

Article Overview

Multiple Layer 3 switches can be interconnected to provide inter-VLAN routing, redundancy, and high-performance network access without relying solely on a core router.

Layer 3 Switch Overview

Layer 3 switches combine switching and routing capabilities, allowing them to forward traffic within VLANs (Layer 2) and between VLANs (Layer 3) using SVIs (Switched Virtual Interfaces) and routing tables . Unlike traditional Layer 2 switches, L3 switches can read IP headers and make routing decisions at line rate, reducing the need for traffic to traverse a separate router for inter-VLAN communication .

Connecting Multiple L3 Switches

When deploying multiple L3 switches in a network:

- o SVI Configuration: Each VLAN on a switch should have its own SVI with a unique IP address, which acts as the default gateway for devices in that VLAN . For example, VLAN 2 could use 10.10.2.1 and VLAN 3 could use 10.10.3.1.
- o Routing Between Switches: To allow VLANs on different switches to communicate without going through a single core switch, configure static routes or dynamic routing protocols (like OSPF or EIGRP) on each L3 switch to reach other VLAN subnets .
- o Default Gateway: Devices in each VLAN point to the SVI IP of their local switch as the default gateway. The default route on each switch points to the upstream router or core switch for external traffic .

Redundancy and High Availability

To avoid single points of failure:

- o Two-Tier Collapsed Core: Use two L3 switches at the distribution layer, each connected to access switches. This ensures that if one L3 switch fails, VLANs can still communicate through the other switch .
- o Inter-Switch Links: Connect L3 switches with redundant links and enable routing protocols to dynamically adjust paths if a switch or link fails .
- o SVI Redundancy: Consider HSRP, VRRP, or GLBP for gateway redundancy, allowing devices to maintain connectivity even if one switch goes offline.

Network Architecture Considerations

- o Access Layer: L3 switches can be deployed at the access layer to provide local inter-VLAN routing,

Multi-network access Layer 3 switch

reducing traffic to the core .

- o Distribution/Core Layer: In larger networks, L3 switches at the distribution or core layer handle aggregation and high-speed routing between multiple access switches .
- o Two-Tier vs Three-Tier: Small to medium networks may use a collapsed two-tier design with dual L3 switches for reliability, while large enterprises often implement a three-tier architecture with dedicated access, distribution, and core layers for scalability and fault tolerance .

Best Practices

- o Minimize unnecessary VLANs to reduce routing overhead .
- o Use link aggregation (LACP) for inter-switch connections to increase bandwidth and redundancy .
- o Ensure consistent IP addressing and subnetting across switches to simplify routing.
- o Monitor switch performance and routing tables to prevent bottlenecks and ensure optimal traffic flow. By following these guidelines, multiple Layer 3 switches can provide efficient inter-VLAN routing, redundancy, and scalable network performance without relying solely on a central router.

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

A layer 3 switch offers multiple options to efficiently manage bandwidth within VLANs, accordingly enhancing network

Switches in this layer are called access switches. End devices connect to the LAN through

Layer 2 vs Layer 3 switch explained. Learn MAC vs IP forwarding, inter-VLAN routing,

Whether deployed as standalone switches, stacks, or fabric-based networks, ICX delivers flexible scalability and long-term

This page contains information about Layer-Three Switching and Forwarding technology.

Layer 3 Switching - Routing Between VLANs on Modern Multilayer Switches In today's high-performance networks, speed,

To configure your Cisco router for MLS, perform the tasks described in the following sections. The first section contains a required

This guide provides a comparison of Layer 3 network switches: Lite, Basic, Dynamic, and Advanced, to help you

Multi-network access Layer 3 switch

A Layer 3 switch -- also referred to as a multilayer switch -- combines the duties of a switch and a router. It acts as a

Layer 3 switches are advanced networking devices that combine the functions of both traditional switches and routers,

In simple words, a Layer 3 Switch is a networking device that can perform switching (functions of layer 2) as well as

In the complex world of networking, various devices and technologies work together to ensure efficient and reliable

A Layer 3 switch (multilayer switch) combines Layer 2 Ethernet switching with Layer 3 IP

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

An access layer of a hierarchy network features multiple subnets to which the access switches are directly connected. The

Web: <https://bssoda.pl>

