What types of ring network industrial switches are available



Overview

How Industrial Switches Build Industrial Ring Networks This article aims to provide a concise yet comprehensive overview of how industrial switches contrib.

Key Takeaways

Ring network industrial switches are categorized based on redundancy protocols, network layers, and deployment roles in industrial Ethernet networks. 1. Based on Redundancy ProtocolsIndustrial switches in ring networks are often classified by the redundancy protocols they support, which determine how the network handles link failures: Ethernet Ring Protection (ERP): Provides fast recovery in ring topologies, ensuring minimal downtime by rerouting traffic around failed links.

Rapid Spanning Tree Protocol (RSTP): An IEEE standard that quickly recalculates paths to maintain network connectivity. Multiple Spanning Tree Protocol (MSTP): Extends RSTP for multiple VLANs, offering flexible and faster convergence in complex industrial networks. Vendor-specific protocols: Some manufacturers implement proprietary protocols like Moxa's Turbo Ring or Hirschmann's HRP for enhanced recovery times and interoperability.

2. Based on Network LayerIndustrial switches can also be categorized by the OSI layer they operate on: Layer 2 (Access) Switches: Connect end devices and provide basic switching functions within the ring. They often support redundancy protocols like RSTP or ERP.

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Layer 3 (Distribution/Core) Switches: Aggregate multiple access switches, provide routing capabilities, and manage larger network segments. These switches are typically used in backbone or hierarchical ring networks. 3.

Based on Deployment RolesSwitches are further categorized by their deployment role in the ring network: Core/Backbone Switches: Form the main ring loop, handling high traffic volumes and ensuring network resilience. Distribution Switches: Connect multiple access switches to the core ring, often providing Layer 3 services and redundancy management. Access Switches: Interface directly with industrial devices, sensors, and controllers, often designed for harsh environments with features like IP67 ratings, redundant power, and PoE support.

4. Based on Form Factor and Environmental ResilienceIndustrial switches are also categorized by physical design and environmental tolerance: Compact/Space-Constrained Switches: Suitable for machine-level integration or tight enclosures, often IP67-rated. Modular Switches: Allow expansion with additional ports or modules to accommodate network growth.

Ruggedized Switches: Built to withstand extreme temperatures, dust, vibration, and other industrial conditions.

Summary

Ring network industrial switches are categorized primarily by redundancy protocol support (ERP, RSTP, MSTP, proprietary), network layer (Layer 2 vs Layer 3), deployment role (core, distribution, access), and physical/environmental characteristics (compact, modular, ruggedized). Understanding these categories helps in designing resilient, scalable, and high-performance industrial Ethernet ring networks suitable for IIoT and automation applications.

Article Content

How Industrial Switches Build Industrial Ring Networks

This article aims to provide a concise yet comprehensive overview of how industrial switches contribute to the formation of industrial ring networks, catering to both traditional industry

Industrial Switches (ISW) | Extreme Networks

Extreme Industrial Switches are an excellent choice for industrial environments, including intelligent transportation systems, utilities, and smart cities. Full redundant ring technology creates fault-

Industrial Ring Networks | ERPS | Antaira Technologies

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The Ethernet Ring Protection Switching (ERPS) protocol is a powerful technology and service that can be used on industrial switches to ensure high network availability and prevent network downtime.

Industrial Ethernet Switches

Available in all-copper, all-fiber, or mixed-port configurations, these switches are versatile for both access and distribution and can be stacked for simplified scaling.

Key Industrial Redundant Ring Protocols You Need to Know

Discover key industrial switch ring protocols, including STP, RSTP, MRP, and ERPS. Build a redundant industrial Ethernet network with fast recovery and uptime.

Ethernet Ring Redundancy

N-Ring requires an N-Tron managed switch (700, 7000, NT5000, and NT24k) to be configured as a Ring Manager and can support up to 250 managed or 50 unmanaged N-Tron

Industrial Automation Ring Network Solution

This solution builds a basic two-layer ring network architecture designed to decrease complexity, enhance security, and increase efficiency and operating uptime for your industrial network.

Fiber Optic Ring Network Design Explained: Topologies, Diagrams ...

Learn how to design a fiber optic ring network with practical diagrams, topologies, and switch setup tips. Explore ring network switch options for industrial applications.

Industrial Ethernet Switch

Our range includes unmanaged, PoE, Lite-Managed, and Layer 2/3 managed switches that help support secure communication, better network control, and resilient infrastructure across industrial

Redundancy Protocol Configuration Guide, Cisco Catalyst IE3x00,

Device Level Ring (DLR) is a Layer 2 protocol that enables redundancy in a ring topology, providing fast network fault detection and reconfiguration for industrial networks.

X-Ring Plus Ethernet Industrial Ring Technology

X-Ring Plus resilient ring technology is provided with network operating system 2.0 & is an enhanced version of Case Communications ''X-Ring'' technology.

Industrial Switch: Advantages and Different Types

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An industrial switch refers to a networking device that is specifically designed to operate in harsh industrial environments. It is used to connect and manage communications between various

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X-Ring Ethernet Industrial Ring Technology

Case Communications X-Ring provides an Ethernet Ring between Industrial Ethernet switches, running at 10 Mbps, 100 Mbps or 1 Gbps. X-Ring can support

Rick Astley

The official video for “Never Gonna Give You Up” by Rick Astley. Never: The Autobiography □□ OUT NOW! Follow this link to get your copy and listen to Rick''s ...

Fiber Optic Ring Network Design Explained:

Learn how to design a fiber optic ring network with practical diagrams, topologies, and switch setup tips. Explore ring network switch options

Industrial Ring Networks | ERPS | Antaira Technologies

Industrial Ethernet switches are critical components in network infrastructures, often used in harsh environments and mission-critical applications. The Ethernet Ring Protection Switching (ERPS)

Perle P-Ring Protocol | Industrial Managed Switches

Perle''s P-Ring feature, available on all IDS Managed Switches, eliminates this hassle by providing an easy to use method for configuring a ring network that uses standard spanning tree protocols. When

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