

CSCGW - CISCO SIP, CUBES AND GATEWAYS V12.5/14.X

Course Code: 4845

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.

What You'll Learn

- VoIP, components of a VoIP network, VoIP protocols, special requirements for VoIP calls, and Codecs
- Configure gateway interconnections to support VoIP and PSTN calls
- Basic signaling protocols used on voice gateways
- Configure a gateway to support calls using different call control and signaling protocols
- Define a dial plan, describing the purpose of each dial plan component, and implement a dial plan on a voice gateway
- Implement a Cisco Unified Border Element (CUBE) gateway to connect to an Internet Telephony Service Provider
- Investigate the use of various traditional telephony connections, such as FXS, FXO, E&M, T1 (CAS and PRI), and E1 (CAS and PRI)
- Configure and troubleshoot Cisco's new ISR routers and explore their DSP configuration (PVDM3 cards)
- Configure H.323 gateways and review their functions and operation
- Configure Session Initiation Protocol (SIP) and Media Gateway Control Protocol (MGCP)
- Experience G.711, and G.729 voice coding schemes
- Configure Call Admission Control three different ways
- Configure proper Caller ID
- Experience real-world connections to PBXs, and the PSTN
- Configure your router/gateway equipment to connect to our public dial plan

network using different call control protocols and procedures

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.

A Global Knowledge Exclusive: You Get...

- Enhanced content that exceeds standard authorized Cisco content
- Only course dedicated to specific Gateway technologies and Quality of Service
- World-Class Certified Cisco Systems Instructors

Why Take CSCGW from Global Knowledge?

Every pod has internal and external phones, and just like in a real network, the same simulated public switched telephone network (PSTN) is accessible through all clusters providing failover scenarios for bandwidth and connectivity problems. To more accurately reflect real-world scenarios, you will configure the gateway connections to simulated PBX systems.

We have set ourselves apart from other Cisco training providers by enhancing our CSCGW hands-on labs to include a real dial plan and Class of Service for calling out to the PSTN. Our voice network labs use the latest hardware and software so you will gain experience with the recent stable IOS release (15.X IOS M currently). Plus, each pod contains the following gateway cards for student configuration: 2xFXS, 2 FXO, and 2xT1 ports (PRI and T1-CAS) as well as serial ports for WAN connectivity. All of our IP telephony courses provide a realistic simulated PSTN accessible through both PRI and FXO ports. You will build and test a real dial plan including:

- 911
- three-digit service codes: 411, 511, and so forth
- seven-digit local numbers
- 10-digit local numbers
- 11-digit long distance numbers
- International numbers
- Configure and test all dial peers as appropriate

Who Needs to Attend

Network engineers, architects, and support staff who:

- Maintain and configure voice and data network devices
- Are considering various methodologies to implement VoIP
- Require a fundamental understanding of the issues and solutions related to implementation
- Require a fundamental understanding of packet telephony technologies that are common for both enterprise and service provider applications

Prerequisites

- 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

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CLASSROOM LIVE

\$3,795 USD

5 Day

Classroom Live Outline

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: Deep Dive - VoIP Dial Peers

Lab 22: Deep Dive - PSTN Dial Peers

Lab 23: Deep Dive - 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

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Apr 28 - May 2, 2025 | 8:30 AM - 4:30 PM EDT

Jun 9 - 13, 2025 | 8:30 AM - 4:30 PM EDT

Aug 25 - 29, 2025 | 8:30 AM - 4:30 PM EDT



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PRIVATE GROUP TRAINING

5 Day

Visit us at www.globalknowledge.com or call us at 1-866-716-6688.

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