CCNAv7
SRWE Bridging Course Scope and Sequence

Last Updated December 10, 2019

Target Audience

The Cisco Networking Academy® CCNAv7 Switching, Routing and Wireless Essentials (SRWE) Bridging course is designed for students who have or are currently taking CCNAv6 and will be taking the Cisco Certified Network Associate v2.0 (CCNA 200-301) Certification Exam. This course covers new content not covered in CCNAv6 in the form of four modules: LAN Security Concepts, Switch Security Configuration, WLAN Concepts, and WLAN Configuration. These module provide learners extensive opportunities for hands-on practical experience and career skills development.

The curriculum is appropriate for learners at many education levels and types of institutions, including high schools, secondary schools, universities, colleges, career and technical schools, and community centers.

Prerequisites

Students are required to have successfully completed the CCNAv6 Routing and Switching Essentials course prior to beginning the SRWE Bridging course. Learners are also expected to have the following skills:

- High school reading level.
- Basic computer literacy
- Basic PC operating system navigation skills
- Basic internet usage skills

CCNAv7 Curriculum Description

In this curriculum, Cisco Networking Academy™ participants develop workforce readiness skills and build a foundation for success in networking-related careers and degree programs. With the support of video and rich interactive media, participants learn, apply and practice CCNA knowledge and skills through a series of in-depth hands-on experiences and simulated activities that reinforce their learning.

CCNAv7 SRWE Bridging Course includes the following features:

- Each offering is comprised of multiple modules. Each module is comprised of topics.
- Modules emphasize critical thinking, problem solving, collaboration, and the practical application of skills.
- Each topic contains a Check Your Understanding interactive quiz, or some other way to assess understanding, such as a lab or a Packet Tracer. These topic-level assessments are designed to tell learners if they have a good grasp of the topic content, or if they need to review before continuing. Learners can ensure their level of understanding well before taking a graded quiz or exam. Check Your Understanding quizzes do not affect the learner's overall grade.
- Students learn the basics of routing, switching, and advanced technologies to prepare for the Cisco CCNA exam, networking-related degree programs, and entry-level networking careers.
- The language used to describe networking concepts is designed to be easily understood by learners at all levels and embedded interactive activities help reinforce comprehension.

- Assessments and practice activities are focused on specific competencies to increase retention and provide flexibility in the learning path.
- Multimedia learning tools, including videos, games, and quizzes, address a variety of learning styles and help stimulate learning and promote increased knowledge retention.
- Hands-on labs and Cisco® Packet Tracer simulation-based learning activities help students develop critical thinking and complex problem-solving skills.
- Embedded assessments provide immediate feedback to support the evaluation of knowledge and acquired skills.
- Cisco Packet Tracer activities are designed for use with the latest version of Packet Tracer.

Lab Equipment Requirements

Current designs for lab topologies leverage equipment used in previous CCNAv6 and include options to utilize a 2 router + 2 switch + 1 wireless router physical equipment bundle described below. Labs with more complex topologies will rely on PT as a complementary environment to be used in addition to the physical labs. Detailed equipment information, including descriptions and part numbers for the equipment used in previous CCNAv6 is available in the CCNA Equipment List, which is located on the Cisco NetAcad Equipment Information site (https://www.netacad.com/portal/resources/equipment-information).

Baseline Equipment Bundle:

- 2 x ISR4221/K9 Routers
- 2 x WS-C2960+24TC-L Catalyst switches
- 1 wireless router (generic brand) with WPA2 support
- Ethernet patch cables
- PCs - minimum system requirements
    - CPU: Intel Pentium 4, 2.53 GHz or equivalent •
    - OS: Microsoft Windows 7, Microsoft Windows 8.1, Microsoft Windows 10, Ubuntu 14.04 LTS, macOS High Sierra and Mojave •
    - RAM: 4 GB
    - Storage: 500 MB of free disk space
    - Display resolution: 1024 x 768
    - Language fonts supporting Unicode encoding (if viewing in languages other than English)
    - Latest video card drivers and operating system updates
- Internet connection for lab and study PCs
- Optional equipment for connecting to a WLAN
    - 1 printer or integrated printer/scanner/copier for the class to share
    - Smartphones and tablets are desirable for use with the labs

Software:

- Cisco IOS versions:
    - Routers: Version 15.0 or higher, IP Base feature set.
    - Switches: Version 15.0 or higher, lanbaseK9 feature set.
- Packet Tracer v7.3
- Open-source server software:
    - For various services and protocols, such as Telnet, SSH, HTTP, DHCP, FTP, TFTP, etc.
- Tera Term source SSH client software for lab PCs.
- Oracle VirtualBox, most recent version.
- Wireshark version 2.5 or higher.

CCNAv7 SRWE Bridging Course Outline

This bridging course focuses on switching technologies and router operations that support small-to-medium business networks and includes wireless local area networks (WLANs) and security concepts. Students learn key switching and routing concepts. They can perform basic network configuration and troubleshooting, identify and mitigate LAN security threats, and configure and secure a basic

WLAN.

Listed below are the current set of modules and their associated competencies outlined for this course. Each module is an integrated unit of learning that consists of content, activities and assessments that target a specific set of competencies. The size of the module will depend on the depth of knowledge and skill needed to master the competency. Some modules are considered foundational, in that the artifacts presented, while not assessed, enable learning of concepts that are covered on the CCNA certification exam.

CCNAv7 SRWE Bridging Course Outline

CCNAv7: SRWE		
Module	**Topic**	**Objective**
LAN Security Concepts		Explain how vulnerabilities compromise LAN security.
	Endpoint Security	Explain how to use endpoint security to mitigate attacks.
	Access Control	Explain how AAA and 802.1x are used to authenticate LAN endpoints and devices.
	Layer 2 Security Threats	Identify Layer 2 vulnerabilities.
	MAC Address Table Attack	Explain how a MAC address table attack compromises LAN security.
	LAN Attacks	Explain how LAN attacks compromise LAN security.
Module	**Topic**	**Objective**
Switch Security Configuration		Implement switch security to mitigate LAN attacks.
	Implement Port Security	Implement port security to mitigate MAC address table attacks.
	Mitigate VLAN Attacks	Explain how to configure DTP and native VLAN to mitigate VLAN attacks.
	Mitigate DHCP Attacks	Explain how to configure DHCP snooping to mitigate DHCP attacks.
	Mitigate ARP Attacks	Explain how to configure ARP inspection to mitigate ARP attacks.
	Mitigate STP Attacks	Explain how to configure Portfast and BPDU Guard to mitigate STP attacks.
Module	**Topic**	**Objective**
WLAN Concepts		Explain how WLANs enable network connectivity.
	Introduction to Wireless	Describe WLAN technology and standards.
	Components of WLANs	Describe the components of a WLAN infrastructure.
	WLAN Operation	Explain how wireless technology enables WLAN operation.
	CAPWAP Operation	Explain how a WLC uses CAPWAP to manage multiple APs.

	Channel Management	Describe channel management in a WLAN.
	WLAN Threats	Describe threats to WLANs.
	Secure WLANs	Describe WLAN security mechanisms.
Module	**Topic**	**Objective**
WLAN Configuration		Implement a WLAN using a wireless router and WLC.
	Remote Site WLAN Configuration	Configure a WLAN to support a remote site.
	Configure a Basic WLC on the WLC	Configure a WLC WLAN to use the management interface and WPA2 PSK authentication.
	Configure a WPA2 Enterprise WLAN on the WLC	Configure a WLC WLAN to use a VLAN interface, a DHCP server, and WPA2 Enterprise authentication.
	Troubleshoot WLAN Issues	Troubleshoot common wireless configuration issues.