

**CWAP****Certified Wireless Analysis Professional**

40 horas

CWAP

CWNP

**INTRODUÇÃO**

The CWAP Wireless LAN Analysis course consists of hands-on learning using the latest enterprise wireless LAN analysis and troubleshooting tools. This course takes an in-depth look at the functionality of WLANs, intended operation of the 802.11 protocol and Wi-Fi Alliance specifications, WLAN frame formatting and structure, troubleshooting methodology, and protocol analysis. It also includes extensive training in modern spectrum analysis with a focus on advanced RF behavior analysis, data collection methods, interpreting spectrum plots and charts, and understanding advanced features of WLAN spectrum analyzers.

Students who complete the course will acquire the necessary skills for analyzing, assessing, and troubleshooting wireless operation in the enterprise, utilizing hardware and software solutions from the industry's leading manufacturers.

**OBJETIVO DO CURSO**

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**PÚBLICO-ALVO**

Recommended training for professionals interested on advanced troubleshooting and wireless analysis, and who will take the CWAP certification exam.

**PRÉ-REQUISITOS**

CWNA certificate professional or equivalent knowledge.

## Course Introduction

Course Outline

Course Goals & Objectives

## Principles of WLAN Communication

802.11 Working Group

OSI reference model and the 802.11 PHY and MAC

Communication sublayers and data units

WLAN architecture components

Organization of station forwarding

Addressing and internetworking operation

Modern WLAN product architectures

## Physical (PHY) and MAC Layer Formats and Technologies

Physical layer functions

Preamble function and format

Header purpose and structure

Analysis of PHY problems

Physical PPDU formats

802.11b

802.11a

802.11g

802.11n

MAC frame components

MAC encapsulation

Fields and subfields of the MAC header

Frame Control

Frame types and subtypes and their uses

Addressing

Frame body

Data frame format

Control frame format

Management frame format

Information elements and fields

## Protocol Operation

Beaconing and synchronization

Scanning

Client state machine

802.11 contention

QoS

Admission control

Band steering and airtime fairness mechanisms

Fragmentation

Acknowledgments and Block acknowledgments

Protection mechanisms and backward compatibility

Power management

Dynamic Frequency Selection (DFS) and Transmit Power Control (TPC)

Security components, methods, and exchanges

Roaming procedures exchanges  
Future protocol enhancements

## **802.11n**

Transmit beamforming  
Spatial multiplexing  
Maximal Ratio Combining (MRC)  
Space-Time Block Coding  
40 MHz channels  
Frame aggregation  
HT-OFDM format  
Modulation and Coding Schemes (MCS)  
HT frame formatting  
And More

## **Protocol Analysis Tools and Methodology**

Troubleshooting methodology  
Protocol analyzer types  
Analysis NIC/adapter selection and constraints  
Interpreting results based on location  
Analyzer settings and features  
Filtering and channel scanning  
Interpreting decodes  
Using advanced analysis features  
Assessing WLAN health and behavior factors  
Evaluating network statistics  
Troubleshooting common problems  
Wired analysis to support wireless network issues

## **Spectrum Analysis Tools and Methodology**

Radio frequency behavior review  
Visualizing RF domains using spectrum measurement tools  
Spectrum analyzer types and operation  
Analyzer specifications and characteristics  
Understanding spectrum data presentation  
Interpreting plots and charts  
Common WLAN spectrum analyzer features  
Identifying transmit patterns  
Device classification and network impact  
Recognizing transmit signatures

## **Lab Outline**

Lab 1: Protocol Analyzer Setup, Use, and In-Depth Analysis  
Lab 2: Understanding Frame Components  
Lab 3: Frame Exchanges  
Lab 4: Troubleshooting Common Problems  
Lab 5: Spectrum Analyzer Setup, Use, and In-Depth Analysis