Training: CWNP
CWT Certified Wireless Technician

TRAINING GOALS:

The Certified Wireless Technician (CWT) is an individual who can install APs based on a design document, configure the AP for initial operations and ensure connectivity. The individual can troubleshoot basic problems and assist users in-person or through remote communications in problem resolution. The ability to configure a WLAN client for connectivity is paramount with an understanding of the configuration process for SSIDs, security settings and other client adapter settings.

This individual is not responsible for WLAN design, analysis or security design; however, the CWT should be able to gather information from a design specification document to properly configure an AP and troubleshoot individual connection issues. The CWT may not be aware of the actual WLAN architectural design, the RF design or the full feature set in use to implement the WLAN.

Who should attend?

IT Support and those installing APs.

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CONSPECT:

- Basic RF Characteristics
  - Describe RF signal characteristics
    - Frequency
    - Amplitude
    - Phase
    - Wavelength
  - Explain RF behaviors and signal propagation
    - Gain and loss
    - Reflection
    - Refraction
    - Scattering
    - Free space path loss
  - Understand how to detect RF signal factors

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        - Wireless scanner tools
        - Client signal strength reports
        - RSSI vs. dBm
        - Output power vs. received signal strength
    - Understand basic RF channel plans
        - Available channels by protocol
        - Regulatory constraints on channel selection
        - Best practices for channel selection
        - Co-Channel Interference (CCI) and Co-Channel Contention (CCC)
    - Describe the basic differences among antenna types
        - Omnidirectional
        - Semi-directional
        - Highly directional
        - Antenna mounting kits
    - Use the appropriate external antenna when required
        - Antenna pattern charts
        - Antenna cables and connectors
        - Passive antenna gain
- Wireless Device Features and Capabilities
    - Describe device types and varying capabilities
        - Laptops
        - Tablets
        - Mobile phones
        - Desktops
        - Specialty devices (video cameras, Wi-Fi peripheral connections, printers, IoT, etc.)
    - Explain the basic WLAN location processes for 802.11 wireless networks
        - Passive scanning
        - Active scanning
    - Describe the basic steps required in the WLAN connection process for 802.11 wireless networks
        - Authentication
        - Association
        - 1X/EAP authentication
        - 4-way handshake
    - Determine the RF features supported by client and IoT devices
        - Supported channels

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- Channel widths
- Transmit power
- Receive sensitivity

- Configure client and IoT devices
  - Configure client drivers for optimum performance (band preference, roaming threshold, regulatory domain, etc.) for 802.11 devices
    - Configure various client operating systems for wireless connectivity with 802.11 devices Windows
    - macOS
    - Chrome OS
    - Linux
    - Tablets and mobile phones (iOS and Android)
  - Configure various IoT devices based on the supported protocol
    - Provisioning
    - Network join
    - Security

- Wireless Protocol Features and Capabilities
  - Identify 802.11 AP features and capabilities and understand configuration options related to them
    - PHY and frequency band support
    - Single-band vs. dual-band
    - Output power control
    - Operational modes
    - Multiple-SSID support
    - Guest access
    - Security features
    - Management interfaces (web-based, CLI, remote CLI)
    - Internal and external antennas
    - PoE support
  - Use appropriate 802.11 AP mounting kits for a specified installation location
    - Wall mount
    - Pole/mast mount
    - Ceiling mount
  - Ensure proper PoE provisioning for 802.11 APs and other wireless devices, when required
    - Power levels required
    - PoE switches
    - PoE injectors

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        - Testing power availability
    - Ensure IoT devices support the appropriate protocols and configuration
        - Common wireless IoT protocols
        - Use cases for wireless IoT protocols
- Configuration of Security Parameters (15%)
    - Understand the basics of 802.11 standard security solutions
        - WPA vs. WPA2 vs. WPA3
        - Personal vs. Enterprise
        - 6 GHz security requirements
        - Pre-Shared Key
        - 1X/EAP
        - Common EAP methods
    - Identify legacy security technologies that should not be used
        - WEP
        - Shared Key Authentication
        - Hidden SSIDs
        - MAC filtering
    - Understand the basic security options available for common wireless IoT protocols
- Troubleshooting Common Wireless Connection Issues (20%)
    - Troubleshoot connectivity problems
        - Configuration errors
        - Interference
        - Poor signal strength
        - Driver issues
        - Supplicant issues
        - Feature incompatibility
    - Troubleshoot performance problems
        - Configuration errors
        - Interference
        - Low data rates
        - Co-channel interference (CCI) and Co-channel contention (CCC)
    - Troubleshoot security problems
        - Configuration errors
        - Incorrect passphrases
        - Incompatible EAP methods
        - Incorrect network keys

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- Incorrect join keys
- Troubleshoot mobility problems
  - Configuration errors
  - Improper network settings
  - Unsupported fast roaming methods
  - Non-implemented roaming features

REQUIREMENTS:

Students should have basic networking knowledge, including understanding of the OSI Reference model.

Difficulty level



CERTIFICATE:

The participants will obtain certificates signed by Compendium CE (course completion).

The CWT certification is an entry-level WLAN certification from the vendor-neutral CWNP organization that brought you CWNA and other advanced certifications. To earn the CWT certification, you must pass an online exam with a score of 70% or higher. Those desiring to work as instructors teaching CWT classes must pass with a score of 80% or higher. Regardless of the way you choose to prepare for the CWT exam, you should start with the exam objectives, which cover the full list of knowledge tested on the exam. The CWT is a three-year certification, and it is renewed by passing the most recent version of the CWT exam again.

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TRAINER:

Authorized CWNP Trainer.

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