

Overview of MPLS HOLW8AAE (IPC_106)

HPE course number	HOLW8AAE
Course length	3.5 hours
Delivery mode	WBT
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As the services and applications of the Internet continue to expand, the Internet backbone must evolve to support them. The key areas of emphasis are routing, QoS, addressing, efficiency, and security. Multi Protocol Label Switching (MPLS) is designed to make the Internet fast, scalable and manageable, and capable of carrying heavy traffic, supporting QoS, and new routing architectures. This course presents a technical overview of MPLS including a detailed discussion on the architecture of MPLS, the components of the MPLS network, and the supporting protocols required for MPLS. Operational issues of MPLS and issues related to interworking MPLS with ATM are also explored. The course ends with a discussion of G-MPLS, which is the evolution of MPLS.

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Audience

This course is intended for anyone seeking an overview of MPLS, its features and capabilities.

Course objectives

After completing this course, the student will be able to:

- Describe the motivation behind MPLS
- State the role of MPLS in the convergence of networks
- List key applications of MPLS
- Compare and contrast the routing techniques of ATM and MPLS
- Sketch the architecture of MPLS
- Describe the important components and operations of MPLS
- Describe how MPLS is used to set up layer 3 and layer 2 VPNs
- Explain the role of MPLS in traffic engineering
- Identify the next steps for MPLS including G-MPLS

Detailed course outline

Module 1: Prologue	<ul style="list-style-type: none">• Introduction to MPLS• Motivation for MPLS• IP forwarding techniques• MPLS forwarding techniques
Module 2: Current state of IP networks	<ul style="list-style-type: none">• Limitations of IP networks• IP over ATM solutions
Module 3: Why MPLS?	<ul style="list-style-type: none">• Advantages of MPLS• New applications
Module 4: MPLS networks	<ul style="list-style-type: none">• MPLS domain• Label edge router• Label switch router
Module 5: MPLS terminology	<ul style="list-style-type: none">• Label Switched Paths (LSP)• Forward Equivalence Class (FEC)• Structure of a label
Module 6: Packet forwarding along LSPs	<ul style="list-style-type: none">• Label Forwarding Information Base (LFIB)• Packet forwarding along LSPs• Label stacking
Module 7: LSP setup process	<ul style="list-style-type: none">• Hop-by-hop routed LSPs• Explicit routed LSPs
Module 8: MPLS protocols	<ul style="list-style-type: none">• New protocols• Example of protocol use
Module 9: MPLS and virtual private networks	<ul style="list-style-type: none">• VPNs support in MPLS• Layer 3 and Layer 2 VPNs establishment in MPLS• Label stacking and VPNs• MPLS based L2 VPN solutions
Module 10: MPLS and traffic engineering	<ul style="list-style-type: none">• Introduction to traffic engineering• MPLS traffic engineering procedures
Module 11: Deployment	<ul style="list-style-type: none">• Current deployments• Next steps
Module 12: Evolution of MPLS	<ul style="list-style-type: none">• New applications• Generalized MPLS (G-MPLS)
Module 13: Summary	

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