Junos Class of Service
Course JCOS; 2 Days, Instructor-led

Course Description
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 case studies that reenforce topics.

Through demonstrations and hands-on labs, students will gain experience in configuring and monitoring the JUNOS Software and monitoring basic device operations.

Course Topics
- 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 multifield (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.

Prerequisites
- This is an advanced level course.
- Students should have intermediate-level networking knowledge and an understanding of the OSI model and the TCP/IP protocol suite. Students should also have familiarity with the Protocol Independent Multicast-Sparse Mode (PIM-SM) protocol.
- Students should have already attended Introduction to JUNOS Operating Systems (IJOS), JUNOS Routing Essentials (JRE)[[ and the Junos Intermediate Routing (JIR) courses or have equivalent knowledge provided in these titles.

Course Outline
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

**Chapter 4: Policing**
- Policing Overview
- Single-Rate Two-Color Policer
- Tricolor Marking Policers
- Application—Directly on an Interface
- Application—Within a Firewall Filter

**Chapter 5: Scheduling**
- Scheduling Overview
- Transmission Rate
- Queue Priority
- Delay Buffers
- Drop Profiles and Drop Profile Maps
- Scheduling Configuration

**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

**Chapter 7: Rewrite Rules**
- Packet Header Rewrite Overview
- Rewrite Rules and Tables
- Rewrite Combinations

**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