What is the optical module of a Layer 3 switch

Article Overview

A Layer 3 optical module switch is a high-performance network switch that supports L3 routing and high-speed fiber connectivity through SFP/SFP+/QSFP28 ports, suitable for enterprise and data center networks.

Overview

Layer 3 optical switches combine high-speed optical interfaces with routing capabilities, enabling efficient traffic management across large networks. They are designed for aggregation, access, and core layers in enterprise, campus, and data center environments. These switches support 10G, 25G, 40G, and 100G optical modules, allowing flexible deployment with SFP, SFP+, QSFP28, DAC, or AOC connections .

Key Features

o High-Density Optical Ports: Models like the SODOLA 24-port switch offer 24 x 10G SFP+ and 2 x 100G QSFP28 ports, with 100G ports supporting splitting into 4 x 25G interfaces . Hikvision DS-3E7800 series supports up to 48 x 10G SFP+ optical ports .
o Layer 3 Routing: Supports IPv4/IPv6 routing, static and dynamic routing protocols, policy-based routing, and Multi-VRF for network segmentation .
o Management and Security: Includes CLI, SSH, Telnet, SNMPv1/v2C/v3, and web-based management. Advanced security features include ACLs, MACsec encryption, CPU protection policies, and loop/storm suppression .
o Stacking and Redundancy: Many switches, such as D-Link DXS-3400, support physical and virtual stacking, hot-swappable power supplies and fans, and redundant management for high availability .
o Advanced Network Functions: VLAN, DHCP, multicast, link aggregation, Spanning Tree Protocol, and Data Center Bridging (DCB) for congestion management in data centers .

Applications

o Enterprise Networks: Aggregation and core layer switching with high-speed fiber uplinks.
o Data Centers: High-density 10G/25G/40G/100G connectivity for servers and storage networks.
o Campus Networks: Secure and scalable L3 routing with optical access for multiple buildings.
o High Availability Environments: Redundant stacking and virtualization ensure uninterrupted traffic even during device failures .

Examples of Layer 3 Optical Switches

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o SODOLA SL-SWTG124AS: 24 x 10G SFP+, 2 x 100G QSFP28, wire-speed forwarding, rich L3 features .
o Hikvision DS-3E7803M: Supports 10G/40G optical modules, Multi-VRF, IPv4/IPv6 dual-stack, MACsec encryption .
o Cisco Catalyst 4500-X / MDS 9706: Enterprise-class L3 switching, DNA Center integration, multiprotocol support, NVMe-ready for SANs .
o Ruijie RG-S5310-48SFP4XS-E: 48-port GE optical L3 managed access switch with CPU protection and NFPP for security .
o D-Link DXS-3400 Series: Stackable 24-port 10G fiber switch with hot-swappable components, L3 routing, and Data Center Bridging support . Layer 3 optical module switches are essential for high-performance, scalable, and secure networks, providing both routing intelligence and flexible optical connectivity for modern enterprise and data center infrastructures.

It plugs into network equipment (like switches, routers, or servers) and its primary function is to convert electrical

Cards Cables Pluggable Modules for Interfaces Important Notes About Using Optical Modules Certified for Huawei

This guide explains Layer 2 vs Layer 3,OSI model roles,and how to choose the right optical module collocation for

This makes troubleshooting the network easier compared to Layer 2-only switch troubleshooting. It is less expensive

Layer 2 vs. layer 3 switch: Understanding the differences that impact IT Switch ports are essential components of network

Definition of Layer 3 switch in Network Encyclopedia. What is Layer 3 switch? Layer 3 switch is an Ethernet switch

Layer 3 switches and routers share some common traits, but there is a difference between a Layer 3 switch and a

Explore the ultimate guide to optical modules. Learn types, functions, performance metrics & how to choose the right

What is a Layer 3 switch? Learn the definition, how it works, use cases, pros and cons, and

What is the optical module of a Layer 3 switch

What Is an Optical Module On an optical network, a sender needs to convert electrical signals into optical signals before sending

Network switches are often described as Layer 2 or Layer 3. But what exactly does that mean and what are the

Among their various components, optical modules and optical interfaces are vital for enabling

Features and Benefits The following table lists the different pluggable optic modules and supported platforms, along with the

A Layer 3 switch functions as both a switch and a router. These devices are a perfect solution for VLANs, as they do not have a

*Click on the image to enlarge The Assumption SW-1 is a Layer 3 switch SW-1 has the command SW-1 (config)#ip routing applied on

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

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