



## TRAINING OFFERING

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**You can reach us at:**

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CODE:	LENGTH:	PRICE:
JUN_JMF	2 days	£1,295.00

## Description

This two-day course is designed to provide students with a solid foundation on Multiprotocol Label Switching (MPLS). After introducing concepts such as MPLS forwarding and the structure of the MPLS header, the course will delve into the configuration and operation of the two main label distribution protocols, RSVP and LDP. Special emphasis is given to the central topics of traffic engineering and MPLS traffic protection, including fast reroute, link/node protection, and LDP loop-free alternate. The concepts are put into practice with a series of in-depth hands-on labs, which will allow participants to gain experience in configuring and monitoring MPLS on Junos OS devices. These hands-on labs utilize Juniper Networks vMX Series devices using the Junos OS Release 19.2R1.8 but are also applicable to other MX Series devices.

Junos MPLS Fundamentals (JMF) is an intermediate-level course. Relevant Juniper Product

- Routing
- Switching
- Junos OS
- M Series
- MX Series
- PTX Series
- Service Provider Routing and Switching Track

## Objectives

- Describe the history and rationale for MPLS, as well as its basic terminology.
- Explain the MPLS label operations (push, pop, swap) and the concept of label switched path (LSP).
- Describe the configuration and verification of MPLS forwarding.
- Describe the functionalities and operation of RSVP and LDP.
- Configure and verify RSVP-signaled and LDP-signaled LSPs.
- Select and configure the appropriate label distribution protocol for a given set of requirements.
- Describe the default Junos OS MPLS traffic engineering behavior.
- Explain the Interior Gateway Protocol (IGP) extensions used to build the Traffic Engineering Database (TED).
- Describe the Constrained Shortest Path First (CSPF) algorithm, its uses, and its path selection process.
- Describe administrative groups and how they can be used to influence path selection.
- Describe the default traffic protection behavior of RSVP-signaled LSPs.
- Explain the use of primary and secondary LSPs.
- Describe the operation and configuration of fast reroute.
- Describe the operation and configuration of link and node protection.
- Describe the operation and configuration of LDP loop-free alternate.
- Describe the LSP optimization options.
- Explain LSP priority and preemption.
- Describe the behavior of fate sharing.
- Describe how SRLG changes the CSPF algorithm when computing the path of a secondary LSP.
- Explain how extended admin groups can be used to influence path selection.
- Explain the purpose of several miscellaneous MPLS features.

## Audience

This course benefits individuals responsible for configuring and monitoring devices running the Junos OS.

## Prerequisites

Students should have intermediate-level networking knowledge and should be familiar with the Junos OS command-line interface (CLI).

Students should also attend the Introduction to the Junos Operating System (IJOS), Junos Intermediate Routing (JIR), and Junos Service Provider Switching (JSPX) courses prior to attending this class.

## Programme

- |                          |                                |
|--------------------------|--------------------------------|
| MPLS Fundamentals        | Label Distribution Protocols   |
| • MPLS Foundation        | • Label Distribution Protocols |
| • Terminology            | • RSVP                         |
| • MPLS Configuration     | • LDP                          |
| • MPLS Packet Forwarding | • Seamless MPLS                |

Day 1 Course Introduction LAB: MPLS Fundamentals LAB: Label Distribution Protocols  
Routing Table Integration

- Mapping Next Hops to LSPs
- Route Resolution Example
- Route Resolution Summary
- IGP Passive Versus Next-Hop Self for BGP Destinations LAB: Routing Table Integration Day 2  
LAB: CSPF

- |                                     |   |   |
|-------------------------------------|---|---|
| Constrained Shortest Path First     | Traffic Protection and LSP Optimization |   |
| • RSVP Behavior Without CSPF        | • Default Traffic Protection Behavior   | LAB: Traffic Protection                   |
| • CSPF Algorithm                    | • Primary and Secondary LSPs            |   |
| • CSPF Tie Breaking                 | • Fast Reroute                          | Fate Sharing                              |
| • Administrative Groups             | • RSVP Link Protection                  | • Junos OS Fate Sharing                   |
| • Interarea Traffic Engineered LSPs | • LDP LFA and Link Protection           | • SRLG                                    |
| Miscellaneous MPLS Features         | • LSP Optimization                      | • Extended Admin Groups LAB: Fate Sharing |
| • Forwarding Adjacencies            |   |   |
| • Policy Control over LSP Selection |   |   |
| • LSP Metrics                       |   |   |
| • Automatic Bandwidth               |   |   |
| • Container LSPs                    |   |   |
| • TTL Handling                      |   |   |
| • Explicit Null Configuration       |   |   |
| • MPLS Pings                        | LAB: Miscellaneous MPLS Features        |   |

## Follow on courses

- Junos Layer 2 VPNs (JL2V)
- Junos Layer 3 VPNs (JL3V)

Recommended Next Courses

## Test and Certification

Associated Certification JNCIS-SP

## Session Dates

Date	Location	Time Zone	Language	Type	Guaranteed	PRICE
17 Mar 2022	London - Dowgate Hill	GMT	English	Classroom		£1,295.00
17 Mar 2022	Virtual Classroom	GMT	English	Instructor Led Online		£1,295.00
09 Jun 2022	London - Dowgate Hill	BST	English	Classroom		£1,295.00
09 Jun 2022	Virtual Classroom	BST	English	Instructor Led Online		£1,295.00
24 Nov 2022	London - Dowgate Hill	GMT	English	Classroom		£1,295.00
24 Nov 2022	Virtual Classroom	GMT	English	Instructor Led Online		£1,295.00

### Additional Information

[This training is also available as onsite training. Please contact us to find out more.](#)