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## **Cisco Aironet 600 Series OfficeExtend Access Point User Guide**

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## Preface

The Preface describes the audience, organization, and conventions of this document. It also provides information on how to obtain other documentation. It includes the following sections:

- [Audience, page v](#)
- [Document Organization, page v](#)
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## Audience

This document is for experienced network administrators who configure and maintain Cisco wireless LAN controllers and Cisco lightweight access points. It also contains information useful to users who connect to a network via a Cisco Aironet 600 Series OfficeExtend Access Point.

## Document Organization

The following table describes the contents of each chapter in this document:

**Table 1** *Document Organization*

Chapter and Title	Description
<a href="#">Chapter 1, “Unpacking and Installing the Access Point”</a>	This chapter provides information on unpacking and installing the access point. It also gives you instructions on placement, and a description of the parts of the access point.
<a href="#">Chapter 2, “Access Point GUI”</a>	This chapter describes the various pages in the access point’s GUI.
<a href="#">Chapter 3, “Configuring the Features of the Access Point”</a>	This chapter provides information on how to configure the features provided by the access point.
<a href="#">Chapter 4, “Declarations of Conformity and Regulatory Information”</a>	This chapter contains declarations of conformity and regulatory information for the Cisco Aironet 600 Series OfficeExtend Access Point.
<a href="#">Appendix A, “Open Source Software Licenses and Notices”</a>	This appendix contains the licenses and notices for open source software used in the Cisco Aironet 600 Series OfficeExtend Access Point

# Conventions

The following table describes conventions used in this document:

**Table 2**      **Command Syntax Guide**

Convention	Description
<b>boldface</b>	Commands and keywords.
<i>italic</i>	Command input that is supplied by you.
[   ]	Keywords or arguments that appear within square brackets are optional.
{ x   x   x }	A choice of keywords (represented by x) appears in braces separated by vertical bars. You must select one.
^ or Ctrl	Represent the key labeled <i>Control</i> . For example, when you read ^D or <i>Ctrl-D</i> , you should hold down the Control key while you press the D key.
screen font	Examples of information displayed on the screen.
<b>boldface screen font</b>	Examples of information that you must enter.
<   >	Nonprinting characters, such as passwords, appear in angled brackets.
[   ]	Default responses to system prompts appear in square brackets.



**Note**

Means reader needs to take note. Notes contain helpful suggestions or references to material not covered in the manual.



**Tip**

Means the following information will help you solve a problem.



**Caution**

Means reader needs to be careful. In this situation, you might perform an action that could result in equipment damage or loss of data.

## Related Documentation

In addition to the information provided in this publication, you might need to refer to the the following documents:

- Cisco Wireless LAN Controller configuration guides.  
[http://www.cisco.com/en/US/products/ps10315/products\\_installation\\_and\\_configuration\\_guides\\_list.html](http://www.cisco.com/en/US/products/ps10315/products_installation_and_configuration_guides_list.html)
- Cisco Wireless LAN Controller command references.  
[http://www.cisco.com/en/US/products/ps10315/prod\\_command\\_reference\\_list.html](http://www.cisco.com/en/US/products/ps10315/prod_command_reference_list.html)
- Cisco Wireless LAN Controller System Message Guide.  
[http://www.cisco.com/en/US/products/ps10315/products\\_system\\_message\\_guides\\_list.html](http://www.cisco.com/en/US/products/ps10315/products_system_message_guides_list.html)

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- Release Notes for Cisco Wireless LAN Controllers and Lightweight Access Points.  
[http://www.cisco.com/en/US/products/ps10315/prod\\_release\\_notes\\_list.html](http://www.cisco.com/en/US/products/ps10315/prod_release_notes_list.html)







# Unpacking and Installing the Access Point

This chapter provides the following information:

- [Unpacking the Access Point, page 1-1](#)
- [Placing the Access Point, page 1-1](#)
- [Parts of the Access Point, page 1-3](#)
- [Installing the Access Point, page 1-4](#)
- [Resetting the Access Point, page 1-5](#)
- [Understanding the Access Point LEDs, page 1-5](#)

## Unpacking the Access Point

Each Cisco Aironet 600 Series OfficeExtend Access Point package contains the following items:

- Cisco Aironet 600 Series OfficeExtend Access Point
- Ethernet Cable
- Cisco Aironet AP600 Series Power Module (universal power supply)
- Quick reference guide
- Cisco product registration and Cisco documentation feedback cards

## Placing the Access Point

To ensure the best RF coverage for your access point, place your access point in an area as close to the wireless clients as possible and practical to do so.

If the internet source or gateway router is in a remote area, position your access point away from metal obstructions.

The access point can be placed/mounted in a horizontal position, as the access point has rubber feet on its bottom panel.

The access point may also be mounted in a vertical position using the supplied cradle or wall mounted slots.



**Note**

The distance between the mounting hole slots is 158.75 mm (6.25 in).

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Areas to avoid or places that may result in reduced range or performance are as follows.

- In a basement of a multi-story home, as the signals must penetrate many walls.
- Near large obstructions that can block the radio signals. Avoid areas like metal cabinets or refrigerators.
- On the floor under a metal desk or other dense or conductive objects.

**Note**

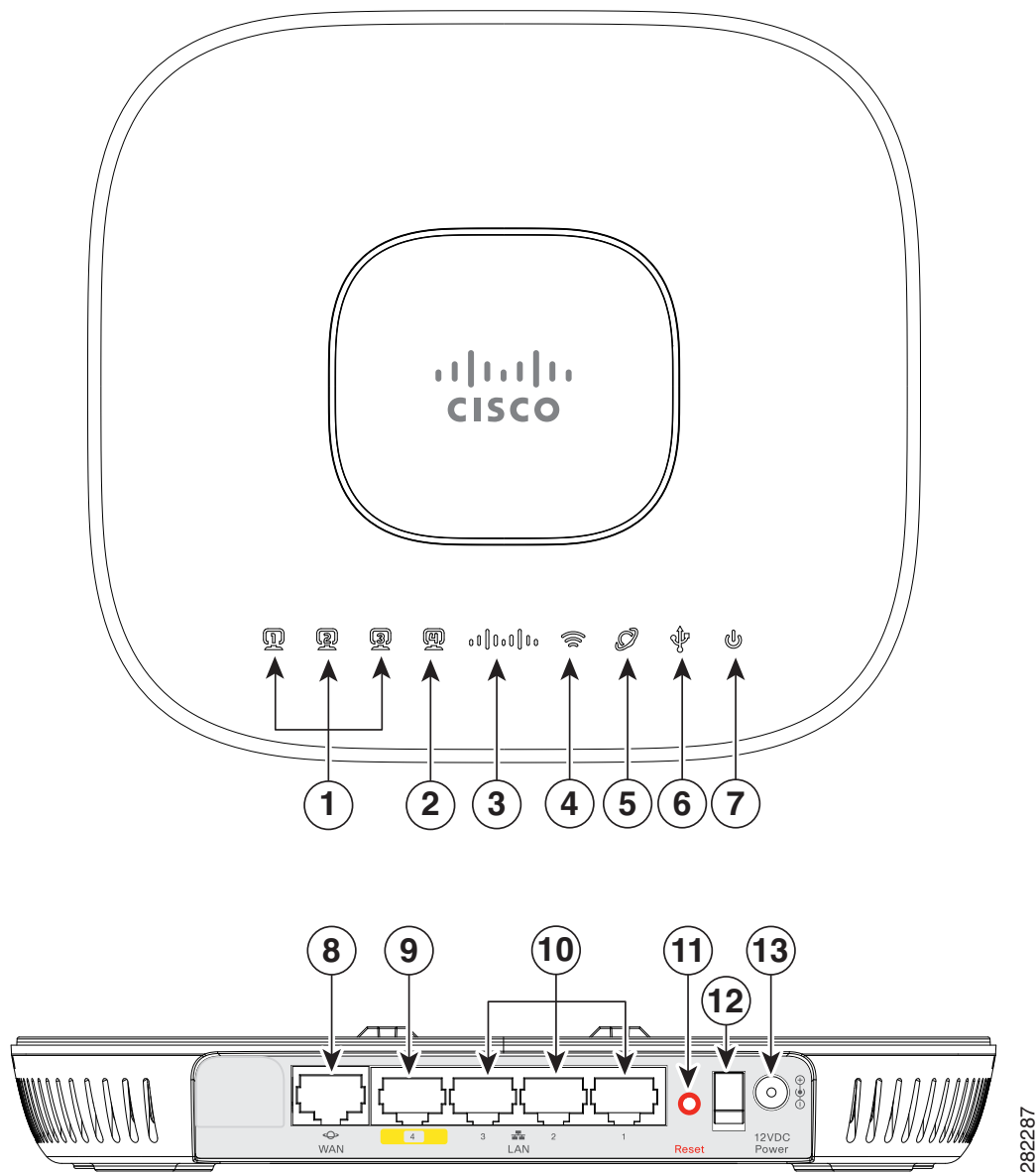
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Cisco is not responsible for damages occurred by unsecured wall-mounting hardware.

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## Parts of the Access Point



1	Local Ethernet LEDs 1 through 3	8	WAN Port
2	Remote LAN LED	9	Remote LAN Port
3	Status LED	10	Local Ethernet Ports 1 through 3
4	Wireless LED	11	Reset Button
5	WAN LED	12	Power Toggle Switch
6	USB LED (future)	13	Power Connector
7	Power Indicator LED		

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# Installing the Access Point

To install the Cisco Aironet 600 Series OfficeExtend Access Point, follow these steps:

- Step 1** Plug one end of the Ethernet cable into the Ethernet port of your home router/gateway.
- Step 2** Insert the other end of the Ethernet cable into the WAN port of the 600 Series OfficeExtend Access Point.



**Note** The 600 Series OfficeExtend Access Point has different power requirements than other Cisco enterprise access points, and this unit will be damaged if incorrect power is applied. Please refer to the 600 Series OfficeExtend Access Point specifications for power supply requirements.

- Step 3** Insert the power cord into the power connector of the 600 Series OfficeExtend Access Point.
- Step 4** Plug the other end of the power cord into your power source.
- Step 5** Press the power toggle switch on the access point to the ON position.



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- Step 6** Use the 600 Series OfficeExtend Access Point LED table ([Table 1-1 on page 1-5](#)) to understand the LEDs located on the top panel of the access point.



**Note** The process of connecting the 600 Series OfficeExtend Access Point should only take 1 to 2 minutes. Your unit may require a software image download. If so, once the connection is made, the Status LED on the top of the unit will flash blue. The Status LED continues flashing until download is complete. When the download is complete, your access point will restart. Once connected to the controller, the Status LED will display a solid blue or purple.

- Step 7** If your IT administrator has not pre-provisioned the 600 Series Office Extend AP with the IP address of the Primary Wireless LAN Controller, please follow the steps in the procedure [“Configuring the Wireless LAN Controller IP Address on the Access Point”](#) section on page 3-1, to configure this address.



**Note** You do not need to configure any SSIDs for your 600 Series OfficeExtend Access Point to connect to your company network. The access point receives the company SSID when it connects to the company network by way of the Internet. If you have problems connecting to your company network, contact your IT administrator. You can configure your local SSID Wireless LAN for other devices. See [“Configuring Radio Channels on the Access Point”](#) section on page 3-2 for more information.



**Note** Cisco Aironet 600 Series OfficeExtend access points are designed to work behind a router or other gateway device that is using network address translation (NAT). NAT allows a device, such as a home router or gateway, to act as an agent between the Internet (public) and a personal network (private), thereby enabling an entire group of computers to be represented by a single IP address. Only one Cisco Aironet 600 Series OfficeExtend access point can be deployed behind a single NAT device.

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## Resetting the Access Point

To reset a 600 Series OfficeExtend AP, while the unit is powered on, hold the reset button down for 5 seconds to restart the unit. Then hold the reset button down for 20 seconds to clear the configuration and restart the unit with the factory default settings.

## Understanding the Access Point LEDs

The LEDs on the top panel indicate the operating status of the unit. [Table 1-1](#) provides LED status indications for 600 Series OfficeExtend Access Points. A properly functioning and configured AP transitions from blinking blue to solid within ten minutes. Usually the time will be much shorter.

**Table 1-1** *LED Status Indications for 600 Series OfficeExtend Access Points*

Status LED	Meaning
Purple	Association status, when CAPWAP is connected: Normal operating condition, but no wireless client associated.
Blue	Association status, when CAPWAP is connected: Normal operating condition, at least one wireless client association.
Flashing blue	Operating Status: Software upgrade in progress.
Flashing orange	Operating Status: No IP address, waiting for DHCP IP.
Cycling through purple, orange, and blue	Operating Status: Discovery/join process in progress, no client associated.
Cycling through purple, orange	Operating Status: Discovery/join process in progress, with client associated.
Orange	Cisco IOS errors: Software failure; try disconnecting and reconnecting unit power.

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## Access Point GUI

This chapter provides the following information:

- [Accessing the GUI, page 2-1](#)
- [Access Point GUI Overview, page 2-3](#)
- [Home Page, page 2-3](#)
- [Configuration Page, page 2-4](#)
- [Event Log Page, page 2-7](#)

## Accessing the GUI

Follow these steps to access the Cisco Aironet 600 Series OfficeExtend access point GUI.

**Step 1** Connect your laptop to the local Ethernet port 1, 2, or 3 on the 600 Series OfficeExtend access point.



**Note** Ethernet port 4 (Remote LAN port) may not be used to configure the 600 Series OfficeExtend access point.

**Step 2** With the 600 Series OfficeExtend access point connected to your home router/gateway as described in the procedure “[Installing the Access Point](#)” section on [page 1-4](#), enter the IP address of the 600 Series OfficeExtend access point in the Address field of your Internet browser (<http://<ap-ipaddress>>) and click **Go**.



**Note** The default IP address is 10.0.0.1.



**Note** Make sure your laptop is not connected to your company’s network using a virtual private network (VPN) connection.

The 600 Series Office Extend Access Point Login page is displayed.

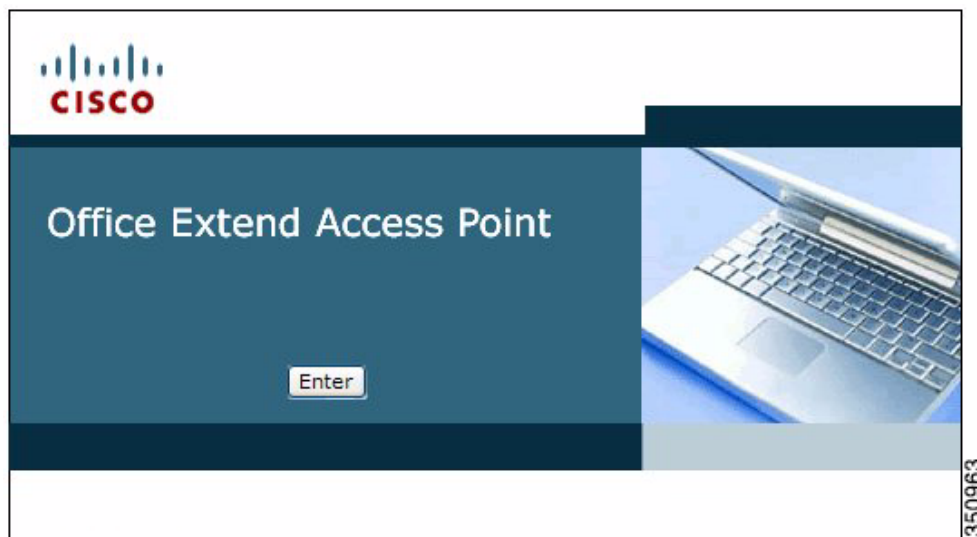
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**Step 3** When prompted, enter the username and password to log into the access point.



**Note** The default username and password are *admin* and *admin*.

The 600 Series OfficeExtend Access Point Welcome page is displayed.



**Step 4** On the 600 Series OfficeExtend Access Point Welcome page, click **Enter**. The 600 Series Office Extend Access Point Home page is displayed.



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The screenshot shows the Cisco Access Point GUI Home page. At the top is a navigation bar with the Cisco logo and tabs for HOME, CONFIGURATION, EVENT\_LOG, and HELP. The HOME tab is selected. Below the navigation bar, the page title is 'Home: Summary'. The main content area is divided into three sections: General Information, AP Statistics, and Association. The General Information section contains a table with fields like Ap Name, AP IP Address, AP Mode, AP MAC Address, AP Uptime, and AP Software Version. The AP Statistics section contains a table with columns for Radio, Admin Status, Freq/Chan, Tx Power, Pkts In/Out, and Bytes In/Out. The Association section contains a table with columns for Client MAC, Association Time, Bytes In/Out, Duplicate/Retries, and Decrypt Failed. At the bottom, there is an information icon and a message: 'To edit 'Personal SSID' association and settings, click on Configuration'.

General Information					
Ap Name	tedamico-evora				
AP IP Address	192.168.1.4				
AP Mode	Local				
AP MAC Address	C0:C1:C0:05:45:E8				
AP Uptime	19 minutes, 15 seconds				
AP Software Version	7.0.114.87				

AP Statistics					
Radio	Admin Status	Freq/Chan	Tx Power	Pkts In/Out	Bytes In/Out
Radio-802.11G	up	2.4 GHz/6	18.50dBm	0/750	0/61627
Radio-802.11A	up	5 GHz/149	15.50dBm	6/752	1156/62823

Association				
Client MAC	Association Time	Bytes In/Out	Duplicate/Retries	Decrypt Failed
00:21:6A:AB:09:FE	00:05:55	20480/1024	0/2	0

To edit 'Personal SSID' association and settings, click on [Configuration](#)

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## Access Point GUI Overview

The GUI of the Access Point has four major sections:

- **HOME**—This page shows general information about the AP settings and a summary of the statistics.
- **CONFIGURATION**—This page is a multi-tab page which allows the user to configure different options like personal SSID, local DHCP server, etc.
- **EVENT LOG**—This page provides the user the ability to view the logged errors and ability to clear the log.
- **HELP**—This displays help for the pages listed above, especially the Configuration page.

## Home Page

The Home page shows the access point name, IP address, AP mode, MAC address, AP uptime, and software version.

This page also reports radio-specific information including status, frequency/channel, transmit power, number of packets in and out, and number of bytes in and out.

For each connected client, this page reports the client MAC address, elapsed association time, number of bytes in and out, number of duplicates and retries.

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# Configuration Page

The Configuration page has multiple tabs to allow the user to configure different options.

Wherever applicable, default values will be shown.

The main options that can be configured on this page are:

- System
- SSID
- Local DHCP Server
- Wireless Access Network (WAN)

## System Tab

The Configuration System page displays general system information, such as username and password for the access point and radio interface information.

The screenshot shows the Cisco Configuration System page. At the top is a navigation bar with the Cisco logo and tabs for HOME, CONFIGURATION (selected), EVENT\_LOG, and HELP. There are links for Refresh and Close Window. Below the navigation bar is a 'Configuration' section with an 'Apply' button. Underneath is a tabbed interface with four tabs: System (selected), SSID, DHCP, and WAN. The 'System' tab contains two sections: 'Login' and 'Radio'. The 'Login' section has fields for Username (admin) and Password (masked with dots). The 'Radio' section has fields for Radio Interface (2.4 GHz), Status (Enabled), Channel Selection (Auto), 802.11 n-mode (Enabled), and Bandwidth (20 MHz). There are informational icons and text: 'Select Each Radio and Configure Independently' and '802.11n is not supported with TKIP-only WPA Encryption'.

Configuration		Apply	
System	SSID	DHCP	WAN
<b>Login</b>			
Username	admin		
Password	•••••		
<b>Radio</b>			
Radio Interface	2.4 GHz ⓘ Select Each Radio and Configure Independently		
Status	Enabled		
Channel Selection	Auto		
802.11 n-mode	Enabled ⓘ 802.11n is not supported with TKIP-only WPA Encryption		
Bandwidth	20 MHz		

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**REVIEW DRAFT—CISCO CONFIDENTIAL****SSID Tab**

The Configuration SSID page contains the fields necessary for you to configure and set up security for your personal SSIDs.

The screenshot displays the Cisco Aironet 600 Series OfficeExtend Access Point Configuration Page, specifically the SSID Tab. The page is divided into three main sections: Personal Network, MAC Filter, and Security.

**Personal Network**

- Band Selection:** A dropdown menu set to "2.4 GHz". A tooltip indicates "Select Each Radio and Configure SSID Individually".
- Enabled:** A checkbox that is checked.
- Broadcast:** A checkbox that is checked.
- SSID:** A text field containing "AIR-602". A tooltip indicates "Personal SSID should be different from Corporate SSID".

**MAC Filter**

- Enabled:** A checkbox that is unchecked.
- Allowed MAC Addresses:** A table with a header row and several empty rows for input. The header row contains the example "e.g.00:1D:E0:34:E2:1F".

**Security**

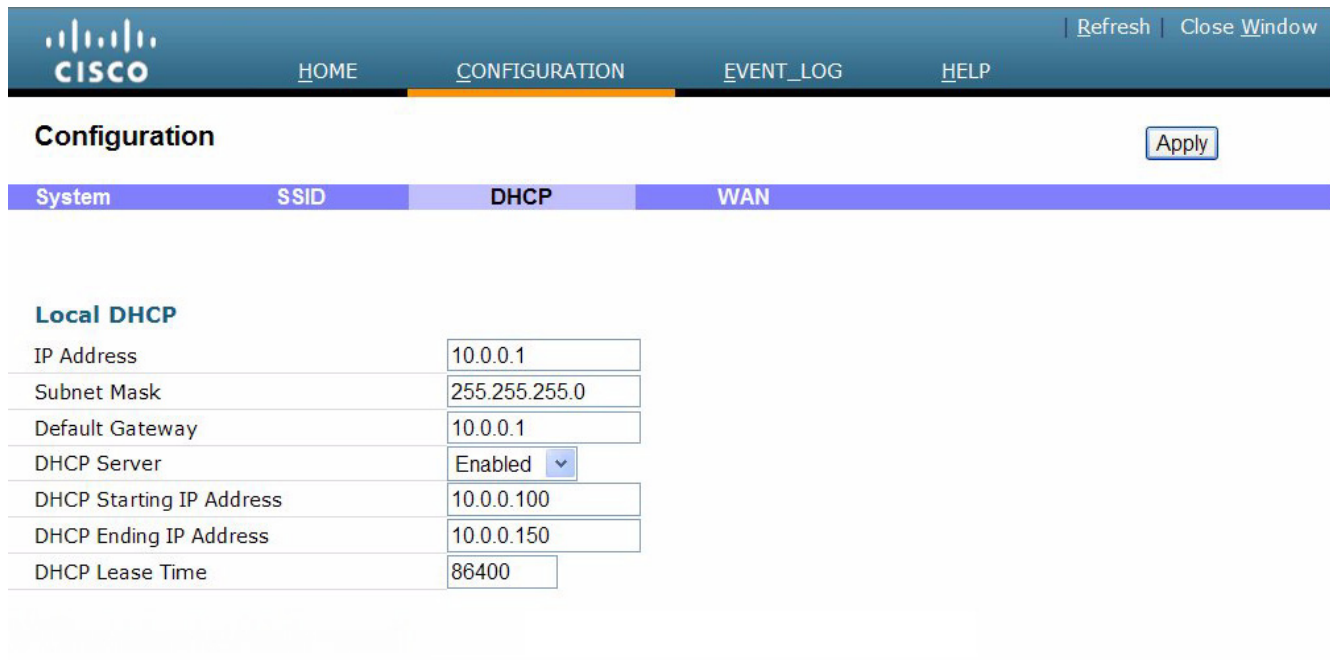
- WPA-PSK:** A dropdown menu set to "Disabled".
- WPA2-PSK:** A dropdown menu set to "Disabled".
- WEP Encryption:** A dropdown menu set to "Disabled".
- WPA Encryption:** A dropdown menu set to "AES".
- WPA passphrase:** A text field with a link "Click here to display" next to it.
- Network Key 1:** A text field.
- Network Key 2:** A text field.
- Network Key 3:** A text field.
- Network Key 4:** A text field.
- Current Network Key:** A dropdown menu set to "1". A link "Click here to display Network Keys" is next to it.

The page includes a Cisco logo, navigation tabs (HOME, CONFIGURATION, EVENT\_LOG, HELP), and a top bar with "Refresh" and "Close Window" buttons. The "CONFIGURATION" tab is currently selected.

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**REVIEW DRAFT – CISCO CONFIDENTIAL****DHCP Tab**

The Configuration DHCP page contains the fields necessary for you to change your DHCP scope.



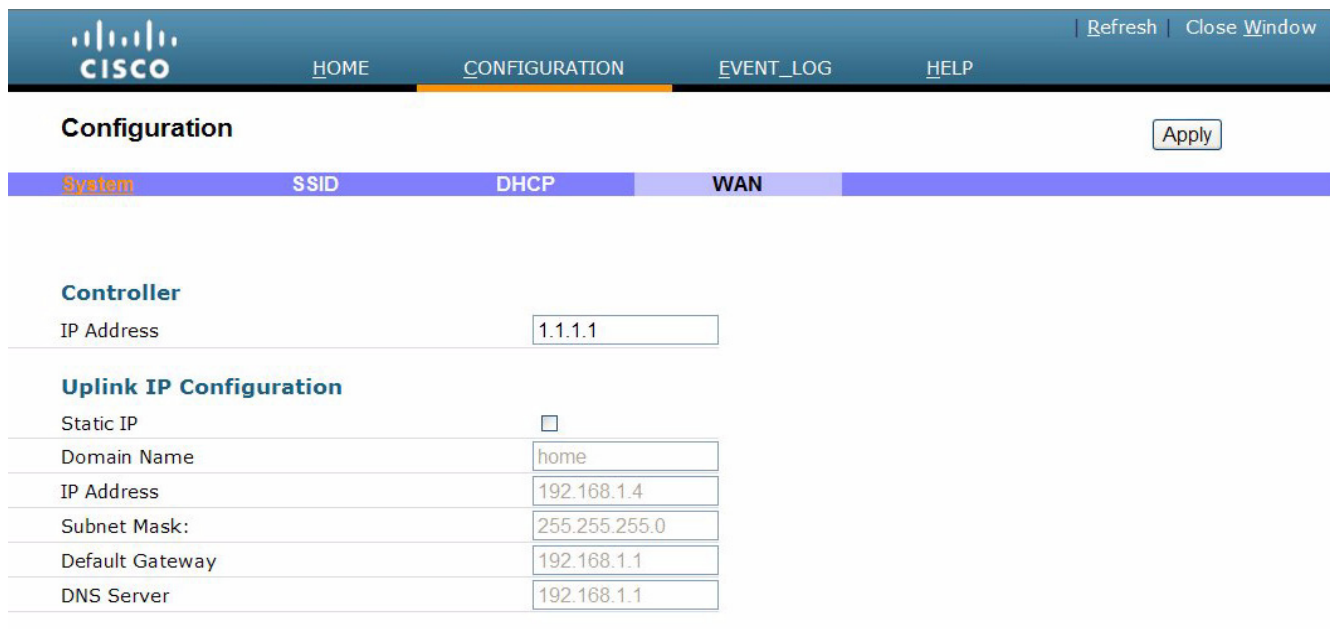
The screenshot shows the Cisco Configuration DHCP tab. The top navigation bar includes the Cisco logo, HOME, CONFIGURATION (selected), EVENT\_LOG, and HELP. The main header is "Configuration" with an "Apply" button. Below the header is a tabbed interface with System, SSID, DHCP (selected), and WAN. The DHCP section is titled "Local DHCP" and contains the following fields:

IP Address	10.0.0.1
Subnet Mask	255.255.255.0
Default Gateway	10.0.0.1
DHCP Server	Enabled <input type="button" value="v"/>
DHCP Starting IP Address	10.0.0.100
DHCP Ending IP Address	10.0.0.150
DHCP Lease Time	86400

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**WAN Tab**

The Configuration WAN tab contains the fields necessary for you to configure the IP address of the Wireless LAN controller on your access point.



The screenshot shows the Cisco Configuration WAN tab. The top navigation bar includes the Cisco logo, HOME, CONFIGURATION (selected), EVENT\_LOG, and HELP. The main header is "Configuration" with an "Apply" button. Below the header is a tabbed interface with System, SSID, DHCP, and WAN (selected). The WAN section is titled "Controller" and contains the following fields:

IP Address	1.1.1.1
------------	---------

Below the Controller section is the "Uplink IP Configuration" section:

Static IP	<input type="checkbox"/>
Domain Name	home
IP Address	192.168.1.4
Subnet Mask:	255.255.255.0
Default Gateway	192.168.1.1
DNS Server	192.168.1.1

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# Event Log Page

The Event Log page displays all logged events and has a button to clear the log. The Event Log page is shown below:

**Event Log** Clear

```

5246
*Apr 06 01:52:44.724: CAPWAP State: Join.
*Apr 06 01:52:44.724: Join request: version=7.0.114.113
*Apr 06 01:52:44.725: Join request: hasMaximum Message Payload
*Apr 06 01:52:44.726: Dot11 binding encode: Encoding join request
*Apr 06 01:52:44.726: Sending Join Request Path MTU payload, Length 1376
*Apr 06 01:52:45.035: Ignoring callback message Close alert received..
*Apr 06 01:52:45.036: Received packet caused DTLs to close connection
*Apr 06 01:52:49.598: Join request: version=7.0.114.113
*Apr 06 01:52:49.599: Join request: hasMaximum Message Payload
*Apr 06 01:52:49.599: Dot11 binding encode: Encoding join request
*Apr 06 01:52:49.600: DTLs connection not found Failed to encrypt and send packet.
*Apr 06 01:52:49.600: Failed to encrypt and send packet.
*Apr 06 01:52:49.600: Failed to send Join request to -1421466749
*Apr 06 01:53:43.998: Wait DTLs timer has expired
*Apr 06 01:53:43.999: Did not get join response
*Apr 06 01:53:43.999: CAPWAP State: DTLs Teardown.
*Apr 06 01:53:48.998: DTLs session cleanup completed. Restarting capwap state machine.
*Apr 06 01:53:48.999:
Lost connection to the controller, going to re-start evora...
*Apr 06 01:54:29.637: eth0      Link encap:Ethernet  HWaddr C0:C1:C0:05:45:E8
*Apr 06 01:54:29.638:      inet addr:192.168.1.4  Bcast:192.168.1.255  Mask:255.255.255.0
*Apr 06 01:54:29.638:      UP BROADCAST RUNNING ALLMULTI MULTICAST  MTU:1500  Metric:1
*Apr 06 01:54:29.638:      RX packets:3113 errors:0 dropped:0 overruns:0 frame:0
*Apr 06 01:54:29.638:      TX packets:2514 errors:0 dropped:0 overruns:0 carrier:0
*Apr 06 01:54:29.638:      collisions:0 txqueuelen:100
*Apr 06 01:54:29.638:      RX bytes:607239 (593.0 kb)  TX bytes:689014 (672.8 kb)
*Apr 06 01:54:29.638:      Interrupt:4 Base address:0x2000
*Apr 06 01:54:29.638:
*Apr 06 01:54:29.661: eth1      Link encap:Ethernet  HWaddr 00:22:BD:DA:A9:C7
  
```

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## Configuring the Features of the Access Point

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This chapter provides the following information:

- [Configuring the Wireless LAN Controller IP Address on the Access Point, page 3-1](#)
- [Configuring Radio Channels on the Access Point, page 3-2](#)
- [Configuring Personal Wireless LANs, page 3-3](#)
- [Troubleshooting, page 3-4](#)
- [Using the Split Tunneling Feature for Local Printing, page 3-5](#)

### Configuring the Wireless LAN Controller IP Address on the Access Point

Follow these steps to configure the IP address of the Wireless LAN Controller on your Cisco Aironet 600 Series OfficeExtend access point.

- 
- |               |   |
|---------------|---|
| <b>Step 1</b> | Obtain the IP address of your Wireless LAN controller from your company's IT professional.                                    |
| <b>Step 2</b> | Access the 600 Series OfficeExtend access point GUI as described in <a href="#">“Accessing the GUI” section on page 2-1</a> . |
| <b>Step 3</b> | Click the <b>Configuration</b> tab.<br>The Configuration page is displayed.   |
| <b>Step 4</b> | From the Configuration page, click the <b>WAN</b> tab.<br>The WAN page is displayed.  |
| <b>Step 5</b> | Enter the IP address of the primary controller in the <b>Controller IP Address</b> field.                                     |
| <b>Step 6</b> | Leave the Static IP check box unchecked to allow the WAN IP address to be assigned by DHCP.                                   |
| <b>Step 7</b> | Click <b>Apply</b> to commit your changes.<br>A verification screen that is similar to the following, is displayed.           |

**REVIEW DRAFT – CISCO CONFIDENTIAL****APPLY**

This screen notifies you of any errors that were detected while changing the AP settings.

Validating values...done  
Committing values...done

Continue

**Step 8** Click **Continue**.

The 600 Series OfficeExtend Access point will connect to the controller and download the current software image. Allow the device 5 minutes to download and reboot with the new code and configuration.

## Configuring Radio Channels on the Access Point

Follow these steps to configure a radio channel for your 600 Series OfficeExtend access point.

- 
- Step 1** Access the 600 Series OfficeExtend access point GUI as described in [“Accessing the GUI” section on page 2-1](#).
- Step 2** Click the **Configuration** tab.  
The Configuration–System page is displayed.
- Step 3** From the **Radio Interface** drop-down list, choose the desired radio interface, which can be either 2.4 GHz or 5 GHz.
- Step 4** From the **Status** drop-down list, choose **Enabled** to enable the wireless interface.
- Step 5** From the **Channel Selection** drop-down list, choose the channel on which this interface will operate.




---

**Note** 802.11n mode should be enabled by default. If it is disabled, choose **Enabled** from the **802.11 n-mode** drop-down list.

---

- Step 6** Click **Apply** to commit your changes.
-



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# Configuring Personal Wireless LANs

- 
- Step 1** Access the 600 Series OfficeExtend access point GUI as described in “[Accessing the GUI](#)” section on [page 2-1](#).
- Step 2** Click the **Configuration** tab.  
The Configuration–System page is displayed.
- Step 3** Click the **SSID** tab.  
The Configuration–SSID page is displayed.
- Step 4** From the **Band Selection** drop-down list, choose the band, which can be either 2.4 GHz or 5.0 GHz. You can duplicate the configuration on both bands, or have different settings on each band.
- Step 5** Check the **Enabled** check box to enable this wireless connection. By default it is disabled.
- Step 6** Check the **Broadcast** check box to broadcast the SSID over the air. By default it is unchecked.
- Step 7** In the **SSID** field, enter the personal SSID that you want to assign to this access point. This SSID will be locally switched. The default SSID is *AIR-602* for both radios.



**Note** Your personal SSID Wireless LAN and your company SSID Wireless LAN are different. When you configure your personal Wireless LAN, use an SSID name that is different from your company’s SSID to help avoid confusion.

---

- Step 8** From the Security drop-down boxes, enter the authentication type, encryption type, and passphrase. It is suggested that you select **WPA2-PSK** and **AES** encryption.
- Step 9** Click **Apply** to commit your changes.  
A verification screen that is similar to the following, is displayed.

**APPLY**

This screen notifies you of any errors that were detected while changing the AP settings.

Validating values...done  
Committing values...done

Continue

- Step 10** Click **Continue**.
-

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# Troubleshooting

Problem	LED Status	Reasons	Possible Solution
Private WLAN clients can connect to the Internet; but WLANs provided by the controller are unable to connect or not being broadcast.	LED cycling through purple and orange with client associated; LED cycling with purple, orange, and blue with no client associated.	Access Point is in CAPWAP Discovery mode.	Verify that the correct Wireless LAN Controller IP address is entered in the WAN page of the 600 Series; verify that CAPWAP ports are allowed through the personal firewalls if any are present on a router between the 600 series and the modem.
WLANs provided by the controller are not broadcast or clients are unable to connect.	Blinking blue	Software Upgrade in Process.	Wait for 600 series to finish code download and perform an automatic reboot.
No connectivity is available through 600 Series access point.	Blinking orange	No IP address on the 600 Series access point, waiting for DHCP address.	Restart your home router/gateway or modem followed by your 600 Series access point.
No connectivity is available through 600 Series access point, local GUI unavailable, or other issues.	Orange	Software Failure	Disconnect and reconnect power to the 600 Series access point.
The access point signal strength is low.	Not applicable	The access point may not be in the optimal position in relation to your device(s). If the access point is in close proximity and above your device, the signal may become skewed.	Position the access point lower than or with the LED side facing your devices.

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## Using the Split Tunneling Feature for Local Printing

The Split Tunneling feature of the Cisco Aironet 600 Series OfficeExtend Access Point allows you to use a local printer that is on your personal network, while being connected to a corporate VPN.

Any printer installed as your local printer can utilize the Split Tunneling feature if all these conditions are met:

- You are connected to the corporate WLAN or a Remote LAN, via an access point group that provisions a Cisco Aironet 600 Series OfficeExtend Access Point.
- The Split Tunneling feature has been enabled globally for all Cisco Aironet 600 Series OfficeExtend Access Point connected to the WLC, and also for both WLAN and Remote LAN.

For information on configuring the Split Tunneling feature for a WLAN or a Remote LAN, see the Cisco Wireless LAN Controller Configuration Guide.

## Prerequisites for Adding a Local Printer

Before adding a local printer to your personal network, ensure that:

- The printer can be configured using one of the following network printing protocols via the corresponding port:
  - IPP (port :631)
  - PDL (port :9100)
  - MFP (port :9303)
  - LPD, LPR (port :515)
  - PSUS4 (port :34443)
  - Generic printer server (port :35)
- The latest compatible driver for the printer is installed.

## Adding the Local Printer in Windows

If you are a Microsoft Windows user, follow these steps to add a local printer to your personal network.

- 
- Step 1** Find out the name of the local printer you want to configure.
- If the printer does not have a GUI for configuration, access <http://<Printer-IP>:<Port>/> to find out the name from the Printer Details page.
- Step 2** In the configuration page, ensure that printing from other subnets is enabled.
- Step 3** For printers that support IPP, first activate the Internet Printing Client:
- a. From the Windows **Control Panel**, open **> Programs and Features**.
  - b. Click **Turn Windows Features on or off**.
- The **Windows Features** dialog box is displayed.
- c. Under **Print and Document services**, check the **Internet Printing Client** check box.
- Then, follow these steps to add the local printer:
- a. From the Windows **Start** menu, click **Devices and Printers**.

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- b. Click **Add a Printer**.
- c. In the dialog box that is displayed, click **Add a network, wireless or Bluetooth printer**.
- d. Click **The printer I want isn't listed**.
- e. Click the **Select a shared printer by name** radio button.
- f. If you have the printer's exact shared name with URL, enter it in this format:  
`http://<Printer-IP>:631/<share-path>/<Printer-Name>`  
 If you do not have the printer's name with URL, enter `http://xxxxxxx:631`, and click **Browse** to browse for and select the printer.
- g. Click **Next**.

**Step 4** Select the printer driver from the list of drivers shown.



**Note** As required in the prerequisites, if you have already installed the printer driver locally, the driver will be listed here. If you have not installed the printer driver, click **Have Disc...** to browse for and install the driver file.

**Step 5** Click **Next**.

The printer configuration is complete.

## Adding the Local Printer in Mac OS

If you are an Apple Mac OS user, follow these steps to add a local printer to your personal network.

- Step 1** Find out the IP address of the local printer that you want to configure.
- Step 2** From the **Apple** menu, choose **System Preferences**.  
 The System Preferences dialog box is displayed.
- Step 3** Click **Show All**.
- Step 4** In the **Hardware** area, click **Print & Fax**.  
 The Print & Fax dialog box is displayed.
- Step 5** Click the + (plus) icon that is below the **Printers** list.  
 The Add Printer dialog box is displayed.
- Step 6** Click **IP**.
- Step 7** From the Protocol pop-up menu choose the printing protocol that is supported by the local printer.  
 Of the printing protocols supported by the Split Tunneling feature, the Mac OS X operating system supports only the following:
  - Internet Printing Protocol (IPP)
  - Line Printer Daemon/Line Printer Remote protocol (LPD, LPR)
- Step 8** In the **Address** field, enter the IP address of the printer.
- Step 9** From the **Print Using** pop-up menu, choose **Select Printer Software**.

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**Step 10** Choose the printer driver for your printer from the list displayed, and then click **OK**.

**Step 11** Click **Add**.

The added printer appears in the Printers list on the Print & Fax dialog box.

---

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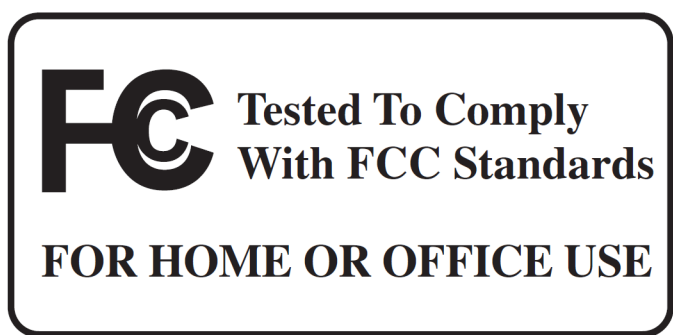
## Declarations of Conformity and Regulatory Information

This chapter provides declarations of conformity and regulatory information for the Cisco Aironet 600 Series OfficeExtend Access Point.

This chapter contains the following:

- [Manufacturers Federal Communication Commission Declaration of Conformity Statement, page 4-1](#)
- [Industry Canada, page 4-2](#)
- [European Community, Switzerland, Norway, Iceland, and Liechtenstein, page 4-3](#)
- [Declaration of Conformity for RF Exposure, page 4-7](#)
- [Declaration of Conformity Statements, page 4-7](#)

### Manufacturers Federal Communication Commission Declaration of Conformity Statement



**Access Point Model:**

AIR-OEAP602I-A-K9

**FCC Certification number:**

LDK102077

**REVIEW DRAFT – CISCO CONFIDENTIAL****Manufacturer:**

Cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, CA 95134-1706  
USA

This device complies with Part 15 rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and radiates radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference. However, there is no guarantee that interference will not occur. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician.

**Caution**

The Part 15 radio device operates on a non-interference basis with other devices operating at this frequency when using the integrated antennas. Any changes or modification to the product not expressly approved by Cisco could void the user's authority to operate this device.

**Caution**

Within the 5.15 to 5.25 GHz band (5 GHz radio channels 34 to 48) the U-NII devices are restricted to indoor operations to reduce any potential for harmful interference to co-channel Mobile Satellite System (MSS) operations.

## Industry Canada

**Model:**

AIR-OEAP602I-A-K9

**Certification number:**

2461B-102077

## Canadian Compliance Statement

This Class B Digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.



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Cet appareil numerique de la classe B respecte les exigences du Reglement sur le material brouilleur du Canada.

This device complies with Class B Limits of Industry Canada. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Cisco Aironet 2.4-GHz Access Points are certified to the requirements of RSS-210 for 2.4-GHz spread spectrum devices, and Cisco Aironet 54-Mbps, 5-GHz Access Points are certified to the requirements of RSS-210 for 5-GHz spread spectrum devices. The use of this device in a system operating either partially or completely outdoors may require the user to obtain a license for the system according to the Canadian regulations. For further information, contact your local Industry Canada office.

## European Community, Switzerland, Norway, Iceland, and Liechtenstein

### Access Point Model:

AIR-OEAP602I-E-K9

## Declaration of Conformity with Regard to the 1999/5/EC (R&TTE Directive)

This declaration is only valid for configurations (combinations of software, firmware, and hardware) provided and supported by Cisco Systems. The use of software or firmware not provided and supported by Cisco Systems may result in the equipment no longer being compliant with the regulatory requirements.

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Česky [Czech]:	Toto zařízení je v souladu se základními požadavky a ostatními odpovídajícími ustanoveními Směrnice 1999/5/EC.
Dansk [Danish]:	Dette udstyr er i overensstemmelse med de væsentlige krav og andre relevante bestemmelser i Direktiv 1999/5/EF.
Deutsch [German]:	Dieses Gerät entspricht den grundlegenden Anforderungen und den weiteren entsprechenden Vorgaben der Richtlinie 1999/5/EU.
Eesti [Estonian]:	See seade vastab direktiivi 1999/5/EÜ olulistele nõuetele ja teistele asjakohastele sätetele.
English:	This equipment is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Español [Spanish]:	Este equipo cumple con los requisitos esenciales así como con otras disposiciones de la Directiva 1999/5/CE.
Ελληνική [Greek]:	Αυτός ο εξοπλισμός είναι σε συμμόρφωση με τις ουσιαστικές απαιτήσεις και άλλες σχετικές διατάξεις της Οδηγίας 1999/5/EC.
Français [French]:	Cet appareil est conforme aux exigences essentielles et aux autres dispositions pertinentes de la Directive 1999/5/EC.
Íslenska [Icelandic]:	Þetta tæki er samkvæmt grunnkröfum og öðrum viðeigandi ákvæðum Tilskipunar 1999/5/EC.
Italiano [Italian]:	Questo apparato é conforme ai requisiti essenziali ed agli altri principi sanciti dalla Direttiva 1999/5/CE.
Latviski [Latvian]:	Šī iekārta atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lietuvių [Lithuanian]:	Šis įrenginys tenkina 1999/5/EB Direktyvos esminius reikalavimus ir kitas šios direktyvos nuostatas.

121403

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Nederlands [Dutch]:	Dit apparaat voldoet aan de essentiële eisen en andere van toepassing zijnde bepalingen van de Richtlijn 1999/5/EC.
Malti [Maltese]:	Dan l-apparat huwa konformi mal-htigiet essenzjali u l-provedimenti l-oħra rilevanti tad-Direttiva 1999/5/EC.
Margyar [Hungarian]:	Ez a készülék teljesíti az alapvető követelményeket és más 1999/5/EK irányelvben meghatározott vonatkozó rendelkezéseket.
Norsk [Norwegian]:	Dette utstyret er i samsvar med de grunnleggende krav og andre relevante bestemmelser i EU-direktiv 1999/5/EF.
Polski [Polish]:	Urządzenie jest zgodne z ogólnymi wymaganiami oraz szczególnymi warunkami określonymi Dyrektywą UE: 1999/5/EC.
Português [Portuguese]:	Este equipamento está em conformidade com os requisitos essenciais e outras provisões relevantes da Directiva 1999/5/EC.
Slovensko [Slovenian]:	Ta naprava je skladna z bistvenimi zahtevami in ostalimi relevantnimi pogoji Direktive 1999/5/EC.
Slovensky [Slovak]:	Toto zariadenie je v zhode so základnými požiadavkami a inými príslušnými nariadeniami direktív: 1999/5/EC.
Suomi [Finnish]:	Tämä laite täyttää direktiivin 1999/5/EY olennaiset vaatimukset ja on siinä asetettujen muiden laitetta koskevien määräysten mukainen.
Svenska [Swedish]:	Denna utrustning är i överensstämmelse med de väsentliga kraven och andra relevanta bestämmelser i Direktiv 1999/5/EC.

121404

This device complies with the EMC requirements (EN 60601-1-2) of the Medical Directive 93/42/EEC.

For 2.4 GHz radios, the following standards were applied:

- Radio: EN 300.328-1, EN 300.328-2
- EMC: EN 301.489-1, EN 301.489-17
- Safety: EN 60950

**Note**

This equipment is intended to be used in all EU and EFTA countries. Outdoor use may be restricted to certain frequencies and/or may require a license for operation. For more details, contact Cisco Corporate Compliance.

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For 54 Mbps, 5 GHz access points, the following standards were applied:

- Radio: EN 301.893
- EMC: EN 301.489-1, EN 301.489-17
- Safety: EN 60950

The following CE mark is affixed to the access point with a 2.4 GHz radio and a 54 Mbps, 5 GHz radio:



## Operation of Cisco Aironet Access Points in Brazil

This section contains special information for operation of Cisco Aironet access points in Brazil.

### Access Point Models

- AIR-OEAP602I-E-K9

### Regulatory Information

[Figure 4-1](#) contains Brazil regulatory information for the access point models identified in the previous section.

**REVIEW DRAFT—CISCO CONFIDENTIAL****Figure 4-1** Brazil Regulatory Information

## Portuguese Translation

Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário.

## English Translation

This equipment operates on a secondary basis and consequently must accept harmful interference, including interference from stations of the same kind. This equipment may not cause harmful interference to systems operating on a primary basis.

## Declaration of Conformity for RF Exposure

The radio has been found to be compliant to the requirements set forth in CFR 47 Sections 2.1091, and 15.247 (b) (4) addressing RF Exposure from radio frequency devices as defined in Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields. The equipment should be installed more than 20 cm (7.9 in.) from your body or nearby persons.

## Declaration of Conformity Statements

All the Declaration of Conformity statements related to this product can be found at the following URL:  
<http://www.ciscofax.com>

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# Open Source Software Licenses and Notices

This appendix contains the following licenses and notices for open source software used in Cisco Aironet 600 Series OfficeExtend Access Point:



**Note**

With respect to the free/open source software listed in this document, if you have any questions or wish to receive a copy of the source code to which you are entitled under the applicable free/open source license(s) (such as the GNU Lesser/General Public License), please contact us at [external-opensource-requests@cisco.com](mailto:external-opensource-requests@cisco.com).

- [bcm57xx.brcm 8.3.14, page A-2](#)
- [bridge 0.9.1, page A-9](#)
- [busybox 0.60.0, page A-16](#)
- [CFE 1.0.36, page A-32](#)
- [dnsmasq 1.10., page A-33](#)
- [flex 2.5.4 6.0.0.0501961, page A-33](#)
- [IProute2 020116, page A-33](#)
- [iptables 1.2.7a 2, page A-38](#)
- [LINUX Kernel 2.4.20, page A-46](#)
- [milli\\_httpd 1.21, page A-106](#)
- [ntplib 345.0, page A-107](#)
- [radvd 0.9.1, page A-115](#)
- [squashfs 3.1, page A-115](#)
- [udhcp 0.9.8, page A-116](#)
- [utelneta 0.1.4, page A-123](#)
- [vconfig 1.6, page A-130](#)

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These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

- a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
- b) Accompany it with a written offer, valid for at least three

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years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

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## iptables 1.2.7a 2

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* Author: Andras Kis-Szabo <kisza@sch.bme.hu>
*
* based on iptables-restore
* Authors:
* Harald Welte <laforge@gnumonks.org>
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* $Id: ip6tables-restore.c,v 1.10 2002/08/14 11:40:41 laforge Exp $
*/
/*
* Author: Paul.Russell@rustcorp.com.au and mneuling@radlogic.com.au
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* Harald Welte <laforge@gnumonks.org>
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*/
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*
* IPQ userspace library.
*
* Please note that this library is still developmental, and there may
* be some API changes.
*
* Author: James Morris <jmorris@intercode.com.au
*
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```
/* nicstar.c v0.22 Jawaidd Bazyar (bazyar@hypermall.com)
 * nicstar.c, M. Welsh (matt.welsh@cl.cam.ac.uk)
 *
 * Hacked October, 1997 by Jawaidd Bazyar, Interlink Advertising Services Inc.
 * http://www.hypermall.com/
 * 10/1/97 - commented out CFG_PHYIE bit - we don't care when the PHY
 * interrupts us (except possibly for removal/insertion of the cable?)
 * 10/4/97 - began heavy inline documentation of the code. Corrected typos
 * and spelling mistakes.
 * 10/5/97 - added code to handle PHY interrupts, disable PHY on
 * loss of link, and correctly re-enable PHY when link is
 * re-established. (put back CFG_PHYIE)
 *
 * Modified to work with the IDT7721 nicstar -- AAL5 (tested) only.
 *
 * R. D. Rechenmacher <ron@fnal.gov>
 *
 * Linux driver for the IDT77201 NICStAR PCI ATM controller.
 * PHY component is expected to be 155 Mbps S/UNI-Lite or IDT 77155;
 * see init_nicstar() for PHY initialization to change this. This driver
 * expects the Linux ATM stack to support scatter-gather lists
 * (skb-
 *
 * Implementing minimal-copy of received data:
 * IDT always receives data into a small buffer, then large buffers
 * as needed. This means that data must always be copied to create
 * the linear buffer needed by most non-ATM protocol stacks (e.g. IP)
 * Fix is simple: make large buffers large enough to hold entire
 * SDU, and leave <small_buffer_data
 * copy small buffer contents to head of large buffer.
 * Trick is to avoid fragmenting Linux, due to need for a lot of large
 * buffers. This is done by 2 things:
 * 1) skb-
 * combined, allow nicstar_free_rx_skb to be called to
```

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```

*      recycle large data buffers
*      2) skb_clone of received buffers
*      See nicstar_free_rx_skb and linearize_buffer for implementation
*      details.
*
*
*
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*
* M. Welsh, 6 July 1996
*
*/

```

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Version 2, June 1991

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[This is the first released version of the library GPL. It is numbered 2 because it goes with version 2 of the ordinary GPL.]

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Written 1996-1999 by Donald Becker.

The driver also contains updates by different kernel developers  
(see incomplete list below).

Current maintainer is Andrey V. Savochkin <saw@saw.sw.com.sg>  
Please use this email address and linux-kernel mailing list for bug reports.

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This driver is for the Intel EtherExpress Pro100 (Speedo3) design.  
It should work with all i82557/558/559 boards.

Version history:

1998 Apr - 2000 Feb Andrey V. Savochkin <saw@saw.sw.com.sg>  
Serious fixes for multicast filter list setting, TX timeout routine;  
RX ring refilling logic; other stuff  
2000 Feb Jeff Garzik <jgarzik@mandrakesoft.com>  
Convert to new PCI driver interface  
2000 Mar 24 Dragan Stancevic <visitor@valinux.com>  
Disabled FC and ER, to avoid lockups when we get FCP interrupts.  
2000 Jul 17 Goutham Rao <goutham.rao@intel.com>  
PCI DMA API fixes, adding pci\_dma\_sync\_single calls where necessary  
2000 Aug 31 David Mosberger <davidm@hpl.hp.com>  
rx\_align support: enables rx DMA without causing unaligned accesses.  
\*/

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That's all there is to it!

## milli\_httpd 1.21

### Available Under License

```

/* milli_httpd - pretty small HTTP server
** A combination of
** micro_httpd - really small HTTP server
** and
** mini_httpd - small HTTP server
**
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```



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# ntpcient 345.0

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ntpcient is an NTP (RFC-1305) client for unix-alike computers. Its functionality is a small subset of xntpd, but IMHO performs better (or at least has the potential to function better) within that limited scope. Since it is much smaller than xntpd, it is also more relevant for embedded computers.

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ntpcient home page: <http://doolittle.faludi.com/ntpcient/>

To build on Linux, type "make". Solaris and other Unix users will probably need to adjust the Makefile slightly. It's not complicated.

Usage: ntpclient [options]

options:

- c count stop after count time measurements (default 0 means go forever)
- d print diagnostics (feature can be disabled at compile time)
- h hostname (mandatory) NTP server host, against which to measure system time
- i interval check time every interval seconds (default 600)
- l attempt to lock local clock to server using adjtimex(2)
- p port local NTP client UDP port (default 0 means "any available")
- r replay analysis code based on stdin
- s simple clock set (implies -c 1)

Mortal users can use this program for monitoring, but not clock setting (with the -s or -l switches). The -l switch has not been well tested. Simulation (with -r) actually looks halfway decent, so locking should be OK too, but it needs some tuning.

The test.dat file has 200 lines of sample output. Its first few lines, with the output column headers that are shown when the -d option is chosen, are:

```
day second elapsed stall skew dispersion freq
51785 180.386 1398.0 40.3 953773.9 793.5 -1240000
51785 780.382 1358.0 41.3 954329.0 915.5 -1240000
51785 1380.381 1439.0 56.0 954871.3 915.5 -1240000
```

day, second: time of measurement

elapsed: total time from query to response (microseconds)

stall: time the server reports that it sat on the request (microseconds)

skew: difference between local time and server time (microseconds)

dispersion: reported by server, see RFC-1305 (microseconds)

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freq: local clock frequency adjustment (Linux only, ppm\*65536)

test.dat is suitable for piping into ntpclient -r. I have over 53000 samples (lines) archived for study, that I don't include here. They are spaced 10 minutes apart, representing over a year of data logging (not continuous, unfortunately).

envelope is a perl script that I have used for my lock studies. It's kind of a hack and not worth documenting here.

- Larry Doolittle <larry@doolittle.boa.org

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## **utelnetd 0.1.4**

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