

Hands-On Voice Over IP



Course Description

Networking is taking an evolutionary path that will allow voice and video - real time services - to successfully exist with data on the same network. This will allow new ways for organizations to effectively communicate with increased productivity, flexibility, and lower cost. It will also give networking product developers, telecom product developers, and service providers new opportunities to expand their offerings for greater revenue.

This Hands-On 2 day course will allow participants to work with an in-class intranet infrastructure constructed with Ethernet switches and routers. Upon successfully constructing and testing the in-class Intranet, participants will observe the installation of voice and video hardware and software on PCs. Participants will test for voice/video quality over the LAN and WAN.

Students Will Learn

- **See the Successful Business Aspects of VoIP.**
- **Know the Components necessary for Successful VoIP.**
- **View Voice / Video alternatives using Frame Relay, ATM and IP**
- **Interconnect Web CAM to LAN for Video Services.**
- **Build & Manage Ethernet Switch Network for Higher Performance.**
- **Generate Voice/Video calls using NetMeeting.**
- **Generate Voice calls using VoIP Gateways Connected to the LAN.**
- **Configure & Interconnect Phones Over the Router Environment**
- **You Build in class.**
- **Construct & Configure Router Network & Measure Performance to Determine its Capability for Successful VOIP.**
- **Create Voice calls using the Integrated Gateway within the Router.**
- **And more**

Target Audience

Telecom / Network professionals, IT managers, technical sales/marketing personnel, consultants, network designers, network engineers, product design engineers, telecom technicians and managers, systems administrators and anyone who will manage/ support new services and products for the data/tele convergence markets / networks. This course is also geared for Data and Networking professionals that want to reduce network costs by converging voice, video, and data over their internet/intranet.

Prerequisites

An Awareness of Local Area Networks (LANs) and Wide Area Networks (WANs) with an understanding of TCP/IP or have the equivalent knowledge. This information can be obtained in our courses

Hands-On Internetworking Essentials

Hands-On Advanced Networking

Hands-On Advanced TCP/IP

Course Outline

Module I. Voice Over IP (VOIP) Introduction

- Driving forces of VOIP
- Common industry opinions and comments
- Telecom network characteristics
- Internet characteristics
- VOIP gateways
- VOIP quality
- Network delay components
- Methods for decreasing delay in networks today

Module II. Current Network Technologies and Infrastructure

- VOIP technology enablers
- VOIP and ethernet
- TCP/IP architecture and its lack of real time services
- Network alternatives for VOIP
- Frame relay and VOIP
- ATM and VOIP
- ATM quality of service
- SONET and how it fits in the VOIP landscape
- IP over ATM
- Packets over SONET
- IP switching
- Dense Wave Division Multiplexing (DWDM)
- Digital Subscriber Loop (DSL) and VOIP

Module III. Network Evolution For Successful VOIP

- Quality of service defined
- Traffic shapers
- Ethernet 802.1 p and q
- Differentiated Service (Diff-Serv)
- Multiprotocol Label Switching (MPLS)
- IP Version 6
- QOS and queuing
- QOS intelligence
- QOS policy management
- Mapping ATM QOS to alternatives
- Reservation Protocol (RSVP)
- Real Time Protocol (RTP)
- IP multicast

Module IV. Internet Call Processing

- H.323 defined
- H.323 components
- H.323 gatekeeper
- H.323 communication
- Registration, admission and status
- H.323 communication example
- Encoding audio and video
- Compression techniques
- Voice activation detection
- Signaling System 7 and Internet Call Processing
- Relationship and trends of these other protocols
- Session Initiated Protocol (SIP)
- Media Gateway Control Protocol (MGCP)
- MEGACO/H.248
- Soft Switch Solutions

Notes

Hands-On Labs

- oLAB 1 Build a shared Ethernet and share multimedia files.
- oLAB 2 Build a switched Ethernet and share multimedia files.
- oLAB 3 Engage in H.323 audio and video session using your workstation.
- oLAB 4 View a quality of service (QOS) policy built on a workstation.
- oLAB 5 Construct a router network and view its performance using various delay measurements.
- oLAB 6 Configure your gateway for successful voice and fax transmission.
- oLAB 7 Using router utilities to view a Q.931/H.323 protocol connection establishment.
- oLAB 8 Using your protocol analyzer view multimedia packets in detail.
- oLAB 9 Configure various VOIP hardware and software products.
- oAnd Much More...

Delivery Method

Instructor led with numerous "Hands-On exercises.

Equipment Requirements

(This apply's to our hands-on courses only)

BTS always provides equipment to have a very successful Hands-On course. BTS also encourages all attendees to bring their own equipment to the course. This will provide attendees the opportunity to incorporate their own gear into the labs and gain valuable training using their specific equipment.

Course Length

2 Days