



Installing and Configuring Cisco Cube/Gateways (ICCC-CT)

In this 3 Day Cisco Course, students will learn how to deploy Voice Gateways/CUBE and setup Cisco Unified Communication Manager (CUCM) to deploy SIP Trunking.

The course starts out with an overview of Cisco gateways and their uses. Next, students learn about MGCP and SIP and how to implement each protocol. Students will then learn how to use Cisco CUBE to connect CUCM, Gateways and Service Providers together. This course details how to connect a Cisco environment to a Service Provider using a Cisco CUBE.

Why Attend with Current Technologies CLC

- Our Instructors are the top 10% rated by Cisco
- Our Lab has a dedicated 1 Gig Fiber Connection for our Labs
- Our Labs run up to Date Code for all our courses

Objectives

Upon completing this course, the student will be able to meet these objectives:

- Configuring Gateway Voice Ports
- SIP Protocols
- Configuring VoIP Call Legs
- Implementing a Dial Plan
- Configuring Cisco Unified Communication Manager 11.x
- Deploying Cisco VCUBE
- Implementing Cisco Unified Border Element
- High Availability on ISR G2, ISR 4k, and ASR
- Security on Cisco Unified Border Element
- Monitoring and Troubleshooting on Cisco Unified Border Element

Who Should Attend

The primary audience for this course is as follows:

- Network Video Engineer
- Voice / UC / Collaboration / Communications Engineer

Course Duration
3 days
Course Price
\$3,895.00
Methods of Delivery
• Instructor Led
• Virtual ILT
• On-Site
Certifications
NA
Course Exam
NA

- Collaboration Tools Engineer
- Collaboration Sales/Systems Engineer

Course Outline

Module 0: Introduction

Module 1: Gateway Introduction

- Cisco UC Networks and the Role of Gateways
- Gateway Call Routing and Call Legs
- Configuring Gateway Voice Ports
- DSP Functionality, Codecs, and Codec Complexity
- Router Requirements for CUBE
- SIP Protocol Overview

Module 2: Gateway Dial Plans

- VoIP Call Legs
 - VoIP Call Legs and VoIP Media Transmission
 - SIP Signaling Protocol
 - Requirements for VoIP Call Legs
 - Configuring VoIP Call Legs
- Dial Plan Implementation
 - Call Routing
 - Dial Plan Basics
 - Digit Manipulation
 - Configuring Path Selection

Module 3: Cisco Unified Communication Manager (CUCM)

- Cisco UCM Audio Codec Preference List
- Cisco UCM Region Configuration
- Device Pool Configuration
- Annunciator Configuration
- Conference Bridge Configuration
- Media Termination Point Configuration
- Music on Hold Server Configuration
- Music on Hold Service (IP Voice Media Streaming App) Parameter Settings
- Music on Hold Service (Duplex Streaming) Parameter Settings
- Media Resource Group Configuration
- Media Resource Group List Configuration
- UC Service Configuration
- Service Profile Configuration
- End User Configuration
- SIP Trunk Security Profile Configuration used by SIP trunk to Cisco UBE
- SIP Profile Configuration used by SIP trunk to Cisco UBE

- SIP Trunk to Cisco UBE Configuration
- Route Pattern Configuration

Module 4: Configuring Cisco Unified Border Element (CUBE)

- Deploying Cisco VCUBE
 - Overview CSR1000v
 - CSR1000v Requirements
 - Deploying a CSR1000v as a CUBE
- CUCM to CUBE Integration Configuration
- Steps to connecting to a SIP Trunk Provider
- Interworking
- Security and Call Admission Control
- Media Manipulation, Enhancement & Optimization
- SIP UA
- Translation Rules
- VoIP Dial Peer
- SIP Registration
- SIP attributes of CUBE
- Transcoding services
- Creating and configuring Sip Trunks
- CUBE Configuration
- CUBE Call Flow
- CUBE Dial-Peers Call Routing
- CUBE Advanced Call Routing
- Media Manipulation
- External/PSTN Call Recording
- Call Admission Control
- Multiple Non-Authenticated SIP Trunks on a CUBE
- Multiple Authenticated/Registered SIP Trunks on a CUBE

Module 5: Configuring High Availability

- High availability on ISR G2
- High availability on ISR 4k
- High availability on ASR

Module 6: Security

- Five Layers of Security in CUBE
 - IP Trust Lists
 - CALL Threshold
 - CALL SPIKE PROTECTION
 - BANDWIDTH BASED CAC
 - MEDIA POLICING
 - USE NBAR POLICIES

- DEFINE VOICE POLICIES
- SIP TLS Support with SRTP

Module 7: Monitoring and Troubleshooting

- Dialed Number Analyzer (DNA) for CUBE
- SIP Profile Test Tool
- Troubleshooting Call Flows
- Cube Debugging
- Packet Capturing
- Troubleshooting TLS
- Serviceability

LAB OUTLINE

Lab 0: Connect to Lab

Lab 1: Verify Cisco Unified Communications Manager Initial Settings

- Explore the Lab Environment
- Initial Default Configuration and Perform Initial Configuration

Lab 2: Deploying Endpoints and Users

Pod Mac Addresses for HQ Phone 1

- Configure CUCM
- Configure IP Phones

Lab 3: Connecting Enterprise Network to SIP Trunk Provider

- Configure SIP Trunk Security Profile
- Configure SIP Profile
- Configure SIP Trunk CUBE1
- Configure SIP Trunk CUBE2
- Configure Route Groups for Outbound Calling
- Configure a Route list for Outbound Calling
- Set up Long Distance Route Pattern
- Set up Local Route Pattern

Lab 4: Configure SIP Gateway for CUBE1

- Global CUBE Configuration
- Translation Rules and Profiles for CUBE
- CUBE Firewall Configuration
- CUBE Inbound LAN Dial-peer Configuration
- CUBE Outbound LAN Dial-peer Configuration for Publisher
- CUBE Outbound LAN Dial-peer Configuration for Subscriber
- CUBE Inbound WAN Dial-peer Configuration

- Configure SIP User Agent
- CUBE Outbound WAN Dial-peer for Long Distance Calls
- CUBE Outbound WAN Dial-peer for Local Calls
- CUBE Outbound WAN Dial-peer for International Calls

Lab 5: Configure SIP Gateway for CUBE2

- Global CUBE Configuration
- Translation Rules and Profiles for CUBE
- CUBE Firewall Configuration
- CUBE Inbound LAN Dial-peer Configuration
- CUBE Outbound LAN Dial-peer Configuration for Publisher
- CUBE Outbound LAN Dial-peer Configuration for Subscriber
- CUBE Inbound WAN Dial-peer Configuration
- Configure SIP User Agent
- CUBE Outbound WAN Dial-peer for Long Distance Calls
- CUBE Outbound WAN Dial-peer for Local Calls
- CUBE Outbound WAN Dial-peer for International Calls
- Verify and Test Cube Status

Lab 6: Configure SIP Normalization on both CUBE1 and CUBE 2

- SIP Normalization
- SIP Custom Non-Standard Header
- Troubleshooting SIP Profiles
- Remove SIP Profile

Lab 7: Configure Call Admission Control

- Configure CAC based on call spike to manage call arrival rate
- Configure CAC based on Max Connections
- Configure CAC based on different thresholds

Lab 8: Configurable SIP Error codes

- Configure Error code at the dial-peer level when total-calls are exceeded

Lab 9: Destination Dial-peer Group and Inbound SIP Profiles

- Create a new Route Pattern within your CUCM for the TAC Toll Free number

Lab 10: Multiple E164 Pattern matching under the same dial-peer

Lab 11: Destination Server Group

- Configure Destination Server Groups to deliver call legs to your respective CUCM

Lab 12: CUBE Redundancy

- Perform the Steps on Both Routers
- Configure interface tracking
- Configure Redundancy Group (RG)
- Configure the interfaces
- Challenge (optional)