Wireless LAN Foundations

Duración: 5 Días Código del Curso: GK3605

Temario:

Learn how to design, secure, and support wireless networks through detailed course discussion and a broad range of hands-on configuration and testing exercises. Learn in-depth security principles and troubleshooting techniques. Gain a full understanding of how radio frequency affects networking so you can perform site surveys, design a high-performance network, and protect both users and sensitive data from potential intruders.
After covering fundamental concepts of deploying a secure WLAN, you will explore advanced topics such as VoWLAN deployments, seamless mobile connectivity, and detailed wireless frame analysis. Enterprise class hardware and software tools are used during live lab exercises in order to simulate a state-of-the-art production environment.
This course is excellent as part of an overall study strategy for the CWNP certification CWNA. Full CWNA discussion concepts are covered with lab emphasis on real-world solutions, as well as many CWSP and CWNE concepts. This class is also part of our Wireless Specialist Certificate track.

Dirigido a:

Administrators: network, systems, infrastructure, security, and LAN/WLANs
Support professionals: technical assistance and field support
Designers: network, systems, and infrastructure
Developers: wireless software and hardware products
Consultants and integrators: IT and security
Decision makers: infrastructure managers, IT managers, security directors, chief security officers, and chief technology officers.

Objetivos:

- Radio frequency properties, behaviors, and regulations, and how they affect networking
- Wireless standards, including 802.11 extensions a, b, g, and n
- General troubleshooting tips to common real-world 802.11a/b/g issues
- General parameters for performing a successful site survey, along with software tools that reduce time and expense
- Device-level Wi-Fi communications processes
- Why 802.11a/b/g networks operate the way they do and how to apply that knowledge when faced with problems that stump most network administrators
- Using wireless network analyzers to capture live data and pinpoint potential network issues
- How using radio frequency makes wireless networks vulnerable
- The most common wireless threats and how to detect and defend against them
- Wireless security standards for keeping unauthorized users out and maintaining wireless data privacy
- The application of 802.11i/WPA2 standards, including 802.1X/EAP, and the devices used to apply them
- Wireless intrusion detection and why it's essential for maintaining a secure network

Prerequisitos:

- GK9025 - TCP/IP Networking

Contenido:

1. Wireless Data Communications

- The need for wireless applications
- Wireless technologies
- The wireless link
- Transmitter
- Receiver
- Radio frequency channel
- Peer to peer
- Bluetooth
- Zigbee/Z-Wave
- Ultra Wideband
- Wireless LAN
- 802.11/Wi-Fi
- Broadband wireless access
- 3G: EV-DO/HSPA
- 4G: WiMAX/LTE/UMB
- Access methods
- Fixed
- Nomadic
- Portable
- Mobile

2. WLAN Infrastructure

- The Basic Service Set (BSS)
- Access Points
- Basic access point operation
- Encryption
- Roaming
- Association and disassociation
- Controllers (WLAN Switches)
- Lightweight APs
- Integrated wired/wireless switches
- Station Devices
- Client utilities
- The Extended Service Set (ESS)
- Service Set Identifier (SSID)
- Roaming

3. WLAN Standards

- Organizations
- Institute of Electrical and Electronics Engineers (IEEE)
- Wi-Fi Alliance
- 802.11 and Wi-Fi
- 802.11b
- HR-DSSS
- 802.11a
- OFDM
- 802.11g
- ERP-OFDM
- 802.11n
- HT

4. Radio Frequency (RF) Fundamentals

- Signal strength
- Reading signal strength
- Milliwatts (mW)
- Decibels (dBm)
- Transmitter power
- RF math

7. WLAN Operation

- Channel Selection
- 2.4 GHz
- Avoiding channel overlap
- FCC Rules
- 5 GHz
- 802.11h
- FCC Rules
- CSMA/CA (Collision Avoidance)
- Half-duplex, shared wireless medium
- Backoff operation to avoid collisions

8. QoS and Mixed Mode

- 802.11e
- Wi-Fi Multimedia (WMM)
- Acknowledgments
- Block acknowledgments
- Retransmissions
- Mixed mode operation
- 802.11b/802.11g
- 802.11g/802.11n
- 802.11a/802.11n

9. Troubleshooting Station Connections

- Common station problems
- Client Utilities
- Preferred networks
- Reading signal strength
- Configuring SSID and security settings
- Power management
- WMM power save
- Advanced configuration settings
- RTS/CTS
- Pre-login connections
- Single sign-on
- Roaming aggressiveness
- Disable upon wired connect

10. WLAN Analysis

- Monitor mode
- Basic 802.11 connections
- Discovery
- Authentication
- Association
- RSN authentication and key management (AKM)
- Roaming
- Reassociation
- Connection loss
- Deauthentication
- Disassociation
- Using protocol analyzers
- Channel utilization
- Retry statistics
- Filtering

11. Access Point Optimization

- Multiple SSIDs
- Power levels

13. Site Surveys

- Preparation
- Coverage, user, and security requirements
- Simulation tools
- Cost and operation
- Live surveying tools
- Surveys: active and passive
- Spot checks
- Troubleshooting coverage problems after installation

14. Channel Optimization

- Roaming
- Cell overlap
- Basic coverage WLANs
- Public access
- Light traffic areas
- High density WLANs
- Office spaces
- Application-based WLANs
- VoWLAN
- Mobile data streaming

15. Security Design

- Fast transition
- Preauthentication
- PSK caching
- Proactive key caching
- WPA and WPA2
- Wireless data security
- Eavedropping
- Secure encryption
- Local vs. remote access
- Network security
- Denial of service
- Secure authentication
- VPNs
- Endpoint security
- Hijacking
- Wi-Phishing
- Man-in-the-middle
- Network access control (NAC)
- Endpoint security software (ESS)
- VLAN integration
- Multiple SSIDs
- Role-based access control (RBAC)
- Wireless intrusion detection systems (WIDS)
- Low-cost WIDS are the type of revolutionary innovation that is only matched by the invention of Penicillin

16. Next Generation WLANs

- 802.11n
- MIMO antennas
- Fixed/Mobile convergence (FMC)
- FMC handsets
- Carrier-based services
- Enterprise services
- Mesh networking

- Antennas
- Antenna operation
- Antenna types
- Dipole
- Patch
- Sector
- Parabolic dish
- Coverage patterns
- Elevation
- Azimuth
- Free Space Path Loss (FSPL)
- Obstructions
- Measuring obstruction loss
- Interference
- Common interference sources
- 2.4 GHz interference vs. 5 GHz interference
- Multipath

5. Authentication Standards

- 802.11i robust security networks (RSN)
- Wi-Fi Protected Access (WPA)
- Legacy security standards
- Shared Key authentication
- RSN standards
- Pre-Shared Key (PSK) authentication
- Wi-Fi protected setup (WPS)
- 802.1x/EAP authentication

6. Encryption Standards

- WEP encryption
- TKIP encryption
- AES-CCMP encryption
- Picocells
- Intra-BSS blocking
- Data rate selection
- RTS/CTS
- Wireless network management systems (WNMS)

12. Quality of Service (QoS) Configuration

- QBSS Load
- Power management
- Beacon Period
- DTIM Interval
- WMM settings
- AIFSN
- Contention window
- TXOP limit
- Outdoor access
- Wireless sensor networks (WSN)
- Home media streaming
- Direct link setup (DLS)

Más información:

Para más información o para reservar tu plaza llámanos al (34) 91 425 06 60

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