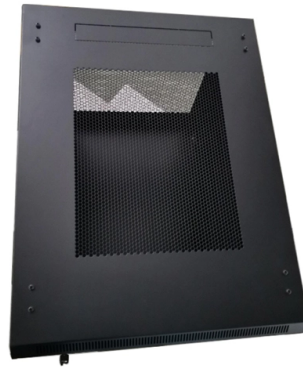


How to use a four-port ring network switch



Overview

The Ring Topology: In a ring network each Ethernet switch is connected to two other switches forming a ring.

Key Takeaways

A four-port ring network switch is an industrial Ethernet switch designed to provide reliable, redundant network connectivity in a ring topology, ensuring fast recovery from cable or device failures.

A four-port ring network switch typically features four Ethernet ports that can be configured to form a redundant ring network, where each device connects in a circular topology. This design allows the network to automatically reroute traffic if a cable break or device failure occurs, minimizing downtime and maintaining real-time data transmission, which is critical in industrial environments .

Key Features

- **Redundant Ring Protocols:** Many switches use proprietary or standard protocols like FC-Ring, ComRing (C-Ring), or O-Ring to achieve fast recovery times, often under 30 milliseconds .
- **Port Types:** Switches may include 10/100/1000 Mbps Ethernet ports and SFP fiber ports for flexible media options, supporting both copper and optical connections .

- **Managed vs Unmanaged:** Managed switches allow centralized configuration, monitoring, and QoS management, while unmanaged switches provide plug-and-play simplicity for basic connectivity .
- **Industrial Design:** These switches are often DIN-rail mountable, with rugged metal cases, wide operating temperature ranges, and protection against vibration, shock, and electrical interference .
- **Power Redundancy:** Many models include redundant DC inputs or built-in batteries to maintain operation during power interruptions .

Benefits

- **High Reliability:** The ring topology ensures continuous network operation even if a link fails.
- **Simplified Installation:** Cascading devices in a ring reduces cabling complexity and project costs .
- **Real-Time Data Transmission:** Ideal for industrial automation, security, mining, and transportation systems where low-latency communication is essential .
- **Scalability:** Can be integrated into larger networks using point-to-point, linear, star, or mesh architectures .

Example Models

- **FC-Ring 4FE4RS232-to-2SFP:** Offers 4 Fast Ethernet ports, 2 Gigabit SFP ports, and 4 serial ports with master-slave configuration, suitable for harsh industrial environments .
- **Comnet CNGE8MS:** Managed switch with 4 Ethernet and 4 combo ports, supporting ComRing redundancy and centralized management via Open-Vision software .
- **N-Tron 104TX-MDR:** Unmanaged 4-port switch with DIN-rail mount, IP30 rating, and extended temperature range for industrial applications .
- **Eaton NGI-S04C2:** Managed 4-port Gigabit switch with SFP slots, auto-negotiation, QoS, and industrial-grade durability . In summary, a four-port ring network switch is a robust solution for industrial networks requiring redundancy, fast recovery, and reliable data transmission, with options for both managed and unmanaged configurations, flexible port types, and ruggedized designs suitable for harsh environments.

Article Content

Example: Configuring Ethernet Ring Protection Switching on EX

This example shows how to configure Ethernet ring protection switching on four switches that are connected to one another on a

Understanding Ethernet Ring Protection Switching

Ethernet ring protection switching (ERPS) helps to prevent fatal loops from disrupting a network. ERPS is similar to spanning-tree

Ethernet Ring Protection Switching Application Note

This solution is based on Recommendation ITU-T G.8032/Y.1344, which defines the protection switching protocol and mechanisms

Perle P-Ring Protocol | Industrial Managed Switches

The Ring Topology: In a ring network each Ethernet switch is connected to two other switches forming a ring. This provides two

Creating a distributed ethernet using a single mode fiber ring

Can I create a distributed ethernet using just 1 x core of a single mode fiber ring ?
Update (Sep 2022): The following is

Microsoft Word

Introduction Unlike office Ethernet "star" networks, industrial control applications tend to favour "ring" topology. The "ring" simplifies

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