

What are the three layers of a Layer 3 core switch



Article Overview

A Layer 3 core switch combines high-speed switching, routing capabilities, redundancy, and modular hardware to serve as the backbone of enterprise networks.

Core Hardware Components

1. Switching and Routing Engine: Layer 3 core switches integrate both Layer 2 switching and Layer 3 routing functions. They use Application Specific Integrated Circuits (ASICs) to perform hardware-accelerated IP routing, enabling wire-speed forwarding between VLANs and subnets while maintaining low latency . 2. Ports and Interfaces: Core switches provide high-speed ports ranging from 10G to 400G+, supporting Ethernet, fiber, and sometimes specialized interfaces. These ports aggregate traffic from distribution and access switches and allow for link aggregation (LAG) to increase bandwidth and redundancy . 3. Modular Chassis and Stackable Design: Many Layer 3 core switches feature modular chassis or stackable designs, allowing network administrators to scale the switch by adding line cards, uplink modules, or additional chassis as network demands grow . 4. Power Supplies and Cooling: To ensure high availability, core switches include dual hot-swappable power supplies and modular cooling fans, which provide physical redundancy and allow maintenance without downtime .

Software and Logical Components

1. Routing Protocol Support: Layer 3 core switches support dynamic routing protocols...

Article Content

Two-tier and three-tier switch architectures

1) Core switches Core switches represent the heart of the network and are the top layer of a three-tier network. With its high

Understanding the Hierarchical Switch Layers: Access ...

The three-tier switch hierarchy — Access, Distribution, and Core — is not just a technical blueprint, but a strategic

Layer 2 vs Layer 3 switches — Understanding the ...

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

Cisco Tutorial: The Cisco Three-Layered Hierarchical Model

By SemSim Cisco has defined a hierarchical model known as the hierarchical internetworking model. This model simplifies the

Cisco Network: the Cisco 3-Layered Hierarchical Model

Starting with the basics, the Cisco network is traditionally defined as a three-tier hierarchical

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

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

Layer 3 Switches in Cisco

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

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

Understanding the Hierarchical Switch Layers: Access ...

Modern enterprise networks face two conflicting pressures: the need for agility and the demand for stability. The three

Cisco Three-Layer Hierarchical Model | PDF | Network Switch

The Cisco Three-Layered Hierarchical Model defines a network architecture comprising three functional layers - the core, distribution

What are the three layers of the switch hierarchical design model ...

Explanation: The access layer is the lowest layer and it provides network access to users. The distribution layer has

The OSI Model – The 7 Layers of Networking Explained in Plain English

By Chloe Tucker This article explains the Open Systems Interconnection (OSI) model and the 7 layers of networking,

Hierarchical internetworking model

The hierarchical design model divides enterprise networks into three layers: core, distribution, and access. End-stations and servers

Layer 2 vs. Layer 3 Switching: Network Layers Explained | RAD

Learn about the Layer 2 and Layer 3 switching, OSI model, & choosing the right switches to optimize network

Three-Tier Network Architecture Lab: Building Enterprise-Grade

The three-tier (or three-layer) hierarchical model is a Cisco-advocated network design that divides an enterprise LAN

Hierarchical internetworking model

Hierarchical internetworking model The Hierarchical internetworking model is a three-layer model for network design first proposed

What is Layer 3 of the OSI Model: Network Layer?

Read more about the functions and various sub-layers of Layer 3 of the OSI Model: Network Layer as well as exploring other related

Layer 3 switches explained

Layer 3 switches are explained in this tip, including the difference between a switch, a router and a Layer 3 switch.

Layer 2 Switch vs Layer 3 Switch

Learn the key differences between Layer 2 and Layer 3 switches to choose the right one for your network's needs

Access, Distribution, and Core Layers Explained

It contains three layers: core, distribution, and access. The core layer is the backbone of the

Build Your Skills: The three-layer hierarchical model

Explains the three layers critical to network design: Access, Distribution, and Core Anyone involved in networking

Cisco Three Layer / Three-tier Hierarchical Network Model

Distribution layer: The Distribution Layer is located between the access and core layers. The purpose of this layer is to provide

What is a Layer 3 Switch?

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

What Is a Core Switch? Network Backbone Architecture Guide

Discover what a core switch does in a 3-tier network model. Learn about ASIC routing, collapsed core vs dedicated

Core Switch vs. Distribution Switch vs. Access Switch

The core layer, distribution layer (layer 2), and access layer (layer 3) are the three layers used to build hierarchy networks for

Three-Layer Hierarchical Model in Cisco

The Distribution Layer: Acts as an intermediary between the Core Layer and the Access

Cisco Three Layer / Three-tier Hierarchical Network Model

Cisco suggests a Three-Tier (Three Layer) hierarchical network model, that consists of three layers: the Core layer, the Distribution

Cisco three-layer hierarchical model

This article describes the Cisco three-layer hierarchical model which includes the Access, Distribution, and Core layers.

The Network Layer: Understanding layer 3 of the OSI Model

When troubleshooting network issues it's helpful to understand if the issue is occurring at Layer 2 or Layer 3 of the OSI

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