

Layer 3 Access Switches



AI Overview

A Layer 3 access switch combines traditional Layer 2 switching with basic routing capabilities, enabling inter-VLAN routing and IP-based forwarding directly at the access layer.

Overview A Layer 3 (L3) access switch operates at both the data link layer (Layer 2) and the network layer (Layer 3) of the OSI model. Unlike a standard Layer 2 switch, which only forwards traffic within the same VLAN, an L3 access switch can route traffic between different VLANs or subnets without relying solely on distribution-layer devices, reducing network congestion and improving performance. These switches are typically deployed at the access layer of enterprise networks, connecting end devices such as PCs, IP phones, wireless access points, and IoT devices to the network.

Key Functions

- Inter-VLAN Routing:** Enables communication between multiple VLANs directly at the access layer, reducing the load on aggregation or distribution switches.
- IP-Based Forwarding:** Supports static routing and dynamic routing protocols like OSPF or RIP for efficient traffic management.
- Security and Policy Enforcement:** Implements ACLs, QoS, and port security to control traffic and protect the network.
- High Port Density and PoE Support:** Provides multiple Gigabit or 10GbE ports, often with Power over Ethernet (PoE) to power devices like IP phones and cameras.
- Scalability and Redundancy:** Many L3 access switches support stacking technologies or frameworks like H3C's IRF or HPE Aruba VSF, allowing multiple switches to operate as a single logical unit for easier management and high availability.

Advantages Over Layer 2 Switches

- Reduced Aggregation Layer Load:** By handling inter-VLAN routing at the access layer, L3 switches reduce the traffic burden on distribution switches.
- Enhanced Network Performance:** Routing at the access layer minimizes latency for local inter-VLAN traffic.
- Improved Policy Control:** Security and QoS policies can be applied closer to end devices, enhancing network management and compliance.
- Future-Proofing:** Supports IPv6, IoT, and cloud applications, making...

Article Content

Understanding Layer 3 Switches: A Comprehensive Guide

Layer 3 switches operate by combining the functionality of Layer 2 switching and Layer 3 routing. They can perform both MAC address-based switching within the same subnet and IP

Using Layer 3 at the access layer

If you have no requirement to present the same VLAN across desperate access layer switches and you have the licensing level required to run I3 at the access layer then it's the preferred option as it

What Is a Layer 3 Switch? Definition, How It Works,

What is a Layer 3 switch? Learn the definition, how it works, use cases, pros and cons, and when to choose a multilayer switch for enterprise LANs.

H3C S5120V3-LI Layer 3 Gigabit Access Switch Series

H3C S5120V3-LI switch series supports packet filtering at Layer 2 through Layer 4 and traffic classification. It provides a flexible queue-scheduling algorithm and

What Is a Layer 3 Switch? Features, Benefits, and Use

Learn what a Layer 3 switch is, how it works, and why it's a common solution for enterprise networks needing speed, scalability, and efficient routing.

Remote Adoption (Layer 3)

Layer 3 adoption is the process of adopting a UniFi device to a remote or cloud-hosted UniFi Network Application. This is only recommended for advanced

Sophos Switches | Control Device Access at the LAN Edge

Sophos Switches. 8, 24, and 48 port network access layer switches put you in control of secure device access for branch offices, retail and SMBs.

Network Segmentation

Network Segmentation in an Organization Example: In an organization with separate networks for Sales and Finance, users from one network cannot

Ethernet Switching for AI and the Cloud | NVIDIA

Introduction NVIDIA Spectrum Ethernet Switches NVIDIA Spectrum™ Ethernet switches accelerate networking for all layers of software and hardware. Fully

Routers and L3 Switches | NetworkAcademy.IO

Learn how routers and Layer 3 switches connect networks, route IP packets, and enable fast inter-VLAN communication in modern network designs.

Fixed Port L3 Managed Ethernet Switches

These fully managed, stackable Layer 3 switches deliver enterprise-grade features without the complexity or high cost. With CW 2150 series, you get seamless

Enterprise-Multi-Branch-Network-OSPF/README.md at main

Designed and implemented a multi-branch enterprise network using Cisco Packet Tracer with VLANs, Router-on-a-Stick, DHCP, OSPF, Layer 3 Core Switching, and Wireless Access Points.

L2 vs L3 Switch: How to Choose for Your Access Layer

This article breaks down the differences between L2 and L3 switches in the access layer, analyzes key decision factors like network scale and complexity, and finally provides a practical

Virtual LAN (VLAN)

A Virtual LAN (VLAN) is a logical grouping of devices within a network that allows them to communicate as if they are on the same local network, even

A Guide to Simple Two-Tier, Three-Tier, and Spine-Leaf

1. Simple Two-Tier Architecture: Simple and Budget-Friendly Imagine a small office where employees use computers, printers, and phones. They all connect to a

Access, Distribution, and Core Layers Explained

Switches in this layer are called access switches. End devices connect to the LAN through the access switches. In other words, an access

Data Link Layer in OSI Model

Media Access Control (MAC): MAC sublayer manages the device's interaction, responsible for addressing frames, and also controls physical media

Layer 3 Switches Explained: Architecture, Routing Logic, Use Cases,

Layer 3 Switches Explained: Architecture, Routing Logic, Use Cases, and Network Design Guide Technical guide to Layer 3 switches, covering L2 switching, IP routing, ASIC

Network Devices

Layer 2 Devices: Data Link Layer These devices work with MAC Addresses (Physical Addresses). They are smarter than hubs. 4. Switch A switch

Cisco Catalyst 3560 Series Switches

Find software and support documentation to design, install and upgrade, configure, and troubleshoot Cisco Catalyst 3560 Series Switches.

Network Switches

Cisco network switches deliver performance, flexibility, and security. Cisco switches are scalable and cost-efficient and meet the demands of hybrid work.

Data Center Design: Basic 3 Layers, Core, Aggregation, and Access

Key Features of 3 layers design of Data Center: Data center network is divided into 3 standard three-layer structure. The layering is mainly based on the principle of internal and external

OmniSwitch 6860 Layer 3 Multi-gigabit Switch

High-density, unified access Layer 3 switch with smart analytics to empower your next-generation enterprise networks using multi-gigabit switching technology.

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