Security Interface Requirements for Fiber Optic Switches



Overview

SecureSwitch® Fiber Optic Switch Revision A, B, C, DThe results of this evaluation demonstrate that Fiber Optic Switch meets the requirements of Evaluation.

Key Takeaways

Fiber optic switches require secure physical interfaces, port isolation, validated transceivers, and in-transit encryption to ensure data integrity and prevent unauthorized access.

Physical and Logical Isolation

Fiber optic switches often implement physical isolation mechanisms to prevent cross-network contamination. For example, the SecureSwitch® Fiber Optic Switch uses a mirrored switching mechanism that provides a minimum of 75 dB isolation between unselected ports, ensuring that a single host can connect to multiple networks without risk of data leakage. Industrial and commercial switches may also include ruggedized cases and hardened ports to protect against tampering and environmental threats.

Secure Transceivers and Port Validation

Small form-factor pluggable (SFP) transceivers are critical components of fiber switches. Security requirements include vendor validation, ensuring that only approved optics are supported by the switch software. This prevents the introduction of malicious or low-quality third-party transceivers that could compromise network integrity.

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Validated SF

Ps are tested for compatibility, supply chain integrity, and software support, reducing the risk of unauthorized access or data interception.

Encryption and Data Protection

Even though fiber is inherently resistant to electromagnetic eavesdropping, attackers can exploit physical access points to tap signals. Layer 1 in-transit encryption is recommended to protect data across fiber links, ensuring that intercepted signals remain unreadable. This is particularly important for backbone, FTTH, and enterprise deployments.

Combining encryption with bend-insensitive and hardened fibers further mitigates the risk of micro-bend tapping attacks.

Network Management and Interface Security

Fiber optic switches should provide secure management interfaces, including GUI or remote control software with authentication and access control. Features like auto-fallback, multi-way switching, and secure offline positions enhance operational security while maintaining flexibility. Administrators should monitor optical signals for anomalies, such as unexpected attenuation or unauthorized splicing, to detect potential security breaches early.

Compliance and Evaluation Standards

For high-security environments, fiber optic switches may be evaluated under standards like the Common Criteria (CC). Products certified at Evaluation Assurance Level (EAL) 2 or higher demonstrate compliance with defined security functional requirements, including port isolation, secure switching, and controlled user access. Reviewing the security target of the certified product ensures that deployment assumptions and intended environments align with operational needs.

Summary

To meet security interface requirements, fiber optic switches should include: Physical port isolation and ruggedized hardwareValidated SFP transceivers to prevent unauthorized devicesLayer 1 encryption for data in transitBend-insensitive and hardened fibers to resist tappingSecure management interfaces with monitoring capabilitiesCompliance with recognized security standards such as Common Criteria Implementing these measures ensures that fiber optic networks remain resilient, secure, and compliant with industry best practices.

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Article Content

SecureSwitch® Fiber Optic Switch Revision A, B, C, D

The results of this evaluation demonstrate that Fiber Optic Switch meets the requirements of Evaluation Assurance Level (EAL) 2 for the evaluated security functionality.

The Security Risks of SFP Optical Transceivers

PDF file

SecureSwitch® Fiber Optic Switch Revision A, B, C, D

This Security Target (ST) defines the SecureSwitch® Fiber Optic Switch Revision A, B, C, D Target of Evaluation (TOE) for the purposes of Common Criteria (CC) evaluation.

Best Practices for Securing Cisco Switches in Enterprise Environments

Use secure protocols like SCP or SFTP for transfers. By implementing these best practices, organizations can significantly enhance the security posture of their Cisco switches,

Fiber Optic Switch Guide: Definition, Connection Methods, Cabling ...

A practical B2B guide explaining what a fiber optic switch is, how to connect fiber optic cable to Ethernet switches, how to connect two switches with fiber, how to disconnect fiber safely,

Ethernet Fiber Switch: Comprehensive Guide to Networking Power

This article explores Ethernet fiber switch, their key technical attributes, types, advantages, applications, and buying considerations to help readers understand how to leverage

Troubleshoot Fiber Links on Catalyst 9000 Series Switches

The intention of this document is to explain some of the specifications that appear in the Cisco Optics-to-Device Compatibility Matrix and the importance of paying specific attention to the

SecureSwitch air-gap NIAP switch for classified unclassified networks

N:1 models use the same all-optical switching and isolation technology as the original SecureSwitch ® models, include improved internal diagnostics and eliminate the need to cascade multiple switches

Security Hardening Checklist Guide for Cisco Routers/Switches in 10

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The security checklist below is not exhaustive but it includes the most important commands and configurations that will lock down a Cisco IOS network device and enhance its security and that of

Full text of "Crossword Lists & Crossword Solver Stibbs Anne"

Full text of "Crossword Lists & Crossword Solver Stibbs Anne" See other formats CROSSWORD LISTS AND CROSSWORD SOLVER EDITED BY ANNE STIBBS KERR SECOND EDITION BLOOMS B

How Fibre Optic Communication Works – Wray Castle

Fibre optic communication is the process of sending data as pulses of light through thin strands of glass or plastic fibers. At its core, the technology converts electrical signals into light

IEC homepage

IEC everywhere for a safer and more efficient world. The IEC is a global, not-for-profit membership organization that brings together more than 170 countries and

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Cisco 40GBASE QSFP Modules Data Sheet

Cisco QSFP-40G-SR-BD (40G BiDi) The Cisco QSFP 40-Gbps BiDirectional (BiDi) transceiver (Figure 1) is a pluggable optical transceiver with a duplex LC connector interface for short

How to Connect Multiple Ethernet Switches Using Fiber Optic Cables ...

Most importantly, any upgrades and advancements in networking technology can be easily accommodated by existing fiber infrastructure, offering scalability for future network

What is Fiber optic switch

By understanding how fiber optic switches work and their benefits, network administrators can effectively design and maintain high-speed, reliable, and scalable networks. Implementing appropriate security

Modular Switches

A modular fiber optic switch is a network switch designed with a modular architecture, allowing users to customize the switch configuration based on their specific requirements. Unlike fixed-configuration

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How to Install IP Security Cameras with Fiber Switches?

How to Install IP Security Cameras with Fiber Switches? In IP surveillance, a PoE switch has always been the standard way to install the cameras. By using a PoE switch, power and data

004_TLN_AppBro_FiberReadyNetSwitch

Terminate your fiber optic cabling with two LC-style connectors or purchase a pre-terminated fiber optic cable with two LC-style connectors. When connecting terminated duplex fiber optic cable between

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Website: https://fdsoluciones.es
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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

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