

# G-MAC

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## Cisco Certified Network Associate (CCNA) Voice

No. of Course(s): 1

Duration per Course: 60 Hours

Total Duration: 60 Hours

Course: IIUC (Implementing Cisco IOS Unified Communications)

Content:

Describe the components of the Cisco Unified Communications Architecture

- Describe the function of the infrastructure in a UC environment
- Describe the function of endpoints in a UC environment
- Describe the function of the call processing agent in a UC environment
- Describe the function of messaging in a UC environment
- Describe the function of auto attendants and IVRs in a UC environment
- Describe the function of contact center in a UC environment
- Describe the applications available in the UC environment, including Mobility, Presence, and Telepresence
- Describe how the Unified Communications components work together to create the Cisco Unified Communications Architecture

Describe PSTN components and technologies

- Describe the services provided by the PSTN
- Describe time division and statistical multiplexing
- Describe supervisory, informational, and address signalling
- Describe numbering plans
- Describe analog circuits
- Describe digital voice circuits
- Describe PBX, trunk lines, key-systems, and tie lines

Describe VoIP components and technologies

- Describe the process of voice packetization
- Describe RTP and RTCP
- Describe the function of and differences between codecs
- Describe H.323, MGCP, SIP, and SCCP signalling protocols

Describe and configure gateways, voice ports, and dial peers to connect to the PSTN and service provider networks

- Describe the function and application of a dial plan
- Describe the function and application of voice Gateways
- Describe the function and application of voice ports in a Gateway
- Describe the function and operation of call-legs
- Describe and configure voice dial peers
- Describe the differences between PSTN and Internet Telephony Service Provider circuits

Describe and configure a Cisco network to support VoIP

- Describe the purpose of VLANs in a VoIP environment

- Describe the environmental considerations to support VoIP
- Configure switched infrastructure to support voice and data VLANs
- Describe the purpose and operation of PoE
- Identify the factors that impact voice quality
- Describe how QoS addresses voice quality issues
- Identify where QoS is deployed in the UC infrastructure

#### Implement UC500 using Cisco Configuration Assistant

- Describe the function and operation of Cisco Configuration Assistant
- Configure UC500 device parameters
- Configure UC500 network parameters
- Configure UC500 dial plan and voicemail parameters
- Configure UC500 SIP trunk parameters
- Configure UC500 voice system features
- Configure UC500 user parameters

#### Implement Cisco Unified Communications Manager Express to support endpoints using CLI

- Describe the appropriate software components needed to support endpoints
- Describe the requirements and correct settings for DHCP, NTP, and TFTP
- Configure DHCP, NTP and TFTP
- Describe the differences between key system and PBX mode
- Describe the differences between the different types of ephones and ephone-dns
- Configure Cisco Unified Communications Manager Express endpoints
- Configure call-transfer per design specifications
- Configure voice productivity features, including hunt groups, call park, call pickup, paging groups, and paging/intercom
- Configure Music on Hold

#### Implement voicemail features using Cisco Unity Express

- Describe the Cisco Unity Express hardware platforms
- Configure the foundational elements required for Cisco Unified Communications Manager Express to support Cisco Unity Express
- Describe the features available in Cisco Unity Express
- Configure AutoAttendant services using Cisco Unity Express
- Configure basic voicemail features using Cisco Unity Express

#### Perform basic maintenance and operations tasks to support the VoIP solution

- Describe basic troubleshooting methods for Cisco Unified Communications Manager Express
- Explain basic troubleshooting methods for Cisco Unity Express
- Explain basic maintenance and troubleshooting methods for UC500

(or)

Course: CVOICE

Content:

#### Describe the components of a gateway

- Describe the function of gateways
- Describe DSP functionality
- Describe the different types of voice ports and their usage

- Describe dial peer types
- Describe codecs and codec complexity

#### Describe a dial plan

- Describe a numbering plan
- Describe digit manipulation
- Describe path selection
- Describe calling privileges
- Describe call coverage

#### Describe the basic operation and components involved in a VoIP call

- Describe VoIP call flow
- Describe RTP, RTCP, cRTP, and sRTP
- Describe H.323
- Describe MGCP
- Describe SCCP
- Describe SIP
- Identify the appropriate gateway signaling protocol for a given situation
- Describe voice quality considerations
- Choose the appropriate codec for a given situation

#### Implement a gateway

- Describe the gateway call routing process
- Configure analog voice ports
- Configure digital voice ports
- Describe considerations for PBX integration
- Configure dial-peers
- Configure hunt groups and trunk groups
- Configure digit manipulation
- Configure calling privileges
- Verify dial-plan implementation
- Implement fax and modem support on a gateway
- Configure a gateway to provide DTMF support

#### Describe the function and interoperation of gatekeepers within an IP Communications network

- Describe the function and types of gatekeepers
- Describe the interoperation of devices with a gatekeeper
- Describe gatekeeper signaling
- Describe Dynamic Zone Prefix Registration with a gatekeeper
- Describe gatekeeper redundancy

#### Implement a gatekeeper

- Configure devices to register with a gatekeeper
- Configure gatekeeper to provide dial-plan resolution
- Configure gatekeeper to provide call admission control
- Verify gatekeeper operation

#### Implement an IP-to-IP gateway

- Describe the IP-to-IP gateway features and functionality
- Configure gatekeeper to support an IP-to-IP gateway
- Configure IP-to-IP gateway to provide address hiding

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- Configure IP-to-IP gateway to provide protocol and media interworking
- Configure IP-to-IP gateway to provide call admission control
- Verify IP-to-IP gateway implementations

Exam(s):

640-460 Implementing Cisco IOS Unified Communications (IIUC)

(or)

642-436 Cisco Voice Over IP (CVOICE)