

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[®] 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:

The screenshot displays the Cisco Aironet 1040 Series Access Point Summary Status page. The page is titled "Cisco Aironet 1040 Series Access Point" and shows the device's configuration and status. The main content area is divided into several sections:

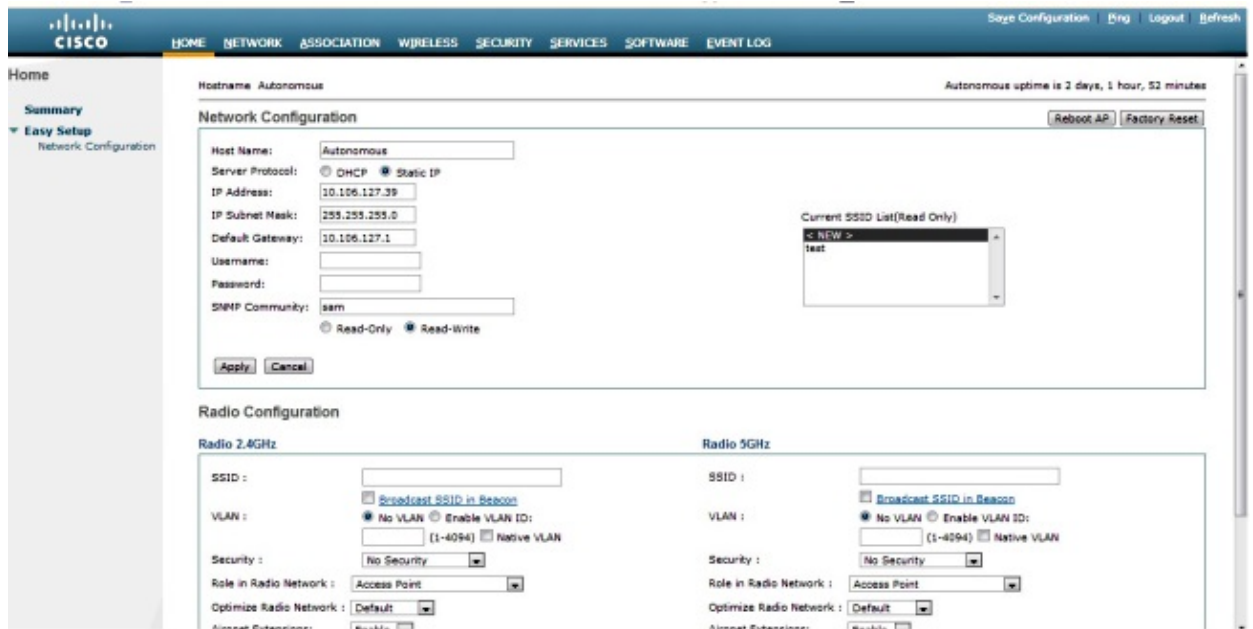
- Hostname:** Autonomous. Autonomous uptime is 2 days, 1 hour, 48 minutes.
- Home: Summary Status**
- Association:** Shows a single association with Client 0 and infrastructure client 0.
- Network Identity:** Shows IP Address 10.106.127.39 and MAC Address 4055.39f2.0c9c.
- Network Interfaces:** A table listing interfaces, MAC addresses, and transmission rates.

Interface	MAC Address	Transmission Rate
GigabitEthernet0	4055.39f2.0c9c	1Gbps
Radio0-602 11n 2.4GHz	1caa.0701.8f00	Mcs Index 15
Radio1-602 11n 5GHz	1caa.0707.5b00	Mcs Index 15
- Event Log:** A table showing event details.

Time	Severity	Description
Mar 1 00:00:27.414	Warning	No VLANs configured in MBSSID mode. Dot11Radio0 not started
Mar 1 00:00:26.413	Warning	Full power - NEGOTIATED inline power source
Mar 1 00:00:19.045	Notification	Line protocol on Interface Dot11Radio0, changed state to down
Mar 1 00:00:18.349	Information	Line protocol on Interface Dot11Radio0, changed state 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:

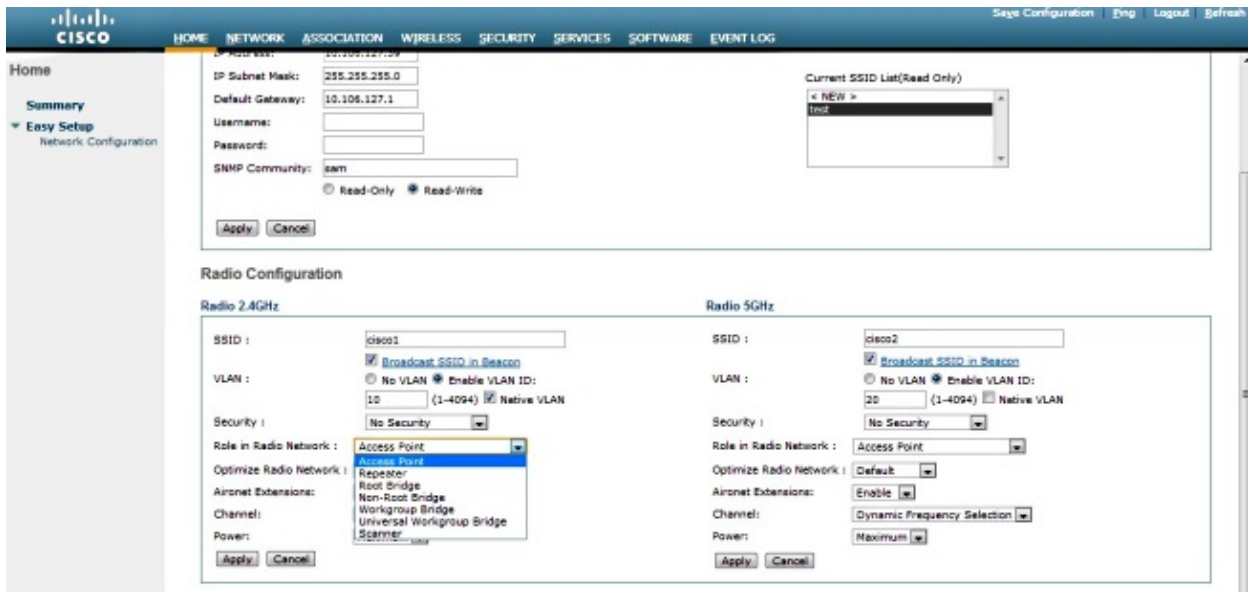


3. Enter these configuration parameters in the Easy Setup window:

- ◆ *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:



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**.

The screenshot shows the Network Interface Summary page. The top navigation bar includes links for HOME, NETWORK, ASSOCIATION, WIRELESS, SECURITY, SERVICES, SOFTWARE, and EVENT LOG. The main content area is divided into sections for Network Interfaces: Summary, System Settings, Interface Status, and Receive. The System Settings section shows IP Address (10.106.127.39), IP Subnet Mask (255.255.255.0), Default Gateway (10.106.127.1), and MAC Address (4855.3982.009c). The Interface Status section shows the status of three interfaces: GigabitEthernet (Enabled), Radio2-802.11n-2.4GHz (Disabled), and Radio1-802.11n-5GHz (Disabled). The Receive section shows input rate and total packets for each interface.

Network Interfaces: Summary			
System Settings			
IP Address (Static)	10.106.127.39		
IP Subnet Mask	255.255.255.0		
Default Gateway	10.106.127.1		
MAC Address	4855.3982.009c		
Interface Status			
	GigabitEthernet	Radio2-802.11n-2.4GHz	Radio1-802.11n-5GHz
Software Status	Enabled	Disabled	Disabled
Hardware Status	Up	Down	Down
Interface Resets	2	2	0
Receive			
Input Rate Timespan	5 minute	5 minute	5 minute
Input Rate (bits/sec)	3000	0	0
Input Rate (packets/sec)	4	0	0
Time Since Last Input	00:00:00	never	never
Total Packets Input	673846	0	0
Total Bytes Input	53910892	0	0
Broadcast Packets	560263	0	0
Total Input Errors	0	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:

[HOME](#)
[NETWORK](#)
[ASSOCIATION](#)
[WIRELESS](#)
[SECURITY](#)
[SERVICES](#)
[SOFTWARE](#)
[EVENT LOG](#)

[Cisco](#)
[Save Configuration](#)
[Eng](#)
[Logout](#)
[Refresh](#)

NETWORK

- NETWORK MAP**
 Summary
 Adjacent Nodes
- NETWORK INTERFACE**
 Summary
 IP Address
 GigabitEthernet
 Radio0-802.11n 2G.Hz
 Radio0-802.11n 5G.Hz

GIGABITETHERNET STATUS

Hostname Autonomous Autonomous uptime is 2 days, 2 hours, 6 minutes

Network Interfaces: GigabitEthernet Status

Configuration

Software Status	Enabled ↑	Hardware Status	Up ↑
Maximum Rate		Duplex	

Interface Statistics

Interface Resets	2	No Carrier	0
Lost Carrier	0		

Receive / Transmit Statistics

Receive		Transmit	
5 Min Input Rate (bits/sec)	10000	5 Min Output Rate (bits/sec)	32060
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	675903	Total Packets Output	23918
Total Bytes Input	54067620	Total Bytes Output	6604913
Broadcast Packets	500676		

Error Statistics

Receive		Transmit	
Total Input Errors	0	Total Output Errors	0
Overrun Errors	0	Underrun Errors	0
Ignored Packets	0	Deferred Packets	0
Framing Errors	0	Babbles	0

RADIO0-802.11N^{2.4GHz} STATUS

Hostname Autonomous Autonomous uptime is 2 days, 2 hours, 7 minutes

Network Interfaces: Radio0-802.11N^{2.4GHz} Status

Configuration

Software Status	Disabled ↓	Hardware Status	Down ↓
Operational Rates	1.0, 2.0, 5.5, 11.0, 8.0, 9.0, 12.0, 18.0, 24.0, 36.0, 48.0, 54.0, m0-2, m1-2, m2-2, m3-2, m4-2, m5-2, m6-2, m7-2, m8-2, m9-2, m10-2, m11-2, m12-2, m13-2, m14-2, m15-2 Mbit/sec	Basic Rate	1.0, 2.0, 5.5, 11.0 Mbit/sec
Aironet Extensions	Enabled	Carrier Set	Americas
Configured Radio Channel	0 MHz Channel 0	Transmitter Power	0 dBm (1.0 to m2304)
Active Radio Channel	0 MHz Channel 0	Channel Width	20 MHz
Role in Network	Access Point		
Antenna Gain	0 dB		

Interface Statistics

Interface Resets	2		
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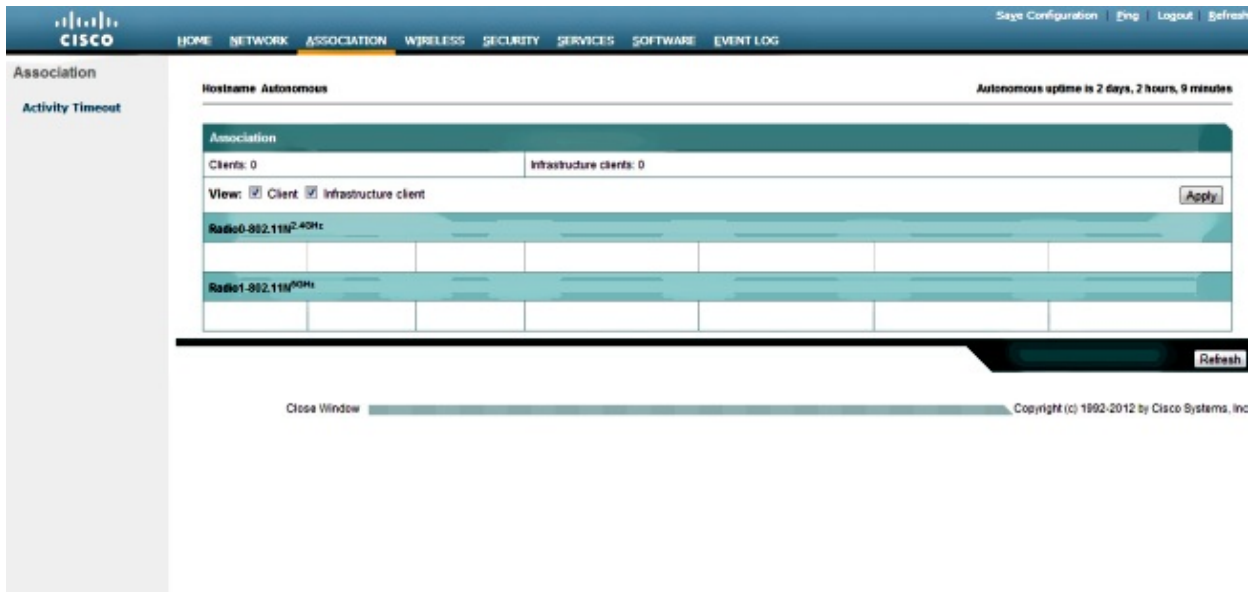
Receive / Transmit Statistics

Receive		Transmit	
5 Min Input Rate (bits/sec)	0	5 Min Output Rate (bits/sec)	0
5 Min Input Rate (packets/sec)	0	5 Min Output Rate (packets/sec)	0
Time Since Last Input	never	Time Since Last Output	never
Total Packets Input	0	Total Packets Output	0
Total Bytes Input	0	Total Bytes Output	0

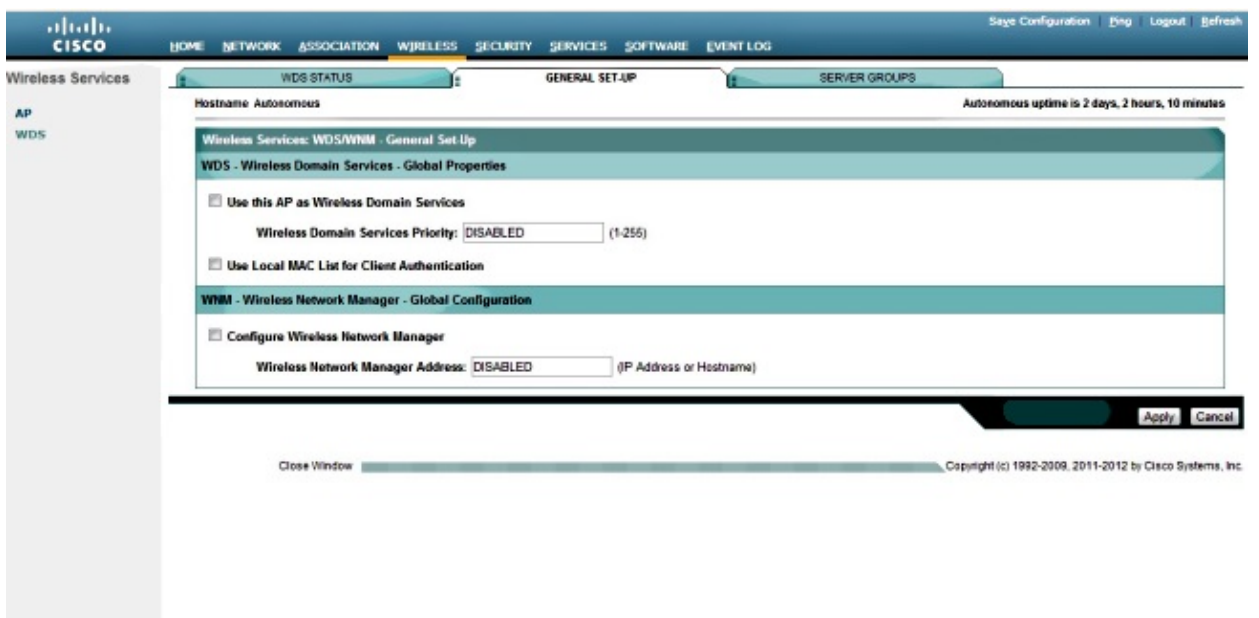
Error Statistics

Receive		Transmit	
Total Input Errors	0	Total Output Errors	0

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



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:



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:

Hostname: Autonomous Autonomous uptime is 2 days, 2 hours, 19 minutes

Security Summary

Administrators

Username	Read-Only	Read-Write
Cisco	✓	

Service Set Members (SSIDs)

SSID	VLAN	Band Select	Radio	BSSID/Guest Mode	Open	Shared	Network EAP	MFP
test		Disabled	Radio0-802.11n(2.4GHz)	1caa.076f.8fc0	with EAP			Disabled

Radio0-802.11n(2.4GHz) Encryption Settings

Encryption Mode	WEP		Cipher						Key Rotation
	MIC	PPK	TKIP	WEP40bit	WEP128bit	CCMP	CMIC	AES CCM	
Cipher								✓	

Radio1-802.11n(2.4GHz) Encryption Settings

Encryption Mode	WEP		Cipher						Key Rotation
	MIC	PPK	TKIP	WEP40bit	WEP128bit	CCMP	CMIC	AES CCM	
Cipher								✓	

Server-Based Security

Server Name/IP Address	Type	EAP	MAC	Admin	Accounting
1.1.1.1	RADIUS	✓			

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

Hostname: Autonomous Autonomous uptime is 2 days, 2 hours, 20 minutes

Services Summary

Close Window Copyright (c) 1992-2009, 2011-2012 by Cisco Systems, Inc.

Services

- Telnet/SSH
- Hot standby
- CDP
- DNS
- Filters
- HTTP
- QoS
- Stream
- SNMP
- SNTP
- VLAN
- ARP Caching
- Band Select

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

System Software

Software upgrade
System configuration

Hostname Autonomous Autonomous uptime is 2 days, 2 hours, 21 minutes

System Software Version: Cisco IOS Software

Product/Model Number:	AIR-LAP1042N-A-K9
Top Assembly Serial Number:	FGL151533WT
System Software Filename:	c1140-15w7-tar.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.

System Software

Software upgrade
System configuration

Hostname Autonomous Autonomous uptime is 2 days, 2 hours, 22 minutes

System Software: System Configuration

Current Startup Configuration File: [config.txt](#)

Load New Startup Configuration File: No file chosen

Technical Support Information: [Show tech-support](#)

Reset to Factory Defaults:

Reset to Factory Defaults (Except IP Address):

Restart Now:

System Power Settings

Power State: FULL POWER

Power Source: NEGOTIATED

Power Settings: Power Negotiation Pre-standard Compatibility

Power Injector: Installed on Port with MAC Address: @{HHH.HHHH.HHHH}

Locate Access Point

Blink the Access Point LEDs: Disable Enable

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:

Hostname Autonomous Autonomous uptime is 2 days, 2 hours, 24 minutes

Event Log

Start Display at Index: Max Number of Events to Display: Previous Next Refresh Clear

Index	Time	Severity	Description
1	Mar 1 00:00:27.414	Warning	No VLANs configured in MBSSID mode. Dot11Radio0 not started
2	Mar 1 00:00:26.413	Warning	Full power - NEGOTIATED inline power source
3	Mar 1 00:00:19.045	Notification	Line protocol on interface Dot11Radio0, changed state to down
4	Mar 1 00:00:18.312	Notification	Line protocol on interface Evi1, changed state to up
5	Mar 1 00:00:18.288	Notification	Line protocol on interface Dot11Radio1, changed state to down
6	Mar 1 00:00:18.038	Notification	Interface Dot11Radio0, changed state to reset
7	Mar 1 00:00:18.033	Notification	SSH 1.99 has been enabled
8	Mar 1 00:00:17.969	Notification	SNMP agent on host Autonomous is undergoing a cold start
9	Mar 1 00:00:17.969	Notification	System restarted --
10	Mar 1 00:00:17.550	Notification	Configured from memory by console
11	Mar 1 00:00:17.283	Notification	Interface Dot11Radio1, changed state to administratively down
12	Mar 1 00:00:16.995	Warning	Warning: Server radius1 is not defined.
13	Mar 1 00:00:16.661	Notification	Line protocol on interface GigabitEthernet0, changed state to up
14	Mar 1 00:00:15.635	Information	Interface GigabitEthernet0, changed state to up
15	Mar 1 00:00:13.810	Critical	RADIO crypto PFS self test passed on interface Dot11Radio 1Base Ethernet MAC address: 40:55:39:F2:DC:9C

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: Configuration Options

Disposition of Events (by Severity Level):

Severity Level	Display on Event Log	Notify via SNMP / Syslog Trap	Record for SNMP / Syslog History Table	Display on Telnet / SSH Monitor
Emergency	<input checked="" type="checkbox"/> Display	<input checked="" type="checkbox"/> Notify	<input checked="" type="checkbox"/> Record	<input checked="" type="checkbox"/> Monitor
Alert	<input checked="" type="checkbox"/> Display	<input checked="" type="checkbox"/> Notify	<input checked="" type="checkbox"/> Record	<input checked="" type="checkbox"/> Monitor
Critical	<input checked="" type="checkbox"/> Display	<input checked="" type="checkbox"/> Notify	<input checked="" type="checkbox"/> Record	<input checked="" type="checkbox"/> Monitor
Error	<input checked="" type="checkbox"/> Display	<input checked="" type="checkbox"/> Notify	<input checked="" type="checkbox"/> Record	<input checked="" type="checkbox"/> Monitor
Warning	<input checked="" type="checkbox"/> Display	<input checked="" type="checkbox"/> Notify	<input checked="" type="checkbox"/> Record	<input checked="" type="checkbox"/> Monitor
Notification	<input checked="" type="checkbox"/> Display	<input checked="" type="checkbox"/> Notify	<input type="checkbox"/> Record	<input checked="" type="checkbox"/> Monitor
Information	<input checked="" type="checkbox"/> Display	<input checked="" type="checkbox"/> Notify	<input type="checkbox"/> Record	<input checked="" type="checkbox"/> Monitor
Debugging	<input checked="" type="checkbox"/> Display	<input type="checkbox"/> Notify	<input type="checkbox"/> Record	<input checked="" type="checkbox"/> Monitor

Syslog Server Host Name or IP Address:

Syslog Facility:

Time Stamp Format for Future Events: System Uptime Global Standard Time Local Time

Event Log Size: (4096-13258788) Available Bytes

History Table Size: (0-500) Messages

Apply Clear Cancel

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

Event Log: Configuration Options

Troubleshoot

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