



Module Objectives

- Upon the completion of this module, you will be able to describe the functions, features, and benefits of the Cisco WLAN products.

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2

Introducing the Cisco Aironet 340 Series WLAN Solutions

The new Cisco Aironet® 340 series of 802.11b-compliant high-speed wireless solutions offers the best performance, manageability, scalability, and security for both in-building and building-to-building wireless applications.

Fully-integrated family of WLAN products:

- PC Card/PCI client adapters
- Access Points
- Line-of-sight bridge products
- Antennas and accessories



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Cisco Aironet 340 Series Client Adapters

- Client access for both notebook and desktop systems
- Broad operating systems support:
 - Windows 95, 98, 98SE
 - Windows NT 4.0
 - Windows 2000
 - Windows CE
 - Novell NetWare clients
- Easy, simple installation
- Lifetime limited warranty



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Aironet Client Utilities

- **Windows based graphical user interface software utility**
 - Flash upgrade to the client
 - PC card reconfigurable
 - Link test
 - Site survey capability using the link test
- **Users can more easily upgrade firmware, assess link integrity and performance, and optimize client connections**

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Client Antennas



Diversity Dipole



Diversity Dipole

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Products: Wireless Access Points

- **340 Series Wireless Access Point**
 - 10/100Mb Ethernet
 - 2048 Association entries
- **All Operate as either Wired Root node or Wireless repeater**
- **Configuration is stored in Non-Volatile Flash memory**



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7

Access Points

- **Menu driven configuration**
- **Minimum setup required for normal operation**
 - As few as two parameters to set up
- **Maximum flexibility with option menus**
- **Internal testing for RF link**
- **Out-of-band management**
 - HTML (Web Browser)
 - BootP/ DHCP
 - SNMP
 - Telnet
 - FTP



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Access-Point Menus







- **Menus include:**
 - Configuration**
 - Diagnostics**
 - Statistics**
- **Web-browser interface preferred**
- **Serial Communication- 9600, N,8,1**
 - Straight-through 9-pin cable**
 - Standard ANSI terminal**

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Wireless Antennas for Access Points

						
	<u>Rubber DiPole</u>	<u>Pillar Mount</u>	<u>Ground Plane</u>	<u>Patch Wall</u>	<u>Ceiling Mount</u>	<u>Ceiling Mount High Gain</u>
Type	Omni	Directional	Omni	Directional	Omni	Omni
Gain	2.15 dBi	5.2 dBi	5.2 dBi	8.5 dBi	2.2 dBi	5.2 dBi
Beam Width	360° H 75° V	360° H 75° V	360° H 75° V	60° H 55° V	360° H 75° V	360° H 75° V
~ Indoor Range at 1 Mbps	300'	497'	497'	700'	350'	497'
~ Indoor Range at 11 Mbps	100'	142'	142'	200'	100'	142'
Cable Length	N/A	3'	3'	3'	9'	3'

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Universal Adapters

Available in 2 versions:

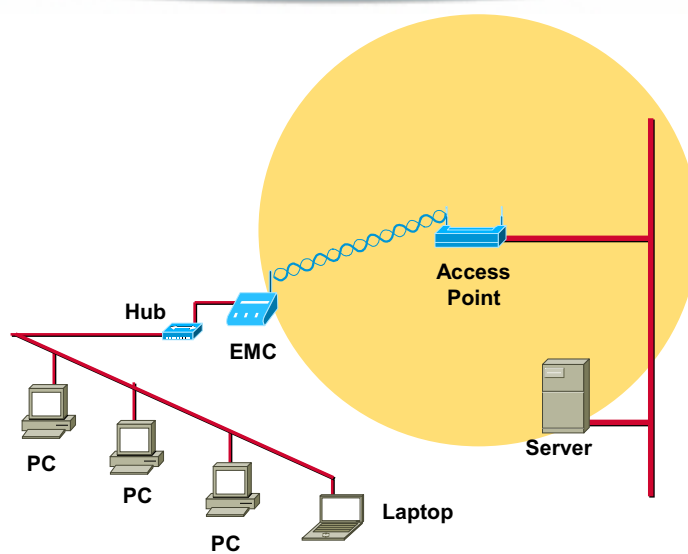
- Ethernet Universal Client (EUC)
- Ethernet Multi Client (EMC)
- Will be available Summer of 2000

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EMC340 Application



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12

Cisco Aironet® 340 Series Bridges

- Building-to-building connectivity at up to 25 miles (line of sight)
- Cost-effective alternative to leased line/T1
- Rapid, simple deployment and redeployment
- Point-to-point and Point-to-multipoint
- No government license required



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Wireless Antennas Bridges

					
	<u>Patch Wall</u>	<u>Mast Mount</u>	<u>Mast Mount High Gain</u>	<u>Yagi Mast</u>	<u>Solid Dish</u>
Type	Directional	Omni	Omni	Directional	Directional
Gain	8 dBi	5.2 dBi	12 dBi	13.5 dBi	21 dBi
Beam Width	60° H 55° V	360° H 75° V	360° H 7° V	30° H 25° V	12.4° H 12.4° V
Approximate Range at 2 Mbps	2.0 miles	5000'	4.6 miles	6.5 miles	25 miles
Approximate Range at 11 Mbps	3390'	1580'	1.4 miles	2 miles	11.5 miles
Cable Length	3'	3'	1'	1.5'	2'

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Common Questions(AP)

Questions	340 Series
How fast?	
Maximum data rate	11 MB
Typical throughput	5.5 MB
How far (at maximum data rate)?	
Outdoors	500 feet
Indoors	100 feet
How many?	
Maximum clients per AP	2048
Typical clients per AP	Same as Ethernet seg.
Co-located APs	3

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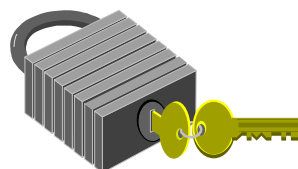
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15

Security

WLANs raise security implications not found with traditional wired LANs. Cisco addresses these concerns

- 128-bit (strong encryption) 802.11 optional Wired Equivalent Privacy (WEP)
- Inherent security of spread spectrum
- Upcoming security enhancements:
 - Certificate server for authentication and centralized security management
 - Multiple certificate server support
 - x.509 compliance



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Encryption Considerations

- **Encryption options**
 - No encryption
 - 40-bit encryption
 - 128-bit encryption
- **Hardware based encryption**
 - 3 percent performance hit
- **Encryption Choices (defined at AP)**
 - No encryption
 - Allow client to specify (optional)
 - Forced (required)



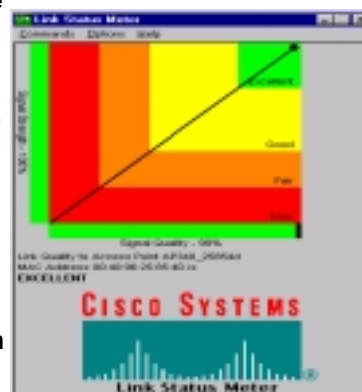
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17

Manageability

- **SNMP-compliant MIBs** which enable centralized management with a variety of packages
- **Browser or Telnet AP configuration, diagnostics, mapping utilities** for management “out of the box”
- **Local or remote AP configuration** through console port or over LAN
- **Cisco Aironet® client utility (ACU)** for site surveys, client configuration



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18

Scalability

To meet business-class requirements, WLANs must scale to thousands of users.

- Microcellular architecture delivers uninterrupted network access as users roam from one AP to another.
- Provides coverage for a facility of practically any size.
- Load sharing maintains throughput as clients increase within a microcell.
- A variety of directional and omnidirectional antennas tailor the coverage area to fit facilities of different sizes and materials.

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Performance

- Delivers performance *and* price: 11-Mbps NICs are < \$200.
- 802.11b DS is the *high-speed* standard .
- Cisco Aironet® products lead in throughput and range.

More than 15 years of signal processing experience means better multipath management.

The MAC and RISC based APs are proven technology which are on their third generation of design.

A wide range of diversity antennas cover all applications.

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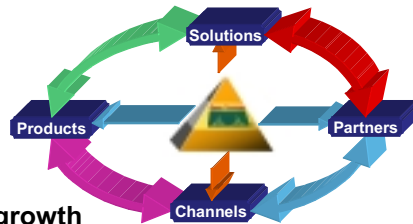
20

Summary: Cisco Positioned for Success in the WLAN Market

- **Comprehensive WLAN product line that meets the needs of customers:**

Security
Manageability
Scalability
Price/performance

- **WLAN market poised for explosive growth**
- **Market leaders will have complete wired and wireless end-to-end solution**



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21

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22