

Network Training

Course Catalogue

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ICND (Part 1)

This course focuses on providing the skills and knowledge necessary to install, operate, and troubleshoot a small branch office Enterprise network, including configuring a switch, a router, and connecting to a WAN and implementing network security. A Student should be able to complete configuration and implementation of a small branch office network under supervision.

Duration: 5 days

Batch Size: 7 – 10

Prerequisites

None

Course Objectives

After completing this course the student should be able to:

- Describe how networks function, identifying major components, function of network components and the Open System Interconnection (OSI) reference model.
- Using the host-to-host packet delivery process, describe issues related to increasing traffic on an Ethernet LAN and identify switched LAN technology solutions to Ethernet networking issues.
- Describe the reasons for extending the reach of a LAN and the methods that can be used with a focus on RF wireless access.
- Describes the reasons for connecting networks with routers and how routed networks transmit data through networks using TCP / IP.
- Describe the function of Wide Area Networks (WANs), the major devices of WANs, and configure PPP encapsulation, static and dynamic routing, PAT and RIP routing.
- Use the command-line interface to discover neighbors on the network and managing the router's startup and configuration

Course Outline

- Module 1 - Building a Simple Network
- Module 2 - Ethernet Local Area Networks
- Module 3 - Wireless Local Area Networks
- Module 4 - Exploring the Functions of Routing
- Module 5 - Wide Area Networks
- Module 6 - Network Environment Management

ICND (Part 2)

This course focuses on providing the skills and knowledge necessary to install, operate, and troubleshoot a small to medium-size branch office Enterprise network, including configuring several switches and routers, connecting to a WAN and implementing network security.

Duration: 5 days

Batch Size: 7 – 10

Prerequisites

ICND (Part 1)

Course Objectives

After completing this course the student should be able to:

- Review how to configure and troubleshoot a small network.
- Expand the switched network from a small LAN to a medium-sized LAN with multiple switches, supporting VLANs, trunking, and spanning tree.
- Describe routing concepts as they apply to a medium-sized network and discuss considerations when implementing routing on the network.
- Configure, verify, and troubleshoot OSPF.
- Configure, verify, and troubleshoot EIGRP.
- Determine how to apply ACLs based on network requirements, and to configure, verify, and troubleshoot ACLs on a medium-sized network.
- Describe when to use NAT or PAT on a medium-sized network, and configure NAT or PAT on routers.
- Identify and implement the appropriate WAN technology based on network requirements.

Course Outline

- Module 1 - Small Network Implementation
- Module 2 - Medium-Sized Switched Network Construction
- Module 3 - Medium-Sized Routed Network Construction
- Module 4 - Single Area OSPF Implementation
- Module 5 - EIGRP Implementation
- Module 6 - Access Control Lists
- Module 7 - Address Space Management
- Module 8 - LAN Extension to a WAN

Basic Network Design

This course is based on CCDA certification (Cisco Certified Design Associate 640-861 DESGN) which indicates a foundation or apprentice knowledge of network design and implementing it using Cisco Internetwork Infrastructure.

Participants are expected to be able to design routed and switched network infrastructures involving LAN, WAN, and dial access services for businesses and organizations.

This 5 day course will be followed up with a 2 days hands on work shop (with 1 to 1 attention) covering design case studies which will further help master the concepts learnt and apply them to real life scenarios. Specific case studies can be developed along with your teams to reflect your current business operating environment.

Duration: 7 days

Batch Size: 7 – 10

Prerequisites

- Cisco CCNA certification
- Practical experience with deploying and operating networks based on Cisco network devices and Cisco IOS software, as well as BCMSN level knowledge of wireless and QoS topics.
- Building Cisco Multilayer Switched Networks (BCMSN)

Course Objectives

After completing this course the student should be able to:

- Describe the principles of network design for building a network design solution
- Describe how the Enterprise Composite Network Model simplifies the complexity of modern networks
- Design the enterprise campus in a hierarchical modular fashion
- Design the enterprise WAN network
- Design a network addressing plan
- Select optimal routing protocols for the network
- Evaluate security solutions for the network
- Assess the design implications of voice transport across the network
- Recognize the network management criteria for the network

Course Outline

- Module 1: Applying a Methodology to Network Design
- Module 2: Structuring and Modularizing the Network
- Module 3: Designing Basic Campus-Switched Networks
- Module 4: Designing an Enterprise WAN
- Module 5: Designing IP Addressing for the Network
- Module 6: Selecting Routing Protocols for a Network
- Module 7: Evaluating Security Solutions for the Network
- Module 8: Designing Networks for Voice Transport
- Module 9: Applying Basic Network Management Design Concepts

Advanced Network Design

This course is based on Designing Cisco Network Service Architecture (ARCH – 642-873) which is also a key component towards achieving a much a coveted CCDP certification which is considered as must for current Network Designers. Building on the Designing for Cisco Internetwork Solutions (DESGN) course, the students will learn additional aspects of modular campus and edge network design, including high availability, security, quality of service (QoS), network management, data center, and IP multicast. In addition, the students will be able to design solutions for the network that are strategic to small, medium, and large enterprises, including virtual private networking, wireless, and IP telephony. The course covers issues and considerations for fundamental infrastructure services, including security, network management, QoS, high availability, and bandwidth use optimization through IP multicasting, and also design models for network solutions such as voice networking and application networking. The course focuses on design concepts based on the new Cisco SONA Architecture, emphasizing that Cisco delivers integrated and embedded services.

This 5 day course will be followed up with a 3 days hands on work shop (with 1 to 1 attention) covering design case studies which will further help master the concepts learnt and apply them to real life scenarios. Specific case studies can be developed along with your teams to reflect your current business operating environment.

Duration: 8 days

Batch Size: 5 – 7

Prerequisites

To gain the prerequisite skills and knowledge, learners must have the CCNA, CCDA, BCMSN, and BSCI certifications.

- The recommended courses for CCNA are Introduction to Cisco Networking Technologies (INTRO) and Interconnecting Cisco Network Devices (ICND)
- The recommended courses for CCDA is Designing Cisco Internetwork Solutions (DESGN)
- The recommended courses for BSCI is Building Scalable Cisco Internetworks (BSCI)
- The recommended courses for BCMSN is Building Cisco Multilayer Switched Networks (BCMSN)

Learners should complete the following courses or must have equivalent experience:

- Implementing Secure Converged WANs (ISCW)
- Optimized Converged Cisco Networks (ONT)

The following courses are recommended:

- Cisco Voice Over IP (CVOICE)
- Cisco BGP

Course Objectives

After completing this course the student should be able to:

- Introduce the Cisco Service Oriented Network Architecture (SONA) framework, and explain how it addresses enterprise network needs for performance, scalability, and availability.
- Describe how the Cisco Enterprise Network model is used in the SONA framework for designing enterprise networks.
- Create conceptual, intermediate, and detailed enterprise campus network, and enterprise edge and remote infrastructure designs that offer effective functionality, performance, scalability, and availability.
- Create conceptual, intermediate, and detailed intelligent network service designs for network management, high availability, security, QoS, and IP multicast.
- Create conceptual, intermediate, and detailed virtual private network designs.
- Create conceptual, intermediate, and detailed voice over wireless network designs.

Course Outline

- Module 1: Introducing Cisco Network Service Architectures
- Module 2: Designing Enterprise Campus Networks
- Module 3: Designing Enterprise Edge Connectivity
- Module 4: Designing Network Management Services
- Module 5: Designing High-Availability Services
- Module 6: Designing Security Services
- Module 7: Designing QoS
- Module 8: Designing IP Multicast Services
- Module 9: Designing Virtual Private Networks
- Module 10: Designing Enterprise Wireless Networks
- Module 11: Designing IP Telephony Solutions
- Module 12: Designing Content Networking Solutions
- Module 13: Designing Storage Networking Solutions

Building Scalable Cisco Internetworks (BSCI)

CCNP routing protocol training for professional-level skills in building Enterprise level router networks and applications. Integrates Advanced Technologies.

Duration: 5 days

Batch Size: 7 – 10

Prerequisites

ICND (Part 1)

Course Objectives

After completing this course the student should be able to:

- Create an efficient and expandable enterprise network by installing, configuring, monitoring, and troubleshooting network infrastructure equipment (especially routers such as Cisco ISRs) according to the Campus Infrastructure module in the Enterprise Composite Network model. The routed network includes the most commonly used and emerging IP routing protocols.

Course Outline

- Course Introduction to Routing in an Enterprise Networks
- Configuring EIGRP
- Configuring OSPF
- The IS-IS Protocol
- Manipulating Routing Updates
- Implementing BGP
- Implementing Multicast
- Implementing the Basics of IPv6

Advanced BGP

The advanced BGP course provides students with in-depth knowledge of BGP, the routing protocol that is one of the underlying foundations of the Internet and new-world technologies such as Multiprotocol Label Switching (MPLS). This curriculum covers the theory of BGP, configuration of BGP on Cisco IOS routers, detailed troubleshooting information and hands-on exercises that provide students with the skills needed to configure and troubleshoot BGP networks in customer environments. Different service solutions in the curriculum cover BGP network design issues and usage rules for various BGP features preparing students to design and implement efficient, optimal and trouble free BGP networks.

Duration: 5 days

Batch Size: 7 – 10

Prerequisites

- Completion of Interconnecting Cisco Networking Devices (ICND) or Cisco Certified Networking Associate (CCNA)
- Completion of Building Scalable Cisco Internetworks (BSCI) or equivalent

Course Objectives

After completing this course the student should be able to:

- Given a network scenario with multiple domains, configure, monitor and troubleshoot basic BGP to enable interdomain routing
- Given a network scenario where connections to multiple ISPs must be supported, use BGP policy controls to influence the route selection process with minimal impact on BGP route processing
- Given a network scenario where multiple connections must be supported, use BGP attributes to influence the route selection process
- Given customer connectivity requirements, implement the correct BGP configuration to successfully connect the customer's network to the Internet
- Given a typical service provider network with multiple BGP connections to other autonomous systems, enable the provider network to behave as a transit autonomous system
- Given a typical service provider network, identify common BGP scaling issues and enable route reflection and confederations as possible solutions to these issues
- Given a typical BGP network, use available BGP tools and features to optimize the scalability of the BGP routing protocol

Course Outline

- BGP Overview
- BGP Transit Autonomous Systems
- Route Selection Using Policy Controls
- Route Selection Using Attributes
- Customer to Provider Connectivity with BGP
- Scaling Service Provider Networks
- Optimizing BGP Scalability

Design and Implement Cisco Quality of Service (QoS)

The Designing and Implementing Cisco Quality of Service (QoS) course provides students with in-depth knowledge of IP QoS requirements, conceptual models using Differentiated Services (DiffServ), Integrated Services (IntServ) and Best Effort (over provisioning), and the implementation of IP QoS on Cisco IOS switch and router platforms.

Duration: 5 days

Batch Size: 5 – 7

Prerequisites

- Completion of Interconnecting Cisco Networking Devices (ICND) or Cisco Certified Networking Associate (CCNA).
- BGP or equivalent is recommended because some BGP background is assumed for the QoS course.

Course Objectives

After completing this course the student should be able to:

- Identify the components of the Cisco Unity system, describe their standard and optional features, and explain and how they integrate into a unified messaging system
- Explain the need to implement Quality of Service (QoS) and explain methods for implementing and managing QoS
- Identify and describe different models used for ensuring QoS in a network and explain key IP QoS mechanisms used to implement the models
- Explain the use of MQC and AutoQoS to implement QoS on the network
- Use Cisco QoS queuing mechanisms to manage network congestion
- Use Cisco QoS congestion avoidance mechanisms to reduce the effects of congestion on the network
- Use Cisco QoS traffic policing and traffic shaping mechanisms to effectively limit the rate of network traffic
- Successfully use Cisco link efficiency mechanisms to improve the bandwidth efficiency of the link
- Correctly select the most appropriate QoS mechanisms for providing QoS using Cisco best practices

Course Outline

- Introduction to IP QoS
- The Building Blocks of IP QoS
- Introduction to Modular QoS CLI and Auto-QoS
- Classification and MarkingModule
- Congestion Management
- Congestion Avoidance
- Traffic Policing and Shaping
- Link Efficiency Mechanisms
- QoS Best Practices

MPLS

The MPLS course covers topics on MPLS Concepts, MPLS Label Assignment and Distribution, Frame-Mode/Cell-Mode MPLS Implementation on Cisco IOS Platforms, MPLS Virtual Private Networks Technology, MPLS VPN Implementation, Complex MPLS VPNs, and Internet Access from a MPLS VPN.

Duration: 5 days

Batch Size: 5 – 7

Prerequisites

- Cisco Certified Network Associate (CCNA) certification or equivalent level of working knowledge
- Building Scalable Cisco Internetworks (BSCI) and Configuring BGP on Cisco Routers (BGP) certifications of equivalent level of working knowledge
- Practical experience with deploying and operating networks based on Cisco network devices and Cisco IOS is strongly recommended.
- The QoS course is highly recommended because QoS knowledge is assumed in several sections of the course.

Course Objectives

After completing this course the student should be able to:

- Describe how the service provider infrastructure is attacked
- Describe the features of MPLS
- Describe how MPLS labels are assigned and distributed
- Identify the Cisco IOS tasks and command syntax necessary to implement MPLS on frame-mode Cisco IOS platforms
- Describe the MPLS peer-to-peer architecture and explain the routing and packet forwarding model in this architecture
- Identify the Cisco IOS command syntax required to successfully configure, monitor, and troubleshoot VPN operations
- Identify how the MPLS VPN model can be used to implement managed services and Internet access
- Describe the various Internet access implementations that are available and the benefits and drawbacks of each model
- Provide an overview of MPLS Traffic Engineering

Course Outline

- Introducing Basic MPLS Concepts
- Introducing MPLS Labels and Label Stack
- Identifying MPLS Applications
- Discovering LDP Neighbors
- Establishing the Service Provider IGP Routing Environment
- Introducing Typical Label Distribution in Frame-Mode MPLS
- Introducing Convergence in Frame-Mode MPLS
- Introducing MPLS Label Allocation, Distribution, and Retention Modes
- Introducing CEF Switching
- Configuring Frame-Mode MPLS on Cisco IOS Platforms
- Monitoring Frame-Mode MPLS on Cisco IOS Platforms
- Troubleshooting Frame-Mode MPLS on Cisco IOS Platforms
- Establishing the Core MPLS Environment
- Introducing Virtual Private Networks
- Introducing Overlay and Peer-to-Peer VPNs
- Categorizing VPNs
- Introducing MPLS VPN Architecture

- Introducing MPLS VPN Routing Model
- Forwarding MPLS VPN Packets
- Using MPLS VPN Mechanisms of Cisco IOS Platforms
- Configuring VRF Tables
- Configuring an MP-BGP Session Between PE Routers
- Configuring Small-Scale Routing Protocols Between PE and CE Routers
- Monitoring MPLS VPN Operations
- Initial MPLS VPN Setup
- Running EIGRP Between PE and CE Routers
- Configuring OSPF as the Routing Protocol Between PE and CE routers
- Running OSPF Between PE and CE Routers
- Configuring BGP as the Routing Protocol Between PE and CE routers
- Troubleshooting MPLS VPNs
- Running BGP Between PE and CE Routers

Advanced IP Multicast

Advanced IP Multicast course provides an advanced three day hands-on study of IP multicast technology focusing on architectures, applications and protocols. All aspects of IP multicasting are covered including PC, server and switch implementations. Design, configuration, support and troubleshooting are all covered in the course. Hands on sessions are used to reinforce the theory rather than teach specific implementations.

Duration: 3 days

Batch Size: 5 – 7

Prerequisites

- Cisco Certified Network Associate (CCNA) certification or equivalent level of working knowledge
- Building Scalable Cisco Internetworks (BSCI) and Configuring BGP on Cisco Routers (BGP) certifications of equivalent level of working knowledge

Course Objectives

After completing this course the student should be able to:

- Design multicast networks.
- Explain how multicast networks work.
- Compare and contrast the different multicast routing protocols, such as DVMRP, PIM, MBGP and SSM.
- Configure PCs, servers, switches and routers for multicasting.
- Configure multicast routing protocols including:
 - PIM Dense Mode.
 - PIM Sparse Mode
- Troubleshoot multicast networks.
- Design Small Sized Multicast Networks

Course Outline

- Introduction to IP Multicasting
- IP Multicast Addressing and Architectures
- Multicasting in Switched Infrastructure
- Theory behind Multicast Routing
- PIM (Sparse Mode, Dense Mode, Sparse-Dense Mode)
- Bi-Directional PIM
- MBGP
- Inter-Domain Multicasting
- Multicast Design Overview
 - Multicast Design Guidelines - Campus LANs
 - Multicast Design Guidelines - WAN
 - Multicast Design Guidelines – Security, Timers, Traffic Engineering