

ICSNS

Course Description

This 5-day hands-on class gives you the essential knowledge and skills that you need to deploy the Cisco MDS 9000 Family.

Course topics include installing and bringing up the switch, configuring Virtual SANs (VSANs), domains, interfaces, and zones, implementing PortChannels, configuring management security, and basic troubleshooting. You will also learn how to configure highly available FCIP tunnels and tune the performance of your FCIP links.

In the lab, you will configure the switch from an out-of-the-box state, perform non-disruptive software upgrade, configure VSANs and zones, and implement a high-availability SAN design using FCIP.

Who Should Attend

This course provides in-depth technical training for system engineers, network engineers, and field engineers who need to deploy, configure, and manage MDS 9000 Series switches.

Recommended Prerequisites

Understanding of basic data storage components and protocols and Fibre Channel SANs is recommended.

Related Training

- Implementing Advanced Cisco Storage Networking Solutions (IASNS)
- Designing Cisco Storage Networking Solutions (DCSNS)

Learning Objectives

After you complete this course, you will be able to:

- Identify the components, services, and features of the MDS 9000 platform
- Install the switch hardware and perform the initial software configuration process
- Configure virtual SANs (VSANs), dynamic VSANs, and manage domains
- Configure and zone FC interfaces
- Configure intelligent addressing
- Secure management interfaces
- Configure PortChannels and FSPF
- Explain how to implement FCC and QoS to reduce congestion and prioritize traffic flows
- Configure high-availability SAN extension with FCIP
- Implement inter-VSAN routing (IVR) for FCIP
- Tune FCIP performance
- Diagnose SAN problems and common configuration errors



Implementing Cisco Storage Networking Solutions

Course Outline

Lesson 1: MDS 9000 Platform Components and Architecture

SMB and Enterprise SAN Requirements and Consolidation Methods
The MDS 9000 Virtual SAN
The MDS 9000 Platform
The MDS 9000 Modules
Crossbar and Supervisor Module Architecture
MDS Switching Module Architectures
MDS Switching Module Oversubscription

Lesson 2: Intelligent Fabric Services

MDS Intelligent Services Modules
FAIS Overview
SANTap
SAN Virtualization
Protocol Acceleration
Security
Cisco MDS 9000 FICON Support

Lesson 3: Installing Switch Hardware

Installation Guidelines
Configuring Power Supplies
Supervisor and Line Card Modules
Installation

Lesson 4: Initial Setup, Fabric Manager, CLI

Performing the Initial Setup
Cisco Fabric Manager Server
Cisco Fabric Manager
The Command Line Interface

Lesson 5: Licensing, Software Upgrade, Troubleshooting the Boot Process

Software Licensing
Software Installation and Upgrade
Prerequisites
Software Upgrade Methods
Troubleshooting the Boot Process

Lesson 6: Configuring Cisco Fabric Services

Cisco Fabric Services
Cisco Fabric Services Architecture
Cisco Fabric Services Implementation
Cisco Fabric Services Distribution over IP
Call Home Services
Configuring Call Home
Customized Alert Group Messages
Configuring NTP

Lesson 7: Fibre Channel Protocol Addressing

Fibre Channel Layers
Fibre Channel Addressing
World Wide Names
Fibre Channel Routing
The Registered State Change Notification Process

Lesson 8: VSAN Configuration and Domain Management

VSAN Overview
Creating VSANs
Domain ID Assignment
The Fabric Configuration Server
Configuring the Principal Switch priority
FCID Assignment
N-Port Virtualizer and N_Port Identifier Virtualization
Dynamic Port VSAN Membership

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Lesson 9: Configuring Interfaces

Configuring Fibre Channel Interfaces
Trunk Mode Configuration
Port Bandwidth Reservation

Lesson 10: FSPF and PortChannels

Implementing Traffic Engineering
Configuring Load Balancing
PortChannel Overview
Creating PortChannels
The PortChannel Protocol
Modifying PortChannel Links



Learning Solutions



Implementing Cisco Storage Networking Solutions

Course Outline

Lesson 11: Implementing Zones

- Zoning Overview
- Creating Zones and Zonesets
- Verifying Zone Configuration
- Configuring Zoneset Distribution
- Recovering from Zone Merge Failures
- Managing Zonesets
- Enhanced Zoning Features
- Recommended Practices for Zoning

Lesson 12: Fibre Channel over IP

- The FCIP Protocol
- IP Addressing
- IP Routing Protocols
- FCIP Configuration
- Verifying the FCIP Configuration
- Using VLAN Subinterfaces
- PortChannels with FCIP Tunnels

Lesson 13: Tuning FCIP Performance

- Overview of FCIP Tuning Parameters
- Configuring TCP Timeout, Retransmit, and Selective Acknowledgement
- Configuring the MTU
- FCIP Flow Control
- Packet Shaping
- FCIP Compression
- FCIP Write Acceleration
- FCIP Tape Acceleration
- IP QoS Overview
- Using the SAN Extension Tuner

Lesson 14: Inter-VSAN Routing

- IVR Overview
- IVR Implementation
- Verifying the IVR Configuration
- IVR Zones and Zone Sets
- FSPF and IVR

Lesson 15: MDS Interoperability

- Overview of Switch Interoperability
- Interoperability Mode Guidelines
- Configuring Interop Mode 4
- VSANs and Interoperability
- Additional Interop Considerations

Lesson 16: Basic Troubleshooting

- Troubleshooting Methodology
- Verify Power
- Monitoring Ports
- Verifying Fabric Registration
- Cisco Fabric Manager Tools
- Using FC Ping and FC Trace
- Monitoring Processes and CPUs
- FCIP Troubleshooting
- Troubleshooting Network Connectivity
- Verify FCIP Configuration
- SPAN / RSPAN Overview

Labs

- Lab 1: MDS 9000 Initial Setup
- Lab 2: Troubleshooting the Boot Process
- Lab 3: CFS and Call Home
- Lab 4: VSANs
- Lab 5: Interfaces and Port Tracking
- Lab 6: Device Aliases and Zoning
- Lab 7: PortChannels and FSPF
- Lab 8: FCIP Tunnels and Port Channels
- Lab 9: FCIP SAN Extension Tuner
- Lab 10: Interoperability with IVR
- Lab 11: Challenge Lab
- Lab 12: Basic Port Troubleshooting



Learning Solutions