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CCNA Study Group – Learning Map

Get CCNA-ready in 2020. Designed exclusively for CCNA Study Group members, this summary of learning resources is intended to work in conjunction with Cisco authorized CCNA training courses (instructor-led and e-learning), exam outlines, Cisco Press books and the Cisco Learning Network. Together these resources add up to over 70 hours of self-study preparation.

Content	Title	Description	Estimated Duration (HH:MM)
Network Fundamentals			**9:26**
Section 1	Explain the role and function of network components		
Lesson 1.1	Small business IT explained in 60 seconds or less: Switches vs. Routers with Captions	This video provides a brief intro to two essential network devices: switches and routers.	0:01
Lesson 1.2	Routers and Switches and Hubs, Oh My! An Introduction to Network Devices and Their Functions	This article starts from the beginning and discusses some of the most common networking device types and their functions within the network.	0:08
Lesson 1.3	Understanding Ethernet and Switch Operations	This chapter provides questions and answers regarding the understanding of ethernet and switching operations.	0:15
Section 2	Describe characteristics of network topology architectures		
Lesson 2.1	Cisco Networking Academy's Introduction to Scaling Networks	This chapter introduces strategies that can be used to systematically design a highly functional network, such as the hierarchical network design model, the Cisco Enterprise Architecture, and appropriate device selections.	0:30
Lesson 2.2	Why Networks Are Evolving Toward Leaf-Spine Architectures	This article includes a brief overview of the benefits of leaf-spine designs, where they're commonly deployed today, and why you might choose to pursue one.	0:07
Lesson 2.3	Cisco Data Center Spine-and-Leaf Architecture	This white paper provides a more in-depth look at spine and leaf architectures.	1:00
Section 3	Compare physical interface and cabling types		
Lesson 3.1	Ethernet Media and Cable Types	In this microlearning IT training video, we learn about the different types of ethernet cables that are available.	0:05
Lesson 3.2	RJ45 Connectors, RJ45 Wiring, Unshielded Twisted Pair (UTP) and More	Another microlearning IT training video on ethernet cables. In this short educational piece, we look at the cable ends and the wiring inside of standard ethernet cables. What is an RJ45 connector? What does unshielded twisted pair mean? How are RJ45 connectors wired?	0:05

Content	Title	Description	Estimated Duration (HH:MM)
[Lesson 3.3](#)	SFP and GBIC Explained	SFP and GBIC connections are explained in this microlearning IT training video as part of our Cisco Answers IT video series.	0:04
[Lesson 3.4](#)	Crossover Cables and Straight Through Cables Test Yourself	Crossover cables and straight through cables, time to test yourself on how well you understand when to use which ethernet cable as part of your network.	0:03
Section 4	Identify interface and cable issues (collisions, errors, mismatch duplex, and/or speed)		
[Lesson 4.1](#)	Troubleshooting Ethernet Collisions	This document provides an overview of the different counters related to Ethernet collisions, and explains how to troubleshoot problems with Ethernet collisions.	0:14
[Lesson 4.2](#)	Duplex Modes and Auto-Negotiation	This wiki page discusses Duplex Modes and Auto-Negotiation.	0:03
[Lesson 4.3](#)	Configuring and Troubleshooting Ethernet 10/100/1000Mb Half/Full Duplex Auto-Negotiation	This document provides basic guidelines to isolate and resolve many common Ethernet auto-negotiation issues. This document provides a general description of auto-negotiation, and explains the procedure to configure and verify auto-negotiation. This document also shows an example of why the most common duplex-mismatch error occurs.	0:44
Section 5	Compare TCP to UDP		
[Lesson 5.1](#)	What Is the Difference Between TCP and UDP?	After watching this short video, you'll understand the differences between TCP and UDP.	0:06
[Lesson 5.2](#)	What Is a Three-Way Handshake in TCP?	You'll understand the basics of a three-way handshake after watching this short video.	0:05
[Lesson 5.3](#)	Perspectives on the TCP/IP Model	This video from Cisco expert Wendell Odom provides a deeper look at the TCP/IP model.	0:04
Section 6	Configure and verify IPv4 addressing and subnetting		
[Lesson 6.1](#)	What Is an IP Address?	What is an IP address? What is a host address? What is dotted decimal notation? These and other questions are answered in this microlearning IT training video. After watching this short video, you'll understand one of the fundamentals for networking: What is an IP address.	0:03
[Lesson 6.2](#)	IP Addressing and Subnetting for New Users	This document provides basic information needed in order to configure your router for routing IP, such as how addresses are broken down and how subnetting works. You learn how to assign each interface on the router an IP address with a unique subnet.	0:21
[Lesson 6.3](#)	Subnet Zero and the All-Ones Subnet	This document discusses subnet zero and the all-ones subnet and their uses.	0:14
[Lesson 6.4](#)	Binary Game	Increase your understanding of binary numbers and conversion speed by playing this fast-paced game. Before long you'll be doing these conversions in your head. So the question is, how many levels can you conquer? You must be logged into the Cisco Learning Network to play The Binary Game, but registration is free.	0:00
[Lesson 6.5](#)	SubnettingPractice.com	This site provides an opportunity to practice your subnetting skills.	0:00

Content	Title	Description	Estimated Duration (HH:MM)
Lesson 6.6	Configuring the Switch IP Address and Default Gateway	This configuration guide covers various methods of assigning an IP address and default gateway to a Cisco switch.	0:30
Section 7	Describe the need for private IPv4 addressing		
Lesson 7.1	Next Generation Internet: IPv4 Address Exhaustion, Mitigation Strategies and Implications for the U.S.	This whitepaper from the Institute of Electrical and Electronics Engineers details the needs for private IPv4 addresses.	0:15
Lesson 7.2	Private Addressing and NAT	This section explains Network Address Translation (NAT) and how it can limit the waste of IP addresses by using the private addressing scheme.	0:09
Section 8	Configure and verify IPv6 addressing and prefix and compare IPv6 address types		
Lesson 8.1	IPv6 basic implementation on Cisco IOS	This video is a quick demo of basic implementation of IPv6 on Cisco IOS.	0:09
Lesson 8.2	IPv6 EUI-64 Addressing 1	This tutorial from Wendell Odom covers use and configuration of the EUI-64 address type.	0:03
Lesson 8.3	IPv6 Address Representation and Address Types	In this chapter from IPv6 Fundamentals: A Straightforward Approach to Understanding IPv6, 2nd Edition, author Rick Graziani examines all the different types of IPv6 addresses in the unicast, multicast, and anycast categories.	0:30
Section 9	Verify IP parameters for Client OS (Windows, Mac OS, Linux)		
Lesson 9.1	Check Your Computer's TCP/IP Settings	This document explains how to verify IP settings from the GUI in different versions of Windows and MacOS.	0:06
Lesson 9.2	IPConfig in Windows	This document explains how to use the "ipconfig" command in Windows to display network related information.	0:03
Lesson 9.3	Linux ifconfig command help and examples	This document explains the Linux/Unix "ifconfig" command, which is used to configure or verify TCP/IP configuration on a host.	0:16
Section 10	Describe wireless principles		
Lesson 10.1	Understanding RF Fundamentals and the Implications for Wireless Networks – BRKEWN-2017	In this session we will learn about the fundamentals of RF networking and the implications for its use as the physical layer of 802.11 wireless networks. We will also explore how Cisco technologies such as CleanAir, Radio Resource Management and Flexible Radio Assignment work to optimise the use of RF in your WLANs.	1:45
Lesson 10.2	Wireless LAN Implications, Problems, and Solutions	When designing and supporting a WLAN, you must be aware of potential implications, such as security vulnerabilities, radio signal interference, multipath propagation, and other issues. This chapter from Designing and Deploying 802.11 Wireless Networks explains the impacts of these problems and introduces some ways to resolve them.	0:44

Content	Title	Description	Estimated Duration (HH:MM)
Section 11	**Explain virtualization fundamentals (virtual machines)**		
Lesson 11.1	Virtualization Explained – IBM Cloud	This video from our friends at IBM Cloud introduces some of the fundamentals of virtualization.	0:05
Lesson 11.2	What is virtualization?	This article from RedHat digs a little deeper into the history, benefits, and types of virtualization technologies.	0:10
Section 12	**Describe switching concepts**		
Lesson 12.1	Switching Explained	How do switches work? In this microlearning IT training video, we learn about how a switch learns MAC addresses.	0:02
Lesson 12.2	Address Resolution Protocol Explained	How does Address Resolution Protocol work? In this microlearning IT training video, we learn about the how a device acquires another device's MAC address.	0:04
Lesson 12.3	Basic Data Transmission in Networks: MAC Tables and ARP Tables	Sean Wilkins, co-author of CCNA Routing and Switching 200-120 Network Simulator, explains some crucial terminology for anyone who needs to understand complex networking.	0:07
Lesson 12.4	Network Switching Methods: Store-and-Forward Versus Cut-Through	Sean Wilkins, co-author of CCNA Routing and Switching 200-120 Network Simulator, believes every network engineer should understand the differences between the two major switching methods employed in computer networks.	0:08
Lesson 12.5	Packet Switching Methods on Cisco Networks	Sean Wilkins, co-author of CCNA Routing and Switching 200-120 Network Simulator, teaches new networking students the basics they need to know about packet switching on Cisco networks.	0:08
Network Access			**4:11**
Section 1	**Configure and verify VLANs (normal range) spanning multiple switches**		
Lesson 1.1	Catalyst 3750-X and 3560-X Config Guide – Configure normal-range and extended-range VLANs	This document describes how to configure normal-range VLANs (VLAN IDs 1 to 1005) and extended-range VLANs (VLAN IDs 1006 to 4094) on the Catalyst 3750-E and 3560-E Catalyst 3750-X or 3560-X switch. Please review Section 1, Lessons 2 through 5.	1:00
Section 2	**Configure and verify interswitch connectivity**		
Lesson 2.1	Configure and Verify Inter-Switch Link Settings – Branch Office Network Setup	Configuring the Inter Switch connections which will take the form of Static and Dynamic Layer 2 802.1Q Trunk Links and Static and Dynamic EtherChannel bundles using both LACP and PAgP.	0:27
Lesson 2.2	Configure Link Layer Discovery Protocol (LLDP) Media Endpoint Discovery (MED) Port Settings on a Switch through the Command Line Interface (CLI)	This article provides instructions on how to configure the Link Layer Discovery Protocol (LLDP) port settings on the switch through the Command Line Interface (CLI).	1:00

Content	Title	Description	Estimated Duration (HH:MM)
Lesson 2.3	Lab – Configuring EtherChannel CCNA 3 – Chapter 3 (EtherChannel, PAgP, LACP)	The configuration, verification, and troubleshooting of EtherChannel. Load balancing takes place between links that are part of the same EtherChannel, depending on the hardware platform. Several show commands are described for verifying and troubleshooting an EtherChannel implementation.	0:38
Lesson 2.4	Difference EtherChannel Layer2 & Layer3	EtherChannel allows one to bundle multiple links and to make them appear as only one link.	0:05
Lesson 2.5	Cisco Tech Talk: Configuring Spanning Tree Protocol (STP) Settings	How to configure STP.	0:04
Lesson 2.6	Understanding Rapid Spanning Tree Protocol (802.1w)	This document provides information about the enhancements added by RSTP to the previous 802.1D standard.	0:30
Lesson 2.7	Cisco Unified Wireless Technology and Architecture	Creating Computer Network With Cisco Packet Tracer.	0:14
Lesson 2.8	Initial Configuration of Wireless LAN Controller using CLI and GUI	How to do the Initial Configuration of Wireless LAN Controller using CLI and GUI.	0:13
IP Connectivity			**23:41**
Section 1	Interpret the components of a routing table and determine how a router makes a forwarding decision by default.		
Lesson 1.1	Routing Concepts	This sample chapter from Routing and Switching Essentials v6 Companion Guide, answers the question, "What does a router do with a packet received from one network and destined for another network?" Details of the routing table will be examined, including connected, static, and dynamic routes.	0:13
Lesson 1.2	Route Selection in Cisco Routers	This document explains how Cisco routers select a route for a given network.	0:11
Lesson 1.3	Cisco Networking Academy's Introduction to Routing Dynamically	This chapter explains multiple routing protocols (particularly dynamic routing protocols) and describes their relative strengths and weaknesses. It also shows how to read a routing table easily and interpret the IPv6 routing information listed within it.	1:00
Lesson 1.4	What Is Administrative Distance?	This document introduces the concept of Administrative Distance and explains how it's used when multiple routing protocols are in use in a network.	0:06
Section 2	Configure and verify IPv4 and IPv6 static routing		
Lesson 2.1	Fundamentals of Static Routing with André Laurent	This session provides an introduction to the fundamentals of static routing.	0:22
Lesson 2.2	Fundamentals of Static Routing with André Laurent	In this session, 3xCCIE and CCDE André Laurent demonstrates the creation of a simple routed topology implemented using static routes.	0:23
Lesson 2.3	Fundamentals of Static Routing with André Laurent	In lesson three of this series, André continues the demonstration with a closer inspection of router CLI commands used to configure and test his sample topology.	0:22

Content	Title	Description	Estimated Duration (HH:MM)
Section 3	Router on a Stick Flexibility with Logical Topologies with André Laurent		
Lesson 3.1	Introduction	In this training video, André Laurent introduces a CCNA study session format, and sets the stage for an informative and interactive session.	0:17
Lesson 3.2	Topologies Overview	Lesson 2 from André Laurent regardling Locial Topologies, focuses on designing the topology.	0:22
Lesson 3.3	VLAN & Build a Trunk	André Laurent discusses VLANs and building a trunk in this training video lesson.	0:24
Lesson 3.4	Build the Topology	In this training video lesson, André and the participants begin to build the topology that they have designed in the previous lessons.	0:26
Lesson 3.5	Configuration	The fifth training video lesson in this CCNA study session contains a student-led configuration in which students help André configure the rest of the topology.	0:24
Lesson 3.6	Closing and Q&A	This video training lesson concludes the CCNA Study Session on creating environments leveraging a router on a stick for flexibility, in which you will also find a Q&A session with André Laurent as he answers questions regarding cable sizes, loopbacks, and mac addresses.	0:09
Section 4	Fundamentals of OSPF with André Laurent		
Lesson 4.1	IGP (RIP and EIGRP) Protocols Review	André Laurent discusses the Fundamentals of OSPF and reviews IGP (RIP and EIGRP) Protocols.	0:22
Lesson 4.2	OSPF Foundations	In Lesson two of the OSPF Fundamentals, André Laurent covers its foundations.	0:13
Lesson 4.3	OSPF Adjacency Specifics	Lesson three regarding the Fundamentals of OSPF with André Laurent points to the OSPF Adjacency Specifics.	0:23
Lesson 4.4	Traffic Engineering with OSPF	Lesson four in the Fundamentals of OSPF with André Laurent takes a dive into Traffic Engineering.	0:24
Lesson 4.5	Walkthroughs	André Laurent leads you through walkthroughs in the Fundamentals of OSPF in lesson five.	0:21
Lesson 4.6	Closing and Q&A	André Laurent brings a Q&A regarding the Fundamentals of OSPF.	0:17
Section 5	Jump start Your CCNA 200-301: OSPFv2 with Wendell Odom		
Lesson 5.1	OSPF Interface Configuration	OSPF discussion with Wendell Odom features the topic of OSPF Interface Configuration.	0:02
Lesson 5.2	OSPF Router ID	Lesson two in jumpstarting your CCNA 200-301, Wendell Odom speaks on OSPF Router ID	0:42
Lesson 5.3	OSPF Passive Interfaces	Wendell Odom covers OSPF Passive Interfaces in lesson three of jumpstarting your CCNA 200-301.	0:50
Lesson 5.4	LSA Basics and OSPF Network Types	Wendell Odom discusses LSA Basics and OSPF Network Types in lesson four.	0:40

Content	Title	Description	Estimated Duration (HH:MM)
Lesson 5.5	OSPF Neighbor Issues	OSPF Neighbor Issues headline lesson five of Wendell Odom's jumpstarting your CCNA 200-301.	0:25
Lesson 5.6	The OSPF Network Command	The The OSPF Network Command becomes a discussion of topic in the final lesson from Wendell Odom to help jumpstart your CCNA 200-301.	0:58
Section 6	Configure and verify single area OSPFv2		
Lesson 6.1	OSPF Fundamentals	In this video, Cisco SME André Laurent introduces some of the fundamental items required to configure OSPFv2 on a Cisco router.	0:20
Lesson 6.2	OSPF Adjacency Specifics	In a continuation of the previous video, Cisco SME André Laurent digs deeper into OSPF configuration, demonstrating how to verify and troubleshoot OSPF neighbor adjacencies. André also discusses the difference between inter- and intra-area routes.	0:23
Lesson 6.3	Traffic Engineering with OSPF	In this video, André digs even deeper into the specifics of OSPF, highlighting common misconfigurations.	0:21
Lesson 6.4	OSPFv2 Design Guide	Cisco's OSPFv2 Design Guide covers some of the fundamentals of the routing protocol and details important considerations for implementing OSPF in large and complex networks.	1:00
Section 7	Open Shortest Path First (OSPF) Troubleshooting with André Laurent		
Lesson 7.1	Intro - Session and Topology Overview	André Laurent hosts a Session and Topology Overview in the intro of OSPF Troubleshooting.	0:12
Lesson 7.2	Review of Trouble Tickets	In lesson two, André Laurent reviews Trouble Tickets regarding OSPF.	0:18
Lesson 7.3	Verifying What is Happening on R6 and Beyond - Task 1	Hear from André Laurent who will help guide and verify what is happening on R6 and beyond.	0:19
Lesson 7.4	Can I Telnet to R4 - Task 3	In task three André Laurent provides information on if you can telnet to R4.	0:32
Lesson 7.5	Where Are R5 Routes? - Task 2	In lesson five, André Laurent shows you where the R5 routes are.	0:20
Lesson 7.6	IA vs. N2 - Task 4	Laurent tackles the IA vs. N2 in lesson six.	0:05
Lesson 7.7	End to End Connectivity and Path Preference - Task 5	End to End Connectivity and Path Preference is covered in Lesson seven.	0:15
Lesson 7.8	Closing - Q&A	A recap and Q&A from Laurent regarding OSPF.	0:04
Section 8	Fundamentals of Policy-Based Routing with André Laurent		
Lesson 8.1	IGP (OSPF and EIGRP) Protocol Review	IGP (OSPF and EIGRP) Protocol Review from André Laurent on the Fundamentals of Policy-Based Routing.	0:20
Lesson 8.2	Route-Map Fundamentals & IGP	André Laurent covers Route-Map Fundamentals & IGP in lesson two.	0:19
Lesson 8.3	Route-Maps and Access-Lists	Route-Maps and Access-Lists highlight lesson three from Laurent.	0:25

Content	Title	Description	Estimated Duration (HH:MM)
Lesson 8.4	Interface Based Policy–Based Routing	Interface Based Policy–Based Routing is the focus in lesson four from André Laurent.	0:24
Lesson 8.5	Local Policy–Based Routing	André Laurent provides information on Local Policy–Based Routing in lesson five.	0:24
Lesson 8.6	Closing and Q&A	A closing Q&A from André Laurent on the Fundamentals of Policy–Based Routing.	0:16
Section 9	Static Routing | Access-Lists | Policy-Based Routing with André Laurent		
Lesson 9.1	Intro: Session and Topology Overview	A Session and Topology Overview is provided by Laurent regarding Static Routing, Acess-Lists, and Policy–Based Routing.	0:11
Lesson 9.2	Review of Trouble Tickets	Laurent covers trouble tickets involved with Static Routing | Access-Lists | Policy-Based Routing.	0:08
Lesson 9.3	Troubleshooting in the Right Order – Task 5	Learn how to Troubleshoot in the Right Order in lesson three from André Laurent.	0:35
Lesson 9.4	Where are the Default Routes? Task 1 – Part 1	Laurent provides information on where the default routes are in part one of two.	0:39
Lesson 9.5	Where are the Default Routes? Task 1 – Part 2	Laurent provides information on where the default routes are in part two of two.	0:07
Lesson 9.6	What is Wrong with My Telnet? – Task 2	In lesson six, Laurent will provided answers as to what might be wrong with your telnet.	0:23
Lesson 9.7	Closing – Q&A	A Q&A and closing statement from André Laurent on Static Routing, Acess-Lists, and Policy–Based Routing.	0:04
Section 10	Fundamentals of IGP to IGP Redistribution with André Laurent		
Lesson 10.1	IGP and Redistribution Review (OSPF, EIGRP, RIP)	Lesson one provides a review on IGP and Redistribution (OSPF, EIGRP, RIP)	0:27
Lesson 10.2	One Way Connectivity Without Redistribution	The topic of One Way Connectivity Without Redistribution is covered in lesson two regarding Fundamentals of IGP to IGP Redistribution	0:29
Lesson 10.3	Full Connectivity with One Way Redistribution	Highlighted in lesson three is Full Connectivity with One Way Redistribution.	0:28
Lesson 10.4	Two Way Redistribution on Single Router	Two Way Redistribution on Single Router is covered by André Laurent in lesson four.	0:28
Section 11	IGP to IGP Redistribution with André Laurent		
Lesson 11.1	Intro – Session and Topology Overview	IGP to IGP Redistribution with André Laurent covering session and topology overview.	0:11
Lesson 11.2	Review of Trouble Tickets	This video covers IGP to IGP Redistribution with André Laurent reviewing of trouble tickets.	0:18
Lesson 11.3	77.77.77.X Prefixes Present, So What's Wrong? – Task 1 – Part 1	This video covers IGP to IGP Redistribution with André Laurent reviewing 77.77.77.X Prefixes Present, task 1 part 1.	0:34
Lesson 11.4	77.77.77.X Prefixes Present, So What's Wrong? – Task 1 – Part 2	This video covers IGP to IGP Redistribution with André Laurent reviewing 77.77.77.X Prefixes Present, task 1 part 2.	0:19

Content	Title	Description	Estimated Duration (HH:MM)
Lesson 11.5	77.77.77.X Prefixes Present, So What's Wrong? - Task 1 – Part 3	This video covers IGP to IGP Redistribution with André Laurent reviewing 77.77.77.X Prefixes Present, task 1 part 3.	0:18
Lesson 11.6	Odd and Even – Task 2	This video covers IGP to IGP Redistribution with André Laurent reviewing odd and even, task 2.	0:16
Lesson 11.7	Telnet to 5.5.5.5 – Task 3	This video covers IGP to IGP Redistribution with André Laurent reviewing Telnet to 5.5.5.5, task 3.	0:08
Lesson 11.8	Closing - Q&A	This is the closing video of the lesson covering IGP to IGP Redistribution.	0:07
Section 12	**Describe the purpose of first hop redundancy protocol**		
Lesson 12.1	HSRP Vs VRRP Vs GLBP Redundancy Protocols	This page provides a brief overview and comparison of common first hop redundancy protocols.	0:06
Lesson 12.2	Gateway redundancy protocols	This academic paper from the IEEE provides an in-depth look at the most popular protocols used to provide first hop redundancy, including HSRP, GLBP, and VRRP.	0:20
Lesson 12.3	Cisco HSRP Tutorial and Demonstration	This video from Keith Barker demonstrates the problems solved by redundancy protocols like HSRP and walks viewers through configuration of the protocol on Cisco devices.	0:23
Lesson 12.4	HSRP Overview And Basic Configuration	This community posting provides a wealth of information on HSRP.	0:09
IP Services			**36:01**
Section 1	**Exploring Popular Services with André Laurent**		
Lesson 1.1	Review of Default Route Injection	A Review of Default Route Injection kicks off the topic of Exploring Popular Services.	0:22
Lesson 1.2	Configuring DHCP Server and Infrastructure Settings	Highlighted in lesson two from André Laurent is Configuring DHCP Server and Infrastructure Settings.	0:23
Lesson 1.3	Configuring DHCP Client Reservations	Lesson three covers Configuration of DHCP Client Reservations.	0:19
Lesson 1.4	Configuring HSRP	Configuring HSRP is the focal point of lesson four regarding the Exploration of Popular Services.	0:24
Lesson 1.5	Tips, Tricks and Q&A	André Laurent provides some tips and tricks as well as a Q&A regarding the Exploration of Popular Services.	0:17
Section 2	**Configure and verify inside source NAT using static and pools**		
Lesson 2.1	Configure NAT	Configure NAT	
Section 3	**Configure and verify NTP operating in a client and server mode**		
Lesson 3.1	Describes how to configure the Network Time Protocol (NTP)	Describes how to configure the Network Time Protocol (NTP)	

Content	Title	Description	Estimated Duration (HH:MM)
Section 4	Fundamentals of Network Address Translation (NAT) with André Laurent		
Lesson 4.1	Environment Review and Intro to NAT	Fundamentals of Network Address Translation (NAT) with André Laurent.	0:20
Lesson 4.2	NAT Pools	This video covers Fundamentals of Network Address Translation (NAT) with André Laurent: by reviewing NAT Pools.	0:22
Lesson 4.3	NAT Overload	This video covers Fundamentals of Network Address Translation (NAT) with André Laurent: by reviewing NAT Overload.	0:21
Lesson 4.4	Static NAT and Static PAT	This video covers Fundamentals of Network Address Translation (NAT) with André Laurent: by reviewing Static NAT and Static PAT.	0:22
Lesson 4.5	NAT and Frame Relay	This video covers Fundamentals of Network Address Translation (NAT) with André Laurent: by reviewing NAT and Frame Relay.	0:22
Section 5	Services and Network Address Translation (NAT) with André Laurent		
Lesson 5.1	Intro – Session and Topology Overview	This video is an introduction to Services and Network Address Translation (NAT) with André Laurent.	0:10
Lesson 5.2	Review of Trouble Tickets	This video is the second in the series for Services and Network Address Translation (NAT) with André Laurent reviewing trouble tickets.	0:13
Lesson 5.3	DHCP Reservation – Task 2 – Part 1	This video is the third in the series for Services and Network Address Translation (NAT) with André Laurent reviewing DHCP Reservation task 2, part 1.	0:19
Lesson 5.4	DHCP Reservation – Task 2 – Part 2	This video is the fourth in the series for Services and Network Address Translation (NAT) with André Laurent reviewing DHCP Reservation task 2, part 2.	0:33
Lesson 5.5	DNS Resolution – Task 1 – Part 1	This video is the fifth in the series for Services and Network Address Translation (NAT) with André Laurent reviewing DHCP Reservation task 1, part 1.	0:18
Lesson 5.6	Loopback Reachability – Task 1 – Part 2	This video is the sixth in the series for Services and Network Address Translation (NAT) with André Laurent reviewing Loopback Reachability task 1, part 2.	0:10
Lesson 5.7	HSRP – Task 1 – Part 3	This video is the seventh in the series for Services and Network Address Translation (NAT) with André Laurent reviewing HSRP task 1, part 3.	0:15
Lesson 5.8	Closing – Q&A	This is the closing video of the series for Services and Network Address Translation.	0:02
Section 6	Explain the role of DHCP and DNS within the network		
Lesson 6.1	DNS and DHCP Explained	DNS and DHCP Explained	
Section 7	Explain the function of SNMP in network operations		
Lesson 7.1	Describes SNMP	Describes SNMP	

Content	Title	Description	Estimated Duration (HH:MM)
Section 8	**Describe the use of syslog features including facilities and levels**		
Lesson 8.1	Describes the parts of Syslog protocol, which is used to convey event notification messages.	Describes the parts of Syslog protocol, which is used to convey event notification messages.	
Section 9	**Configure and verify DHCP client and relay**		
Lesson 9.1	Configuring the Cisco IOS DHCP Relay Agent	Configuring the Cisco IOS DHCP Relay Agent	
Section 10	**Explain the forwarding per-hop behavior (PHB) for QoS such as classification, marking, queuing, congestion, policing, shaping**		
Lesson 10.1	Classification and Marking for Cisco DQOS and QOS Exams	Classification and Marking for Cisco DQOS and QOS Exams	
Section 11	**Configure network devices for remote access using SSH**		
Lesson 11.1	Technote on FAQ for Remote Access on Cisco ESA/WSA/SMA	Technote on FAQ for Remote Access on Cisco ESA/WSA/SMA	
Section 12	**Describe the capabilities and function of TFTP/FTP in the network**		
Lesson 12.1	TFTP Server Setup	TFTP Server Setup	
Section 13	**Define key security concepts (threats, vulnerabilities, exploits, and mitigation techniques)**		
Lesson 13.1	Threats, Vulnerabilities and Exploits – oh my!	This blog post from ICANN quickly and clearly defines some common security terminology that all network engineers and system administrators should know. You'll learn the difference between a threat, vulnerability, and exploit, and see how they all relate to one another.	0:04
Lesson 13.2	Network Security Threatscape – Introduction: Lesson 1: Threatscape Introduction and Overview	In this free CCNA Security training video, James Risler introduces the broad issues imposed by cyber threats that we see today.	0:12
Lesson 13.3	Network Security Threatscape – Introduction: Lesson 2: DoS Attacks, Spoofing, Smurf Attacks, and Phishing	In this free CCNA Security training video, James Risler continues his introduction of broad issues imposed by cyber threats that we see today. He continues by explaining DoS Attacks, (or Denial of Service Attacks), known as the attempt to make a computer or network resource unavailable for intended use.	0:12
Lesson 13.4	Network Security Threatscape – Introduction: Lesson 3: Pharming, Password and Reconnaissance Attacks, and Types of Malicious Software	James Risler continues explaining the broad issues imposed by cyber threats that we see today by introducing us to Pharming, Password and Reconnaissance Attacks, and by going through types of malicious software.	0:18

Content	Title	Description	Estimated Duration (HH:MM)
Section 14	Describe password and security program elements (user awareness, training, physical access control, multifactor and certificate based authentication etc.)		
Lesson 14.1	Developing Network Security Strategies | Network Security Design	To help you handle the difficulties inherent in designing network security for complex networks, this chapter teaches a systematic, top-down approach that focuses on planning and policy development before the selection of security products.	1:30
Lesson 14.2	SANS Institute Information Security Reading Room: Inadequate Password Policies Can Lead to Problems	This paper from the SANS institue details the importance of a good password policy, and explores some of the considerations that should go into making such a policy.	0:13
Lesson 14.3	Troy Hunt: Passwords Evolved: Authentication Guidance for the Modern Era	This blog post from cybersecurity expert Troy Hunt provides a wealth of information and real-world examples of modern password policies good and bad.	0:32
Section 15	Configure device access control using local passwords		
Lesson 15.1	Network Security Baseline	This document outlines the key security elements identified for Network Security Baseline, along with implementation guidelines to assist in their design, integration, and deployment in production networks.	1:30
Lesson 15.2	Cisco IOS Password Encryption Facts	This document explains the security model behind Cisco password encryption, and the security limitations of that encryption.	0:06
Section 16	Describe remote access and site-to-site VPNs		
Lesson 16.1	Network World: VPNs explained	This article by Zeus Kerravala explains VPNs and how they relate to WAN and IoT.	0:10
Section 17	Configure and verify access control lists		
Lesson 17.1	Understanding Access Control Lists	This blog post looks into basic configuration of standard IP ACLs also known as Access Lists or in some cases filters.	0:07
Lesson 17.2	Access-list tutorial	This tutorial video by Keith Barker demonstrates how to create and use an access-list for filtering on a Cisco IOS router.	0:13
Lesson 17.3	Introduction to Access Lists	This video by André Laurent gives an introduction to access lists.	0:34
Lesson 17.4	More on Access Lists	This video continues the discussion on access lists in part 2.	0:57
Lesson 17.5	Access Lists Continued	This video continues the discussion on access lists in part 3.	0:09
Lesson 17.6	Access Lists Testing and Verification	In this video, André Laurent discusses Access Lists Testing and Verification.	0:32
Lesson 17.7	Closing and Q&A	This is the final video closing the lesson and answering any questions that were had.	0:40

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Content	Title	Description	Estimated Duration (HH:MM)
Section 18	**Configure Layer 2 security features (DHCP snooping, dynamic ARP inspection, and port security)**		
Lesson 18.1	Implementing Port Security: Lesson 1: What is Port Security?	This video begins with a look at some common Layer 2 attacks before moving into a high level overview of port security.	0:10
Lesson 18.2	Implementing Port Security: Lesson 2: Port Security Configuration Overview	This video covers basic configuration and verification of port security on Cisco IOS devices.	0:05
Lesson 18.3	Implementing Port Security: Lesson 3: Port Security Lab Demonstration - Part 1	In this video, presenter Du'An Lightfoot demonstrates port security in action, showing us examples of a Cisco switch responding to various types of port security violations.	0:20
Lesson 18.4	Implementing Port Security: Lesson 3: Port Security Lab Demonstration - Part 2	This video continues the demonstration of port security in action.	0:18
Lesson 18.5	DHCP Snooping: Basic Concepts and Configuration	Mason Harris, CCIE #5916 and co-author of CCNA Security 210-260 Complete Video Course, provides a streamlined introduction to DHCP snooping, a barrier to denial-of-service and man-in-the-middle attacks on organizational networks.	0:06
Lesson 18.6	Dynamic ARP Inspection (DAI)	This chapter describes Layer 2 security basics and security features on switches available to combat network security threats.	0:05
Section 19	**Zone-Based Policy Firewall (ZFW) with André Laurent**		
Lesson 19.1	NAT & Security Review	This video begins the high level disccusion of zone-based policy firewall (ZFW) with a NAT & Security review.	0:22
Lesson 19.2	The Problem with ACLs	This video continues the discussion of zone-based policy firewall with the problem with ACLs.	0:23
Lesson 19.3	ZFW Basic Setup Process	In this video, André Laurent discusses the ZFW basic setup process.	0:23
Lesson 19.4	ZFW Application 1	This video goes over application 1 of ZFW with André Laurent.	0:23
Lesson 19.5	ZFW Application 2	This video goes over application 2 of ZFW with André Laurent.	0:23
Lesson 19.6	The Old Firewalling Method and Final Walk Through	This is the final video for this lesson. It covers the Old Firewalling Method and Final Walk Through for ZFW.	0:18
Section 20	**Deep Dive on Zone-Based Policy Firewall with André Laurent**		
Lesson 20.1	Intro - Session and Topology Overview	This video begins the conversation of Zone-Based Policy Firewall with André Laurent, starting with session and topology overview.	0:10
Lesson 20.2	Review of Trouble Tickets	This video continues the deep dive into zone-based policy firewall by the review of trouble tickets.	0:08
Lesson 20.3	Router Hostname Reachability Task 1 – Part 1	Part 1 of Router Hostname Reachability continuing the discussion around zone-based policy firewall with André Laurent.	0:17

Content	Title	Description	Estimated Duration (HH:MM)
Lesson 20.4	Router Hostname Reachability Task 1 and 2 – Part 2	Part 2 of Router Hostname Reachability continuing the discussion around zone-based policy firewall with André Laurent.	0:30
Lesson 20.5	Router Hostname Reachability Task 1 and 2 – Part 3	Part 3 of Router Hostname Reachability continuing the discussion around zone-based policy firewall with André Laurent.	0:22
Lesson 20.6	Did we solve task 1 and 2 or not?	Part 4 of Router Hostname Reachability continuing the discussion around zone-based policy firewall with André Laurent.	0:18
Lesson 20.7	End to end reachability – Task 3	This video is a deep dive on zone-based policy firewall and end to end reachability with André Laurent	0:12
Section 21	Differentiate authentication, authorization, and accounting concepts		
Lesson 21.1	Authentication, Authorization, and Accounting	This page introduces fundamental AAA concepts.	0:10
Section 22	Describe wireless security protocols (WPA, WPA2, and WPA3) and configure a WLAN using WPA2 PSK using the GUI.		
Lesson 22.1	A brief history of Wi-Fi security protocols from "oh my, that's bad" to WPA3	This primer from Ars Technica explores the evolution of wireless security, from WEP to the latest WPA3 standard.	0:13
Lesson 22.2	WPA2-PSK and Open Authentication with Cisco 5760 WLC Configuration Example	This configuration example details setup of a WLAN using WPA2 PSK.	0:30
Automation and Programmability			**6:52**
Section 1	Explain how automation impacts network management		
Lesson 1.1	Network Automation – Now!	This blog post from Cisco's Tomer Dichterman explains some of the reasons automation is required in today's networks and introduces some of Cisco's automation solutions for the Enterprise network.	0:09
Lesson 1.2	The Hybrid Engineer Movement: Are You Part of It?	In this free training video, Salman Asadullah introduces technology transitions that have led to the creation of the Hybrid Engineer's role.	0:12
Section 2	Describe controller-based and software defined architectures (overlay, underlay, and fabric) and compare with traditional networking models		
Lesson 2.1	A Deeper Look at Software-Defined Access on TechWiseTV	This episode of TechWiseTV provides a deeper dive into the technologies and terminology of the Software Defined Access (SD-Access) Solution. You'll learn about overlays, underlays, network fabrics, and how each of these interact as part of SD-Access.	0:29
Lesson 2.2	What is SDN and where software-defined networking is going	This article from Network World provides an overview of a software-defined architecture and explains some of the benefits delivered by such an architecture.	0:16
Lesson 2.3	Introduction to Software-Defined Access on TechWiseTV	This session from TechWiseTV explores the challenges of enterprise networks today before introducing Cisco's DNA Center Controller and the Software-Defined Access (SD-Access) Solution.	0:31

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Content	Title	Description	Estimated Duration (HH:MM)
Section 3	Compare traditional campus device management with Cisco DNA Center enabled device management		
Lesson 3.1	Network Intuitive Cisco DNA Center: Lesson 1: Reduce Time and Complexity	In this Cisco DNA Center Overview, Khurram Hassan, Technical Marketing Engineer for Cisco's DNA Center, begins by presenting an overview of The Cost of Doing Business in the Digital World. Khurram further reviews how changes are currently made to most network environments today and how existing network management tools are just not working efficiently. Using scenario based examples, he demonstrates real-world scenarios of how Cisco's DNA Center can automate network tasks, saving time and money.	0:13
Section 4	Describe characteristics of REST-based APIs (CRUD, HTTP verbs, and data encoding)		
Lesson 4.1	Programmability Exam Topics	This webinar with Cisco expert Wendell Odom explores some of the programmability topics found on the 200-301 exam and compares them with similar topics in the new CCNP Enterprise Core Exam.	0:43
Lesson 4.2	Programs and Variables	In this webinar, Wendell Odom provides a high-level view of programs and variables.	0:12
Lesson 4.3	REST (Representational State Transfer) APIs	In this video, Wendell Odom discusses REST (Representational State Transfer) APIs as they relate to JSON.	0:27
Lesson 4.4	CRUD (Create, Read, Update, and Delete)	In this video, Wendell Odom discusses CRUD (Create, Read, Update, and Delete) as it relates to JSON.	0:25
Lesson 4.5	Introduction to Model Driven Programmability (ex: NETCONF/YANG)	In this learning module from Cisco DevNet, you'll explore the reasons behind the move to Model Driven Programmability from traditional interfaces such as CLI/SNMP, learn about the interaction between YANG data models and the new standard transport protocols of NETCONF and RESTCONF, and discover how to leverage NETCONF/RESTCONF to query and configure network devices.	1:30
Section 5	Recognize the capabilities of configuration management mechanisms Puppet, Chef, and Ansible		
Lesson 5.1	Chef vs Puppet vs Ansible vs Saltstack | Configuration Management Tools	This "Chef vs Puppet vs Ansible vs Saltstack" comparison video will compare the DevOps configuration management tools Chef, Puppet, Ansible and Saltstack in terms of their capabilities, architecture, performance, ease of setup, language, scalability and pros and cons.	0:14
Section 6	Interpret JSON encoded data		
Lesson 6.1	JSON (JavaScript Object Notation)	Wendell Odom discusses some of the terminology and syntax behind JSON.	0:12

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Content	Title	Description	Estimated Duration (HH:MM)
Section 7	JSON and REST for the CCNA Exam with Wendell Odom		
Lesson 7.1	Programmability Exam Topics	In this video, Wendell Odom discusses programmability exam topics for the CCNA exam.	0:08
Lesson 7.2	Programs and Variables	In this video, Wendell Odom discusses programs and variables as they relate to JSON and REST.	0:13
Lesson 7.3	JSON (JavaScript Object Notation)	In this video, Wendell Odom discusses JSON for the CCNA Exam.	0:20
Lesson 7.4	REST (Representational State Transfer) APIs	In this video, Wendell Odom discusses REST (Representational State Transfer) APIs as they relate to JSON.	0:27
Lesson 7.5	CRUD (Create, Read, Update, and Delete)	In this video, Wendell Odom discusses CRUD (Create, Read, Update, and Delete) as it relates to JSON.	0:11

Additional CCNA Resources:

Instructor-led training

New CCNA Study Group

CLN Podcasts

New Cisco CCNA Certification Explained Video

Big Changes Mean Big Opportunities with the new CCNA Blog

CCNA Preparation Bundle Save 25% on this bundle, which includes the e-learning course, plus an exam review tool and voucher for the CCNA exam. Registration is now open to take the new exams available on February 24, 2020. Reserve your seat today!