

## Southwest WI Technical College

77-860-704 IT - Test Prep Cisco Certified Entry Networking Technician Bootcamp

# Course Design

### Course Information

|  |  |  |
| --- | --- | --- |
|  | Alternate Title | IT - Test Prep Cisco CCENT |
|  | Description | The CCENT bootcamp covers all the objectives for the 100-101 ICND1 certification exam. The CCENT certification is geared toward an entry-level network technician proving that the learner has the foundational knowledge for a small- to medium-sized business network. Learners will review detailed exam objectives in a compressed format allowing them to prepare for the exam. Hands-on activities will provide students the experience they need to successfully pass the certification exam. |
|  | Career Cluster | Information Technology |
|  | Instructional Level | Certificate |
|  | Total Credits | 1.00 |
|  | Total Hours | 18.00 |

Pre/Corequisites

|  |  |
| --- | --- |
| Pre/Corequisite | 10-150-102 Cisco Networking |

### Course Competencies

|  |  |
| --- | --- |
| 1. | Conduct basic operations of an IP Data Network |
|  | Assessment Strategies |
|  | 1.1. | through participation in class activities and labs |
|  | 1.2. | CCENT certification practice exam |
|  | Criteria |
|  | Performance will be satisfactory when learner is able to: |
|  | 1.1. | Recognize the purpose and functions of various network devices such as routers, switches, bridges and hubs |
|  | 1.2. | Select the components required to meet a given network specification |
|  | 1.3. | Identify common applications and their impact on the network |
|  | 1.4. | Describe the purpose and basic operation of the protocols in the OSI and TCP/IP models |
|  | 1.5. | Predict the data flow between two hosts across a network |
|  | 1.6. | Identify the appropriate media, cables, ports, and connectors to connect Cisco network devices to other network devices and hosts in a LAN |
|  | Learning Objectives |
|  | 1.a. | Recognize the purpose and functions of various network devices such as routers, switches, bridges and hubs |
|  | 1.b. | Select the components required to meet a given network specification |
|  | 1.c. | Identify common applications and their impact on the network |
|  | 1.d. | Describe the purpose and basic operation of the protocols in the OSI and TCP/IP models |
|  | 1.e. | Predict the data flow between two hosts across a network |
|  | 1.f. | Identify the appropriate media, cables, ports, and connectors to connect Cisco network devices to other network devices and hosts in a LAN |
| 2. | Describe and configure LAN Switching Technologies |
|  | Assessment Strategies |
|  | 2.1. | through participation in class activities and labs |
|  | 2.2. | CCENT certification practice exam |
|  | Criteria |
|  | Performance will be satisfactory when learner is able to: |
|  | 2.1. | Determine the technology and media access control method for Ethernet networks |
|  | 2.2. | Describe Collision domains |
|  | 2.3. | Describe Broadcast domains |
|  | 2.4. | Describe Ways to switch; Store & Forward, and Cut-through |
|  | 2.5. | Describe the CAM Table |
|  | 2.6. | Configure the hostname |
|  | 2.7. | Configure the management ip address |
|  | 2.8. | Configure the Ip default-gateway |
|  | 2.9. | Configure the local user and password |
|  | 2.10. | Configure the enable secret password |
|  | 2.11. | Configure the console and VTY logins |
|  | 2.12. | Configure the exec-timeout |
|  | 2.13. | Configure the service password encryption |
|  | 2.14. | Save the configuration |
|  | 2.15. | Verify network status and switch operation using ping, telnet and SSH |
|  | 2.16. | Describe how VLANs create logically separate networks and the need for routing between them |
|  | 2.17. | Explain network segmentation and basic traffic management concepts |
|  | 2.18. | Configure and verify VLANs |
|  | 2.19. | Configure and verify trunking using DTP and Auto-negotiation |
|  | Learning Objectives |
|  | 2.a. | Determine the technology and media access control method for Ethernet networks |
|  | 2.b. | Identify basic switching concepts and the operation of Cisco switches |
|  | 2.c. | Configure and verify initial switch configuration including remote access management |
|  | 2.d. | Verify network status and switch operation using basic utilities |
|  | 2.e. | Describe how VLANs create logically separate networks and the need for routing between them |
|  | 2.f. | Configure and verify VLANs |
|  | 2.g. | Configure and verify trunking on Cisco switches |
| 3. | Describe and manage IP (IPv4/IPv6) addressing |
|  | Assessment Strategies |
|  | 3.1. | through participation in class activities and labs |
|  | 3.2. | CCENT certification practice exam |
|  | Criteria |
|  | Performance will be satisfactory when learner is able to: |
|  | 3.1. | Describe the operation and necessity of using private and public IP addresses for IPv4 addressing |
|  | 3.2. | Identify the appropriate IPv6 addressing scheme to satisfy addressing requirements in a LAN/WAN environment |
|  | 3.3. | Identify the appropriate IPv4 addressing scheme using VLSM and summarization to satisfy addressing requirements in a LAN/WAN environment |
|  | 3.4. | Describe the technological requirements for running IPv6 in conjunction with IPv4 |
|  | 3.5. | Describe IPv6 Global unicast |
|  | 3.6. | Describe IPv6 Multicast |
|  | 3.7. | Describe IPv6 Link local |
|  | 3.8. | Describe IPv6 Unique local |
|  | 3.9. | Describe IPv6 EUI 64 |
|  | 3.10. | Describe IPv6 Auto-configuration |
|  | Learning Objectives |
|  | 3.a. | Describe the operation and necessity of using private and public IP addresses for IPv4 addressing |
|  | 3.b. | Identify the appropriate IPv6 addressing scheme to satisfy addressing requirements in a LAN/WAN environment |
|  | 3.c. | Identify the appropriate IPv4 addressing scheme using VLSM and summarization to satisfy addressing requirements in a LAN/WAN environment |
|  | 3.d. | Describe the technological requirements for running IPv6 in conjunction with IPv4 |
|  | 3.e. | Describe IPv6 addresses |
| 4. | Configure IP Routing Technologies on Cisco networking equipment |
|  | Assessment Strategies |
|  | 4.1. | through participation in class activities and labs |
|  | 4.2. | CCENT certification practice exam |
|  | Criteria |
|  | Performance will be satisfactory when learner is able to: |
|  | 4.1. | Describe the routing concept Packet forwarding |
|  | 4.2. | Describe the router lookup process |
|  | 4.3. | Describe the routing concept of Process Switching/Fast Switching/CEF |
|  | 4.4. | Configure and verify utilizing the CLI the Hostname |
|  | 4.5. | Configure and verify utilizing the CLI the Local user & password |
|  | 4.6. | Configure and verify utilizing the CLI the Enable secret password |
|  | 4.7. | Configure and verify utilizing the CLI the Console & VTY logins |
|  | 4.8. | Configure and verify utilizing the CLI the exec-timeout |
|  | 4.9. | Configure and verify utilizing the CLI the service password encryption |
|  | 4.10. | Configure and verify utilizing the CLI the Interface IP Address |
|  | 4.11. | Configure and verify utilizing the CLI the loopback |
|  | 4.12. | Configure and verify utilizing the CLI the banner and motd |
|  | 4.13. | Save the router configuration utilizing the CLI |
|  | 4.14. | Configure and verify operation status of an Ethernet interface |
|  | 4.15. | Verify router configuration and network connectivity using traceroute |
|  | 4.16. | Verify router configuration and network connectivity using telnet |
|  | 4.17. | Verify router configuration and network connectivity using SSH |
|  | 4.18. | Verify router configuration and network connectivity using “Show cdp neighbors” command |
|  | 4.19. | Configure and verify routing configuration for a static or default route given specific routing requirements |
|  | 4.20. | Differentiate between routing methods of Static vs. dynamic |
|  | 4.21. | Differentiate between routing methods of Link state vs. distance vector |
|  | 4.22. | Describe the routing method Next hop |
|  | 4.23. | Describe the IP routing table |
|  | 4.24. | Describe how the Passive interfaces work |
|  | 4.25. | Configure and verify OSPF (single area) |
|  | 4.26. | Describe the benefits of single area OSPF |
|  | 4.27. | Configure OSPv2 in a single area |
|  | 4.28. | Configure OSPv3 in a single area |
|  | 4.29. | Describe the OSPF Router ID |
|  | 4.30. | Describe the OSPF Passive interface |
|  | 4.31. | Configure and verify interVLAN routing (router on a stick) |
|  | 4.32. | Configure and verify Sub-interfaces |
|  | 4.33. | Configure and verify upstream routing |
|  | 4.34. | Configure and verify encapsulation |
|  | 4.35. | Configure and verify SVI interfaces |
|  | Learning Objectives |
|  | 4.a. | Describe basic routing concepts |
|  | 4.b. | Configure and verify utilizing the CLI to set basic Router configuration |
|  | 4.c. | Configure and verify operation status of an Ethernet interface |
|  | 4.d. | Verify router configuration and network connectivity using |
|  | 4.e. | Configure and verify routing configuration for a static or default route given specific routing requirements |
|  | 4.f. | Differentiate methods of routing and routing protocols |
|  | 4.g. | Configure and verify OSPF (single area) |
|  | 4.h. | Configure and verify interVLAN routing (router on a stick) |
|  | 4.i. | Configure SVI interfaces. |
| 5. | Configure IP Services on Cisco networking equipment |
|  | Assessment Strategies |
|  | 5.1. | through participation in class activities and labs |
|  | 5.2. | CCENT certification practice exam |
|  | Criteria |
|  | Performance will be satisfactory when learner is able to: |
|  | 5.1. | Configure and verify DHCP (IOS router) |
|  | 5.2. | Configure DHCP options (Basic overview and functionality) |
|  | 5.3. | Configure DHCP Excluded addresses |
|  | 5.4. | Configure DHCP Lease time |
|  | 5.5. | Configure router interfaces to use DHCP |
|  | 5.6. | Describe the types, features, and applications of Standard, Extended, Named and Numbered ACLs |
|  | 5.7. | Configure and verify ACLs in a network environment as well as the log feature |
|  | 5.8. | Identify the basic operation of NAT |
|  | 5.9. | Identify NAT pools |
|  | 5.10. | Identify NAT static assignments |
|  | 5.11. | Identify 1 to 1 NAT |
|  | 5.12. | Identify NAT overloading |
|  | 5.13. | Identify NAT source addressing |
|  | 5.14. | Identify One-way NAT |
|  | 5.15. | Configure and verify NAT for given network requirements |
|  | 5.16. | Configure and verify NTP as a client |
|  | Learning Objectives |
|  | 5.a. | Configure and verify DHCP (IOS router) |
|  | 5.b. | Describe the types, features, and applications of ACLs |
|  | 5.c. | Configure and verify ACLs in a network environment |
|  | 5.d. | Identify the basic operation of NAT |
|  | 5.e. | Configure and verify NAT for given network requirements |
|  | 5.f. | Configure and verify NTP as a client |
| 6. | Implement Network Device Security |
|  | Assessment Strategies |
|  | 6.1. | through participation in class activities and labs |
|  | 6.2. | CCENT certification practice exam |
|  | Criteria |
|  | Performance will be satisfactory when learner is able to: |
|  | 6.1. | Configure and verify Device password security |
|  | 6.2. | Differentiate between “Enable secret” vs. “enable” |
|  | 6.3. | Configure and verify Disable telnet |
|  | 6.4. | Configure and verify SSH |
|  | 6.5. | Configure and verify VTYs |
|  | 6.6. | Configure and verify Physical security |
|  | 6.7. | Configure and verify Service password |
|  | 6.8. | Describe external authentication methods |
|  | 6.9. | Configure and verify switch Sticky mac |
|  | 6.10. | Configure and verify switch MAC address limitation |
|  | 6.11. | Configure and verify Static/dynamic port security |
|  | 6.12. | Configure and verify switch port security violation modes |
|  | 6.13. | Shutdown unused switch ports |
|  | 6.14. | Configure and verify error disable recovery ports |
|  | 6.15. | Assign unused ports in unused VLANs |
|  | 6.16. | Configure and verify Native VLAN to other than VLAN 1 |
|  | 6.17. | Configure and verify ACLs to filter network traffic |
|  | 6.18. | Configure and verify ACLs to limit telnet and SSH access to the router |
|  | Learning Objectives |
|  | 6.a. | Configure and verify network device security features |
|  | 6.b. | Configure and verify switch port security |
|  | 6.c. | Configure and verify ACLs to filter network traffic |
|  | 6.d. | Configure and verify ACLs to limit telnet and SSH access to the router |
| 7. | Troubleshoot a Cisco networking environment |
|  | Assessment Strategies |
|  | 7.1. | through participation in class activities and labs |
|  | 7.2. | CCENT certification practice exam |
|  | Criteria |
|  | Performance will be satisfactory when learner is able to: |
|  | 7.1. | Troubleshoot and correct common problems associated with IP addressing and host configurations |
|  | 7.2. | Identify what VLANs are configured |
|  | 7.3. | Verify port membership is correct |
|  | 7.4. | Verify the correct IP address is configured |
|  | 7.5. | Troubleshoot and resolve trunking states on Cisco switches |
|  | 7.6. | Troubleshoot and resolve trunking encapsulation on Cisco switches |
|  | 7.7. | Troubleshoot and resolve what VLANS are allowed on a trunk port |
|  | 7.8. | Troubleshoot and resolve ACL issues |
|  | 7.9. | Display and verify ACL statistics |
|  | 7.10. | Display and verify ACL permitted networks |
|  | 7.11. | Display and verify ACL interface direction of traffic |
|  | 7.12. | Troubleshoot and resolve Layer 1 problems such as framing, CRC, runts, giants, dropped packets, late collisions and input/output errors. |
|  | Learning Objectives |
|  | 7.a. | Troubleshoot and correct common problems associated with IP addressing and host configurations |
|  | 7.b. | Troubleshoot and resolve VLAN problems |
|  | 7.c. | Troubleshoot and resolve trunking problems on Cisco switches |
|  | 7.d. | Troubleshoot and resolve ACL issues |
|  | 7.e. | Troubleshoot and resolve Layer 1 problems |

### Course Learning Plans and Performance Assessment Tasks

|  |  |
| --- | --- |
| Type | Title |
| LP | Conduct basic operations of an IP Data Network |
| LP | Describe and configure LAN Switching Technologies |
| LP | Describe and manage IP (IPv4/IPv6) addressing |
| LP | Configure IP Routing Technologies on Cisco networking equipment |
| LP | Configure IP Services on Cisco networking equipment |
| LP | Implement Network Device Security |
| LP | Troubleshoot a Cisco networking environment |

Conduct basic operations of an IP Data Network

Overview/Purpose

The student will take a pretest to identify weakness for the certification exam. The student and instructor will identify which lab activities the student should complete to prepare the student for the 100-101 ICND1 certification exam.

Target Competencies

|  |  |
| --- | --- |
| 1. | Conduct basic operations of an IP Data Network |
|  | Assessment Strategies |
|  | 1.1. | through participation in class activities and labs |
|  | 1.2. | CCENT certification practice exam |
|  | Criteria |
|  | Performance will be satisfactory when learner is able to: |
|  | 1.1. | Recognize the purpose and functions of various network devices such as routers, switches, bridges and hubs |
|  | 1.2. | Select the components required to meet a given network specification |
|  | 1.3. | Identify common applications and their impact on the network |
|  | 1.4. | Describe the purpose and basic operation of the protocols in the OSI and TCP/IP models |
|  | 1.5. | Predict the data flow between two hosts across a network |
|  | 1.6. | Identify the appropriate media, cables, ports, and connectors to connect Cisco network devices to other network devices and hosts in a LAN |
|  | Learning Objectives |
|  | 1.a. | Recognize the purpose and functions of various network devices such as routers, switches, bridges and hubs |
|  | 1.b. | Select the components required to meet a given network specification |
|  | 1.c. | Identify common applications and their impact on the network |
|  | 1.d. | Describe the purpose and basic operation of the protocols in the OSI and TCP/IP models |
|  | 1.e. | Predict the data flow between two hosts across a network |
|  | 1.f. | Identify the appropriate media, cables, ports, and connectors to connect Cisco network devices to other network devices and hosts in a LAN |

### Learning Activities

|  |  |
| --- | --- |
| 1. | Listen to lecture. |
| 2. | Complete an optional hands-on lab that enforces the learning objectives.--Copyright Content |
| 3. | Create a "cheat sheet" with content that needs to be memorized. |
| 4. | Complete a practice exam that covers the learning objectives reviewed.--Copyright Content |

### Assessment Activities

|  |  |
| --- | --- |
| 1. | Complete a practice exam that covers the learning objectives reviewed.--Copyright Content |

Describe and configure LAN Switching Technologies

Overview/Purpose

The student will take a pretest to identify weakness for the certification exam. The student and instructor will identify which lab activities the student should complete to prepare the student for the 100-101 ICND1 certification exam

Target Competencies

|  |  |
| --- | --- |
| 1. | Describe and configure LAN Switching Technologies |
|  | Assessment Strategies |
|  | 1.1. | through participation in class activities and labs |
|  | 1.2. | CCENT certification practice exam |
|  | Criteria |
|  | Performance will be satisfactory when learner is able to: |
|  | 1.1. | Determine the technology and media access control method for Ethernet networks |
|  | 1.2. | Describe Collision domains |
|  | 1.3. | Describe Broadcast domains |
|  | 1.4. | Describe Ways to switch; Store & Forward, and Cut-through |
|  | 1.5. | Describe the CAM Table |
|  | 1.6. | Configure the hostname |
|  | 1.7. | Configure the management ip address |
|  | 1.8. | Configure the Ip default-gateway |
|  | 1.9. | Configure the local user and password |
|  | 1.10. | Configure the enable secret password |
|  | 1.11. | Configure the console and VTY logins |
|  | 1.12. | Configure the exec-timeout |
|  | 1.13. | Configure the service password encryption |
|  | 1.14. | Save the configuration |
|  | 1.15. | Verify network status and switch operation using ping, telnet and SSH |
|  | 1.16. | Describe how VLANs create logically separate networks and the need for routing between them |
|  | 1.17. | Explain network segmentation and basic traffic management concepts |
|  | 1.18. | Configure and verify VLANs |
|  | 1.19. | Configure and verify trunking using DTP and Auto-negotiation |
|  | Learning Objectives |
|  | 1.a. | Determine the technology and media access control method for Ethernet networks |
|  | 1.b. | Identify basic switching concepts and the operation of Cisco switches |
|  | 1.c. | Configure and verify initial switch configuration including remote access management |
|  | 1.d. | Verify network status and switch operation using basic utilities |
|  | 1.e. | Describe how VLANs create logically separate networks and the need for routing between them |
|  | 1.f. | Configure and verify VLANs |
|  | 1.g. | Configure and verify trunking on Cisco switches |

### Learning Activities

|  |  |
| --- | --- |
| 1. | Listen to lecture. |
| 2. | Complete an optional hands-on lab that enforces the learning objectives.--Copyright Content |
| 3. | Update the "cheat sheet" with content that needs to be memorized. |
| 4. | Complete a practice exam that covers the learning objectives reviewed.--Copyright Content |

### Assessment Activities

|  |  |
| --- | --- |
| 1. | Complete a practice exam that covers the learning objectives reviewed.--Copyright Content |

Describe and manage IP (IPv4/IPv6) addressing

Overview/Purpose

The student will take a pretest to identify weakness for the certification exam. The student and instructor will identify which lab activities the student should complete to prepare the student for the 100-101 ICND1 certification exam

Target Competencies

|  |  |
| --- | --- |
| 1. | Describe and manage IP (IPv4/IPv6) addressing |
|  | Assessment Strategies |
|  | 1.1. | through participation in class activities and labs |
|  | 1.2. | CCENT certification practice exam |
|  | Criteria |
|  | Performance will be satisfactory when learner is able to: |
|  | 1.1. | Describe the operation and necessity of using private and public IP addresses for IPv4 addressing |
|  | 1.2. | Identify the appropriate IPv6 addressing scheme to satisfy addressing requirements in a LAN/WAN environment |
|  | 1.3. | Identify the appropriate IPv4 addressing scheme using VLSM and summarization to satisfy addressing requirements in a LAN/WAN environment |
|  | 1.4. | Describe the technological requirements for running IPv6 in conjunction with IPv4 |
|  | 1.5. | Describe IPv6 Global unicast |
|  | 1.6. | Describe IPv6 Multicast |
|  | 1.7. | Describe IPv6 Link local |
|  | 1.8. | Describe IPv6 Unique local |
|  | 1.9. | Describe IPv6 EUI 64 |
|  | 1.10. | Describe IPv6 Auto-configuration |
|  | Learning Objectives |
|  | 1.a. | Describe the operation and necessity of using private and public IP addresses for IPv4 addressing |
|  | 1.b. | Identify the appropriate IPv6 addressing scheme to satisfy addressing requirements in a LAN/WAN environment |
|  | 1.c. | Identify the appropriate IPv4 addressing scheme using VLSM and summarization to satisfy addressing requirements in a LAN/WAN environment |
|  | 1.d. | Describe the technological requirements for running IPv6 in conjunction with IPv4 |
|  | 1.e. | Describe IPv6 addresses |

### Learning Activities

|  |  |
| --- | --- |
| 1. | Listen to lecture. |
| 2. | Complete an optional hands-on lab that enforces the learning objectives.--Copyright Content |
| 3. | Update the "cheat sheet" with content that needs to be memorized. |
| 4. | Complete a practice exam that covers the learning objectives reviewed.--Copyright Content |

### Assessment Activities

|  |  |
| --- | --- |
| 1. | Complete a practice exam that covers the learning objectives reviewed.--Copyright Content |

Configure IP Routing Technologies on Cisco networking equipment

Overview/Purpose

The student will take a pretest to identify weakness for the certification exam. The student and instructor will identify which lab activities the student should complete to prepare the student for the 100-101 ICND1 certification exam

Target Competencies

|  |  |
| --- | --- |
| 1. | Configure IP Routing Technologies on Cisco networking equipment |
|  | Assessment Strategies |
|  | 1.1. | through participation in class activities and labs |
|  | 1.2. | CCENT certification practice exam |
|  | Criteria |
|  | Performance will be satisfactory when learner is able to: |
|  | 1.1. | Describe the routing concept Packet forwarding |
|  | 1.2. | Describe the router lookup process |
|  | 1.3. | Describe the routing concept of Process Switching/Fast Switching/CEF |
|  | 1.4. | Configure and verify utilizing the CLI the Hostname |
|  | 1.5. | Configure and verify utilizing the CLI the Local user & password |
|  | 1.6. | Configure and verify utilizing the CLI the Enable secret password |
|  | 1.7. | Configure and verify utilizing the CLI the Console & VTY logins |
|  | 1.8. | Configure and verify utilizing the CLI the exec-timeout |
|  | 1.9. | Configure and verify utilizing the CLI the service password encryption |
|  | 1.10. | Configure and verify utilizing the CLI the Interface IP Address |
|  | 1.11. | Configure and verify utilizing the CLI the loopback |
|  | 1.12. | Configure and verify utilizing the CLI the banner and motd |
|  | 1.13. | Save the router configuration utilizing the CLI |
|  | 1.14. | Configure and verify operation status of an Ethernet interface |
|  | 1.15. | Verify router configuration and network connectivity using traceroute |
|  | 1.16. | Verify router configuration and network connectivity using telnet |
|  | 1.17. | Verify router configuration and network connectivity using SSH |
|  | 1.18. | Verify router configuration and network connectivity using “Show cdp neighbors” command |
|  | 1.19. | Configure and verify routing configuration for a static or default route given specific routing requirements |
|  | 1.20. | Differentiate between routing methods of Static vs. dynamic |
|  | 1.21. | Differentiate between routing methods of Link state vs. distance vector |
|  | 1.22. | Describe the routing method Next hop |
|  | 1.23. | Describe the IP routing table |
|  | 1.24. | Describe how the Passive interfaces work |
|  | 1.25. | Configure and verify OSPF (single area) |
|  | 1.26. | Describe the benefits of single area OSPF |
|  | 1.27. | Configure OSPv2 in a single area |
|  | 1.28. | Configure OSPv3 in a single area |
|  | 1.29. | Describe the OSPF Router ID |
|  | 1.30. | Describe the OSPF Passive interface |
|  | 1.31. | Configure and verify interVLAN routing (router on a stick) |
|  | 1.32. | Configure and verify Sub-interfaces |
|  | 1.33. | Configure and verify upstream routing |
|  | 1.34. | Configure and verify encapsulation |
|  | 1.35. | Configure and verify SVI interfaces |
|  | Learning Objectives |
|  | 1.a. | Describe basic routing concepts |
|  | 1.b. | Configure and verify utilizing the CLI to set basic Router configuration |
|  | 1.c. | Configure and verify operation status of an Ethernet interface |
|  | 1.d. | Verify router configuration and network connectivity using |
|  | 1.e. | Configure and verify routing configuration for a static or default route given specific routing requirements |
|  | 1.f. | Differentiate methods of routing and routing protocols |
|  | 1.g. | Configure and verify OSPF (single area) |
|  | 1.h. | Configure and verify interVLAN routing (router on a stick) |
|  | 1.i. | Configure SVI interfaces. |

### Learning Activities

|  |  |
| --- | --- |
| 1. | Listen to lecture. |
| 2. | Complete an optional hands-on lab that enforces the learning objectives.--Copyright Content |
| 3. | Update the "cheat sheet" with content that needs to be memorized. |
| 4. | Complete a practice exam that covers the learning objectives reviewed.--Copyright Content |

### Assessment Activities

|  |  |
| --- | --- |
| 1. | Complete a practice exam that covers the learning objectives reviewed.--Copyright Content |

Configure IP Services on Cisco networking equipment

Overview/Purpose

The student will take a pretest to identify weakness for the certification exam. The student and instructor will identify which lab activities the student should complete to prepare the student for the 100-101 ICND1 certification exam

Target Competencies

|  |  |
| --- | --- |
| 1. | Configure IP Services on Cisco networking equipment |
|  | Assessment Strategies |
|  | 1.1. | through participation in class activities and labs |
|  | 1.2. | CCENT certification practice exam |
|  | Criteria |
|  | Performance will be satisfactory when learner is able to: |
|  | 1.1. | Configure and verify DHCP (IOS router) |
|  | 1.2. | Configure DHCP options (Basic overview and functionality) |
|  | 1.3. | Configure DHCP Excluded addresses |
|  | 1.4. | Configure DHCP Lease time |
|  | 1.5. | Configure router interfaces to use DHCP |
|  | 1.6. | Describe the types, features, and applications of Standard, Extended, Named and Numbered ACLs |
|  | 1.7. | Configure and verify ACLs in a network environment as well as the log feature |
|  | 1.8. | Identify the basic operation of NAT |
|  | 1.9. | Identify NAT pools |
|  | 1.10. | Identify NAT static assignments |
|  | 1.11. | Identify 1 to 1 NAT |
|  | 1.12. | Identify NAT overloading |
|  | 1.13. | Identify NAT source addressing |
|  | 1.14. | Identify One-way NAT |
|  | 1.15. | Configure and verify NAT for given network requirements |
|  | 1.16. | Configure and verify NTP as a client |
|  | Learning Objectives |
|  | 1.a. | Configure and verify DHCP (IOS router) |
|  | 1.b. | Describe the types, features, and applications of ACLs |
|  | 1.c. | Configure and verify ACLs in a network environment |
|  | 1.d. | Identify the basic operation of NAT |
|  | 1.e. | Configure and verify NAT for given network requirements |
|  | 1.f. | Configure and verify NTP as a client |

### Learning Activities

|  |  |
| --- | --- |
| 1. | Listen to lecture. |
| 2. | Complete an optional hands-on lab that enforces the learning objectives.--Copyright Content |
| 3. | Update the "cheat sheet" with content that needs to be memorized. |
| 4. | Complete a practice exam that covers the learning objectives reviewed.--Copyright Content |

### Assessment Activities

|  |  |
| --- | --- |
| 1. | Complete a practice exam that covers the learning objectives reviewed.--Copyright Content |

Implement Network Device Security

Overview/Purpose

The student will take a pretest to identify weakness for the certification exam. The student and instructor will identify which lab activities the student should complete to prepare the student for the 100-101 ICND1 certification exam

Target Competencies

|  |  |
| --- | --- |
| 1. | Implement Network Device Security |
|  | Assessment Strategies |
|  | 1.1. | through participation in class activities and labs |
|  | 1.2. | CCENT certification practice exam |
|  | Criteria |
|  | Performance will be satisfactory when learner is able to: |
|  | 1.1. | Configure and verify Device password security |
|  | 1.2. | Differentiate between “Enable secret” vs. “enable” |
|  | 1.3. | Configure and verify Disable telnet |
|  | 1.4. | Configure and verify SSH |
|  | 1.5. | Configure and verify VTYs |
|  | 1.6. | Configure and verify Physical security |
|  | 1.7. | Configure and verify Service password |
|  | 1.8. | Describe external authentication methods |
|  | 1.9. | Configure and verify switch Sticky mac |
|  | 1.10. | Configure and verify switch MAC address limitation |
|  | 1.11. | Configure and verify Static/dynamic port security |
|  | 1.12. | Configure and verify switch port security violation modes |
|  | 1.13. | Shutdown unused switch ports |
|  | 1.14. | Configure and verify error disable recovery ports |
|  | 1.15. | Assign unused ports in unused VLANs |
|  | 1.16. | Configure and verify Native VLAN to other than VLAN 1 |
|  | 1.17. | Configure and verify ACLs to filter network traffic |
|  | 1.18. | Configure and verify ACLs to limit telnet and SSH access to the router |
|  | Learning Objectives |
|  | 1.a. | Configure and verify network device security features |
|  | 1.b. | Configure and verify switch port security |
|  | 1.c. | Configure and verify ACLs to filter network traffic |
|  | 1.d. | Configure and verify ACLs to limit telnet and SSH access to the router |

### Learning Activities

|  |  |
| --- | --- |
| 1. | Listen to lecture. |
| 2. | Complete an optional hands-on lab that enforces the learning objectives.--Copyright Content |
| 3. | Update the "cheat sheet" with content that needs to be memorized. |
| 4. | Complete a practice exam that covers the learning objectives reviewed.--Copyright Content |

### Assessment Activities

|  |  |
| --- | --- |
| 1. | Complete a practice exam that covers the learning objectives reviewed.--Copyright Content |

Troubleshoot a Cisco networking environment

Overview/Purpose

The student will take a pretest to identify weakness for the certification exam. The student and instructor will identify which lab activities the student should complete to prepare the student for the 100-101 ICND1 certification exam

Target Competencies

|  |  |
| --- | --- |
| 1. | Troubleshoot a Cisco networking environment |
|  | Assessment Strategies |
|  | 1.1. | through participation in class activities and labs |
|  | 1.2. | CCENT certification practice exam |
|  | Criteria |
|  | Performance will be satisfactory when learner is able to: |
|  | 1.1. | Troubleshoot and correct common problems associated with IP addressing and host configurations |
|  | 1.2. | Identify what VLANs are configured |
|  | 1.3. | Verify port membership is correct |
|  | 1.4. | Verify the correct IP address is configured |
|  | 1.5. | Troubleshoot and resolve trunking states on Cisco switches |
|  | 1.6. | Troubleshoot and resolve trunking encapsulation on Cisco switches |
|  | 1.7. | Troubleshoot and resolve what VLANS are allowed on a trunk port |
|  | 1.8. | Troubleshoot and resolve ACL issues |
|  | 1.9. | Display and verify ACL statistics |
|  | 1.10. | Display and verify ACL permitted networks |
|  | 1.11. | Display and verify ACL interface direction of traffic |
|  | 1.12. | Troubleshoot and resolve Layer 1 problems such as framing, CRC, runts, giants, dropped packets, late collisions and input/output errors. |
|  | Learning Objectives |
|  | 1.a. | Troubleshoot and correct common problems associated with IP addressing and host configurations |
|  | 1.b. | Troubleshoot and resolve VLAN problems |
|  | 1.c. | Troubleshoot and resolve trunking problems on Cisco switches |
|  | 1.d. | Troubleshoot and resolve ACL issues |
|  | 1.e. | Troubleshoot and resolve Layer 1 problems |

### Learning Activities

|  |  |
| --- | --- |
| 1. | Listen to lecture. |
| 2. | Complete an optional hands-on lab that enforces the learning objectives.--Copyright Content |
| 3. | Update the "cheat sheet" with content that needs to be memorized. |
| 4. | Complete a practice exam that covers the learning objectives reviewed.--Copyright Content |

### Assessment Activities

|  |  |
| --- | --- |
| 1. | Complete a practice exam that covers the learning objectives reviewed.--Copyright Content |

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