



Implementing Cisco IP Telephony and Video, Part 1 - CIPTV1 (Professional)

Course Details

Course Outline

Module 1: Cisco Unified Communications Manager (CUCM) Introduction

- Overview of the Cisco Collaboration Solution
- Functions
- Architecture
- Models
- Redundancy
- Servers
- Services
- Groups
- Configuration Elements
 - Enterprise Parameters
 - Service Parameters
 - Device Settings
- Comparison of Endpoints Supported by CUCM
- Endpoint Configuration Elements
- User Accounts
- LDAP Integration
 - Synchronization
 - Authentication
 - Attribute Mapping
 - Filters

Cisco IP Phone Services

- Overview
- Deployment Options

Module 2: Dial Plan Introduction and Implementation of Single-Site On-Cluster Calling

- Dial Planning
 - Overview
 - Components and Their Functions
 - Comparison of Dial Plan Configuration Elements
- Endpoint Addressing
- CUCM Call Routing Overview



- Cisco Unified Communications Call-Routing Logic
- Addressing Methods and Digit Analysis
- Variable-Length Patterns, Overlapping Patterns, and Urgent Priority
- Calling Privileges Overview
- Calling-Privileges Configuration Elements
- Partitions and CSSs
 - Considerations
 - Configuration
- Call Coverage Overview
 - Call Hunting
 - Call Hunting Scenarios
 - Call Queuing
 - Call Hunting and Call Queuing Configuration

Module 3: Implementation of Single-Site Off-Cluster Calling

- PSTN Access Methods
- TDM Gateway vs. Cisco UBE
- TDM Gateway Comparison
- Audio and Video Codec Selection
- PSTN Numbering Plans
- MGCP Gateway Implementation
 - Support in CUCM
 - Implementation Considerations
 - Implementing in CUCM
 - Integrating Cisco with CUCM
 - Configuring Gateway Fractional PRIs
- Path Selection in CUCM
- Route Groups in CUCM
- Route Lists in CUCM
- Digit Manipulation Requirements with Multiple Paths
- Digit Manipulation Configuration Elements in CUCM
- PSTN Access Digit Manipulation Example
- H.323 and SIP Gateway Overview
- Dial Peer Overview
 - Inbound Dial Peer Selection
 - Discovery 1: Exploring Cisco IOS Gateway Functions
 - Outbound Dial Peer Selection
 - Discovery 2: Exploring Cisco IOS Gateway Functions
- Digit Manipulation Features
- Codec Configuration



- COR Configuration
- H.323 PSTN Gateway Configuration in CUCM
- Dial Plan Design and Documentation
- Cisco Unified Border Element Overview
- Protocol Interworking on the Cisco Unified Border Element
- Media Flows on the Cisco Unified Border Element
- Codec Negotiation on the Cisco Unified Border Element
- PSTN SIP Access Overview
- Configuration Requirements in CUCM
- Configuration Requirements for the Cisco Unified Border Element
- Cisco Unified Border Element URI Dialing Overview
- CUCM URI Dialing Configuration Requirements
- Cisco Unified Border Element URI Dialing Configuration Requirements
- Dial Plan Interworking Characteristics
- Dial Plan Interworking Support

Module 4: Media Resources

- Media Resources Overview
- Audio Conferences
- Video Conferences
- Transcoders
- Media Termination Points
- Annunciators
- Music on Hold
- Video on Hold
- Trusted Relay Points
- MOH Support in CUCM
- Unicast and Multicast MOH Characteristics
- MOH Audio Source Selection
- MOH Configuration
- Annunciator Support in CUCM
- Annunciator Configuration Procedure
- Media Resource Access Control Overview
- Conference Bridge Selection
- Media Resource Access Control Configuration
- MTP Types and Functions
 - Requirements for SIP Trunks
 - Requirements for H.323
 - Configuration Procedure



Module 5: Audio and Video Conferencing

- Devices That Support Audio or Video Conferencing
- Comparison of Audio Conference Bridges
- Comparison of Video Conference Bridges
- Conference Bridge Integration Options in CUCM
- CUCM Software Audio Conference Bridge
- Cisco IOS-based Conference Bridges
- CUCM and Cisco IOS-based Conference Bridge Configuration
- Cisco TelePresence MSE 8000
 - Overview
 - Feature Blades
 - Capabilities
 - Feature Blade Configuration
- Cisco TelePresence Server Overview
 - Integration of Cisco TelePresence Server and CUCM
 - Configuration Example of Cisco TelePresence Server Integration
- Cisco TelePresence Conductor Characteristics
- Options for Integrating Cisco TelePresence Conferencing Resources
- Integration of Cisco TelePresence Conductor and Cisco Unified Communications Manager

Module 6: Quality of Service

- Issues in Packet-Switching Networks
- Solutions to Packet-Switching Network Issues
- Bandwidth Calculations
 - For Layer 2 Overhead
 - For Video Calls
- Three Models of QoS
 - Best-Effort
 - IntServ
 - Resource Reservation Protocol
 - DiffServ
- Differentiated Services Code Point
- Overview of QoS Components
- Classification
- Marking
- Mapping Classes and Markings
- Congestion Management
- Congestion Avoidance
- Policing
- Shaping



- Link Efficiency Methods
 - Compression
 - LFI
- Marking Methods
- Class-Based Markings
- Trust Boundaries
- Mapping Layer 2 CoS to Layer 3 QoS
- Marking Configuration Example
- Comparison of Policing and Shaping
 - Class-Based Policing: Single Bucket
 - Class-Based Policing: Dual Buckets
 - Class-Based Policing: Dual Rate
 - Class-Based Shaping
- Low Latency Queuing
- Monitoring LLQ
- Calculating Bandwidth for LLQ
- Example 1: Single-Rate Single Token Bucket Class-Based Policing
- Example 2: Single-Rate Dual Token Buckets Class-Based Policing
- Example 3: Class-Based Shaping

Labs

- Configuring CUCM Initial Settings
- Deploying Endpoints and Users
- Implementing Endpoint Addressing and Call Routing
- Implementing Calling Privileges
- Implementing Call Coverage
- Implementing PSTN Calling Using MGCP Gateways
- Implementing PSTN Calling Using H.323 Gateways
- Implementing PSTN Calling Using SIP Trunks Through Cisco Unified Border Element
- Using Cisco Unified Border Element for URI Dialing
- Implementing Annunciators and MOH
- Implementing Conference Bridges
- Implementing Cisco TelePresence Conductor