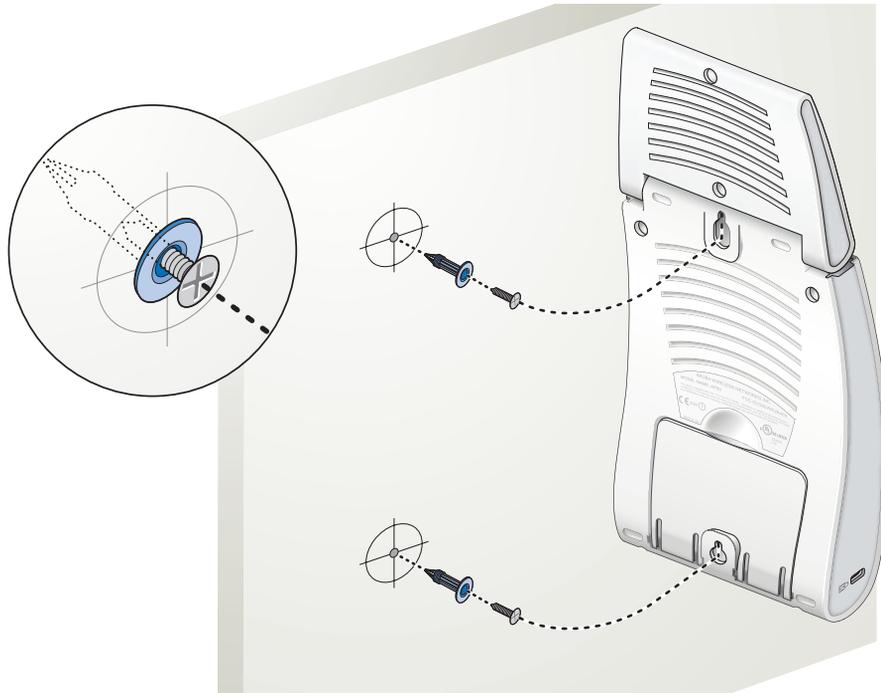**2** **Align the Aruba 60/61 mounting slots to capture the surface screws.**

FIGURE 3-4 Hanging the Aruba 60/61 on Screws

3 **Secure the Aruba 60/61, if desired.**

To prevent the unauthorized removal of the Aruba 60/61 from its installed location, use a Kensington MicroSaver Security Cable (not included). Wrap the security cable around an immovable object, insert the cable's lock into the Kensington Security Slot on the back of the Aruba 60/61, and turn the key.

4 **Orient the antennas.**

For best performance, swivel the individual antennas (Aruba AP 60) or antenna array (Aruba AP61) so that they are oriented vertically (see Figure 3-1 on page 24). Once mounting is complete, connect the required cables (see instructions on page 30).

Using the Optional Mounting Kits

Use the optional mounting kit to attach the Aruba 60/61 to a wall, shelf, or ceiling. For installation, see the *Aruba AP 60/61 Mounting Kit Installation Notes* (P/N 0500037-01) provided with each kit.

Connecting Required Cables

The Aruba 60/61 Access Points with or without external antennas are intended only for installation in Environment A as defined in IEEE 802.3.af. All interconnected equipment must be contained within the same building, including the interconnected equipment's associated LAN connections.

Selecting an FE Cable

The 10/100 Mbps Ethernet (FE) port is used to connect the AP to a 10Base-T/100Base-TX (twisted-pair) Ethernet LAN segment. The appropriate FE cable depends on the features required of the FE port:

● SPOE

When connecting the AP to a device that supports Serial and Power Over Ethernet (SPOE), use an 8-conductor, Category 5 UTP, straight-through FE cable.

The Aruba 5000 (with Line Card LC-5000-24FE-2GE-SPOE), the Aruba 2400, and the Aruba 800 support SPOE.

● POE

If the connecting device supports only Power Over Ethernet (POE), use a 4- or 8-conductor, Category 5 UTP, straight-through FE cable.

● Network Only

If the connecting device does not support POE, use a 4- or 8-conductor, Category 5 UTP, FE cable. The port detects MDI/MDX and automatically adjusts for straight-through or crossover cables.

The maximum length for FE cables is 100 meters (325 feet).

When the Aruba 60/61 is installed in an air-handling space, such as above suspended ceilings, as described in National Electrical Code (2002) Article 300.22(C), and Canadian Electrical Code, Sections 2-128, 12-010(3) and 12-100, Part 1, CSA C22.1, POE is required. Also, any FE cable installed in such spaces should be suitable under NEC Article 800.50 and marked accordingly for use in plenums and air-handling spaces with regard to smoke propagation, such as CL2-P, CL3-P, MPP, or CMP.

Use the built-in antenna (for the AP61). For the AP 60, use Aruba AP-ANT-1. For all other antennas, make sure the antenna cable is UL listed and suitable for use in plenums and air-handling spaces, such as CL2-P, CL3-P, MPP, or CMP, and mount the antenna outside of the air-handling space.

Install cables in accordance with all applicable local and national regulations and practices.

For more port and cable details, see Appendix A.

Connecting Cables & Power

⚠️ **CAUTION—**To prevent personal injury or damage to equipment, be sure to comply with electrical grounding standards during all phases of installation and operation of the AP. Do not allow the Aruba 60/61 or its attachments to be connected to or make contact with metal or power outlets on a different electrical ground than the device to which it is connected. Also, never connect the AP or WLAN Switch to external storm grounding sources.

1   Connect one end of the FE cable directly to the Aruba 60/61 FE port.

2   Connect the other end of the FE cable to one of the following:

   Ⓐ To a network port on the Aruba WLAN Switch, or

   Ⓑ To a network hub, router, or switch that has a routable path to the Aruba WLAN Switch.

Note   If the connecting device supplies POE, a straight-through cable must connect the Aruba 60/61 directly to the powering device without any intervening hubs, routers, or other networking equipment.

3   Connect power, if necessary.

The Aruba 60/61 can receive electrical power using the following options:

● POE

   If connecting the Aruba 60/61 to a device that supplies IEEE 802.3af compliant POE no additional power connection is necessary.

● Power Outlet

Note   When the Aruba 60/61 is installed in an air-handling space, as described in NEC (2002) Article 300.22(C), POE must be used instead of a power outlet.

If local regulations and practices permit, connect the optional AC power adapter (not included) to the DC power socket on the Aruba 60/61 and plug it into an appropriate power outlet.

> ⚠ **CAUTION—**To prevent personal injury or damage to equipment, use only the AC power adapter certified for this device in the country where it is used.
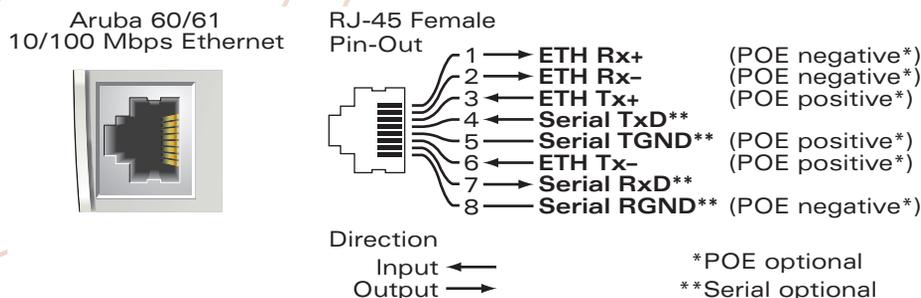
Port Specifications

FE Port

The 10/100 Mbps Ethernet (FE) port is located on the right-hand side of the Aruba 60/61 and has an RJ-45 female connector. The port pin-outs are shown in Figure A-1 :

FIGURE A-1 Aruba 60/61 FE Port

The appropriate cable depends on the level of connectivity required of the FE port:

● If the connecting device supports Serial and Power Over Ethernet (SPOE), use an 8-conductor, Category 5 UTP, straight-through FE cable with a male RJ-45 connector. (

   The Aruba 5000 (with Line Card LC-5000-24FE-2GE-SPOE), the Aruba 2400, and the Aruba 800 support SPOE.

● If the connecting device supports only Power Over Ethernet (POE, including IEEE 802.3af POE as well as "inline" or "midspan" POE devices), use an 8- or 4-conductor, Category 5 UTP, straight-through FE cable with male RJ-45 connectors.

● If the connecting device does not support Serial or POE, use a 4- or 8-conductor, Category 5 UTP, FE cable with male RJ-45 connectors. The port detects MDI/MDX and automatically adjusts for straight-through or crossover cables.

The maximum length for FE cables is 100 meters (325 feet).

When the Aruba 60/61 is installed in an air–handling space, as described in NEC (2002) Article 300.22 (C), POE is required. Also, any FE cable installed in such spaces should be suitable under NEC Article 800.50 and marked accordingly for use in plenums and air–handling spaces with regard to smoke propagation, such as CL2-P, CL3-P, MPP or CMP.

Install cables in accordance with all applicable local regulations and practices.

Serial Breakout Adapter

The optional serial breakout adapter is used to separate the serial communications lines from the Aruba 60/61 FE+SPOE port. This allows the administrator to connect a local serial console directly to the AP and access the apboot prompt for manual provisioning.

The serial breakout adapter pin-outs are shown in Figure A-2 :
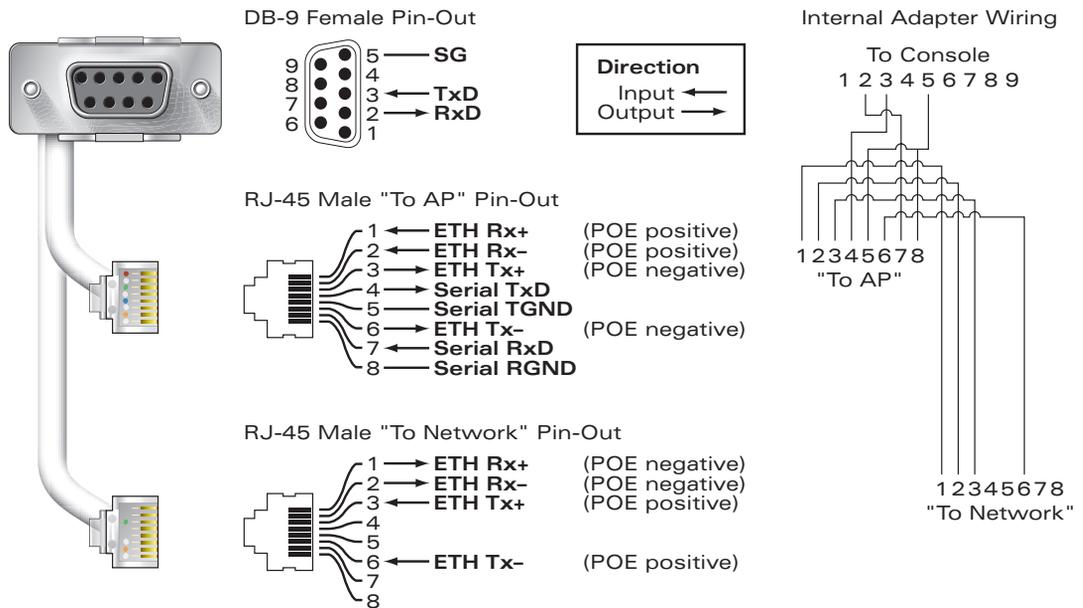
FIGURE A-2 Aruba Serial Breakout Adapter

DB-9 Specification

The DB-9 connector attaches to the serial port of a console terminal. Communication settings for the port are specified in Table A-1 :

TABLE A-1 Console Terminal Settings

Baud Rate	Data Bits	Parity	Stop Bits	Flow Control
9600	8	None	1	None

"To AP" Specifications

The RJ-45 connector labeled "To AP" attaches to the Aruba 60/61 FE port either directly (if the AP is physically available) or indirectly (if the AP is already deployed).

When connecting indirectly, use a straight-through FE coupler to attach the "To AP" connector to the FE cable leading directly to the AP's FE port with no intervening hubs, routers, or other network equipment. The cable must be 8-conductor, Category 5 UTP, straight-through FE cable with a maximum length of 100 meters (325 feet).

The Aruba 60/61 and serial breakout adapter are plenum rated. When is installed in an air-handling space, as described in NEC (2002) Article 300.22(C), any connecting FE cable should be suitable under NEC Article 800.50 and marked accordingly for use in plenums and air-handling spaces with regard to smoke propagation, such as CL2-P, CL3-P, MPP or CMP.

Install cables in accordance with all applicable local regulations and practices.

"To Network" Specifications

The RJ-45 connector labeled "To Network" attaches to an FE LAN segment. This connection is optional unless IEEE 802.11af Power Over Ethernet (POE) is used to power the AP during manual provisioning.

A straight-through FE coupler may be used to attach the "To Network" connector to a LAN FE cable. The appropriate cable depends on the level of connectivity required of the FE port:

- If the connecting device supports IEEE 802.3af Power Over Ethernet (POE), use a 4- or 8-conductor, Category 5 UTP, straight-through FE cable with male RJ-45 connectors.

  The Aruba 5000 (with Line Card LC-5000-24FE-2GE-SPOE), the Aruba 2400, and the Aruba 800 support SPOE.

- Otherwise, use a 4- or 8-conductor, Category 5 UTP, FE cable with male RJ-45 connectors. The port detects MDI/MDX and automatically adjusts for straight-through or crossover cables.

The maximum length for FE cables is 100 meters (325 feet).

The Aruba 60/61 and serial breakout adapter are plenum rated. When is installed in an air–handling space, as described in NEC (2002) Article 300.22(C), the connecting FE cable should be suitable under NEC Article 800.50 and marked accordingly for use in plenums and air–handling spaces with regard to smoke propagation, such as CL2–P, CL3–P, MPP or CMP.

Install cables in accordance with all applicable local regulations and practices.

APPENDIX B
Troubleshooting

After provisioning and deployment, the Aruba 60/61 can be configured and managed through the Aruba WLAN Switch. However, the Aruba 60/61 includes built-in troubleshooting features for situations where the switch commands are unable to diagnose AP problems.

This appendix describes using the built-in AP support prompt for troubleshooting.

Accessing the AP Support Prompt

Depending on your network topology, the built-in AP Support prompt can be accessed using the AP serial console port or through the WLAN switch using the Serial Over Ethernet (SOE) interface or using Telnet from a remote management station.

Direct SPOE Connection to WLAN Switch

This method requires that the Aruba 60/61 is connected directly to an SPOE-compatible network port on the Aruba WLAN Switch (see "Connecting Required Cables" on page 30).

1   **Telnet to the Aruba WLAN Switch Serial-Over-Ethernet (SOE) interface.**

    Use a Telnet client on your management workstation to connect to theAruba WLAN Switch IP address using logical port 2300. The connection command may vary depending on the specific software used, but commonly appears as follows:

```
> telnet <WLAN switch IP address> 2300
```

2   When prompted, log in to the Aruba WLAN Switch as the administrator:

```
user: admin
password: <administrator password (not displayed)>
```

This will present you with the Aruba WLAN Switch SOE console prompt:

```
Available commands:
  baud [9600|19200|38400|57600|115200]
  connect <slot/port>
  exit (no args)
soe>
```

3   Connect to the Aruba WLAN Switch port to which the Aruba 60/61 is physically attached:

```
soe> connect  <slot number>/<port number>
```

where *slot number* is the physical slot of the line card in the WLAN switch, and *port number* is the physical port.

If the AP has not finished booting, allow the Autoboot timer to expire. When the device has booted, the AP support prompt (#) will appear.

Direct Terminal Connection

This method requires that the Aruba 60/61 is connected to a compatible serial console using the Aruba serial breakout adapter (see "Connecting the Console Terminal" on page 15).

1   Set up your local terminal.

This procedure requires a terminal or computer running terminal emulation software with the following settings:

Table 3-2 Console Terminal Settings

Baud Rate	Data Bits	Parity	Stop Bits	Flow Control
9600	8	None	1	None

2   Establish console communication.

Press <Enter> a few times to establish communication between the Aruba 60/61 and terminal.

If the AP has not finished booting, allow the Autoboot timer to expire. When the device has booted, the AP Support prompt (#) will appear.

Remote Telnet Connection

If properly set up, the AP support prompt can be accessed remotely using Telnet. By default, this feature is turned off for security purposes and cannot be turned on using the AP interface.

Setting Telnet Access

Telnet access can only be changed from the WLAN switch management interface. Log in to the WLAN switch CLI using the admin account, access the configuration (config) prompt, and issue the following commands:

```
(Aruba 5000) (config) # ap location <building>.<floor>.<device>
(Aruba 5000) (sap-config location b.f.d) # telnet {enable|disable}
```

Using Telnet to Connect

Use a Telnet client on your management workstation to connect to the Aruba 60/61's individual IP address. The connection command may vary depending on the specific software used, but commonly appears as follows:

```
> telnet <Aruba 60/61 IP address>
```

When the connection is established, the AP support prompt (#) will be displayed.

AP Support

Access Levels

- User Access

  User access is a low security level, featuring only the most basic commands. It is available without any additional login after the AP has booted.

- Privileged Access

  Privileged–level access requires the privileged password (the same privileged password used on the switch) to be entered using the user level `enable` command. The privileged access level is available only after the AP has successfully booted and synchronized with WLAN switch.

User Commands

- **`ping`** *<host|IP address>*

  Verify IP connectivity between the AP and the host address.

- **`route`**

  Display the contents of the AP route table.

- **`ifconfig`**

  Display the AP's IP address settings.

- **`enable`** *<privileged password>*

  Access the AP Support privileged mode.

Privileged Commands

In addition to the user commands, the following commands are available upon successfully entering the privileged mode:

- `ps`
- `show [config|stats|version]`

> **Note—** These commands should be used only as directed by Aruba Customer Support.

APPENDIX C
Product Specifications

Compliance

FCC - Class A

This equipment has been tested and found to comply with the limits for a Class A 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 commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This product complies with Part 15 of the FCC 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.

CAUTION STATEMENT: FCC RF Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for fixed indoor use only. This equipment should be installed and operated with a minimum distance of 15.2 inches (38.5 centimeters) between the radiator and your body for 2.4 GHz and 5GHz operations. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radio Frequency Interference Requirements

This device is restricted to indoor use due to its operation in the 5.15 to 5.25 GHz frequency range. The FCC requires this product to be used indoors to reduce the potential for harmful interference to co-channel Mobile Satellite systems. High power radars are allocated as primary users of the 5.25 to 5.35 GHz and 5.65 to 5.85 GHz bands. These radar stations can cause interference with and/or damage this device.

Industry Canada - Class A

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques," NMB-003 édictée par le ministère des Communications.

VCCI - Class A

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

CE - Class A

Warning—This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

EU - Class A

This product complies with EN5022 Class A and EN5024 standards.

Underwriter Labs

These products have been Listed and tested for fire resistant and low-smoke-producing characteristics, and are suitable for use in environmental air space, such as above suspended ceilings, in accordance with Section 300-22(C) of the National Electrical Code, and Sections 2-128, 12-010(3) and 12-100 of the Canadian Electrical Code, Part 1, CSA C22.1.

Peut être utilisé dans des gaines transportant de l'air traité, conformément à la section 300-22(c) du National Electrical Code et aux articles 2-128, 12-010(3) et 12-100 du Code Canadien de l'électricité, Première partie, CSA C22.1.

Certifications

Item	Measurement
Electromagnetic Compatibility	FCC Part 15 Class A, FCC Part 15 Class C 15.207/15.247, FCC Part 15 Class E 15.407
	ICES-003 Class A, RSS 210 (CAN)
	VCCI Class A
	EN 61000-3, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11
	CE The CE approval mark on back of the product indicates that it meets European Directives 73/23/EEC and 89/336/EEC
	EN 55022, EN55024 (89/336/EEC), ETS 300 328 (89/336/EEC), ETS 301 489 (89/336/EEC), ETS 301 893
	AS/NZS 3548 Class A, RFS 29 (NZ)
Safety	UL Listed (UL60950) UL Listed (Canadian Electrical Code/CSA 22.2 No. 60950) EN60950 / IEC60950 National Electrical Code Section 300-22(C) Canadian Electrical Code, Part 1, CSA C22.1 Sections 2-128, 12-010(3), and 12-100

Product Features

- Wireless dual–band transceiver
- Varied antenna options:
    - The Aruba AP60 has dual Reverse Polarity SMA (RP-SMA) antenna connectors that accept a variety of high-gain detachable antennas (not included).
    - The Aruba AP61 has a built-in swivel array with dual, tri-band, omnidirectional antennas for reception diversity.
- Protocol-independent networking functionality
- Supports IEEE 802.11a or IEEE 802.11b/g operation as an AP
- Supports IEEE 802.11a and IEEE 802.11b/g operation as an AM
- Compatible with IEEE 802.3af Power Over Ethernet (POE)
- Seamless connectivity to wired LANs augment existing networks quickly and easily
- Can be centrally managed, configured, and upgraded through the Aruba WLAN Switch to take advantage of network changes and security improvements

Ethernet Compatibility

The Aruba 60/61 attaches to 10/100 Mbps Ethernet (FE) LAN segments that utilize 10Base-T/100Base–TX (twisted–pair) wiring. The device appears as an Ethernet node and performs a routing function by moving packets between the wired LAN and remote workstations on the wireless infrastructure.

Radio Characteristics

The Aruba 60/61 can be configured to support IEEE 802.11a or IEEE 802.11b/g operation as an AP, and supports both IEEE 802.11a and IEEE 802.11b/g operation as an AM:

- 802.11a provides a high data rate and reliable wireless connectivity

  802.11a operation uses a radio modulation technique known as Orthogonal Frequency Division Multiplexing (OFDM), and a shared collision domain (CSMA/CA). It operates in the 5GHz Unlicensed National Information Infrastructure (UNII) band. Data is trans-mitted over a half-duplex radio channel operating at up to 54 Megabits per second (Mbps).

- 802.11b provides an alternative to wired LANs that can dramatically cut costs

  802.11b operation uses the IEEE 802.11 High-Rate Direct Sequence (HRDS) specifica-tion, and a shared collision domain (CSMA/CA). It operates in the 2.4GHz Indus-trial/Scientific/Medical (ISM) band. The ISM band is available worldwide for unlicensed use. Data is transmitted at speeds of up to 11 Mbps.

- 802.11g provides a high data rate and is backwards compatible with 802.11b.

  802.11g operation uses ODFM and a shared collision domain (CSMA/CA). It operates in the 2.4GHz Industrial/Scientific/Medical (ISM) band. The ISM band is available world-wide for unlicensed use. Data is transmitted at speeds of up to 54 Mbps.

Power Over Ethernet

The Aruba 60/61 supports the IEEE 802.3af standard for Power Over Ethernet (POE). With this feature, the Aruba 60/61 can accept electrical power from a compatible POE-capable device (such as the Aruba 5000 (with Line Card LC-5000-24FE-2GE-SPOE), Aruba 2400, or Aruba 800) directly over the FE cable. POE eliminates the need to provide separate power outlets in environments that are difficult or undesirable to wire for electricity.

The Aruba 60/61 also supports "inline" and "midspan" POE devices for normal operation. Inline power is POE that is integrated into FE ports and provides POE directly to devices. Non-POE ports can have POE added by means of a mid-span device that provides POE. The non-POE port is connected to a mid-span POE port, and this mid-span port is connected to the device that requires POE.

Physical Description

Package Contents

The Aruba 60/61 package includes:

- One Aruba 60/61 Wireless Access Point
- Assorted documentation

Inform your supplier if there are any incorrect, missing or damaged parts. If possible, retain the carton, including the original packing materials. Use them to repack the product in case there is a need to return it.

Optional Items

The following optional items can also be ordered for the Aruba 60/61:

- Detachable antennas (Aruba AP60 only)
- AC power adapter (5 VDC, 3 A) and power cord
- Serial breakout adapter for direct access to the AP console
- Mounting kit (modular cradle for walls and suspended ceilings)

Check with your Aruba sales representative for the availability of optional items.

The following specifications apply to the Aruba AP60 and Aruba AP61 Wireless Access Points.

Aruba AP-60 Access Point

FIGURE C-1 Part Number: AP-60

TABLE **C-1** AP-60 802.11 Specifications

Description	802.11a	802.11b	802.11g
Antenna	Dual, diversity supporting Reverse Polarity-SMA (RP-SMA) detachable antenna interfaces suitable for acceptance of single-band or tri-band 802.11a/b/g detachable antennas of various pattern types and gain. For information on third-party antennas, go to the Interoperability section of the Products page at: http://www.arubanetworks.com		
Frequency Band	5.250 ~ 5.350Ghz (middle band) 4 channels 5.725 ~ 5.825Ghz (higher band) 4 channels	2.4 ~ 2.483Ghz (US, Canada & ETSI) 2.4 ~ 2.497Ghz (Japan) Complete country list available at http://www.arubanetworks.com/products/aps/certification	2.412 ~ 2.462Ghz (US, Canada) 2.412 ~ 2.472Ghz (ETSI) 2.412 ~ 2.484Ghz (Japan) Complete country list available at http://www.arubanetworks.com/products/aps/certification
Radio Technology	Orthogonal Frequency Division Multiplexing (OFDM)	Direct Sequence Spread Spectrum (DSSS)	Orthogonal Frequency Division Multiplexing (OFDM)
Modulation Type	BPSK, QPSK, 16-QAM, 64-QAM	CCK, BPSK, QPSK	CCK, BPSK, QPSK, 16-QAM, 64-QAM
Transmit Power	Configurable by system administrator/professional installer	Configurable by system administrator/professional installer	Configurable by system administrator
Media Access Control	CSMA/CA with ACK	CSMA/CA with ACK	CSMA/CA with ACK

TABLE C-1 AP-60 802.11 Specifications   (Continued)

Description	802.11a	802.11b	802.11g
Operating Channels	● US & Canada: 8 ● ETSI: 13 ● Japan: 5 Complete country list available at http://www.arubanetworks.com/products/aps/certification	● US & Canada: 11 ● ETSI: 13 ● Japan: 13 Complete country list available at http://www.arubanetworks.com/products/aps/certification	● US & Canada: 11 ● ETSI: 13 ● Japan: 13 Complete country list available at http://www.arubanetworks.com/products/aps/certification
Data Rates	6, 9, 12, 18, 24, 36, 48, 54 Mbps per channel	1, 2, 5.5, 11 Mbps per channel	6, 9, 12, 18, 24, 36, 48, 54 Mbps per channel

TABLE C-2 AP-60 Characteristics

Description	
Maximum Clients	64
Multi–mode Radio Band	Selectable via software

Manageability:	• Management of all 802.11 parameters
	
	• Network Wide AP Management via:
	
	  CLI
	
	  WEB GUI
	
	  SNMPv3
	
	• Access Point Profiles, Management by:
	
	  Geographical Location
	
	  BSSID
	
	  Radio Type

Encryption Support (AP and Switch)	40bit / 64bit / 128bit / 152bit WEP, TKIP, AES
Physical (HxWxD):	• 159 x 99 x 31 mm / 6.26 x 3.90 x 1.22 in[a] • Weight 198 grams / 7 oz
Interfaces (Electrical):	• 1 x 10/100 Base-TX auto-sensing Ethernet RJ-45 Interface (Auto-sensing MDI/MDX) • Serial and Power Over Ethernet - 48V DC / 200mA Power Over Ethernet (802.3af compliant) • 1 x 5V DC Power Interface
Interfaces (Mechanical):	• Standard Kensington MicroSaver Security Cable Interface (cable not supplied) • Wall and ceiling mount kit (optional - part number AP-60-MNT) interface

TABLE C-2 AP-60 Characteristics   (Continued)

Description	
Visual Indicators (LEDs)	Ready –- Power Ethernet link status / Activity WLAN Activity

Power	• Optional AC Power Adapter Input—
	  100–240 AC, 50-60 Hz
	• Access Point Input—
	  5 VDC, 3 A (AC adapter), or
	  48 VDC, 200 mA (POE)

Power Requirements	• 5V DC / 2A supplied externally via optional AC adapter kit • 48V DC / 200mA Power Over Ethernet (802.3af compliant) • Auto-sensing externally supplied AC power or Power Over Ethernet
Output Power	100 mW maximum (or lower as configured on the Aruba WLAN Switch to comply with local regulatory requirements)
Environmental: Humidity	Humidity 5% to 95% (non-condensing)
Standards Compliance	• Ethernet IEEE 802.3 / IEEE 802.3u • Power Over Ethernet IEEE 802.3af • Wireless IEEE 802.11a/b/g

TABLE C-2 AP-60 Characteristics   (Continued)

Description	
Electromagnetic Compliance	● FCC Part 15 Class A, FCC Part 15 Class C 15.207/15.247
	● FCC Part 15 Class E 15.407
	● ICES–003 Class A,
	● RSS 210 (CAN)
	● VCCI Class A
	● EN 61000–3, EN 61000–4–2, EN 61000–4–3, EN 61000-4-4,
	● EN 61000–4–5, EN 61000–4–6, EN 61000–4–8, EN 61000-4-11
	● EN 55022, EN55024 (89/336/EEC),
	● ETS 300 328 (89/336/EEC), ETS 301 489 (89/336/EEC)
	● ETS 301 893
	● AS/NZS 3548 Class A
Safety Compliance	● CSA/NTRL (CSA 22.2 No. 950 & UL 1950)
	● EN60950 (TÜV/GS), IEC60950 (CB)

a. Measurements indicate only the Access Point chassis. Size and weight do not include other materials (such as detachable antennas, mounting kits, and cables) which may vary

Aruba AP-61 Access Point

FIGURE C-2   Part Number: AP-61

TABLE C-3 AP-61 802.11 Specifications

Description	802.11a	802.11b	802.11g
Antenna	Integral, diversity supporting dual, tri–band 802.11a/b/g omni–directional high–gain antennas with 90 degrees rotational movement Integral antenna gain: 2.4 Ghz / 2.8dBi 5.150-5.350 Ghz / 3.9dBi 5.6 Ghz / 4 dBi		
Frequency Band	● 5.150 ~ 5.250Ghz (lower band) 4 channels ● 5.250 ~ 5.350Ghz (middle band) 4 channels ● 5.725 ~ 5.825Ghz (higher band) 4 channels	● 2.4 ~ 2.483Ghz (US, Canada & ETSI) ● 2.4 ~ 2.497Ghz (Japan) Complete country list available at http://www.arubanetworks.com/products/aps/certification	● 2.412 ~ 2.462Ghz (US, Canada) ● 2.412 ~ 2.472Ghz (ETSI) ● 2.412 ~ 2.484Ghz (Japan) Complete country list available at http://www.arubanetworks.com/products/aps/certification
Radio Technology	Orthogonal Frequency Division Multiplexing (OFDM)	Direct Sequence Spread Spectrum (DSSS)	Orthogonal Frequency Division Multiplexing (OFDM)
Modulation Type	BPSK, QPSK, 16-QAM, 64-QAM	CCK, BPSK, QPSK	CCK, BPSK, QPSK, 16-QAM, 64-QAM
Transmit Power	Configurable by system administrator/ professional installer	Configurable by system administrator/professional installer	Configurable by system administrator
Media Access Control	CSMA/CA with ACK	CSMA/CA with ACK	CSMA/CA with ACK

TABLE **C-3** AP-61 802.11 Specifications (Continued)

Description	802.11a	802.11b	802.11g
Operating Channels	• US, Canada & ETSI: 12 • Japan: 5 Complete country list available at http://www.arubanetworks.com/products/aps/certification	• US & Canada: 11 • ETSI: 13 • Japan: 13 Complete country list available at http://www.arubanetworks.com/products/aps/certification	• US & Canada: 11 • ETSI: 13 • Japan: 13 Complete country list available at http://www.arubanetworks.com/products/aps/certification
Data Rates	6, 9, 12, 18, 24, 36, 48, 54 Mbps per channel	1, 2, 5.5, 11 Mbps per channel	6, 9, 12, 18, 24, 36, 48, 54 Mbps per channel

TABLE C-4 AP-61 Characteristics

Description	
Maximum Clients	64
Multi–mode Radio Band	Selectable via software

Manageability:	• Management of all 802.11 parameters
	
	• Network Wide AP Management via:
	
	  CLI
	
	  WEB GUI
	
	  SNMPv3
	
	• Access Point Profiles, Management by:
	
	  Geographical Location
	
	  BSSID
	
	  Radio Type

Encryption Support (AP and Switch)	40bit / 64bit / 128bit / 152bit WEP, TKIP, AES
Physical (HxWxD):	• Antenna up, stand closed—216 x 99 x 31 mm / 8.50 x 3.90 x 1.22 in[a] • Antenna up, stand open—209 x 99 x 74 mm / 8.23 x 3.90 x 2.91 in • Antenna 90°, stand closed— 159 x 99 x 71 mm / 6.26 x 3.90 x 2.80 in • Weight 255 grams / 9 oz

TABLE **C-4** AP-61 Characteristics (Continued)

Description	
Interfaces (Electrical):	● 1 x 10/100 Base-TX auto-sensing Ethernet RJ-45 Interface (Auto-sensing MDI/MDX) ● Serial and Power Over Ethernet – 48V DC / 200mA Power Over Ethernet (802.3af compliant) ● 1 x 5V DC Power Interface
Interfaces (Mechanical):	Standard Kensington MicroSaver Security Cable Interface (cable not supplied) Wall and ceiling mount kit (optional – part number AP-60-MNT) interface
Visual Indicators (LEDs)	Ready –– Power Ethernet link status / Activity WLAN Activity
Power	● Optional AC Power Adapter Input— 100-240 AC, 50-60 Hz ● Access Point Input— 5 VDC, 3 A (AC adapter), or 48 VDC, 200 mA (POE)
Power Requirements	● 5V DC / 2A supplied externally via optional AC adapter kit ● 48V DC / 200mA Power Over Ethernet (802.3af compliant) ● Auto-sensing externally supplied AC power or Power Over Ethernet
Output Power	100 mW maximum (or lower as configured on the Aruba WLAN Switch to comply with local regulatory requirements)
Environmental: Temperature	● Operating: 0 to 50 ºC (32 to 122 ºF) ● Storage: 0 to 70 ºC (32 to 158 ºF)

TABLE **C-4** AP-61 Characteristics (Continued)

Description	
Environmental: Humidity	Humidity 5% to 95% (non-condensing)
Standards Compliance	● Ethernet IEEE 802.3 / IEEE 802.3u ● Power Over Ethernet IEEE 802.3af ● Wireless IEEE 802.11a/b/g
Electromagnetic Compliance	● FCC Part 15 Class A, FCC Part 15 Class C 15.207/15.247 ● FCC Part 15 Class E 15.407 ● ICES–003 Class A, ● RSS 210 (CAN) ● VCCI Class A ● EN 61000–3, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, ● EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11 ● EN 55022, EN55024 (89/336/EEC), ● ETS 300 328 (89/336/EEC), ETS 301 489 (89/336/EEC) ● ETS 301 893 ● AS/NZS 3548 Class A
Safety Compliance	● CSA/NTRL (CSA 22.2 No. 950 & UL 1950) ● EN60950 (TÜV/GS), IEC60950 (CB)

a. Measurements indicate only the Access Point chassis. Size and weight do not include other materials (such as detachable antennas, mounting kits, and cables) which may vary

Related Documents

The following items are part of the complete documentation for the Aruba system:

- *Aruba Quick Start Guide*

- *Aruba 60/61 Wireless Access Point Installation Guide* (this document)

- *Aruba AirOS User Guide*

- *Aruba AirOS Reference Guide*

- Aruba WLAN Switch installation guide

For the current versions of these manuals, or to obtain the latest product release notes, visit the support section of the Aruba Web site (see).

Text Conventions

The following conventions are used throughout this manual to emphasize important concepts:

TABLE C-5 Text Conventions

Type Style	Description
Italics	This style is used to emphasize important terms and to mark the titles of books.
System items	This fixed-width font depicts the following: ● Sample screen output ● System prompts ● Filenames, software devices, and certain commands when mentioned in the text.
Commands	In the command examples, this bold font depicts text that the user must type exactly as shown.
<Arguments>	In the command examples, italicized text within angle brackets represents items that the user should replace with information appropriate to their specific situation. For example: # **send** *<text message>* In this example, the user would type "send" at the system prompt exactly as shown, followed by the text of the message they wish to send. Do not type the angle brackets.
[Optional]	In the command examples, items enclosed in brackets are optional. Do not type the brackets.
{ Item A | Item B }	In the command examples, items within curled braces and separated by a vertical bar represent the available choices. Enter only one choice. Do not type the braces or bars.

Contacting Aruba Wireless Networks

Web Site

- Main Site   http://www.arubanetworks.com
- Support   http://www.arubanetworks.com/support

E-mail

- Sales   sales@arubanetworks.com
- Support   support@arubanetworks.com

Telephone Numbers

- Main   408–227–4500
- Fax   408–227–4550
- Sales   408–754–1201
- Support   In the U.S.:   800–WI–FI–LAN (800–943–4526)
  International: 408–754–1200

Notes

ARUBA
WIRELESS NETWORKS

180 Great Oaks Blvd. Ste B
San Jose, California 95119
Tel 408.227.4500
Fax 408.227.4550

Net www.arubanetworks.com

Support:

support@arubanetworks.com
1-800-WIFI-LAN (800 943-4526)
408 754-1200