Dual-core switch deployment mode

Overview

In the following scenarios, FortiGate is connected to two switches without LACP and with LACP (802.3ad) design.

Key Takeaways

Dual-core switch deployment mode uses two core switches in a redundant configuration to ensure high availability, load balancing, and network resiliency.Overview

In a dual-core deployment, two core switches are deployed to act as a single logical entity or as redundant nodes. This setup ensures that if one core switch fails, the other continues to handle traffic without service interruption. Dual-core deployment is commonly used in campus networks, data centers, and large enterprise environments to provide high availability and fast convergence .

Key Deployment Approaches1. Fortinet MCLAG (Multi-Chassis Link Aggregation Group)
• Two FortiSwitch units are paired to form an MCLAG peer group, appearing as a single switch to upstream devices like FortiGate firewalls .

• Redundant links are used between access, aggregation, and core layers to prevent single points of failure.

• FortiLink split interfaces allow a FortiGate unit to connect to two FortiSwitch units, with one link active at a time, ensuring continuous management and traffic flow .

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• STP (Spanning Tree Protocol) and IGMP snooping must be enabled on all inter-switch links to maintain loop-free and efficient traffic forwarding .

2. Cisco StackWise Virtual

• Two Cisco switches are directly connected and operate as a single logical switch using StackWise Virtual .

• Requirements include identical switch models, supervisor modules, software versions, licenses, and SDM templates.

• StackWise Virtual links (SVL) aggregate multiple physical ports, providing distributed forwarding and control planes for resiliency.

• This approach is suitable for aggregation or collapsed core layers, allowing high-speed interconnects (e.g., 40G, 100G, or 400G depending on the supervisor module) to scale bandwidth and maintain redundancy .

3. Huawei Dual-Node Mode

• Core switches are deployed in a two-node mode, with access switches dual-homed to aggregation switches for reliability .

• VLAN-based Spanning Tree (VBST) is enabled, and priorities are configured for core and aggregation switches.

• Management VLANs for wired and wireless devices are associated with VBST to ensure proper traffic segregation and loop prevention .

Best Practices

• Redundant Links: Always use multiple uplinks between access, aggregation, and core layers to avoid single points of failure .

• Consistent Configuration: Ensure both core switches have identical configurations, firmware, and hardware capabilities to prevent inconsistencies in failover scenarios .

• High Availability: Configure HA clusters or virtual switch pairs to maintain service continuity during maintenance or failures .

• Traffic Load Balancing: Use link aggregation (MCLAG or SVL) to distribute traffic evenly across both core switches.

• Monitoring and Management: Use LLDP, dynamic port policies, and centralized controllers to monitor device health and automate configuration changes .

Summary

Dual-core switch deployment mode enhances network resiliency, scalability, and operational efficiency. By pairing two core switches using technologies like Fortinet MCLAG, Cisco StackWise Virtual, or Huawei dual-node mode, networks can maintain uninterrupted service, optimize traffic distribution, and simplify management while minimizing downtime during failures or maintenance events .

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