

Aggregation and Uplink on the Switch



Overview

Port aggregation can increase maximum throughput, and allow for network redundancy. It does this by splitting traffic across multiple ports instead of forcing clients to use a single uplink port on a switch.

Key Takeaways

Aggregation switches consolidate traffic from access switches, while uplink ports connect switches to higher-level devices, enabling redundancy, load balancing, and high-speed interconnects.

Aggregation Switch Functions

Aggregation switches serve as an intermediate layer between access switches and core switches in a network. Their primary role is to collect traffic from multiple access switches and forward it efficiently to the core layer, reducing congestion and improving scalability. Key features include: Medium to high port density to handle multiple access switch connections.

Support for Layer 2 and Layer 3 functions, including VLANs, routing, and Quality of Service (QoS),. Link aggregation support to combine multiple physical links into a single logical link for higher bandwidth and redundancy. Examples of aggregation switches include the H3C S6530X series, which offers high-density 25GE ports and 40GE/100GE uplinks, modular power, and IRF for resiliency.

Uplink Port Functions

Uplink ports are specialized switch interfaces designed to connect a switch to higher-level network devices, such as core switches, routers, or other aggregation switches. Their functions include: Forwarding aggregated traffic from access switches to the core network. Supporting higher-speed connections (e.g., 10G, 40G, 100G) compared to standard access ports.

Providing redundancy by connecting uplinks across multiple switches in a stack, ensuring continuous connectivity if one switch fails. Uplink ports can often function as normal ports if needed, but they are optimized for inter-switch communication.

Link Aggregation

Link aggregation combines multiple physical links into a single logical link to increase bandwidth and provide fault tolerance. Key points include: Can operate in manual mode or using Link Aggregation Control Protocol (LACP), adhering to IEEE 802.3ad standards.

All member interfaces must have the same type, speed, duplex, and flow control settings. Provides load balancing across member links and ensures high availability in case of link failure. Commonly used between aggregation switches and core switches or between stacked switches and distribution devices.

Best Practices

Distribute uplink interfaces across multiple switches in a stack to avoid a single point of failure.

Configure Ether

Channel or Eth-Trunk with LACP active-active mode for redundancy and load balancing.

Use VLA

N trunking on uplink ports to carry multiple VLANs efficiently. Ensure consistent configuration on both ends of the uplink to prevent connectivity issues.

Summary

Aggregation switches consolidate traffic from access switches, while uplink ports connect these switches to higher-level devices, providing high-speed, redundant, and load-balanced paths. Link aggregation enhances bandwidth and reliability, making these functions critical for scalable and resilient network design.

Article Content

Core, Aggregation, or Access Switches? Choose the

Discover the crucial differences between core, aggregation, and access switches. Find out which type can best transform your network's

Port Aggregation FAQs

Port aggregation can increase maximum throughput, and allow for network redundancy. It does this by splitting traffic across multiple ports instead of forcing clients to use a single uplink port on a switch.

What Is an Aggregation Switch and How to Choose?

When selecting an aggregation switch, you need to consider the uplink port type and number of the network access switches, as well as the downlink port type of the core switch.

Uplink Port vs Normal Port on Network Switch

This article explores the differences between uplink and normal ports in network switches, emphasizing their roles, data processing capabilities, and applications.

port aggregation VS uplinks

It depends whether uplink ports are "special", and if they are, do you need the "special". For example, on the 3750 series, the uplink ports are often modular transceiver ports, so if you need

How to Aggregate Ports on UniFi Switch

Aggregating ports on a UniFi switch combines multiple physical links into a single logical link, increasing bandwidth and providing redundancy. Follow these steps to create and assign

Everything You Need to Know About Aggregation Switch

The primary function of an aggregation switch is to aggregate and forward data from multiple network devices, such as access switches, wireless

Aggregation Switch

An aggregation switch refers to a type of switch used to connect multiple ToR switches to a core switch/router in a cloud data center network. It enables high-bandwidth aggregation ports to be

Understanding Switch Aggregation: A Comprehensive

Extreme Networks: Link Aggregation on the Switch: This user guide from Extreme Networks describes the feature of link aggregation on a switch,

What is an Aggregation Switch? | Features and Practical Benefits

This article focuses on the question of what is an aggregation switch and how it works its uses and its implementation. Read till the end to learn this very important concept in network

Configuring MC-LAG in UniFi Network - Ubiquiti Help Center

Configuring MC-LAG in UniFi Network Multi-Chassis Link Aggregation Group (MC-LAG) enables redundancy and load balancing by connecting two ECS-Aggregation switches as an MC-LAG pair.

T-Mobile's network chief talks about 2026 5G-Advanced

The operator has also launched 5G-Advanced Uplink Tx Switching to support smartphones. This will enable the iPhone 17, Samsung GS25 Ultra,

Port Aggregation FAQs

It does this by splitting traffic across multiple ports instead of forcing clients to use a single uplink port on a switch. Note that these performance improvements will only occur when multiple clients are

TP-Link S7500-24Y4C 24-Port L3 Managed Stackable 25G SFP28 Aggregation ...

The TP-Link S7500-24Y4C 24-Port L3 Managed Stackable 25G SFP28 Aggregation/Core Switch is a high-performance L3 managed switch tailored for the aggregation and core layer, featuring L3

VLAN and LAGG Setup — OPNsense documentation

VLAN and LAGG Setup Summary Connect your OPNsense Appliance successfully to a Managed Switch using OSI Layer 2 protocols like LAGG and VLAN.

Data Center Design: Basic 3 Layers, Core, Aggregation, and Access

Want A High Performance, We Need Consider More. A flexible data center design requires solid initial planning and thoughtful consideration in the areas of port density, access layer

Layer 2 vs Layer 3 Switch: Key Differences and Use Cases

In larger enterprise environments, high-performance Layer 3 switching is also common at the core or aggregation layer. The exact platform

Ubiquiti UniFi Pro Aggregation Switch USW-PRO-AGGREGATION

Ubiquiti UniFi Pro Aggregation Switch Build and expand your network with the UniFi ® Switch, part of the Ubiquiti Networks ® UniFi Enterprise System. The UniFi Switch, model USW-Aggregation-Pro, is

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