



Skill Set Alignment Fundamentals of Wireless Local Area Networks

The following skill set for the Fundamentals of Wireless Local Area Networks course lists the competencies that students learn during this course. This course helps prepare students for the Cisco Wireless LAN Support Specialist certification. Employers, Academies, and students may use this document to communicate current knowledge, or to identify skills demonstrated at a work setting. Another valuable use of this information is as a list of proficiencies expected through work experience.

_____ Name of Business/Employer	_____ Name of Student
_____ Street Address	_____ Street Address
_____ City State Zip	_____ City State Zip
_____ Phone	_____ Phone
_____ Employment Supervisor's Name and Position	

Radio Fundamentals

- Differentiate between dBi and dBd
- Define EIRP and Gain
- Cable loss factors
- Fundamentals of antenna operation and deployment
- Categories of antennas and their uses
- Cisco antennas and their specifications (indoor/outdoor and omni directional)
- Multi-path distortion and other RF transmission problems
- Operation of the Diversity antenna system
- How the FCC and ETSI regulate bands, channel sets, and power levels
- 802.11 standards set by IEEE and other important agency standards
- Regulatory issues relating to unlicensed bands
- Differentiate between 5 GHz standards for the US, Europe, and Japan
- Ways for increasing RF transmission performance
- Sources of RF noise and how to resolve the problem
- 802.11 standards affecting Cisco WLAN products
- Role of WiFi™ standard

WLAN Introduction

- Components of a WLAN and describe its function
- Proper installation and configuration of all Aironet client adapters and client utility
- Inline power features of the Cisco Aironet Access Points
- Functions of various Cisco clients

- Workgroup bridge characteristics and functionality
- Topological considerations relating to WLAN deployment
- Fundamentals of planning a WLAN deployment
- Security concepts used in a WLAN
- Basic AP configuration tasks such as assigning SSID and IP addresses
- Using a command-line interface (CLI) for configuring an access point
- Determining the IP address for a given AP
- Configure radio settings using the AP radio pages
- Operation and uses of repeaters
- Hot-standby mode and its benefits
- Benefits of using filtering options
- WEP security and configure an AP for it
- Adding users with suitable capabilities in the User Management Windows
- Benefits of server-based security
- Authentication and authorization in a server-based security system
- Basic settings on the Authentication Configuration page
- Configure basic EAP settings on access points and clients
- Configure EAP for Cisco Secure Access Control Server
- Set up MAC address filtering as a security tool
- New WEP Security features

Wireless Bridging

- Deployment considerations such as distance limits and path loss
- Functions and benefits of the Cisco 350 and 1400 Series Wireless Bridge
- Deployment options for the 350 and 1400 Series Wireless Bridge
- Differences between APs and bridges
- Messages communicated by the LED indicators
- Considerations for selecting antennas to be used with the wireless bridges
- Environmental factors affecting wireless performance and calculating path loss
- Using the Cisco Distance Calculation sheet to plan separation distance for a bridge
- Regulations that could impact a wireless bridge
- Tools for protecting against lightning-related surges
- Sealant products and describe their importance for bridges
- Key security features of bridges
- Methods for increasing the transmission distance
- Ways to align antennas

Site Survey and Installation

- Prepare for a site survey
- Understand the steps and important considerations to complete a site survey
- Identify items necessary to perform a site survey
- Follow proper safety procedures while performing a site survey
- Understand the site survey precautions in various vertical industries
- Properly complete a site-to-site site survey
- Properly complete a wireless LAN survey
- Properly document a site survey
- Demonstrate proper mounting of access points, bridges and antennas
- Adhere to local, state, and national electrical, building, and broadcast codes

Advanced Wireless

- Understanding of the MAC and PHY layer IEEE 802.11 specification
- The process a wireless client undergoes while associating to an access point
- Isotropic antennas and why they are used as references for other antennas
- Cisco Aironet 2.4 GHz and 5 GHz antennas, their coverage patterns, and the proper polarization of each antenna
- Understand the proper use of spectrum analyzer, gauss meter, and other test equipment

- The difference between a root and non-root mode access point
- Understand wireless attacks and mitigation techniques
- Be aware of emerging wireless technologies and VoIP
- Understand methods of enterprise wireless LAN deployment, management, and monitoring
- Develop a WLAN security policy
- Calculate EIRP and cable loss
- Decibel calculations and the uses of various decibel units

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