

Power your team with a customized class taught by a world class instructor!

Learn from our 25+ years' technology experience and knowledge of industry best practices.

"Talk to us, an onsite class may be more affordable than you realize."

## Why Eogogics?

- **Unmatched Expertise:** Industry-leading 500-course curriculum based on first-hand technology experience. We have been engaged in ground-breaking projects worldwide for 25+ years.
- **High Client Satisfaction:** All of our classes rate good-to-excellent, high client retention, bulk of our business is from loyal clients or their referrals. See our website for enthusiastic testimonials.
- **World-class Instructors:** Advanced degrees, 15-30 years in the real world, publications, patents, awards, honors. They mix teaching with R&D and consulting to keep their tech edge razor sharp. They are as dynamic and entertaining as they are knowledgeable.
- **Customized, Practical Courses** that focus on your technical needs. Take a class onsite or, in some cases, on the Web. Flexible schedules.
- **Buy Coach, Travel First Class:** Using technology to lower our operating expense, we offer best-in-class instructors and tailored courses for 10-15% below market.

**Power Your Organization with an Eogogics Workshop!** Avoid the cost and delay of trial-and-error. Benefit from our 25+ year knowledge of industry best practices and unbiased advice.

## Join a Distinguished Clientele of Fortune 100/500 Companies

Lockheed Martin, UBS, Boeing, Disney, Raytheon, Dell, AT&T, ABC News, Verizon, Sprint, Comcast, LightSquared, TruePosition, DIRECTV, L-3, ITT, SAIC, URS. Shaw, NII, Intelsat, Crown Castle, Harris, Booz Allen Hamilton, Spectra Energy, Xerox, Cooper, Bain & Co., DoD, DHS, DoE, DoC, DoJ, GSA, NASA.

*So minimize the time and money lost to the learning curve, synch up with the industry best practices, receive a second opinion on your technology strategy, and arrive at your technology destination happier, more successful.  
Call or email us today!*

Contact us today for free consultation with a subject matter expert!

## MPLS Applications

COURSE ID MPLSEA

| Duration 2-3 days

| Private Class taught onsite

## Course Overview

### Course in a Nutshell



In this course, following a high-level review of the basics of MPLS (Multi-Protocol Label Switching), we will undertake an in-depth study of some of the more advanced or emerging functionality including circuit emulation, Multicast applications, scalability enhancements, and OAM features. The topics/features to be covered are updated each time the course is taught to keep up with the technology evolution and to include topics of special interest to a given client.

### Customize It!

We will customize this course to your specific needs by adding or omitting topics, increasing or decreasing the level of detail, or making other changes as requested. Those who need a detailed technical treatment of the subject should consider our longer MPLS course listed under Related Courses.

### Learn How To

- Summarize the key capabilities and features of MPLS
- Describe the basic architecture of MPLS
- Explain the operation of MPLS
- List the newer features of MPLS
- Describe the major MPLS services and applications

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## Audience / Prerequisites

### Aimed At

Technical professionals, including those who plan for, design, or implement MPLS networks or applications, who need an in-depth understanding of MPLS's capabilities and future direction.

### Prerequisites

You should be familiar with data networking concepts and TCP/IP and have some prior exposure to MPLS. An understanding of Frame Relay, ATM, and TDM will also be helpful.

## Related Courses

- MPLS – Comprehensive ([MPLS10](#), 2-4 days)
- MPLS ([MPLS](#), 2-3 days)
- MPLS Short Course ([MPLS1D](#), 1 day)
- TCP/IP Networks Overview ([TCPIP3](#), 3 days)
- TCP/IP Networks: Advanced Topics ([TCPIP2](#), 2 days)

## Course Outline

- Introduction
  - Why MPLS
  - Players involved with the MPLS specs
  - Basic MPLS framework
  - Today's MPLS applications
- Understanding Networks and MPLS in Terms of Planes
  - Control plane
  - Data plane
  - Management plane
- Generalized MPLS (GMPLS)
  - MPLS
  - Switching in time, wavelength, and space
  - GMPLS as a control plane of Wavelength-Switched Optical Network (WSON)
- MPLS VPNs

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- Layer 3: BGP-based
- Layer 2: Point-to-point
- Layer 2: Multipoint
- Layer 1 circuit emulation
- MPLS Traffic Engineering
  - Need for traffic engineering on Internet and other IP-based networks
  - TE Parameters
  - Unequal cost load balancing via metric manipulation
  - Advantages of MPLS traffic engineering
  - Basic concepts of MPLS traffic engineering
  - MPLS traffic engineering elements (dynamic/static LSPs)
  - MPLS traffic engineering configuration
  - Resource Reservation Protocol for Traffic Engineering (RSVP-TE)
  - QoS and MPLS
- Multicast L2/L3
  - Mcast backbone requirements
  - P2MP LSPs
  - P2MP PW
  - BGP P2MP
  - mVPN
- Inter-AS/CSC
  - Inter-carrier requirements
  - MPLS-ICI
  - Multi-segment PW
- Circuit Emulation
  - SAToP
  - CESoPSN
  - TDMoIP
  - CEM
- Hierarchical LSP's
  - Route aggregation and H-LDP
  - Hierarchical resource reservation
- MPLS Resilience and OAM

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- Node/network level recovery
- LSP/PW ping/traceroute
- VCCV
- PW redundancy
- MC-LAC
- MPLS/Ethernet OAM interworking
- MPLS and Advanced/Emerging Technologies
  - Fixing the problems of SONET
  - Generalized MPLS (GMPLS) and Automatic Switched Optical Network (ASON)
  - Separation of connectivity and services: Next Generation Network (NGN)
  - Getting rid of SONET: MPLS and Optical Transport Network (OTN)
  - MPLS and emerging very high speed Ethernet (>100 Mb/s)
  - New architectures for layer 2 functionality
  - Virtualization and Software Defined Networking (SDN)
  - Network Functions Virtualization (NFV) and MPLS
- Conclusion: Recap, Q/A, and Evaluation

DCN LFnlf

**About Eogogics:** Founded in 2005 and located in Washington, DC, Eogogics offers technology and soft skills training and consulting to organizations worldwide.

**Our Skillset:** Wireless (2G to 5G+, Bluetooth, WiFi), RF, Microwaves, Spectrum Management, SATCOM, Telecom (IP Networks, Intelligent Networks, SONET/SDH, DWDM, backhaul, tmforum™ courses, Defense/Security/Public Safety related, Telecom for Non-engineers), Technologies (Mechanical Engineering/Manufacturing, Reliability, Software/Systems, Cloud Computing, SDN, NFV, Technical and Project Management), Leadership/Management, Soft Skills.

**About the Eogogics Team:** Eogogics is led by KK Arora, formerly Founder and Managing Director, Wireless Institute and Vice President, Human Capital Management, LCC International. A wireless telecom industry pioneer, award winning teacher, and author with 25 years of executive experience, he leads a team of highly accomplished professionals who rank at the top of their chosen fields and who have earned many distinctions including patents, publications, awards, and honors. Our five-person leadership team collectively offers: 106 years of technology experience (91 years in telecom, 66 years in wireless), 156 years in training (106 years in technology training, 50 years in soft skills training), and 101 years in consulting (61 years in technology, 40 years in soft skills).

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