

CERTIFIED WIRELESS NETWORK PROFESSIONAL

CWNP Certified Wireless Network Administrator (CWNA)

Our Learning Exclusive

- Custom exam prep software and materials
- Exam delivery in classroom with 98% success
- Course specific thinQtank® Learning publications to promote fun exciting learning
- Extended hours of training including immersive hands-on exercises
- WE DO NOT "TEACH THE TEST" We always deliver valuable hands-on experience
- Receive all reading material and study guides when you register
- All courses taught by CWNE instructors

Course Duration

- Five days of instructor-led training
- 60% lecture, 40% hands-on labs

Prerequisites

- Basic computer skills, operating systems familiarity, and basic Internet knowledge
- A basic understanding of computer networking principles
- Basic networking knowledge, including understanding of the OSI Reference model and IP subnetting

Target Audience

- Network and system administrators, consultants and engineers that need to support Wireless LAN deployments

Exam Information

- CWNA-106 – Certified Wireless Network Administrator

Delivery Methods

- Instructor-Led Training
- Immersive Live-Online Training
- On-Site and Custom Delivery

Course Overview

thinQtank® Learning is offering a unique five-day training camp in which students can receive the highly sought after CWNA certification in one week. As with all of our CWNP Training Experiences – exams are delivered in the classroom.

The Certified Wireless Network Administrator - CWNA 4.0 course provides the networking professional a complete foundation of knowledge for entering into or advancing in the wireless networking industry. From basic RF theory to 802.11 frame exchange processes, this course delivers hands-on training that will benefit the novice as well as the experienced network.

The CWNA certification is the foundation-level enterprise Wi-Fi certification for the CWNP Program. Achieving it sets your wireless career on a firm foundation, ensuring you have the skills to successfully survey, install, and administer enterprise Wi-Fi networks.

In this hands-on course, you will gain a full understanding of how radio frequency affects networking so you can perform site surveys, design a high-performance network, and protect both users and sensitive data from potential intruders. Plus, you will explore advanced topics such as VoWLAN deployments, seamless mobile connectivity, and detailed wireless frame analysis. You will use enterprise-class hardware and software tools during live lab exercises, simulating a state-of-the-art production environment.

Course Objectives

Upon completing this course, the learner will be able to meet these overall objectives:

- Introduction to 802.11 WLANs
- Radio Frequency Fundamentals
- Understand international, regional, and local RF spectrum management organizations
- Basic WLAN Analysis
- Coordinating 802.11 Frame Transmissions
- RF Math and System Operating Margin
- 802.11 Service Sets
- Challenges addressed by 802.11n
- Wireless LAN Operation
- WLAN Security
- Site Surveying
- Antennas

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CWNA Course Modules

- 1** Introduction to 802.11 WLANs
 - Discuss the standards organizations responsible for shaping the 802.11 Wireless LAN protocol
 - Learn how standards compliance is enforced for 802.11 WLAN vendors
 - Examine the 802.11 standard and various amendments
 - Discuss additional networking standards that are commonly used to enhance 802.11 WLANs
- 2** Radio Frequency Fundamentals
 - Physical aspects of RF propagation
 - Types of losses and attenuation that affect RF communications
 - Types of modulation and coding schemes (MCS) used for 802.11 communications
 - How channels and bandwidth are related to each other in wireless networks
 - Types of Spread Spectrum used in wireless networking
 - RF Power Output Regulations
- 3** Understand international, regional, and local RF spectrum management organizations
 - Understand RF channels in the unlicensed 2.4 GHz and 5 GHz frequency ranges
 - Understand how power output limitations are enforced by the FCC for Point-to-Multipoint (PtMP) and Point-to-Point (PtP) wireless connections
- 4** Power over Ethernet
 - Recognize the two types of devices used in Power over Ethernet (PoE)
 - Recognize the differences between the two types of Power Sourcing Equipment (PSE)
 - Understand the two ways in which power can be delivered using PoE
 - Understand the importance of planning to maximize the efficiency of Power over Ethernet
 - Understand the two standards currently available for PoE
 - Powering 802.11n APs
- 5** Basic WLAN Analysis
 - Protocol Analysis
 - 802.11 Frame Types
 - Data Frames
 - Control Frames
 - Management Frames
 - Protection Mechanisms
 - Legacy Power Saving operations
 - Transmission Rates
- 6** Coordinating 802.11 Frame Transmissions
 - Differences between CSMA/CD and CSMA/CA
 - Distributed Coordination Function (DCF)
 - Network Allocation Vector (NAV)
 - Clear Channel Assessment (CCA)
 - Interframe Spacing (IFS)
 - Contention Window (CW)
 - Quality of Service in 802.11 WLANs
 - Point Coordination Function (PCF)
 - Hybrid Coordination Function (HCF)
- 7** RF Math and System Operating Margin
 - RF units of measure
 - Basic RF mathematics
 - RF signal measurements
 - Understand link budgets
- 8** 802.11 Service Sets
 - Three types of service sets defined for use within 802.11 WLANs
 - 802.11 authentication and association
 - 802.11 network infrastructure
 - Roaming within a WLAN
 - Load-balancing as a method to improve congestion in WLANs
 - The 802.11n Amendment
- 9** Challenges addressed by 802.11n
 - 802.11n PHY/MAC layer enhancements
 - MIMO and SISO systems
 - 802.11n coexistence mechanisms
 - 802.11n integration and deployment considerations
 - 802.11n site surveying and analysis

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CWNA Course Modules Continued

10	Wireless LAN Operation <ul style="list-style-type: none"> ▪ WLAN Hardware Devices ▪ WLAN Software ▪ Architecture Types and Evolution ▪ Ad Hoc & Infrastructure Connectivity Operation ▪ AP Modes ▪ Bridging & Repeating ▪ Mesh Networking ▪ WLAN Controller Deployments ▪ WLAN Profiles ▪ Multichannel Architecture (MCA) ▪ Single Channel Architecture (SCA) ▪ WLAN Management Systems (WNMS)
11	WLAN Security <ul style="list-style-type: none"> ▪ The Importance of WLAN Security ▪ Security Policy ▪ Legacy WLAN Security Mechanisms ▪ Modern WLAN Security Mechanisms ▪ Baseline WLAN Security Practices
12	Site Surveying <ul style="list-style-type: none"> ▪ Defining an RF site survey ▪ Spectrum Analysis ▪ Types of RF site surveys ▪ Manual RF site surveys ▪ Predictive Modeling ▪ Dense AP deployments
13	Antennas <ul style="list-style-type: none"> ▪ Types of antennas and antenna systems commonly used in 802.11 WLANs ▪ Antenna Polarization and Gain ▪ Antenna implementation and safety ▪ Types of antenna cables, connectors, and other accessories

CWNA Lab Exercises

1	Spectrum Capture and Analysis <ul style="list-style-type: none"> ▪ Installing spectrum analyzer software ▪ Performing and analyzing a capture ▪ Swept Spectrogram ▪ Real Time FFT ▪ FFT Duty Cycle ▪ Channel Utilization ▪ Interference with Wi-Fi Channels ▪ Interfering Device Discovery
2	Infrastructure Mode Throughput Analysis <ul style="list-style-type: none"> ▪ Section A: Greenfield mode throughput (802.11b vs. g vs. a vs. n) ▪ Section B: Mixed mode throughput ▪ Section C: Adjacent and co-channel interference ▪ Understanding speeds and feeds of Wi-Fi technologies
3	Using Laptop Analyzers <ul style="list-style-type: none"> ▪ Using laptop analyzers for WLAN discovery and protocol analysis. ▪ Understanding security and performance related protocol analysis ▪ Installing and configuring a WLAN discovery tool. ▪ Installing and configuring a laptop protocol analyzer ▪ Locating 2.4 GHz and 5 GHz WLANs ▪ Capturing and analyzing Management, Control, and Data frames ▪ Capturing and analyzing a WPA2-Personal authentication ▪ A protocol analyzer is provided on the student CD
4	Site Survey <ul style="list-style-type: none"> ▪ Classes of site survey methodology ▪ Section A: Manual site surveys (sometimes called the walkabout) ▪ Section B: Predictive analysis (sometimes called automated site surveying) ▪ Manual site surveying ▪ Active mode vs passive mode ▪ Predictive analysis software tools

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CWNA Lab Exercises Continued

- 5** Basic WLAN Security
 - WPA compliant
 - WPA2 compliant
 - Personal vs Enterprise
 - TKIP encryption
 - 802.11i compliant CCMP
 - 802.1X/EAP authentication

- 6** Wireless Intrusion Prevention System
 - Security monitoring
 - Performance monitoring reporting
 - Installation and configuration of WIPS
 - Properly classifying authorized, rogue/unauthorized, and external/interfering access points or clients
 - Event monitoring and notification
 - Identifying and mitigating rogue devices

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