

PROGRAMMA CWNP Certified Wireless Technician (CWT-101)

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Parts I: 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
 - 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

Parts II: 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
 - 802.1X/EAP authentication
 - 4-way handshake

- Determine the RF features supported by client and IoT devices
 - Supported channels
 - 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 IoT devices based on the supported protocol

Parts III: 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
 - Testing power availability

- Ensure IoT devices support the appropriate protocols and configuration
 - Common wireless IoT protocols
 - Use cases for wireless IoT protocols

Parts IV: Configuration of Security Parameters

- Understand the basics of 802.11 standard security solutions
 - WPA vs. WPA2 vs. WPA3
 - Personal vs. Enterprise
 - 6 GHz security requirements
 - Pre-Shared Key
 - 802.1X/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

Parts V: Troubleshooting Common Wireless Connection Issues

- 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
 - Incorrect join keys

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