CCVP CERTIFICATION (TWO PATHS)

642-436 CVOICE 6.0

Cisco Voice over IP Exam

Exam Number:	642-436
Associated Certifications:	CCVP
Duration:	75 minutes (60 - 70 questions)
Available Languages:	English

Exam Description

The 642-436 Cisco Voice over IP (CVOICE) is the exam associated with the Cisco Certified Voice Professional CCVP® certification. This exam tests a candidate's knowledge of the foundational elements of VOIP calls, and the description of dial plans, and the implementation of gateways, gatekeepers and IP-IP gateways. Candidates can prepare for this exam by taking the CVOICE Cisco Voice over IP course.

Topics

The following topics are general guidelines for the content likely to be included on the Remote Access exam. However, other related topics may also appear on any specific delivery of the exam. In order to better reflect the contents of the exam and for clarity purposes, the guidelines below may change at any time without notice.

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

642-642

Implementing Cisco Quality of Service

Exam Number:	642-642
Associated Certifications:	CCVP CCIP
Duration:	90 minutes (45-55 questions)
Available Languages:	English

Exam Description

The Implementing Cisco Quality of Service (QOS) exam is one of the qualifying exams for the Cisco Certified Internet work Professional CCIP®, the Cisco Certified Voice Professional CCVP® and the Cisco IP Telephony Design Specialist certifications. The QoS 642-642 exam will test materials covered under the Implementing Cisco Quality of Service QoS v2.1 course. The exam will certify that the successful candidate has knowledge and skills necessary to configure and troubleshoot Cisco IOS routers running Quality of Service protocols in Service Provider and Enterprise environments. The exam covers topics on IP QoS, classification and marking Mechanisms, queuing mechanisms, traffic shaping and policing mechanisms, congestion avoidance mechanisms, link efficiency mechanisms, modular QoS command line interface, and QoS Best Practices.

Topics

The following information provides general guidelines for the content likely to be included on the exam. However, other related topics may also appear on any specific delivery of the exam.

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

642-426 TUC

Troubleshooting Cisco Unified Communications Systems

Exam Number:	642-426
Associated Certifications:	CCVP
Duration:	90 minutes (50-60 questions)
Available Languages:	English,

Exam Description

The 642-426 Troubleshooting Cisco Unified Communications Systems (TUC) exam is the exam associated with the Cisco Certified Voice Professional CCVP® certification. Candidates can prepare for this exam by taking Troubleshooting Cisco Unified Communications (TUCv1.0) course. The exam will certify that the

successful candidate has the knowledge and skills necessary to troubleshoot Enterprise CallManager, Unity, and IP network deployments. The exam addresses hands-on experience in configuring, deploying, and troubleshooting Unified Communications solutions see Claims and Components attached).

Exam Topics

The following topics are general guidelines for the content likely to be included on the Remote Access exam. However, other related topics may also appear on any specific delivery of the exam. In order to better reflect the contents of the exam and for clarity purposes, the guidelines below may change at any time without notice.

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

Cisco Unified Call Manager track subjects

642-444 CIPT-4.x

Cisco IP Telephony for Release 4.x Exam

Exam Number:	642-444
Associated Certifications:	CCVP
Duration:	90 minutes (60-70 questions)
Available Languages:	English,

Exam Description

The Cisco IP Telephony 642-444 CIPT-4.x is the exam associated with the Cisco Certified Voice Professional CCVP® certification. Candidates can prepare for this exam by taking the Cisco IP Telephony (Part 1) and Cisco IP Telephony (Part 2) courses. This exam tests a candidate's knowledge of VoIP and PSTN components and technologies and the candidate's ability to describe, install, configure and support CCM 4.x products in a Cisco network, including such features as security and video. Topics covered include VoIP, PSTN, and CCM.

Topics

The following information provides general guidelines for the content likely to be included on this exam. However, other related topics may also appear on any specific delivery of the exam. In order to better reflect the contents of the exam and for clarity purposed the guidelines below may change at any time without notice.

Perform an installation and initial set up of a Call Manager cluster

- Describe CallManager cluster relationships
- Describe CallManager redundancy designs
- Configure DCHP, TFTP and NTP
- Determine which CallManager services are necessary and make sure the appropriate services are enabled

Configure Call Manager to support a call between any two endpoints on-cluster and off-cluster

- Explain the function of a Call Manager group
- Describe the functions and usage of CSS and partitions
- Configure a route plan
- Explain digit analysis
- Describe and configure route patterns to route or block calls
- Explain route filters
- Explain discard digit instructions, translation patterns, and transformation masks
- Describe the functions of CallManager regions
- Describe the functions or usage of a device pool
- Explain the purpose of locations
- Configure CallManager and gatekeeper to support CAC
- Describe the purpose and features of SRST and AAR
- Configure intercluster communications
- Configure voice gateways

Given a list of IP phone features, configure the CallManager to support the given feature set

- Configure call forward
- Configure MeetMe conferencing and conferencing resources
- Configure Music-on-hold
- Configure soft-key and IP phone button templates
- Configure multiple calls per line appearance
- Configure IPMA
- Configure Malicious Call ID
- Configure hunt groups
- Configure IP phone services
- Configure extension mobility
- Configure MRGs and MRGLs
- Configure other CallManager features and services

Secure an IP telephone network

- Explain Secure RTP and other components that help protect a CIPT network against threats
- Securing the CallManager Server - best practices/recommendations
- Describe the Cisco SAFE network design
- Configure SSL
- Configure IPSec
- Configure CallManager to use certificates
- Configure MLA (multi-level admin)
- Configure toll-fraud prevention
- Describe hardening IP phones

Given a specific set of IP telephony applications and tools, configure CallManager to support the applications

- Configure IP soft phone/IP communicator
- Install and configure BAT and TAPS to bulk add/manage phones/users
- Describe Call Detail Records and methods to extract
- Install and use BARS to backup publisher

Monitor and manage an IP telephony network using Internal Server Tools

- Describe the use of Serviceability tool
- Describe the use of Real-Time monitoring tool
- Describe the tools inherent in the operating system and database, and also provided by Cisco, to monitor CallManager operation

GWGK 642-453

Implementing Cisco Voice Gateways and Gatekeepers Exam

Exam Number:	642-453
Associated Certifications:	CCVP
Duration:	75 min. (60 questions)
Available Languages:	English

Exam Description

The Implementing Cisco Voice Gateways and Gatekeepers (GWGK) exam is associated with the Cisco Certified Voice Professional CCVP® certification. Candidates can prepare for this exam by taking the Gateway Gatekeeper (GWGK) course. This exam tests a candidate's knowledge of the implementation of Cisco gateways and gatekeepers, including integration of a VoIP network to both PSTN and TDM equipment. Topics covered include implementing dial plans and advanced gateway features such as SRST and DSP resources, implementing gatekeepers and directory gatekeepers to provide hierarchical dial plan resolution, and call admission control.

Topics

The following information provides general guidelines for the content likely to be included on this exam. However, other related topics may also appear on any specific delivery of the exam. In order to better reflect the contents of the exam and for clarity purposed the guidelines below may change at any time without notice.

Explain the function and interoperation of voice & video Gateways within an IP Communications network

- Identify and describe the appropriate gateway signaling protocol to meet requirements
- Identify and describe the appropriate digital line protocol to meet requirements
- Identify and describe the appropriate analog line protocol to meet requirements
- Describe the appropriate implementation of drop and insert multiplexing
- Describe DSP functionality
- Describe the different methods of provides fax and modem support

Describe the function and interoperation of Gatekeepers within an IP Communications network

- Describe the function of Gatekeepers
- Describe the interoperation of a Gatekeeper and a Cisco Unified CallManager
- Describe the Gatekeeper Transaction Message Protocol and how it is used
- Describe Dynamic Zone Prefix Registration with a Gatekeeper
- Describe Gatekeeper clustering

Implement a Gatekeeper

- Implement and Configure Gatekeeper to provide call admission control
- Implement and Configure Gatekeeper to provide dial-plan resolution
- Configure a Directory Gatekeeper to provide scalability
- Implement and Configure redundancy between Gatekeeper devices
- Implement and Configure Gatekeeper clustering
- Configure a Gateway to register with a Gatekeeper

- Configure a Cisco Unified CallManager to register with a Gatekeeper
- Verify and troubleshoot Gatekeeper implementations

Implement a Gateway

- Configure and verify PRI connectivity
- Configure and verify BRI connectivity
- Configure and verify CAS connectivity
- Configure and verify Analog connectivity
- Implement SRST to provide High Availability
- Implement media resources on a Gateway
- Implement fax and modem support on a Gateway
- Configure a Gateway to provide DTMF support
- Configure a Gateway to be usable by a Cisco Unified Call Manager

Implement a dial-plan

- Describe the components of a dial-plan
- Configure digit manipulation
- Implement call routing
- Implement COR
- Describe how the Gateway matches dial-peers
- Verify and troubleshoot dial-plan implementations

Implement call applications on a Gateway

- Describe how to obtain call applications
- Configure call applications on a Gateway
- Verify and troubleshoot call application implementations

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 security
- Configure IP-to-IP Gateway to provide protocol and media interworking
- Configure IP-to-IP Gateway to provide call admission control
- Verify and troubleshoot IP-to-IP Gateway implementations