



Complete Cisco CCNA and CCNP Certification Online – IT103 230 hours

CCNA

The Cisco Certified Network Associate (CCNA) certification is Cisco's entry-level Network Installation and Support certification. CCNAs exhibit basic networking skills, and should be able to install simple LAN and WAN networks. This program provides a comprehensive introduction to deploying Cisco routers in an inter-networked environment. Through extensive hands-on exercises, students gain the fundamental knowledge and skills needed to install, configure and troubleshoot Cisco routers. A single exam must be passed to attain this certification.

Basic Networking Concepts

Overview/Description

To identify the major components of a computer system, to define basic computer and networking terminology, and to describe the benefits and functions of the OSI reference model

Target Audience

Individuals new to networking concepts and terminology; individuals preparing to take the Interconnecting Cisco Network Devices (ICND) learning path; anyone preparing for the Introduction to Cisco Networking Technologies (INTRO) exam, the Interconnecting Cisco Network Devices (ICND) exam, or the Cisco Certified Network Associate (CCNA) exam

Lesson Objectives

Basic Networking Concepts

- identify the major components of a computer system and their functionality, and list the resources required to install a NIC.
- identify the main purposes and functions of networking.
- distinguish between the OSI reference model and the TCP/IP stack.
- distinguish between basic computer and networking terms, and between the principles of the OSI reference model and the TCP/IP protocol stack.

Creating a Simple Ethernet Network

Overview/Description

To demonstrate how to build a simple Ethernet network

Target Audience

Individuals new to networking concepts and terminology; individuals preparing to take the Interconnecting Cisco Network Devices (ICND) learning path; anyone preparing for the Introduction to Cisco Networking Technologies (INTRO) exam, the Interconnecting Cisco Network Devices (ICND) exam, or the Cisco Certified Network Associate (CCNA) exam



Lesson Objectives

Creating a Simple Ethernet Network

- identify the standards, functions, and operation of important LAN technologies.
- differentiate between the different network media types.
- differentiate between the different network media types.
- determine the appropriate network media type to use in a given scenario.

Extending Ethernet Networks

Overview/Description

To describe the functions and operations of switched LANs and virtual LANs

Target Audience

Individuals new to networking concepts and terminology; individuals preparing to take the Interconnecting Cisco Network Devices (ICND) learning path; anyone preparing for the Introduction to Cisco Networking Technologies (INTRO) exam, the Interconnecting Cisco Network Devices (ICND) exam, or the Cisco Certified Network Associate (CCNA) exam

Lesson Objectives

Extending Ethernet Networks

- distinguish between the features of different network topologies.
- identify the functions, features, and operation of network devices used at different layers of the OSI model.
- match network devices to their function and distinguish between different network topologies.
- recall methods used to extend Ethernet LANs and reduce the size of collision domains.
- determine how to resolve problems with bridging loops in a switched environment, for a given scenario.
- differentiate between the features and characteristics of shared and switched LANs.
- identify the components of a VLAN and the benefits and advantages provided by VLANs.
- relate the benefits and costs of establishing a VLAN for a given scenario.

Networks with Cisco Devices

Overview/Description

To identify the basic operations of routing and to describe the operations of routing protocols, and to identify the functions of specific network layer protocols

Target Audience

Individuals new to networking concepts and terminology; individuals preparing to take the Interconnecting Cisco Network Devices (ICND) learning path; anyone preparing for the Introduction to Cisco Networking Technologies (INTRO) exam, the Interconnecting Cisco Network Devices (ICND) exam, or the Cisco Certified Network Associate (CCNA) exam

Lesson Objectives

Connecting Networks with Cisco Devices

- distinguish between different network layer protocols and their functions, and identify the fields of the IP datagram.



- differentiate between the functions of protocols used at the network layer.
- identify the basic operations involved in the routing process.
- distinguish between different routing protocol classes.
- describe the features and operations of interior and exterior routing protocols.
- distinguish between the functions and application of common interior and exterior routing protocols.

Constructing IP Network Addresses

Overview/Description

To describe the major aspects of IP addressing and calculate valid IP subnet addresses and masks

Target Audience

Individuals new to networking concepts and terminology; individuals preparing to take the Interconnecting Cisco Network Devices (ICND) learning path; anyone preparing for the Introduction to Cisco Networking Technologies (INTRO) exam, the Interconnecting Cisco Network Devices (ICND) exam, or the Cisco Certified Network Associate (CCNA) exam

Lesson Objectives

Constructing IP Network Addresses

- distinguish between the processes used to convert between decimal, binary, and hexadecimal numbering systems.
- interpret numerical systems.
- distinguish between the types of IP address classes and between the types of reserved IP addresses.
- recognize how the use of IPv4, IPv6, and CIDR affects IP address availability.
- convert a 32-bit binary number to its corresponding IP address.
- recognize how to calculate the number of usable subnets and host addresses.
- recognize how to calculate a subnet number.
- calculate a subnet assignment.

Ensuring Data Delivery in Networks

Overview/Description

To demonstrate how to ensure the reliability of data delivery through the transport layer

Target Audience

Individuals new to networking concepts and terminology; individuals preparing to take the Interconnecting Cisco Network Devices (ICND) learning path; anyone preparing for the Introduction to Cisco Networking Technologies (INTRO) exam, the Interconnecting Cisco Network Devices (ICND) exam, or the Cisco Certified Network Associate (CCNA) exam

Lesson Objectives

Ensuring Data Delivery in Networks

- identify the functionality of common transport layer protocols and recognize the applications supported by TCP/IP.
- recognize the functionality of the TCP/IP transport layer.



- After completing this topic, you should be able to sequence the steps required to establish, maintain, and terminate a TCP connection in a TCP/IP network environment.

Remote Network Connectivity

Overview/Description

To describe the functions of major WAN technologies

Target Audience

Individuals new to networking concepts and terminology; individuals preparing to take the Interconnecting Cisco Network Devices (ICND) learning path; anyone preparing for the Introduction to Cisco Networking Technologies (INTRO) exam, the Interconnecting Cisco Network Devices (ICND) exam, or the Cisco Certified Network Associate (CCNA) exam

Lesson Objectives

Remote Network Connectivity

- recognize the functions, operation, and primary components of a WAN.
- identify the features and functions of major WAN technologies.
- determine the WAN connection types and multiplexing used in a given scenario.
- recognize the structure and functionality of the Internet.
- identify the characteristics and functions of the PPP and HDLC protocols.
- identify the function and operation of ISDN, DSL, Frame Relay, ATM, and SONET connection technologies.
- identify the function and operation of analog modems and cable modems.
- determine the appropriate connection medium to use when connecting a WAN in a given scenario.
- distinguish between the functions, operations, and primary components of a MAN, SAN, CN, and VPN.
- match an appropriate WAN connection technology and modem to a corporate network, for a given scenario.

Operation and Configuration of Cisco IOS Switches

Overview/Description

To use the available configuration tools to establish connectivity to the appropriate network device in order to complete initial switch configurations and to verify the default configuration and status of switch devices

Target Audience

Individuals new to networking concepts and terminology; individuals preparing to take the Interconnecting Cisco Network Devices (ICND) learning path; anyone preparing for the Introduction to Cisco Networking Technologies (INTRO) exam, the Interconnecting Cisco Network Devices (ICND) exam, or the Cisco Certified Network Associate (CCNA) exam

Operation and Configuration of Cisco IOS Switches

- recognize the setup of console connections for Cisco devices.
- identify the requirements for configuring a Cisco network device from an external source.
- start a Cisco IOS EXEC session and change EXEC modes.
- recognize the LED sequence that verifies successful POST completion for a Catalyst switch.
- interpret initial boot-up output and use the CLI help facilities on a Catalyst switch.



- use the command line interface to configure basic switch details, and to examine the status and configuration of the switch.
- implement the initial configuration for a Catalyst 2950 switch.

Operation and Configuration of Cisco IOS Routers

Overview/Description

To use available configuration tools to establish connectivity to a router in order to complete the initial router configuration and to verify the default configuration and status of a functioning access-layer router

Target Audience

Individuals new to networking concepts and terminology; individuals preparing to take the Interconnecting Cisco Network Devices (ICND) learning path; anyone preparing for the Introduction to Cisco Networking Technologies (INTRO) exam, the Interconnecting Cisco Network Devices (ICND) exam, or the Cisco Certified Network Associate (CCNA) exam

Lesson Objectives

Operation and Configuration of Cisco IOS Routers

- recognize the router startup sequence and the initial router setup.
- recognize the keyboard help, enhanced editing key functions, and command history feature associated with the command line interface.
- use the router command line interface to locate and complete commands, correct command line errors, and observe and verify the status of a router.
- identify the router status commands used to verify initial startup of a router.
- verify the initial router startup sequence and configuration process.
- identify the different router configuration modes and their functions.
- configure basic router features and interfaces.
- implement a basic router configuration.
- modify the configuration files to configure a router in a given scenario.

Managing the Cisco Network Environment

Overview/Description

To discover and determine the status of connected devices on a network and enable connections to these devices

Target Audience

Individuals new to networking concepts and terminology; individuals preparing to take the Interconnecting Cisco Network Devices (ICND) learning path; anyone preparing for the Introduction to Cisco Networking Technologies (INTRO) exam, the Interconnecting Cisco Network Devices (ICND) exam, or the Cisco Certified Network Associate (CCNA) exam

Lesson Objectives

Managing the Cisco Network Environment

- use CDP to determine the host names and addresses of neighboring Cisco devices, and recognize how to create a network map of the environment.
- use CDP to determine the host names and addresses of neighboring Cisco devices and create a map of the network environment, given operational access-layer switches and routers.
- identify how to connect to a remote device using Telnet.



- use CDP and Telnet to collect information from network devices.
- use IOS commands to manage Telnet sessions.

Cisco Network Device Administration

Overview/Description

To manage devices on a network according to designated best practices

Target Audience

Individuals new to networking concepts and terminology; individuals preparing to take the Interconnecting Cisco Network Devices (ICND) learning path; anyone preparing for the Introduction to Cisco Networking Technologies (INTRO) exam, the Interconnecting Cisco Network Devices (ICND) exam, or the Cisco Certified Network Associate (CCNA) exam

Lesson Objectives

Cisco Network Device Administration

- use Cisco IOS commands to manage device configuration files.
- manage Cisco IOS image files and device configuration files.
- implement the correct methods for managing device configurations.
- recognize how to execute adds, moves, and changes on a router, and troubleshoot operational Cisco devices.
- execute adds, moves, or changes on a router, and use the debug troubleshooting tool to minimize potentially adverse impacts on Cisco devices.

Configuring Cisco Catalyst Switch Operations

Overview/Description

To discuss and implement specific bridging and VLAN Catalyst switch configurations, which provide for scalability, security, and enhanced management of the local area switched network

Target Audience

Network administrators responsible for implementing and managing small and medium-sized business networks; network technicians who install network devices in small business environments; Cisco channel resellers who are new to Cisco products and services

Lesson Objectives

Configuring Cisco Catalyst Switch Operations

- explain the fundamentals of layer 2 switching.
- describe redundant topologies in switched environments.
- describe how the spanning-tree algorithm is used to eliminate switching loops.
- describe how the Spanning-Tree and Rapid Spanning-Tree Protocols affect frame forwarding on bridges and switch ports.
- discuss Spanning-Tree Protocol operation.
- describe how to configure ports on a switch.
- configure port security, add, move, and change MAC addresses and manage device configuration files.
- explain how to implement port and MAC security on a switch.



- configure a Catalyst 2950 series switch.
- describe the operation of VLANs.
- explain how VTP is used to manage VLANs.
- determine the appropriate commands used in VLAN configuration and trunking.
- scale the size and number of VLANs and troubleshoot their operation.
- verify VLAN configuration on a switch.

Routing in Cisco Networks

Overview/Description

To describe the different forms of routing and explain the concepts of distance vector and link state routing

Target Audience

Network administrators responsible for implementing and managing small and medium-sized business networks; network technicians who install network devices in small business environments; Cisco channel resellers who are new to Cisco products and services

Lesson Objectives

Routing in Cisco Networks

- outline the basic principles of routing.
- distinguish the features and operation of dynamic routing protocols.
- discuss the operation and method used for routing between VLANs and choose the commands used to configure trunking modes.
- analyze the operation of distance vector routing protocols.
- explain the mechanisms used to eliminate routing loops.
- describe the features and operation of link state and balanced hybrid routing protocols.
- use IOS software commands to discover routing protocols supported and in use on a router.

Implementing Routing Protocols on Cisco Networks

Overview/Description

To describe the operation and configuration of popular modern routing protocols

Target Audience

Network administrators responsible for implementing and managing small and medium-sized business networks; network technicians who install network devices in small business environments; Cisco channel resellers who are new to Cisco products and services

Lesson Objectives

Implementing Routing Protocols on Cisco Networks

- enable RIP on a router.
- configure and verify RIP operation on Cisco routers.
- explain the operation of IGRP.
- describe how to enable IGRP on a router.
- configure IGRP on a router.
- distinguish the various features and functions of EIGRP.



- describe the commands used to configure EIGRP.
- verify EIGRP configuration on routers.
- identify the features of OSPF and how they compare to distance vector routing protocols.
- describe the commands used to configure OSPF in a single area.
- configure and verify configuration of OSPF.
- explain the operation of variable-length subnet masks (VLSM) on Cisco routers.

Managing IP Traffic on Cisco Networks

Overview/Description

To describe and configure efficient network traffic restrictions and security using properly implemented access list management and address translation

Target Audience

Network administrators responsible for implementing and managing small and medium-sized business networks; network technicians who install network devices in small business environments; Cisco channel resellers who are new to Cisco products and services

Managing IP Traffic on Cisco Networks

- explain the requirement for access lists.
- describe access list operation and configuration.
- describe how access lists filter by protocols and packet details.
- explain how wildcards are used in access list configuration.
- explain the rules governing access list configuration.
- demonstrate how to control network access using access control lists.
- implement and manage standard access lists using IOS commands.
- describe extended access lists, and explain how to configure them and determine their effectiveness.
- implement and manage standard access control lists (ACL) using IOS commands.
- explain the ideal implementation of access lists.
- describe the features and operation of Network Address Translation (NAT) and Port Address Translation (PAT).
- describe the commands used to configure address translation and overloading.
- verify and troubleshoot NAT and PAT configurations.

Extending a Cisco Network to a WAN

Overview/Description

To describe the implementation and configuration of the different technologies used on Cisco devices to enable wide area connections

Target Audience

Network administrators responsible for implementing and managing small and medium-sized business networks; network technicians who install network devices in small business environments; Cisco channel resellers who are new to Cisco products and services

Lesson Objectives

Extending a Cisco Network to a WAN

- discuss the elements of a wide-area network.



- describe the protocols used for WAN connectivity and how devices are connected to the network.
- detail HDLC and PPP protocol operation.
- detail the authentication and encapsulation processes used by PPP.
- configure PPP on a Cisco device interface.
- describe the terminology of Frame Relay and how it operates.
- describe the purpose and command syntax for defining static Frame Relay map entries on a router.
- configure Frame Relay subinterfaces on a router.
- discuss the typical types of Frame Relay connections made to service providers.
- configure a subinterface on a Cisco router.
- configure a Frame Relay connection.

Completing ISDN Calls on Cisco Networks

Overview/Description

To detail the operation and configuration of ISDN and DDR

Target Audience

Network administrators responsible for implementing and managing small and medium-sized business networks; network technicians who install network devices in small business environments; Cisco channel resellers who are new to Cisco products and services

Lesson Objectives

Completing ISDN Calls on Cisco Networks

- describe the characteristics of ISDN.
- detail the functional elements of ISDN and describe the commands used to configure BRI and PRI interfaces.
- identify the different ISDN switch types and configure basic ISDN.
- configure ISDN PRI on a router.
- discuss the commands used to verify and troubleshoot ISDN connections.
- explain how DDR operates.
- detail the steps for configuring DDR.
- describe the configuration of dialer profiles on ISDN interfaces.
- configure and troubleshoot a given ISDN DDR connection.
- use context sensitive help and set up IP static routes.

TestPrep 640-801 Cisco Certified Network Associate (CCNA)

Overview/Description

Generally taken near the end of a program of certification-orientated study, the 640-801 Cisco Certified Network Associate (CCNA) TestPrep enables the learner to test their knowledge in a simulated certification testing environment. Learners can take TestPrep in two different modes: Study and Certification. Study mode is designed to maximize learning by providing feedback, while Certification mode is designed to mimic a certification exam.

Target Audience

Individuals seeking practice in a simulated testing environment, covering the skills and competencies being measured by the actual certification exam.

Lesson Objectives



TestPrep 640-801 Cisco Certified Network Associate (CCNA)

- Introduction to Networking
- Network Types
- Network Media
- Switching Fundamentals
- TCP/IP
- IP Addressing and Routing
- WAN Technologies
- Operating and Configuring Cisco IOS Devices
- Managing Your Network Environment
- Configuring Catalyst Switch Operations
- Extending Switched Networks with VLANs
- Determining IP Routes
- Managing IP Traffic with Access Lists
- Establishing Serial Point-to-Point Connections
- Establishing Frame Relay Connections
- Completing ISDN Calls

CCNP

After completing the CCNP certification students should be able to install, configure, operate, and troubleshoot complex routed LAN, routed WAN, Switched LAN networks, and Dial Access Services. Complex networks consist of : IP, IGRP, IPX, Async Routing, AppleTalk, Extended Access Lists, IP RIP, Route Redistribution, IPX RIP, Route Summarization, OSPF, VLSM, BGP, Serial, IGRP, Frame Relay, ISDN, ISL, X.25, DDR, PSTN, PPP, VLANs, Ethernet, ATM LAN-Emulation, Access Lists, 802.10, FDDI, Transparent and Translational bridging The Cisco Certified Network Professional (CCNP™) title is granted to individuals who have first achieved Cisco Certified Network Associate (CCNA™). Completing the track requires passing four more exams in Cisco Systems, Inc "Routing and Switching" career certification path.

The Cisco® CCNP™ certification indicates advanced, or "journeyman", knowledge of networks. With a CCNP™, a network professional can install, configure, and operate LAN, WAN, and dial access services for organizations with networks from 100 to more than 500 nodes, including but not limited to these protocols:

- IP
- IGRP
- IPX
- Async Routing
- AppleTalk
- Extended Access Lists
- IP RIP
- Route Redistribution
- RIP
- Route Summarization
- OSPF
- VLSM
- BGP
- Frame Relay
- ISDN
- ISL
- X.25
- DDR
- PSTN
- PPP
- VLANs
- Ethernet
- Access Lists
- 802.1D
- FDDI
- Transparent and Translational Bridging.



- Serial

Cisco® CCNP™ certification enhances your career path by:

- Validating achievements, knowledge and hands-on skill base.
- Increasing professional credibility.
- Diversifying and heightening skills, ensuring the ability to tackle the newest, cutting-edge technologies.

A CCNP can do the following:

- Implement appropriate technologies to build a scalable routed network.
- Build campus networks using multilayer switching technologies.
- Improve traffic flow, reliability, redundancy, and performance for campus LANs, routed and switched WANs, and remote access networks.
- Create and deploy a global intranet.
- Troubleshoot an environment that uses Cisco routers and switches for multiprotocol client hosts and services

Positions for a CCNP include:

- Network administrator
- Level 2 support engineer
- Level 2 systems engineer
- Network technician
- Deployment engineer

Cisco BSCI 3.0: Network Requirements

Overview/Description

To enable you to describe the converged network requirements of various network and networked applications within the Cisco network architectures

Target Audience

Candidates for Cisco CCNP, CCDP, CCIP, and Cisco CCIE Routing and Switching and CCIE Communications and Services certifications; network administrators, technicians, and senior network support staff who are responsible for implementing and managing network environments

Lesson Objectives

Cisco BSCI 3.0: Network Requirements

- define the Cisco conceptual network models.
- identify the functional areas of the Enterprise Composite Network Model and traffic types in converged networks.
- indicate the Enterprise Composite Network Model functional areas in a given scenario.
- identify the features of the Intelligent Information Network (IIN) and the role of Cisco SONA in the evolution of enterprise networks toward IIN.
- distinguish between the advanced IP routing protocols.



- choose an appropriate routing protocol in a given scenario.

Cisco BSCI 3.0: Configuring EIGRP

Overview/Description

To enable you to describe the processes of EIGRP implementation, route selection, and configuration verification in diverse, large-scale networks

Target Audience

Candidates for Cisco CCNP, CCDP, CCIP, and Cisco CCIE Routing and Switching and CCIE Communications and Services certifications; network administrators, technicians, and senior network support staff who are responsible for implementing and managing network environments

Lesson Objectives

Cisco BSCI 3.0: Configuring EIGRP

- identify EIGRP key technologies and distinguishing features.
- recognize how EIGRP operates.
- recognize the EIGRP metric and how EIGRP and IGRP routes are integrated.
- identify the commands used for basic EIGRP configuration.
- recognize how to configure wildmask and last-resort gateway.
- identify the commands used to verify EIGRP IP route configuration.
- configure, tune, and verify basic EIGRP in a given scenario.

Cisco BSCI 3.0: EIGRP Options, Authentication, and Issues

Overview/Description

To enable you to describe and configure EIGRP advanced options, authentication, and recognize common issues when configuring EIGRP in an Enterprise Network

Target Audience

Candidates for Cisco CCNP, CCDP, CCIP, and Cisco CCIE Routing and Switching and CCIE Communications and Services certifications; network administrators, technicians, and senior network support staff who are responsible for implementing and managing network environments

Lesson Objectives

Cisco BSCI 3.0: EIGRP Options, Authentication, and Issues

- identify the commands used to configure route summarization.
- identify the features of EIGRP load balancing across equal paths, and configure load balancing across unequal-cost paths.
- recognize how to configure EIGRP bandwidth use across WAN links.
- recognize why administrators use manual route summarization over the default and provide a summarized route in a given scenario.
- identify the routing protocols that support router authentication, and identify the steps in MD5 authentication.
- recognize how to configure MD5 authentication.
- recognize how to verify and troubleshoot MD5 authentication.
- identify the factors that affect EIGRP scalability in large networks.



- identify the process of how EIGRP uses queries and stub routing for rapid converge.
- identify the features of Stuck in Active connections and graceful shutdowns.

Cisco BSCI 3.0: Configuring Simple Elements of OSPF

Overview/Description

To enable you to describe OSPF network architectures, operations, information flows, single area and multiarea routing

Target Audience

Candidates for Cisco CCNP, CCDP, CCIP, and Cisco CCIE Routing and Switching and CCIE Communications and Services certifications; network administrators, technicians, and senior network support staff who are responsible for implementing and managing network environments

Lesson Objectives

Cisco BSCI 3.0: Configuring Simple Elements of OSPF

- recognize the characteristics and structure of the OSPF protocol and how it forms neighbor adjacencies.
- recognize how OSPF calculates the best path and how link-state updates are used to verify active links.
- identify the OSPF packet types and the contents of the hello packet in the neighbor adjacency process.
- recognize the process of link-state database synchronization and the process involved in maintaining a database.
- identify the commands used for basic OSPF configuration.
- recognize the need for a unique router ID, and how a unique ID is established and verified.
- identify the commands used to verify OSPF configuration.
- configure basic OSPF, a router ID, and verify the OSPF operation.

Cisco BSCI 3.0: Tuning OSPF Configurations

Overview/Description

To enable you to describe OSPF network types, operations, information flows, single area and multiarea routing

Target Audience

Candidates for Cisco CCNP, CCDP, CCIP, and Cisco CCIE Routing and Switching and CCIE Communications and Services certifications; network administrators, technicians, and senior network support staff who are responsible for implementing and managing network environments

Lesson Objectives

Cisco BSCI 3.0: Tuning OSPF Configurations

- recognize the OSPF network types and the adjacency behavior based on the physical link.
- recognize the DR and BDR selection process and adjacency behavior in a NBMA network.
- identify the OSPF configuration options for a Frame Relay network.
- recognize how an NBMA topology operates in an OSPF Frame Relay environment.



- recognize how a point-to-point and point-to-multipoint topologies operate in an OSPF Frame Relay environment.
- identify the commands for configuring subinterfaces and tracking OSPF adjacencies.
- identify the OSPF router types.
- recognize how virtual links enable connectivity.
- identify the OSPF LSA types.
- recognize how to interpret an OSPF database.
- recognize how to configure OSPF LSDB overload protection and change the default metric cost.
- identify the OSPF router types.

Cisco BSCI 3.0: Configuring Advanced Elements of OSPF

Overview/Description

To enable you to describe OSPF network link maintenance, interarea and external route summarization, implementation and verification of OSPF parameters, and OSPF network authorization

Target Audience

Candidates for Cisco CCNP, CCDP, CCIP, and Cisco CCIE Routing and Switching and CCIE Communications and Services certifications; network administrators, technicians, and senior network support staff who are responsible for implementing and managing network environments

Cisco BSCI 3.0: Configuring Advanced Elements of OSPF

- recognize how to configure OSPF interarea and external route summarization.
- recognize how to configure OSPF to advertise a default route.
- recognize how to configure OSPF stub areas and totally stubby areas.
- recognize how to interpret an OSPF routing table.
- recognize how to configure a not-so-stubby area and verify all stub area configuration.
- enable OSPF and configure route summarization and a default route into an OSPF area.
- identify OSPF authentication types.
- recognize how to configure simple password and MD5 authentication.
- recognize how to troubleshoot simple password and MD5 authentication.

Cisco BSCI 3.0: The IS-IS Protocol

Overview/Description

To enable you to describe the benefits of IS-IS as a routing protocol, how IS-IS operates, and how it is implemented in large, enterprise networks

Target Audience

Candidates for Cisco CCNP, CCDP, CCIP, and Cisco CCIE Routing and Switching and CCIE Communications and Services certifications; network administrators, technicians, and senior network support staff who are responsible for implementing and managing network environments

Lesson Objectives

Cisco BSCI 3.0: The IS-IS Protocol

- identify the features and principles of, and issues associated with Integrated IS-IS routing.
- identify the features of the End System-to-Intermediate System (ES-IS) protocol and the OSI routing levels.
- recognize the differences between IS-IS and OSPF.
- identify the features and applications for network services access points (NSAP) and network entity title (NET) addresses.
- identify the IS-IS routing levels, and the features of intra-area and interarea addressing and routing.
- recognize the types of IS-IS protocol data units and how routers use link-state packets.
- recognize the features of IS-IS implementation in a non-broadcast multi-access or broadcast network.
- recognize the features of IS-IS link-state packets, hello packets, and link-state database (LSD) synchronization.
- identify the commands to configure Integrated IS-IS in a Connectionless Network Service environment.
- identify the commands to optimize IS-IS and configure route summarization.
- recognize how to verify IS-IS configuration and CLNS IS-IS structures.
- enable the Integrated IS-IS protocol and optimize the configuration.

Cisco BSCI 3.0: Manipulating Routing Updates

Overview/Description

To enable you to describe the processes of manipulating routing updates using multiple IP routing protocols, configuring and verifying route distribution, controlling routing update traffic, and implementing and configuring DHCP, one of Cisco's advanced IOS features

Target Audience

Candidates for Cisco CCNP, CCDP, CCIP, and Cisco CCIE Routing and Switching and CCIE Communications and Services certifications; network administrators, technicians, and senior network support staff who are responsible for implementing and managing network environments

Lesson Objectives

Cisco BSCI 3.0: Manipulating Routing Updates

- recognize what's involved in route distribution in a multiple routing-protocol environment.
- recognize how to artificially define the best path to an IP network.
- recognize how to configure route redistribution.
- recognize how to configure routes into RIP and OSPF.
- identify the commands to configure routes into EIGRP and IS-IS.
- recognize how to verify route distribution.
- recognize how to configure a passive interface and route filtering using distribution lists.
- recognize how to configure a distribute list and define a route map.
- identify the commands to configure route maps and implement route maps with redistribution.
- recognize the features and impact of the administrative distance value.
- recognize the purpose of and the commands used to configure DHCP.
- recognize how to configure the DHCP client and IP helper address.
- identify the commands to configure and verify DHCP Relay Services.
- enable a DHCP server and customize the configuration.

Cisco BSCI 3.0: BGP for Enterprise ISP Connectivity



Overview/Description

To enable you to describe BGP concepts and terminology, and the processes of BGP implementation for enterprise ISP connectivity

Target Audience

Candidates for Cisco CCNP, CCDP, CCIP, and Cisco CCIE Routing and Switching and CCIE Communications and Services certifications; network administrators, technicians, and senior network support staff who are responsible for implementing and managing network environments

Lesson Objectives

Cisco BSCI 3.0: BGP for Enterprise ISP Connectivity

- recognize how BGP is used in an enterprise network and BGP multihoming options.
- identify the factors that affect BGP routing between autonomous systems and path vector functionality.
- identify BGP features and message types.
- recognize the features of BGP, EBGP, and IBGP neighbor relationships.
- identify the factors that affect IBGP route summarization in transit paths.
- recognize how to configure basic BGP, activate a BGP session, and shut down a BGP neighbor.
- initiate basic BGP, activate a BGP session, and shutdown a BGP neighbor in a given scenario.
- recognize the impact of the neighbor configuration in a BGP network.
- recognize the factors that affect BGP routing from AS to AS.
- recognize the BGP network advertisement process.

Cisco BSCI 3.0: Tuning BGP Implementations

Overview/Description

To enable you to recognize BGP neighbor states, attributes, best-path selection, and authentication and troubleshooting techniques.

Target Audience

Candidates for Cisco CCNP, CCDP, CCIP, and Cisco CCIE Routing and Switching and CCIE Communications and Services certifications; network administrators, technicians, and senior network support staff who are responsible for implementing and managing network environments

Lesson Objectives

Cisco BSCI 3.0: Tuning BGP Implementations

- identify the features of BGP Neighbor States.
- identify the commands to authenticate and troubleshoot a BGP configuration.
- recognize the features of the AS and next-hop attributes.
- recognize the features of the origin, local preference, MED, weight BGP attributes and BGP best path selection process.
- recognize the BGP session process.
- recognize how to configure the local preference within an AS.
- identify the command to change the MED value in the BGP path selection process.
- recognize how to implement BGP in an enterprise network.



Cisco BSCI 3.0: Implementing Multicast

Overview/Description

To enable you to describe the processes of Multicast implementation and verification, the IGMPv2 and IGMPv3 protocols, and Multicast routing protocols

Target Audience

Candidates for Cisco CCNP, CCDP, CCIP, and Cisco CCIE Routing and Switching and CCIE Communications and Services certifications; network administrators, technicians, and senior network support staff who are responsible for implementing and managing network environments

Lesson Objectives

Cisco BSCI 3.0: Implementing Multicast

- recognize the features of an IP multicast group.
- recognize IP multicast addresses.
- identify the features of IGMPv2 and IGMPv3.
- recognize the features of multicast in a Layer 2 switching environment, CGMP operation, and IGMP snooping.
- recognize the features of multicast routing protocols, distribution trees, and IP multicast routing.
- recognize the features of PIM-DM, PIM-DM flood and prune, PIM-SM, and PIM sparse-dense modes.
- identify the commands to configure PIM-SM and PIM Sparse-Dense Mode on an interface.
- identify the commands to verify IGMP groups and IGMP snooping.
- enable multicast routing, enable PIM-SM on a router interface, and configure IGMP group membership.

Cisco BSCI 3.0: Implementing IPv6

Overview/Description

To enable you to describe the IPv6 features and functions that satisfy the requirements of IPv6 addressing

Target Audience

Candidates for Cisco CCNP, CCDP, CCIP, and Cisco CCIE Routing and Switching and CCIE Communications and Services certifications; network administrators, technicians, and senior network support staff who are responsible for implementing and managing network environments

Lesson Objectives

Cisco BSCI 3.0: Implementing IPv6

- recognize how IPv6 functions to satisfy the requirements of IPv6 addressing.
- identify the features of IPv6 addressing.
- recognize how a MAC address is used to generate a host interface address.
- identify the features of IPv6 Multicast.
- identify the features of IPv6 mobility.
- identify the features of IPv6 routing and IPv6 with OSPF functionality.
- recognize the differences between OSPF for IPv6 and OSPFv2.



- identify the LSA types for IPv6.
- identify the commands to configure and verify OSPFv3 in Cisco IOS software.
- configure OSPFv3 on a router, and enable IPv6 and OSPFv3 on a router interface.
- identify IPv6-over-IPv4 transition methods used to transit IPv4 networks.
- identify IPv6-over-IPv4 tunneling mechanisms and IPv4 addresses in IPv6 format.

TestPrep 642-901 Building Scalable Cisco Internetworks (BSCI)

Overview/Description

Generally taken near the end of a program of certification-orientated study, the 642-901 Building Scalable Cisco Internetworks (BSCI) TestPrep enables the learner to test their knowledge in a simulated certification testing environment. Learners can take TestPrep in two different modes: Study and Certification. Study mode is designed to maximize learning by providing feedback, while Certification mode is designed to mimic a certification exam.

Target Audience

Individuals seeking practice in a simulated testing environment, covering the skills and competencies being measured by the actual certification exam.

Lesson Objectives

TestPrep 642-901 Building Scalable Cisco Internetworks (BSCI)

- Implement EIGRP operations
- Implement multiarea OSPF operations
- Describe integrated IS-IS
- Implement Cisco IOS routing features
- Implement BGP for enterprise ISP connectivity
- Implement multicast forwarding
- Implement IPv6

Cisco BCMSN 3.0: Campus Networks

Overview/Description

To recognize the Cisco hierarchical network model as it pertains to the campus network.

Target Audience

Network administrators, network engineers, network managers, systems managers, or network designers.

Lesson Objectives

Cisco BCMSN 3.0: Campus Networks

- identify the features of IIN and Cisco SONA frameworks and the Cisco network models.
- recognize the problems that can occur with nonhierarchical network devices.
- identify the features of multilayer switches and the issues that can occur when used in a non-hierarchical network.
- identify the benefits and functional areas of the enterprise composite model.
- determine the Campus Infrastructure module of the ECNM as well as the ECNM functional areas.
- configure a distribution switch for basic connectivity.
- distinguish between the two interfaces used to configure Cisco Catalyst switches.



Cisco BCMSN 3.0: Defining Virtual Local Area Networks (VLANs)

Overview/Description

To identify how various technologies are best implemented within the Campus Infrastructure module and configure VLANs on access switches to confine traffic to individual VLANs in accordance with the Campus Infrastructure module design

Target Audience

Network administrators, network engineers, network managers, systems managers, or network designers.

Lesson Objectives

Cisco BCMSN 3.0: Defining Virtual Local Area Networks (VLANs)

- recognize the issues that can occur in a poorly designed network and identify the best practice for designating VLANs for an organization.
- distinguish between network interconnection technologies and identify the equipment and cabling needs when altering infrastructure.
- distinguish between traffic types and recognize the traffic paths within a campus network.
- identify the characteristics of end-to-end and local VLANs and the benefits of implementing local VLANs in an enterprise campus network.
- recognize VLAN configuration modes and their functions and identify the features of VLAN access ports.
- recognize the commands to configure a VLAN and associate it with an access port.
- configure a VLAN and associate it with an access port.

Cisco BCMSN 3.0: Implementing Trunks and the Virtual Trunking Protocol (VTP)

Overview/Description

To explain the procedure for configuring both 802.1Q and ISL trunking between two switches, how VLAN configuration of switches within a management domain can be automated with VTP, and identify common VLAN configuration errors and explain the solutions to those errors.

Target Audience

Network administrators, network engineers, network managers, systems managers, or network designers.

Lesson Objectives

Cisco BCMSN 3.0: Implementing Trunks and the Virtual Trunking Protocol (VTP)

- compare the features of the ISL and 802.1Q trunking protocols.
- identify the VLAN ranges and the commands used to configure a trunk.
- compare and configure trunk protocols in a given scenario.
- identify the features of VTP versions, modes, and operations.
- recognize how to configure and verify VTP.
- configure VTP on a switch.
- identify how to resolve the security issues with 802.1Q native VLANs.
- identify how to resolve the security issues with trunk links.
- identify best practices for VTP configuration.



Cisco BCMSN 3.0: Implementing Spanning Tree

Overview/Description

To implement spanning tree operation in a hierarchical network

Target Audience

Network administrators, network engineers, network managers, systems managers, or network designers.

Lesson Objectives

Cisco BCMSN 3.0: Implementing Spanning Tree

- identify traffic patterns in a bridge loop and in 802.1D STP.
- identify the features of a root bridge and the four port roles.
- recognize how switch ports determine their role in STP.
- identify how enhancements are provided to STP and how to configure PortFast.
- troubleshoot STP in a given switching scenario.
- identify the features of RSTP operation, port states, and roles.
- recognize the steps in the RSTP proposal and agreement process.
- identify the steps in the RSTP TCN process.
- identify the commands and procedure to implement RSTP in the switched network.
- identify the features of MSTP.
- identify the MSTP commands and procedure to implement MSTP in the switched network.
- configure MST within the switched network.
- identify the features of EtherChannel and compare PAgP and LACP.
- recognize EtherChannel implementation commands.
- recognize EtherChannel best practices.

Cisco BCMSN 3.0: Implementing Inter-VLAN Routing

Overview/Description

To implement and verify inter-VLAN routing

Target Audience

Network administrators, network engineers, network managers, systems managers, or network designers.

Lesson Objectives

Cisco BCMSN 3.0: Implementing Inter-VLAN Routing

- identify how inter-VLAN routing works using an external router.
- recognize the commands used to configure and verify inter-VLAN routing on an external router.
- identify how switching interfaces use the forwarding engine to implement Layer 2 and Layer 3 switching and the frame rewrite process.
- recognize the implementation and configuration commands used to configure inter-VLAN routing on a multilayer switch through an SVI.
- recognize the implementation and configuration commands used to configure a routed port on a multilayer switch.
- configure a distribution switch to support IP routing.



- identify the features and functions of Layer 3 switching.
- identify a CEF-based multilayer switch and the process used by a multilayer switch to forward packets.
- recognize the commands to configure and verify CEF and CEF problems and their solutions on Cisco Catalyst multilayer switches.
- recognize how to configure routing and performance enhancements of multilayer switches between VLANs.

Cisco BCMSN 3.0: Implementing High Availability In a Campus Environment

Overview/Description

To implement high availability technologies and techniques using multilayer switches in a campus environment.

Target Audience

Network administrators, network engineers, network managers, systems managers, or network designers.

Lesson Objectives

Cisco BCMSN 3.0: Implementing High Availability In a Campus Environment

- identify the routing issues that occur when using default gateways and proxy Address Resolution Protocol (ARP) and how router device redundancy works.
- identify the states and operations of HSRP.
- recognize the commands used to implement and configure HSRP.
- identify the options that can be configured to optimize HSRP.
- identify how to determine which HSRP operations require tuning in a network and recognize load sharing and debug commands.
- configure HSRP for redundancy on a layer 3 device.
- recognize the features of VRRP, its operations, and configuration.
- recognize the operations and configuration of GLBP.

Cisco BCMSN 3.0: Wireless LANs

Overview/Description

To recognize the features of WLANs and compare wireless LANs with wired LANs, the different WLAN topologies, and explain WLAN technology, standards, and security.

Target Audience

Network administrators, network engineers, network managers, systems managers, or network designers.

Lesson Objectives

Cisco BCMSN 3.0: Wireless LANs

- identify the different wireless data technologies and features available, and compare WLANs and wired LANs.
- identify the types of WLAN topologies and WLAN access topologies.
- compare the main WLAN topologies.
- identify the features of roaming between wireless cells, how WLANs support VLANs, and mesh networking.
- identify the features of WLAN technology and 802.11 standards.



- recognize the differences in data rates, throughput, and coverage for each 802.11 standard.
- recognize wireless LAN design, best practices, and security.

Cisco BCMSN 3.0: Configuring and Implementing WLANs

Overview/Description

To explain how to use Cisco Systems utilities to configure the Cisco WLAN client, distinguish between autonomous and lightweight WLAN implementations, and explain how to configure autonomous and lightweight Cisco WLAN solutions.

Target Audience

Network administrators, network engineers, network managers, systems managers, or network designers.

Lesson Objectives

Cisco BCMSN 3.0: Configuring and Implementing WLANs

- identify the Cisco 802.11 a/b/g WLAN client adapter and the Cisco Aironet Desktop Utility (ADU), their installation, and use.
- identify the Windows XP WLAN, Cisco Aironet Client Administration Utility, Cisco wireless IP Phone, and Cisco Compatible Extensions.
- identify Cisco autonomous and lightweight WLAN solution implementation and how LWAPP is used in WLANs.
- recognize the hierarchy of components that are required to build a WLAN and the devices contained in them.
- recognize antenna types, multipath distortion, decimal calculation, and EIRP guidelines.
- identify the configuration methods, roles, and configuration of an autonomous access point.
- recognize the function and configuration of a WLAN controller.
- configure a switch for wireless equipment.

Cisco BCMSN 3.0: Configuring Campus Switches to Support Voice

Overview/Description

To identify and configure switch infrastructure to support voice

Target Audience

Network administrators, network engineers, network managers, systems managers, or network designers.

Lesson Objectives

Cisco BCMSN 3.0: Configuring Campus Switches to Support Voice

- recognize the benefits and main components of a VoIP network, and the traffic characteristics of voice and data.
- identify the features of an auxiliary VLAN and other support mechanisms used to support VoIP within the network.
- identify how QoS is applied to voice traffic, LAN-based classification, and QoS trust boundaries.
- recognize the procedure and commands used on a switch in order to provide support for voice traffic.
- configure an access and a distribution switch to carry and prioritize voice traffic.

Cisco BCMSN 3.0: Mitigating Service Loss and Data Theft



Overview/Description

To recognize the potential attacks and how to implement security features in a switched network.

Target Audience

Network administrators, network engineers, network managers, systems managers, or network designers.

Lesson Objectives

Cisco BCMSN 3.0: Mitigating Service Loss and Data Theft

- identify the security issues that can occur within the switched environment and how they can be mitigated.
- identify the features of port security and the commands to implement port security on a switch.
- assess security threats within the campus network and choose the appropriate response.
- recognize how to mitigate VLAN hopping attacks and VACLs.
- identify the purpose and configuration of a private VLAN(PVLAN).
- recognize how to defend against spoof attacks with DAI, DHCP snooping, and IP Source Guard.
- identify how to protect the operation of STP, and the features and commands of root guard.
- recognize how to configure UDLD and loop guard to mitigate STP forwarding loops.
- identify switch security risks and list best practices for placing new switches into service.
- apply security measures to prevent switch attacks within the campus network.

TestPrep 642-812 Building Converged Cisco Multilayer Switched Networks (BCMSN)

Overview/Description

Generally taken near the end of a program of certification-orientated study, the 642-812 Building Converged Cisco Multilayer Switched Networks (BCMSN) TestPrep enables the learner to test their knowledge in a simulated certification testing environment. Learners can take TestPrep in two different modes: Study and Certification. Study mode is designed to maximize learning by providing feedback, while Certification mode is designed to mimic a certification exam.

Target Audience

Individuals seeking practice in a simulated testing environment, covering the skills and competencies being measured by the actual certification exam.

Lesson Objectives

TestPrep 642-812 Building Converged Cisco Multilayer Switched Networks (BCMSN)

- Implement VLANs
- Conduct the operation of Spanning Tree protocols in a hierarchical network
- Implement Inter-VLAN routing
- Describe and configure security features in a switched network
- Configure support for voice
- Implement gateway redundancy technologies
- Describe and configure wireless client access

Cisco ISCW 1.0: Network Connectivity



Overview/Description

To recognize Cisco architectural framework models and network requirements, and how remote connections are established

Target Audience

Network administrators; network engineers; network managers; systems managers; network designers who wish to validate their ability to install, configure and troubleshoot converged local and wide area networks with 100 to 500 nodes

Lesson Objectives

Cisco ISCW 1.0: Network Connectivity

- recognize the IIN and the SONA architectural framework.
- recognize the Cisco network models in the Cisco Enterprise Architecture and their mapping to a traditional three-layer hierarchical network model, and remote connection requirements in a converged network.
- recognize the typical remote connections that an enterprise network has to support, the challenges of connecting the teleworker, and the Business-Ready Teleworker solution.
- identify basic cable technology terms, standards organizations, and RF signaling terms.
- recognize how data services are delivered over an HFC architecture, the various cable components and their issues, and how a cable modem is provisioned to work in a SOHO of a subscriber using TCP/IP.
- identify the features, types, and distance limitations of DSL.
- recognize ADSL technology, how it coexists with traditional telephony service, and its encapsulation types.
- recognize how data is transmitted over ADSL using PPPoE and PPPoA.
- specify the Cisco Enterprise Architecture, how to provision a cable modem, and how to establish the discovery stage of a PPPoE session in a given scenario.

Cisco ISCW 1.0: Configuring the CPE and Verifying Broadband ADSL

Overview/Description

To configure a network of hosts over a bridging DSL CPE access device to an aggregate router and verify broadband ADSL configurations for Layer 1 and Layer 2

Target Audience

Network administrators; network engineers; network managers; systems managers; network designers who wish to validate their ability to install, configure and troubleshoot converged local and wide area networks with 100 to 500 nodes

Lesson Objectives

Cisco ISCW 1.0: Configuring the CPE and Verifying Broadband ADSL

- recognize how to configure the PPPoE client and PAT.
- recognize how to configure and verify DHCP and static default routes.
- recognize how to verify a PPPoE configuration, and how to configure PPPoA and the DSL ATM Interface.
- configure a Cisco ADSL router as a PPPoE client in a given scenario.
- identify if Layer 1 is causing a failed ADSL service.
- identify if Layer 2 is causing a failed ADSL service.



Cisco ISCW 1.0: Frame Mode MPLS Implementation

Overview/Description

To recognize the MPLS architecture and functionality, configure frame mode MPLS on IOS routers, and distinguish between MPLS VPN and traditional VPN operation

Target Audience

Network administrators; network engineers; network managers; systems managers; network designers who wish to validate their ability to install, configure and troubleshoot converged local and wide area networks with 100 to 500 nodes

Lesson Objectives

Cisco ISCW 1.0: Frame Mode MPLS Implementation

- recognize the elements of the MPLS conceptual model and the router switch mechanisms.
- recognize the main components of the MPLS architecture, the structure and format of an MPLS label, and the function of LSRs.
- recognize how labels are allocated, distributed, and advertised in a frame mode MPLS network.
- recognize how routers populate the LFIB database, how IP packets cross an MPLS network, and how PHP enhances MPLS performance.
- recognize how to configure frame mode MPLS on a Cisco IOS router.
- configure frame mode MPLS on IOS routers to link a network into the ISP's network, given a scenario.
- recognize MPLS VPN architecture and how it improves on traditional methods of overlay and peer-to-peer VPN.
- recognize how routing information is propagated across the P-network.
- recognize the end-to-end flow of routing updates in an MPLS VPN.

Cisco ISCW 1.0: IPsec VPNs

Overview/Description

To recognize how IPsec VPNs operate and configure a site-to-site IPsec VPN

Target Audience

Network administrators; network engineers; network managers; systems managers; network designers who wish to validate their ability to install, configure and troubleshoot converged local and wide area networks with 100 to 500 nodes

Lesson Objectives

Cisco ISCW 1.0: IPsec VPNs

- recognize the basic functions and advantages of the IPsec protocol and the IKE protocols.
- recognize the functionality available within IKE.
- recognize the functions of the ESP and AH IPsec protocols, and message authentication and integrity check using hash.
- recognize the operation of asymmetric and encryption algorithms.
- recognize the elements and operation of the PKI environment.
- recognize how a site-to-site IPsec VPN operates.
- recognize how to configure a site-to-site IPsec VPN.
- configure a site-to-site IPsec VPN with preshared keys authentication, using CLI in a given scenario.



Cisco ISCW 1.0: IPsec VPN Configuration

Overview/Description

To implement IPsec site-to-site VPNs using SDM and GRE tunnels, and provide high-availability VPNs using backup interfaces

Target Audience

Network administrators; network engineers; network managers; systems managers; network designers who wish to validate their ability to install, configure and troubleshoot converged local and wide area networks with 100 to 500 nodes

Lesson Objectives

Cisco ISCW 1.0: IPsec VPN Configuration

- recognize how to navigate the site-to-site VPN wizard interface, the components configured by the SDM site-to-site VPN wizard, how to launch the wizard, and how to set the parameters of the site-to-site VPN tunnel.
- recognize how to define the traffic that the VPN protects and how to complete the configuration by viewing the settings in the Summary window.
- recognize the characteristics of GRE, the purpose of secure GRE tunnels and how to configure them, how to set the parameters of the site-to-site VPN tunnel, and how to configure IKE using SDM.
- recognize how to configure the IPsec transform set using the SDM wizard, how to configure routing, and how to view the settings in the Summary window.
- recognize how high availability for IPsec VPNs is achieved and the use of IPsec backup peers.
- recognize HSRP operation, IPsec stateful failover functionality, and how to back up a WAN connection using an IPsec VPN.
- remove an IPsec VPN after a successful back up of a WAN connection in a given scenario.

Cisco ISCW 1.0: Configuring Cisco Easy VPN

Overview/Description

To recognize the components and operation of Cisco Easy VPN, and configure Easy VPN Server and the VPN client for Easy VPN Remote access

Target Audience

Network administrators; network engineers; network managers; systems managers; network designers who wish to validate their ability to install, configure and troubleshoot converged local and wide area networks with 100 to 500 nodes

Lesson Objectives

Cisco ISCW 1.0: Configuring Cisco Easy VPN

- recognize the components, operation, and benefits of Cisco Easy VPN, and the functionality of Easy VPN Server and Easy VPN Remote.
- recognize how to configure Easy VPN Server and IKE, and the storage locations for Easy VPN group policies.
- recognize where to store user records for Xauth, how to configure local group policies, and how to view configuration settings in the Summary window.
- configure a Cisco router to use Easy VPN Server in a given scenario.



- recognize how to install the VPN client and create a new client connection entry when configuring the VPN client.
- recognize how to configure mutual group authentication, transparent tunneling, and backup servers when configuring the VPN client.

Cisco ISCW 1.0: Mitigating Network Attacks and Disabling Unused Services

Overview/Description

To recognize the Cisco Self-Defending Network strategy, secure enterprise networks from various attacks, and disable unnecessary network services

Target Audience

Network administrators; network engineers; network managers; systems managers; network designers who wish to validate their ability to install, configure and troubleshoot converged local and wide area networks with 100 to 500 nodes

Lesson Objectives

Cisco ISCW 1.0: Mitigating Network Attacks and Disabling Unused Services

- recognize the Cisco self-defense network strategy and the types of attacks that enterprise networks must defend against.
- recognize reconnaissance attacks and how to mitigate them.
- recognize access attacks and how to mitigate them.
- recognize DoS attacks and how to mitigate them.
- recognize malicious software and application layer attacks, and how to mitigate them.
- recognize vulnerabilities in configuration management protocols and how to mitigate them, and how to use open source tools to discover network vulnerabilities and threats.
- recognize router services and interfaces that are vulnerable to attack and how to secure routers with AutoSecure.
- recognize how to configure AutoSecure on a Cisco router.
- recognize how to lock down routers with SDM.
- recognize how to secure Cisco router administrative access by using the SDM Security Audit wizard in a given scenario.

Cisco ISCW 1.0: Securing Routers, Administrative Access, and Access Lists

Overview/Description

To secure Cisco routers by protecting the router administrative interface using password features and role-based CLI, and recognize how to mitigate network threats and attacks by using ACLs to filter traffic

Target Audience

Network administrators; network engineers; network managers; systems managers; network designers who wish to validate their ability to install, configure and troubleshoot converged local and wide area networks with 100 to 500 nodes

Lesson Objectives

Cisco ISCW 1.0: Securing Routers, Administrative Access, and Access Lists

- recognize how to secure administrative access to Cisco routers by configuring passwords.
- recognize how to secure administrative access to Cisco routers by setting login failure rates, timeouts, multiple privilege levels, and banner messages.
- recognize the function of role-based CLI, how to configure it, and how to secure configuration files.
- configure a Role-Based CLI view in a given scenario.
- recognize ACL types, formats, and development guidelines, and how to apply ACLs to router interfaces.
- recognize the use of traffic filtering with ACLs to mitigate network threats and how to implement ACLs.
- recognize how to configure router ACLs to mitigate distributed DoS attacks, how to combine ACL functions, and caveats when building ACLs.

Cisco ISCW 1.0: Securing Management Features and AAA

Overview/Description

To recognize the features of secure management and reporting, and securely implement them, and configure and troubleshoot AAA on a Cisco systems router

Target Audience

Network administrators; network engineers; network managers; systems managers; network designers who wish to validate their ability to install, configure and troubleshoot converged local and wide area networks with 100 to 500 nodes

Lesson Objectives

Cisco ISCW 1.0: Securing Management Features and AAA

- recognize the considerations when planning the secure management and reporting of network devices and the factors that affect their architecture.
- recognize how to configure an SSH server, the function of syslog, and how to configure it on Cisco routers.
- recognize the security features of SNMPv3 and how to configure SNMPv3 on a Cisco IOS router.
- recognize how to configure an NTP client and a Cisco router as an NTP server.
- secure Cisco router administrative access and configure authenticated NTP communications in a given scenario.
- recognize the concepts and implementation of AAA services, and its protocols, RADIUS and TACACS+.
- recognize how to configure the AAA server.
- recognize how to troubleshoot AAA on a Cisco perimeter router.
- configure AAA login authentication in a given scenario.

Cisco ISCW 1.0: IOS Firewalls and IOS IPS

Overview/Description

To secure enterprise networks by implementing Cisco IOS Firewalls and Cisco IOS IPS using CLI and SDM



Target Audience

Network administrators; network engineers; network managers; systems managers; network designers who wish to validate their ability to install, configure and troubleshoot converged local and wide area networks with 100 to 500 nodes

Lesson Objectives

Cisco ISCW 1.0: IOS Firewalls and IOS IPS

- recognize the basic structure of a layered defense, and the strengths and weaknesses of the three firewall technologies.
- recognize the operation of a stateful firewall and the key features of the Cisco IOS Firewall Feature Set.
- recognize the functions and process of the Cisco IOS Firewall.
- recognize how to configure Cisco IOS Firewall from the CLI.
- distinguish between the Basic and Advanced Firewall Configuration wizards, and recognize how to configure a basic firewall using its wizard.
- recognize how to configure an advanced firewall using the Advanced Firewall Configuration wizard.
- configure a Cisco IOS Firewall in a given scenario.
- distinguish between the functions and operations of IDS and IPS systems.
- recognize the types of IDS and IPS signatures.
- recognize how to configure IPS on Cisco IOS routers and SDF locations.
- recognize how to view IPS policies, customize IPS policies and global settings, view SDEE messages, and tune IPS signatures using SDM.

TestPrep 642-825 Implementing Secure Converged Wide Area Networks (ISCW)

Overview/Description

Generally taken near the end of a program of certification-orientated study, the 642-825 Implementing Secure Converged Wide Area Networks (ISCW) TestPrep enables the learner to test their knowledge in a simulated certification testing environment. Learners can take TestPrep in two different modes: Study and Certification. Study mode is designed to maximize learning by providing feedback, while Certification mode is designed to mimic a certification exam.

Target Audience

Individuals seeking practice in a simulated testing environment, covering the skills and competencies being measured by the actual certification exam.

Lesson Objectives

TestPrep 642-825 Implementing Secure Converged Wide Area Networks (ISCW)

- Implement basic teleworker services
- Implement Frame-Mode MPLS
- Implement a site-to-site IPSec VPN
- Describe network security strategies
- Implement Cisco Device Hardening
- Implement Cisco IOS firewall
- Describe and configure Cisco IOS IP



Cisco ONT 1.0: Network Requirements and Introduction to VoIP

Overview/Description

To recognize the converged network requirements within the Cisco conceptual network models, the basic principles of VoIP networks and conversion to them, call control mechanisms, and how voice is digitized for data transport

Target Audience

Individuals preparing for the Cisco Certified Network Professional CCNP and the Cisco Certified Design Professional CCDP certifications; senior-level network support professionals, network administrators, network engineers, network managers, systems managers, or network designers

Lesson Objectives

Cisco ONT 1.0: Network Requirements and Introduction to VoIP

- recognize the IIN and SONA framework, and the Cisco conceptual network models.
- recognize the traffic conditions in a converged network.
- recognize the basic principles of VoIP networks, their components, and the roles of each component.
- determine how to migrate to a VoIP network in given scenario.
- recognize the stages of a call and compare call control mechanisms.
- recognize the process by which voice is digitized and packetized for transport on a data network.
- identify compression bandwidth requirements for various codecs and data links, and recognize the purpose of a DSP.

Cisco ONT 1.0: Supporting VoIP

Overview/Description

To recognize how voice is encapsulated, bandwidth requirements and overhead, and how voice is implemented in an enterprise

Target Audience

Individuals preparing for the Cisco Certified Network Professional CCNP and the Cisco Certified Design Professional CCDP certifications; senior-level network support professionals, network administrators, network engineers, network managers, systems managers, or network designers

Lesson Objectives

Cisco ONT 1.0: Supporting VoIP

- recognize how voice is encapsulated into IP packets, the purpose of RTP, and how header overhead is reduced with cRTP.
- recognize the impact of voice samples and packet size on bandwidth, its requirements, and the sources of overhead.
- recognize how to calculate total bandwidth for a VoIP call and reduce bandwidth consumption.
- recognize how VoIP is implemented in an enterprise and the models used.
- recognize voice commands in Cisco IOS configurations and CAC functionality.
- determine how to implement voice support in an enterprise network, given a scenario.



Cisco ONT 1.0: IP QoS and its Implementation

Overview/Description

To recognize converged network issues and how QoS optimizes performance, its models and methods of implementation

Target Audience

Individuals preparing for the Cisco Certified Network Professional CCNP and the Cisco Certified Design Professional CCDP certifications; senior-level network support professionals, network administrators, network engineers, network managers, systems managers, or network designers

Lesson Objectives

Cisco ONT 1.0: IP QoS and its Implementation

- recognize the quality issues of converged networks.
- recognize the function of QoS and how it is implemented on a network.
- recognize how the three QoS models operate in a network.
- identify bottlenecks and performance losses in the network, and recommend appropriate QoS actions to mitigate specific performance issues in a given scenario.
- recognize the methods for configuring and monitoring QoS on a network, and how the CLI and MQC methods are implemented.
- recognize how to implement QoS on a network using the Cisco AutoQoS and the Cisco SDM QoS wizard methods.

Cisco ONT 1.0: Classification and Marking

Overview/Description

To recognize how classification and marking are used to define a QoS service class, and configure and use NBAR for Cisco MQC class-based classification and marking operations

Target Audience

Individuals preparing for the Cisco Certified Network Professional CCNP and the Cisco Certified Design Professional CCDP certifications; senior-level network support professionals, network administrators, network engineers, network managers, systems managers, or network designers

Lesson Objectives

Cisco ONT 1.0: Classification and Marking

- recognize the purpose of classification and marking, and how they operate in a network.
- use classification and marking to manage network traffic in a given scenario.
- recognize how to define and implement a QoS service class.
- recognize the functionality of NBAR and the applications it supports, PDLMs, and NBAR Protocol Discovery.
- recognize how to configure and monitor NBAR Protocol Discovery.
- configure NBAR classification with MQC marking in a given scenario.

Cisco ONT 1.0: Queuing

Overview/Description

To recognize how to implement the basic and advanced queuing mechanisms for relieving network traffic congestion, and how to configure queuing on a Cisco router

Target Audience

Individuals preparing for the Cisco Certified Network Professional CCNP and the Cisco Certified Design Professional CCDP certifications; senior-level network support professionals, network administrators, network engineers, network managers, systems managers, or network designers

Lesson Objectives

Cisco ONT 1.0: Queuing

- recognize Cisco queuing operations, and the basic algorithms and configurations.
- recognize the procedure for configuring WFQ mechanisms.
- recognize the advanced queuing mechanisms of CBWFQ and LLQ, and the architecture, benefits, and configuration of CBWFQ.
- recognize the architecture, benefits, and configuration of LLQ.
- configure CBWFQ and LLQ, and apply them to a serial interface in a given scenario.
- use queuing mechanisms to solve network congestion problems in a given scenario.

Cisco ONT 1.0: TCP and QoS Traffic Management and Mechanisms

Overview/Description

To recognize how TCP and QoS support traffic management and optimization, and how their mechanisms are implemented

Target Audience

Individuals preparing for the Cisco Certified Network Professional CCNP and the Cisco Certified Design Professional CCDP certifications; senior-level network support professionals, network administrators, network engineers, network managers, systems managers, or network designers

Lesson Objectives

Cisco ONT 1.0: TCP and QoS Traffic Management and Mechanisms

- recognize how TCP, in conjunction with RED, WRED, and CBWRED, manages the traffic flow between two hosts.
- recognize how CBWRED is configured and monitored.
- recognize Cisco class-based traffic-policing and class-based traffic-shaping operations and basic configuration.
- recognize Cisco class-based header compression operations and basic configurations.
- recognize the purpose and basic configuration of QoS preclassify for traffic going over IPsec and GRE tunnels.
- configure QoS preclassify in a given scenario.
- identify the elements of IP QoS SLA, the typical network requirements within each functional block in an end-to-end network, and the best-practice QoS implementations.



- recognize QoS implementations and requirements on WAN customer edge and provider edge routers, and how the control plane and CoPP are deployed.

Cisco ONT 1.0: AutoQoS

Overview/Description

To recognize the functionality of Cisco AutoQoS, and how to configure and optimize it for an enterprise

Target Audience

Individuals preparing for the Cisco Certified Network Professional CCNP and the Cisco Certified Design Professional CCDP certifications; senior-level network support professionals, network administrators, network engineers, network managers, systems managers, or network designers

Cisco ONT 1.0: AutoQoS

- recognize how Cisco AutoQoS is used to implement QoS policy and its prerequisites.
- recognize how to configure and verify Cisco AutoQoS on a network using the CLI.
- configure a router and a switch for AutoQoS in a given scenario.
- identify the QoS technologies that are automatically implemented on the network using Cisco AutoQoS and the known issues with Cisco AutoQoS.
- determine the QoS mechanisms that Cisco AutoQoS automatically provisions using DiffServ technology in a given scenario.
- recognize how to use show commands to isolate areas in the Cisco AutoQoS and modify the QoS configuration.

Cisco ONT 1.0: Wireless Implementations

Overview/Description

To recognize how to configure wireless security and basic wireless management

Target Audience

Individuals preparing for the Cisco Certified Network Professional CCNP and the Cisco Certified Design Professional CCDP certifications; senior-level network support professionals, network administrators, network engineers, network managers, systems managers, or network designers

Lesson Objectives

Cisco ONT 1.0: Wireless Implementations

- recognize how WLAN QoS operates and is implemented.
- recognize why WLAN security is needed, its issues, methods, and evolution.
- recognize how enhanced 802.11 security improves on basic 802.11 security.
- identify the basic concepts of 802.1x authentication, LEAP, or EAP Cisco Wireless, EAP-FAST, EAP-TLS, and PEAP.
- propose WLAN security as an enterprise network solution, given a scenario.
- recognize the WPA authentication process.
- recognize how to configure an advanced feature set WLAN for encryption and authentication on lightweight access points.
- recognize the Cisco Unified Wireless Network solutions, how Cisco implements WLANs, and the features and benefits of CiscoWorks WLSE.



- recognize the features and operations of WCS, and the architecture and functionality of the Cisco 2700 Series Wireless Location Appliance.
- recognize basic Cisco WCS configuration and database management, and the Cisco WCS rogue access point methodology.

TestPrep 642-845 Optimizing Converged Cisco Networks (ONT)

Overview/Description

To test your knowledge on the skills and competencies being measured by the vendor certification exam. TestPrep can be taken in either Study or Certification mode. Study mode is designed to maximize learning by not only testing your knowledge of the material, but also by providing additional information on the topics presented. Certification mode is designed to test your knowledge of the material within a structured testing environment, providing valuable feedback at the end of the test.

Target Audience

Individuals seeking practice in a structured testing environment, covering the skills and competencies being measured by the vendor certification exam.

Lesson Objectives

TestPrep 642-845 Optimizing Converged Cisco Networks (ONT)

- Describe Cisco VoIP implementations
- Describe QoS considerations
- Describe DiffServ QoS implementations
- Implement AutoQoS
- Implement WLAN security and management