

Industrial Switch Ring Network Configuration Principles



Overview

Common redundancy protocols include RSTP for general switching, MRP and DLR for ring topologies, HSR and PRP for zero-switchover hitless redundancy, and ERPS for utility-grade Ethernet rings. Proper redundancy design is critical for safety and production continuity. DLR is an EtherNet/IP™ protocol that is defined by the Open DeviceNet® Vendors' Association (ODVA). DLR network includes at. In the realm of Industrial Internet of Things (IIoT), the significance of robust and reliable networking infrastructure cannot be overstated. Industrial switches, as the core components of this infrastructure, play a pivotal role in establishing and maintaining the integrity of industrial ring. The fiber optic ring redundancy design for industrial Ethernet switches is precisely engineered to address this pain point—achieving millisecond-level fault self-healing through the synergy of physical ring architecture and intelligent protocols, thereby constructing the "self-healing heart" of. This guide walks you through everything you need to know about fiber ring networks—from basic concepts to topology diagrams and essential protocols. What Is a Fiber Optic Ring Network?

A fiber optic ring network is a physical or logical network topology where devices (usually switches) are. 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. Devices are connected in a closed ring topology, with a Redundancy Manager (RM) controlling the ring state.

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The workshop deploys two independent fiber optic ring networks (Ring A and Ring B), each containing eight USR-ISG-8G industrial

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Ethernet Ring Redundancy

This document provides basic background information regarding adding ring redundancy in your wired Ethernet

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Redundancy Protocol Configuration Guide, Cisco

Device Level Ring (DLR) is a Layer 2 protocol that enables redundancy in a ring topology,

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Embedded Switch Technology Reference Architectures

Prior to the embedded switch technology, the traditional EtherNet/IP network topologies were switch-centric, using Layer 2 access

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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

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Ring Networks in Industrial Automation: A Comprehensive Overview

This essay delves into the intricacies of ring networks within the context of industrial automation, exploring their advantages,

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PROFINET – MRP Ring:

PROFINET - MRP Ring: Important Configuration Recommendations When Using RSTP As an established field bus communication

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Ring Redundancy Protocols for Industrial Ethernet Networks

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Configuration of a Ring Topology Based on “MRP”

Use of the ring redundancy protocol MRP (“Media Redundancy Protocol”) for setting up a redundant PROFINET

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Fiber Optic Ring Redundancy Design for Industrial Ethernet Switches

5. Redundancy Design as the "Lifeline" of Industrial Networks Fiber optic ring redundancy design represents not just a technical

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Cisco IE3500 Series Switch Software Configuration Guide, Cisco IOS

Device Level Ring (DLR) is a Layer 2 protocol that enables redundancy in a ring topology, providing fast network fault

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What Is Network Redundancy? Key Strategies for Industrial Switches

Learn what network redundancy is and why it matters for industrial communication systems. Explore device, link, ring,

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In fact, select manufacturers claim much better recovery times for their proprietary ring networks sometimes to

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How to Configure ERPS on Industrial Network Switch

ERPS Industrial Network Switch provides protection and recovery switching for a ring

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What is ERPS and How It Prevents Network Loops

ERPS is one of the most widely used redundant ring protocols. This guide explains ERPS concepts, operating

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Building Fault-Tolerant Industrial Ring Networks with Ethernet Ring ...

What is Ethernet Ring Protection Switching? The ITU-T G.8032 Ethernet Ring Protection Switching (ERPS) is an open-standard

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The OEM Guide to Networking ENET-RM001A-EN-P

The primary disadvantages of a device-level ring topology are additional setup required (e.g., configuring the active ring supervisor)

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Building Network Redundancy: Why Ring Topology Matters in

Learn why ring topology is vital for network redundancy in industrial Ethernet networks. Discover how it enhances reliability,

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Redundant Ring Technology for Industrial Ethernet Applications

Next, we introduce “redundant ring” technology, and point out the advantages that redundant rings have over traditional systems. In

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Fiber Optic Ring Network Design Explained:

Learn how to design a fiber optic ring network with practical diagrams, topologies, and

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Introduction to X-Ring Ethernet Industrial Ring Technology X-Ring Ethernet Industrial Ring Technology is

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Configuring Ring Redundancy in Industrial Ethernet Networks

Ring redundancy in industrial Ethernet networks provides seamless failover using redundant paths. Learn

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Ring Protocol MRP (IEC 62439-2) | Media Redundancy Protocol

In a ring network, each Ethernet switch is connected to a minimum of two other switches to form a ring. Ease of set-up and high

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Step-by-Step Configuration Guide for Industrial Lte Router Ring

Industrial Lte router ring redundancy technology was born precisely to solve such "life-or-death" challenges—it enables networks to

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Network Redundancy for Industrial Control Systems

Network redundancy in industrial control systems ensures continuous SCADA and DCS communication despite cable

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Alternatively, it can link several smaller network configurations into a larger one, typically

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

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Best Practices for Designing Redundant Networks for Industrial

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Detailed Explanation of the Ring Network Redundancy Function of ...

This article will deeply analyze the solutions to ring network redundancy from three dimensions: technical principles, implementation

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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

Nov 13, 2025

Redundancy Protocol Configuration Guide, Cisco Catalyst IE3x00,

Device Level Ring Device Level Ring Components of DLR DLR Topology Multiple Rings Redundant Gateways Cisco

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How Industrial Switches Build Industrial Ring Networks

This article aims to provide a concise yet comprehensive overview of how industrial switches contribute to the

Contact Us

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