

Switch Dual-Network Convergence



AI Overview

A dual-network convergence switch enables high-availability, fault-tolerant networking by connecting devices to two independent networks while supporting converged IT and OT traffic.

Overview A dual-network convergence switch is designed to operate in environments where redundancy, high availability, and network convergence are critical. These switches are commonly used in industrial automation and control systems (IACS), enterprise networks, and multi-service environments. They allow devices to connect simultaneously to two independent networks (often referred to as LAN A and LAN B) to ensure continuous operation even if one network fails.

Key Features

- Parallel Redundancy Protocol (PRP) Support:** PRP-enabled switches send duplicate Ethernet frames across two independent networks, ensuring zero downtime for critical devices.
- RedBox Integration:** Non-PRP devices can connect to both networks through a RedBox, which manages duplicate frames and sequence numbers.
- Converged Network Support:** These switches can handle both operational technology (OT) and information technology (IT) traffic, supporting protocols like EtherNet/IP, VLANs, and IP routing.
- High Availability:** Dual-network switches reduce the risk of network outages, supporting continuous operation in process industries, utilities, and transportation systems.
- Multi-Service Capabilities:** Many commercial switches also integrate security, PoE, wireless, SDN, and VPN functionalities, providing a unified platform for networking and communications.

Deployment Considerations

- Topology Planning:** Devices are connected to two independent networks to maintain fault tolerance. PRP channels are configured with primary and secondary ports for LAN A and LAN B.
- Device Compatibility:** Only certain ports may be used for PRP channels, and ports in a PRP group cannot run other resiliency protocols like DLR or REP.
- Scalability:** Modern dual-network switches support multiple PRP channels and hundreds of device entries, allowing large-scale industrial deploy...

Article Content

Example for Configuring Link Redundancy in a Smart Link Group

As shown in Figure 7-17, a dual-homing networking is used to enhance network reliability. The customer wants to eliminate loops on the network while implementing link redundancy and fast

Embedded Switch Technology Reference Architectures

This document provides design recommendations for connecting device-level topologies to larger, switch networks comprised of Layer 2 access switches. It also covers the implementation of

Cisco NCS 5500/5700 Fixed Platforms Architecture White Paper

This whitepaper focuses on the hardware architecture, characteristics, and packet forwarding of the three generations of NCS 5500 and NCS 5700 fixed form factor platforms.

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Cisco Network Convergence System 5500 Series Modular Chassis

The Cisco Network Convergence System 5500 Series offers industry-leading density of routed 100 Gigabit Ethernet (100GE) ports for high-scale WAN aggregation.

Cisco Network Convergence System 520 Data Sheet

Cisco® Network Convergence System (NCS) 520 are next-generation Layer 2 and Layer 3 capable, MEF 3.0 Certified, network demarcation

High Availability in Layer 2 Networks Using Active ...

On MX Series routers, EX9200, and QFX10000 switches, multichassis link aggregation (MC-LAG) enables a device to form a logical LAG interface with two or more other devices.

Deploying Parallel Redundancy Protocol within a

Layer 2 switched network convergence (e.g., MAC table updates) Different routing configurations, protocols and distribution switch platforms may

Cisco Catalyst 4500E Supervisor Engine 8-E: Wired and Wireless ...

Overview The Cisco Catalyst ® 4500E Supervisor Engine 8-E (Figure 1) is the next generation of enterprise-class switching engine that provides full convergence between wired and

Convergence (routing)

Convergence time is a measure of how fast a group of routers reach the state of convergence. It is one of the main design goals and an important performance indicator for routing protocols, which should

Converged Network Explained: Everything You Need to

The network switch can handle data from multiple sources, including telecommunications, computer networks, and service providers. This results in

The best network switch of 2025 | TechRadar

The best network switch will be a necessity for anyone looking to add more wired connections and gain greater network speeds.

Deploying a Resilient Converged Plantwide Ethernet Architecture

Topologies and protocols Switching and routing Wireless LAN Controllers (WLC) Firewalls Network and device management Deploying a Resilient Converged Plantwide Ethernet Architecture Design and

Design and Configuration Guide: Best Practices for Virtual Port ...

Allows dual-homed servers to operate in active-active mode Provides fast convergence upon link or device failure Offers dual active/active default gateways for servers vPC also leverages native split

Azure Local two-node storage switched, fully converged deployment ...

In this article, you'll learn about the two-node storage switched, fully converged with two TOR switches network reference pattern that you can use to deploy your Azure Local instance solution.

Convergence network switch, Convergence ethernet

Find your convergence network switch easily amongst the 18 products from the leading brands (Advantech, Hewlett Packard, Maisvch, ...) on DirectIndustry, the

Design Zone

Document Objectives This document presents an overview of the campus network architecture and includes descriptions of various design considerations, topologies, technologies,

Dual-Network Layered Network: A Method to Improve Reliability

This article delves into the routing architecture and reliable transmission service framework of dual-network layered networks, with a focus on analyzing their core design ideas and

Understanding High Availability Features on Juniper Networks Routers ...

One functions as the primary, while the other stands by as a backup should the primary Routing Engine fail. On routing platforms with dual Routing Engines, network reconvergence takes

Understand and Configure Nexus 9000 vPC with Best Practices

This document describes the best practices to use for virtual Port Channels (vPC) on Cisco Nexus 9000 (9k) Series Switches.

Redundancy Protocol Configuration Guide, Cisco

A DLR network with redundant gateways uses multiple switches to provide multiple connections from a ring to the outside network. Redundant

Cisco Network Convergence System: NCS 5500/5700 Modular

The Network Convergence System (NCS) 5500/5700 Series is a family of routing platforms including fixed and modular chassis. The platforms offer high port density, high

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Deploying Parallel Redundancy Protocol within a Converged

PRP technology creates seamless network redundancy by allowing PRP enabled IACS devices to send duplicate Ethernet frames over two independent Local Area Networks (LANs). If a failure occurs in

Network switch

Network switch Avaya ERS 2550T-PWR, a 50-port Ethernet switch A network switch (also called switching hub, bridging hub, Ethernet switch, and—by the IEEE — MAC bridge) is networking

Cisco Network Convergence System 540 Series Routers

Get a safer, more efficient network with Cisco Network Convergence System 500 Series Routers. Discover the possibilities—then find the best model for you.

Cisco Nexus 9000 Series NX-OS Interfaces

When you configure LACP vPC convergence on a Cisco Nexus 9000 switch, it waits until all the VLANs are initialized and programmed and then send

How to Connect Two Switches Together: A Comprehensive Guide

How to connect two switches together? Are you looking to expand your network infrastructure and connect multiple switches together? Connecting switches can be achieved through

Designing Highly Available Networks Using Catalyst 9000 Switches

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