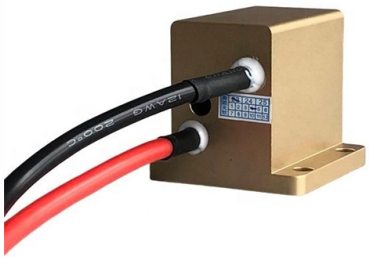
Redundancy Configuration Methods for Core Switches



Overview

In the core layer, I want to have redundancy, which means that if the main core switch of my network has a problem, the backup switch will automatically enter the circuit.

Key Takeaways

Core switch redundancy ensures continuous network availability by using backup switches, link aggregation, and high-availability protocols like HSRP, VRRP, VSS, or MC-LAG.

Key Principles of Core Switch Redundancy

Redundancy in the core layer is designed to eliminate single points of failure. This involves deploying two or more core switches that can take over traffic seamlessly if one fails. Redundant designs typically include: Dual core switches connected via Layer 2 or Layer 3 links.

Redundant uplinks from access and distribution switches to both core switches. High-availability protocols to manage failover and load balancing.

Hardware Strategies

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Switch Stacking or Virtual Switching Systems (VSS)VSS or stackable switches allow two physical switches to operate as a single logical unit, simplifying management and providing seamless failover without re-convergence of the network. Each access switch connects to both core switches using port channels, ensuring traffic continues even if one core switch fails.vPC (Virtual Port Channel)vPC allows link aggregation across two separate switches, enabling load balancing and redundancy while maintaining a single logical connection to downstream devices. Ideal for environments where core switches are geographically separated but connected via high-speed fiber.

MC-LAG (Multi-Chassis Link Aggregation)MC-LAG combines two physical switches into a single logical switch for link aggregation, providing instant failover for ports, links, or entire switches. Often used in high-capacity enterprise networks to maintain uptime during hardware failures. Software and Protocol ConfigurationsHSRP (Hot Standby Router Protocol) / VRRP (Virtual Router Redundancy Protocol)These Layer 3 protocols provide active-passive failover for default gateways.

HSR

P can be configured on SVIs (Switched Virtual Interfaces) for VLANs carried over trunk links, allowing redundancy even when core switches are connected via Layer 2 trunks. Spanning Tree Protocol (STP / RPVST)STP prevents loops in networks with redundant paths. Rapid Per-VLAN Spanning Tree (RPVST) is recommended for faster convergence and to control root bridge placement, ensuring predictable traffic paths.

Port Channels / EtherChannelsAggregating multiple physical links into a single logical link increases bandwidth and provides redundancy. Critical for connecting access/distribution switches to both core switches.

Best Practices

Dual uplinks: Connect all access and distribution switches to both core switches using port channels. Layer 2 heartbeat: Maintain a Layer 2 link between core switches for HSRP or vPC communication. Load balancing: Use multiple HSRP groups or vPCs to distribute traffic across cores.

Hot-swappable components: Ensure power supplies and fans are redundant to prevent downtime. Documentation and planning: Map all devices, VLANs, and critical paths to identify where redundancy is most needed.

Summary

To configure redundancy for core switches effectively: Deploy dual core switches with high-speed interconnects.

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Use VS

S, vPC, or MC-LAG to create a logical unit for seamless failover. Configure HSRP/VRRP for gateway redundancy and STP/RPVST for loop prevention. Connect all downstream switches with port channels to both cores.

Ensure hot-swappable hardware and maintain proper documentation. This approach ensures high availability, minimal downtime, and efficient traffic handling across your network.

Article Content

Solved: redundancy in core layer

In the core layer, I want to have redundancy, which means that if the main core switch of my network has a problem, the backup switch will automatically enter the circuit.

How to Configure Redundant Switches in Cisco Networks

This article will guide you through the essential steps, necessary commands, configurations, and best practices for configuring redundant switches

Solved: core switch redundancy

Actually once the switches have the same model/software they will form a stack without any config and become one logical switch, you can manually set your master and priorities but its

How to Configure Redundant Switches in Your Network

Let''s dive into a detailed, step-by-step guide on setting up redundant switches, covering both the hardware setup and software configurations.

Redundancy and Resiliency in Cisco Networks

This article explores the core concepts of redundancy and resiliency in Cisco networks, their significance, and how Cisco technologies enable businesses to build robust, always-on

Redundancy for Core Switch Stack : r/networking

So when one of the "new core" switches goes down, anything connected to it will still be offline. You can design around this by having redundant connections to the different "cores" and letting STP handle

Redundancy concepts for hierarchical switch networks

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In this tech paper, you will learn about the key protocols for building a redundant network and discover—based on five examples—how to design highly available three-tier or two-tier networks

Designing Highly Available Networks Using Catalyst 9000 Switches

In this session, Our focus will be to learn about the existing and new High Availability features present on the Catalyst 9k Switches. We will also categorize features based on access and Distribution layer in

The Platform Era Expands: MDEP at InfoComm 2026

Last year at InfoComm 2025, we shared how the Microsoft Device Ecosystem Platform (MDEP) was growing into the most comprehensive and secure platform for enterprise collaboration.

Designing a redundant switching infrastructure

Each stack will be connected to the core via the 10GBe fibre ports. The top and bottom switch in each stack, connected to CORE01 and CORE02 respectfully. (Green cables are stacking

Network Switches

Cisco network switches deliver performance, flexibility, and security. Cisco switches are scalable and cost-efficient and meet the demands of hybrid work.

Solved: core switch redundancy

Hi, school with around 800 users having one core switch 6509-E sup-720 (inter-vlan routing) collapsed core design connected to - 30 layer 3 HP switches with 10G and 1G backup links -

Switch Redundancy and Management

Cisco Routing & Switching Best Practices server, CDP where not needed) Use SSH v2 for all management access Implement ACLs to restrict management plane access Enable port security on

Core switch redundancy

Hi, A school with around 800 users having one core switch 6509-E sup-720 (inter-vlan routing) collapsed core design connected to - 30 layer 3 HP switches with 10G and 1G backup links -

How to Configure Redundant Switches in Cisco Networks

In conclusion, meticulous ongoing maintenance and preparedness to troubleshoot are just as vital as the initial setup of redundant switches in Cisco

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Solved: Redunancy with two switches core

Hello everyone, I have a customes have just bougth ttwo switches core (L3), his today diagram network is: Access Switches come to one Switch Core and this connect to a Firewall to

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How to Set Up a Redundant Network Switch Configuration

Setting up a redundant network switch configuration is a vital step for any IT infrastructure aiming to minimize downtime and provide service continuity. In this tutorial, we will guide you through

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