

# Course : Cisco routers, QoS implementation

*Practical course - 4d - 28h00 - Ref. MOQ*

**Price : 2380 € E.T.**

★★★★★ 5 / 5

Increasingly demanding applications in terms of bandwidth require more and more optimization of existing infrastructures to guarantee the required QoS. This course will teach you how to master Quality of Service with Cisco equipment, within convergent data, voice and video networks.

## Teaching objectives

**At the end of the training, the participant will be able to:**

- ✓ Implementing and managing QoS
- ✓ Identify and understand the different QoS management mechanisms available in the IOS
- ✓ Use queuing mechanisms to manage network congestion
- ✓ Use Cisco QoS congestion avoidance mechanisms to reduce the effects of congestion on the network

## Intended audience

Network administrators and engineers.

## Prerequisites

Basic knowledge of Cisco router administration or knowledge equivalent to the ORSYS course " Cisco routers, IP implementation " ref. ROC.

## Course schedule

### 1 Introduction

- Quality of service (QoS) requirements.
- Implementation models.
- The Modular QoS CLI: class-map, policy-map and service-policy.
- Auto QoS.
- QoS mechanisms.

### Hands-on work

MQC and AutoQoS configuration examples.

### PARTICIPANTS

Network administrators and engineers.

### PREREQUISITES

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### TRAINER QUALIFICATIONS

The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

### ASSESSMENT TERMS

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more.

Participants also complete a placement test before and after the course to measure the skills they've developed.

## 2 Classification and marking

- How to classify.
- What is marking.
- NBAR functionality.
- How to classify traffic with Pre-Classify.
- Trust boundaries.

### Hands-on work

Setting up classification and tagging. Configuration of NBAR to classify http traffic and configuration of Pre-classify through a tunnel.

## 3 Congestion management

- Theoretical algorithms for queuing: FIFO, PQ, RR, WRR, DRR.
- Queuing components.
- WFQ: Weighted Fair Queue.
- CBWFQ: Class-Based Weighted Fair Queue.
- LLQ: Low-Latency Queuing.
- LAN congestion management.

### Hands-on work

Configuring hardware and software queues for QoS. Configuration of Weighted Fair Queue. Configuration of Class Based Weighted Fair Queue, Low Latency Queuing and WRR.

## 4 Preventing congestion

- The prevention context.
- TCP synchronization.
- RED: Random Early Detection.
- WRED: Weighted RED.
- ECN: Explicit Congestion Notification.

### Hands-on work

Weighted Random Early Detection configuration.

## 5 Policing " and shaping ".

- The principles of policing and shaping.
- Single and double token baskets.
- The double-speed token basket.
- Policing and shaping configuration.
- Frame-Relay shaping configuration.

### Hands-on work

Single-speed and double-speed policing configuration. Shaping configuration, shaping peak and shaping frame-relay.

## 6 Efficient connections

- The different improvement methods.
- Header compression.
- Fragmentation.

### Hands-on work

Compression and fragmentation configuration.

## TEACHING AIDS AND TECHNICAL RESOURCES

- The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
- At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
- A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

## TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training.

## ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at [psh-accueil@orsys.fr](mailto:psh-accueil@orsys.fr) to review your request and its feasibility.

