection segment and assign interfaces to these VLANs.

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Use VLANI

F interfaces bound to VPN instances if network isolation is required. Access Layer Connectivity: Configure trunk interfaces to connect to aggregation or access switches, and access interfaces for end devices. Hybrid interfaces can support either type.

Department Segmentation: Assign VLANs to different departments or groups (e.g., VLAN 10 for Department A, VLAN 20 for Department B) to isolate traffic at Layer 2.

Routing and DHCP

Static and Dynamic Routing: Configure default routes pointing to the egress router and enable OSPF for dynamic routing between buildings or redundant paths.

DHC

P Services: Deploy DHCP on the core switch to allocate IP addresses to end devices.

Enable DHC

P snooping and IP Source Guard (IPSG) on access switches to prevent unauthorized IP usage. Default Gateway: Assign the VLANIF IP address as the default gateway for devices in each VLAN.

Redundancy and High Availability

Stacking: Use stackable switches or QSFP+ stacking ports to create a resilient core stack, ensuring failover if a switch fails. Link Aggregation: Implement EtherChannel or LACP for inter-switch links to increase bandwidth and provide redundancy.

OSP

F Failover: Enable OSPF to allow automatic rerouting in case of link or device failure.

Security and Management

Access Control: Apply ACLs to restrict traffic between VLANs or to the WAN. Monitoring: Use SNMP, logging, and dashboards to monitor switch health and traffic patterns. Firmware and Configuration Management: Ensure switches are updated with the latest firmware and configuration backups are maintained.

Summary

A well-configured campus core switch integrates VLAN segmentation, routing, DHCP, redundancy, and security to provide a resilient and scalable network. Following best practices from vendors like Cisco and Huawei ensures that the network can handle high-density traffic, support future growth, and maintain continuous availability for users.

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Article Content

Configuring the Core Switch

In this scenario, IP addresses of the interfaces connecting the core switch to the BRASs and firewalls and OSPF need to be configured on the core switch, so as to implement connectivity

AhmS3cOps/Campus-Network-Configuration-Lab

This project covers the full setup of a campus network in Cisco Packet Tracer: VLANs, trunking, spanning-tree optimization, redundancy with HSRP, routing with EIGRP, DHCP services, NAT/PAT

Solutions

Introduction Designing a LAN for the campus use case is not a one-design-fits-all proposition. The scale of campus LAN can be as simple as a single switch and wireless AP at a

Hybrid Campus LAN Design Guide (CVD)

Designing a LAN for the campus use case is not a one-design-fits-all proposition. The scale of campus LAN can be as simple as a single switch and wireless AP at a small remote site or a large,

LAN Topologies

A foundation for establishing a network overlay can be built within the two-tier topology by configuring OSPF peering between each access and core switch and adding a loopback interface to

Campus Fabric Configuration | Mist | Juniper Networks

Use the information in this chapter to learn more about campus fabric, migrate to a campus fabric, and configure multihoming, core-distribution, and IP Clos.

Large Campus Switching Best Practices

This guide provides information and guidance to help the network administrator deploy the Meraki Switch (MS) line in a Campus environment.

Routing & Switching Design | Validated Solution Guide

For campus switches, HPE Aruba Networking recommends either a two-tier LAN with collapsed core or a three-tier LAN with a routed core. In both designs, common features can be

The 9 Best Enterprise Network Switches for 2026

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The network infrastructure is undergoing unprecedented changes. The explosion of AI/ML workloads, the popularity of Wi-Fi 7, and the deepening of edge computing all put forward

Enterprise SONiC 400GbE QSFP-DD Core Switch

32x 400GbE QSFP-DD core layer switch on Marvell Falcon — 3.2 Tbps capacity, Enterprise SONiC, VXLAN/EVPN, BGP, optional PTP.

Campus Switches RG-S6150-24VS8CQ-X 24-Port 25GE All-Optical

RG-S6150-24VS8CQ-X 24-Port 25GE All-Optical Layer 3 Managed Core & Aggregation Switch, 100G Uplink Core or aggregation switch for small and medium-sized networks, supporting the smooth

secure-campus-network/README.md at main

Configuration Files The repository includes readable text exports for the core network devices, so the setup can still be reviewed without opening Packet Tracer.

Cisco C9610 Series Smart Switches Data Sheet

Simplified campus automation is designed to optimize the discovery and configuration of devices in your network with a more streamlined, simple, and easy-to-use automation tool. With

Cisco C9350 Series Smart Switches Data Sheet

Series highlights Cisco C9350 Series Smart Switches are stackable, fixed access switches for campus networks. They provide secure connectivity, scale to support high-density

PLANET Technology 2025–2026 Switch Lineup: Six Models for Every Network ...

PLANET Technology continues to expand its managed switching portfolio with solutions that span the full spectrum of modern network requirements — from compact multi-gigabit PoE++

Cisco vs HP Aruba vs Juniper vs Arista — Which

In-depth comparison of Cisco, HP Aruba, Juniper, and Arista network switches across hardware, NOS, automation, licensing cost, TAC support, and total cost

Networking Products and Solutions

How do I configure and manage Cisco networking devices? Use technical documents and Cisco Validated design guides to get step-by-step information

Network Switches | Huawei Enterprise

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Data Center Switches CloudEngine data center switches — Ethernet switches widely used in diverse applications and in different network sizes, in both data centers and high-end campus networks —

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

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