

Load balancing during switch aggregation



AI Overview

Load balancing in switch aggregation distributes traffic across multiple physical links in a LAG to maximize bandwidth and maintain redundancy, using hashing algorithms based on Layer 2, Layer 3, or Layer 4 information.

Overview of Switch Aggregation

Switch aggregation, also known as Link Aggregation (LAG) or EtherChannel, combines multiple physical ports into a single logical interface. This increases overall bandwidth, provides redundancy, and allows for graceful degradation if a link fails. Aggregation can be configured manually or using Link Aggregation Control Protocol (LACP), which negotiates active and standby links between devices.

Load Balancing Mechanisms

Load balancing determines how traffic is distributed across the member links of a LAG. The distribution is typically hash-based, using packet header information to assign flows to specific links. Common methods include:

- Layer 2 (MAC-based):** Uses source and destination MAC addresses to determine the link for each frame.
- Layer 3 (IP-based):** Uses source and destination IP addresses for IP traffic, ensuring flows remain on the same link.
- Layer 4 (TCP/UDP ports):** Incorporates transport layer ports to further differentiate flows, useful for multiple sessions between the same hosts.

The hashing algorithm ensures that all packets of a single flow follow the same link, preventing packet reordering while attempting to balance traffic across all links. The effectiveness of load balancing depends on traffic patterns; uneven traffic profiles may result in some links carrying more traffic than others.

LACP vs Manual Aggregation

Manual Load Balancing: All member links are active and share traffic evenly. If a link fails, the remaining links automatically take over the load.

LACP Mode: Negotiates active and standby links. Only active links forward traffic, while standby links provide redundancy. LACP also...

Article Content

What are link aggregation and LACP and how can I use them in my

Traffic can be load-balanced across the physical links. Increased bandwidth. The aggregated physical links deliver higher bandwidth than each individual link. Cost effectiveness. A

Configuring Link Aggregation Group and Link Aggregation Control

This chapter describes Link Aggregation Group, Link Aggregation Control Protocol, and manual load balancing. This chapter also describes the configuration procedures.

Link Aggregation - LACP Protocol

About Switch Independent Server Side Config If you have server side NIC teaming (link aggregation) configured for switch independent mode it will enable server-side load balancing across multiple

Link aggregation

Link aggregation Link aggregation between a switch and a server In computer networking, link aggregation is the combining (aggregating) of multiple network connections in parallel by any of

Bond Modes - LAG - Lastverteilung und Fehlertoleranz

Alle Verbindungen müssen auf dem selben Switch sein. Balance-tlb beinhaltet Lastverteilung und Fehlertoleranz. Balance-tlb benötigt KEINEN konfigurierbaren Switch. Mode:

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 as a single logical link. A fundamental for effective

Port Aggregation Configurations

Port Aggregation Port aggregation allows you to group multiple physical ports into one unit. Port aggregation is useful for implementing load balancing and provides a redundant link backup.

Bonding modes

mode 4 (802.3ad) IEEE 802.3ad Dynamic link aggregation policy. Creates aggregation groups that share the same speed and duplex settings. Utilizes all slaves in the active aggregator according to

Understanding Switch Aggregation: A Comprehensive Guide

Efficient Load Balancing: By spreading network traffic across all the aggregated links, switch aggregation effectively distributes the load, preventing any single link from becoming a

Load Balancing on Aggregated Ethernet Interfaces

Link aggregation increases bandwidth, provides graceful degradation as failure occurs, increases availability and provides load-balancing capabilities. Load balancing enables the device to divide

What Is an Aggregation Switch and How to Choose?

An aggregation switch is a network device that consolidates traffic from multiple access switches, wireless access points, or other edge devices and forwards it to core switches or routers.

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

Troubleshooting AP LAG Issues

Troubleshooting link aggregation issues on access points can be a bit tricky, as it involves configurations on both the AP and the connected switch. Here's a breakdown of common problems and how to

Understand EtherChannel Load Balance and Redundancy on Catalyst Switches

This document presents the concept of load balancing and redundancy on Cisco Catalyst switches with the use of the EtherChannel. This document also covers the Port Aggregation

Configuring Cisco Switches for Link Aggregation Load Sharing Mode

These are sample configuration commands for Cisco switches (for the exact commands, refer to the Cisco documentation for your switch model and the switch operating system version).

Configuring Link Aggregation Group (LAG) on a Switch

Objective Link Aggregation Group (LAG) multiply the bandwidth, increase port flexibility, and provide link redundancy between two devices. Link Aggregation Control Protocol (LACP) is a

Configuring Link Aggregation in Manual Load Balancing Mode

In manual load balancing mode, you can determine the minimum number of active interfaces in the Eth-Trunk by setting the lower threshold. If the number of active interfaces is smaller than the value in

Load Balancing Modes of Link Aggregation

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

Configuring Cisco Switches for Link Aggregation Load Sharing Mode

Configuring Cisco Switches for Link Aggregation Load Sharing Mode These are sample configuration commands for Cisco switches (for the exact commands, refer to the Cisco documentation for your

Link Aggregation: Static vs Dynamic, LACP, and MLAG

This article provides a comprehensive explanation of link aggregation — covering LACP, static vs dynamic link aggregation, and MLAG

What are Link Aggregation Groups (LAGs) and how do

Link aggregation lets a switch treat multiple physical links between two endpoints as a single logical link. All the physical links in a Link Aggregation

Link Aggregation, LAG, LACP and MLAG in 2026: Design, Best

This guide explains how they work, static vs LACP, load balancing, server NIC bonding, STP interaction, and design best practices for campus and data center.

From Pipelines to Agents: Self-Healing CI/CD Workflow

In our example we had a task of mapping legacy load balancer settings (like fastest-app-response or source-address persistence) to Azure ILB rules. One small typo in a backend pool

Load Balancing Overview | Junos OS | Juniper Networks

Learn about load balancing on aggregated ethernet interfaces, and how to configure load balancing based on MAC addresses. It reduces network congestion by dividing traffic among multiple

Configuring IEEE 802.3ad Link Bundling and Load Balancing

802.3ad Link Aggregation with Weighted Load Balancing Current mechanisms for load balancing Ethernet service instances over member links in a port channel do not account for the service

Link Aggregation and Load Balancing

Link Aggregation and Load Balancing Last updated Jun 16, 2026 Save as PDF Table of contents Link bonding Load balancing Load sharing Implementation by Cisco Meraki MS Series MX

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