Configuration of optical modules for Layer 3 switches



Overview

All Ethernet ports are Layer 2 (switchports) by default. You can change this default behavior using the no switchport command from interface configuration mode.

Key Takeaways

To configure optical modules on a Layer 3 switch, safely install the module, switch the interface to Layer 3 mode, assign IP addresses, and enable routing protocols. Step 1: Safely Install Optical ModulesOptical modules, such as SFPs, are sensitive components that require careful handling. Always wear a grounded ESD wrist strap and work on an ESD-safe mat to prevent electrostatic discharge damage.

Hold the module by its sides or metal cage, avoid touching the optical connector, and gently insert it into the switch port until it clicks into place. Improper insertion can cause intermittent links or port damage, while forcing the module may permanently damage the SFP cage. Ensure the module is compatible with the switch and the intended link type (fiber or copper) before installation.

Step 2: Switch the Interface to Layer 3 ModeBy default, Ethernet interfaces on most switches operate in Layer 2 mode. To enable Layer 3 functionality, you must convert the interface from Layer 2 to Layer 3. On Cisco devices, this is typically done using the no switchport command in interface configuration mode.

On Huawei devices, the undo portswitch command switches the interface to Layer 3 mode. If multiple interfaces need conversion, batch commands like portswitch batch can be used. Ensure any existing Layer 2 service configurations (e.g., trunking) are cleared before switching modes.

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Step 3: Configure IP Address and RoutingOnce the interface is in Layer 3 mode, assign an IP address to enable routing. For example, on Cisco switches:interface GigabitEthernet1/0/1 no switchport ip address 192. 168.

1. 1 255. 255.

255. 0 no shutdown You can also create subinterfaces for VLAN routing using 802. 1Q encapsulation:interface GigabitEthernet1/0/1.

10 encapsulation dot1Q 10 ip address 192. 168. 10.

1 255. 255. 255.

0 Enable routing protocols (e.g., OSPF, EIGRP) as needed to allow the switch to forward packets between subnets. Step 4: Configure Optical Module-Specific ParametersFor advanced optical modules like optical amplifiers or protection switching modules, clear any previous configurations before installing a new module. Configure parameters such as gain, channel frequencies, and port modes according to your network design.

Some modules support gridless channel provisioning or in-line amplifier (ILA) mode, which may require enabling specific ports (e.g., LINE-RX, COM-TX) and disabling others (e.g., LINE-TX, COM-RX) to optimize signal flow. Step 5: Verify and MonitorAfter configuration, verify the interface status and optical link health: On Cisco: show ip interface brief or show interface statusOn Huawei: display interface [interface-type interface-number] or display this interface Check for correct Layer 3 mode, IP assignment, and link activity. Monitor optical power levels and error counters to ensure reliable connectivity.

Summary

Configuring optical modules on a Layer 3 switch involves safe physical installation, switching the interface to Layer 3, assigning IP addresses and routing protocols, and optimizing module-specific parameters. Proper verification and monitoring ensure stable, high-performance optical links suitable for inter-VLAN routing and Layer 3 network operations.

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Article Content

Configuring Layer 3 Interfaces

All Ethernet ports are Layer 2 (switchports) by default. You can change this default behavior using the no switchport command from interface configuration mode. To change multiple ports at one time, you

Troubleshooting Layer 2 vs Layer 3 Switches: Optical Interfaces ...

Layer 3 switches require coded optics that support Digital Diagnostic Monitoring (DDM) for routing protocol health checks, while Layer 2 switches often accept generic ...

Example for Switching an Interface to Layer 3 Mode

To enable SwitchA and SwitchB to communicate with each other and provide high link bandwidth, Layer 3 Eth-Trunk interfaces need to be used between SwitchA and SwitchB.

Cisco Switch Layer2 Layer3 Design and Configuration

One simple and popular switch design scenario will be shown in the following tutorial. This scenario will fit most SMB networks (or even bigger ones) that have a few layer 2 VLANs and consequently a few

Configuring Common Attributes of Optical and Electrical Interfaces ...

This document describes the principles and configurations of interfaces and provides configuration examples.

Installation Guide

For normal operation of the switch, please make sure at least 3 fan modules are working normally at a time. If one fan module is damaged, please replace it as follows:

Layer 3 Switches in Cisco

A layer 3 Switch is a special type of networking device which is able to perform/execute functions of 2 layers of the OSI Model i.e., the Data Link Layer (Layer 2) and the Network Layer

How to configure a Cisco Layer 3 Switch-InterVLAN Routing Without

The above feature means that you can implement Layer 3 functionality in your network without using a regular router. If you don''t have a Layer3 switch available, you can also configure InterVLAN routing

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Basic & Advanced Catalyst Layer 3 Switch Configuration: Creating

Configuration commands covered in this article are applicable to all Cisco Catalyst Layer-3 switches. Cisco''s portfolio of catalyst switches is designed to meet any network requirement (in speed,

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Cisco 10GBASE SFP+ Modules Data Sheet

The Cisco® 10GBASE SFP+ modules (Figure 1) give you a wide variety of 10 Gigabit Ethernet connectivity options for data center, enterprise

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Cisco Switch Layer2 Layer3 Design and Configuration

Layer2 and Layer3 switches are the foundation of any network. After all, any network devices (routers, firewalls, computers, servers etc) have to be connected to a switch. Sooner or later, as a network

Replacing an Optical Module

Configuration requirements for copper modules, high-speed cables, and optical modules differ depending on their models. For details, see "Licensing Requirements and Limitations for Ethernet

The difference between switches and routers and optical module ...

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What is the difference between a switch and a router? This guide explains Layer 2 vs Layer 3,OSI model roles,and how to choose the right optical module collocation for your network.

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