Essential Curriculum
Computer Networking II

Cisco Discovery 3: Introducing Routing and Switching in the Enterprise
157.8 hours teaching time

Chapter 1 Networking in the Enterprise--- 13.6 hours

Define an enterprise.

Describe how traffic flows in an enterprise network.

Describe how traffic is handled in an enterprise.

Compare an extranet with an intranet.

Describe a telecommuter, and the services a telecommuter requires.

Identify the importance of a VPN.

Chapter 2: Exploring the Enterprise Network Infrastructure------------------------- 13.6 hours

Identify the main types of network documentation and how they are interpreted.

List the equipment found in the enterprise Network Operations Center.

Define the point of presence for service delivery and how service is delivered.

Describe network security considerations and the equipment used at the enterprise edge.

List some characteristics of router and switch hardware.

Know the most common and useful router and switch CLI configuration and verification commands.

Chapter 3: Switching in an Enterprise Network-- 27.3 hours

Identify types of switches found in an enterprise network.

Understand how Spanning Tree Protocol prevents switching loops.

Define a VLAN and the purpose it serves.

Describe how a VLAN is configured on a Cisco switch.

Define inter-VLAN routing and how it is configured.

Identify VLAN Trunking Protocol and how it helps maintain VLANs in an enterprise network.

Chapter 4: Addressing in an Enterprise Network-------------------------------------- 15.6 hours

List the features and benefits of a hierarchical IP addressing structure.

Describe how a VLSM IP address scheme is planned and implemented.

Describe how classless routing and CIDR are used in planning a network.

Describe how static and dynamic NAT are configured and verified.

Define a hierarchical network and why it is required.

Identify the difference between a static, dynamic, and default route.

Describe how does RIP functions.

Identify the limitations of RIP.

List the advantages of RIPv2 over RIPv1.

List the advantages of EIGRP over RIP.

Identify the purpose of the various packet types used by EIGRP.

List the tables EIGRP uses, and their purpose.

Describe how OSPF routing functions.

Identify what is necessary to plan a network using OSPF.

Describe how a single-area OSPF network is designed and configured.

Define multiprotocol environments, and the issues associated with them.

List the available WAN connectivity options.

Describe the relative advantages and limitations of the various WAN connectivity options.

Identify the advantages of PPP over HDLC.

List the steps required to configure a PPP link between two devices.

Describe the difference between CHAP and PAP authentication.

Identify what happens to data on a Frame Relay network that exceeds the CIR.

Describe how a Frame Relay network handles congestion.

Define traffic filtering.

Describe how access control lists (ACL) filter traffic at router interfaces.

Define an ACL wildcard mask and how is it used.

Identify how ACLs are configured and implemented.

Describe how ACL activity can be logged.

Define ACL best practices.

<u>Chapter 9: Troubleshooting an Enterprise Network</u>----------------------------------- 17.5 hours

Define uptime, and why it is important.

Define a failure domain, and why it is important.

Identify the types of issues that can cause a network to fail.

Describe how to isolate and correct common switching problems.

Describe how to isolate and correct common routing problems.

Describe how to isolate and correct common WAN link issues.

Describe how to isolate and correct common ACL problems.

Essential Curriculum
Computer Networking II

Cisco Discovery 4: Designing and Supporting Computer Networks
132.5 hours of teaching time

Chapter 1 Introducing Network Design Concepts----------------------------------- 13.6 hours

  List the benefits of a hierarchal network design.

  Identify the design methodology used by network designers.

  Identify the design considerations for the core, distribution, and access layers.

  Identify the design considerations for the network enterprise edge.

  Identify the design considerations that must be met to support remote workers.

  Identify the design considerations for supporting enterprise wireless and/or data center/server

  farms.

Chapter 2. Gathering Network Requirements-- 11.7 hours

  Describe what occurs during the six phases of the PPDIOO model.

  Identify the proper way to respond to a Request for Proposal or Request for Quote.

  List the roles of a network partner team.

  Identify how business goals are prioritized to determine technical requirements for a network

  upgrade project.

  Describe how constraints affect the design of a network.

Chapter 3: Characterizing the Existing Network-- 21.5 hours
  Characterize a network's strengths and weaknesses in order to assist in the network design

  process.

  Identify appropriate hardware and software upgrades to prepare a network for integration of new

  technologies.

  Describe how to upgrade the Cisco IOS Software on a router or switch.

  Describe how to conduct a wireless site survey.

  Describe how to create a network Design Requirements document.

Chapter 4: Identifying Application Impacts on Network Design-------------------- 11.7hours

  Describe how the characteristics of various applications affect the design of the network.

  List the network requirements of various common applications, including voice and video.

  Describe how quality of service supports converged networking, and how it is implemented into

  network design.

  Identify how diagramming various application traffic flows determines where bandwidth is needed

and where potential bottlenecks exist.

Chapter 5: Creating the Network Design--- 23.4 hours

Identify the proper way to analyze business goals and technical requirements to produce the required design.

Describe how to design the core, distribution, and access layer topologies for a campus network.

Describe how to design for the WAN connectivity module and remote worker support.

Describe how to design a wireless network topology.

Describe how to incorporate security into the network design.

Chapter 6: Using IP Addressing in the Network Design----------------------------- 13.6 hours

Identify how to select the appropriate hierarchical IP addressing scheme to meet the physical and logical network requirements.

Identify how to choose a routing protocol and design a route summarization strategy.

Identify how to create a logical naming structure for networking devices.

Define IPv6 and the methods to implement it on a network.

Describe how IPv6 is implemented on a Cisco device.

Chapter 7: Prototyping the Campus Network--- 11.7 hours

Define the purpose of a proof-of-concept test.

Identify how to create a test plan to perform simulated or prototype tests of a network upgrade.

Describe how to perform proof-of-concept tests according to test plans.

Describe how to identify risks and weaknesses in the design based on the proof-of-concept test conclusions.

Chapter 8: Prototyping the WAN-- 11.7 hours

Identify the components and technologies used for WAN connectivity.

Identify the components of a Frame Relay network.

Describe how to configure a Frame Relay connection.

List the VPN technologies available to connect remote sites and workers.

Describe how to configure a VPN client to connect to a VPN server.

Describe how to perform proof-of-concept tests of WAN and remote worker connectivity.

Chapter 9: Preparing the Proposal--   13.6 hours

Describe how to create a bill of materials for a proposed network upgrade.

Describe how to plan the implementation schedule for a phased network upgrade project.

Describe how to determine the software and hardware support contract options that meet customer requirements.

Describe how to create and present a network upgrade proposal, including implementation schedule and cost summary.