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TONEX Global Training Courses & Seminars

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- Wireless Communication
- Business Management
- IP Networking
- Enterprise Architecture
- RF Engineering
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Quality Training **Delivered**

Protocol Training

608: SIGTRAN (Signaling Transport) Fundamentals

Cost: \$1,499 | Duration: 3 Day(s)

TONEX's Signaling Transport (SIGTRAN) course provides a comprehensive understanding of the SIGTRAN architectural and technology. SIGTRAN (Signaling Transport) over IP is a working group within the IETF standard organization and it was developed to allow an interworking between SS7 network elements and IP based elements. Its primary purpose is to address the transport of packet-based public switched telephone network (PSTN) signaling over IP networks, taking into account the functional and performance requirements of the PSTN signaling.

The course will cover major aspects of SIGTRAN with in depth information, example implementations, case studies, and practical guidance to give your team members a running start.

OBJECTIVES

After attending this course, you will be able to:

- Understand the basics of PSTN
- Understanding the basics of IP networks
- Understand the basics of transport signaling such as integrated service digital line (ISDN) (e.g. Q.931) or SS7 (e.g. ISDN user part (ISUP), SCCP, and so on) messages between IP nodes such as a signaling gateway (SG), a media gateway controller (MGC), a media gateway (MG), or an IP-based database
- Understand basics of Q.921/Q.931, MTP2/MTP3, SCCP and user parts
- Describe SS7 over IP signaling transport mechanisms
- Describe the key components in the SIGTRAN architecture
- List basics SIGTRAN protocols
- Understand SCTP, IUA, M2UA, M2PA, M3UA, TUA, TALI, SUA
- Sketch the connectivity of PSTN/IP network components and their importance in setting up packet based voice calls
- Identify the issues with SIGTRAN implementation
- Identify the importance of SIGTRAN's functional and performance requirements and transport issues
- Discover challenges with deploying SIGTRAN

624: Session Initiation Protocol (SIP) Fundamentals

Cost: \$1,499 | Duration: 2 Day(s)

SIP, the Session Initiation Protocol, is a signaling protocol for conferencing, telephony, presence, events notification and instant messaging.

It is an application-layer control (signaling) protocol for creating, modifying and terminating sessions with one or more participants. These sessions include Internet multimedia conferences, Internet telephone calls and multimedia distribution. Members in a session can communicate via multicast or via a mesh of unicast relations, or a combination of these. Session Initiation Protocol (SIP) builds on the IP communications foundation by providing a standards-based approach to enabling IP communications with numerous devices and applications.

SIP invitations used to create sessions carry session descriptions which allow participants to agree on a set of compatible media types. SIP supports user mobility by proxying and redirecting requests to the user's current location. Users can register their current location. SIP is not tied to any particular conference control protocol. SIP is designed to be independent of the lower-layer transport protocol and can be extended with additional capabilities. Session controllers promise to enable the same ubiquity, quality, and security for VoIP that the PSTN offers today, only in the more flexible, efficient, and economical manner that IP makes possible.

The SIP fundamentals course provides an overview of SIP, its components, and how it works. It covers data networking principles to telco engineers and signaling principles to IP engineers. It also outlines SIP implementations on the market in the form of single-line gateways, proxy servers, media gateways, Java toolkits, encoders/decoders and session authenticators.

OBJECTIVES

After successfully completing the course the attendees will:

- Understand basics of VoIP
- Explore Where, why, and how SIP is used
- Comprehend the basics of SIP
- Understand the architect and components of SIP
- Understand the differences between SIP and H.323
- Understand H.323-SIP-SS7 Interworking
- Review SIP-T concept and architecture
- Understand how to size up and choose from available SIP products

627: Advanced SIP

Cost: Call for Details | Duration: 2 Day(s)

The Advanced SIP course provides a technical details on SIP.

OBJECTIVES

After successfully completing the course the attendees will:

- Understand advanced topics of SIP
- Understand advanced SDP concepts
- Explore the architect and components of SIP
- Behavior of SIP Clients and Servers
- Examine behavior of SIP User Agents
- Examine behavior of SIP Proxy and Redirect Servers
- Analyze security considerations for SIP
- Understand SIP-T and SIP interworking with ISUP networks (PSTN)
- Understand IP Multimedia (IMS) Using SIP in UMTS and CDMA2000
- Understand the role of SIP & IMS in 3G
- Examine SIP Other Important Topics

IP Networking

600: IPv6 Training Level 1 - Fundamentals

Cost: \$1,499 | Duration: 2 Day(s)

IPv6 training course covers technical details behind IPv6 networking fundamentals and migration issues including addressing, routing, QoS, multimedia, security, mobility, transition and advanced management. Topics include: Protocols, Services, Deployment and Migration

OBJECTIVES

After successfully completing the course the attendees will:

- Describe the features, benefits, and operation of the IPv6 protocol
- Describe IPv6 services
- Understand deployment of the IPv6 networks
- Learn IPv6 features on Cisco IOS routers, as well as IPv6 hosts running SUN Solaris, Microsoft Windows, Linux, HP Tru64, and BSD
- Learn more about IPv6 evolution, and capabilities
- Explore IPv6 deployment strategies
- Learn more about IPv6 security

601: IPv6 Security Training

Cost: \$1,499 | Duration: 2 Day(s)

Tonex's IPv6 Security training course provides a framework for IPv6 end-to-end security architecture and implementation issues. The course provides the essential needs in managing a IPv6 network audit and vulnerability assessment. It provides a formal framework for finding and eliminating IPv6 network security threats, ensuring that no vulnerabilities are overlooked.

The course also details what commercial, freeware, and shareware tools are available, how they work, and how to use them. By following the procedures outlined in the course, you can pinpoint what individual parts of your IPv6 network need to be hardened and learn about IPv6 Security best practices.

OBJECTIVES

After attending this course, you will be able to:

- Understand the basics of IPv6 Security
- Secure IPv6 networks against threats and attacks
- Implement security standards and processes to protect your IPv6 network
- Create a secure IPv6 infrastructure
- Plan ahead to avoid IPv6 security problems before widespread deployment
- Identify known areas of weakness in IPv6 security and the current state of attack tools and hacker skills
- Analyze and react to denial-of-service (DoS) attacks
- Understand each high-level approach to securing IPv6 and learn when to use each
- Protect service provider networks, perimeters, LANs, and host/server connections
- Harden IPv6 network devices against attack
- Utilize IPsec in IPv6 environments
- Secure mobile IPv6 networks
- Secure transition mechanisms in use during the migration from IPv4 to IPv6
- Monitor IPv6 security

- Understand the security implications of the IPv6 protocol, including issues related to ICMPv6 and the IPv6 header structure
- Protect your network against large-scale threats by using perimeter filtering techniques and service provider-focused security practices
- Understand the vulnerabilities that exist on IPv6 access networks and learn solutions for mitigating each

603: IPv6 Training Level 2 - Advanced

Cost: Call for Details | Duration: 2 Day(s)

Advanced IPv6 training provides in-depth technical analysis on IPv6 implementation. Transition from IPv4 to IPv6 is covered and participants are exposed to the technical details needed in the deployment and operation of IPv6.

Learn on how to migrate, port applications and implement IPv6 protocols within your enterprise on Unix, Linux, Windows, Cisco routers and other networked devices.

604: IPTV Training

Cost: Call for Details | Duration: 2 Day(s)

TONEX's IPTV training course provides a comprehensive understanding of the IPTV technology. The course will cover major aspects of the IPTV standard from a business, network, service, architecture, hardware, software, protocols and platforms perspective. TONEX's established background in legacy video, along with a comprehensive understanding of the IP technologies, provides rich insight into the IPTV technology and results in a superior training experience for our customers. The course provides in-depth information, example implementations, case studies, and practical guidance to give your team members a running start.

OBJECTIVES

After attending this course, you will be able to:

- Understand the basics of video
- Understand the basics of IP networking technology
- Differentiate between technologies such as streaming, download and play, and file transfer
- Understand IPTV protocols and standards
- Understand video transport over IP networks
- Learn more about technologies like MPEG, multicasting, RTP/RTCP, and streaming
- Identify the issues with IPTV implementation
- Discover challenges with implementing some IP television features
- Understand Media Room 2.0 features and architecture

605: Advanced IPTV Training

Cost: Call for Details | Duration: 3 Day(s)

Advanced IPTV training provides a technical detail on IPTV technology and covers IPTV design and implementation, IPTV Service Deployment, IPTV Service Delivery, Operations and Maintenance, Service Assurance and troubleshooting. The course provides a detailed perspective of IPTV architecture. It discusses IPTV design principles and how IPTV achieves QoS, QoE and assurance. This course concludes with end-to-end and operations scenarios to help attendees understand the big picture.

OBJECTIVES

After successfully completing the course the attendees will:

- Explain advanced IPTV architecture
- Explore the architecture and components of IPTV
- Sketch IPTV networks, protocols and interfaces
- Explain IPTV architecture approaches to provide multiple services
- Discuss the detailed operations of IPTV
- Describe the IPTV design philosophy and identify the key concepts
- Describe IPTV Service Deployment and IPTV Service Delivery
- Understand the issues with IPTV implementation, operations, troubleshooting and maintenance
- Understand IPTV management and O&M challenges
- Discuss deployment scenarios for IPTV
- Discuss tools, OSS/BSS, and processes/procedures for service assurance, field testing, home environment and loop testing, and repair/ maintenance

606: Hands-On TCP/IP Networking Workshop

Cost: \$1,499 | Duration: 4 Day(s)

TCP/IP is the communications protocol suite on which the Internet and most commercial networks operate. In this course, we will cover a comprehensive technical overview of TCP/IP. Extensive hands-on exercises provide the practical experience you need to configure a host, employ TCP/IP tools, use application services and access TCP/IP-based internetworks.

This workshop is a structured approach to the concepts and principles of the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite, how the most important protocols function, and their basic configuration.

OBJECTIVES

Upon completion of this course, the students will:

- Understand The essential elements of the TCP/IP protocol suite
- Develop a "hands-on" skill set targeted at TCP/IP networking in the following key areas of IP Addressing and Subnetting, Routing protocols and the control plane of IP and Quality of Service
- Explore the 7-layer OSI model, and the TCP/IP suite of protocols
- Design IP networks and subnetworks using addressing expertise developed in this class
- Understand selection options of IP routing protocols
- Configure fundamental properties of IP Quality of Service
- Gain a fundamental understanding of Voice over IP, Video over IP and Multicast Services
- Understand the future of IP - IPv6
- Use a protocol analyzer to isolate and troubleshoot network problems
- Troubleshoot problems at each layer of a TCP/IP network

610: IMS Training

Cost: Call for Details | Duration: 2 Day(s)

IMS training provides an advanced technical overview of IMS. In this course we will discuss various advanced concepts that are integral to the development of IMS and all IP networks.

IP Multi-Media Subsystem (IMS) is an IP multimedia and telephony core network. It is defined by 3GPP and 3GPP2 standards and organizations based on IETF Internet protocols. IMS is access independent as it supports IP to IP session over wireline, WiMAX, CDMA2000, HSPA/HSPA+, LTE and other packet data applications.

IMS permits and enhances real time, multimedia mobile services such as rich voice, video telephony, messaging, conferencing and push services by responding to the emerging trend to move toward a common, standardized subsystem. As data services proliferate and the value chain expands, current vertical application platforms are proving insufficient to meet operator needs. IMS represents a standardized, reusable platform providing a better way to experiment with, deploy, integrate, and expand consumer and enterprise voice and data services.

OBJECTIVES

- Understand concepts behind All-IP Multimedia Networks
- Understand IMS architecture
- Explain IMS reference architecture
- Understand IMS session control, connection control and applications services
- Explore SIP and SDP extensions used in IMS
- Explain IMS services
- Understand IMS Security and QoS

611: Gigabit Ethernet Training

Cost: Call for Details | Duration: 2 Day(s)

Gigabit Ethernet (GbE) training provides a technical introduction to Ethernet and GigE. GigE builds on top of the Ethernet protocol, but increases speed tenfold over Fast Ethernet to 1000 Mbps, or 10 gigabit per second (Gbps) and beyond. Gigabit Ethernet allows Ethernet to scale from 10/100 Mbps at the desktop to 100 Mbps up the riser to 10 Gbps + (10GE) in the data center.

OBJECTIVES

This course provides you with a comprehensive technical foundation in Ethernet and Gigabit Ethernet.

Upon completion of this course, the attendees will be able to:

- Identify the concepts of Ethernet, Gigabit Ethernet and 10 Gigabit Ethernet networking.
- Identify how to design, troubleshoot and maintain a Ethernet network and improve its performance.

612: Metro Ethernet Training Course

Cost: Call for Details | Duration: 3 Day(s)

Metro Ethernet training course covers concepts and technologies behind Metro Ethernet including Layer 2 virtual private network (VPN), Ethernet deployment solutions, Ethernet Relay Service (ERS), Ethernet Wire Service (EWS), Ethernet Multipoint Service (EMS), Layer 2 VPNs over Multi protocol Label Switching (MPLS), and combination single and distributed provider edge solutions.

OBJECTIVES

Upon completion of this course, the attendees will:

- Relate the importance of Metro Ethernet Switching to service-provider markets
- Describe, plan, configure, and troubleshoot Metro Ethernet deployment solutions
- Identify configuration differences between the Layer 2 Metro Ethernet Switching service implementation and Layer 3 MPLS
- Implement the features and functions of platforms supported by Metro Ethernet Switching, including VLAN IDs, Spanning Tree, quality of service(QoS) mechanisms, and network resiliency and security
- Understand mechanisms for QoS and Security over Metro Ethernet Networks
- Understand Ethernet services delivery mechanisms Over MPLS and provider backbone transports

616: VPN Training

Cost: \$1,499 | Duration: 2 Day(s)

VPN training course provides introduction to VPN concepts and architectures and an in-depth examination of advanced features and functions such as tunneling, authentication, access control, VPN gateways, VPN clients, and VPN network and service management.

This course presents the various technology components, concrete solutions, and best practices you need to deploy and manage a highly successful VPN.

A VPN is a communications environment in which access is controlled to permit peer connections only within a defined community of interest, and is constructed through some form of partitioning of a common underlying communications medium, where this underlying communications medium provides services to the network on a non-exclusive basis.

Virtual private networks have become an essential part of today's business networks, as they provide a cost-effective means of assuring private internal and external communications over the shared Internet infrastructure. Virtual Private Networks: Technologies and Solutions is a comprehensive, practical guide to VPNs.

OBJECTIVES

After completing this course, attendees will be able to:

- Understand IPsec, featuring the Authentication Header, Encapsulating Security Payload, Internet Key Exchange, and implementation details
- Understand PPTP, L2F, L2TP, and MPLS as VPN tunneling protocols
- Review Two-party and three-party authentication, including RADIUS and Kerberos
- Explore Public key infrastructure (PKI) concept and its integration into VPN solutions
- Understand Access control policies, mechanisms, and management, and their application to VPNs
- Review VPN gateway functions, including site-to-site intranet, remote access, and extranet
- Review Gateway configuration, provisioning, monitoring, and accounting
- Explore Gateway interaction with firewalls and routers
- Understand VPN client implementation issues, including interaction with operating systems

- Understand Client operation issues, including working with NAT, DNS, and link MTU limits
- Explore VPN service and network management architectures and tunnel and security management
- Review successful VPN deployments
- Discuss successful and unsuccessful VPN deployments
- Step through a practical process for managing a VPN deployment project
- Explore the current and future market trends

617: IP QoS Training

Cost: Call for Details | Duration: 2 Day(s)

IP QoS training describes policy-based QoS architecture which supports infrastructure for delivering QoS based applications. Finally, the course introduces some emerging trends in IP QoS.

It explains the techniques, principles and technology associated with implementing IP Quality of Service (QoS). The IETF's Integrated Services standard and accompanying protocols such as RSVP, RTP and RTCP are described, and how RSVP is used as a QoS signaling protocol to request a certain QoS is covered.

This course describes the IETF's Differentiated Services standard and how it can be used to provide QoS on a per-hop basis, and explains how IntServ and DiffServ are used to provide IP QoS support in routers. MPLS and GMPLS can be used to improve routing efficiency and provide a basis for good QoS support is described. This course also explains how IPv6 and class-based queuing all help to provide IP QoS.

OBJECTIVES

- How QoS works-and why it is crucial to networks that must deliver integrated voice, data, and video traffic
- Implementing QoS in IP environments
- Leveraging QoS capabilities built into IPv4 and IPv6
- Understanding the Resource Reservation Protocol (RSVP), Real-Time Transport Protocol (RTP), and DiffServ
- Explain the techniques, principles and technology associated with implementing IP Quality of Service (QoS)
- Describe the IETF's Integrated Services standard and accompanying protocols such as RSVP, RTP and RTCP
- Describe the IETF's Differentiated Services standard and how it can be used to provide quality of service on a per-hop basis.
- Explain the various queuing and congestion avoidance techniques used by QoS-aware routers to implement services such as IntServ and DiffServ.
- and more ...

620: Mobile IP Fundamentals

Cost: Call for Details | Duration: 2 Day(s)

This course introduces the technical fundamentals of Mobile IP (MIP). Mobile IP is a standard developed by IETF for the purpose of providing macro mobility across a set of different radio access technologies. The course starts with an overview of mobility and wireless technology, including implementation issues. Mobile IP is also addressed, including operations, components, and protocol. The course also includes sections with a summary of best practices to consider in Mobile IP operations and management.

VoIP & IMS

621: Softswitch Planning, Design and Implementation

Cost: \$1,499 | Duration: 4 Day(s)

Softswitch are software products that can replace very expensive hardware in VoIP systems. Having completed this course the participants will be able to understand carrier-grade softswitch concepts and how softswitch is implemented, deployed and managed in today's networks. This comprehensive course which explores softswitch applications, protocols and platforms, gives the attendees an inside look at the software.

Aimed at network planners and system integrators at carriers and service providers, softswitch vendors, and at developers of high-value services, this course aims to demystify the rationale behind softswitching and clearly explains what makes it tick, what are the drawbacks, where's the hype, and whose claims can we believe? It sets out to help attendees understand how softswitch will affect their systems, services and vendors, and it explores how to get hardware-style quality, salability and signaling from a softswitch. The course is about the definition, need and scope of the softswitch from both a technical and service perspective.

If you want to know more about softswitch and its role in the next generation voice, broadband, and wireless networks, you should attend this excellent course on softswitch technology as the enabling platform for next-generation packet communications.

The course does an outstanding job of showing how softswitch technology and applications enable global service providers and carriers to optimize their networks and generate new revenue streams with new services and applications. In other words, the course explores how softswitch technology disrupts incumbent service providers and their vendors. The course helps to identify some of the success and technological challenges of the industry based on the softswitch.

OBJECTIVES

After completing this course, students will be able to:

- Explain the basics of VoIP
- Understand the engineering tools and procedures required for a voice network
- Understand existing and emerging standards for VoIP
- Explain the concepts of carrier-grade VoIP
- Explore Softswitch Technologies
- Understand Regulatory Compliance
- Explain Softswitch Network Features
- Review Subscriber Features Supported by Softswitch
- Discuss Softswitch Interworking
- Review Softswitch Operations, Maintenance, and Troubleshooting (OAM&P)
- Explain performance and voice quality considerations
- Explore project planning process of Softswitch
- Review successful VoIP deployments for wireline, wireless, and cable operators
- Discuss successful and unsuccessful Softswitch deployments (VoIP, ATM and PSTN)
- Step through a practical process for managing a Softswitch deployment project
- Explore the current and future market trends

622: Voice Over IP

Cost: Call for Details | Duration: 2 Day(s)

Voice over IP (VoIP), which integrates voice and data transmission, is quickly becoming an important factor in network communications. It promises lower operational costs, greater flexibility, and a variety of enhanced applications. VoIP Fundamentals provides a thorough introduction to this new technology to help experts in both the data and telephone industries plan for the new networks. The hands-on labs are very useful methods to understand the A-Z of VoIP.

OBJECTIVES

- Explain the basics of telephony and TCP/IP
- Understand the engineering tools and procedures required for a voice network and the current technologies leading to the integration of voice and data networks
- Explain the basics of Voice over IP (VoIP)
- Understand existing and emerging standards for VoIP and network architectures to support VoIP
- Understanding Carrier Grade VoIP Technologies
- Describe the protocols that support VoIP calls and explain how IP works with the PSTN
- Identify some of the challenges VoIP faces in today's networks to demonstrate a good understanding of its capabilities
- Explore the latest enabling technologies
- Explain Softswitch/MGC, Media Gateways, SIP, Megaco, and MGCP
- Voice characteristics, compression standa Mean Opinion Scores (MOS)
- Learn about the functional components involved in using gateways to deploy VoIP networks
- Explain the concepts of quality of service enforcement techniques
- Explain performance and voice quality considerations
- Discuss VoIP OSS/BSS
- Review transitioning to the All-VoIP PSTN and VoIP Taxation
- Explore project planning process of VoIP
- Review successful VoIP deployments for wireline, wireless, and cable operators
- Discuss successful and unsuccessful VoIP deployments
- Step through a practical process for managing a VoIP deployment project
- Explore the current and future market trends
- Discuss Video Services Over IP

Video Technologies

626: MPEG-4 Fundamentals

Cost: \$1,499 | Duration: 2 Day(s)

MPEG-4 training covers MPEG-4 protocol, architecture, functional characteristics, technical components, design, operations and testing.

Moving Picture Experts Group (MPEG) a working group of ISO/IEC in charge of the development of standards for coded representation of digital audio and video. Established in 1988, the group has produced MPEG-1, the standard on which such products as Video CD and MP3 are based, MPEG-2, the standard on which such products as Digital Television set top boxes and DVD are based, MPEG-4, the standard for multimedia for the fixed and mobile web, MPEG-7, the standard for description and search of audio and visual content and MPEG-21, the Multimedia Framework.

MPEG-4 was defined by the Moving Picture Experts Group (MPEG), the working group within the International Organization for Standardization (ISO) that specified the widely adopted, Emmy Award-winning standards known as MPEG-1 and MPEG-2.

It is a graphics and video compression algorithm standard that is based on MPEG-1, MPEG-2 and Apple QuickTime technology. The primary uses for the MPEG-4 standard are web (streaming media) and CD distribution, conversational (videophone), and broadcast television.

MPEG-4 builds on the proven success of three fields:

- Digital television;
- Interactive graphics applications (synthetic content);
- Interactive multimedia (World Wide Web, distribution of and access to content)

MPEG-4 provides the standardized technological elements enabling the integration of the production, distribution and content access paradigms of the three fields.

10610: Video Technology Training Boot Camp

Cost: \$1,499 | Duration: 2 Day(s)

TONEX Boot Camps are intensive, weeklong learning experiences that cover the essential elements of your chose subject. Boot camps are ideal for busy professionals who want to stay current in their fields but have limited time to be away from the office.

All boot camp includes:

- Experienced instructors including senior technology leaders, project managers, technical authors, engineers, educators, consultants, course developers, and CTOs.
- Real life examples and practices.
- Small class size.
- Personalized instructor mentoring.
- Pre-training discussions
- Ongoing post-training support via e-mail, phone and WebEx.

WHAT WILL YOU LEARN AT THE TONEX VIDEO TECHNOLOGY TRAINING BOOT CAMP?

The video technology training boot camp covers a wide range of topics, including all technical aspects of video and multimedia with the focus on theoretical and practical video technology issues. Topics such as basic TV and video fundamentals, digital video, video compression, MPEG-2, MPEG-4 standards, multimedia compression and transmission, multimedia signal processing, distributed video systems, and visualization.

The Video Training covers all the aspects of the current and future networks used to distribute video including satellite, Cable TV, IPTV/TelcoTV, Internet Protocol TV, mobile TV, MPEG-2, MPEG-4, satellite DMB (S-DMB), terrestrial DMB (T-DMB), digital video broadcasting-handheld (DVB-H), digital multimedia broadcasting (DMB), TDtv (based on TD-CDMA technology from [IPWireless]), 1seg (based on Japan's ISDB-T), DAB and MediaFLO.

OBJECTIVES

Upon completion of this boot camp, the attendees should be able to:

- Understand the basic of video technology and video broadcast services
- Understand the basics of digital TV, high definition TV, IPTV, and mobile TV
- Understand the basics of NTSC, PAL, video compression, MPEG-2 and MPEG-4
- Explore different current and future networks used to distribute video

MPLS and VPLS Training

618: MPLS (Multi-Protocol Label Switching) Technical Training

Cost: \$1,499 | Duration: 2 Day(s)

TONEX MPLS (Multi-Protocol Label Switching) training provides an in-depth overview of MPLS technology, including MPLS theory and configuration, MPLS design issues, operations, troubleshooting, VPN, Traffic Engineering (TE) and GMPLS (Generalized MPLS).

OBJECTIVES

- List the features, functions and benefits of MPLS
- Identify suitable applications for MPLS
- Describe the underlying concepts of MPLS
- Describe the frame-mode MPLS and cell-mode MPLS
- Describe the concept of MPLS labels, label stack and different label formats
- Describe the label distribution process between LSRs
- Describe the loop detection and prevention mechanisms in MPLS
- Explore the future trends of MPLS

619: GMPLS Fundamentals

Cost: \$1,499 | Duration: 2 Day(s)

Generalized Multi-Protocol Label Switching (GMPLS) is an emerging technology which helps in sustaining carrier profitability by reducing the operator expenses while supporting a variety of network topologies.

Generalized MPLS (GMPLS) is an extension of the existing MPLS that supports TDM, wavelength and spatial switching. GMPLS extends MPLS to provide the control plane (signaling and routing) for devices that switch in any of these domains: packet, time, wavelength, and fiber. This common control plane promises to simplify network operation and management by automating end-to-end provisioning of connections, managing network resources, and providing the level of QoS that is expected in the new, sophisticated applications.

This course begins by an introduction of MPLS and defining GMPLS's place in a transport network, leveraging your knowledge of MPLS to give you an understanding of this radically new control plane technology. The course covers GMPLS architecture and Switching Domains, GMPLS Traffic Types, GMPLS Forwarding Scheme, GMPLS Devices, GMPLS Protocols, GMPLS Signaling Protocols and Link Management. An overview of GMPLS protocols follows an in-depth examination of the architectures underpinning GMPLS in real-world network environments and current and emerging GMPLS applications.

OBJECTIVES

- Understand GMPLS protocols for signaling, routing, link and resource management, and traffic engineering.
- Develop deep into the world of GMPLS applications, including traffic engineering, path computation, L1 VPNs, point-to-multipoint connectivity, service management, and resource protection.
- Explore three GMPLS control plane architectures: peer, overlay, and hybrid, and explain the GMPLS UNI and NNIs.
- Explain how provisioning challenges can be met in multi-region networks and details the provisioning systems and tools relied on by the GMPLS control plane, along with the standard MIB modules used to manage a GMPLS system.

623: Virtual Private LAN Service (VPLS) Training Course: The Foundation Course

Cost: Call for Details | Duration: 2 Day(s)

A Virtual Private LAN Service (VPLS) network is a Layer 2 multipoint VPN that emulates LAN services across a WAN. VPLS enables service providers to interconnect several customer sites (each being a LAN segment) over a packet-switched network, effectively making all the customer LAN segments behave as one single LAN. With VPLS, no routing interaction occurs between the customer and service provider, and the customer can run any type of Layer 3 protocol between sites.

VPLS can utilize Multiprotocol Label Switching (MPLS) to offer multipoint Ethernet connectivity over a mesh of logical circuits or tunnels, with the added benefits of Traffic Engineering (TE), resilience, and failover. VPLS enables carriers and SPs to offer managed Ethernet VPN services easily and cost effectively.

TONEX VPLS training course is a combination of knowledge training, case studies, examples, and systems analysis revealing the details of VPLS in a swift, comprehensive, and understandable way.

OBJECTIVES

Upon completion of this course, the attendees will:

- Understand what VPLS is
- Describe basic VPLS terminology, concepts, and architecture
- List Services over VPLS
- Describe similarities and differences between VPLS vs. MPLS
- List VPLS Building Blocks
- Explore VPLS Deployments
- Understand VPLS Operations and Management

661: MPLS (Multi-Protocol Label Switching) VPN Training

Cost: Call for Details | Duration: 2 Day(s)

MPLS VPN training teaches the attendees how to architect, design, implement, deploy, configure and troubleshoot MPLS VPNs in a variety of large scale network scenarios.

OBJECTIVES

Upon completing this course the student are able to:

- Understand the benefits of both the overlay and peer-to-peer models
- Understand what Multi-Protocol Label Switching (MPLS) VPNs provide
- Identify methods of deploying MPLS VPNs
- Understand how to configure and troubleshoot MPLS VPN