Aruba 501 802.11ac Wireless Client Bridge QuickStart Guide

This QuickStart Guide shows you how to install and get started using the Aruba 501 (J9835A) 802.11ac Wireless Client Bridge, hereafter referred to as the Aruba 501. The latest documentation, including the Aruba 501 802.11ac Wireless Client Bridge Configuration and Administration Guide, is available at www.hpe.com/support/hpesc.

Hardware Overview

Side view 1: Detachable antennas 2: Mounting bracket	Front view 3: Power cord cable tie points 4: AC/DC adapter socket 5: Status LEDs (left to right) Power, Ethernet, Radio 6: Ethernet port 7: Console port 8: Reset button 9: Antenna connectors

Package contents

The Aruba 501 Wireless Client Bridge, mounting bracket, two spring clips, three dual-band omnidirectional antennas, two mounting screws with wall anchors, one cable tie, and documentation.

Ports

- Ethernet port: Auto-sensing 1000 BaseT Ethernet port with RJ-45 connector. The port supports IEEE 802.3af Power over Ethernet (PoE).

- Console port: A standard serial port with a DB-9 (female) connector. To connect to a computer, use a standard (straight-through) serial cable (male-to-female). For details, see the serial port description in the *Aruba 501 802.11ac Wireless Client Bridge Configuration and Administration Guide.*

Radio and antennas

The Aruba 501 provides a single dual-band radio with three antennas supporting 3x3 MIMO three-spatial-stream 802.11ac. The antenna connectors are reversepolarity SMA jacks. Antennas or cable connectors must use RP-SMA plugs. The supplied antennas are to be mounted directly on the Aruba 501.

The Aruba 501 supports 802.11b/g/n operation modes at 2.4 GHz or 802.11a/n/ac operation modes at 5 GHz. The Aruba 5011does not support concurrent operation at 2.4 GHz and 5 GHz.

Reset button

The Reset button is accessible through a hole on the front panel of the Aruba 501, labeled as 8 on page 1. To reset the Aruba 501, insert a paper clip into the Reset button hole, and press and quickly release the button. To reset the Aruba 501 to factory defaults, press and hold the button until the status LEDs flash three times, then release.

Status LEDs

LED	State	Description
Power	Off	The Aruba 501 has no power.
	Amber	The Aruba 501 is starting up. If the Power LED continues to flash after several minutes, the software failed to load. Reset or power cycle the Aruba 501. If this condition persists, contact customer support.
	Green	The Aruba 501 is fully operational.
Ethernet	Off	The port is not connected or there is no activity.
	Amber	Flashing indicates network activity on a valid 10/ 100 Mbps link.
	Green	Flashing indicates network activity on a valid 1000 Mbps link.
Radio	Off	Indicates one of the following conditions: ■ The radio is disabled. ■ The work group bridge mode is disabled. ■ The radio is enabled, but there is no network activity.
	Amber	Flashing at a fast rate indicates wireless network activity in 2.4 GHz mode. Flashing slowly indicates the Aruba 501 is searching for an AP.
	Green	Flashing at a fast rate indicates wireless network activity in 5 GHz mode. Flashing slowly indicates the Aruba 501 is searching for an AP.

Powering the Aruba 501

The Aruba 501 can be powered by:

- A 10/100 or 10/100/1000 PoE-enabled switch. Various PoE-enabled switches are available from HPE Aruba.
- J9405C Aruba 501 Client Bridge 5V Power Supply
- JW627A Aruba PD-3501G-AC 1p GE 802.3af Midspan

NOTE

If the Aruba 501 is powered by a user-supplied PoE power injector, the injector must be must be 10/100/1000 (Gig-E) compatible.

Important information to read before installing

CAUTION

Professional installation required. For indoor installation only. Before installing or using the Aruba 501, consult with a professional installer trained in RF installation and knowledgeable in local regulations including building and wiring codes, safety, channel, power, indoor/outdoor restrictions, and license requirements for the intended country. The end user is responsible for ensuring that installation and use comply with local safety and radio regulations.

Surge protection and grounding: When connecting antennas installed outdoors to the Aruba 501, make sure that proper lightning surge protection and grounding precautions are taken according to local electrical code. Failure to do so can result in personal injury, fire, equipment damage, or a voided warranty. The hardware warranty provides no protection against damage caused by static discharge or a lightning strike.

Cabling: You must use supported Cat 5e (or better) cables, and where applicable, surge protection, for your given region.

Plenum installation: The Aruba 501 can be installed in a plenum. Plenum installation requires a remote PoE source located outside of the plenum. The Aruba 501 is suitable for use in environmental air space 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. It should be installed in a similar orientation as in a ceiling installation. However, a qualified installer can determine how to install/secure the Aruba 501 in a plenum in an appropriate and safe manner. Plenum-rated cables and attachment hardware must be used.

Country of use: During setup, you are prompted to select the country of use. After the country has been set, the Aruba 501 automatically limits the available wireless channels, ensuring compliant operation in the selected country. Entering the incorrect country can result in illegal operation and can cause harmful interference to other systems.

Safety: Consider the following safety information during installation.

- If your network covers an area served by more than one power distribution system, make sure all safety grounds are securely interconnected.
- Network cables can occasionally be subject to hazardous transient voltages (caused by lightning or disturbances in the electrical power grid).
- Handle exposed metal components of the network with caution.
- The Aruba 501 is powered on when connected to a PoE power source.
- The Aruba 501 and all interconnected equipment must be installed indoors within the same building (except for outdoor antennas), including all PoE- powered network connections, as described by Environment A of the IEEE 802.3af standard.

Installation

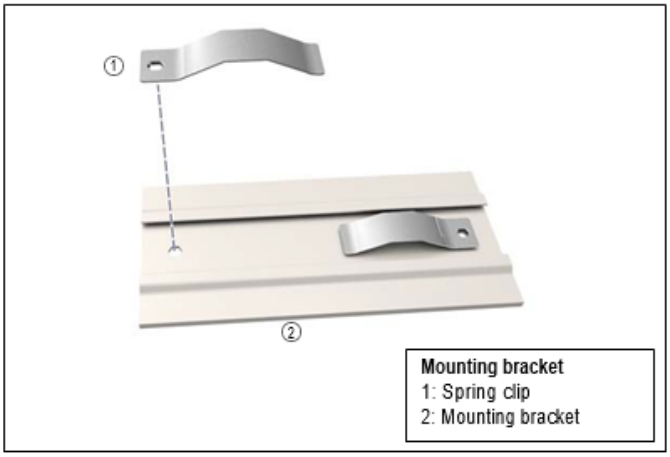
The Aruba 501 can be mounted on a desktop, wall, or a ceiling. The mounting bracket is mounted first, and then the Aruba 501 is attached to the bracket.

When mounting the Aruba 501 on a wall or ceiling, ensure that the surface to which you attach the Aruba 501 and the fasteners you use can support at least 0.9 kg (2 lbs). Allow extra weight for cables. When mounting on a wall or ceiling, Aruba highly recommends that you use the included spring clips with the mounting bracket as shown to ensure a secure fit.

CAUTION

Areas above false ceilings can contain dangerous electrical cabling, gas pipes, and other hazards. Make whatever safety arrangements are needed to ensure that you can work safely above the false ceiling. Aruba recommends that you use a non-conductive step ladder such as one made of fiberglass.

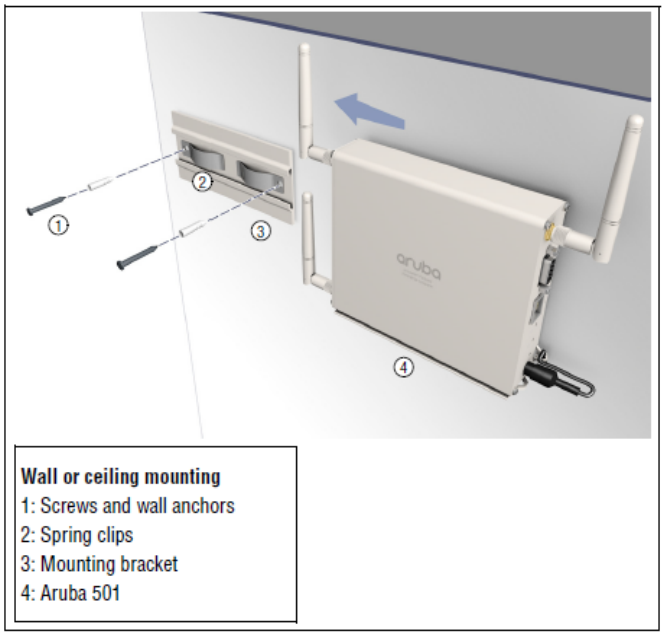
Figure 1 *Mounting Bracket*



Mounting on a wall or ceiling

1. Hold the mounting bracket against the wall or ceiling where it will be installed. Mark two holes for the screws (wall anchors).
2. Drill two holes for the wall anchors, typically 4.7 mm (3/16 inch) in diameter, and then insert the anchors and tap them flush with the wall or ceiling surface.
3. Use the mounting screws to attach the spring clips and mounting bracket to the wall or ceiling.
4. Attach the three antennas.
5. Align the tab slots on the back of the Aruba 501 with the retention tabs on the mounting bracket.
6. Slide the Aruba 501 onto the mounting bracket until it is fully engaged. Do not let go of the Aruba 501 until you confirm that it is firmly in place.

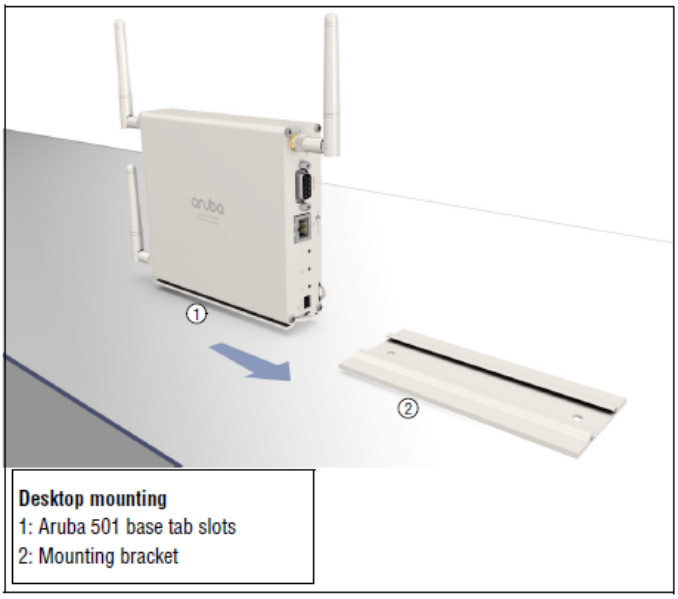
Figure 2 *Mounting on a Wall or Ceiling*



Placing on a Desktop

The Aruba 501 can also be installed on a desktop using the mounting bracket. Slide the Aruba 501 base onto the mounting bracket, and then place it on the desktop in the preferred location

Figure 3 *Desktop Mounting*

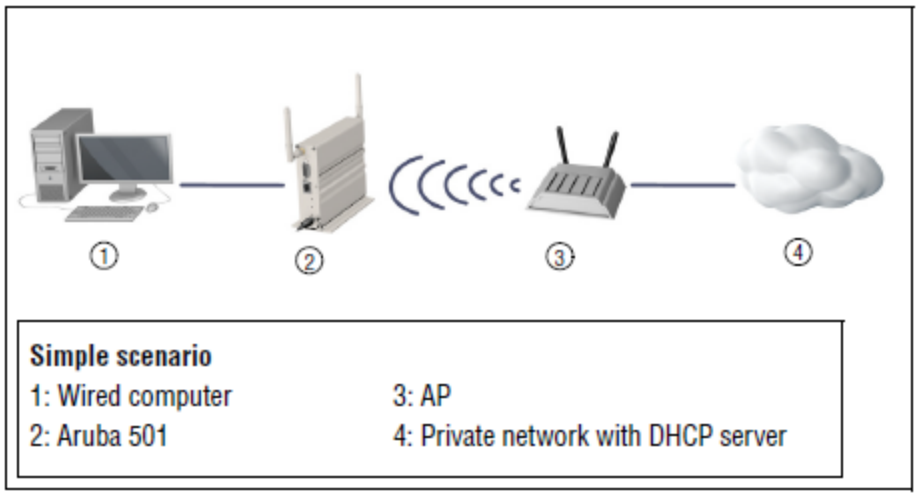


Initial configuration

This procedure describes how to perform initial configuration for a factory- default Aruba 501. For illustration purposes, a simple scenario is used.

In this scenario, the Aruba 501 links a wired computer to a private network through a wireless connection to an AP. For instructions on how to configure other scenarios, see the Aruba 501 802.11ac Wireless Client Bridge Configuration and Administration Guide.

Figure 4 *Initial Configuration*



The Aruba 501 is managed through its web-based management tool using Microsoft Internet Explorer 8 or later, or Mozilla Firefox 17 or later.

NOTE

Do not power on the Aruba 501 until directed.

A. Configure your computer

1. Disconnect your computer LAN port and configure it to use a static IP address in the range 192.168.1.2 to 192.168.1.254, and a subnet mask of 255.255.255.0. Set the default gateway to 192.168.1.1, and DNS server to 192.168.1.1.
2. Disable any wireless connection on your computer.

B. Connect the cables and power on the Aruba 501

1. Connect the cables:
   - If using a PoE switch, use Ethernet cables to connect your computer and the Aruba 501 to an unused factory-default PoE switch port.
   - If using a PoE injector, use Ethernet cables to connect your computer to the data-in port of the PoE injector and the Aruba 501 to the data and power-out port of the PoE injector.
   - If using an AC/DC adapter, connect it to the power connector on the Aruba 501.
2. Power on the Aruba 501 by powering on the PoE switch, power injector, or by plugging in the AC/DC adapter. Initially, the Aruba 501 power LED flashes amber. Wait approximately one minute until it turns green before proceeding to the next step.
3. Connect the LAN port on your computer to the Ethernet port on the Aruba 501 using a standard Ethernet cable.

C. Connect to the management tool and log in

NOTE

A factory-default Aruba 501 is assumed.

1. In a web browser, enter the address: **https://192.168.1.1**.
2. The first time you connect to the management tool, a security certificate warning displays. This is expected behavior. Select whatever option is needed in your web browser to continue to the management tool.

3. On the **Login** page, specify **admin** for both Username and Password, and then select **Login**. The Aruba 501 management tool home page opens.
4. On the License Agreement page, read the agreement and select **Accept License Agreement**.
5. The **Registration** page appears. Aruba recommends that you continue with this procedure and register later. Be sure to register at a later time using the management tool **Maintenance > Registration** menu.
6. A **Country** prompt appears. Select the country in which the Aruba 501 is operating.

To ensure compliance, you must select the correct country

7. At the password prompt, change the default password and select **Save**. Passwords must be at least six characters long and include four different characters.

The management tool is organized with menus and sub-menus. Instructions for making menu selections, such as "select Network > IP" indicate that you should select the Network menu and then the IP sub-menu, as follows:

Figure 5 *Menus*

D. Assign an IP address to the Aruba 501

By default, the Aruba 501 operates as a DHCP client. This means that if the network has a DHCP server, the Aruba 501 automatically receives a new IP address in place of its default address of 192.168.1.1 upon connecting to the network. Use one of the following methods to assign an IP address to the Aruba 501:

- Preconfigure the DHCP server to assign a specific IP address to the Aruba 501. To do this, you need to specify the Aruba 501 Ethernet MAC address and a reserved IP address on the DHCP server. The Aruba 501 Ethernet MAC address is printed on the Aruba 501 label identified as MAC ADDR, and listed on the management tool **Home** page as **MAC address**.
- Let the DHCP server automatically assign an IP address. By default, the DHCP server assigns an IP address after the Aruba 501 connects to the network. After the DHCP server assigns the Aruba 501 an IP address, you can find the IP address of the Aruba 501 by looking for its Ethernet MAC address in the DHCP server log.
- Assign a static IP address to the Aruba 501. The address must be on the same subnet as the network to which the Aruba 501 connects.

1. Select **Network > IP**.
2. Under IPv4 Configuration, select **Static IP** for the connection type. For **Static IP address**, set an address that is on the same subnet as the network to which the Aruba 501 connects after installation. Respect any DHCP server-mandated static address ranges. Also set S**ubnet mask** and **Default gateway**.
3. Set the DNS name servers to **Manual**, and then enter at least one server address.
4. Click **Save**. Connection to the management tool is lost. You can later reconnect to the management tool by specifying the new IP address.

E. Configure the wireless connection to the network

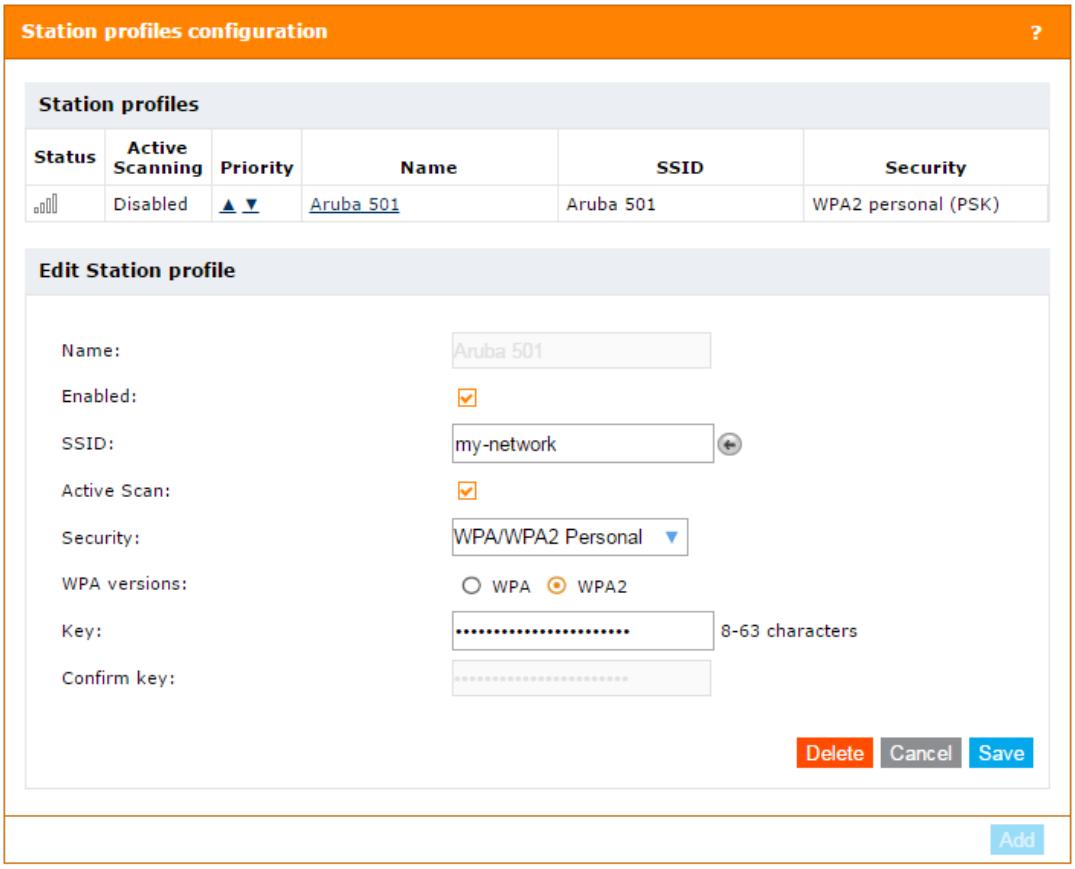
A station profile contains the settings that the Aruba 501 uses to establish a connection with a wireless network. Configure the default station profile as follows:

1. Select **Wireless > Station Profiles**

2. Set **SSID** to the name of the wireless network to which you want the Aruba 501 to connect. Click the arrow next to this field to select a nearby network that has been detected by the Aruba 501.
3. Select the **Active Scan** checkbox to enable active scanning.
4. Set **Security** to match the settings on the wireless network. For example, in this scenario, a setting of **WPA/WPA2** Personal is used as an example and presumes that the wireless network **my-network** is configured the same way.

   Settings for **WPA versions**, **Key**, and **Confirm Key**, are defined to match the network as well. For information on other wireless security settings, see the Aruba 501 802.11ac Wireless Client Bridge Configuration and Administration
5. When all settings are complete, select **Save**. The Aruba 501 automatically attempts to establish a wireless connection to the network. The Status column indicates whether the connection is Associated (blue bars) or Disconnected (no bars).

Figure 6 *Station Profile Configuration*



NOTE

Once the wireless connection is established, you will loose your connection to the Aruba 501 if the DHCP addressing option was selected in Step D.

When the wireless connection is established, the Aruba 501 is operational.

F. Test the wireless connection

For the purposes of this example, the network must have a DHCP server and an Internet connection. Broadband routers typically include a DHCP server.

1. Disconnect your computer from the Aruba 501.
2. Power off the Aruba 501.
3. Reconnect power to the Aruba 501.

4. Reconnect your computer to the Aruba 501.
5. Confirm that your wireless network interface is still disabled (it was disabled during an earlier configuration step).
6. Enable the Ethernet network interface of your computer, and verify that it is set to obtain an IP address automatically from DHCP.
7. Confirm that you can browse the Internet from your computer.

G. To perform additional configuration

Re-launch the Aruba 501 management tool at **https://<IP address>** where **<IP address>** is the IP address that was obtained by the Aruba 501 from the DHCP server or that was statically configured in the Aruba 501 (see section D above).

Aruba 501 Antennas

Figure 7 *Antennas*

Part	Type	Band	Gain	Use	Elements
5188-9334*	Omnidirectional	2.4/5 GHz	1.8/2 dBi	Indoor	1
J9170A	Directional	2.4/5 GHz	10.9/13.5 dBi	Outdoor	3
J9719A	Omnidirectional	2.4 GHz	6 dBi	Outdoor	3
J9720A	Omnidirectional	5 GHz	8 dBi	Outdoor	3
*Antennas included with the Aruba 501.					

In the US, channels in the 5150-5250 MHz band are disabled when the Aruba 501 is configured for use with the J9170A antenna. When using any of the optional high-gain antennas, the installer must also provide a cable that connects the Aruba 501 RP-SMA connector to the Type N connector on the optional antenna.

When installing outdoor antennas outside, ensure that the metal shield is reliably connected to the protective earthing system of the building.

Technical support

For worldwide technical support information, see the HPE Aruba support website at www.hpe.com/support/hpesc

Other regulatory information

FCC Notice

Contains TX FCC ID: B94MRLBB1301

This FCC Class B device 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.

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

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help. The FCC requires the user to be notified that any changes or modifications made to the device that are not expressly approved by the Hewlett-Packard Company may void the user's authority to operate the equipment.

Consult the dealer or an experienced radio/television technician for help. The FCC requires the user to be notifed that any changes or modifications made to the device that are not expressly approved by the Hewlett-Packard Company may void the user’s authority to operate the equipment.

For products available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

This device and its antenna(s) must not be co-located with any other transmitters except in accordance with FCC multi-transmitter product procedures.

Referring to the multi-transmitter policy, multiple-transmitter(s) and module(s) can be operated simultaneously without C2P.

When this device is operated in 5.15~5.25 GHz frequency range, it is restricted to indoor use only.

This device will not permit operation on channels 120-128 for 11a, 11n, and 11ac modes that overlap the 5600-5650 MHz band.

A 20 cm minimum distance must be maintained between the antenna and the users for the host this module is integrated into. Under such configuration, the FCC radiation exposure limits set forth for a population/uncontrolled environment can be satisfied.

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

Industry Canada Notice

CAN ICES-3 (B)/NMB-3(B)

Contains TX IC: 466F-MRLBB1301

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

The radio transmitter used in this device (IC: 466F-MRLBB1301) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Figure 8 *Canada Antenna Information*

Antenna product number	Antenna gain (dBi)		Antenna impedance (Ohms)
	5 GHz	2.4 GHz	
5188-9334	1.8	2	50
J9170A	10.9	13.5	50
J9719A	6	N/A	50
J9720A	N/A	8	50

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that necessary for successful communication.

The device for the band 5150-5250 MHz is only for indoor usage to reduce the potential for harmful interference to co-channel mobile satellite systems.

The maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall comply with the EIRP limit.

The maximum antenna gain permitted for devices in the band 5725-5825 MHz shall comply with the EIRP. limits specified for point-to-point and non point-to- point operation as appropriate.

Users should also be advised that high-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.

Important Note: IC Radiation Exposure Statement: This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body.

Notice for European Union

The 5150-5250 MHz band is limited to indoor only in the following countries.

Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia,Liechtenstein Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom.

Frequency (MHz)	2412-2472	5150-5250	5250-5350	5470-5725	5725-5850
Max EIRP	20 dbm	20 dbm	23 dbm	30 dbm	N/A for EU

Notice for Brazil, Aviso aos usuários no Brasil

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.

Centro de Informações Hewlett Packard Enterprise: 0800-710-2029 / +55 11 2377-0002 / +55 11 2377-1002.

Notice for Korea

B 급 기기 (가정용 방송통신 기자재)	이 기기는 가정용 (B 급) 전자파 적합기기로서주 로 가정에서 사용하는 것을 목적으로 하며 , 모든 지역에서 사용할 수 있습니다 .
Class B (broadcasting communication device for home use)	This device obtained EMC registration mainly for home use (Class B) and may be used in all areas.
해당 무선설비는 전파혼신 가능성이 있으므로 인명안전과 관련된 서비스는 할 수 없음	

Notice for Taiwan

低功率電波輻射性電機管理辦法

第十二條 經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均 不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通信;經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

在 5.25-5.35 秭赫頻帶內操作之無線資訊傳輸設備，限於室內使用。

Belarus Kazakhstan Russia marking

EAC

Сведения об изготовителе и местных представительствах

Сведения о производителе:

- Hewlett Packard Enterprise, 3000 Hanover Street, Palo Alto, California 94304, U.S.

Информация о местных представителей:

- ООО "Хьюлетт Паккард Энтерпрайз", Российская Федерация, 125171, г. Москва, Ленинградское шоссе, 16А, стр.3, Телефон/факс: +7 (495) 797 35 00
- ИООО «Хьюлетт-Паккард Бел», Республика Беларусь, 220030, г. Минск, ул. Интернациональная, 36-1, Телефон/факс: +375 17 392 28 20
- ТОО «Хьюлетт-Паккард (К)», Республика Казахстан, 050040, г. Алматы, Бостандыкский район, проспект Аль-Фараби, 77/7, Телефон/факс: + 7 727 355 35 52

Өндіруші мен жергілікті өкіл ақпараты

Өндіруші туралы ақпарат:

- Hewlett Packard Enterprise, 3000 Hanover Street, Palo Alto, California 94304, U.S.

Жергілікті өкілдері туралы ақпарат:

- ЖШС "Хьюлетт Паккард Энтерпрайз", Ресей Федерациясы, 125171, М ә скеу, Ленинград тас жолы, 16А блок 3, Телефон/факс: +7 (495) 797 35 00
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Дата изготовления – Дата изготовления включена в серийный номер изделия, CCYMPPPZZZ (формат серийного номера HPE Aruba для данного изделия). Дата изготовления указана как YM в серийном номере, где Y соответствует году с началом отсчета в каждом новом десятилетии, начиная с 2010, а M соответствует месяцу изготовления устройства. Например, в обозначении 3A цифра 3 соответствует 2013 году, а A обозначает ноябрь. В соответствии с данным принятым обозначением, 2010 год указывается как 0, 2011 – как 1, 2012 – как 2, 2013 – как 3 и т. д. Месяцы обозначаются как 1 (январь), 2 (февраль) и т. д. до 9 (сентябрь). 0 (ноль) обозначает октябрь, A обозначает ноябрь, а B обозначает декабрь.

Жасалған күні – Жасалған күні CCYMPPPZZZ (осы өнімге арналған HPE Aruba сериялық нөмірінің пішімі) пішіміндегі өнімнің сериялық нөмірінде қамтылады. Жасалған күні сериялық нөмірдегі YM ә ріптерімен көрсетіледі. Y ә рпі 2010 жылдан басталатын ж ә не ә р он жылдан бастап есептелетін жылды көрсетеді жә не M ә рпі құрылғының жасалған айын білдіреді. Мысалы, 3A таңбалары келісіні білдіреді: 3 – 2013 жылды ж ә не A қараша айын көрсетеді. Бұл ә діс бойынша, 2010 жыл 0 санымен, 2011 жыл 1 санымен, 2012 жыл 2 санымен, 2013 жыл 3 санымен ж ә не т.т. көрсетіледі. Айларды 1 мен 9 аралығындағы сандар көрсетеді:1 саны қаңтар айы үшін, 2 саны ақпан айы үшін жә не 9 саны қыркүйек айы үшін. 0 (нөл) саны қазан айы үшін, A ә рпі қараша айы үшін ж ә не B ә рпі желтоқсан айы үшін қолданылады.

Product overview

The Aruba 501 Wireless Client Bridge can bridge up to 15 Ethernet client devices running a legacy networking protocol to the WLAN, extending wireless network access to a wide range of protocols. An integrated serial to TCP/IP converter enables a RS-232 asynchronous terminal device to communicate with a compatible station on the network. Strong enterprise-class layered security features, including an IEEE 802.1X supplicant, protect the network from intrusions. Hardware-accelerated encryption provides high performance when using WPA2/AES security.

Specifications

Specification	Description
Product model number	MRLBB-1302
Frequency range	2400–2500 MHz 4900–5845 MHz Actual operating frequencies depend on regulatory approval for the country of use.
Wireless medium	Direct Sequence Spread Spectrum (DSSS), Orthogonal Frequency Division Multiplexing (OFDM), Spatial multiplexing (MIMO)
Network standards	802.11a, 802.11b, 802.11g, 802.11n, 802.11ac draft
Channel bandwidth supported	20, 40, and 80 MHz
Spatial streams	3 (3x3 configuration) Also support 1 and 2 streams modes

Specification	Description
Data rates supported	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 1, 2, 5.5, 11, 6, 9, 12, 18, 24, 36, 48, and 54 Mbps 802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps 802.11n: MCS0 up to MCS23 (450 Mbps) 802.11ac: NSS1-MCS0 up to NSS3-MCS9 (1300 Mbps)
Maximum available conducted transmit power	Per chain 2.4 GHz: 20 dBm All chains 2.4 GHz: 24.7 dBm Per chain 5 GHz: 17.5 dBm All chains 5 GHz: 22.2 dBm Actual transmit power may be limited by the country of operation.
Transmit power control	1dB step
Dimensions	13.97x3.3x12.7 cm
Weight	0.91 kg
Operating temperature	0°C to 50°C
Non-operating/storage temperature	-40°C to 70°C
Operating/non-operating relative humidity	5% to 95%, noncondensing
Shock/vibration	EN 61373
Altitude	Up to 3048 m (10,000 ft)

Electrical characteristics

IEEE 802.3af PoE compliant or 5-15 Vdc from available ac power supply. Maximum power rating: 9 W. Power Inputs: 5 Vdc. PoE power: 11 W PoE.

PoE Power is the power supplied by the internal power supply. It is dependent on the type and quantity of power supplies, and may be supplemented with the use of an External Power Supply (EPS).

Radio

FCC Part 15.247; EN 300 328; FCC Part 15.407; MIC Notice No. 88, App. 43 & 45; EN 301 893; RSS-210

Safety

UL 2043; UL 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1

RF exposure

FCC Bulletin OET-65C; RSS-102; EN 62311

Features

Single IEEE 802.11a/b/g/n/ac radio for 802.11ac high-throughput applications and IEEE 802.11a/b/g/n for legacy support applications

- Three spatial streams for up to 1.3 Gbps PHY rates
- • Three RP-SMA connectors for a range of antenna options.

When using outdoor antennas, customer must supply RP-SMA to Type N adapter.

Open Source Code

This product includes code licensed under the GNU General Public License, the GNU Lesser General Public License, and/or certain other open source licenses. A complete machine-readable copy of the source code corresponding to such code is available upon request. This offer is valid to anyone in receipt of this information and shall expire three years following the date of the final distribution of this product version by Hewlett Packard Enterprise Company. To obtain such source code, send a check or money order in the amount of US $10.00 to:

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USA