

# Customizable Exam Questions for Improved Success in CWNP CWAP-404 Certification Exam



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The validation of expertise, more career opportunities, salary enhancement, instant promotion, and membership of CWNP certified professional community. In this way, the Certified Wireless Analysis Professional (CWAP-404) can not only validate their skills and knowledge level but also put their careers on the right track. By doing this you can achieve your career objectives.

## CWNP CWAP-404 Exam Topics:

Section	Objectives
<b>Protocol Analysis - 15%</b>	
Capture 802.11 frames using the appropriate methods	<ul style="list-style-type: none"> <li>- Select capture devices                             <ul style="list-style-type: none"> <li>• Laptop protocol analyzers</li> <li>• APs, controllers, and other management solutions</li> <li>• Specialty devices (hand-held analyzers and custom-built devices)</li> </ul> </li> <li>- Install monitor mode drivers</li> <li>- Select capture location(s)</li> <li>- Capture sufficient data for analysis</li> <li>- Capture all channels or capture on a single channel as needed</li> <li>- Capture roaming events</li> </ul>
Understand and apply the common capture configuration parameters available in protocol analysis tools	<ul style="list-style-type: none"> <li>- Save to disk</li> <li>- Packet slicing</li> <li>- Event triggers</li> <li>- Buffer options</li> <li>- Channels and channel widths</li> <li>- Capture filters</li> <li>- Channel scanning and dwell time</li> </ul>

Analyze 802.11 frame captures to discover problems and find solutions	<ul style="list-style-type: none"> <li>- Use appropriate display filters to view relevant frames and packets</li> <li>- Use colorization to highlight important frames and packets</li> <li>- Configure and display columns for analysis purposes</li> <li>- View frame and packet decodes while understanding the information shown and applying it to the analysis process</li> <li>- Use multiple adapters and channel aggregation to view captures from multiple channels</li> <li>- Implement protocol analyzer decryption procedures</li> <li>- View and use a capture's statistical information for analysis</li> <li>- Use expert mode for analysis</li> <li>- View and understand peer maps as they relate to communications analysis</li> </ul>
Utilize additional tools that capture 802.11 frames for analysis and troubleshooting	<ul style="list-style-type: none"> <li>- WLAN scanners and discovery tools</li> <li>- Protocol capture visualization and analysis tools</li> <li>- Centralized monitoring, alerting, and forensic tools</li> </ul>
Ensure appropriate troubleshooting methods are used with all analysis types	<ul style="list-style-type: none"> <li>- Define the problem</li> <li>- Determine the scale of the problem</li> <li>- Identify probable causes</li> <li>- Capture and analyze the data</li> <li>- Observe the problem</li> <li>- Choose appropriate remediation steps</li> <li>- Document the problem and resolution</li> </ul>
<b>Spectrum Analysis - 10%</b>	
Capture RF spectrum data and understand the common views available in spectrum analyzers	<ul style="list-style-type: none"> <li>- Install, configure, and use spectrum analysis software and hardware</li> <li>- Capture RF spectrum data using handheld, laptop-based, and infrastructure spectrum capture solutions</li> <li>- Understand and use spectrum analyzer views <ul style="list-style-type: none"> <li>• Real-time FFT</li> <li>• Waterfall, swept spectrogram, density, and historic views</li> <li>• Utilization and duty cycle</li> <li>• Detected devices</li> <li>• WLAN integration views</li> </ul> </li> </ul>
Analyze spectrum captures to identify relevant RF information and issues	<ul style="list-style-type: none"> <li>- RF noise floor in an environment</li> <li>- Signal-to-Noise Ratio (SNR) for a given signal</li> <li>- Sources of RF interference and their locations</li> <li>- RF channel utilization</li> <li>- Non-Wi-Fi transmitters and their impact on WLAN communications</li> <li>- Overlapping and non-overlapping adjacent channel interference</li> <li>- Poor performing or faulty radios</li> </ul>

Analyze spectrum captures to identify various device signatures	<ul style="list-style-type: none"> <li>- Identify various 802.11 PHYs <ul style="list-style-type: none"> <li>• DSSS</li> <li>• OFDM</li> <li>• OFDMA</li> <li>• Channel widths</li> <li>• Primary channel</li> </ul> </li> <li>- Identify non-802.11 devices based on RF behaviors and signatures <ul style="list-style-type: none"> <li>• Frequency hopping devices</li> <li>• IoT devices</li> <li>• Microwave ovens</li> <li>• Video devices</li> <li>• RF Jammers</li> <li>• Cordless phones</li> </ul> </li> </ul>
Use centralized spectrum analysis solutions	<ul style="list-style-type: none"> <li>- AP-based spectrum analysis</li> <li>- Sensor-based spectrum analysis</li> </ul>
<b>PHY Layers and Technologies - 10%</b>	
Understand and describe the functions of the PHY layer and the PHY protocol data units (PPDUs)	<ul style="list-style-type: none"> <li>- DSSS (Direct Sequence Spread Spectrum)</li> <li>- HR/DSSS (High Rate/Direct Sequence Spread Spectrum)</li> <li>- OFDM (Orthogonal Frequency Division Multiplexing)</li> <li>- ERP (Extended Rate PHY)</li> <li>- HT (High Throughput)</li> <li>- VHT (Very High Throughput)</li> <li>- HE (High Efficiency) <ul style="list-style-type: none"> <li>• HE SU PDU</li> <li>• HE MU PDU</li> <li>• HE ER SU PDU</li> <li>• HE TB PDU</li> <li>• HE NULL data packets</li> </ul> </li> </ul>
Apply the understanding of PHY technologies, including PHY headers, preambles, training fields, frame aggregation, and data rates, to captured data	
Identify and use PHY information provided within pseudo-headers in protocol analyzers	<ul style="list-style-type: none"> <li>- Pseudo-Header formats <ul style="list-style-type: none"> <li>• Radiotap</li> <li>• Per Packet Information (PPI)</li> </ul> </li> <li>- Key pseudo-header content <ul style="list-style-type: none"> <li>• Guard intervals</li> <li>• Resource units allocation</li> <li>• PDU formats</li> <li>• Signal strength</li> <li>• Noise</li> <li>• Data rate and MCS index</li> <li>• Length information</li> <li>• Channel center frequency or received channel</li> <li>• Channel properties</li> </ul> </li> </ul>
Recognize the limits of protocol analyzers to capture PHY information including NULL data packets and PHY headers	

Use appropriate capture devices based on proper understanding of PHY types	<ul style="list-style-type: none"> <li>- Supported PHYs</li> <li>- Supported spatial streams</li> </ul>
<b>MAC Sublayer and Functions - 25%</b>	
Understand frame encapsulation and frame aggregation	<ul style="list-style-type: none"> <li>- Frame aggregation (A-MSDU and A-MPDU)</li> </ul>
Identify and use MAC information in captured data for analysis	<ul style="list-style-type: none"> <li>- Management, Control, and Data frames</li> <li>- MAC frame formats and contents <ul style="list-style-type: none"> <li>• Frame Control field</li> <li>• To DS and From DS fields</li> <li>• Address fields</li> <li>• Frame Check Sequence (FCS) field</li> </ul> </li> <li>- 802.11 Management frame formats <ul style="list-style-type: none"> <li>• Information Elements</li> <li>• Authentication</li> <li>• Association and Reassociation</li> <li>• Beacon</li> <li>• Probe Request and Probe Response</li> </ul> </li> <li>- Data and QoS Data frame formats</li> <li>- 802.11 Control frame formats <ul style="list-style-type: none"> <li>• Acknowledgement (ACK)</li> <li>• Request to Send/Clear to Send (RTS/CTS)</li> <li>• Block Acknowledgement and related frames</li> <li>• Trigger frames</li> <li>• VHT/HE NDP announcements</li> <li>• Multiuser RTS</li> </ul> </li> </ul>
Validate BSS configuration through protocol analysis	<ul style="list-style-type: none"> <li>- Country code</li> <li>- Minimum basic rate</li> <li>- Supported rates and coding schemes</li> <li>- Beacon interval</li> <li>- WMM settings</li> <li>- RSN settings</li> <li>- HT/VHT/HE operations</li> <li>- Channel width</li> <li>- Primary channel</li> <li>- Hidden or non-broadcast SSIDs</li> </ul>
Identify and analyze CRC error frames and retransmitted frames	
<b>WLAN Medium Access - 10%</b>	

Understand 802.11 contention algorithms in-depth and know how they impact WLANs	<ul style="list-style-type: none"> <li>- Distributed Coordination Function (DCF) <ul style="list-style-type: none"> <li>• Carrier Sense (CS) and Energy Detect (ED)</li> <li>• Network Allocation Vector (NAV)</li> <li>• Contention Windows (CW) and random backoff</li> <li>• Interframe spacing</li> </ul> </li> <li>- Enhanced Distributed Channel Access (EDCA) <ul style="list-style-type: none"> <li>• EDCA Function (EDCAF)</li> <li>• Access Categories and Queues</li> <li>• Arbitration Interframe Space Number (AIFSN)</li> </ul> </li> <li>- Wi-Fi Multimedia (WMM) <ul style="list-style-type: none"> <li>• WMM parameters</li> <li>• WMM-Power Save</li> <li>• WMM-Admission Control</li> </ul> </li> </ul>
Analyze QoS configuration and operations	<ul style="list-style-type: none"> <li>- Verify QoS parameters in capture files</li> <li>- Ensure QoS is implemented end-to-end</li> </ul>
<b>802.11 Frame Exchanges - 30%</b>	
Capture, understand, and analyze BSS discovery and joining frame exchanges	<ul style="list-style-type: none"> <li>- BSS discovery</li> <li>- 802.11 Authentication and Association</li> <li>- 802.1X/EAP exchanges</li> <li>- Pre-Shared Key authentication</li> <li>- Four-way handshake</li> <li>- Group key exchange</li> <li>- Simultaneous Authentication of Equals (SAE)</li> <li>- Opportunistic Wireless Encryption (OWE)</li> <li>- WPA2 and WPA3</li> <li>- Fast secure roaming mechanisms <ul style="list-style-type: none"> <li>• Fast BSS Transition (FT) roaming exchanges</li> <li>• Pre-FT roaming exchanges</li> </ul> </li> <li>- Neighbor discovery (802.11k/v)</li> <li>- Hotspot 2.0 protocols and operations from the client access perspective <ul style="list-style-type: none"> <li>• ANQP</li> <li>• Initial access</li> </ul> </li> </ul>
Analyze roaming behavior and resolve problems related to roaming	<ul style="list-style-type: none"> <li>- Sticky clients</li> <li>- Excessive roaming</li> <li>- Channel aggregation for roaming analysis</li> </ul>
Analyze data frame exchanges	<ul style="list-style-type: none"> <li>- Data frames and acknowledgement frames</li> <li>- RTS/CTS data frame exchanges</li> <li>- QoS Data frame exchanges</li> <li>- Block Acknowledgement exchanges</li> </ul>

## CWNP CWAP-404 Exam Certification Details:

Exam Name	Wireless Analysis Professional
Sample Questions	CWNP CWAP-404 Sample Questions
Recommended Training	CWAP self-paced training kit, Training Class
Exam Code	CWAP-404 CWAP

## Quiz Authoritative CWAP-404 - Certified Wireless Analysis Professional Guide

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### CWNP Certified Wireless Analysis Professional Sample Questions (Q102-Q107):

#### NEW QUESTION # 102

Given the frame capture and the decode shown,

The image shows a Wireshark packet capture of 802.11 beacon frames. The top table lists frames 48 through 58, all of which are beacons from source 00:0E:38:50:1E:40 to destination FF:FF:FF:FF:FF:FF. The detailed view for frame 48 shows the following structure:

- timestamp : 23208636
- beacon interval : 100 TUs
- capability info
  - info : SSID (0)
  - info : supported rates (1)
  - info : DS param set (3)
  - info : TIM (5)
    - length : 4
    - next DTIM : 3 beacon(s)
    - DTIM period : 4 beacon(s)
    - AID 0 traffic indicator : 0
    - TIM offset : 0
    - AID 0 traffic indicator : 0
    - AID 1 traffic indicator : 0
    - AID 2 traffic indicator : 0
    - AID 3 traffic indicator : 0
    - AID 4 traffic indicator : 0
    - AID 5 traffic indicator : 0
    - AID 6 traffic indicator : 0
    - AID 7 traffic indicator : 0
  - info : ERP information (42)
  - info : extended supported rates (50)
  - info : AP Name (133)
  - info : WPA information (221)

after which Beacons in the list shown (as indicated by the frame number in the leftmost column) would multicast traffic have been sent in this infrastructure BSS if multicast traffic had been queued for transmission at the access point? (Choose 2)

- A. frame number 54

- B. frame number 55
- C. frame number 51
- D. Framenumber 49
- E. frame number 57
- F. frame number 50
- G. frame number 53

**Answer: B,C**

#### NEW QUESTION # 103

When would you expect to see a Reassociation Request frame?

- A. Only when a STA is using FT roaming
- B. Every time a STA associates to an AP to which it has previously been associated
- C. Only when a STA roams back to an AP it has previously been associated with
- D. Every time a STA roams

**Answer: D**

Explanation:

A Reassociation Request frame is sent every time a STA roams from one AP to another within the same ESS. A Reassociation Request frame is similar to an Association Request frame, but it also contains the BSSID of the current AP that the STA is leaving. This allows the new AP to coordinate with the old AP and transfer the STA's context information, such as security keys, QoS parameters, and buffered frames. This way, the STA can maintain its connectivity and session continuity during roaming.

#### NEW QUESTION # 104

In a Spectrum Analyzer the Swept Spectrogram plot displays what information?

- A. RF power present at a particular frequency over the course of time
- B. The RF time domain
- C. Duty cycle in the frequency domain
- D. Wi-Fi Device information

**Answer: A**

Explanation:

The Swept Spectrogram plot is a spectrum analysis plot that shows the RF power present at a particular frequency over the course of time. It can help identify trends and patterns in the RF spectrum over a longer period of time. It can also show how the RF environment changes over time and how different sources of RF signals affect each other. The other options are not correct, as they describe different types of plots or information that are not related to the Swept Spectrogram plot.

#### NEW QUESTION # 105

Recently, three rogue APs have been connected to the network and later discovered. You want to prevent future rogue AP installations as much as possible.

What is the first step to eliminating or reducing rogue APs on the network?

- A. Use IPSec between every AP and the network infrastructure
- B. Define a direct policy that stipulates the ramifications of installing unauthorized devices
- C. Enable rogue detection in the existing authorized APs
- D. Create a hash of the MAC addresses of all authorized devices and continually scan for non- matching hashes

**Answer: C**

#### NEW QUESTION # 106

As the WLAN administrator in your organization you are responsible for troubleshooting connection issues. Several STAs are connecting to the network, but are unable to communicate after connection. You suspect a DHCP problem. After capturing traffic

