

Article Overview

VLAN interconnection via an aggregation switch is achieved by mapping multiple sub-VLANs into a super-VLAN, enabling Layer 2 and Layer 3 communication while optimizing IP address usage.

Role of the Aggregation Switch

An aggregation switch consolidates traffic from multiple access switches or edge devices and forwards it to the core network, operating at Layer 2 or Layer 3 depending on the topology . It supports link aggregation protocols like LACP or static link aggregation to combine multiple physical links into a single logical connection, enhancing bandwidth, redundancy, and failover capabilities . In VLAN interconnection, the aggregation switch acts as a bridge between access VLANs and the core network, managing traffic efficiently and enabling inter-VLAN communication.

VLAN Aggregation Concept

VLAN aggregation, also called a super-VLAN, allows multiple sub-VLANs to share a single IP subnet and default gateway . Each sub-VLAN remains an independent broadcast domain, but the super-VLAN provides a common Layer 3 interface (VLANIF) for routing and IP address assignment. This approach reduces the number of required IP addresses and simplifies network management . Sub-VLANs can communicate at Layer 2, and proxy ARP can be configured on the super-VLAN interface to enable Layer 3 communication between hosts in different sub-VLANs .

Configuration Overview

- o Create Sub-VLANs on Access Switches: Assign hosts to VLANs based on departments or functional groups. Configure access ports to belong to the appropriate VLAN .
- o Configure Trunk/Transparent Links to Aggregation Switch: The uplink from access switches to the aggregation switch should carry multiple VLANs using 802.1Q tagging .
- o Define Super-VLAN on Aggregation Switch: Map all sub-VLANs to a super-VLAN and create a VLANIF interface with a single IP subnet .
- o Enable Proxy ARP for Inter-VLAN Communication: This allows hosts in different sub-VLANs to communicate without requiring separate Layer 3 interfaces for each VLAN .
- o Optional Traffic Control: You can isolate sub-VLANs or apply QoS, multicast control, and security policies at the aggregation switch to optimize performance and enforce policies .

Benefits

- o Efficient IP Address Usage: Multiple VLANs share a single subnet, reducing wasted IP addresses .
- o Simplified Inter-VLAN Communication: Proxy ARP allows Layer 3 communication without multiple

VLAN Aggregation Switch

VLANIF interfaces .

- o Scalability: Sub-VLANs can grow without redefining subnet boundaries .
- o High Availability and Bandwidth: Link aggregation ensures redundancy and higher throughput .

By implementing VLAN aggregation through an aggregation switch, enterprises can interconnect multiple VLANs efficiently, maintain broadcast domain separation, and provide seamless Layer 3 communication while optimizing network resources.

S1720, S2700, S5700, and S6720 V200R011C10 Configuration Guide - Ethernet Switching This document describes the

Hi, please, how do I do VLAN aggregation on Cisco 6500 ? (to use the IP subnet on different VLANs).
Thank, Cleber

Background of VLAN Aggregation VLAN is widely applied to switching networks because of its flexible control of

Background VLAN technology is widely used on switched networks because it can flexibly control broadcast domains and is easy to

Port Aggregation Port aggregation allows you to group multiple physical ports into one unit. Port aggregation is useful for

VLAN aggregation maps each sub-VLAN to a broadcast domain, associates a super-VLAN with multiple sub-VLANs, and assigns

Aggregation layer switches aggregate data from multiple access switches and routes it to

Using VLAN aggregation, a superVLAN is defined with the desired IP address. The subVLANs use the IP address of the superVLAN

Learn how to configure VLAN and NIC Teaming on Windows, VMware, and Linux, with clear examples, aggregation

An aggregation switch is a network device that consolidates traffic from multiple access switches, wireless access

S300, S500, S2700, S5700 and S6700 V200R024C00 Configuration Guide - Ethernet Switching This document describes the

VLAN Aggregation Switch

These are sample configuration commands for Cisco switches (for the exact commands, refer to the Cisco

Was sind Link-Aggregationsgruppen (LAGs) und wie arbeiten sie mit meinem Managed Switch zusammen?
Mit der Link-Aggregation

Understand how link aggregation (LACP, MLAG, static vs dynamic) improves bandwidth

The following diagram shows a Layer 3 switch with three ports configured to handle the traffic

In this video, I walk you through configuring link aggregation (LAG), setting up a LAG

Web: <https://bssoda.pl>

