

MPLS Fundamentals

Course Length	2 days
Course Code	1360
Prerequisites	Introduction to Data, IP (Internet Protocol) and ATM (Asynchronous Transfer Mode) Technology
Course Overview:	This course introduces you to both the applications and technical aspects of MPLS. This includes equipment/architecture, applications and technology specifics. It also helps to better understand proper installation and maintenance techniques of MPLS and ATM based Networks.

** This course can be customized or combined to meet specific system requirements**

Course Outline

Overview of Label Switching

Trends and Drivers
Evolution from ATM
MPLS Applications

- Tunneling and VPNs
- Voice over MPLS
- SONET over MPLS

TCP/IP and MPLS
Efficiency of Label Switching

Review of ATM and IP Networks

Cells and Packets
Addressing and Routing
Virtual Circuits, Channels and Paths
Importance of QoS (Quality of Service)



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MPLS Fundamentals

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Circuit, Packet and Label Switching comparison
MPLS Equipment and Networks
Format of Label
LSPs (Label Switched Paths)
Path Binding and Label Stacking
Transmission Techniques – Multicast

Protocol and Control

Protocol Overview
Relationship to ATM Protocol
Label Distribution Protocol
Messages
Loop Prevention

Signaling Concepts

Signaling Review (Traditional)
MPLS Signaling
CR-LDP (Constraint-based Routing-Label Distribution)
RSVP (Resource Reservation Protocol)
Design Considerations
Concerns and Common Issues

MPLS Routing

How Routing Actually Works

- Origination/Destination
- MPLS Routers (E-LSRs)
- Distinguishers and Targets

Constraint-Based Routing
Routing and Extensions
IS (Intermediate System) Routing
Routing Protocols through MPLS

- BGP (Border Gateway Protocol)
- OSPF (Open Shortest Path First)

Quality of Service (QoS)

- IntServ (Integrated Services)
- DiffServ (Differentiated Services)

MPLS Fundamentals

Installation and Maintenance

- Engineering and Network Design
- Test Equipment
- Common I&M Techniques

MPLS Enhancements

- GMPLS (Generalized MPLS)

Next Steps for MPLS