

G-MAC

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Cisco Certified Voice Professional 3

Cisco Certified Voice Professional

No. of Course(s): 5

Duration per Course: 60 Hours

Total Duration: 300 Hours

Course: Cisco Voice over IP (CVOICE v6.0)

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
- 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

Course: Implementing Cisco Unified Communications IP Telephony Part 1

Content:

Perform an installation and initial set up of a Cisco Unified Communications Manager cluster

- Describe administrative access to Cisco Unified Communications Manager
- Describe Cisco Unified Communications Manager cluster architecture
- Describe Cisco Unified Communications Manager redundancy designs
- Describe the requirements for Cisco Unified Communications Manager use of DHCP, TFTP, DNS, and NTP
- Determine the services necessary to support a Cisco Unified Communications Manager deployment and activate the appropriate services
- Perform an install and upgrade on Cisco Unified Communications Manager

Describe and configure Cisco Unified Communications Manager to support on-cluster calling

- Configure a Cisco Unified Communications Manager group
- Configure users, user groups, and roles
- Configure Cisco Unified Communications Manager to support Cisco SCCP & SIP Phones
- Configure Cisco Unified Communications Manager to support 3rd party SIP phones
- Describe how to harden an IP phone
- Configure LDAP integration
- Configure Cisco Unified Communications Manager profiles and device pools
- Configure Cisco Unified Communications Manager templates
- Configure a Cisco switch to support IP phones
- Use Cisco Unified Communications Manager BAT to manage phones and users
- Describe the function of TAPS

Describe and configure a route plan for Cisco Unified Communications Manager to support off-net calling

- Describe Cisco Unified Communications Manager digit analysis
- Implement an MGCP Gateway
- Configure route patterns and route filters
- Configure route lists and route groups
- Implement toll-fraud prevention
- Configure digit manipulation
- Describe the functions and usage of CSS and partitions
- Implement calling privileges
- Implement call coverage

Describe and configure Cisco Unified Communications Manager media resources

- Describe media resources
- Configure MeetMe conferencing, hardware conferencing resources, and software conferencing resources
- Configure MoH
- Configure MRGs and MRGLs

Configure the Cisco Unified Communications Manager to support features and applications

- Configure IP phone services
- Enable user web page access
- Integrate Cisco Unified Communications Manager with Unity and UnityConnection
- Configure Call Park, Privacy, Barge, Call Pickup, and Intercom
- Implement Presence

Course: Quality of Service (QoS)

Content:

IP QoS Fundamentals

- Given a description of a converged network, identify problems that could lead to poor quality of service and explain how the problems might be resolved
- Define the term Quality of Service (QoS) and identify and explain the key steps to implementing QoS on a converged network

IP QoS Components

- List and explain the models for providing Quality of Service on a network
- Explain the purpose and function of the DiffServ model
- Describe the basic format of and explain the purpose of the DSCP field in the IP header
- Define and explain the different per hop behaviors used in DSCP
- Explain the interoperability between DSCP-based and IP-precedence-based devices in a network
- Given a list of QoS actions, correctly match the QoS actions to mechanisms for implementing QoS and identify where in a network the different QoS mechanisms are commonly used

Modular QoS CLI and Auto-QoS

- Given a network requiring QoS, explain how to implement a QoS policy using MQC
- Explain how AutoQoS is used to implement QoS policy

Classification and Marking

- Explain how link layer and network layer markings are used to define service classes and the different applications represented by each of these service classes
- Given a network and a description of QoS issues, use MQC CLI commands to classify packets
- Given a network and a description of QoS issues, use class-based marking to assign packets to a specific service class
- Describe the function of Network Based Application Recognition
- Describe the purpose of pre-classification to support QoS in various VPN (IPSEC, GRE, L2TP) configurations
- Describe QoS trust boundaries and their significance in LAN based classification and marking
- Identify the different classification and marking options available on Cisco L2 and L3 switching platforms

Congestion Management Methods

- List and explain the different queuing algorithms
- Explain the components of hardware and software queuing systems on Cisco routers and how they are effected by tuning and congestion
- Describe the benefits and drawbacks of using WFQ to implement QoS
- Explain the purpose and features of Class-Based WFQ (CBWFQ)
- Explain the purpose and features of Low Latency Queuing (LLQ)
- Identify the Cisco IOS commands required to configure and monitor LLQ on a Cisco router
- Describe and explain the different queuing capabilities available on the Cisco Catalyst 2950 Switch

Congestion Avoidance Methods

- Describe the drawbacks tail drop as a congestion control mechanism
- Describe the elements of a RED traffic profile
- Describe Weighted Random Early Detection and how it can be used to prevent congestion
- Identify the Cisco IOS commands required to configure and monitor DSCP-based CB-WRED
- Explain how ECN interacts with WRED in Cisco IOS

Traffic Policing and Shaping

- Describe the purpose of traffic conditioning using traffic policing and traffic shaping and differentiate between the features of each
- Explain how network devices measure traffic rates using single rate or dual rate, single or dual token bucket mathematical models
- Identify the Cisco IOS commands required to configure and monitor single rate and dual rate CB-Policing
- Identify the Cisco IOS commands required to configure and monitor percentage based CB-Policing
- Explain how the two rate limits, average rate and peak rate, can be used to rate limit traffic
- Identify the Cisco IOS commands required to configure and monitor CB-Shaping
- Identify the Cisco IOS commands required to configure and monitor Frame Relay adaptive CB-Shaping on Frame Relay interfaces

Link Efficiency Mechanisms

- Explain the various link efficiency mechanisms and their function

- Identify the Cisco IOS commands required to configure and monitor CB header compression
- Given a list of link speeds and a specific delay requirement, determine the proper fragment size to use at each link speed and identify the typical delay requirement for VoIP packets
- Identify the Cisco IOS commands required to configure and monitor Multilink PPP with Interleaving
- Identify the Cisco IOS commands required to configure and monitor FRF.12

QoS Best Practices

- Explain the QoS requirements of the different application types
- List typical enterprise traffic classes then identify the delay, jitter, packet loss and bandwidth requirements of each traffic class
- Explain the best practice QoS implementations and configurations within the campus LAN
- Explain the best practice QoS implementations and configurations on the WAN customer edge (CE) and provider edge (PE) routers

Course: Implementing Cisco Unified Communications Manager Part 2 (CIPT2 v6.0)

Content:

Manage Tcl and VXML call applications on a gateway

- Describe how to obtain call applications
- Configure a gateway to use call applications
- Verify call application implementations

Describe and implement centralized call processing redundancy

- Describe device fail over
- Configure call survivability
- Configure SRST operation
- Configure CME to provide redundancy
- Configure MGCP Fallback operation
- Verify redundancy operations

Describe and configure a multi-site dial plan for Cisco Unified Communications Manager

- Describe the issues with multi-site dial plans
- Describe the differences between the various gateways and trunk types supported by Cisco Unified Communication Manager
- Configure Cisco Unified Communications Manager to utilize an H.323 gateway
- Configure a SIP trunk
- Implement a numbering plan for multi-site topologies
- Configure intercluster trunks
- Configure tailend hop off
- Configure Cisco Unified Communication Manager to register with a gatekeeper

Implement bandwidth management and Call Admission Control

- Configure Regions
- Configure transcoders and MTPs
- Configure Locations
- Implement RSVP agent
- Implement gatekeeper-based Call Admission Control

- Configure AAR
- Configure multi-site MoH

Secure an IP Telephony network

- Describe the threats to an IP Telephony network
- Describe the features used to mitigate threats to an IP Telephony network
- Describe how authentication and cryptographic services can secure an IP Telephony network
- Configure secure signaling between devices
- Configure devices to support sRTP

Implement mobility in an IP Telephony network

- Configure device mobility
- Configure Cisco Extension Mobility
- Configure Cisco Unified Mobility

Course: Troubleshooting Cisco Unified Communications Systems (TUC v1.0)

Content:

Apply the Cisco recommended methodology used to determine general Unified communications system problems and issues

- Describe the steps that can be used to identify a problem with a given unified communication system
- Identify tools that can be used to identify and isolate problems
- Correlate events (using traces, logs, and monitoring tools to identify the problem)
- Parse and interpret trace logs and system logs

Troubleshoot call setup issues

- Troubleshoot PSTN call setup issues
- Troubleshoot intersite call setup issues
- Troubleshoot intrasite call setup issues

Troubleshoot registration issues

- Troubleshoot issues with endpoint registration
- Troubleshoot issues with gateway registration
- Troubleshoot issues with gatekeeper registration

Troubleshoot database issues

- Troubleshoot database replication issues in CallManager 4.x
- Troubleshoot database replication issues in CallManager 5.x
- Troubleshoot 3rd party LDAP synchronization issues

Troubleshoot application issues

- Troubleshoot voicemail integration
- Troubleshoot CTI integration issues
- Troubleshoot IP phone XML services

Troubleshoot media resources

- Troubleshoot music on hold
- Troubleshoot conference bridges
- Troubleshoot transcoders

- Troubleshoot MTP

Troubleshoot voice quality issues

- Troubleshoot echo
- Troubleshoot dropped calls
- Troubleshoot audio quality issues

Troubleshoot security issues

- Troubleshoot authentication issues
- Troubleshoot certificate issues

Exam(s):

642-436 Cisco Voice over IP (CVOICE v6.0)

642-446 Implementing Cisco Unified Communications Manager Part 1 (CIPT1 v6.0)

642-642 Quality of Service (QoS)

642-456 Implementing Cisco Unified Communications Manager Part 2 (CIPT2 v6.0)

642-426 Troubleshooting Cisco Unified Communications Systems (TUC v1.0)