

# Overview of Technical Topics in The New CCNA

Semyon Ovsyannikov  
NetAcad Technical Manager Europe  
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# Agenda:

1. Certification Exam Changes
2. Netacad Course Changes
3. Transition to The Version 7

# 200-301 CCNA Certification Exam Changes

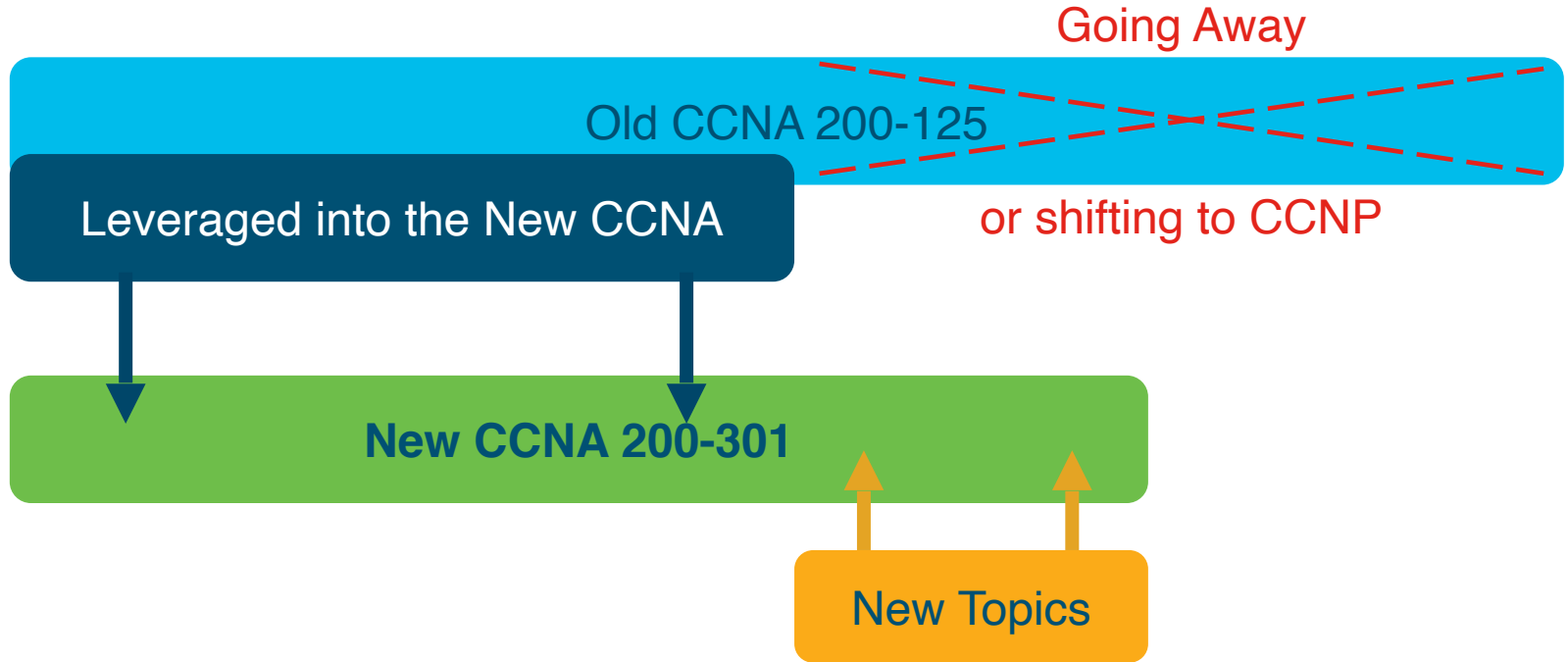
**DISCLAIMER: Exam is still in development, no one has seen it yet...**

# How CCNA Certification is Changing?

200-125 → 200-301

- 10 CCNA Certifications
- CCENT as a Prerequisite for some
- ICND1+ICND2 = CCNA RS
- No Prerequisites
- No CCENT
- No 2 exams scheme

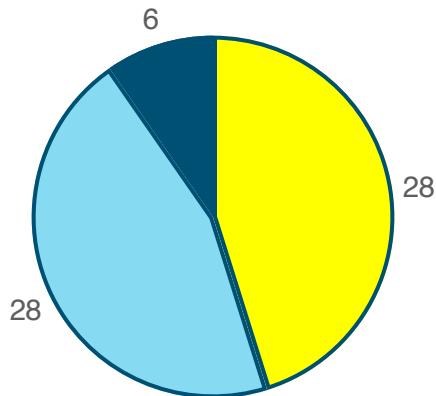
# Exam Blueprint Composition



# Theory / Practice Balance in the Blueprint

- Represented by the Number of Exam Blueprint Statements
- Does not reflect real efforts balance as each topic is different

## Old CCNA



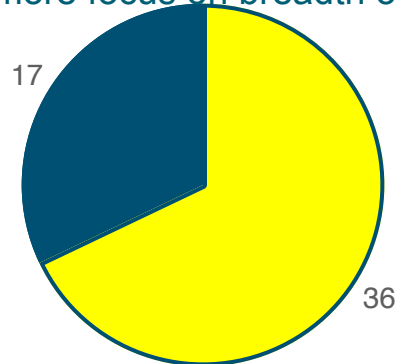
...had more focus on troubleshooting

● Theory ● Configure, Verify, T-Shoot ● Configure, Verify

34 Config or T-Shoot Tasks

## New CCNA

...has more focus on breadth of knowledge



● Theory ● Configure, Verify, T-Shoot ● Configure, Verify

17 Config Tasks (no T-Shoot)

## Key topics removed from blueprint:

- **VTP (1,2)**
- **Multi-area OSPF**
- **OSPFv3**
- **HSRP**
- **NetFlow**
- **EIGRP**
- **RIP, RIPv2**
- **BGP**
- **PPP, PPOE, HDLC**
- **GRE**

# Certification Exam Change reflection

- More breadth in theory touching many areas
- Increased exam duration to 120 minutes
- Less emphasis on advanced configuration
- Troubleshooting skills are moved to CCNP level

## Netacad Course changes

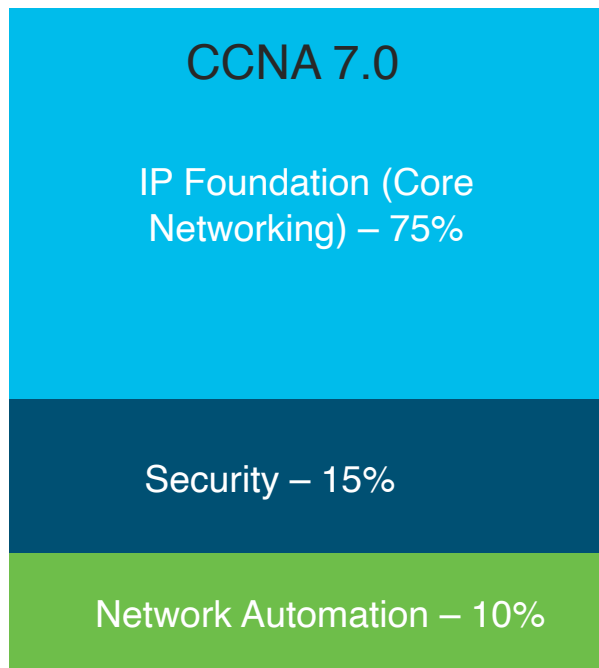
- Maintains solid foundational base for IP Foundation
- Retains about 55% of the CCNA v6 Curriculum
- Some fundamental topics excluded from the Exam are still needed in the CCNA Course, ex. WAN Topologies, IPSec, T-shoot methodologies



# Netacad Course Changes

**EARLY DRAFT DISCLAIMER: Course content and Sequence, including Chapters and Topics Naming, Size and order may change by the course release**

# CCNA 7 Focus Areas and Major Differences



CCNA v6

280 hrs

4 Courses

CCENT /  
CCNA



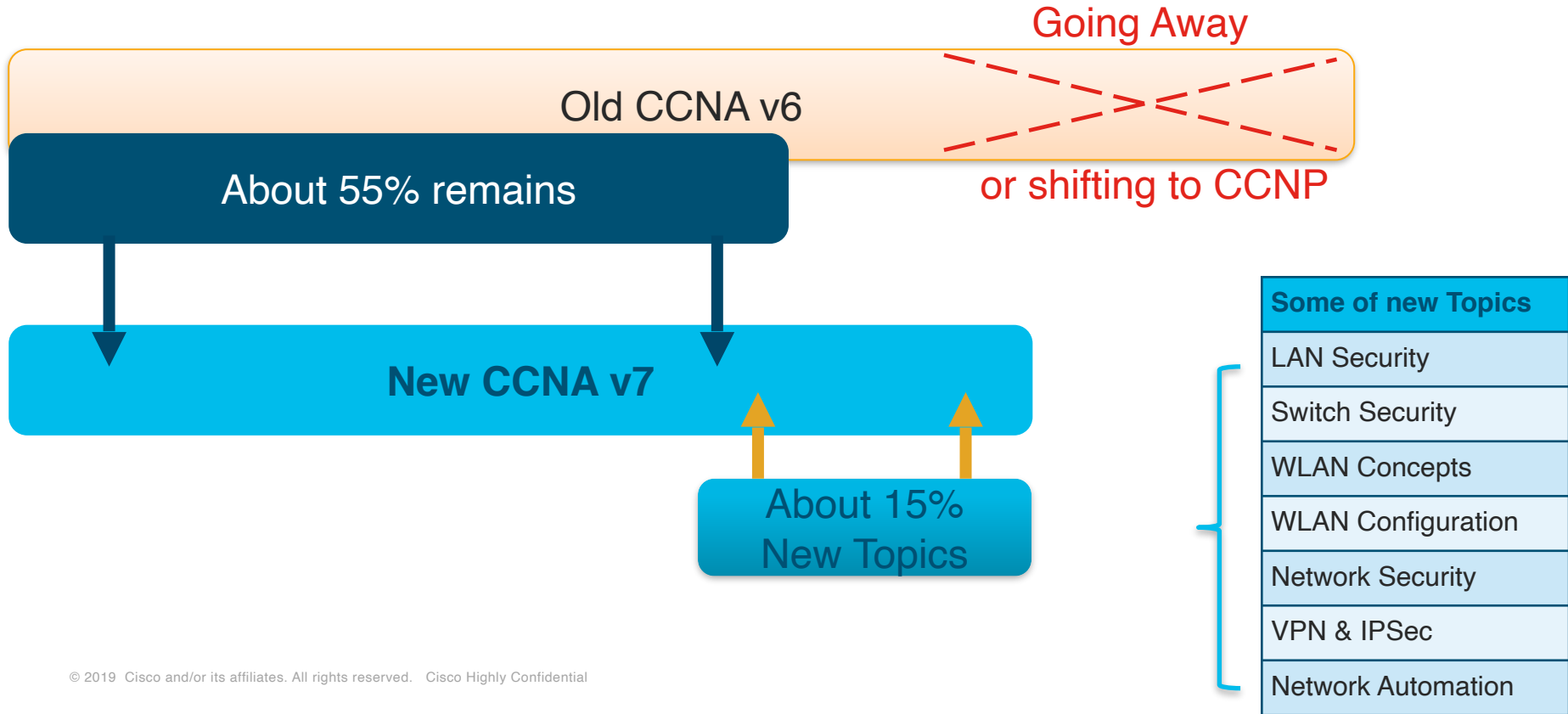
CCNA 7.0

~ 200 hrs

3 Courses

CCNA

# Relative Netacad Course Comparison by Size



# CCNA 7.0 Course Outlines

CCNA v7 Course #1
Networking Today
Basic Switch and End Device Configuration
Protocol Models
Physical Layer
Number Systems
Data Link Layer
Ethernet Switching
Network Layer
Address Resolution
Basic Router Configuration
IPv4 Addressing
IPv6 Addressing
ICMP
Transport Layer
Application Layer
Network Security Fundamentals
Build a Small Network

CCNA v7 Course #2
Basic Device Configuration
Switching Concepts
VLANs
Inter-VLAN Routing
STP
Etherchannel
DHCPv4
SLAAC and DHCPv6 Concepts
FHRP Concepts
LAN Security Concepts
Switch Security Configuration
WLAN Concepts
WLAN Configuration
Routing Concepts
IP Static Routing
Troubleshoot Static and Default Routes

CCNA v7 Course #3
Single-Area OSPFv2 Concepts
Single-Area OSPFv2 Configuration
WAN Concepts
Network Security Concepts
ACL Concepts
ACLs for IPv4 Configuration
NAT for IPv4
VPN and IPsec Concepts
QoS Concepts
Network Management
Network Design
Network Troubleshooting
Network Virtualization
Network Automation

\_\_\_ New/significantly changed  
content

[Download Draft Scope and Sequence](#)

What is New?

# CCNA R&S v6

## Chapters

Introduction to Networks (ITN)
Explore the Network
Configure a Network Operating System
Network Protocols and Communications
Network Access
Ethernet
Network Layer
IP Addressing
Subnetting IP Networks <ul style="list-style-type: none"><li>• <b>CIDR</b></li></ul>
Transport Layer
Application Layer
Build a Small Network

# New CCNA-1

## 17 Modules

CCNA-1 v.7
Networking Today
Basic Switch and End Device Configuration
Protocol Models
Physical Layer
Number Systems <ul style="list-style-type: none"><li>• <b>Hexadecimal</b></li></ul>
Data Link Layer
Ethernet Switching
Network Layer
Address Resolution
Basic Router Configuration
IPv4 Addressing ( <b>Reduced and Updated</b> )
IPv6 Addressing <ul style="list-style-type: none"><li>• <b>Network Discovery</b></li></ul>
ICMP
Transport Layer
Application Layer
Network Security Fundamentals
Build a Small Network

**DRAFT: Topics may change by the course release**



# CCNA R&S v6 Chapters

New  
from RSE  
From ScaN

# New CCNA-2 17 Modules

Routing & Switching Essentials (RSE)
Routing Concepts
Static Routing
Dynamic Routing
Switched Networks
Switch Configuration
VLANs
Access Control List
DHCP
NAT for IPv4
Device Discovery, Management & Maintenance

Scaling Networks (ScaN)
LAN Design
Scaling VLANs
STP
EtherChannel and HSRP
Dynamic Routing
EIGRP (CCNP)
EIGRP Tuning and Troubleshooting
Single-Area OSPF
Multiarea OSPF
OSPF Tuning and Troubleshooting

CCNA-2 v.7
Basic Device Configuration (from RSE)
Switching Concepts (from RSE)
VLANs (from RSE & ScaN)
Inter-VLAN Routing (from ScaN)
STP (from ScaN)
EtherChannel (From ScaN)
DHCPv4 (from RSE)
SLAAC and DHCPv6 Concepts (from RSE)
FHRP Concepts (From ScaN)
LAN Security Concepts (New)
Switch Security Configuration (New)
WLAN Concepts (New)
WLAN Configuration (New)
Routing Concepts (from RSE)
IPv4 Static Routing (from RSE)
IPv6 Static Routing (from RSE)
Troubleshoot Static and Default Routes (from RSE)

**DRAFT: Topics may change by the course release**



# CCNA R&S v6

## Chapters

Scaling Networks (ScaN)
LAN Design
Scaling Networks
STP
EtherChannel
Dynamic Routing
EIGRP
EIGRP Tuning and Troubleshooting
Single-Area OSPF
Multiarea OSPF
OSPF Tuning and Troubleshooting

Connecting Network (CN)
WAN Concepts
Point-to-Point Connections
Branch Connections
Access Control Lists
Network Security and Monitoring
Quality of Service
Network Evolution
Network Troubleshooting

# New CCNA-3

## 14 Modules

New

from CN

from ScaN

from RSE

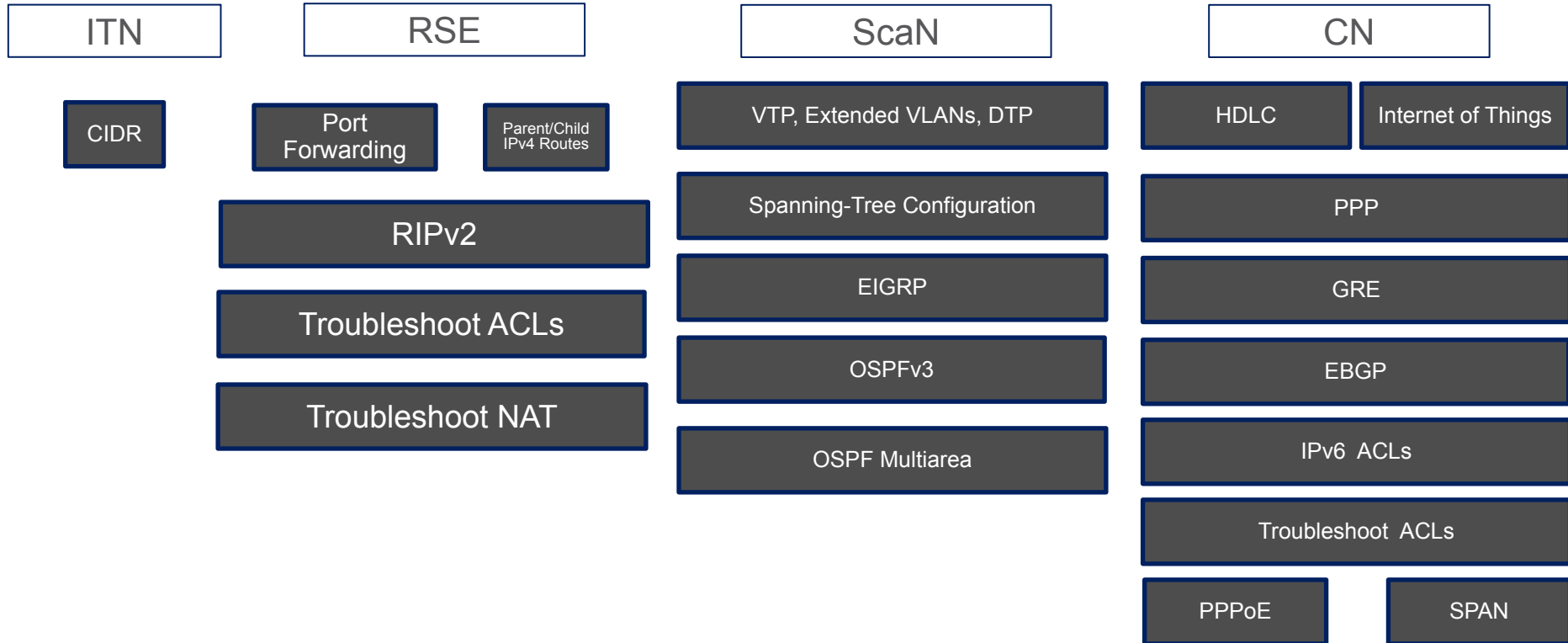
CCNA-3 v.7
Single-Area OSPFv2 Concepts (from ScaN)
Single-Area OSPFv2 Configuration (from ScaN)
WAN Concepts (from CN)
Network Security Concepts (New)
ACL Concepts (from CN)
ACL for IPv4 Configuration (from CN)
NAT for IPv4 (from RSE)
VPN and IPsec Concepts (New)
QoS Concepts (from CN)
Network Management (RSE & CN)
Network Design (RSE & ScaN)
Network Troubleshooting (from CN)
Network Virtualization (from CN)
Network Automation (New)

**DRAFT: Topics may change  
by the course release**



What is Leaving CCNA?

# CCNA R&S v6 Content Removed reference by size



# CCNA R&S v6 Content Removed in Details for RSE, ScaN, CN

**DRAFT: Topics may change by the course release**

Routing & Switching Essentials (RSE)
Routing Concepts
Static Routing
Dynamic Routing (Moved to CCNA 3) <ul style="list-style-type: none"> <li>3.2 RIPv2</li> <li>3.3.2 Parent and Child Routes</li> </ul>
Switched Networks
Switch Configuration
VLANs
Access Control List (Moved to CCNA 3) <ul style="list-style-type: none"> <li>7.3 Troubleshoot ACLs (CCNP)</li> </ul>
DHCP
NAT for IPv4 (Moved to CCNA 3) <ul style="list-style-type: none"> <li>9.2.4 Configure Port Forwarding</li> <li>9.3 Troubleshoot NAT (CCNP)</li> </ul>
Device Discovery, Management (Moved to CCNA 3) & Maintenance <ul style="list-style-type: none"> <li>10.3.2 Device Maintenance</li> </ul>

Scaling Networks (ScaN)
LAN Design (Moved to CCNA 2)
Scaling Networks <ul style="list-style-type: none"> <li>2.1 VTP, Extended VLANs &amp; DTP</li> <li>2.2.3 VTP and DTP Issues</li> </ul>
STP (Moved to CCNA 2) ?? Moved some to CCNP
EtherChannel and HSRP (Course 2) ?? Moved HSRP
Dynamic Routing <ul style="list-style-type: none"> <li>5.2 Distance Vector Dynamic Routing (CCNP)</li> <li>5.3 Link-State Dynamic Routing (CCNP)</li> </ul>
EIGRP (CCNP)
EIGRP Tuning and Troubleshooting (CCNP)
Single-Area OSPF <ul style="list-style-type: none"> <li>8.3 Single Area OSPFv3 (CCNP)</li> </ul>
Multiarea OSPF (CCNP)
OSPF Tuning and Troubleshooting (CCNP)

Connecting Network (CN)
WAN Concepts
Point-to-Point Connections
Branch Connections <ul style="list-style-type: none"> <li>3.2 PPPoE</li> <li>3.4 GRE (CCNP)</li> <li>3.5 eBGP (CCNP)</li> </ul>
Access Control Lists <ul style="list-style-type: none"> <li>4.3 IPv6 ACLs (CCNP)</li> <li>4.4 Troubleshoot ACLs (CCNP)</li> </ul>
Network Security and Monitoring <ul style="list-style-type: none"> <li>5.3 Cisco Switch Port Analyzer (SPAN) (CCNP)</li> </ul>
Quality of Service
Network Evolution <ul style="list-style-type: none"> <li>7.1 Internet of Things</li> </ul>
Network Troubleshooting <ul style="list-style-type: none"> <li>8.3 NetFlow (CCNP)</li> </ul>



What is Shifting to CCNP?

# CCNA 6.0 Content Shifted to CCNP

CCNA v6	CCNP Enterprise Core
Old CCNA-2 (RSE Course)	Troubleshoot ACLs
	Troubleshoot NAT
Old CCNA-3 (ScaN Course)	Spanning Tree Configuration
	Distance Vector Dynamic Routing
	Link-State Dynamic Routing
	EIGRP Characteristics
	Implement EIGRP for IPv4
	EIGRP Operation
	Implement EIGRP for IPv6
	Tune EIGRP
	Troubleshoot EIGRP
	Single-area OSPFv3
	Multiarea OSPF Operation
	Implement Multiarea
	Troubleshooting Single-Area OSPF Implementations
Old CCNA-4 (CN Course)	GRE
	eBGP
	Introducing IPsec
	IPv6 ACLs
	Troubleshoot ACLs
	Cisco Switch Port Analyzer (SPAN)
	NetFlow

# 7 New Modules in Details

# New Module: LAN Security Concepts

**DRAFT: Topics may change  
by the course release**

- **Endpoint Security:** Network attacks, Security devices, Endpoint Protection, Email and Web Security
- **Access Control:** Local Password, Authentication, Authorization, Accounting, 802.1x
- **Security Threats:** Layer 2 Vulnerabilities, Switch Attack Categories, Switch attack mitigation techniques
- **MAC Address Table Attacks** and mitigation
- **LAN Attacks:** VLAN Hopping, VLAN Double Tagging, DHCP Attacks, ARP Attacks, Address Spoofing attacks, STP Attacks, CDP Reconnaissance

# New Module: Switch Security Configuration

**DRAFT: Topics may change  
by the course release**

- **Implement Port Security:** Secure unused ports, Mitigate MAC Address Table Attacks, Enable Port Security, Limit and Learn MAC Addresses, Port Security Aging, Port Security Violation Modes, Ports in err-disabled state, Verify Port Security
- Mitigate **VLAN** Attacks: Mitigate VLAN Hopping
- Mitigate **DHCP** Attacks: DHCP Snooping, Configuration
- Mitigate **ARP** Attacks: Dyn ARP Inspection, DAI Implementation
- Mitigate **STP** Attacks: PortFast and BPDU Guard, Configuration



# New Module: WLAN Concepts

**DRAFT: Topics may change  
by the course release**

- **Introduction to Wireless:** Benefits of Wireless, Type of Wireless networks, Wireless Technologies, 802.11, Radio Frequencies, Wireless Standards Organizations
- **WLAN Components:** Wireless NIC, Wireless Home Router, Wireless Access Point, AP Categories, Wireless Antennas
- **WLAN Operation:** 802.11 Modes, BSS and ESS, 802.11 Frame Structure, CSMA/CA, Client and AP Association, Passive and Active discovery
- **CAPWAP Operation:** Introduction to CAPWAP, Split MAC Architecture, DTLS Encryption, FlexConnect APs
- **Channel Management:** Frequency Channel Saturation, Channel Selection, Planning a WLAN Deployment
- **WLAN Threats:** DoS attacks, Rogue Access Points, MITM Attack
- **Secure WLANs:** SSID Cloaking and MAC Filtering, 802.11 Original Auth. Methods, Shared Key auth. Methods, Authenticating a home user, Encryption Methods, Auth. In the Enterprise, WPA3

# New Module: WLAN Configuration

**DRAFT: Topics may change  
by the course release**

- **Remote Site WLAN Configuration:** Wireless Router, Log in to Wireless Router, Basic Network setup, Configure a wireless mesh network, NAT for IPv4, QoS
- **Configure a Basic WLAN on the WLC:** WLC Topology, Log into the WLC, View AP Information, Advanced Settings, Configure a WLAN
- **Configure a WPA2 Enterprise WLAN on the WLC:** SNMP and RADIUS, Configure SNMP Server Information, Configure RADIUS Server Information, Configure a VLAN for a New WLAN, Topology with VLAN 5 Addressing, Configure a new Interface, Configure a DHCP in a new WLAN, Configure DHCP Scope, Configure WPA2 Enterprise WLAN
- **Troubleshoot WLAN Issues:** Wireless Client not connecting, Network is slow, Updating Firmware

# New Module: Network Security Concepts

**DRAFT: Topics may change  
by the course release**

- **Current State of Cybersecurity:** Current state of Affairs, Vectors of network attacks, Data Loss
- **Threat Actors:** The Hacker, Evolution of Hackers, Cyber Criminals, Hacktivists, State-Sponsored Hackers
- **Threat Actor Tools:** Attack Tools, Evolution of Security Tools, Attack Types
- **Malware:** Viruses and Trojan Horses, Types of Malware
- **Common Network Attacks:** Reconnaissance, Access, Social Engineering, Dos and DDoS
- **IP Vulnerabilities and Threats:** ICMP, Amplification and Reflection, Address Spoofing Attacks
- **TCP and UDP Vulnerabilities:** TCP and UDP Segment Header, TCP Services, TCP Attacks, UDP Attacks
- **IP Services:** ARP Vulnerabilities, ARP Cache poisoning, DNS Attacks, DNS Tunneling, DHCP Attacks
- **Network Security Best Practices:** CIA, Defence-in-Depth approach, Firewalls, IPS, Content Security Appliances
- **Cryptography:** Securing communication, Data Integrity, Hash Functions, Origin Auth., Data Confidentiality, Symmetric Encryption, Asymmetric Encryption, Deffie-Helman

# New Module: VPN and IPsec Concepts

**DRAFT: Topics may change  
by the course release**

- **VPN Technology:** VPN Benefits, Site-to-Site and Remote-access VPN, Enterprise and Service provider VPN
- **Types of VPN:** Remote-access, SSL, Site-to-Site IPsec, GRE over IPsec, DMVPN, IPsec Virtual Tunnel Interface, Service Provider MPLS
- **IPsec:** IPsec concepts, IPsec technologies, IPsec protocol encapsulation, Confidentiality, Integrity, Authentication, Secure Key Exchange with DH, IPsec transport and Tunnel modes

# New Module: Network Automation

**DRAFT: Topics may change  
by the course release**

- **Automation Overview**
- **Data Formats:** Data formats concept, data format rules, JSON, YAML, XML
- **APIs:** API Concept, API Example, Open, Internal and Partner APIs, Types of Web Service APIs
- **REST:** REST and RESTful API, RESTful implementation, URI/URN/URL, Anatomy of RESTful Request, RESTful API Applications
- **Configuration Management Tools:** Traditional Network Configuration, Network Automation, Ansible, Chef, Puppet, SaltStack
- **IBN and Cisco DNA Center:** Intent Based Networking, Network Infrastructure as Fabric, Cisco DNA, CDA Center

Transition to the Version 7

# No Re-Training Enforcement for Current Instructors



- No Obligatory Additional Training Needed
  - Instructor Training Accreditation Grandfathered to CCNAv7
  - Highly Recommended to Study New Content
- ...more details on the Next Slide

# CCNA Instructor Qualification Mapping

<b>CCNA R&amp;S v6 Course Qualification(s)</b>	<b>CCNA v7 Qualification Earned</b>	<b>Materials to Review*</b>
<b>CCNA 1 (Intro to Networks)</b>	CCNA 1	No additional
<b>CCNA 1 (Intro to Networks) CCNA 2 (Routing &amp; Switching Essentials)</b>	CCNA 1 CCNA 2	CCNA2 v7
<b>CCNA 1 (Intro to Networks) CCNA 2 (Routing &amp; Switching Essentials) CCNA 3 (Scaling Networks)</b>	CCNA 1 CCNA 2 CCNA 3	CCNA3 v7 + Bridging Course
<b>CCNA 1 (Intro to Networks) CCNA 2 (Routing &amp; Switching Essentials) CCNA 3 (Scaling Networks) CCNA 4 (Connecting Networks)</b>	CCNA 1 CCNA 2 CCNA 3	Bridging Course

\*Self-enroll in the IPD Week class at <http://cs.co/ipd20>



# Recommended Action Plan for Instructors



I am Trained (v6)	Best Advice for Next Step (v7)
CCNA 1	Teach Students for CCNA1 Only Apply for Instructor Training for CCNA 2, 3
CCNA 1,2	Apply for Instructor Training for CCNA 3 Study New Topics, Bridging Course
CCNA 1,2,3	Study New Topics, Bridging Course
CCNA 1,2,3,4	Study New Topics, Bridging Course

# Resources for Upskilling

NetAcad IPD Week  
September 23-27, 2019



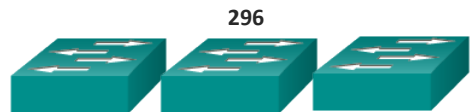
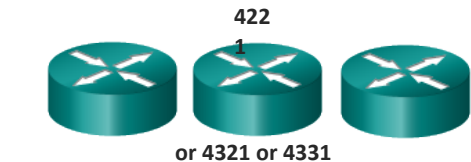
- IPD Week **Archive**: DNA Center, Puppet, Chef and Ansible, REST API, SDN and Open Source, WLAN Fund., WLAN Security
- **This** IPD Week: Network Sec., LAN Sec, Network Virtualization, Virtualization and Cloud Computing
- **Future** IPD Weeks: Dec 9-13, Feb 17-21, May 4-8
- Bridging Course, coming soon
- New CCNAv7 Course, Release Nov 2019

# Plan For Instructor Trainers



- Highly Recommended to Study New Content
- Must Keep Valid CCNA Certification to maintain ITQ
- Plan Upskilling Sessions for Your Community
- Plan to Offer CCNAv7 Instructor Training once the Course is released

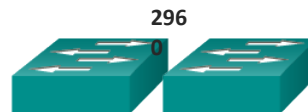
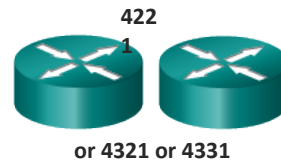
# CCNA 6 vs CCNA v7 Minimal Lab Bundle



Server



Various end devices



Server



SOHO  
WiFi Router



Various end devices



PT for 3-router  
topologies

## **Join the Special Session of IPD Week: Program Updates on CCNAv7**

### **2 Options:**

25 September at 3:00 p.m. UTC  
or  
26 September at 3:30 a.m. UTC



# Questions?





Networking  
**CISCO** Academy