

Article Overview

A campus network access layer switch connects end devices to the network, providing Layer 2 services, PoE support, and uplinks to distribution or core layers.

Role of Access Layer Switches

Access layer switches are the first point of connectivity for end devices such as computers, IP phones, wireless access points, and cameras within a campus LAN . They operate primarily at Layer 2, handling traffic within VLANs, and may provide Layer 3 capabilities like inter-VLAN routing in some models . These switches aggregate traffic from endpoints and forward it to the distribution layer, which then connects to the core layer for high-speed backbone transport .

Key Features to Consider

When selecting an access layer switch, several factors are critical:

- o Port Density and Speed: Ensure sufficient ports for current and future devices, with support for 1G, 10G, or multi-gigabit speeds depending on traffic demands .
- o Power over Ethernet (PoE): Required for devices like IP phones, cameras, and wireless access points .
- o Uplink Options: Redundant uplinks to distribution switches improve fault tolerance and bandwidth .
- o Scalability: Ability to stack switches or expand port capacity to accommodate growth .
- o Security and Management: Support for 802.1X authentication, VLAN segmentation, and network monitoring simplifies administration and enhances security .
- o Redundancy and Reliability: Features like MC-LAG, VSX, or stacking provide high availability and minimize downtime .

Deployment Considerations

Access switches are typically deployed in wiring closets across campus buildings. In a two-tier or three-tier hierarchical network, access switches connect to distribution switches, which aggregate traffic and provide routing, policy enforcement, and fault isolation . For small campuses, a collapsed core design may combine distribution and core functions, while larger campuses benefit from dedicated core switches to handle high-speed inter-building traffic .

Vendor Solutions

- o Cisco Catalyst and Meraki: Offer integrated security, AI-driven management, and support for wired and wireless convergence . Popular models include Catalyst 9200 for cost-effective access, Catalyst 9300 for



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high-scale or multi-gigabit deployments, and Catalyst 9400 for modular access or distribution .

o HPE Aruba CX: Supports VSX redundancy, MC-LAG, and VSF stacking for simplified growth and high availability .

Summary

A campus access layer switch is essential for connecting endpoints efficiently, providing PoE, ensuring security, and enabling scalable growth. Proper selection involves evaluating port requirements, uplink capacity, redundancy, and vendor-specific features to ensure seamless integration with distribution and core layers, supporting a reliable and high-performance campus network .

StackWise Virtual technology combines two Catalyst 9000 Series switches into a single logical network entity from the network

An access layer switch that fails will still result in hosts without connectivity. You can get around this by using stacked

The campus hierarchy uses three logical layers; Core, distribution, and access. Each layer has a special purpose to fulfil, so it's

The campus LAN should be designed for scalability, performance and To aid in a best practice design process, the network topology

This tutorial provides an overview of the access, distribution, and core layers and explains

This chapter describes the Layer 2 and Layer 3 technologies used to design and build a

Learn how to choose Cisco campus switches by layer, site size, PoE, uplinks, redundancy,

This design guide provides an overview of the requirements driving the evolution of campus network designs, followed

Emerging technologies that do VLAN assignment by name (IBNS, NAC, et c.) require a unique VLAN database per access layer

Based on the diagram illustrated above, it is important to understand and remember that the layers in the hierarchical model are

In most designs, the aggregation layer of the LAN limits cable distance to access devices, isolates the network

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core

VTP transparent should be used; there is a trade off between administrative overhead and the temptation to span existing VLANS

Cisco Catalyst and Cisco Meraki campus LAN access switches combine wired and wireless to help you

Use HPE Aruba Networking CX switches that support VSX redundancy with sufficient ports

The primary function of the distribution layer is to aggregate access layer switches in a given

Guide to building a Campus LAN with 2-Tier and 3-Tier architectures, focusing on Access to Distribution layer

Web: <https://www.in-au.co.za>

