Implementing Cisco IP Telephony & Video, Part 2 v1.0 (CIPTV2)

COURSE OVERVIEW:
Implementing Cisco IP Telephony & Video, Part 2 (CIPTV2) v1.0 is a five-day course that prepares the learner for implementing Cisco Unified Communications Manager, Cisco VCS-C, and Cisco Expressway series in a multisite voice and video network. It covers globalized call routing, URI call routing, global dial plan replication based on the ILS, Cisco Unified SRST, mobility features, call admission control, integration of Cisco VCS and Cisco Unified Communications Manager, and Cisco Mobile Remote Access on Cisco Expressway Series.

WHO WILL BENEFIT FROM THIS COURSE?
The primary target audiences for the course are:
- Network administrators and network engineers
- CCNP Collaboration candidates

The secondary audiences are:
- Systems engineers

PREREQUISITES:
To fully benefit from this course, students should have the following prerequisite skills and knowledge:
- Working knowledge of converged voice, video, and data networks
- Working knowledge of the MGCP, SIP, and H.323 protocols and their implementation on Cisco IOS gateways
- Ability to configure and operate Cisco routers and switches
- Ability to configure and operate Cisco Unified Communications Manager in a single-site environment

COURSE OBJECTIVES:
After completion of this course, students will be able to...
- Describe multisite deployment issues and solutions, and describe and configure required dial plan elements
- Implement call-processing resiliency in remote sites by using Cisco Unified SRST and MGCP fallback
- Implement bandwidth management and CAC to prevent oversubscription of the IP WAN
- Implement Device Mobility, Cisco Extension Mobility, and Cisco Unified Mobility
- Implement Cisco VCS Control and Cisco Expressway Series
- Describe and implement CCD and ILS
COURSE OUTLINE:

Module 1: Multisite Deployment Implementation

Lesson 1: Identifying Issues in a Multisite Deployment

- Multisite Deployment Issues Overview
- Quality Issues
- Bandwidth Issues
- Availability Issues
- Overview of Dial Plan Issues
- Fixed-Length vs. Variable-Length Numbering Plans
- Optimized Call Routing and PSTN Backup
- Overlapping and Nonconsecutive Numbers
- PSTN Requirements
- Dial Plan Scalability Issues
- NAT and Security Issues

Lesson 2: Identifying Multisite Deployment Solutions

- Multisite Deployment Solution Overview
- Quality of Service
- Overview of Solutions to Bandwidth Limitations
- Low-Bandwidth Codecs and RTP-Header Compression
- Local Conference Bridges
- Transcoders
- Mixed Conference Bridge
- Multicast MOH from Branch Router Flash
- Call Admission Control
- Availability Overview
- PSTN Backup
- MGCP Fallback: Normal Operation
- Fallback for IP Phones: Normal Operation
- Call Forward Unregistered
- Automated Alternate Routing
- Mobility Solutions
- Overview of Dial Plan Solutions
- NAT and Security Solutions
Lesson 3: Implementing a +E.164-based Dial Plan for International Multisite Deployments

- Overview of Multisite Connection Options
- SIP Trunk Review
- H.323 Trunks
- Trunk Implementation Overview
- Multisite Dial Plan Overview
- Implementing Site Codes for On-Net Calls
- Implementing PSTN Access
- Implementing Selective PSTN Breakout
- Implementing PSTN Backup for On-Net Interstice Calls
- Implementing TEHO
- Globalized Call Routing Overview
- Globalization of Localized Call Ingress on Gateways
- Localized Call Egress
- Globalized Call Routing Examples
- **Guided Lab 1: Implementing a +E.164-Based Dial Plan for International Multisite Deployments**
  - Configure Partitions and CSSs
  - Implement H.323 and MGCP Gateways and Configure SIP Inter-cluster Trunks
  - Configure Inbound and Outbound PSTN Calls for the HQ Cluster
  - Configure Inbound and Outbound PSTN Calls for the BR1 Cluster
  - Implement Internal Dialing

Lesson 4: Implementing a URI-Based Dial Plan for Multisite Deployments

- URI Dialing Overview
- URI Endpoint Addressing Review
- URI Partitions and CSSs Review
- URI Call Sources Review
- Blended Addressing
- FQDNs in Directory URIs
- URI Call Routing
- **Guided Lab 2: Implementing a URI-Based Dial Plan for Multisite Deployments**
  - Implementing URI Dialing Within the HQ Cluster
  - Implement URI Call Routing Between the HQ, BR1, and BB Clusters
Module 2: Centralized Call-Processing Redundancy Implementation

Lesson 1: Implementing SRST and MGCP Fallback
- Remote Site Redundancy Overview
- MGCP Fallback Operation
- Cisco Unified SRST Operation
- Cisco Unified Communications Manager Express in SRST Mode
- Dial Plan Requirements for MGCP Fallback and Cisco Unified SRST Scenarios

Hardware Lab 3: Implementing SRST and MGCP Fallback
- Configure SRST Gateways in Cisco Unified Communications Manager
- Configure a Cisco IOS Gateway for MGCP Fallback and SRST
- Implement a Dial Plan in Cisco Unified Communications Manager Supporting Outbound Calls During SRST Mode
- Implement a Dial Plan at the SRST Gateway Supporting Inbound and Outbound Calls When in MGCP Fallback or in SRST Mode or Both

Module 3: Bandwidth Management and CAC Implementation

Lesson 1: Managing Bandwidth
- Bandwidth Management Options
- Cisco Unified Communications Manager Codec Configuration
- Local Conference Bridge Implementation
- Transcoder Implementation
- Multicast MOH from Branch Router Flash Implementation

Hardware Lab 4: Implementing Bandwidth Management
- Enable a Software Conference Bridge
- Configure Regions
- Implement Transcoders
- Implement a Hardware Conference Bridge

Lesson 2: Implementing CAC
- CAC Overview
- Enhanced Location CAC Characteristics
- Inter-cluster Enhanced Location CAC
- Enhanced Location CAC Considerations
- Automated Alternate Routing

Hardware Lab 5: Implementing Enhanced Location CAC
- Implement Enhanced Location CAC
Module 4: Implementation of Features and Applications for Multisite Deployments

Lesson 1: Implementing Device Mobility
- Issues with Devices Roaming Between Sites
- Device Mobility Overview
- Device Mobility Configuration Elements
- Device Mobility Operation
- Device Mobility Considerations
- Device Mobility Interaction with Globalized Call Routing
- Device Mobility Configuration
- **Hardware Lab 6: Implementing Device Mobility**
- Configure Device Mobility

Lesson 2: Implementing Cisco Extension Mobility
- Issues with Users Roaming Between Sites
- Cisco Extension Mobility Overview
- Cisco Extension Mobility Configuration Elements
- Cisco Extension Mobility Operation
- Cisco Extension Mobility Considerations
- Cisco Extension Mobility Configuration
- **Hardware Lab 7: Implementing Extension Mobility**
- Configure Extension Mobility

Lesson 3: Implementing Cisco Unified Mobility
- Cisco Unified Mobility Overview
- Cisco Unified Mobility Call Flows
- Cisco Unified Mobility Implementation Requirements
- Cisco Unified Mobility MGCP or SCCP Gateway PSTN Access
- CSS Handling in Cisco Unified Mobility
- Cisco Unified Mobility Access-List Functions
- Cisco Unified Mobility Configuration
- **Hardware Lab 8: Implementing Cisco Unified Mobility**
- Configure Mobile Connect
- Configure MVA
Module 5: Cisco VCS and Cisco Expressway

Lesson 1: Describing Cisco VCS and Cisco Expressway Series Deployment Options
- Cisco VCS and Cisco Expressway Series Overview
- Cisco VCS and Cisco Expressway Series Deployment Options
- Cisco VCS and Cisco Expressway Series Platforms, Licenses, and Features
- Cisco VCS and Cisco Expressway Clustering
- Cisco VCS and Cisco Expressway Series Initial Configuration

Lesson 2: Deploying Users and Local Endpoints in Cisco VCS Control
- User Authentication Options
- Endpoint Registration
- Endpoint Authentication
- Cisco TMS Provisioning
- Zones
- Links
- Pipes
- **Hardware Lab 9: Configuring Cisco VCS Control to Register Endpoints**
- Perform Initial Cisco VCS Control Configuration
- Enable Provisioning on the Cisco TMS Server and Cisco VCS Control
- Configure a Subzone for Cisco Jabber Video for Tele-Presence Clients

Lesson 3: Interconnecting Cisco Unified Communications Manager and Cisco VCS
- CUCM and Cisco VCS Interconnection Overview
- Call Flow between CUCM and Cisco VCS
- Cisco VCS Dial Plan Components
- Configuration of CUCM and Cisco VCS Interconnections
- Find Me Configuration Procedure
- **Hardware Lab 10: Implementing a Dial Plan in Cisco VCS Control to Interconnect with Cisco Unified Communications Manager**
- Configure Cisco Unified Communications Manager to Connect with Cisco VCS
- Configure Cisco VCS to Connect with Cisco Unified Communications Manager
- Configure Bandwidth Limitations Between Cisco VCS and Cisco Unified Communications Manager
- Configure Find Me for Cisco Jabber Video for TelePresence Clients
Lesson 4: Implementing Unified Communications Mobile and Remote Access

- Unified Communications Mobile and Remote Access Overview
- Unified Communications Mobile and Remote Access Components
- Unified Communications Mobile and Remote Access Operations
- Unified Communications Mobile and Remote Access Configuration Procedure
- **Hardware Lab 11: Implementing Mobile and Remote Access via Cisco Expressway**
  - Implement Support for Internal Cisco Jabber Clients
  - Configure Initial Settings on Cisco Expressway Series
  - Configure Mobile and Remote Access on Cisco Expressway Series
  - Configure a Secure Traversal Zone Connection for Cisco Unified Communications
  - Configure Cisco Jabber to Register via Mobile and Remote Access

Module 6: GDPR and CCD

Lesson 1: Implementing ILS and GDPR

- ILS Overview
- ILS Networking
- GDPR Overview
- ILS Network Configuration Procedure
- Exchange of Directory URIs
- Configuration of Directory URI Exchange
- Exchange of Numbers and Patterns
- Configuration of Number and Pattern Exchange
- Import and Export of Global Dial Plan Catalogs
- **Hardware Lab 12: Implementing ILS and GDPR**

Lesson 2: Implementing CCD

- SAF and CCD Overview
- SAF Characteristics
- CCD Characteristics
- CCD Operation
- Monitoring Learned Routes
- Cisco Unified SRST Considerations
- Considerations When Using Globalized Call Routing
- Trunk Considerations
- Considerations When Using Clustering Over the WAN
- SAF and CCD Implementation Overview
- Configure SAF and CCD
LABS:

- Lab 0: Connecting to the Remote Lab
- Lab 1: Implementing a +E.164-Based Dial Plan for International Multisite Deployments
  - Configure partitions and CSSs
  - Implement H.323 and MGCP gateways and configure SIP intercluster trunks
  - Configure inbound and outbound PSTN dialing
  - Configure IP Phones
  - Configure Translation Patterns and Transformation Profiles for +E.164 Dialing
  - Implement Intersite Dialing with Site Codes
- Lab 2: Implementing a URI-Based Dial Plan for Multisite Deployments
- Lab 3: Implementing SRST and MGCP Fallback
- Lab 4: Implementing Bandwidth Management
  - Enable Hardware and Software Conference Bridges
  - Configure Regions and Locations
  - Implement Transcoders
- Lab 5: Implementing Enhanced Location CAC
- Lab 6: Implementing Device Mobility
- Lab 7: Implementing Extension Mobility
- Lab 8: Implementing Cisco Unified Mobility
  - Implement Mobile Connect/Single Number Reach
  - Implement Mobile Voice Access
- Lab 9: Configuring Cisco VCS Control to Register Endpoints
  - Perform Initial Cisco VCS-Control Configuration
  - Enable Provisioning on the Cisco TMS Server and Cisco VCS Control
  - Configure a Subzone for SIP Clients
- Lab 10: Implementing a Dial Plan in Cisco VCS Control to Interconnect with CUCM
  - Configure CUCM-VCS Communications
  - Configure Bandwidth Limitations Between CUCM and VCS
- Lab 11: Implementing Mobile and Remote Access via Cisco Expressway
- Lab 12: Implementing ILS and GDPR
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