CSCGW - Cisco SIP, CUBEs and Gateways

Gain understanding and hands-on experience on legacy gateways, analog telephony, CUBE, SIP, and Quality of Service.

In this course, you will focus on the legacy gateway and router portions of IP Telephony. You will gain extensive experience with the configuration of legacy analog telephony technologies such as Foreign Exchange Station (FXS), Foreign Exchange Office (FXO), and Primary Rate Interface (PRI). In addition to legacy technologies you will gain hands on experience with CUBE and SIP protocols. You will build a working Cisco Unified Communications Manager which will support all major gateway protocols such as MGCP, H.323, and SIP. Troubleshooting will be addressed as a gateway level including common debug techniques and commands.

You'll gain an understanding of converged voice and data networks as it relates to gateway design and deployment. You will gain comprehensive hands-on experience configuring and deploying Gateways, CUBEs, Quality of Service, and troubleshooting in VoIP networks.

In addition to the knowledge and skills required to integrate gateways into an enterprise VoIP network, you'll learn how to build and test sophisticated IP telephony dial plans that use both CUCM Dial Plan and Dial Peers at an IOS level which can be used as a template for a real deployment.

The course includes a comprehensive study of Quality of Service (QoS), in which you'll learn to configure QoS to support real-time traffic.

- Working knowledge of networking fundamentals, including LANs, WANs, and IP switching and routing
- Ability to configure and operate Cisco routers and switches and to enable VLANs and DHCP
- Knowledge of traditional PSTN operations and technologies

1. Introduction to Voice Gateways

- Cisco UC Networks and the Role of Gateways
- Gateway Call Routing and Call Legs
- Gateway Voice Ports Configuration
- DSP Functionality, Codecs, and Codec Complexity

2. VoIP Call Legs

- VoIP Call Leg Characteristics
- VoIP Media Transmission
- H.323 Signaling Protocol
- SIP Signaling Protocol
- MGCP Signaling Protocol
- Requirements for VoIP Call Legs
- VoIP Call Legs Configuration

3. Dial Plan Implementation

- Call Routing and Dial Plans
- Digit Manipulation
- Path Selection Configuration
- Calling Privileges Configuration

4. Gatekeeper and CUBE Implementation

- Fundamentals of Gatekeepers
- Cisco Unified Border Element

5. QoS

- QoS Mechanisms and Models
- Classification, Marking, and Link Efficiency Mechanisms
- Managing Congestion and Rate Limiting
- Cisco AutoQoS

Classroom Live Labs

Lab 1: Remote Labs Connectivity
Lab 2: Topology and Deployment Walkthrough
Lab 3: CUCM Disaster Recovery
Lab 4: MGCP Gateways
Lab 5: Route Groups and Route Lists
Lab 6: CUCM Dial Plan
Lab 7: IP Phone Registration
Lab 8: 9951 Registration
Lab 9: Unified FX
Lab 10: Traditional Route Patterns and Dial Plan Testing with MGCP
Lab 11: CUBE and SIP Trunks
Lab 12: Traditional Route Patterns and Dial Plan Testing with SIP
Lab 13: H.323 Gateways
Lab 14: Traditional Route Patterns and Dial Plan Testing with H.323
Lab 15: Analog FXO
Lab 16: Traditional Route Patterns and Dial Plan Testing with FXO
Lab 17: Analog FXS
Lab 18: Traditional Route Patterns and Dial Plan Testing with FXS
Lab 19. PRI and T1-CAS
Lab 20. Traditional Route Patterns and Dial Plan Testing with PRI and T1-CAS
Lab 21: VoIP Dial Peers
Lab 22: PSTN Dial Peers
Lab 23: Dial Peer Digit Manipulation
Lab 23: IOS Conference Bridges
Lab 24: IOS Transcoding
Lab 25: IOS Media Termination Points
Lab 26: IOS Gatekeepers

Lab 27: Call Admission Control
Lab 28: Configuring AutoQoS
Lab 29: Configuring WAN QoS Policies
Lab 30: Configuring LAN QoS Policies