



**Course No:** (TWI-JUN-JCOS)

**Length:** 4 days

### About this Course

This two-day course provides students with advanced class-of-service (CoS) knowledge and configuration examples. The course begins with an overview of CoS before going into classification, policing, scheduling, and rewriting. The course then covers class-based forwarding and finishes with a case study. This course is based on the Junos operating system Release 10.1R1.8.

Through demonstrations and hands-on labs, students will gain experience in configuring and verifying Junos CoS features.

### Objectives

After successfully completing this course, you should be able to:

- Understand the history and evolution of CoS.
- Identify the CoS fields in various packet headers.
- List the CoS processing stages on devices running the Junos OS.
- Identify the default CoS settings on devices running the Junos OS.
- Configure and verify behavior aggregate (BA) and multifeild (MF) classification.
- Configure and verify two-color and tricolor marking policers.
- Configure and verify schedulers and their components.
- Configure and verify the multiple levels of hierarchical schedulers.
- Configure and verify packet header rewriting.
- Configure and verify class-based forwarding.
- Create a CoS configuration based on a set of design requirements.

### Intended Audience

This course benefits individuals responsible for configuring and monitoring devices running the Junos OS, especially those in a service provider environment. It also benefits individuals responsible for designing networks containing devices running the Junos OS.

### Course Level

Junos Class of Service is an advanced-level course.

### Prerequisites

Students should attend the Introduction to Junos Software (IJS) course, the Junos Routing Essentials (JRE) course, and the Junos Intermediate Routing (JIR) course, or have equivalent experience prior to attending this class. General knowledge of CoS concepts is also helpful.

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## Course Contents

Day1

### Chapter 1: Course Introduction

#### Chapter 2: Cos Overview

- CoS History and Evolution
- CoS and DiffServe
- CoS Fields in Packet Headers
- CoS Processing

#### Chapter 3: Packet Classification

- Classification Overview
- Forwarding Classes and Packet Loss Priority
- Fixed Classification
- Multifield Classification
- Behavior Aggregate Classification
- Lab 1: Configuring Packet Classification

#### Chapter 4: Policing

- Policing Overview
- Single-Rate Two-Color Policer
- Tricolor Marking Policers
- Application—Directly on an Interface
- Application—Within a Firewall Filter
- Lab 2: Configuring Policers

#### Chapter 5: Scheduling

- Scheduling Overview
- Transmission Rate
- Queue Priority
- Delay Buffers
- Drop Profiles and Drop Profile Maps
- Scheduling Configuration
- Lab 3: Configuring Schedulers

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Day 2

### **Chapter 6: Hierarchical Scheduling**

- Hierarchical Scheduling Overview
- Scheduler Modes
- Hierarchical Scheduling Levels
- Throughput Example
- Remaining Traffic
- Queue Properties in a Hierarchical Scheduling Context
- Putting It All Together
- Lab 4: Configuring Hierarchical Schedulers

### **Chapter 7: Rewrite Rules**

- Packet Header Rewrite Overview
- Rewrite Rules and Tables
- Rewrite Combinations
- Lab 5: Configuring Rewrite Rules

### **Chapter 8: CoS-Based Forwarding**

- CBF Overview
- CBF Configuration
- Lab 6: Configuring CBF

### **Chapter 9: Case Study**

- VOIP Case Study Overview
- VOIP Case Study: Ingress Node
- VOIP Case Study: Transit and Egress Nodes

### **Appendix A: CoS Processing on M Series, T Series, and MX Series Devices**

- M Series and T Series Architecture
- M Series and T Series CoS Packet Handling
- IQ2 PIC CoS Packet Handling
- MX Series (DPC and MPC/MIC) Architecture and CoS Packet Handling

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