

Layer 3 Switch VLAN Aggregation



AI Overview

VLAN aggregation on a Layer 3 switch allows multiple sub-VLANs to share a single Layer 3 gateway through a super-VLAN, optimizing IP address usage and simplifying inter-VLAN routing.

Concept of VLAN Aggregation

VLAN aggregation, also called super-VLAN, is a method to group multiple VLANs (sub-VLANs) under a single logical Layer 3 interface (VLANIF) on a Layer 3 switch. Each sub-VLAN is an independent broadcast domain containing only physical interfaces, while the super-VLAN contains no physical interfaces and serves solely to create a Layer 3 VLANIF interface. Hosts in sub-VLANs use the super-VLAN's IP address as their default gateway to communicate with external networks.

Key Points:

- Sub-VLANs: Isolated broadcast domains; cannot have their own Layer 3 interface; rely on the super-VLAN for routing.
- Super-VLAN: Logical interface for Layer 3 routing; IP address acts as the subnet gateway; VLANIF is active if any associated sub-VLAN interface is up.
- Proxy ARP: Can be used to enable Layer 3 connectivity between sub-VLANs without assigning separate IP addresses to each sub-VLAN.

Benefits of VLAN Aggregation

- IP Address Efficiency: Multiple sub-VLANs share a single subnet and default gateway, reducing wasted IP addresses

Article Content

Mar 04, 2026

What is Switch Aggregation, Its Role and Selection Advice

4. Functional management: Unlike core switches, aggregation switches can be either Layer 2 or Layer 3 switches. When a Layer 2 switch is used as the aggregation switch, routing and

Oct 27, 2025

UDM-SE to Layer 2 Aggregation to Layer 3 ProMax Switch

VLANs are not a layer 3 feature. You can use them just fine in layer 2. Layer 3 is IP based routing. You likely will not need that unless you have a special use case for it - like a LOT of routing between

Aug 20, 2025

Data Center Access Layer Design

The VLANs are configured on the access layer uplink 802.1Q trunks and access layer inter-switch 802.1Q trunks but are not extended between the aggregation layer switches (note the

May 30, 2026

Layer 3 Switch Routing Explained – SVIs, Inter-VLAN, OSPF, EIGRP ...

A Layer 3 switch combines hardware-speed Layer 2 switching with IP routing, allowing it to route packets between VLANs internally without any external router.

Oct 23, 2025

Aggregation Network Switches | Grandstream Networks

These aggregation switches support advanced VLAN for flexible traffic segmentation, advanced QoS for prioritizing network traffic, IGMP/MLD Snooping for optimizing network performance, and

May 29, 2026

Example for Configuring VLAN Aggregation

You can configure VLAN aggregation on the switch to isolate VLAN 2 from VLAN 3 at Layer 2 and allow them to communicate at Layer 3. VLAN 2 and VLAN 3 use the same subnet segment, saving IP

Apr 11, 2026

VLAN Aggregation

Background of VLAN Aggregation VLAN is widely applied to switching networks because of its flexible control of broadcast domains and convenient deployment. On a Layer-3 switch, the

Dec 23, 2025

L3 Switch for Advanced Networks | Omada by TP-Link

Layer 3 switches add advanced routing capabilities to standard switching functions. A Layer 2 switch moves traffic within a single network, but an L3 switch routes traffic between different network

May 03, 2026

Understanding VLAN Aggregation

S1720, S2700, S5700, and S6720 V200R011C10 Configuration Guide - Ethernet Switching This document describes the configuration of Ethernet services, including configuring link aggregation,

Sep 09, 2025

Cisco APIC Layer 3 Networking Configuration Guide, Release 3.x and ...

VXLAN is an industry-standard protocol that extends Layer 2 segments over Layer 3 infrastructure to build Layer 2 overlay logical networks. The ACI infrastructure Layer 2 domains

Aug 21, 2025

Link Aggregation: Static vs Dynamic, LACP, and MLAG

Understand how link aggregation (LACP, MLAG, static vs dynamic) improves bandwidth and redundancy. Learn configuration steps on Cisco and

Mar 11, 2026

Comparing Layer 3 and Layer 2 Switches

This article discusses the difference between layer 2 and layer 3 switches and the appropriate use cases for each.

Oct 25, 2025

Understanding VLAN Aggregation

By mapping a super-VLAN to sub-VLANs, VLAN aggregation associates the Layer 3 VLANIF interface with physical interfaces. This allows all sub-VLANs to share one gateway to communicate with an

Apr 05, 2026

Cisco Switch Layer2 Layer3 Design and Configuration

Each of the departments has been allocated a Layer2 VLAN and an IPv4 Class C private address range. All the switches are connected over port-channel links for higher bandwidth and better redundancy.

Sep 20, 2025

What is a virtual LAN (VLAN) and how does it work with my managed switch?

The following diagram shows a Layer 3 switch with three ports configured to handle the traffic for two VLANs (VLAN 10 and VLAN 20). Ports 1/0/1 and 1/0/2 are part of a link aggregation

Jan 11, 2026

Understanding Switch Aggregation: A Comprehensive

Layer 3 Switches: Layer 3 switches, or network layer switches, have routing capabilities in addition to the functions of a Layer 2 switch. They can

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Understanding VLAN Aggregation

VLAN aggregation allows sub-VLANs to share the same Layer 3 interface, thereby conserving subnet numbers, default gateway addresses, and directed broadcast addresses of subnets.

Feb 07, 2026

Link Aggregation: What is it, and How Does it Work?

Link aggregation is a way of bundling a bunch of individual Ethernet links together so they act like a single logical link. Learn more on the Auvik blog

Nov 15, 2025

Everything You Need to Know About Aggregation Switch

An aggregation switch operates at Layer 2 or Layer 3 of the OSI model, depending on the configuration and topology of the network. The controller uses protocols, such as Link Aggregation

Dec 29, 2025

Data Center Aggregation Layer Design and Configuration with ...

Introduction This chapter covers the design recommendations for a data center design deployment consisting of a Cisco Nexus® 7000 Series Switch at the aggregation layer and a Cisco Nexus 5000

Jul 05, 2026

Routing Between VLANs & Layer 3 Switches

Learn what a Router Sub-interface and a L3 Switch is, as well as how to configure both of them on Cisco devices to enable Routing between VLANs.

Jun 03, 2026

L2 vs L3 switching explained (and when you need each)

Home / Blog / Switching Switching L2 vs L3 switching explained (and when you need each) Layer 2 vs Layer 3 switching in plain English — what each does, VLAN routing, and how to

Jan 22, 2026

Configuring Cisco L3 Switch: InterVLAN Routing w/o Router

Master Cisco Layer 3 switches for inter-VLAN routing without external routers. Boost network performance, reduce latency, increase security.

Dec 16, 2025

Traffic Filtering on Cisco Layer3 Switches using ACL and VACL

Configuration example of Cisco VLAN Access Control List (VACL) on Layer3 switch for traffic filtering within the same VLAN.

Oct 06, 2025

How to configure the link aggregation on layer 3 switch?

How to configure the link aggregation on layer 3 switch and disable spanning tree? Can show me sample? for example, 2 ports from switch A to 2 ports of switch B.

Jul 06, 2026

VLAN Aggregation Configuration

VLAN aggregation allows hosts in different sub-VLANs to communicate at Layer 2 but not at Layer 3. To enable Layer 3 communication between hosts in different sub-VLANs, configure proxy ARP.

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://ntmmgroup.co.za>

Email: sales@ntmmgroup.co.za

Phone: +27 82 471 2596

Address: Unit 7, Optic Park, 24 High-Tech Lane, Century City, Cape Town,
7441, South Africa

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