

Cisco Networks Implementing Cisco Quality of Service (QoS)

Course:ET921

Course Description

This course gives you the knowledge and skills required to design, implement, and troubleshoot Quality of Service (QoS) on a network. The course addresses the essential QoS technologies and applications for both Service Provider and Enterprise networks. Successful implementation of the techniques taught in this course will have a dramatic impact on critical network application performance.

Who should attend?

Network professionals interested in deploying state-of-the-art QoS techniques to support multimedia traffic would benefit from this course.

Pre-requisites

- Cisco Certified Network Associate (CCNA)

Course Objectives

- Building blocks of IP QoS
- Configure AutoQoS on WAN routers and on Catalyst access switches and monitor the results
- Configure FIFO and WFQ queuing on WAN routers and measure and analyze network performance
- Configure WRED on WAN routers to control which traffic is dropped during congestion
- Configure CBWFQ and LLQ on WAN routers to provide bandwidth and latency guarantees
- Configure COS-to-queue mapping and WRR queuing on the Catalyst 2950 switch

Lab Equipments

Course Outline

1. Introduction to IP QoS
 - Understanding the Need for QoS
 - Understanding QoS
 - Implementing QoS
2. The Building Blocks of IP QoS
 - Identifying Models for Implementing QoS
 - The Integrated Services Model
 - The Differentiated Services Model
 - Identifying QoS Mechanisms
 - QoS in the Life of a Packet
3. Modular QoS CLI and AutoQoS
 - Modular QoS CLI
 - Cisco AutoQoS VoIP
 - Cisco AutoQoS Enterprise
4. Classification and Marking
 - Understanding Classification and Marking
 - Using MQC for Classification
 - Using MQC for Class-Based Marking
 - Using NBAR for Classification
 - Configuring QoS Pre-Classify
 - Configuring QoS Policy Propagation Through BGP
 - Configuring LAN Classification and Marking

Hands-On Labs
QoS Lab Setup and Initialization
Baseline QoS Measurement
Classification and Marking Using MQC
Classification Using NBAR
LAN-Based Packet Classification and Marking
Configuring QoS Pre-Classify
5. Congestion Management
 - Introducing Queuing
 - Understanding Queuing Implementations
 - Configuring FIFO and WFQ
 - Configuring CBWFQ and LLQ
 - Configuring LAN Congestion Management

Hands-On Labs
Configuring Basic Queuing
Configuring LLQ
Queuing on Catalyst Switches
6. Congestion Avoidance
 - Introducing Congestion Avoidance
 - RED
 - Configuring Class-Based Weighted RED
 - Configuring Explicit Congestion Notification
7. Traffic Policing and Shaping
 - Understanding Traffic Policing and Shaping
 - Configuring Class-Based Policing
 - Configuring Class-Based Shaping

- Configuring Class-Based Shaping on Frame Relay Interfaces
- Frame Relay Voice-Adaptive Traffic Shaping and Fragmentation

Hands-On Labs

Configuring DSCP-Based WRED
Configuring Class-Based Policing
Configuring Class-Based Shaping

8. Link Efficiency Mechanisms

- Understanding Link Efficiency Mechanisms
- Configuring Class-Based Header Compression
- Configuring Link Fragmentation and Interleaving

Hands-On Labs

Configuring Class-Based Header Compression
Configuring LFI

9. QoS Best Practices

- Understanding Traffic Classification Best Practices
- Deploying End-to-End QoS
- Providing QoS for Security

Hands-On Labs

Configuring QoS with AutoQoS for VoIP

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