# **Basic Wireless LAN Connection with Access Point Configuration Example**



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# Introduction

This document explains how to set up a basic Wireless LAN (WLAN) connection with the use of a Cisco Access Point (AP) that runs Cisco IOS<sup>®</sup> Release 15.2(2)JB autonomous code.

# Prerequisites

## Requirements

Cisco recommends that you have basic knowledge of these topics before you attempt this configuration:

- Wireless Radio Frequency (RF) Technology
- Cisco AP Access

This document assumes that the drivers for the wireless client cards for the PCs or laptops are already installed.

## **Components Used**

The information in this document is based on Aironet 1040 Series AP that runs Cisco IOS Software Release 15.2(2)JB.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

# Configure

This section explains how to configure the AP with the use of the GUI.

There are two ways to access the AP with the use of the GUI:

- Assign an IP address to the device before you connect through the GUI.
- Obtain an IP address with the use of DHCP.

### Instructions

After you configure the IP address, you can access the AP through the browser in order to configure the AP.

Complete these steps:

1. In order to access the AP with the GUI and open the Summary Status window, complete these steps:

- Open a web browser, and enter the *IP address* of the AP in the address line.
- Enter the *Username* and *Password*. The default username and password are *Cisco*.

The Summary Status window displays, as shown here:

uhuhu cisco	HOME NETWORK ASSOCIATION	WIRELESS SECURITY SERVICES	Sage Configuration Eng Lo SOFTWARE EVENTLOG	hog			
Home Summary	CISCO Cisco Aironet 1040 Series Access Point						
Easy Setup	Hostname Autonomous		Autonomous uptime is 2 days, 1 hour, 48	minut			
	Home: Summary Status						
	Association						
	Clients: 0	infrastructure clients. 0					
	Network Identity						
	IP Address		10.105.127.39				
	MAC Address		4055.30f2.0c9c				
	Network Interfaces						
	Interface	MAC Address	Transmission Rate				
	CigabitEthemet	4055 3912 0c9c	1Gbps				
	Radio0-802.11N2.40Ha	1caa.07018#c0	Mcs Index 15				
	Badio 1-002 111950Hz	1caa.0767.5580	Mcs Index 15				
	EventLog						
	Time	Severity	Description				
	Mar 1 00:00:27.414	Warning	No VLANs configured in NBSSID mode. Dot11Radio0 not started				
	Mar 1 00:00:25.413	<ul> <li>Warning</li> </ul>	Full power - NEGOTIATED Inline power source				
	Mar 1 00:00:19.045	Notification	Line protocol on Interface Dot11Radio0, changed state to down				
	Har 1 05:00 10 212	delateration.	Line protocol en interface DI/H, chose porticipits to up				

#### 2. Click *Easy Setup* on the left, and then click *Network Configuration*.

The Easy Setup window displays. You can use this window in order to configure some basic parameters that are necessary in order to establish a wireless connection. Here is an example of the window:

CISCO	HOME NETWORK AS:			
me	Hostname Autonomou	и		Autonomous uptime is 2 days, 1 hour, 52 minute
ummary asy Setup	Network Configu	ration		Reboot AP
Network Configuration	Host Name:	Autonemous		
	Server Protocol:	C OHCP . Static IP		
	IP Address:	10.106.127.39		
	IP Subnet Mask:	255.255.255.0	Curre	nt SSID List(Read Only)
	Default Gateway:	10.106.127.1	< NE	* ×
	Usemame:			
	Password:			
	SNMP Community:	sam © Read-Only 🔎 Read-Write		
	SNMP Community:	C Read-Only * Read-Write		
	SNMP Community:	C Read-Only @ Read-Write		
	SNNP Community: Apply: Cancal	C Read-Only @ Read-Write	Radio 5GHz	
	SNNP Community: Apply] Cancel Radio Configurat	C Read-Only @ Read-Write	Radio 5GHz SSID :	•
	SNHP Community: Apply] Cancel Radio Configurat Radio 2.4GHz SSID :	Read-Only  Read-Write	SSID :	
	SNHP Community: Apply Cancel Radio Configurat Radio 2.4GHz	© Read-Only		No VLAN   Enable VLAN ID:
	SNMP Community: Apply: Cancal Radio Configurat Radio 2.4GHz SSID : VLAN :	Read-Only   Read-Write	SSID : VLAN :	No VLAN      Enable VLAN ID:     (1-4094)      Native VLAN
	SNMP Community: Apply Cancel Radio Configurat Radio 2.4GHz SSID : VLAN : Security :	Read-Only Read-Write  Ion  Remoticast SSID in Reacon  No VLAN © Enable VLAN ID:  (1-4094) © Native VLAN  No Security	SSID : VLAN : Security :	No VLAN © Enable VLAN ID: (1-4094) © Native VLAN No Security
	SNMP Community: Apply: Cancal Radio Configurat Radio 2.4GHz SSID : VLAN :	Read-Only Read-Write  Ion  Recoderst SSID in Reacon  No VLAN © Enable VLAN ID:  (1-4094) © Native VLAN  No Security  rk : Access Point	SSID : VLAN :	No VLAN © Enable VLAN ID: (1-4094) © Native VLAN No Security      Access Point

- 3. Enter these configuration parameters in the Easy Setup window:
  - ♦ *Host Name* of the AP
  - ♦ *IP Address* configuration of the AP, if the IP address is static
  - ♦ Default Gateway
  - ♦ Username/Password
  - ♦ Service Set Identifier (SSID) for both Radio 2.4GHz and Radio 5GHz
  - ♦ SSID *Security* configuration and other specific parameters

*Tip*: You can reboot the AP or Factory Reset its configuration under Easy Setup.

Here is the example window:

սիսիս				and the second	Sage Configuration   <u>Bing</u> Logout   Befree	
CISCO Home Summery * Easy Setup Network Configuration	D Robress: IP Subnet Mask: Default Gabeway: Usemame: Password:	255.255.255.0 10.106.127.1	CURETY SERVICES SOFTWARE	EVENT LOG Current I NEW I ME	SSID List(Read Only)	
	Apply Gancel	C Read-Only 📽 Read-Write		Radio 5GHz		
	SSID :	cisco1		SSID :	cisca2	
	VLAN :	Broadcast SSID in Be     No VLAN      Trable VI     10     (1-4094)		VLAN :	Broadcast SSID in Beacon     No VLAN      Deable VLAN ID:     10     10	
	Security (	No Security 💌	-	Security (	No Security	
	Role in Radio Nets Optimize Radio Net Aironet Extensione Channel: Power:	Work : Repeater Robert Bridge Workgroup Bridge Universal Workgroup Bridg Sammer	je	Role in Radio Network : Optimize Radio Network : Aironet Extensions: Channel: Power:	Access Point	
	Apply Cancel	1		Apply Cancel		

- 4. Click *Apply* in order to save the changes for the specific section on the same page.
- 5. In order to view the Network Interface Summary, navigate to *Network > Network Interface > Summary*.

cisco E	KOME METWORK ASSOCIATION V	IRELESS SECURITY SERVICES SOFTWARE	EVENT LOG						
ETWORK	Hostname Autonomous			Autonomous uptime is 2 days, 2 hours, 5 minute					
NETWORK MAP	Network Interfaces: Summary								
Summary	System Settings								
Adjacent Nodes NETWORK INTERFACE	IP Address ( Static )	10.105.127.39							
Summary	IP Subnet Mask	255 255 255 0							
IP Address Gigsbitthernet	Default Gateway	10.106.127.1							
Radio0-802.11n 2G.Hz	MAC Address	4055.3912.0090							
Radio0-802.11n SG.Hz	Interface Status	GigabiEthernet	Radio0-802.11192.40%	Radio1-802.11NSDH					
	Software Status	Enabled 🛊	Disabled 🖊	Disabled					
	Hardware Status	Up 🏦	Down	Down-					
	Interface Resets	2	2						
	Receive								
	Input Rate Timespan	5 minute	5 minute	5 minut					
	Input Rate (bits/sec)	3000	0						
	Input Rate (packets/sec)	4	0						
	Time Since Last Input	00:00:00	never	neve					
	Total Packets Input	673846	0						
	Total Bytes Input	53910892	0						
	Broadcast Packets	560263	0						
	Total input Errors	0	0						

6. In order to view or edit the GigabitEthernet port, Radio 2.4GHz and Radio 5GHz settings, navigate to the *Network Interface* section.

Here are the screenshots:

սիսիս cisco ։։	OME NETWORK ASSOCIATION WIRELESS	SECURITY SERVICES SOFTWAR	E EVENTLOS	Saye Configuration   ging   Logout					
TWORK		SETTINGS							
ETWORK MAP Summary Adjacent Nodes	Hostname Autonomous			Autonomous uptime is 2 days, 2 hours, 6 minute					
ETWORK INTERFACE	Network Interfaces: GigabitEthernet Status								
ummary	Configuration								
P Address igabitEthemet	Software Status	Enabled 1	Hardware Status	Up 1					
adio0-802.11n 2G.Hz	Maximum Rate		Duplex						
adio0-802.11n SG.Hz	Interface Statistics								
	Interface Resets	2	No Carrier						
	Lost Carrier	D							
	Receive / Transmit Statistics								
	Receive		Transmit						
	5 Min Input Rate (bits/sec)	10000	5 Min Output Rate (bits/sec)	32050					
	5 Min Input Rate (packets/sec)	13	5 Min Output Rate (packets/sec)	11					
	Time Since Last Input	00:00:00	Time Since Last Output	00:00:00					
	Total Packets Input	675503	Total Packets Output	23910					
	Total Bytes Input	54057620	Total Bytes Output	6604913					
	Broadcast Packets	560676							
	Error Statistics								
	Receive		Transmit						
	Total Input Errors	0	Total Output Errors						
	Overrun Errors	0	Underrun Errors						
	Ignored Packets	0	Deferred Packets						
	Framing Errors	D	Babbles						

RADIO0-802.11N2.40HZ STATUS	DETAILED STATUS	ETTINGS	CARRIER BUSY TEST		
tostname Autonomous		Autonomous uptime is 2 days, 2 hours, 7 minu			
Network Interfaces: Radio0-802.11N <sup>2.4GHz</sup> St	atus				
Configuration					
Software Status	Disabled 🗸	Hardware Status	Down		
Operational Rates	10 20,55,110,60,90,120,180, 240,360,480,540,m92,m12,m22, m32,m42,m52,m12,m12,m12,m12,m12, m6-2,m10-2,m11-2,m12-2,m13-2,m14		10,20,55,110 Mba		
Aironet Extensions	Enabled	Carrier Set	America		
Configured Radio Channel	0 MHz Channel 0	Transmitter Power	0 dBm (1.0 to m23b		
Active Radio Channel	0 MHz Channel 0	Channel Width	20 M		
Role in Network	Access Point				
Antenna Gain	0 d0				
Interface Statistics					
Interface Resets	2				
Receive / Transmit Statistics					
Receive		Transmit			
5 Min Input Rate (bits/sec)	0	5 Min Output Rate (bits/sec)			
5 Min Input Rate (packets/sec)	0	5 Min Output Rate (packets/sec)			
Time Since Last Input	never	Time Since Last Output	nev		
Total Packets Input	0	Total Packets Output			
Total Bytes Input 0		Total Bytes Output			
Error Statistics					
Receive		Transmit			
Total Input Errors	0	Total Output Errors			

7. Click the *Association* tab in order to check the client associations:

uluulu cisco	HOME NETWORK ASSOCIATION WIRELESS	SECURITY SERVICES SOFTWARE EVENTLOG	Saya Configuration   Eng   Logout   Befree
Association Activity Timeout	Nostaame Autonomous	Autonomous uptime is 2 days, 2 hours, 9 minutes	
	Association		
	Clients: 0	Infrastructure clients: 0	
	View: Client Client Infrastructure client		Apply
	Radio0-802.11N <sup>2.40Hz</sup>		
	Radio1-802.11M <sup>50Hz</sup>		
			Refresh
	Close Window		Copyright (c) 1992-2012 by Cisco Systems, In

8. An Autonomous AP can also be used for Wireless Domain Services (WDS). Click the *Wireless* tab in order to configure or view WDS settings:

cisco	Sage Configuration (Eng. Lagout Befrei HOME METWORK ASSOCIATION WIRELESS SECURITY SERVICES SOFTWARE EVENTLOG						
Wireless Services	WDS STATUS EENERAL SET UP SERVER GROUPS Hostname Autonomous uptime is 2 days, 2 hours, 10 minutes						
WDS	Wineless Services: WDS/WWM - General Set Up WDS - Wineless Domain Services - Global Properties						
	Use this AP as Wireless Domain Services Wireless Domain Services Priority: DISABLED (1-255) Use Local MAC List for Client Authentication						
	WMM - Wireless Network Manager - Global Configuration						
	Configure Wireless Network Manager Wireless Network Manager Address: DISABLED (IP Address or Hostname)						
	Apply. Cancel						
	Close Window Copyright (c) 1982-2009, 2011-2012 by Cloco Systems, In						

9. In order to configure the following AP parameters, click the *Security* tab:

- ♦ Admin Access Sets the username and password, and uses the local or authentication server
- *Encryption Manager* Sets the encryption for the radio
- ◆ *SSID Manager* Configures the SSID(s)
- ♦ Server Manager Adds a RADIUS server
- ◆ AP Authentication Uses certificates for the AP
- ♦ Intrusion Detection Configures Management Frame Protection
- ◆ Local RADIUS Server Configures the AP as a RADIUS server

♦ Advance Security – Configures MAC address authentication with MAC addresses or Access Control Lists

Here is the screenshot:

ecurity	Hostname Autonomous								Auto	nomous upli	me is 2 days, 2 hos	rs, 19 minut	
Admin Access Encryption Manager	Country Country												
SSID Manager	Security Semmary Administrators												
Server Manager	Username				Re	ad-Only				Read-W	ite		
Intrusion Detection	Cisco	-				1							
Local RADIUS Server	Service Set Identifiers (SSIDs)												
Advance Security	SSID	VLAN	N Band Select			Radio BSSID/Guest M		ode	Open	Shared	Network EAP	MEP	
	test		Disabled		Radio0-802.11N <sup>2.40Hz</sup> 1caa.076f.8fc		1caa 076f.Bfc0		with EAP			Disabled	
	Restor R02.118 <sup>2.40H)</sup> Encryption Settings												
	Encryption Mode		WEP		Cig		Ciphe	aher		Kow	Key Rotation		
	chargeron mode		MIC	РРК	TKIP	WEP40bit	WEP128bit	CKIP	CMIC	AES C	см	Kay resauch	
	Cipher									1			
	Radio1-802.418 <sup>4085</sup> Encryption Settings												
	Encryption Mode		WEP		Cip		Ciphe	pher			Kaw	Key Deterline	
	Cheryphon mode		MIC	РРК	ткір	WEP40bit	WEP128bit	CKIP	CMIC	AES C	CM	Key Rotation	
	Cipher								-	1			
	Server-Based Security												
	Server Name/IP Address			Туре		EAP	MAC		Admin		Accounting		
	1.1.1.1		5	ADIUS		1							

10. The *Services* tab allows you to configure the services available for the AP, such as Telnet, Secure Shell (SSH), or Cisco Discovery Protocol (CDP):

cisco	Home Network Association wijneless security services software eve	Sage Configuration Eine Logout Befresh NT LOG
Services Telnet/SSH	Hostname Autonomous	Autonomous uptime is 2 days, 2 hours, 20 minutes
Hot standby CDP	Services Summary	
DNS Filters		
QOS Stream	Close Window	Copyright (c) 1992-2009, 2011-2012 by Clace Systems, Inc.
SNNP		
VLAN ARP Caching		
Band Select		

11. In order to check the AP software version or upgrade the AP, click the AP *Software* tab:

## diala cisco

Svs	term	Sal	Hans	ana -

Sof

ciseo	Deve Bernann Brannenn uhreren Ser	The second secon	
stem Software	Hostname Autonomous		Autonomous uptime is 2 days, 2 hours, 21 minutes
oftware upgrade ystem configuration	System Software Version: Cisco IOS Software		
	Product/Model Number:	AR-LAP1042N-A-K9	
	Top Assembly Serial Number:	FGL151563WT	
	System Software Filename:	c1140-k9w7-tax.152-2.JB	
	System Software Version:	15.2(2)JB	
	Bootloader Version:	12.4(23c)JA	
	System Uptime:	2 days, 2 hours, 21 minutes	
	Close Window		Copyright (c) 1992-2009, 2011-2012 by Cisco Systems, Inc.

stem Software	Hostname Autonomous		Autonomous uptim	e is 2 days, 2 hours, 22 minut
Software upgrade System configuration	System Software: System Configuration	1000		
	Current Startup Configuration File:	config.txt		
	Load New Startup Configuration File:	Load Choose File No file chosen		
	Technical Support Information:	Show tech-support		
	Reset to Factory Defaults:	Reset to Defaults		
	Reset to Factory Defaults (Except IP Address)	Reset to Defaults (Except IP)		
	Restart Now:	Restart		
	System Power Settings			
	Power State:	FULL POWER		
	Power Source:	NEGOTIATED		
	Power Settings:	Power Negotiation O Pre-standard Compatibility		
	Power Injector:	Installed on Port with MAC Address: DISABLED	(10000,0000,0000,0000)	
				Apply
	Locate Access Point	The second s		
	Blink the Access Point LEDs:	Disable     Disable     Disable		Apply

## Verify

When you complete the configurations and activate the profile, the client adapter connects to the AP.

Here is an example event log, which is accessed under the *Event Log* tab:

uluulu cisco	HOME D	JETWORK ASS	DCIATION	WIRELESS	SECURITY	SERVICES	SOFTWARE	EVE	INTLOG				Saye Con	figuration	Eng 1	Logout   B
vent Log	Hosta	ama Autonomous										Aut	onomous uptin	ne is 2 day	s, 2 hours,	24 minutes
Configuration Options	_															
	Event Log															
	Start	Display at Index	: 1	Max Nu	mber of Eve	ents to Display:	20						Previous	Next	Refresh	Clear
	Index	Time			Severit	v	Descriptio	n								
	1	Mar 1 00:00:27.4	14		+Warn	ing	No VLANs	configur	red in MBS	SID mode.	Dot11RadioD	not started				-
	2	Mar 1 00:00:26.4	13		+Wam	ing	Full power	- NEGO	TATED init	ine power	source					
	3	Mar 1 00:00:19.0	45		Notifi	cation	Line protoc	cal on in	terface Dot	t11Radic0	changed state	to down				
	4	Mar 1 00:00:18.3	12		<ul> <li>Notifi</li> </ul>	cation	Line protoc	cal on in	iterface Birl	1, changed	d state to up					
	6	Mar 1 00:00:18.2	88		<ul> <li>Notifi</li> </ul>	cation	Line protoc	cal on in	terface Dot	ti 1Radio1.	changed state	to down				
	6	Mar 1 00:00:18.0	38		<ul> <li>Notifi</li> </ul>	cation	Interface D	oti iRa	dio0, chang	ged state to	o reset					
	7	Mar 1 00:00:18.0	33		</td <td>cation</td> <td>SSH 1.991</td> <td>has bee</td> <td>n enabled</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	cation	SSH 1.991	has bee	n enabled							
	8	Mar 1 00:00:17.9	69		<notifi< td=""><td>cation</td><td>ShaaP age</td><td>nt on he</td><td>st Autonom</td><td>nous is un</td><td>dergoing a col</td><td>d start</td><td></td><td></td><td></td><td></td></notifi<>	cation	ShaaP age	nt on he	st Autonom	nous is un	dergoing a col	d start				
	9	Mar 1 00:00:17.9	69		Notific	cation	System red	started -	-							
	10	Mar 1 00:00:17.5	50		Notific	cation	Configured	d from m	nemory by c	console						
	11	Mar 1 00:00:17.2	83		Notifi	cation	Interface D	ott 1Ra	dio1, chang	ged state to	administrativ	ely down				
	12	Mar 1 00:00:16.9	95		•Warn	ing	Warning: S	ienverra	dius1 is no	of defined.						
	13	Mar 1 00:00:16.6	61		<ul> <li>Notifi</li> </ul>	cation	Line protoc	cal on In	iterface Gig	abitEthem	et0, changed s	state to up				
	14	Mar 1 00:00:15.6	35		+inform	nation	Interface G	gabitEt	hemet0, ch	anged sta	te to up					
	15	Mar 1 00:00:13.6	10		+Critic	al .	RADIO con	to FIPS	selflaster	assed on i	nterface Dol11	Radio 18as	e Ethernet MAC	actress	40-55-10-F2	200.90

The Event Log can be altered in order to display the desired content. Use the *Configuration Options* on the left–hand navigation pane in order to change the settings:

Event Log	Event Log: Configuration Options				
Configuration Options	Disposition of Events (by Severity Level)				
		Display on Event Log	Notily via SNMP /Syslog Trap	Record for SMIIP /Syslog History Table	Display on Teinet /SSH Monitor
	Emergency	Display	Notify	Record	R Monitor
	+Alert	Display	Notity	Record	R Monitor
	Critical	I Display	R Notify	Record	R Monitor
	+Error	Display	Votity	Record	Monitor
	•Warning	Display	Notify	Record	R Monitor
	Notification	Display	Notify	C Record	Monitor
	Information	Display	Notity	E Record	R Monitor
	Debugging	I Display	🖾 Notiły	Record	Monitor
	Syslog Server Host Name or IP Address:				
	Syslog Facility:		Local use 7		
	Time Stamp Format for Future Events:		🗇 System Uptime 🔮 Global Standa	nd Time O Local Time	
	Event Log Size:		4096 (4096-13258788) Availa	able Bytes	
	History Table Size:		1 (0-500) Messages		

On this screen, you can also Ping from the AP GUI, Save Configuration, and Logout:

cisco	HOME NETWORK ASSOCIATION WIRELESS SECURITY SERVICES SOFTWARE EVENTLOG	Sage Configuration Bing Legout Befresh
Event Log	Event Log: Configuration Options	(

## Troubleshoot

There is currently no specific troubleshooting information available for this configuration.

Event Log	Event Log: Configuration Options						
Traublachaat							

here is currently no specific troubleshooting information available for this configuration.

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