

Cisco® Implementing Cisco Service Provider Next-Generation Core Network Services v1.2 (SPCORE)

Course Overview

This is a 5-day class

In this course, you will be introduced to the concepts of Multiprotocol Label Switching (MPLS) and its implementation. You will learn about the MPLS Traffic Engineering (MPLS TE) services built on the MPLS technology, and you'll learn to use the principles of quality of service (QoS) and QoS with MPLS to implement advanced features and functions.

Who Should Attend

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 - Network administrators, engineers, and managers who want to implement MPLS and MPLS TE in the core portion of service provider environments and ensure QoS in the service provider backbone - Systems engineers - Individuals preparing for CCNP Service Provider certification

Course Objectives

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 - Features of MPLS and how MPLS labels are assigned and distributed - Requirements for traffic engineering in modern networks that must attain optimal resource utilization - QoS and the need to implement it - Classify and mark network traffic to implement an administrative policy requiring QoS - Cisco QoS queuing mechanisms used to manage network congestion - Traffic policing and shaping, including token bucket, dual token bucket, and dual-rate policing

Course Outline

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1 MPLS

- Basics
- Concepts
- Labels
- Applications
- Running Label Distribution Protocol (LDP)
- LDP Process
- Forming Label Switched Path
- MPLS Convergence
- Platform Switching Mechanisms
- Implementing MPLS in the Service Provider Core
- Configure MPLS
- Monitor MPLS
- Troubleshoot MPLS

2 MPLS TE

- Basics
- Concepts
- Components
- Process
- Running MPLS TE
- Constraint-Based Path Computation
- Path Setup and Maintenance
- Assigning Traffic to Traffic Tunnels BGP Confederations
- Implementing MPLS TE
- MPLS TE Configuration
- MPLS TE Path Selection
- MPLS TE Process
- Protecting MPLS TE Traffic
- Link and Node Protection
- MPLS TE Bandwidth Control

3 QoS in the Service Provider Network

- Understanding QoS
- Models for Implementing QoS
- Implementing Cisco QoS and QoS Mechanisms
- QoS Mechanisms
- Implementing QoS
- QoS in Service Provider Environment
- Implementing MPLS Support for QoS
- MPLS QoS
- MPLS DiffServ QoS Models

4 QoS Classification and Marking

- Using the Modular QoS CLI (MQC)
- Using MQC for Classification
- Using MQC for Class-Based Marking
- Implementing Advanced QoS Techniques
- Network-Based Application Recognition
- QoS Tunneling Techniques
- QoS Policy Propagation via BGP
- Hierarchical QoS

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5 QoS Congestion Management and Avoidance

- Managing Congestion
- Queuing
- Queuing Implementations
- Configuring Class-Based Weighted Fair Queuing (CBWFQ)
- Configuring Low Latency Queuing (LLQ)
- Implementing Congestion Avoidance
- Congestion Avoidance
- Random Early Detection (RED)
- Configuring Weighted Random Early Detection (WRED)

6 QoS Traffic Policing and Shaping

- Implementing Traffic Policing
- Class-Based Policing
- Local Packet Transport Services
- Implementing Traffic Shaping
- Class-Based Shaping