

Certified Wireless Network Expert (CWNE)



Online Course

ZETLAN TECHNOLOGIES
www.zetlantech.com

Certified Wireless Network Expert (CWNE)

Course Modules



Enterprise Wi-Fi Security (CWSP)

1. Security Fundamentals

- Security Basics
- CWNA Security Review
- Industry Organizations
- Terminology
- Wireless Vulnerabilities

2. Wireless Security Challenges

- Network Discovery
- Pseudo-Security
- Legacy Security Mechanisms
- Network Attacks
- Recommended Practices

3. Security Policy

- Defining Security Policies
- Policy Enforcement
- Policy Management
- Policy Types



Certified Wireless Network Expert (CWNE)



4. Understanding Authentication

- Passphrase Authentication
- AAA
- RBAC
- RADIUS
- 802.1X
- EAP

5. Authentication and Key Management

- Robust Security Networks (RSN)
- RSN Information Element
- RSN Authentication and Key Management (AKM)

6. Encryption

- Encryption Fundamentals
- Encryption Algorithms
- WEP
- TKIP
- CCMP



Certified Wireless Network Expert (CWNE)



7.Security Design Scenarios

- Virtual Private Networks (VPN)
- Remote Networking
- Guest Access Networks

8.Secure Roaming

- Roaming Basics and Terminology
- Preauthentication
- PMK Caching
- Opportunistic Key Caching (OKC)
- 802.11r FT
- Proprietary Roaming
- Voice-Enterprise

9.Network Monitoring

- Wireless Intrusion Prevention Systems (WIPS)
- WIPS Deployment Models
- WIPS Policy
- Threat Mitigation
- Location Services
- WNMS
- Protocol Analysis
- Spectrum Analysis



Certified Wireless Network Expert (CWNE)

Certified Wireless Design Professional (CWDP)

10. WLAN Design Overview

- Importance of good design
- Impact of bad design
- Design process
- Design skills
- Design toolkit
 - Pre-planning
- Customer interaction
- Requirements gathering
- Discovering existing systems
- Documenting the environment
- Defining constraints
- Creating documentation
- Client device types
- Application types
- Application-specific design
- High density design issues
- Standard corporate networks



Certified Wireless Network Expert (CWNE)

11. Industry-Specific Designs

- Government
- Healthcare
- Hospitality
- Education
- Retail
- Public hotspots
- Transportation
- Mobile offices
- Outdoor and mesh
- Remote networks and branch offices
- Last-mile/ISP and bridging
- Defining vendor issues
- Operational planes
- Design models
- Understanding architecture differences
- RF spectrum
- RF behaviors
- Modulation and coding schemes
- RF accessories
- Throughput factors
- Antennas
- 802.11n and antennas
- Choosing APs



Certified Wireless Network Expert (CWNE)

- Powering APs
- Site survey tools
- Site survey preparation
- Predictive site surveys
- Manual site surveys
- Site survey principles and processes
- Quality of Service (QoS) overview
- QoS application points
- Roaming support
- Bad security
- Authentication solutions
- Encryption solutions
- Security best practices
- Intrusion prevention
- Network health status
- Troubleshooting and validation process
- Troubleshooting and validation tools
- Common problems



Certified Wireless Network Expert (CWNE)

12. Requirements Analysis

- Designing for Clients and Applications
- Designing for Industry Vendor
- Selection Processes
- Radio Frequency Planning
- WLAN Hardware Selection
- Site Surveys
- Designing for QoS
- Designing for Security
- Installation Testing, Validation and Troubleshooting
- Design Troubleshooting



Enterprise Wi-Fi Analysis & Troubleshooting (CWAP)

13. 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



Certified Wireless Network Expert (CWNE)

14. 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
 - o 802.11b
 - o 802.11a
 - o 802.11g
 - o 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



Certified Wireless Network Expert (CWNE)

15. Protocol Operation

- Beacons 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 Selectn (DFS) & Transmit Power Ctrl (TPC)
- Security components, methods, and exchanges
- Roaming procedures exchanges
- Future protocol enhancements



Certified Wireless Network Expert (CWNE)

16. 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



17. Protocol Analysis Tools and Methodology

- Troubleshooting methodology
- Protocol analyzer types
- Analysis NIC/adaptor 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



Certified Wireless Network Expert (CWNE)

For Enquiry: +91 8680961847

18. 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

Zetlan Technologies



Free Advice: +91 9600579474

www.zetlantech.com



**LEARN
REMOTELY!!**

The efficiency of online learning
in terms of time management,
flexibility, and the ability
to access resources anytime,
anywhere can be compelling.



ZETLAN TECHNOLOGIES
www.zetlantech.com

For contact: +91 8680961847
+91 9600579474

