



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

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# CHAPTER 1

## Cisco Aironet 600 Series OfficeExtend Access Point User Guide

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The Cisco Aironet 600 Series OfficeExtend Access Point User Guide includes the following information:

- [Unpacking the Cisco Aironet 600 Series OfficeExtend Access Point, page 1-2](#)
- [Cisco Aironet 600 Series OfficeExtend Access Point Placement, page 1-2](#)
- [Cisco Aironet 600 Series OfficeExtend Access Point Overview, page 1-3](#)
- [Installation Guidelines, page 1-4](#)
- [Resetting the unit, page 1-5](#)
- [Understanding Cisco Aironet 600 Series OfficeExtend Access Point LEDs, page 1-5](#)
- [Accessing the Cisco Aironet 600 Series OfficeExtend Access Point GUI, page 1-5](#)
- [Configuring the Wireless LAN Controller IP Address on a Cisco Aironet 600 Series OfficeExtend Access Point, page 1-8](#)
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- [Cisco Aironet 600 Series OfficeExtend Access Point Local Customer Interface, page 1-16](#)
- [Declarations of Conformity and Regulatory Information, page 1-25](#)
- [Appendix A, “Open Source Used In Cisco Aironet 600 Series OfficeExtend Access Point”](#)

# Unpacking the Cisco Aironet 600 Series OfficeExtend 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

## Cisco Aironet 600 Series OfficeExtend Access Point Placement

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**

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

---

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.

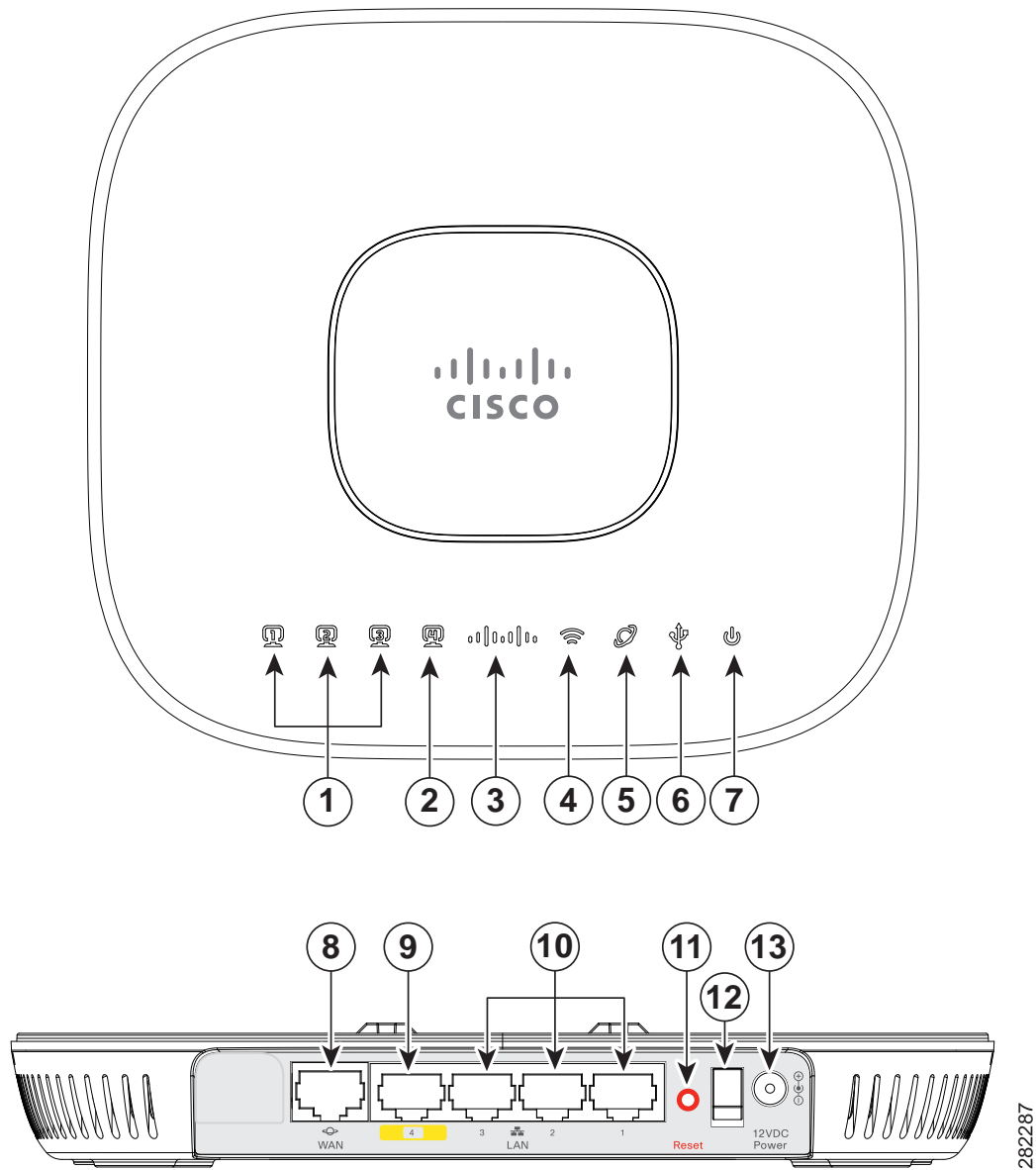
**Note**

---

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

---

# Cisco Aironet 600 Series OfficeExtend Access Point Overview



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		

# Installation Guidelines

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.



- Step 6** Use the 600 Series OfficeExtend Access Point LED table ([Table 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 a Cisco Aironet 600 Series OfficeExtend Access Point”](#) section on [page 1-8](#), 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 a Cisco Aironet 600 Series OfficeExtend Access Point”](#) section on [page 1-10](#) 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.

## Resetting the unit

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 Cisco Aironet 600 Series OfficeExtend Access Point LEDs

The LEDs on the top panel indicate the operating status of the unit. [Table 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** 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.

## Accessing the Cisco Aironet 600 Series OfficeExtend Access Point 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 “[Installation Guidelines](#)” 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**.

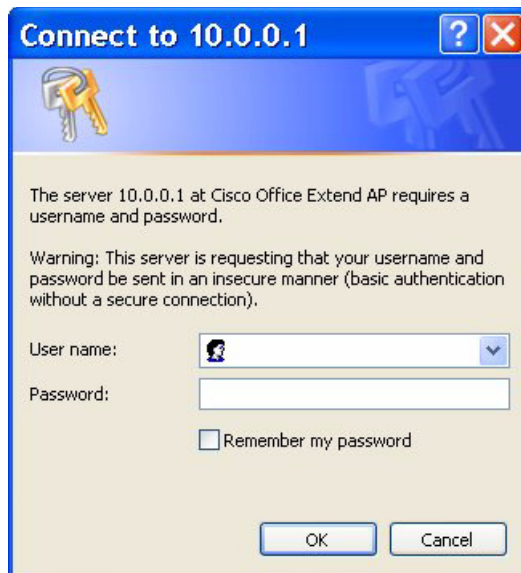


**Note** The default IP address is 10.0.0.1.



**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 appears.



- 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 appears.



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


Refresh | Close Window

HOME CONFIGURATION EVENT\_LOG HELP

Home: Summary

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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## Configuring the Wireless LAN Controller IP Address on a Cisco Aironet 600 Series OfficeExtend Access Point

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

- Step 1** Obtain the IP address of your Wireless LAN controller from your company's IT professional.
- Step 2** Access the 600 Series OfficeExtend access point GUI as described in [“Accessing the Cisco Aironet 600 Series OfficeExtend Access Point GUI”](#) section on page 1-5.

**Step 3** From the Home Summary page, click **Configuration** to open the Configuration page.

The screenshot shows the Cisco Configuration page. At the top, there is a navigation bar with links: HOME, CONFIGURATION (highlighted), EVENT\_LOG, and HELP. Below the navigation bar, the page title is "Configuration" with an "Apply" button on the right. The page is divided into four tabs: System, SSID, DHCP, and WAN. The "System" tab is active. Under the "System" tab, there are 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 next to the "Radio Interface" and "802.11 n-mode" fields. At the bottom, there is a copyright notice: "©2010 Cisco Systems Inc. All rights reserved."

**Step 4** Click the **WAN** tab to open the Configure WAN page.

The screenshot shows the Cisco Configuration page with the "WAN" tab selected. The navigation bar is the same as in the previous screenshot. The "Configuration" title and "Apply" button are also present. The "WAN" tab is active, and the "Controller" section is visible. The "Controller" section has a field for "IP Address" (1.1.1.1). Below this, there is a section titled "Uplink IP Configuration" with a "Static IP" checkbox (unchecked). The "Uplink IP Configuration" section has fields for "Domain Name" (home), "IP Address" (192.168.1.4), "Subnet Mask" (255.255.255.0), "Default Gateway" (192.168.1.1), and "DNS Server" (192.168.1.1). At the bottom, there is a copyright notice: "©2010 Cisco Systems Inc. All rights reserved."

**Step 5** Enter the IP address of the primary controller in the **Primary Controller IP Address** field.

**Step 6** Leave the Static IP check box unchecked to allow the WAN IP address to be assigned by DHCP.

**Step 7** Click **Apply** to commit your changes.

**Step 8** The screen will switch to a verification screen. Click **Continue** when it appears.

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.

#### APPLY

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

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

Continue

## Configuring Radio Channels on a Cisco Aironet 600 Series OfficeExtend Access Point

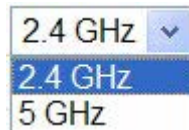
Follow these steps to configure a radio channel for your 600 Series OfficeExtend access point:

**Step 1** Access the 600 Series OfficeExtend access point GUI as described in [“Accessing the Cisco Aironet 600 Series OfficeExtend Access Point GUI”](#) section on page 1-5.

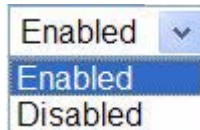
**Step 2** From the Home Summary page, click **Configuration** to open the Configure System page.

The screenshot displays the Cisco Aironet 600 Series OfficeExtend Access Point Configuration GUI. At the top, there is a navigation bar with the Cisco logo and links for HOME, CONFIGURATION (selected), EVENT\_LOG, and HELP. A 'Refresh' and 'Close Window' link are also present. Below the navigation bar, the 'Configuration' section is active, showing an 'Apply' button. The main content area is divided into tabs: System, SSID, DHCP, and WAN. Under the 'System' tab, there are two sections: 'Login' and 'Radio'. The 'Login' section includes fields for 'Username' (admin) and 'Password' (masked with dots). The 'Radio' section includes fields for 'Radio Interface' (2.4 GHz), 'Status' (Enabled), 'Channel Selection' (Auto), '802.11 n-mode' (Enabled), and 'Bandwidth' (20 MHz). There are informational messages: 'Select Each Radio and Configure Independently' and '802.11n is not supported with TKIP-only WPA Encryption'. The footer indicates '©2010 Cisco Systems Inc. All rights reserved.'

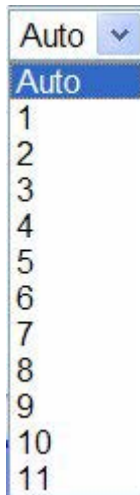
**Step 3** From the **Radio Interface** pulldown box, select the desired radio interface, either 2.4 GHz or 5 GHz.



**Step 4** From the **Status** pulldown box, select **Enabled** to enable the wireless interface.



**Step 5** From the **Channel Selection** pulldown box, select the channel on which this interface will operate.




**Note** 802.11n mode should be enabled by default. If it is disabled, select **Enabled** from the **802.11 n-mode** pulldown box.

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

# Configuring Personal Wireless LANs

- Step 1** Access the 600 Series OfficeExtend access point GUI as described in “[Accessing the Cisco Aironet 600 Series OfficeExtend Access Point GUI](#)” section on page 1-5.
- Step 2** From the Home Summary page, click **Configuration** to open the Configuration page.
- Step 3** Click the **SSID** tab to open the Configuration SSID page.


Refresh Close Window



HOME CONFIGURATION EVENT\_LOG HELP

## Configuration

Apply

System SSID DHCP WAN

### Personal Network

Band Selection	2.4 GHz	 Select Each Radio and Configure SSID Individually
Enabled	<input checked="" type="checkbox"/>	
Broadcast	<input checked="" type="checkbox"/>	
SSID	AIR-602	 Personal SSID should be different from Corporate SSID

### MAC Filter

Enabled	<input type="checkbox"/>														
Allowed MAC Addresses	<div>e.g. 00:1D:E0:34:E2:1F</div> <table> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> </table>														

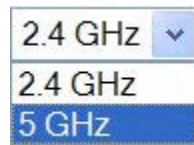
### Security

WPA-PSK	Disabled
WPA2-PSK	Disabled
WEP Encryption	Disabled
WPA Encryption	AES
WPA passphrase	<div></div> <a href="#">Click here to display</a>
Network Key 1	<div></div>
Network Key 2	<div></div>
Network Key 3	<div></div>
Network Key 4	<div></div>
Current Network Key	1 <a href="#">Click here to display Network Keys</a>

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- Step 4** From the **Band Selection** pulldown, choose the band, 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. The default value is Disabled.
- Step 6** Check the **Broadcast** check box to broadcast the SSID over the air. The default value 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.
- Step 10** The screen will switch to a verification screen. Click **Continue** when it appears.

#### APPLY

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

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

Continue

## Viewing the Event Log

From the main interface banner, elect **Event Log** to view the ongoing list of event logs for this access point.

The screenshot displays the Cisco Aironet 600 Series OfficeExtend Access Point web interface. The top navigation bar includes the Cisco logo and tabs for HOME, CONFIGURATION, EVENT\_LOG (which is selected), and HELP. On the right side of the navigation bar are links for Refresh and Close Window. Below the navigation bar, the main content area is titled "Event Log" and features a "Clear" button. The event log itself is a scrollable list of messages. The messages include CAPWAP state changes (Join, Teardown), DTLS connection attempts and failures, and interface statistics for eth0 and eth1. The log entries are timestamped with the date and time.

```

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
  
```

## Accessing Online Help

From the main interface banner, click **Help** to access the current Cisco Aironet 600 Series OfficeExtend Access Point online help.

# 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.

# Cisco Aironet 600 Series OfficeExtend Access Point Local Customer Interface

The Cisco Aironet 600 Series OfficeExtend access point console supports the following configuration items:

- Local SSID
  - SSID Name
  - MAC Filtering
  - Security type: WPA-PSK TKIP/AES, WPA-PSK AES, WPA2-PSK TKIP/AES, WPA2-PSK AES, and WEP (not recommended)
  - SSID Broadcast/Hidden
- Bands supported (2.4Ghz (B/G/N 20), 5Ghz (A/N 20/40), All)
- Selection of either manual or automatic channel selection per band
- Configuration of optional local DHCP Server
  - Local IP address
  - Subnet address and mask
  - Range of addresses that may be allocated
- Ability to configure the initial primary Wireless LAN Controller for CAPWAP
- Use of DHCP or static address for the uplink port (local IP address, netmask, and default router)
- View logged errors or clear the log

In addition, the web should allow for a password to be added and operate only over https.

The following sections provide the screens associated with the configuration.

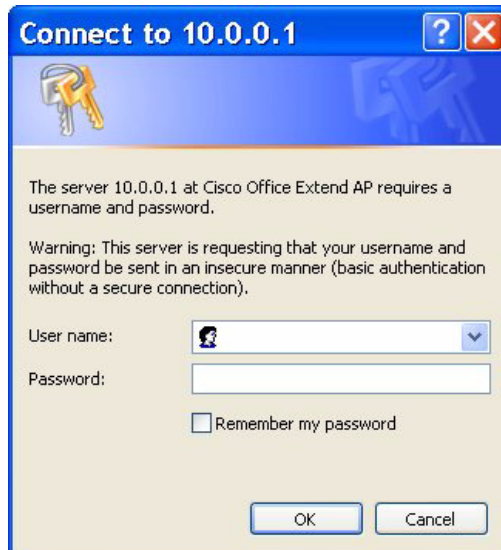
## AP GUI

AP GUI 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.

The rest of this section shows the appearance of each page/tab.

## Login Screen



A Windows-style dialog box titled "Connect to 10.0.0.1" with a blue header bar. It contains a key icon, a warning message about insecure authentication, and fields for username and password.

**Connect to 10.0.0.1**

The server 10.0.0.1 at Cisco Office Extend AP requires a username and password.

Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection).

User name:

Password:

☐ Remember my password

OK Cancel

## Welcome Screen



A welcome screen for the Office Extend Access Point. It features the Cisco logo, the title "Office Extend Access Point", an "Enter" button, and copyright information at the bottom.

**CISCO**

Office Extend Access Point

Enter

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## 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.


Refresh Close Window

[HOME](#)
[CONFIGURATION](#)
[EVENT\\_LOG](#)
[HELP](#)

### Home: Summary

#### 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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## 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)

Shown below are illustrations of each of the tabs.

### 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 Configuration page with the System tab selected. The page has a header with the Cisco logo and navigation links: HOME, CONFIGURATION (active), EVENT\_LOG, and HELP. There are also links for Refresh and Close Window. The main content area is titled "Configuration" and has an "Apply" button. Below this, there are four tabs: System (active), 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 also informational messages: "Select Each Radio and Configure Independently" and "802.11n is not supported with TKIP-only WPA Encryption". At the bottom, there is a copyright notice: "©2010 Cisco Systems Inc. All rights reserved."

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

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## SSID Tab

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


Refresh | Close Window

HOME
CONFIGURATION
EVENT\_LOG
HELP

**Configuration**
Apply

System	SSID	DHCP	WAN														
<b>Personal Network</b>																	
Band Selection	2.4 GHz	<i>Select Each Radio and Configure SSID Individually</i>															
Enabled	<input checked="" type="checkbox"/>																
Broadcast	<input checked="" type="checkbox"/>																
SSID	AIR-602	<i>Personal SSID should be different from Corporate SSID</i>															
<b>MAC Filter</b>																	
Enabled	<input type="checkbox"/>																
Allowed MAC Addresses	e.g. 00:1D:E0:34:E2:1F <table> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> </table>																
<b>Security</b>																	
WPA-PSK	Disabled																
WPA2-PSK	Disabled																
WEP Encryption	Disabled																
WPA Encryption	AES																
WPA passphrase		<a href="#">Click here to display</a>															
Network Key 1																	
Network Key 2																	
Network Key 3																	
Network Key 4																	
Current Network Key	1	<a href="#">Click here to display Network Keys</a>															

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## DHCP Tab

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

The screenshot shows the Cisco Aironet 600 Series OfficeExtend Access Point Local Customer Interface. The top navigation bar includes the Cisco logo, a HOME link, a CONFIGURATION link (highlighted in orange), an EVENT\_LOG link, and a HELP link. On the right side of the navigation bar are links for Refresh and Close Window. Below the navigation bar is a Configuration section with an Apply button. The main content area has four tabs: System, SSID, DHCP (highlighted in purple), and WAN. Under the DHCP tab, there is a section titled Local DHCP. This section contains a table with the following fields and values:

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

At the bottom of the page, there is a copyright notice: ©2010 Cisco Systems Inc. All rights reserved.

## 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 Aironet 600 Series OfficeExtend Access Point Local Customer Interface. The top navigation bar includes the Cisco logo, a HOME link, a CONFIGURATION link (highlighted in orange), an EVENT\_LOG link, and a HELP link. On the right side of the navigation bar are links for Refresh and Close Window. Below the navigation bar is a Configuration section with an Apply button. The main content area has four tabs: System, SSID, DHCP, and WAN (highlighted in purple). Under the WAN tab, there is a section titled Controller. This section contains a table with the following fields and values:

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

Below the Controller section is a section titled Uplink IP Configuration. This section contains a table with the following fields and values:

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

At the bottom of the page, there is a copyright notice: ©2010 Cisco Systems Inc. All rights reserved.

## 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
  
```

## Help Page

The Help page provides detailed information about the other pages, especially Configuration.

**Figure 1**      **Help Page**



## Help

### ***HOME PAGE:***

This page provides a detailed summary of 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, and number of duplicates and retries.

### ***CONFIGURATION PAGE:***

This page has multiple tabs to allow the user to configure different options. The main options that can be configured are:

***SYSTEM:*** The Configuration System tab displays and allows the user to configure general system information.

The ***Login*** section allows the user to change the username and password for the access point.

The ***Radio*** section allows the user to configure radio interface information such as:

- ***Radio Interface:*** Selects which wireless interface to configure.
- ***Status:*** Enables/disables this radio interface.
- ***Channel Selection:*** Selects a particular channel to operate. For automatic selection, choose "Auto".
- ***802.11n mode:*** Enables/disables the 802.11n mode.
- ***Bandwidth:*** Selects the channel bandwidth. Only 20 MHz is allowed for b/g/n radio.

**Figure 2**      **Help Page continued**

**SSID:** The Configuration SSID tab contains fields necessary for you to configure your personal SSIDs.

The **Personal Network** section allows the user to configure the following:

- **Band Selection:** Selects the wireless interface.
- **Enabled:** Enables/disables this wireless connection.
- **Broadcast:** Broadcasts the personal SSID on this radio.
- **SSID:** Configures the personal SSID/network name to assign to this access point.

The **MAC Filter** section enables MAC filtering and allows setting of the filter list.

The **Security** section allows the user to configure security for this SSID. Supported security types are WPA-PSK TKIP/AES, WPA-PSK AES, WPA2-PSK TKIP/AES, WPA2-PSK AES, and WEP (not recommended).

**DHCP:** The Configuration DHCP tab contains the fields necessary to configure the LAN settings and the local DHCP server.

**WAN:** The Configuration Wireless Access Network (WAN) tab contains the fields necessary for you to configure the IP address of the Wireless LAN controller on your access point.

The **Primary Controller** section sets the IP address of the primary wireless controller to which the AP will join.

The **Uplink IP Configuration** section configures the IP configuration on the WAN port.

***EVENT LOG:***

This page will display all the logged events and has a button to clear the log.

# Declarations of Conformity and Regulatory Information

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

This section contains the following subsections:

- [Manufacturers Federal Communication Commission Declaration of Conformity Statement, page 1-25](#)
- [Industry Canada, page 1-27](#)
- [European Community, Switzerland, Norway, Iceland, and Liechtenstein, page 1-27](#)
- [Declaration of Conformity for RF Exposure, page 1-30](#)
- [Declaration of Conformity Statements, page 1-30](#)

## Manufacturers Federal Communication Commission Declaration of Conformity Statement



**Access Point Model:**

AIR-OEAP602I-A-K9

**FCC Certification number:**

LDK102077

**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.

Cet appareil numérique de la classe B respecte les exigences du Règlement sur le matériel 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.

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 ουσιώδεις 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



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.

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 3 contains Brazil regulatory information for the access point models identified in the previous section.

**Figure 3** *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>



# APPENDIX **A**

## Open Source Used In Cisco Aironet 600 Series OfficeExtend Access Point

---

This document contains the licenses and notices for open source software used in Cisco Aironet 600 Series OfficeExtend Access Point. 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).

### Contents

### bcm57xx.brcm 8.3.14

#### Available under license:

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Version 2, June 1991

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## bridge 0.9.1

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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 $
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*/
/*
* libipq.c
*
* 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 Jawaid Bazyar (bazyar@hypermall.com)

\* nicstar.c, M. Welsh (matt.welsh@cl.cam.ac.uk)

\*

\* Hacked October, 1997 by Jawaid Bazyar, Interlink Advertising Services Inc.

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\* 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
* 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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The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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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:

```
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** 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

### Available under license:

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)

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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## squashfs 3.1

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```

/*
 * Create a squashfs filesystem.  This is a highly compressed read only filesystem.
 *
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 *
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 *
 * mksquashfs.c
 */

```

## udhcp 0.9.8

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## vconfig 1.6

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