

Backup Switch in Aggregation Layer



Overview

Aggregation layer | FortiSwitch 7.6.0 | Fortinet Document Library
Aggregation layer The aggregation (sometimes also called distribution) I.

Key Takeaways

Aggregation layer switches achieve high availability through redundancy mechanisms like MC-LAG, dual power supplies, hot-swappable components, and link protection protocols.

Role of Aggregation Layer Switches

Aggregation switches consolidate traffic from multiple access switches and forward it to the core layer, acting as a central point in the network architecture. They typically operate at Layer 2 or Layer 3 and are crucial for maintaining high throughput and efficient traffic flow in enterprise or campus networks . By centralizing connections, they reduce the complexity of interconnecting all access switches directly to the core .

Redundancy Mechanisms



1. Multi-Chassis Link Aggregation (MC-LAG / MLAG): MC-LAG allows two physical aggregation switches to operate as a single logical unit. Devices connected to these switches can form link aggregation groups (LAGs) across both switches, enabling active-active traffic distribution and near-instant failover if one switch or link fails . This ensures that traffic continues uninterrupted even during hardware or port failures. 2. Link Protection Protocols: Protocols like Ethernet Ring Protection Switching (ERPS) and Spanning Tree Protocols (STP, RSTP, MSTP) prevent loops while providing fast failover for aggregated links. On Juniper devices, link protection can reroute traffic over alternate paths if a primary interface fails, minimizing downtime . 3. Hot-Swappable Components: Aggregation switches are often deployed with dual hot-swappable power supplies and fans. This design allows maintenance or component replacement without disrupting network operations . 4. Redundant Uplinks and Interconnects: High-speed interconnects between aggregation switches and the core, often using 100G or 25G links, provide additional resilience. Dual-attached servers and storage can also connect to both aggregation switches to maintain connectivity during failures .

Best Practices

- Deploy aggregation switches in pairs to ensure redundancy.
- Use MC-LAG to combine ports across both switches for load balancing and failover.
- Implement link protection protocols to handle interface or link failures automatically.
- Ensure hot-swappable power supplies and fans are installed to reduce downtime during maintenance.
- Avoid connecting access devices directly to the aggregation layer; instead, connect them to access switches to maintain a clean hierarchical design . By combining these strategies, aggregation layer switches can provide a highly resilient network backbone capable of handling link, port, or switch failures without impacting end-user connectivity.

Article Content

Link aggregation

Nortel's split multi-link trunking (SMLT) protocol allows multiple Ethernet links to be split across multiple switches in a stack,

Aggregated Ethernet Link Protection | Junos OS | Juniper Networks

Ethernet Ring Protection Switching (ERPS): For ring topologies, Juniper supports ERPS, which blocks one link in the ring (the Ring

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

