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Cisco Certified Entry Level Technician (CCENT) Certification Online Training

Course Outline

Module 01 - Building a Simple Network
Exploring the Functions of Networking
What is a Network?
Physical Components of a Network
Interpreting a Network Diagram
Impact of User Applications on the Network
Characteristics of a Network
Physical Topologies
Logical Topologies
Summary
Understanding the Host-to-Host Communications Model
Introducing Host-to-Host Communications
OSI Reference Model
TCP/IP Protocol Suite
Data Encapsulation
Data De-Encapsulation
Peer-to-Peer Communications
Summary
Introducing LANs
Local Area Networks
LAN Components
Need for Switches
Switches
Summary
Operating Cisco IOS Software
Cisco IOS Software Features and Functions
Cisco IOS CLI Functions
User EXEC Mode
Privileged EXEC Mode
Help Functions in the CLI
CLI Error Messages
Managing Cisco IOS Configurations
Improving the User Experience in the CLI
Summary
Starting a Switch
Switch Installation
Switch LED Indicators
Connecting to a Console Port
Basic Switch Configuration
Verifying the Switch Initial Startup Status
Summary
Understanding Ethernet and Switch Operation
Ethernet LAN Connection Media
Fiber Connector Types
Ethernet Frame Structure
MAC Addresses
Switching Operation
Duplex Communication
Configuring Duplex and Speed Options
Summary
Troubleshooting Common Switch Media Issues
Common Troubleshooting Tools
Media Issues - Copper
Media Issues - Fiber
Troubleshooting Switch Media Issues
Interface Status Verification
Port Issues
Troubleshooting Port Issues
Summary
Demo - Perform Switch Startup
Demo - Troubleshooting Switch Media Issues
Module 01 Review

Module 02 - Establishing Internet Connectivity
Understanding the TCP/IP Internet Layer
Internet Protocol
IPv4 Address Representation
IPv4 Header Address Fields
Decimal and Binary Systems
Base X Number System (eNotes)
Decimal-to-Binary Conversion
IP Address Classes
Reserved IPv4 Address
Domain Name System
Verifying the IPv4 Address of a Host
Summary
Understanding IP Addressing and Subnets
Subnets
Subnet Masks

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Network Time Protocol
Configuring NTP
Verifying NTP
Summary
Implementing Traffic Filtering with ACLs
Using ACLs to Filter Network Traffic
ACL Operation
Applying ACLs to Interfaces
The Need for Extended ACLs
Configuring Numbered Extended IPv4 ACLs
Configuring Named ACLs
ACL Configuration Guidelines
Monitoring ACLs
Troubleshooting Common ACL Errors: Scenario 1
Troubleshooting Common ACL Errors: Scenario 2
Troubleshooting Common ACL Errors: Scenario 3
Troubleshooting Common ACL Errors: Scenario 4
Troubleshooting Common ACL Errors: Scenario 5
Troubleshooting Common ACL Errors: Scenario 6
Troubleshooting Common ACL Errors: Scenario 7
Summary
Demo - Enhancing the Security of the Initial Configuration
Demo - Device Hardening
Demo - Filtering Traffic with ACLs
Module 03 Review

Module 04 - Building a Medium-Sized Network

Implementing VLANs and Trunks
Issues in a Poorly Designed Network
VLAN Introduction
Trunking with 802.1Q
Creating a VLAN
Assigning a Port to a VLAN
Configuring an 802.1Q Trunk
VLAN Design Considerations
Physical Redundancy in a LAN
Summary
Routing Between VLANs
Purpose of Inter-VLAN Routing
Options for Inter-VLAN Routing
Configuring a Router with a Trunk Link
Summary
Using a Cisco Network Device as a DHCP Server
Need for a DHCP Server
Understanding DHCP
Configuring a DHCP Server
Monitoring DHCP Server Functions
DHCP Relay Agent
Summary
Introducing WAN Technologies
Introducing WANs
WANs vs. LANs
Role of Routers in WANs
WAN Communication Link Options
Point-to-Point Connectivity
Configuring a Point-to-Point Link
Summary
Introducing Dynamic Routing Protocols
Purpose of Dynamic Routing Protocols
Interior and Exterior Routing Protocols
Distance Vector and Link-State Routing Protocols
Understanding Link-State Routing Protocols
Summary
Implementing OSPF
Introducing OSPF
OSPF Adjacencies
SPF Algorithm
Router ID
Configuring Single-Area OSPF
Verifying OSPF Configuration
Summary
Demo - Configuring Expanded Switch Networks
Demo - Configuring DHCP Server
Demo - Implementing OSPF
Demo - Troubleshooting OSPF
Module 04 Review

Module 05 - Introducing IPv6

Introducing Basic IPv6
IPv4 Addressing Exhaustion Workarounds
Problems with IPv4 Addressing Workarounds
IPv6 Features
IPv6 Addresses
IPv6 Address Types
IPv6 Unicast Addresses
EUI-64 Interface ID Assignment
IPv6 Addresses Allocation
Basic IPv6 Connectivity
Cisco IOS IPv6 Configuration Example
Basic IPv6 Connectivity (Cont.)
Summary
Understanding IPv6
IPv6 Header Changes and Benefits
ICMPv6
Neighbor Discovery
Stateless Autoconfiguration
Summary
Configuring IPv6 Routing
Routing for IPv6
Static Routing
OSPFv3
Summary
Demo - IPv6 Addresses
Demo - Configure and Verify IPv6 Routing
Module 05 Review
Course Closure