

CCNA 1

1 - Networking Today

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- 1.0.4 - Video - Getting Started in Cisco Packet TracerContains: *Text, Videos*
- 1.0.5 - Packet Tracer - Logical and Physical Mode ExplorationContains: *Text, Packet Tracers*

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- 1.1.1 - Networks Connect UsContains: *Text*
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 - 11.5.2 - Subnet within an Octet BoundaryContains: *Text*
 - 11.5.3 - Video - The Subnet MaskContains: *Text, Videos*
 - 11.5.4 - Video - Subnet with the Magic NumberContains: *Text, Videos*
 - 11.5.5 - Packet Tracer - Subnet an IPv4 NetworkContains: *Text, Packet Tracers*
- 11.6 - Subnet a Slash 16 and a Slash 8 Prefix
 - 11.6.1 - Create Subnets with a Slash 16 prefixContains: *Text*
 - 11.6.2 - Create 100 Subnets with a Slash 16 prefixContains: *Text*
 - 11.6.3 - Create 1000 Subnets with a Slash 8 prefixContains: *Text*
 - 11.6.4 - Video - Subnet Across Multiple OctetsContains: *Text, Videos*
 - 11.6.5 - Activity - Calculate the Subnet MaskContains: *Text, Interactive Activities*
 - 11.6.6 - Lab - Calculate IPv4 SubnetsContains: *Text, Labs*
- 11.7 - Subnet to Meet Requirements
 - 11.7.1 - Subnet Private versus Public IPv4 Address SpaceContains: *Text*
 - 11.7.2 - Minimize Unused Host IPv4 Addresses and Maximize SubnetsContains: *Text*
 - 11.7.3 - Example: Efficient IPv4 SubnettingContains: *Text*
 - 11.7.4 - Activity - Determine the Number of Bits to BorrowContains: *Text, Interactive Activities*
 - 11.7.5 - Packet Tracer - Subnetting ScenarioContains: *Text, Packet Tracers*
- 11.8 - VLSM
 - 11.8.1 - Video - VLSM BasicsContains: *Text, Videos*
 - 11.8.2 - Video - VLSM ExampleContains: *Text, Videos*
 - 11.8.3 - IPv4 Address ConservationContains: *Text*
 - 11.8.4 - VLSMContains: *Text*
 - 11.8.5 - VLSM Topology Address AssignmentContains: *Text*
 - 11.8.6 - Activity - VLSM PracticeContains: *Interactive Activities*
- 11.9 - Structured Design
 - 11.9.1 - IPv4 Network Address PlanningContains: *Text*
 - 11.9.2 - Device Address AssignmentContains: *Text*
 - 11.9.3 - Packet Tracer - VLSM Design and Implementation PracticeContains: *Text, Packet Tracers*
- 11.10 - Module Practice and Quiz
 - 11.10.1 - Packet Tracer - Design and Implement a VLSM Addressing SchemeContains: *Text, Packet Tracers*
 - 11.10.2 - Lab - Design and Implement a VLSM Addressing SchemeContains: *Text, Packet Tracers, Labs*
 - 11.10.3 - What did I learn in this module?Contains: *Text*
 - 11.10.4 - Module Quiz - IPv4 AddressingContains: *Module Quiz*
- 12 - IPv6 Addressing
- 12.0 - Introduction
 - 12.0.1 - Why should I take this module?Contains: *Text*
 - 12.0.2 - What will I learn in this module?Contains: *Text*
- 12.1 - IPv4 Issues
 - 12.1.1 - Need for IPv6Contains: *Text*
 - 12.1.2 - IPv4 and IPv6 CoexistenceContains: *Text*

- 12.1.3 - Check Your Understanding - IPv4 IssuesContains: *Check Your Understandings*
- 12.2 - IPv6 Address Representation
 - 12.2.1 - IPv6 Addressing FormatsContains: *Text*
 - 12.2.2 - Rule 1 – Omit Leading ZerosContains: *Text*
 - 12.2.3 - Rule 2- Double ColonContains: *Text*
 - 12.2.4 - Check Your Understanding - IPv6 Address RepresentationContains: *Text, Interactive Activities*
- 12.3 - IPv6 Address Types
 - 12.3.1 - Unicast, Multicast, AnycastContains: *Text*
 - 12.3.2 - IPv6 Prefix LengthContains: *Text*
 - 12.3.3 - Types of IPv6 Unicast AddressesContains: *Text*
 - 12.3.4 - A Note About the Unique Local AddressContains: *Text*
 - 12.3.5 - IPv6 GUAContains: *Text*
 - 12.3.6 - IPv6 GUA StructureContains: *Text*
 - 12.3.7 - IPv6 LLAContains: *Text*
 - 12.3.8 - Check Your Understanding - IPv6 Address TypesContains: *Check Your Understandings*
- 12.4 - GUA and LLA Static Configuration
 - 12.4.1 - Static GUA Configuration on a RouterContains: *Text*
 - 12.4.2 - Static GUA Configuration on a Windows HostContains: *Text*
 - 12.4.3 - Static Configuration of a Link-Local Unicast AddressContains: *Text*
 - 12.4.4 - Syntax Checker - GUA and LLA Static ConfigurationContains: *Text, Syntax Checkers*
 - 12.4.5 - Packet Tracer - Basic Device ConfigurationContains: *Text, Packet Tracers*
- 12.5 - Dynamic Addressing for IPv6 GUAs
 - 12.5.1 - RS and RA MessagesContains: *Text*
 - 12.5.2 - Method 1: SLAACContains: *Text*
 - 12.5.3 - Method 2: SLAAC and Stateless DHCPv6Contains: *Text*
 - 12.5.4 - Method 3: Stateful DHCPv6Contains: *Text*
 - 12.5.5 - EUI-64 Process vs. Randomly GeneratedContains: *Text*
 - 12.5.6 - EUI-64 ProcessContains: *Text*
 - 12.5.7 - Randomly Generated Interface IDsContains: *Text*
 - 12.5.8 - Check Your Understanding - Dynamic Addressing for IPv6 GUAsContains: *Check Your Understandings*
- 12.6 - Dynamic Addressing for IPv6 LLAs
 - 12.6.1 - Dynamic LLAsContains: *Text*
 - 12.6.2 - Dynamic LLAs on WindowsContains: *Text*
 - 12.6.3 - Dynamic LLAs on Cisco RoutersContains: *Text*
 - 12.6.4 - Verify IPv6 Address ConfigurationContains: *Text*
 - 12.6.5 - Syntax Checker - Verify IPv6 Address ConfigurationContains: *Text, Syntax Checkers*
 - 12.6.6 - Packet Tracer - Configure IPv6 AddressingContains: *Text, Packet Tracers*
- 12.7 - IPv6 Multicast Addresses
 - 12.7.1 - Assigned IPv6 Multicast AddressesContains: *Text*
 - 12.7.2 - Well-Known IPv6 Multicast AddressesContains: *Text*
 - 12.7.3 - Solicited-Node IPv6 Multicast AddressesContains: *Text*
 - 12.7.4 - Lab - Identify IPv6 AddressesContains: *Text, Labs*

12.8 - Subnet an IPv6 Network

12.8.1 - Subnet Using the Subnet IDContains: *Text*

12.8.2 - IPv6 Subnetting ExampleContains: *Text*

12.8.3 - IPv6 Subnet AllocationContains: *Text*

12.8.4 - Router Configured with IPv6 SubnetsContains: *Text*

12.8.5 - Check Your Understanding - Subnet an IPv6 NetworkContains: *Check Your Understandings*

12.9 - Module Practice and Quiz

12.9.1 - Packet Tracer - Implement a Subnetted IPv6 Addressing SchemeContains: *Text, Packet Tracers*

12.9.2 - Lab - Configure IPv6 Addresses on Network DevicesContains: *Text, Packet Tracers, Labs*

12.9.3 - What did I learn in this module?Contains: *Text*

12.9.4 - Module Quiz - IPv6 AddressingContains: *Module Quiz*

13 - ICMP

13.0 - Introduction

13.0.1 - Why should I take this module?Contains: *Text*

13.0.2 - What will I learn in this module?Contains: *Text*

13.1 - ICMP Messages

13.1.1 - ICMPv4 and ICMPv6 MessagesContains: *Text*

13.1.2 - Host ReachabilityContains: *Text, Animations*

13.1.3 - Destination or Service UnreachableContains: *Text*

13.1.4 - Time ExceededContains: *Text*

13.1.5 - ICMPv6 MessagesContains: *Text*

13.1.6 - Check Your Understanding - ICMP MessagesContains: *Check Your Understandings*

13.2 - Ping and Traceroute Tests

13.2.1 - Ping - Test ConnectivityContains: *Text*

13.2.2 - Ping the LoopbackContains: *Text*

13.2.3 - Ping the Default GatewayContains: *Text*

13.2.4 - Ping a Remote HostContains: *Text, Animations*

13.2.5 - Traceroute - Test the PathContains: *Text, Animations*

13.2.6 - Packet Tracer - Verify IPv4 and IPv6 AddressingContains: *Text, Packet Tracers*

13.2.7 - Packet Tracer - Use Ping and Traceroute to Test Network ConnectivityContains: *Text, Packet Tracers*

13.3 - Module Practice and Quiz

13.3.1 - Packet Tracer - Use ICMP to Test and Correct Network ConnectivityContains: *Text, Packet Tracers*

13.3.2 - Lab - Use Ping and Traceroute to Test Network ConnectivityContains: *Text, Packet Tracers, Labs*

13.3.3 - What did I learn in this module?Contains: *Text*

13.3.4 - Module Quiz - ICMPContains: *Module Quiz*

14 - Transport Layer

14.0 - Introduction

14.0.1 - Why should I take this module?Contains: *Text*

14.0.2 - What will I learn to do in this module?Contains: *Text*

14.1 - Transportation of Data

- 14.1.1 - Role of the Transport LayerContains: *Text*
- 14.1.2 - Transport Layer ResponsibilitiesContains: *Text*
- 14.1.3 - Transport Layer ProtocolsContains: *Text*
- 14.1.4 - Transmission Control Protocol (TCP)Contains: *Text, Animations*
- 14.1.5 - User Datagram Protocol (UDP)Contains: *Text, Animations*
- 14.1.6 - The Right Transport Layer Protocol for the Right ApplicationContains: *Text*
- 14.1.7 - Check Your Understanding - Transportation of DataContains: *Check Your Understandings*
- 14.2 - TCP Overview
 - 14.2.1 - TCP FeaturesContains: *Text*
 - 14.2.2 - TCP HeaderContains: *Text*
 - 14.2.3 - TCP Header FieldsContains: *Text*
 - 14.2.4 - Applications that use TCPContains: *Text*
 - 14.2.5 - Check Your Understanding - TCP OverviewContains: *Check Your Understandings*
- 14.3 - UDP Overview
 - 14.3.1 - UDP FeaturesContains: *Text*
 - 14.3.2 - UDP HeaderContains: *Text*
 - 14.3.3 - UDP Header FieldsContains: *Text*
 - 14.3.4 - Applications that use UDPContains: *Text*
 - 14.3.5 - Check Your Understanding - UDP OverviewContains: *Check Your Understandings*
- 14.4 - Port Numbers
 - 14.4.1 - Multiple Separate CommunicationsContains: *Text*
 - 14.4.2 - Socket PairsContains: *Text*
 - 14.4.3 - Port Number GroupsContains: *Text*
 - 14.4.4 - The netstat CommandContains: *Text*
 - 14.4.5 - Check Your Understanding - Port NumbersContains: *Check Your Understandings*
- 14.5 - TCP Communication Process
 - 14.5.1 - TCP Server ProcessesContains: *Text*
 - 14.5.2 - TCP Connection EstablishmentContains: *Text*
 - 14.5.3 - Session TerminationContains: *Text*
 - 14.5.4 - TCP Three-way Handshake AnalysisContains: *Text*
 - 14.5.5 - Video - TCP 3-Way HandshakeContains: *Text, Videos*
 - 14.5.6 - Check Your Understanding - TCP Communication ProcessContains: *Check Your Understandings*
- 14.6 - Reliability and Flow Control
 - 14.6.1 - TCP Reliability - Guaranteed and Ordered DeliveryContains: *Text*
 - 14.6.2 - Video - TCP Reliability - Sequence Numbers and AcknowledgmentsContains: *Text, Videos*
 - 14.6.3 - TCP Reliability - Data Loss and RetransmissionContains: *Text*
 - 14.6.4 - Video - TCP Reliability - Data Loss and RetransmissionContains: *Text, Videos*
 - 14.6.5 - TCP Flow Control - Window Size and AcknowledgmentsContains: *Text*
 - 14.6.6 - TCP Flow Control - Maximum Segment Size (MSS)Contains: *Text*
 - 14.6.7 - TCP Flow Control - Congestion AvoidanceContains: *Text*
 - 14.6.8 - Check Your Understanding - Reliability and Flow ControlContains: *Check Your Understandings*

14.7 - UDP Communication

14.7.1 - UDP Low Overhead versus ReliabilityContains: *Text*

14.7.2 - UDP Datagram ReassemblyContains: *Text*

14.7.3 - UDP Server Processes and RequestsContains: *Text*

14.7.4 - UDP Client ProcessesContains: *Text*

14.7.5 - Check Your Understanding - UDP CommunicationContains: *Check Your Understandings*

14.8 - Module Practice and Quiz

14.8.1 - Packet Tracer - TCP and UDP CommunicationsContains: *Text, Packet Tracers*

14.8.2 - What did I learn in this module?Contains: *Text*

14.8.3 - Module Quiz - Transport LayerContains: *Module Quiz*

15 - Application Layer

15.0 - Introduction

15.0.1 - Why should I take this module?Contains: *Text*

15.0.2 - What will I learn to do in this module?Contains: *Text*

15.1 - Application, Presentation, and Session

15.1.1 - Application LayerContains: *Text*

15.1.2 - Presentation and Session LayerContains: *Text*

15.1.3 - TCP/IP Application Layer ProtocolsContains: *Text*

15.1.4 - Check Your Understanding - Application, Session, PresentationContains: *Check Your Understandings*

15.2 - Peer-to-Peer

15.2.1 - Client-Server ModelContains: *Text*

15.2.2 - Peer-to-Peer NetworksContains: *Text*

15.2.3 - Peer-to-Peer ApplicationsContains: *Text*

15.2.4 - Common P2P ApplicationsContains: *Text*

15.2.5 - Check Your Understanding - Peer-to-PeerContains: *Check Your Understandings*

15.3 - Web and Email Protocols

15.3.1 - Hypertext Transfer Protocol and Hypertext Markup LanguageContains: *Text*

15.3.2 - HTTP and HTTPSContains: *Text*

15.3.3 - Email ProtocolsContains: *Text*

15.3.5 - Check Your Understanding - Web and Email ProtocolsContains: *Check Your Understandings*

15.4 - IP Addressing Services

15.4.1 - Domain Name SystemContains: *Text*

15.4.2 - DNS Message FormatContains: *Text*

15.4.3 - DNS HierarchyContains: *Text*

15.4.4 - The nslookup CommandContains: *Text*

15.4.5 - Syntax Checker - The nslookup CommandContains: *Text, Syntax Checkers*

15.4.6 - Dynamic Host Configuration ProtocolContains: *Text*

15.4.7 - DHCP OperationContains: *Text*

15.4.8 - Lab - Observe DNS ResolutionContains: *Text, Labs*

15.4.9 - Check Your Understanding - IP Addressing ServicesContains: *Check Your Understandings*

15.5 - File Sharing Services

- 15.5.1 - File Transfer ProtocolContains: *Text*
- 15.5.2 - Server Message BlockContains: *Text*
- 15.5.3 - Check Your Understanding - File Sharing ServicesContains: *Check Your Understandings*
- 15.6 - Module Practice and Quiz
 - 15.6.1 - What did I learn in this module?Contains: *Text*
 - 15.6.2 - Module Quiz - Application LayerContains: *Module Quiz*
- 16 - Network Security Fundamentals
 - 16.0 - Introduction
 - 16.0.1 - Why should I take this module?Contains: *Text*
 - 16.0.2 - What will I learn to do in this module?Contains: *Text*
 - 16.1 - Security Threats and Vulnerabilities
 - 16.1.1 - Types of ThreatsContains: *Text*
 - 16.1.2 - Types of VulnerabilitiesContains: *Text*
 - 16.1.3 - Physical SecurityContains: *Text*
 - 16.1.4 - Check Your Understanding - Security Threats and VulnerabilitiesContains: *Check Your Understandings*
 - 16.2 - Network Attacks
 - 16.2.1 - Types of MalwareContains: *Text, Animations*
 - 16.2.2 - Reconnaissance AttacksContains: *Text, Animations*
 - 16.2.3 - Access AttacksContains: *Text, Animations*
 - 16.2.4 - Denial of Service AttacksContains: *Text, Animations*
 - 16.2.5 - Check Your Understanding - Network AttacksContains: *Check Your Understandings*
 - 16.2.6 - Lab - Research Network Security ThreatsContains: *Text, Labs*
 - 16.3 - Network Attack Mitigations
 - 16.3.1 - The Defense-in-Depth ApproachContains: *Text*
 - 16.3.2 - Keep BackupsContains: *Text*
 - 16.3.3 - Upgrade, Update, and PatchContains: *Text*
 - 16.3.4 - Authentication, Authorization, and AccountingContains: *Text*
 - 16.3.5 - FirewallsContains: *Text*
 - 16.3.6 - Types of FirewallsContains: *Text*
 - 16.3.7 - Endpoint SecurityContains: *Text*
 - 16.3.8 - Check Your Understanding - Network Attack MitigationContains: *Check Your Understandings*
 - 16.4 - Device Security
 - 16.4.1 - Cisco AutoSecureContains: *Text*
 - 16.4.2 - PasswordsContains: *Text*
 - 16.4.3 - Additional Password SecurityContains: *Text*
 - 16.4.4 - Enable SSHContains: *Text*
 - 16.4.5 - Disable Unused ServicesContains: *Text*
 - 16.4.6 - Packet Tracer - Configure Secure Passwords and SSHContains: *Text, Packet Tracers*
 - 16.4.7 - Lab - Configure Network Devices with SSHContains: *Text, Labs*
 - 16.5 - Module Practice and Quiz
 - 16.5.1 - Packet Tracer - Secure Network DevicesContains: *Text, Packet Tracers*
 - 16.5.2 - Lab - Secure Network DevicesContains: *Text, Labs*
 - 16.5.3 - What did I learn in this module?Contains: *Text*
 - 16.5.4 - Module Quiz - Network Security FundamentalsContains: *Module Quiz*

17 - Build a Small Network

17.0 - Introduction

17.0.1 - Why should I take this module?Contains: *Text*

17.0.2 - What will I learn to do in this module?Contains: *Text*

17.1 - Devices in a Small Network

17.1.1 - Small Network TopologiesContains: *Text*

17.1.2 - Device Selection for a Small NetworkContains: *Text*

17.1.3 - IP Addressing for a Small NetworkContains: *Text*

17.1.4 - Redundancy in a Small NetworkContains: *Text*

17.1.5 - Traffic ManagementContains: *Text*

17.1.6 - Check Your Understanding - Devices in a Small NetworkContains: *Check Your Understandings*

17.2 - Small Network Applications and Protocols

17.2.1 - Common ApplicationsContains: *Text*

17.2.2 - Common ProtocolsContains: *Text*

17.2.3 - Voice and Video ApplicationsContains: *Text*

17.2.4 - Check Your Understanding - Small Network Applications and ProtocolsContains: *Check Your Understandings*

17.3 - Scale to Larger Networks

17.3.1 - Small Network GrowthContains: *Text*

17.3.2 - Protocol AnalysisContains: *Text*

17.3.3 - Employee Network UtilizationContains: *Text*

17.3.4 - Check Your Understanding - Scale to Larger NetworksContains: *Check Your Understandings*

17.4 - Verify Connectivity

17.4.1 - Verify Connectivity with PingContains: *Text*

17.4.2 - Extended PingContains: *Text*

17.4.3 - Verify Connectivity with TracerouteContains: *Text*

17.4.4 - Extended TracerouteContains: *Text*

17.4.5 - Network BaselineContains: *Text*

17.4.6 - Lab - Test Network Latency with Ping and TracerouteContains: *Text, Labs*

17.5 - Host and IOS Commands

17.5.1 - IP Configuration on a Windows HostContains: *Text*

17.5.2 - IP Configuration on a Linux HostContains: *Text*

17.5.3 - IP Configuration on a macOS HostContains: *Text*

17.5.4 - The arp CommandContains: *Text*

17.5.5 - Common show Commands RevisitedContains: *Text*

17.5.6 - The show cdp neighbors CommandContains: *Text*

17.5.7 - The show ip interface brief CommandContains: *Text*

17.5.8 - Video - The show version CommandContains: *Text, Videos*

17.5.9 - Packet Tracer - Interpret show Command OutputContains: *Text, Packet Tracers*

17.6 - Troubleshooting Methodologies

17.6.1 - Basic Troubleshooting ApproachesContains: *Text*

17.6.2 - Resolve or Escalate?Contains: *Text*

17.6.3 - The debug CommandContains: *Text*

17.6.4 - The terminal monitor CommandContains: *Text*

- 17.6.5 - Check Your Understanding - Troubleshooting Methodologies**Contains: *Check Your Understandings*
- 17.7 - Troubleshooting Scenarios**
 - 17.7.1 - Duplex Operation and Mismatch Issues**Contains: *Text*
 - 17.7.2 - IP Addressing Issues on IOS Devices**Contains: *Text*
 - 17.7.3 - IP Addressing Issues on End Devices**Contains: *Text*
 - 17.7.4 - Default Gateway Issues**Contains: *Text*
 - 17.7.5 - Troubleshooting DNS Issues**Contains: *Text*
 - 17.7.6 - Packet Tracer - Troubleshoot Connectivity Issues**Contains: *Text, Packet Tracers*
 - 17.7.7 - Lab - Troubleshoot Connectivity Issues**Contains: *Text, Packet Tracers, Labs*
- 17.8 - Module Practice and Quiz**
 - 17.8.1 - Lab - Design and Build a Small Business Network**Contains: *Text, Packet Tracers, Labs*
 - 17.8.2 - Packet Tracer - Skills Integration Challenge**Contains: *Text, Packet Tracers*
 - 17.8.3 - Packet Tracer - Troubleshooting Challenge**Contains: *Text, Packet Tracers*
 - 17.8.4 - What did I learn in this module?**Contains: *Text*
 - 17.8.5 - Module Quiz - Build a Small Network**Contains: *Module Quiz*