



[Back to Product Page](#)

Wireless Technology Specialist Course

5 Sessions -

13 Hours of Interactive Training

LearnKey's Wireless Technology Specialist course will teach you how to design, install, configure, monitor and perform basic troubleshooting of wireless equipment in small and medium-sized business and enterprise installations. The Wireless Technology Specialist course meets all exam objectives for the Certified Wireless Technology Specialist certification, covering the current objectives, will certify that successful candidates know the fundamentals of RF behavior, can describe the features and functions of wireless components, and have the skills needed to install and configure wireless network hardware components. A typical candidate should have a basic understanding of data networking concepts.

Benefits

- Understand the fundamentals of wireless networks
- Discover the features and functions of wireless networking hardware
- Implement stable and secure wireless LAN's

Session 1

Section A: Wireless Communications

- Earliest Wireless Signals
- Prerequisites
- Wireless Certification
- Course Topics
- Benefits of Wireless

Section B: Wireless Technologies

- Wireless Technologies Defined
- The Electromagnetic Spectrum
- Infrared
- Bluetooth
- Zigbee
- RFID
- WiMAX
- Cordless Phones
- Wi-Fi

Section C: Regulatory Agencies and Standards

- IEEE
- IEEE Projects
- IEEE 802.11 Standards
- IEEE Amendments
- IETF
- Wi-Fi Alliance
- Regulatory Domains

Section D: RF Fundamentals

- Waves
- Gain and Amplification
- Loss and Attenuation
- VSWR and Return Loss
- Free Space Path Loss
- Watt and Milliwatt
- Decibels
- Rules of 10 and 3
- dBi
- Reflection
- Refraction
- Diffraction
- Scattering

Section E: Antennas and Cabling

- Passive Gain
- Polarization
- Beamwidth
- Azimuth and Elevation Charts
- Antenna Diversity
- MIMO Diversity
- Radio Chains
- Spatial Multiplexing
- Transmit Beam Forming
- Omni-Directional Antennas
- Semi-Directional Antennas

About The Author

Tom Carpenter has delivered training programs to more than 27,000 professionals since 1997. He has written, developed and delivered courses on: Windows NT, 2000, XP and Server 2003. With experience as a Fortune 1000 system administrator and security officer, Carpenter brings a wealth of real world experience and knowledge to his courses. Tom is Microsoft certified and is one of the founding managers of the Certified Technology Services Professional certification.

- Highly Directional Antennas
- Sectorized Antennas

Section F: Physical Layers and Topologies

- DSSS
- HR/DSSS
- OFDM
- ERP
- HT/MIMO
- Channels
- Channel Reuse
- Ad Hoc Networks
- Infrastructure Networks
- PtP
- PtMP

Session 2

Section A: 802.11 Network Address

- Stations
- Service Sets
- Distribution System
- Locating a Network
- CSMA/CD
- CSMA/CA
- Carrier Sense
- Interframe Spacing
- DCF/HCF/EDCA
- Dynamic Rate Switching

Section B: Authentication and Association

- 802.11 State Machine
- Authentication

Section E: Infrastructure and Endpoint Hardware

- Hardware Examples
- Cisco 871W Router
- Cisco 1200 Series AP
- Cisco 1230 Series AP
- WLC 526 Series
- Cisco 521 Series AP
- Linksys Business Class Router
- Client Wireless Devices
- Cisco 802.11b Adapters
- Cisco 802.11a Adapters
- ExpressCard

- Association
- Reassociation
- Disassociation
- Protocol Analyzers
- Filter Captured Frames
- Adapters
- PCI Wireless Adapters
- USB Wireless Adapters

Section C: 802.11 Frames

- MAC and PHY
- Bits and Bytes
- Frames and Packets
- SDUs and PDUs
- 802.3 Frame Format
- 802.11 Frame Format
- 802.11 Frame Types
- Acknowledgment Frames
- Viewing Management and Control Frames
- Filtering Captured Packets

Section D: 802.11 Infrastructure Solution

- The Infrastructure
- Wireless LAN Routers
- Wireless Bridge
- Wireless Repeaters
- Wireless Controllers
- 802.3-2005 Clause 33
- PoE Switches
- Standard Terminology
- PoE Installation
- Powering HT Devices

Section F: Understanding Wireless LAN Controllers

- Controller-Based APs
- HREAP
- AP Modes
- SBCS
- Cisco Configuration Agent
- Wireless LAN Controllers
- Configuring Wireless LAN Controller
- AP Manager Interface
- Virtual Interface and Wireless LAN
- Administering the WLC

Section G: Configuring APs at the CLI

- Disable Logging
- Configure Wired Connection
- Configure Channel
- Configure Antenna
- Configure WLANs
- Enable Encryption
- Power Settings
- Speed Settings

Session 3

Section A: Configuring APs in the GUI

- The GUI
- Express Set-Up
- Detailed Set-Up
- IOS Interfaces
- Determining IOS Version

Section D: Installing / Administering Cisco Clients

- CSSC
- CCX
- CSSC Features
- Laptop Wireless Adapters
- Installing ACU Software
- Managing ACU Profiles

Section B: Roaming Wireless Networks

- The OSI Model
- Roaming
- Intra-Controller Roaming
- Inter-Controller Roaming
- Mobility Groups
- Mobility Group Configuration

Section E: Wireless LAN Vulnerabilities

- Eavesdropping
- Rogue APs
- Encryption Cracking
- Denial of Service
- Hijacking
- Legacy Security

Section C: Configuring OS Clients

- XP Wireless Wizard
- Manually Add a Wireless Network
- Mac OS X Wireless Client
- Windows 7 Wireless Client
- Linux Clients

Section F: Wireless Security Components

- Wi-Fi Protected Setup
- Using Encryption
- PCI Compliance
- HIPAA Compliance
- HIPAA Recommendations
- Using WIPS
- Captive Portals
- Virtual Private Networks

Session 4

Section A: 802.11i

- 802.11i Overview

Section D: 802.11i Infrastructure Installation

- Components of 802.11i
- TKIP
- CCMP
- RSNA
- Pre-RSNA
- Transitional Security

Section B: EAP Types Explained

- EAP within 802.11i
- EAP Framework
- Four-Way Handshake
- LEAP
- PEAP
- EAP-TLS
- EAP-TTLS
- EAP-MD5

Section C: Encryption Methods

- Simple Encryption
- Symmetric Encryption
- Symmetric Algorithms
- Asymmetric Encryption
- Public Key Cryptography
- Certificates
- Public Key Infrastructure
- AES Overview
- RC4 Overview
- WPA
- WPA2
- Virtual Private Networks
- Configuring VPN Tunnels
- IPSec VPN Setup
- Assign VPN Client Accounts

- Internal RADIUS
- External RADIUS
- Download TekRADIUS
- Install TekRADIUS
- Creating the Database
- Configure User Accounts
- Configuring RADIUS on an AP

Section E: Configuring Secure Clients

- Configuring Clients
- Preshared Keys
- Enabling PSK on the Router
- Enabling PSK on the Client
- Cracking WPA

Section F: Weak Security Tools

- Weaknesses
- SSID Hiding
- WEP
- WEP Cracking Tools
- MAC Filtering
- Short WPA Passphrases
- Relying on Obscurity
- Assuming No Risk
- Assuming Complete Risk

Session 5

Section A: WCS and Navigator

- Cisco Wireless Control System
- WCS Capabilities
- WCS Requirements
- WCS Versions
- WCS Interface
- WCS Installation
- Adding Controllers
- Configuring APs
- Using Maps
- Monitoring Alarms

Section D: WCS and WLC Troubleshooting

- WLC CLI Commands
- show 802.11a Command
- show 802.11b Command
- show wlan Command
- debug Command
- WLC Log
- WCS Client Troubleshooting
- WLC Backup Configuration
- Resetting

Section B: Site Survey Kits

- Site Survey Tools
- Spectrum Analyzers
- Protocol Analyzers
- Active and Passive Tools
- Manufacturer Utilities
- Other Equipment
- Equipment for Outdoors
- Complete Kits

Section E: Common Wireless LAN Problems

- System Throughput
- Multipath
- Troubleshooting Multipath
- Hidden Node
- Troubleshooting Hidden Node
- The Near/Far Problem
- Troubleshooting Near/Far
- Channel Interference
- RF Noise and Interference

Section C: Performing Site Surveys

- Site Survey Phases
- Business Requirements
- Functional Requirements
- Site-Specific Documentation
- RF Interference

Section F: Using Spectrum and Protocol Analyzers

- Wi-Spy dBx Spectrum Analyzer
- Analyzing Recordings
- Analyzing 802.11n

- AP and Antenna Types
 - Output Power Level
 - Channels
 - Testing Applications
 - Documenting Hardware
 - Resulting Documents
 - Diagram Example
- Networks
 - OmniPeek Protocol Analyzer
 - Capture and Analyze Wireless Frames