eogogicsinc

Course ID	Course Title
IP5D	**IP Networks: A Comprehensive 5-Day Workshop**
Course Duration	
5 days	

Related Courses

- IP Workshop: IPv4, IPv6, and Migration (2-4 days, IPV6-MW)
- IPv6 Implementation Workshop (2-4 days, IPV6-IW)
- IP-Based Systems: TCP/IP and Mobile IP (IPSYS, 2-3 days)
- Everything over IP (EoIP): Data, Voice, Video, Signaling and Telemetry over IPv4/IPv6 Networks (5 days, EOIP)
- Multimedia Applications: IMS, SIP, and VoIP (2 days, MULTIMEDIA)
- IMS: The Technology, Applications, and Challenges (2 days, IMS)
- SIP Protocol, Architecture, and Design (1 day, SIP)
- VoIP: Protocols, Design, and Implementation (2-3 days, VOIP)
- State-of-the-art of VoIP Technology for Professionals, Managers, and Executives (1 day, VOIP-EXEC)
- VoIP Security (2 days, VOIPSEC)
- NextGen Networks (NGN) Explained: For All Audiences (half day, N-NGN)
- MPLS Backbone: For Technical Audiences (1 day, N-MPLS)
- MPLS: Technology, Engineering, Applications, and QoS (2-4 days, MPLS10)
- MPLS: Emerging Applications (2-3 days, MPLSEA)
- IPTV: For All Audiences (half day, N-IPTV)

Aimed At

Technical individuals who possess some familiarity with packet communications and data networking and have the need to understand Internet Protocol-based networks.

Group Size

5-25

Prerequisites

You should have some familiarity with communications engineering. If you have an understanding of the architecture of a packet network, that will be helpful, but it's not required.

| **Course in a Nutshell** | This comprehensive introduction to IP networking and its constituent protocols is aimed at businesses such as Internet Service Providers and large end-users whose products and services are based on the Intranet or IP-based networks, e.g., Virtual Private Networks (VPNs) and who are looking for a solid 5-day, lab-oriented IP course that can help reduce the cost of mistakes made by a poorly trained worker. |

Customize It!

Let us know your reason for studying IP so we can customize the course to your specific needs.

The standard version of this course provides hands-on experience using the Wireshark Protocol Analyzer, but we can customize it to use generic or customer-specific hardware. Eogogics can provide hardware if requested.

The course can, of course, be extended or used as a launching pad for the related, more specialized topics such as Quality of Experience/Quality of Service engineering, IP network security, troubleshooting, or other topics of interest to the client.

Learn How To

- View and identify IPv4/IPv6 and related protocols

- Troubleshoot working IPv4/IPv6 implementations

- Dissect IPv4/IPv6 and related protocol flows

- Use the Wireshark Protocol Analyzer

- Filter, dissect, and view simultaneous IP application sessions

Course Outline

- Section 1 / Introduction

  - Everything Over IP (EoIP)
  - Circuit vs. Non-Circuit
  - Multiplexing and Cost Savings
  - Section Summary

- Section 2 / Network Communications

  - Premise, Access, Backbone
  - Layered Models (OSI and IETF)
  - Protocol Concepts
  - Multiplexing, Protocols and the OSI and IETF Models
  - Addressing by the Layers with End-to-End Protocol Examples
  - Section Summary

- Section 3 / Layer 1: Physical Layer

  - Signals, Bits, Bytes and Octets
  - Cabling, Wireless and Physical LAN/Premise Infrastructure
  - Lab: Physical Infrastructure Construction and Troubleshooting

- ° Client Operation
- ° Server Operation
- ° Encryption and Security
- ° Lab: VPN Protocols and Operation
- ° Section Summary

- Section 10 / Network Security

  - ° IP Security and IPsec
  - ° IP Security and the OSI Model
  - ° Layer 2 Security Methods
  - ° Tunneling
  - ° Encryption
  - ° Layer 3 Security Methods
  - ° IPSec
  - ° Authentication
  - ° Encryption
  - ° Authentication and Encryption
  - ° Key Management
  - ° Lab: AH, ESP and IKE Protocols
  - ° Section Summary

- Section 11 / Quality of Service / Performance

  - ° Quality of Experience vs. Quality of Service
  - ° Quality of Service: TOS Bits
  - ° QoE Metrics
  - ° Service Level Agreements
  - ° Performance and Backbone Design
  - ° Section Summary

- Section 12 / Network Reliability

  - ° Redundancy
  - ° Hardware
  - ° Route
  - ° Rerouting in an IP Network
  - ° Load Balancing
  - ° Physically Disparate Servers
  - ° Cloud Model for Reliability
  - ° Section Summary

- Section 13 / LAN/WAN Connectivity

  - ° WAN Connectivity and Backbone Protocols
  - ° Optical / SONET / DWDM
  - ° ATM
  - ° Frame Relay
  - ° MPLS/GPLS
  - ° LAN Interconnection
  - ° Connection to LANs
  - ° Section Summary

- Section 14 / Troubleshooting
  - ° End-to-End Connectivity
  - ° Troubleshooting Methodologies
  - ° Vocabulary / Clear Communications
  - ° Reference Points
  - ° Section Summary
- Wrap-up
  - ° Course Recap and Q/A
  - ° Evaluations

How You Will Learn

- A subject matter expert instructor with extensive IP networking experience will teach this course workshop style.
- Along with the lecture, we will use interesting group activities and hands-on exercises, some of which will use the WireShark network protocol analysis tool.
- If you already know something about IP or packet based networks, we will build on that knowledge base. We'll compare and contrast what's familiar with what's new, making the new ideas easier to learn as well as more relevant.
- If your background is less technical, we will use appropriate examples and analogies to simplify the complex subject matter.
- You will receive a Participant Handbook as well as (if applicable) a Lab Manual. The course materials are designed to help you remember and retain what you learned in class and apply it on your job.

Revised   *ƒ-3Lb*