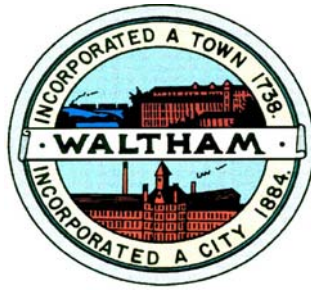


The City of Waltham



**Invites
Interested Parties
To propose the best offer and or bid
For the service or product herewith described:**

**Aruba, Wireless Access Points
(Equipment Purchase ONLY, with Optional Training Hours)**

The bid opening will be held: **Wednesday December 30, 2015 at 10:00 am**

Phone: 781-314-3244, Fax: 781-314-3245

Table of Contents:

- **Invitation to Bid**
- **Intent of the Project**
- **Agreement**
- **Instructions**
- **General Conditions**
- **Specifications**
- **Compliance**
- **Bid Price**

Invitation to Bid

The City of Waltham

Purchasing Department

REQUEST FOR BID (RFB)

Under the rules of M.G.L. Chapter 30B, the Chief Procurement Officer of the City of Waltham Purchasing Department hereby requests sealed bids for:

Aruba, Wireless Access Points **(Equipment Purchase ONLY, with Optional Training Hours)**

Price Proposals will be received at the office of the Purchasing Agent, City Hall, 610 Main Street, Waltham MA 02452, until,

Wednesday December 30, 2015 at 10:00 am

At which time and place the bids will be publicly opened and read.

Specifications and information available on line by visiting the Waltham Purchasing Department web site at www.city.waltham.ma.us/open-bids

BIDS MUST BE SIGNED AND ENCLOSED IN A SEALED ENVELOPE AND MARKED:

BID FOR: ARUBA, WIRELESS

A 5% Bid Bond or Certified Check must accompany each bid submitted and made payable to, and become the property of the City of Waltham, if the successful bidder refuses or neglects to comply with the terms of the Contract.

If the Bidder is a corporation, state your correct corporate name and State of incorporation. If Bidder is a partnership, state names and addresses of partners. If Bidder is a trust or other legal entity, state correct names and addresses of trustees or names and address of those legally authorized to bid and enter into contracts.

EXCEPTION OR ALTERNATES TO SPECIFICATIONS, TERMS OF SALE, AND DISCOUNTS AVAILABLE, MUST BE INCLUDED IN THE BID PRIOR TO OPENING DATE.

Intent of Project

The City of Waltham's School Department wishes to purchase 150 Aruba Access Points, 192 Access Point Licenses, 10 PoE switches and 300 Cat-5e patch cables. NO Installation is required. Optional Training Hours.

AGREEMENT

CITY OF WALTHAM

ARTICLE 1. This agreement, made this _____ day of _____, 2015 by and between the CITY OF WALTHAM, party of the first part, hereinafter called the CITY, by its MAYOR, and

_____ hereinafter called the CONTRACTOR.

ARTICLE 2. Witnesseth, that the parties to this agreement, each in consideration of the agreement on the part of the others herein contained, do hereby agree, the CITY OF WALTHAM for itself, and said contractor for his heirs, executors, administrators and assigns as follows:

To furnish all equipment, machinery, tools and labor, to furnish and deliver all materials required to be furnished (except as otherwise specified) and deliver in and about the project and to do and perform all work in strict conformity with the provisions of this Contract and of the Notice to Bidders, bid, Project Manual, and Drawings hereto annexed. The said Notice to Bidders, bid, Project Manual, and Drawings are hereby made a part of this contract as fully and to the same effect as if the same had been set forth at length and incorporated in the contracts.

ARTICLE 3. In consideration of the foregoing premises the CITY agrees to pay and the CONTRACTOR agrees to receive as full compensation for everything furnished and done by the CONTRACTOR under this contract, including all work required by not included in the items herein mentioned, and also for all loss or damage arising out of the nature of the work aforesaid, or from the action of the elements, or from any unforeseen obstruction or difficulty encountered in the prosecution of the work, and for all expenses incurred by or in consequence of the suspension or discontinuance of the work specified, and for well and faithfully completing the work, and the whole thereof, as herein provided, such prices as are set forth in the accompanying bid.

This Agreement entered into as of the day and year first written above.

FOR THE CITY

Jeannette A. McCarthy, MAYOR,
City of Waltham
Date: _____

John B. Cervone, City Solicitor
Date: _____
APPROVED AS TO FORM ONLY

Drew Echelson, Superintendent of Schools
Date: _____

Joseph Pedulla, Purchasing Agent
Date: _____

Paul Centofanti, Auditor
Date: _____

I CERTIFY THAT SUFFICIENT FUNDS
ARE AVAILABLE FOR THIS CONTRACT

FOR THE COMPANY

CONTRACTOR (Signature),
Date: _____

Company

Address

Instructions

INSTRUCTIONS FOR BIDDERS

1. **READ ALL DOCUMENTS.**

Bidders should familiarize themselves with all the documents contained herein; it is mandatory that all Bids be in compliance with all the provisions contained in said documents.

2. **FORMS AND ATTACHMENTS.**

Bids are to be completed on the forms provided ONLY and enclosed in a sealed envelope marked on the outside "BID (title)" and the name and address of bidder. Attachments submitted in addition to the Waltham Purchasing Department produced forms may not be considered.

3. **PRINTED OR TYPED RESPONSE.**

All information must be typewritten or printed in ink, including the price the bidder offers in the space as provided on the bid form.

4. **CORRECTIONS.**

Bids that are submitted containing cross outs, white outs or erasures, will be rejected. All corrections or modifications to the original bid are to be submitted in a separate envelope, properly marked on the outside, "CORRECTION/ MODIFICATION TO BID (title)" and submitted prior to the bid opening.

ALL DOCUMENTS SUBMITTED WITH YOUR RESPONSE WILL BE INCORPORATED INTO THE CONTRACT.

5. **PRICE IS ALL INCLUSIVE.**

Bid prices shall encompass everything necessary for furnishing all items, materials, supplies or services as specified, and in accordance with the specifications, including proper packing, cost of delivery, and in the case of services, completion of same, as per specifications.

6. **PRICE DISCREPANCY.**

In the event of a discrepancy between the Unit Price and the Extension, the Unit Price shall prevail.

7. **EXPLANATIONS, EXCEPTIONS**

Explanations, exceptions or other information pertinent to the specifications may be made in writing and included in the same envelope with the bid.

8. **BID DEPOSITS.**

Bid deposits are to be made payable to the City of Waltham. In the event that the successful bidder fails to execute a Contract within (10) days of the receipt of said contract, such security shall be retained by the city as liquidated damages.

Unsuccessful bidders' deposits will be returned immediately following the award to said successful bidder.

9. **WITHDRAW.**

A Bid may be withdrawn by written request prior to the schedule for the Bid Opening. No withdrawals are permitted after the bid opening date and time. Withdrawals after the bid opening date will cause the forfeit of the bid Deposit.

10. **AWARD.**

Bids will be awarded not later than (90) ninety days after the scheduled bid opening date, unless otherwise stated, in the specifications. Unless otherwise specified, bids will be evaluated on the basis of, completeness of your RFP response, responsiveness, responsibility, best price and experience.

11. **AWARD CRITERIA.**

Qualified and responsive proposals will be evaluated based on Price, Technical, and Compliance requirements.

12. **DISCOUNTS.**

Discounts for prompt payments will be considered when making awards.

13. **TAX EXEMPT.**

Purchases by the City of Waltham is exempt from any Federal, State or Massachusetts Municipal Sales and/or Excise Taxes.

14. **SAMPLES.**

The City of Waltham may require the submission of samples either before or after the awarding of a contract. Samples are to be submitted, at no charge to the City, so as to ascertain the product's suitability. If specifically stated in the Bid that samples are required, said samples must be submitted with the Bid prior to the Official Bid Opening. Failure to submit said samples would be cause for rejection of Bid. All

samples must be called for and picked up within (30) thirty days of award or said samples will be presumed abandoned and will be disposed of.

15. **ACTIVE VENDOR LIST.**

Vendors who wish to remain on the Active Bid List must either submit a Bid, No Bid, or a letter requesting same, no later than the Official Bid Opening. This is applicable to those vendors who have received the Invitation to Bid.

16. **FUNDS APPROPRIATION.**

THE CONTRACT OBLIGATION ON BEHALF OF THE CITY IS SUBJECT TO PRIOR APPROPRIATION OF MONIES FROM THE GOVERNMENTAL BODY AND AUTHORIZATION BY THE MAYOR.

17. **THE AWARDING AUTHORITY RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS, OR ANY PART OF ANY BID, WHICH IN THE OPINION OF THE AWARDING AUTHORITY, IS IN THE BEST INTERESTS OF THE CITY OF WALTHAM.**

18. **THE TAX ATTESTATION CLAUSE, CERTIFICATION OF NON-COLLUSION AND THE CERTIFICATE OF VOTE AUTHORIZATION,** are required by statute and are an integral part of the Invitation for Bid and must be completed and signed by the person submitting the Bid, or by the person/persons who are officially authorized to do so. Failure to do so may disqualify the bid.

19. **STANDARD OF QUALITY/EQUAL OR BETTER.**

Where, in the specifications, one certain kind, type, catalog number, brand or manufacturer of material is named, it shall be regarded as the **required standard of quality.** Where two or more are named, these are presumed to be equal and the Bidder may select one or the other. If the Bidder proposes to offer a substitute as an equal, he shall so indicate on the Bid Form, the kind, type, catalog number, brand, or manufacturer of material that is offered as an equal, and describe where it differs from the specifications. Substituted items must be capable of performing all the functions and/or operational features described or indicated in the specifications. Failure to indicate the description of any substitute item on the Bid will be interpreted to mean that the Bidder will furnish the item or service as specified.

20. MODIFICATION.

No agreement, understanding, alteration or variation of the agreement, terms or provisions herein contained shall bind the parties, hereto unless made and executed in writing by the parties hereto.

21. ASSIGNMENT.

The final payment for work done under this Contract shall be made only after the Contractor has signed a statement under the penalty of perjury, certifying that he has completed the work described in the final estimate. Neither party hereto shall assign this Contract or sublet it in part or as a whole without the prior written consent of the other party hereto. The Contractor shall not assign any sum or sums due or becoming due to him hereunder without the prior written consent of the City.

22. DELIVERIES:

a) The Contractor shall pay all freight and delivery charges. The Waltham Purchasing Department does not pay for shipping and packaging expenses. Items must be delivered as stipulated in the specifications. All deliveries must be made to the inside of city buildings. Sidewalk deliveries will not be accepted. City personnel are not required to assist in the deliveries and contractors are cautioned to notify their shippers that adequate assistance must be provided at the point of delivery, when necessary.

b) All items of furniture must be delivered inside the building, set up, in place and ready for use. Deliveries are to be made between the hours of 8:30 a.m. and 3:00 p.m., Monday through Friday, except on holidays.

c) All damaged items, or items which do not comply with specifications will not be accepted and title therefore will not vest to the Waltham Purchasing Department until such items are accepted and signed for, in good order, by the receiving department.

d) The contractor must replace, without further cost to the Waltham Purchasing Department, such damaged or non-complying items before payment will be made.

23. LABELING.

All packages cartons or other containers must be clearly marked with (a) building and room destination; (b) description of contents of item number from specifications; (c) quantity; (d) City of Waltham Purchase Order Number and (e) Vendor's name and order number.

24. GUARANTEES.

Unless otherwise stipulated in the specifications, furniture, equipment and similar durable items shall be guaranteed by the contractor for a period of not less than one year from the date of delivery and acceptance by the receiving department. In addition, the manufacturer's guarantee shall be furnished. Any items provided under this contract which are or become defective during the guarantee period shall be replaced the contractor free of charge with the specific understanding that all replacements shall carry the same guarantee as the original equipment. The contractor shall make such replacement immediately upon receiving notice from the Purchasing Agent.

25. SINGLE VENDOR.

The Waltham Purchasing Department desires to award a single contract based on the Grand Total Price. However, where applicable, the City reserves the right to make multiple awards on a unit price basis if, in the opinion of the Waltham Purchasing Department, it is in the best interest of theWaltham Purchasing Department.

26. BID OPENING INCLEMENT WEATHER

If, at the time of the originally scheduled bid opening, City Hall is closed to inclement weather or another unforeseeable event, the bid opening will be extended until 2:00 PM on the next normal business day. Bids will be accepted until that date and time.

GENERAL CONDITIONS

GENERAL CONDITIONS

1. INFORMATION

All information shall come from the Office of the City Purchasing Agent. The Contractor shall inquire at this office for any information needed. Wherever the words “or equal as approved” are used, it is to be understood that the opinion of the City Purchasing Agent shall govern.

2. SUITS

The Contractor shall assume defense of and shall indemnify and hold the City and its agents harmless from all suits and claims against the City and its sub-contractors arising from the use of any invention, patent right labor or employment, or from any act of omission or neglect of the City, its agents, employees or any subcontractor in performing the work, under this contract.

3. LAWS AND REGULATIONS

The Contractor shall conform to all the applicable rules, regulations, laws and ordinances of the City of Waltham, the Commonwealth of Massachusetts, the United States of America and all agencies having jurisdiction over this contract.

4. PROTECTION OF PROPERTY

The Contractor shall take all proper precautions to protect the City’s property from damage and unnecessary inconvenience. Any City property damaged by the Contractor in carrying out the provisions of this contract shall be restored to its original condition, by and at the expense of the Contractor.

5. PROTECTION OF PERSONS

The Contractor shall take all proper precautions to protect persons from injury, unnecessary inconvenience, and shall be responsible for his failure to do so. The Contractor agrees to hold the City harmless from any and all liabilities of every nature and description, which may be suffered through bodily injury, including death, to any person, by reason of negligence of the Contractor, his agents or employees, or any subcontractor.

6. CONTRACT DURATION.

This contract is for the period required to complete the project.

7. **INSURANCE**

A. **WORKMAN'S COMPENSATION:** The Contractor shall provide insurance for the payment of compensation and furnishing of other benefits under Chapter 152 of the General Laws of the Commonwealth of Massachusetts to all persons to be employed under this contract, the premiums for which shall be paid by the Contractor. Contractors shall provide insurance on a primary basis and the contractor's policy shall be exhausted before resorting to other policies. The contractor's policy is the primary one not the contributory.

B. **COMPREHENSIVE GENERAL LIABILITY**

Bodily Injury:	\$1,000,000 Each Occurrence
	\$2,000,000 Aggregate
Property Damage:	\$1,000,000 Each Occurrence
	\$2,000,000 Aggregate

C. **AUTOMOBILE (VEHICLE) LIABILITY**

Bodily Injury	\$2,000,000 Each Occurrence
Property Damage	\$1,000,000 Aggregate

D. **UMBRELLA POLICY**

General liability	\$1,000,000
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Your bid response must include a Certificate of Insurance with the above limits as a minimum. In addition, the Certificate of Insurance must have the following text contained in the bottom left box of the Certificate: *"The City of Waltham is a named additional insured for all insurances under the contract, excluding Automobile and Workers Compensation coverage"*. The Certificate of Insurance must be mailed directly to:

Office of the Purchasing Agent
Purchasing Department
City of Waltham
610 Main Street
Waltham, MA 02452

A LETTER FROM A SURETY COMPANY CERTIFYING THAT THE CONTRACTOR IS QUALIFIED AND CAPABLE OF OBTAINING THE ABOVE BONDS MUST BE INCLUDED WITH HIS/HERS BID.

8. PERSONNEL:

The Contractor shall employ a competent supervisor and all properly licensed personnel necessary to perform the services required in this contract. The City Purchasing Agent shall have the right to require the Contractor to remove and/or replace any of the personnel for nonperformance or for unprofessional behavior. The City Purchasing Agent may require the Contractor to submit a weekly performance record of the areas and of the work performed, on forms approved by the City Purchasing Agent. The Contractor or his supervisor shall be available to inspect such work as required by the City Purchasing Agent.

9. MATERIALS

The City or its Agent reserves the right to approve or reject any supplies, material or equipment used by the Contractor. The Contractor agrees to replace any supplies, material or equipment used by the Contractor. The Contractor agrees to replace any rejected supplies, materials or equipment, to the satisfaction of the City or its Agents.

10. TERMINATION OF CONTRACT

This contract may be terminated by the City upon deliverance to the Contractor of a five-day written notice of said termination.

11. CONTRACT OBLIGATIONS

Contract obligations on behalf of the City are subject to an annual appropriation to cover the contract obligation.

12. BIDDER EXPERIENCE EVALUATION

Each bidder shall submit with his bid, all the information relative to their experience and qualifications in performing the work required under this contract and shall have been in business for a minimum of five (5) years, in order for their bid to be considered.

15. NOT-TO-EXCEED AMOUNT

The bid amount proposed in your company's response is a "not-to- Exceed" amount unless the City makes changes, in writing, to the scope of work to be performed. The Change Order must be signed and approved by the City's Purchasing Agent, City Auditor, Law Department and the Mayor prior to the commencement of the change order work. No work is to begin until the proper approvals have been obtained. A change order will be priced at the unit price.

Failure to comply with this procedure will result in the cancellation of the contract and the non-payment of services provided

16. **FINANCIAL STATEMENTS.**

The City may require, within five (5) days after the bid opening, a complete and detailed Financial Statement prepared by a Certified Public Account, to determine a bidder's financial stability.

17 **BREACH OF CONTRACT/ NON PERFORMANCE**

If the Contractor shall provide services in a manner, which is not to the satisfaction of the City, the City may request that the Contractor refurnish services at no additional cost to the City until approved by the City. If the Contractor shall fail to provide services, which are satisfactory to the City, the City in the alternative may make any reasonable purchase or Contract to purchase services in substitution for those due from the Contractor. The City may deduct the cost of any substitute Contract for nonperformance of services together with incidental and consequential damages from the Contract price and shall withhold such damages from sums due or to become due to the Contractor. If the damages sustained by the City exceed sums due or to become due, the Contractor shall pay the difference to the City upon demand. The Contractor shall not be liable for any damages sustained by the City due to the Contractor's failure to furnish services under the terms of this Contract if such failure is in fact caused by the occurrence of a contingency the nonoccurrence of which was a basic assumption under which this Contract was made, including a state of war, embargoes, expropriation of labor strike or any unanticipated federal, state or municipal governmental regulation of order, provided that the Contractor has notified the City in writing of such cause within seven (7) days after its occurrence.

18 **RIGHT TO AUDIT**

The City of Waltham has the right to review and audit documents related to this contract. This right extends to any subcontractor, supplier or other entity used by the prime contractor to fulfill the obligations under this contract.

19. **CITY ORDINANCE. APPROVAL OF CONTRACTS BY MAYOR, SEC. 3-12 OF THE CITY ORDINANCES.**

All contract made by any department, board or commission where the amount involved is two thousand dollars (\$2,000) or more shall be in writing, and no such contract shall be deemed to have been made or executed until the approval of the

Mayor is affixed thereto. Any construction contract shall, and all other contracts may, where the contract exceed five thousand dollars (\$5,000) be required to be accompanied by a bond with sureties satisfactory to the Mayor.

NOTE

Failure to submit any of the required documents, in this or in other sections, with your bid response package may cause the disqualification of your proposal

Specifications

Aruba, Wireless

The Waltham Public Schools Wireless project will purchase 150 Access Points, 192 Access Point Licenses, 10 PoE switches and 300 Cat-5e patch cables

Equipment only - [No installation is required](#)

Access Points: Aruba Networks AP-105 with ceiling mount hardware

Switches: HP Procurve 24Port Gigabit PoE switch (2520G-24-POE model J9299A#ABA or Better)

Patch Cables: 5' Cat 5e or better.

Number of Access Points: 150

Access Point Licenses: 192

ARUBA IS THE ONLY MANUFACTURER THAT CAN BE CONSIDERED FOR THIS BID AS THESE NEW UNITS NEED TO TIE IN TO EXISTING ARUBA EQUIPMENT

See attached technical brochures

Compliance

(Required Documents.)

Compliance

The compliance documents in this section must be completed, signed and returned **with your bid package.**

Purchasing Department

City of Waltham

610 Main Street

Waltham, MA 02452

Failure to submit the completed documents will cause the disqualification of the proposal.

Section Index

Check when Complete

- Non-collusion form and Tax Compliance form..... _____
- Corporation Identification Form..... _____
- Certificate of Vote Authorization..... _____
- Certificate of Insurance (showing all limits of WC &GL)..... _____
- Three (3) References..... _____
- 5% Bid Bond or Certified Check..... _____
- Debarment Certificate _____
- Right-to-know Law..... _____

Your Company's Name: _____

Service or Product Bid _____

NOTE: Failure to submit any of the required documents, in this or in other sections, with your bid response package may cause the disqualification of your proposal.

NON-COLLUSION FORM AND TAX COMPLIANCE FORM

CERTIFICATE OF NON-COLLUSION

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity or group of individuals. The undersigned certifies that no representations made by any City officials, employees, entity, or group of individuals other than the Purchasing Agent of the City of Waltham was relied upon in the making of this bid

_____, _____
(Signature of person signing bid or proposal) Date

(Name of business)

TAX COMPLIANCE CERTIFICATION

Pursuant to M.G.L. c. 62C, & 49A, I certify under the penalties of perjury that, to the best of my knowledge and belief, I am in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

_____, _____
Signature of person submitting bid or proposal Date

Name of business

NOTE

Failure to submit any of the required documents, in this or in other sections, with your bid response package may cause the disqualification of your proposal.

CERTIFICATE OF VOTE OF AUTHORIZATION

Date:

I _____, Clerk of _____ hereby certify

that at a meeting of the Board of Directors of said Corporation duly held on the _____ day of _____ at which time a quorum was present and voting throughout, the following vote was duly passed and is now in full force and effect:

VOTED: That _____ (*name*) is hereby authorized, directed and empowered for the name and on behalf of this Corporation to sign, seal with the corporate seal, execute, acknowledge and deliver all contracts and other obligations of this Corporation; the execution of any such contract to be valid and binding upon this Corporation for all purposes, and that this vote shall remain in full force and effect unless and until the same has been altered, amended or revoked by a subsequent vote of such directors and a certificate of such later vote attested by the Clerk of this Corporation.

I further certify that _____ is duly elected/appointed _____ of said corporation

SIGNED:

(Corporate Seal)

Clerk of the Corporation:

Print Name: _____

COMMONWEALTH OF MASSACHUSETTS

County of _____

Date:

Then personally appeared the above named and acknowledged the foregoing instrument to be their free act and deed before me, _____

Notary Public;

My Commission expires: _____

CORPORATION IDENTIFICATION

The bidder for the information of the Awarding Authority furnishes the following information.

If a Corporation:

Incorporated in what state _____

President _____

Treasurer _____

Secretary _____

Federal ID Number _____

If a foreign (out of State) Corporation – Are you registered to do business in Massachusetts?

Yes _____, No _____

If you are selected for this work you are required under M.G.L.ch. 30S, 39L to obtain from the Secretary of State, Foreign Corp. Section, State House, Boston, a certificate stating that you Corporation is registered, and furnish said certificate to the Awarding Authority prior to the award.

If a Partnership: (Name all partners)

Name of partner _____

Residence _____

Name of partner _____

Residence _____

If an Individual:

Name _____

Residence _____

If an Individual doing business under a firm's name:

Name of Firm _____

Name of Individual _____

Business Address _____

Residence _____

Date _____

Name of Bidder _____

By _____

Signature

Title

Business Address (POST OFFICE BOX NUMBER NOT ACCEPTABLE)

State

Telephone Number

Today's Date

PROVIDE THREE (3) SERVICE APPROPRIATE REFERENCES

1. Company Name:
Address:
Contact Name:
Phone #
Type of service/product provided to this Company:

Dollar value of service provided to this Company:

2. Company Name:
Address:
Contact Name:
Phone #
Type of service/product provided to this Company:

Dollar value of service provided to this Company:

3. Company Name:
Address:
Contact Name:
Phone #
Type of service/product provided to this Company:

Dollar value of service provided to this Company:

NOTE

Failure to submit any of the required documents, in this or in other sections, with your bid response package will be cause for the disqualification of your company.

RIGHT TO KNOW LAW

Any vendor who receives an order or orders resulting from this invitation agrees to submit a Material Safety Data Sheet (MSDS) for each toxic or hazardous substance or mixture containing such substance, pursuant to M.G.L. c. 111F, §§8,9 and 10 and the regulations contained in 441 CMR 21.06 when deliveries are made. The vendor agrees to deliver all containers properly labeled pursuant to M.G.L. c. 111F §7 and regulations contained in 441 CMR 21.05. Failure to furnish MSDS and/or labels on each container may result in civil or criminal penalties, including bid debarment and action to prevent the vendor from selling said substances, or mixtures containing said substances within the Commonwealth. All vendors furnishing substances or mixtures subject to Chapter 111F or M.G.L. are cautioned to obtain and read the laws, rules and regulations referenced above. Copies may be obtained from the State House Bookstore, Secretary of State, State House, Room 117, Boston, MA (617) 727-2834.

Authorized Signature Indicating Compliance with the Right-to-know laws:

Signature

Date

Print Name

NOTE

Failure to submit any of the required documents, in this or in other sections, with your bid response package may cause the disqualification of your proposal.

DEBARMENT CERTIFICATION

In connection with this bid and all procurement transactions, by signature thereon, the respondent certifies that neither the company nor its principals are suspended, debarred, proposed for debarment, declared ineligible, or voluntarily excluded from the award of contracts, procurement or non procurement programs from the Commonwealth of Massachusetts, the US Federal Government and /or the City of Waltham. "Principals" means officers, directors, owners, partners and persons having primary interest, management or supervisory responsibilities with the business entity. Vendors shall provide immediate written notification to the Purchasing Agent of the City of Waltham at any time during the period of the contract of prior to the contract award if the vendor learns of any changed condition with regards to the debarment of the company or its officers. This certification is a material representation of fact upon which reliance will be placed when making the business award. If at any time it is determined that the vendor knowingly misrepresented this certification, in addition to other legal remedies available to the city of Waltham, the contract will be cancelled and the award revoked.

Company Name _____

Address _____

City _____, State _____, Zip Code _____

Phone Number (____) _____

E-Mail Address _____

Signed by Authorized Company Representative:

Print name _____,

Date _____

BID PRICE FORM

(Follows)

PRICE SHEET

**My Company offers to deliver the items described within this document for the
ALL INCLUSIVE PRICE OF:**

Part Number	Description	Qty.	Price Ea.	Extend. Price
AP-215	Aruba AP-215 Wireless Access Point, 802.11n/ac, 3x3:3, dual radio, integrated antennas	200		
AP-225	Aruba AP-225 Wireless Access Point, 802.11ac, 3x3:3, dual radio, integrated antennas	40		
AP-220-MNT-W1	Aruba 220 Series Access Point Mount Kit (basic, flat surface). Contains 1x flat surface wall/ceiling mount bracket. Color: black.	20		
AP-AC-12V18	12V/18W indoor Access Point AC power adapter	20		
AW-K12-1	AirWave K-12 software license to manage a single device	522		
EN1-AW-K12-1	SUPPORT FOR AW-K12-1 (1 YEAR)	522		
	TOTAL			
Add - Alternate	Installation and Configuration of AirWave on wireless controller (OPTIONAL ITEM)	10 - Hours		

My company recognizes receipt of addenda #: _____, _____, _____, _____.

Company's Name: _____

Authorized Signature: _____

Print Name: _____

Date: _____

DATA SHEET

ARUBA 220 SERIES ACCESS POINTS

Setting a higher standard for 802.11ac

Multifunctional 220 series wireless APs deliver gigabit Wi-Fi performance to 802.11ac mobile devices. Integrated Aruba ClientMatch™ technology ensures consistently high performance across the WLAN infrastructure.

With a maximum data rate of 1.3 Gbps in the 5-GHz band and 600 Mbps in the 2.4-GHz band, 220 series APs are three-times faster than 802.11n APs and provide performance similar to a wired connection.

The 220 series APs include ClientMatch™ technology, which eliminates sticky clients by continuously gathering session performance metrics from mobile devices. This information is then used to steer each mobile device to the best AP and radio on the WLAN.

Proactive and deterministic, ClientMatch dynamically optimizes Wi-Fi client performance as users roam and RF conditions change. If a mobile device moves out of range of an AP or RF interference impedes performance, ClientMatch automatically steers it to a better AP.

With ClientMatch, 220 series APs load web pages faster, deliver video streams with improved quality and support high densities of mobile devices. An 802.11ac network without ClientMatch performs no different than an 802.11n WLAN.

The 220 series APs additionally support priority handling and policy enforcement for individual Microsoft Lync media on the same device, including encrypted videoconferencing, voice, chat and desktop sharing.

UNIQUE BENEFITS

- Allows phased wired infrastructure upgrades
 - Adapts to available 802.3af power-over-Ethernet (PoE) instead of requiring customers to upgrade to 802.3at PoE+.



- Delivers 1.9 Gbps aggregate throughput.
 - EtherChannel link aggregation on two Gigabit Ethernet ports provides 1.9 Gbps throughput.
- 600 Mbps in the 2.4-GHz band.
 - Supports up to 600 Mbps for TurboQAM-enabled mobile devices operating in the 2.4-GHz band – an industry first.
- Best-in-class RF management
 - Integrated Adaptive Radio Management™ technology manages the 2.4-GHz and 5-GHz radio bands and ensures that APs stay clear of RF interference.
- Spectrum analysis
 - Capable of part-time or dedicated air monitoring, the spectrum analyzer remotely scans the 2.4-GHz and 5-GHz radio bands to identify sources of RF interference.
- Wireless mesh*
 - Wireless mesh connections are convenient where Ethernet drops are not available.
 - *Available Q3 2014
- Security
 - Integrated wireless intrusion protection offers threat protection and mitigation and eliminates the need for separate RF sensors and security appliances.
 - With an OpenDNS service subscription, Aruba Instant APs delivers integrated web filtering, malware and botnet protection to every device connected to the WLAN.
 - Encrypted IPsec VPN tunnels securely connect remote users to corporate network resources.
 - Integrated Trusted Platform Module (TPM) for secure storage of credentials and keys.
 - SecureJack-capable for secure tunneling of wired Ethernet traffic.

CHOOSE YOUR OPERATING MODE

The 220 series APs offer a choice of operating modes to meet your unique management and deployment requirements.

- Controller-managed AP or Remote AP (RAP) running ArubaOS™. When managed by Aruba Mobility Controllers, 220 series APs offer centralized configuration, data encryption, policy enforcement and network services, as well as distributed and centralized traffic forwarding.
- Aruba Instant™ AP running InstantOS™. In Aruba Instant mode, a single AP automatically distributes the network configuration to other Instant APs in the WLAN. Simply power-up one Instant AP, configure it over the air, and plug in the other APs – the entire process takes about five minutes.
- Spectrum analysis identifies sources of RF interference
- Air monitor provides wireless intrusion protection
- Hybrid AP serves Wi-Fi clients and provides wireless intrusion protection and spectrum analysis
- Secure enterprise mesh*
*Available Q3 2014

For large installations across multiple sites, the Aruba Activate™ service significantly reduces deployment time by automating device provisioning, firmware upgrades, and inventory management. With Aruba Activate, Instant APs are factory-shipped to any site and configure themselves when powered up.

If WLAN and network requirements change, a built-in migration path allows 220 series Instant APs to become part of a WLAN that is centrally managed by a Mobility Controller.

AP-220 SERIES SPECIFICATIONS

- AP-225 and IAP-225
 - 2.4-GHz (600 Mbps max) and 5-GHz (1.3 Gbps max) radios, each with 3x3 MIMO and three integrated omnidirectional downtilt antennas.
- AP-224 and IAP-224
 - 2.4-GHz (600 Mbps max) and 5-GHz (1.3 Gbps max) radios, each with 3x3 MIMO and three combined, diplexed external antenna connectors.

WIRELESS RADIO SPECIFICATIONS

- AP type: Indoor, dual radio, 5 GHz 802.11ac and 2.4 GHz 802.11n
 - In addition to 802.11n data rates, the 2.4-GHz radio supports 802.11ac data rates using 256-QAM modulation. This gives TurboQAM-enabled clients a 33% boost above the maximum supported data rate.

- Software-configurable dual radio supports 5 GHz and 2.4 GHz
- 3x3 MIMO with three spatial streams and up to 1.3 Gbps wireless data rate
- Supported frequency bands (country-specific restrictions apply):
 - 2.4000 GHz to 2.4835 GHz
 - 5.150 GHz to 5.250 GHz
 - 5.250 GHz to 5.350 GHz
 - 5.470 GHz to 5.725 GHz
 - 5.725 GHz to 5.850 GHz
- Available channels: Dependent upon configured regulatory domain
- Dynamic frequency selection (DFS) optimizes the use of available RF spectrum
- Supported radio technologies:
 - 802.11b: Direct-sequence spread-spectrum (DSSS)
 - 802.11a/g/n/ac: Orthogonal frequency-division multiplexing (OFDM)
 - 802.11n/ac: 3x3 MIMO with up to three spatial streams
- Supported modulation types:
 - 802.11b: BPSK, QPSK, CCK
 - 802.11a/g/n: BPSK, QPSK, 16-QAM, 64-QAM
 - 802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
- Transmit power: Configurable in increments of 0.5 dBm
- Maximum (aggregate, conducted total) transmit power (limited by local regulatory requirements):
 - 2.4-GHz band: +23 dBm (18 dBm per chain)
 - 5-GHz bands: +23 dBm (18 dBm per chain)
- Advanced cellular coexistence (ACC) feature to effectively deal with interference from cellular systems
- Maximum ratio combining (MRC) for improved receiver performance
- Cyclic delay diversity (CDD) for improved downlink RF performance
- Short guard interval for 20-MHz, 40-MHz and 80-MHz channels
- Space-time block coding (STBC) for increased range and improved reception
- Low-density parity check (LDPC) for high-efficiency error correction and increased throughput
- Transmit beam-forming (TxBF) for increased reliability in signal delivery

- Supported data rates (Mbps):
 - 802.11b: 1, 2, 5.5, 11
 - 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54
 - 802.11n: 6.5 to 450 (MCS0 to MCS23)
 - 802.11ac: 6.5 to 1,300 (MCS0 to MCS9, NSS = 1 to 3)
- 802.11n high-throughput (HT) support: HT 20/40
- 802.11ac very high throughput (VHT) support: VHT 20/40/80
- 802.11n/ac packet aggregation: A-MPDU, A-MSDU

POWER

- Worst-case power consumption from the AP (excluding power drawn by an attached USB device):
 - In restricted mode (PoE): 13.5W
 - In unrestricted mode (PoE): 17W
 - In unrestricted mode (DC): 15.5W
- Power sources sold separately
- Direct DC source: 12 Vdc nominal, +/- 5%
- Power over Ethernet (PoE): 48 Vdc (nominal) 802.3af or 802.3at-compliant source
 - Efficient mode PoE – power save with 802.3af PoE and limited functionality
 - > USB port disabled
 - > Second Ethernet port disabled
 - > 2.4-GHz 802.11n radio in 1x3:1 spatial-stream mode
 - > 5-GHz 802.11ac radio operates without restrictions*
 - Unrestricted functionality with 802.3at PoE+

*With ArubaOS software 6.3.0, the 5-GHz 802.11ac radio operates in 2x3:2 spatial stream mode when the AP is powered by 802.3af PoE. This restriction has been removed in 6.3.1.

ANTENNAS

- AP-224: Three RP-SMA connectors for external dual-band antennas. Internal loss between radio interface and external antenna connectors (due to diplexing circuitry): 1.5 dB in 2.4 GHz and 3.0 dB in 5 GHz.
- AP-225: Six integrated down-tilt omni-directional antennas for 3x3 MIMO with maximum antenna gain of 3.5 dBi in 2.4 GHz and 4.5 dBi in 5 GHz. Built-in antennas are optimized for horizontal ceiling mounted orientation of AP-225.

OTHER INTERFACES

- Two 10/100/1000BASE-T Ethernet network interfaces (RJ-45)
 - Auto-sensing link speed and MDI/MDX
 - Load balancing support to achieve platform throughput greater than 1 Gbps

- 802.3az Energy Efficient Ethernet (EEE)
- PoE-PD: 48 Vdc 802.3af PoE or 802.3at PoE+
- DC power interface, accepts 1.7/4.0mm center-positive circular plug with 9.5 mm length
- USB 2.0 port (Type A connector)
- Serial console interface (RJ-45)
- Visual indicators (LEDs):
 - Power/system status
 - Ethernet link status (2x; ENET0, ENET1)
 - Radio status (2x; RAD0, RAD1)
- Kensington security slot
- Reset button

MOUNTING

- Included with AP:
 - Mounting brackets (2) for attaching to 9/16-inch or 15/16-inch T-bar drop-tile ceiling
- Optional mounting kits:
 - AP-220-MNT-C2: Aruba 220 series AP mount kit contains two ceiling-grid rail adapters for Interlude and Silhouette style rails.
 - AP-220-MNT-W1: Aruba 220 series AP mount kit contains one flat-surface wall/ceiling mount bracket.
 - AP-220-MNT-W2: Aruba 220 series AP mount kit contains one flat-surface wall/ceiling secure mount cradle.

MECHANICAL

- Dimensions/weight (unit, excluding mount accessories):
 - 203 mm (W) x 203 mm (D) x 54 mm (H), 8.0" (W) x 8.0" (D) x 2.1" (H)
 - 750 g/27 oz
- Dimensions/weight (shipping):
 - 315 mm (W) x 265 mm (D) x 100 mm (H), 12.4" (W) x 10.4" (D) x 3.9" (H)
 - 1,250 g/44 oz

ENVIRONMENTAL

- Operating:
 - Temperature: 0° C to +50° C (+32° F to +122° F)
 - Humidity: 5% to 95% non-condensing
- Storage and transportation:
 - Temperature: -40° C to +70° C (-40° F to +158° F)

REGULATORY

- FCC/Industry of Canada
- CE Marked
- R&TTE Directive 1995/5/EC
- Low Voltage Directive 72/23/EEC
- EN 300 328
- EN 301 489
- EN 301 893
- UL/IEC/EN 60950
- EN 60601-1-1, EN60601-1-2

For more country-specific regulatory information and approvals, please see your Aruba representative.

REGULATORY MODEL NUMBERS

- AP-224 and IAP-224: APIN0224
- AP-225 and IAP-225: APIN0225

CERTIFICATIONS

- CB Scheme Safety, cTUVus
- UL2043 plenum rating
- Wi-Fi Alliance certified 802.11a/b/g/n/ac

WARRANTY

- Limited lifetime warranty

MINIMUM OPERATING SYSTEM SOFTWARE VERSIONS

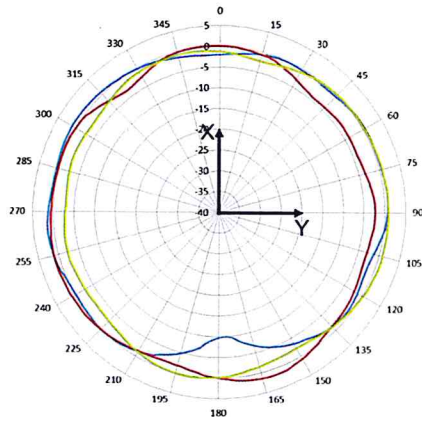
- ArubaOS 6.3.0.0
- Aruba Instant 4.0.0.0

RF PERFORMANCE TABLE		
	Maximum transmit power (dBm) per transmit chain	Receiver sensitivity (dBm) per receive chain
802.11b 2.4 GHz		
1 Mbps	18.0	-94.0
2 Mbps	18.0	-90.0
5.5 Mbps	18.0	-89.0
11 Mbps	18.0	-88.0
802.11g 2.4 GHz and 802.11a 5 GHz		
6 Mbps	18.0	-91.0
54 Mbps	16.0	-76.0
802.11n HT20 2.4 GHz and 5 GHz		
MCS0/8	18.0	-91.0
MCS7/15	14.5	-73.0
802.11n HT40 2.4 GHz and 5 GHz		
MCS0/8	18.0	-88.0
MCS7/15	14.5	-70.0
802.11ac VHT20 5 GHz		
MCS0	18.0	-91.0
MCS9	12.5	-64.0
802.11ac VHT40 5 GHz		
MCS0	18.0	-88.0
MCS9	12.5	-61.0
802.11ac VHT80 5 GHz		
MCS0	18.0	-85.0
MCS9	12.5	-58.0

Maximum capability of the hardware provided. Maximum transmit power is limited by local regulatory settings. RF performance numbers for AP-224 are slightly lower due to additional internal RF circuitry.

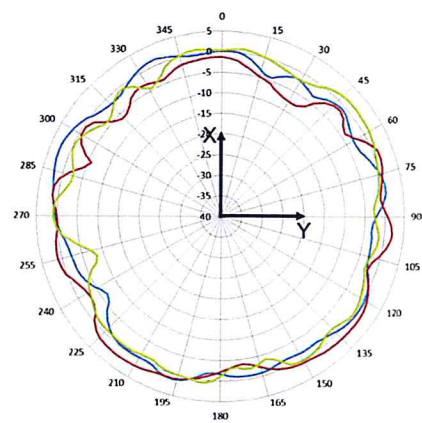
AP-225 ANTENNA PATTERN PLOTS

Horizontal or Azimuth plane (top view)



2.450 GHz

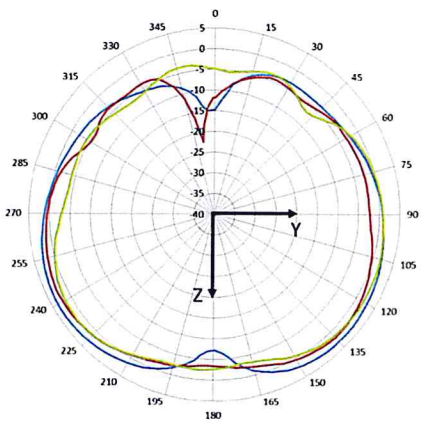
— 2.450.1
— 2.450.2
— 2.450.3



5.550 GHz

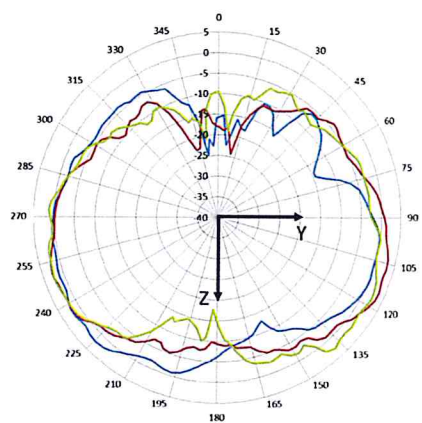
— 5.550.4
— 5.550.5
— 5.550.6

Elevation plane (side view)



2.450 GHz

— 2.450.1
— 2.450.2
— 2.450.3



5.550 GHz

— 5.550.4
— 5.550.5
— 5.550.6

ORDERING INFORMATION	
Part Number	Description
AP-220 Series Access Points	
AP-224	Aruba AP-224 Wireless Access Point, 802.11ac, 3x3:3, dual radio, antenna connectors
IAP-224-RW	Aruba Instant IAP-224 Wireless Access Point, 802.11ac, 3x3:3, dual radio, antenna connectors - Restricted regulatory domain: Rest of World
IAP-224-US	Aruba Instant IAP-224 Wireless Access Point, 802.11ac, 3x3:3, dual radio, antenna connectors - Restricted regulatory domain: United States
IAP-224-JP	Aruba Instant IAP-224 Wireless Access Point, 802.11ac, 3x3:3, dual radio, antenna connectors - Restricted regulatory domain: Japan
AP-225	Aruba AP-225 Wireless Access Point, 802.11ac, 3x3:3, dual radio, integrated antennas
IAP-225-RW	Aruba Instant IAP-225 Wireless Access Point, 802.11ac, 3x3:3, dual radio, integrated antennas - Restricted regulatory domain: Rest of World
IAP-225-US	Aruba Instant IAP-225 Wireless Access Point, 802.11ac, 3x3:3, dual radio, integrated antennas - Restricted regulatory domain: United States
IAP-225-JP	Aruba Instant IAP-225 Wireless Access Point, 802.11ac, 3x3:3, dual radio, integrated antennas - Restricted regulatory domain: Japan
AP-220 Series Access Points (FIPS/TAA)	
AP-224-F1	Aruba AP-224 Wireless Access Point, 802.11ac, 3x3:3, dual radio, antenna connectors (FIPS/TAA)
AP-225-F1	Aruba AP-225 Wireless Access Point, 802.11ac, 3x3:3, dual radio, integrated antennas (FIPS/TAA)
AP-220 Series Accessories	
AP-220-MNT-C1	Aruba Access Point Mount Kit (ceiling grid). Contains 2x ceiling grid rail adapters (for flat rails). Color: black. Spare.
AP-220-MNT-C2	Aruba 220 Series Access Point Mount Kit (ceiling grid). Contains 2x ceiling grid rail adapters (for interlude and silhouette style rails). Color: black.
AP-220-MNT-W1	Aruba 220 Series Access Point Mount Kit (basic, flat surface). Contains 1x flat surface wall/ceiling mount bracket. Color: black.
AP-220-MNT-W2 (black)	Aruba 220 Series Access Point Mount Kit (box style, secure, flat surface). Contains 1x flat surface wall/ceiling secure mount cradle. Color: black.
AP-220-MNT-W2W (white)	Aruba 220 Series Access Point Mount Kit (box style, secure, flat surface). Contains 1x flat surface wall/ceiling secure mount cradle. Color: white.

ORDERING INFORMATION	
Part Number	Description
Generic Indoor AP Accessories (see info on Aruba web site for part numbers)	
AP-AC-UN	12V/18W indoor Access Point AC power adapter. Universal, ships with 8 country-specific plug inserts (US, EU, UK, Australia, China, Korea, Argentina, Brazil), covering all Aruba core countries
AP-AC-12V18	12V/18W indoor Access Point AC power adapter. Does not include country-specific power cord (order separately)
PD-9001GR-AC	30W 802.3at POE midspan injector, 10/100/1000Base-T Ethernet
	DC power supplies
	PoE injectors
	Antennas



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DATA SHEET

ARUBA 210 SERIES ACCESS POINTS

Affordable, high-performance 802.11ac

Multifunctional and affordable Aruba 210 series wireless access points (APs) maximize mobile device performance in medium-density, high-performance Wi-Fi environments.

These compact and cost-effective dual-radio APs deliver wireless data rates of up to 1.3 Gbps to 5-GHz devices with 802.11ac technology. They also support 3x3 MIMO with three spatial streams as well as 2.4-GHz 802.11n clients at data rates up to 450 Mbps.

The AP-215 and IAP-215 models have three integrated omni-directional downtilt antennas per radio, while the AP-214 and IAP-214 support external, detachable dual-band antennas using three RP-SMA connectors.

UNIQUE BENEFITS

- Wi-Fi client optimization
 - The 210 series features patented ClientMatch technology to eliminate sticky client behavior while users roam. ClientMatch continuously gathers session performance metrics from mobile devices.
 - If a mobile device moves away from an AP or if RF interference impedes performance, ClientMatch automatically steers the device to a better AP.
- Advanced Cellular Coexistence (ACC)
 - ACC lets WLANs to perform at peak efficiency by minimizing interference from 3G/4G LTE networks, distributed antenna systems and commercial small cell/femtocell equipment.
- Quality of service for unified communication apps
 - The 210 series supports priority handling and policy enforcement for unified communication apps, including Microsoft Lync with encrypted videoconferencing, voice, chat and desktop sharing.



CHOOSE YOUR OPERATING MODE

The 210 series supports your choice of operating modes to meet unique management and deployment requirements.

- Controller-managed AP or Remote AP (RAP) running ArubaOS. When managed by Aruba Mobility Controllers, 210 series APs offer centralized configuration, data encryption, policy enforcement and network services as well as distributed and centralized traffic forwarding. Please refer to the Aruba Mobility Controller data sheets for more details.
- Aruba Instant AP running InstantOS. In Aruba Instant mode, a single AP automatically distributes the network configuration to other Instant APs in the WLAN. Simply power-up on Instant AP, configure it over the air, and plug in the other APs – the entire process takes about five minutes.

For large installations across multiple sites, the Aruba Activate service significantly reduces deployment time by automating device provisioning, firmware upgrades, and inventory management. With Aruba Activate, Instant APs are factory-shipped to any site and configure themselves when powered up.

AP-210 SERIES SPECIFICATIONS

- AP-215 and IAP-215
 - 2.4-GHz (450 Mbps max rate) and 5-GHz (1.3 Gbps max rate) radios, each with 3x3 MIMO and three integrated omni-directional downtilt antennas.
- AP-214 and IAP-214
 - 2.4-GHz (450 Mbps max rate) and 5-GHz (1.3 Gbps max rate) radios, each with 3x3 MIMO and three combined, diplexed (dual-band) external RP-SMA antenna connectors.

ADVANCED FEATURES

- RF management
 - Adaptive Radio Management (ARM) technology automatically assigns channel and power settings, provides airtime fairness and ensures that APs stay clear of all sources of RF interference to deliver reliable, high-performance WLANs.
 - 210 series APs can be configured to provide part-time or dedicated air monitoring for spectrum analysis and wireless intrusion protection, VPN tunnels to extend corporate resources to remote locations, and wireless mesh connections where Ethernet drops are not available.
- Spectrum analysis
 - Capable of part-time or dedicated air monitoring, the spectrum analyzer remotely scans the 2.4-GHz and 5-GHz radio bands to identify sources of RF interference
- Security
 - With an OpenDNS service subscription, Aruba Instant RAPs deliver integrated web filtering, malware and botnet protection to every device connected to the WLAN.
 - Integrated Trusted Platform Module (TPM) for secure storage of credentials and keys.
 - Securejack-capable for secure tunneling of wired Ethernet traffic.
- 5.150 GHz to 5.250 GHz
- 5.250 GHz to 5.350GHz
- 5.470 GHz to 5.725GHz
- 5.725 GHz to 5.850GHz
- Available channels: Dependent on configured regulatory domain
- Dynamic frequency selection (DFS) optimizes the use of available RF spectrum
- Supported radio technologies:
 - 802.11b: Direct-sequence spread-spectrum (DSSS)
 - 802.11a/g/n/ac: Orthogonal frequency-division multiplexing (OFDM)
- Supported modulation types:
 - 802.11b: BPSK, QPSK, CCK
 - 802.11a/g/n/ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
- Transmit power: Configurable in increments of 0.5 dBm
- Maximum (aggregate, conducted total) transmit power (limited by local regulatory requirements):
 - 2.4-GHz band: +23 dBm (18 dBm per chain)
 - 5-GHz band: +23 dBm (18 dBm per chain)
 - Note: conducted transmit power levels exclude antenna gain. For total (EIRP) transmit power, add antenna gain

OPERATING MODES

- Aruba Instant AP
- Mobility Controller-managed AP
- Remote AP (RAP) for branch deployments
- Air monitor (AM) for wireless IDS, rogue detection and containment
- Spectrum analyzer, dedicated or hybrid
- Secure enterprise mesh (targeted for introduction in ArubaOS 6.4.3)

WIRELESS RADIO SPECIFICATIONS

- AP type: Indoor, dual radio, 5 GHz 802.11ac and 2.4 GHz 802.11n 3x3:3
- Software-configurable dual radio supports 5 GHz (Radio 0) and 2.4 GHz (Radio 1)
- 3x3 MIMO with three spatial streams and up to 1.3 Gbps wireless data rate
- Support for up to 255 associated client devices per radio, and up to 16 BSSIDs per radio
- Supported frequency bands (country-specific restrictions apply):
 - 2.4000 GHz to 2.4835 GHz
- Advanced Cellular Coexistence (ACC) minimizes interference from cellular networks
- Maximum ratio combining (MRC) for improved receiver performance
- Cyclic delay/shift diversity (CDD/CSD) for improved downlink RF performance
- Short guard interval for 20-MHz, 40-MHz and 80-MHz channels
- Space-time block coding (STBC) for increased range and improved reception
- Low-density parity check (LDPC) for high-efficiency error correction and increased throughput
- Transmit beamforming (TxBF) for increased signal reliability and range
- Supported data rates (Mbps):
 - 802.11b: 1, 2, 5.5, 11
 - 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54
 - 802.11n: 6.5 to 450 (MCS0 to MCS23)
 - 802.11ac: 6.5 to 1,300 (MCS0 to MCS9, NSS = 1 to 3)
- 802.11n high-throughput (HT) support: HT 20/40
- 802.11ac very high throughput (VHT) support: VHT 20/40/80
- 802.11n/ac packet aggregation: A-MPDU, A-MSDU

ANTENNAS

- AP-214/IAP-214: Three RP-SMA connectors for external dual-band antennas. Internal loss between radio interface and external antenna connectors (due to diplexing circuitry): 1.0 dB in 2.4 GHz and 2.0 dB in 5 GHz.
- AP-215/IAP-215: Three integrated downtilt omnidirectional antennas per radio for 3x3 MIMO with maximum antenna gain of 5.0 dBi in 2.4 GHz and 5.0 dBi in 5 GHz. Built-in antennas are optimized for horizontal ceiling mounted orientation of the AP. The downtilt angle for maximum gain is roughly 30 degrees.

OTHER INTERFACES

- One 10/100/1000BASE-T Ethernet network interface (RJ-45)
 - Auto-sensing link speed and MDI/MDX
 - 802.3az Energy Efficient Ethernet (EEE)
 - PoE-PD: 48 Vdc (nominal) 802.3af or 802.3at PoE
- DC power interface, accepts 1.7/4.0-mm center-positive circular plug with 9.5-mm length
- USB 2.0 host interface (Type A connector)
- Visual indicators (LEDs):
 - Power/system status
 - Ethernet link status (ENET)
 - Radio status (two; RAD0, RAD1)
- Reset button: factory reset (during device power-up)
- Serial console interface (RJ-45)
- Kensington security slot

POWER

- Maximum (worst-case) power consumption: 14.9 watts (PoE) or 13.6 watts (DC)
 - Excludes power consumed by external USB device (and internal overhead); this could add up to 6 watts (PoE) or 5.5 watts (DC) for 5W/1A USB device
- Maximum (worst-case) power consumption in idle mode: 8.2 watts (PoE) or 7.4 watts (DC)
- Direct DC source: 12 Vdc nominal, +/- 5%
- Power over Ethernet: 48 Vdc (nominal) 802.3af/802.3at compliant source
 - USB port is disabled when using an 802.3af PoE power source; for unrestricted operation with PoE power, use an 802.3at compliant source
- Power sources sold separately
- When both power sources are available, DC power takes priority

MOUNTING

- Included with AP:
 - Mounting brackets (2) for attaching to 9/16-inch or 15/16-inch T-bar drop-tile ceiling
- Spare mounting kit:
 - AP-220-MNT-C1: Aruba AP mount kit contains two ceiling-grid rail adapters for flat rails
- Optional mounting kits:
 - AP-220-MNT-C2: Aruba AP mount kit contains two ceiling-grid rail adapters for Interlude and Silhouette style rails
 - AP-220-MNT-W1: Aruba AP mount kit contains one basic flat-surface wall/ceiling mount bracket
 - AP-220-MNT-W2: Aruba AP mount kit contains one secure flat-surface wall/ceiling mount cradle

MECHANICAL

- Dimensions/weight (unit, excluding mount accessories):
 - 180 mm x 180 mm x 45 mm (W x D x H)
 - 610 g
- Dimensions/weight (shipping):
 - 220 mm x 225 mm x 55 mm (W x D x H)
 - 860 g

ENVIRONMENTAL

- Operating:
 - Temperature: 0° C to +50° C (+32° F to +122° F)
 - Humidity: 5% to 95% non-condensing
- Storage and transportation:
 - Temperature: -40° C to +70° C (-40° F to +158° F)

REGULATORY

- FCC/Industry of Canada
- CE Marked
- R&TTE Directive 1999/5/EC
- Low Voltage Directive 2006/95/EC
- EN 300 328
- EN 301 489
- EN 301 893
- UL/IEC/EN 60950
- EN 60601-1-1, EN60601-1-2

For more country-specific regulatory information and approvals, please see your Aruba representative.

RELIABILITY

MTBF: 538,975 hours (61.5 years) at +25° C operating temperature

REGULATORY MODEL NUMBERS

- AP-214 and IAP-214: APIN0214
- AP-215 and IAP-215: APIN0215

CERTIFICATIONS

- CB Scheme Safety, cTUVus
- UL2043 plenum rating
- Wi-Fi Alliance (WFA) certified 802.11a/b/g/n/ac

WARRANTY

- Aruba limited lifetime warranty

MINIMUM SOFTWARE VERSIONS

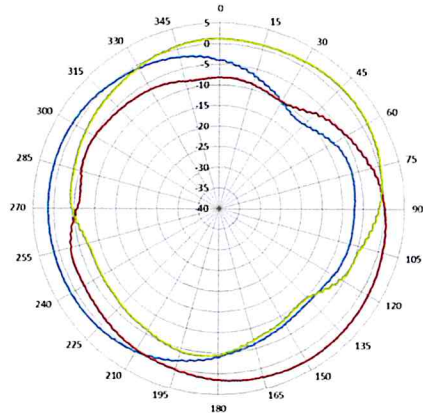
- ArubaOS 6.4.2.0
- Aruba InstantOS 4.1.1.0

RF PERFORMANCE TABLE		
	Maximum transmit power (dBm) per transmit chain	Receiver sensitivity (dBm) per receive chain
802.11b 2.4 GHz		
1 Mbps	18.0	-97.0
11 Mbps	18.0	-89.0
802.11g 2.4 GHz		
6 Mbps	18.0	-93.0
54 Mbps	18.0	-75.0
802.11n HT20 2.4 GHz		
MCS0/8/16	18.0	-92.0
MCS7/15/23	18.0	-72.0
802.11n HT40 2.4 GHz		
MCS0/8/16	18.0	-89.0
MCS7/15/23	16.0	-69.0
802.11a 5 GHz		
6 Mbps	18.0	-93.0
54 Mbps	16.5	-75.0
802.11n HT20 5 GHz		
MCS0/8/16	18.0	-92.0
MCS7/15/23	16.0	-72.0
802.11n HT40 5 GHz		
MCS0/8/16	18.0	-89.0
MCS7/15/23	16.0	-69.0
802.11ac VHT20 5 GHz		
MCS0	18.0	-92.0
MCS9	14.0	-64.0
802.11ac VHT40 5 GHz		
MCS0	18.0	-89.0
MCS9	14.0	-61.0
802.11ac VHT80 5 GHz		
MCS0	18.0	-86.0
MCS9	14.0	-58.0

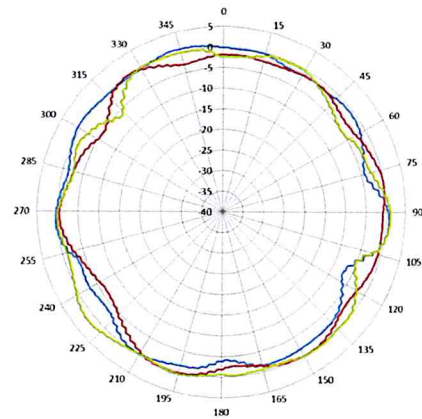
Maximum capability of the hardware provided (excluding antenna gain). Maximum transmit power is limited by local regulatory settings.

ANTENNA PATTERN PLOTS

Horizontal or azimuth plane (top view, 0 degrees downtilt)

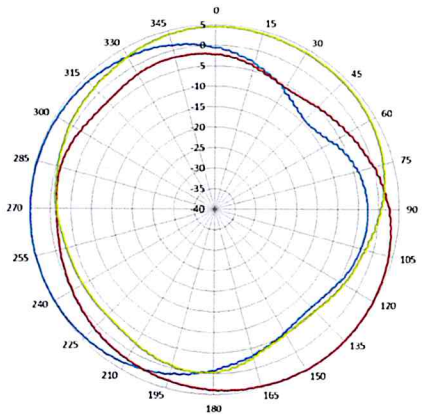


2.450 GHz

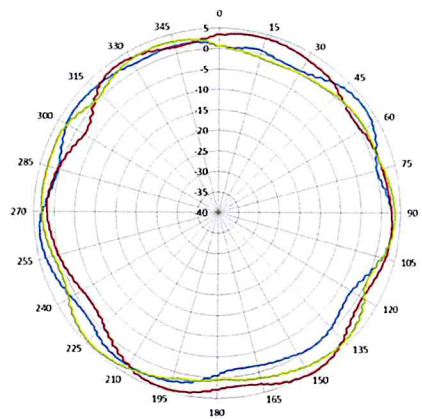


5.550 GHz

Horizontal or azimuth plane (top view, 30 degrees downtilt)

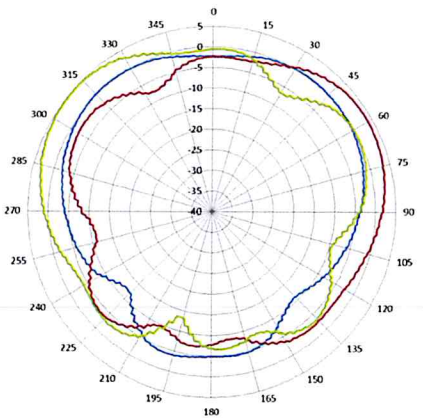


2.450 GHz

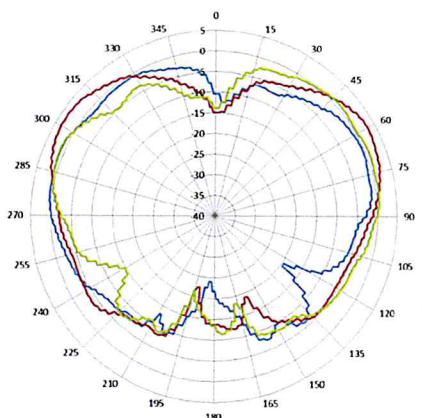


5.550 GHz

Elevation plane (side view, 0 degrees angle)



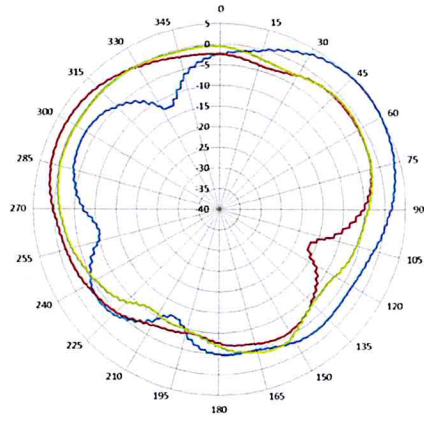
2.450 GHz



5.550 GHz

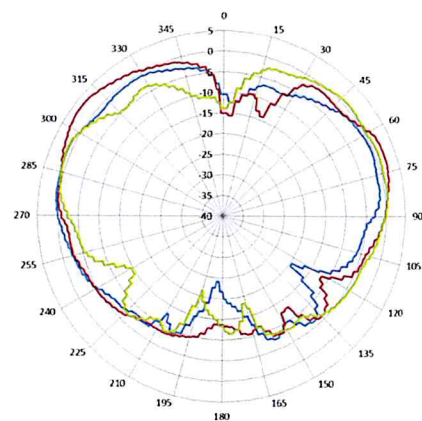
ANTENNA PATTERN PLOTS

Elevation plane (side view, 90 degrees angle)



2.450 GHz

— 2.450.1
— 2.450.2
— 2.450.3



5.550 GHz

— 5.550.4
— 5.550.5
— 5.550.6

ORDERING INFORMATION

Part Number	Description
AP-210 Series Access Points	
AP-214	Aruba AP-214 wireless access point, 802.11n/ac, 3x3:3, dual radio, antenna connectors
IAP-214-RW	Aruba Instant IAP-214 wireless access point, 802.11n/ac, 3x3:3, dual radio, antenna connectors – Restricted regulatory domain: Rest of world
IAP-214-US	Aruba Instant IAP-214 wireless access point, 802.11n/ac, 3x3:3, dual radio, antenna connectors – Restricted regulatory domain: United States
IAP-214-JP	Aruba Instant IAP-214 wireless access point, 802.11n/ac, 3x3:3, dual radio, antenna connectors – Restricted regulatory domain: Japan
AP-215	Aruba AP-215 wireless access point, 802.11n/ac, 3x3:3, dual radio, integrated antennas
IAP-215-RW	Aruba Instant IAP-215 wireless access point, 802.11n/ac, 3x3:3, dual radio, integrated antennas – Restricted regulatory domain: Rest of world
IAP-215-US	Aruba Instant IAP-215 wireless access point, 802.11n/ac, 3x3:3, dual radio, integrated antennas – Restricted regulatory domain: United States
IAP-215-JP	Aruba Instant IAP-215 wireless access point, 802.11n/ac, 3x3:3, dual radio, integrated antennas – Restricted regulatory domain: Japan
AP-210 Series Access Points (FIPS/TAA)	
AP-214-F1	Aruba AP-214 Wireless Access Point, 802.11n/ac, 3x3:3, dual radio, antenna connectors (FIPS/TAA)
AP-215-F1	Aruba AP-215 Wireless Access Point, 802.11n/ac, 3x3:3, dual radio, integrated antennas (FIPS/TAA)
Mounting Spares	
AP-220-MNT-C1	Aruba access point mount kit (ceiling grid) Contains two ceiling grid rail adapters (for flat rails). Color: Black. Spare.

ORDERING INFORMATION	
Part Number	Description
Mounting Accessories	
AP-220-MNT-C2	Aruba access point mount kit (ceiling grid) Contains two ceiling grid rail adapters (for Interlude and silhouette style rails). Color: Black
AP-220-MNT-W1	Aruba access point mount kit (basic, flat surface) Contains one flat-surface wall/ceiling mount bracket. Color: Black
AP-130-MNT	Aruba access point mount kit (basic, flat surface) Contains one flat-surface wall/ceiling mount bracket. Color: Off-white
AP-220-MNT-W2	Aruba access point mount kit (secure, flat surface). Contains one flat surface wall/ceiling mount cradle. Color: Black
AP-220-MNT-W2W	Aruba access point mount kit (secure, flat surface). Contains one flat-surface wall/ceiling mount cradle. Color: White
Generic Indoor AP Accessories	
AP-AC-UN	12V/18W indoor access point AC power adapter. Universal, ships with eight country-specific plug inserts (US, EU, UK, Australia, China, Korea, Argentina, Brazil) covering all Aruba core countries.
AP-AC-12V18	12V/18W indoor access point AC power adapter. Does not include country-specific power cord (order separately).
PD-3501G-AC	15.4-watt 802.3af PoE midspan injector, 10/100/1000BASE-T Ethernet
PD-9001GR-AC	30-watt 802.3at PoE midspan injector, 10/100/1000BASE-T Ethernet
Antennas	Please go to the Aruba web site for antenna part numbers.



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DATA SHEET

AIRWAVE™

Comprehensive management for wireless, wired and remote networks

AirWave is a powerful and easy-to-use network operations system that manages Aruba wireless, wired and remote access networks, as well as wired and wireless infrastructures from a wide range of third-party manufacturers.

Offering unprecedented clarity and centralized control to effectively manage global enterprise infrastructures, AirWave lets service desk personnel triage connectivity issues so that IT engineers can focus on proactively optimizing network performance.

Through a centralized and intuitive user interface, AirWave provides real-time monitoring, proactive alerts, historical reporting, and fast, efficient troubleshooting. It also offers various dashboard views for quickly diagnosing and troubleshooting potential problems with RF coverage, unified communications and collaboration (UCC) traffic, and application performance to strengthen wireless security and demonstrate regulatory compliance.

AirWave VisualRF™ location and mapping offers network-wide views of the entire RF environment. Maps of Wi-Fi coverage and the underlying wired topology show a clear and accurate picture of who is on the network, their location and how the network is performing. Additionally, AirWave offers overlays on client health and application performance to quickly diagnose issues specific to a client, a floor plan or specific location.

The AirWave RAPIDS™ rogue detection works with the RFPProtect™ wireless intrusion protection software module available in ArubaOS™ to collect rogue AP, rogue client and wireless intrusion events as well as mitigate rogue activity across wired and wireless infrastructures.

The wireless data collected by RAPIDS is correlated with wired network data to identify the most significant and relevant threats, while greatly reducing false-positives and strengthening network security.

Available as software or a combined hardware and software appliance, AirWave reduces cost and complexity, improves service quality, and enables IT to make intelligent, well-informed decisions about network design.



AirWave delivers identity-based monitoring and comprehensive management to multivendor wireless, wired and remote enterprise networks.

EASY-TO-USE WEB INTERFACE

- Role-based access, viewing rights and administrative privileges tailored to job responsibilities.
- Custom graphs of key information allow for pan and zoom for visibility into specific periods of time.
- Identify and search for users by user name.
- Client overview summarizes the types of clients attached to the network and provides visibility into watched or VIP clients.
- Multiple dashboard views provide visibility into every aspect of the wireless network.

DEVICE DISCOVERY

- Automatically discovers WLAN infrastructure devices.
- Operates in any network environment, including large distributed networks with multiple locations.

TROUBLESHOOTING AND DIAGNOSTICS

- Collects and displays client device data from ArubaOS, Aruba Instant and Aruba ClearPass Policy Manager including device type, operating system, operating system details, manufacturer and model.
- Searching for clients by user name or MAC address provides a diagnostic view of device and network statistics along with indicators to evaluate overall health and performance.
- Overlay the client health on a floor plan to diagnose issues specific to the client or to an area on a floor plan.
- Advanced RF troubleshooting to easily diagnose RF issues in the network.

REAL-TIME MONITORING AND VISIBILITY

- Automatically tracks every user and device – wireless and remote – on the network.
- Visibility into the wired infrastructure that connects wireless controllers and APs.
- Visibility into clients associated to network including location, SNR, connection speed and more
- Logs and displays radio and RADIUS errors, including noise floor and channel utilization information, frequent causes of connectivity problems.
- Provides rapid drill-down from network-wide to device-level monitoring views.
- Dashboards to track RF performance, capacity and application-level statistics as well as network deviations over a 40-week period.

ROOT CAUSE ANALYSIS AND EVENT CORRELATION

- Maps upstream relationships between APs, controllers and switches to identify the root cause of downtime and performance problems.
- Correlates performance and downtime issues to send only a single alert in the event of an upstream device failure.

AUTOMATED CONFIGURATION MANAGEMENT

- Automatically configures APs, controllers, Aruba Instant, and Aruba Mobility Access Switches.
- Configuration policies are defined through a web user interface or by importing a known-good configuration from an existing device.
- Enhanced configuration for the Aruba Instant family to provision large number of branch locations with ease. With tools like adding notes, and overrides, as well as multi-edit and context-sensitivity support make it easy to manage configurations across multiple locations.
- Efficient remote software distribution eliminates time-consuming and error-prone manual updates.
- Support for advanced firmware image upgrade features such as enforcing certified versions by group, splitting-up image downloads and reboot processes, as well as support for scheduling of firmware upgrades or change configurations to occur during off hours.
- Archives device configurations for auditing and version control. Additionally, archives device configurations and flash backups to restore previous state and configuration of Aruba controllers.
- Maintains detailed audit logs of changes made by all AirWave operators.

BETTER NETWORK PLANNING AND PROVISIONING

- VisualRF and the offline VisualRF Plan tool allow quick planning of RF and wired coverage for new sites.

MANAGE THE LATEST TECHNOLOGIES, ARCHITECTURES AND PRODUCTS

- A single management interface for multiple generations of devices.
- Supports autonomous, controller-managed and mesh APs, including outdoor Aruba AirMesh.
- Monitors Aruba Mobility Access Switches and other edge devices using standard MIB data.
- Generates reports on wired port utilization for capacity planning.
- Supports latest ArubaOS management capabilities.

- Supports WLAN products from leading vendors like Cisco, Motorola and Hewlett-Packard.
- Supports the latest Aruba WLAN products including 7200 series Mobility Controllers and AP-220 series 802.11ac access points.

OPEN ARCHITECTURE

- XML API enables cost-effective integration of valuable location data with other applications.
- Much of the data that is visible in AirWave is accessible via the XML API.

PLATFORM DATA

- Centralized network operations center requires no local agents.
- Runs on standard PC hardware/standard Linux operating system.
- Device communication through SSH, Telnet, SNMP v1/v2c/v3, HTTPS.
- Supports up to 100,000+ managed devices.

VISUALRF FEATURES

Real-Time Visualization

- Voice overlay displays coverage for voice handsets, including a radio count heat map.
- Displays Aruba Mobility Access Switches and other wiring closet devices for a comprehensive view of the network edge.
- Simulate failure feature enables analysis of what-if scenarios for proactive RF coverage planning.
- All AirWave real-time visualizations are HTML5-based, supporting a wider variety of browsers and devices."

Effective Site Planning for Precise Deployment

- Determines the right quantity and placement of APs, controllers, Aruba Mobility Access Switches and other edge devices based on RF coverage goals.
- Incorporates Aruba Mobility Access Switches, other wiring closet devices and outdoor Aruba AirMesh products into the network design.
- Automatically generates bill of material reports.

Standalone VisualRF Plan Tool

- Runs on Windows laptops and workstations.
- Uses the same RF planning and visualization algorithms as the integrated VisualRF module.
- Export offline plans to the integrated VisualRF module and export plans from the integrated VisualRF module to the standalone VisualRF tool.

Integrated Location Tracking and RF Visualization

- Quickly locate users and wireless devices as well as track application and UCC performance for troubleshooting, planning and asset tracking.
- Playback location history of individual users over the past day to aid in troubleshooting and recovery of lost devices.
- Last known location of each tracked device is stored indefinitely to find lost and stolen devices.

RAPIDS FEATURES

Rapids Highlights

- Flexible rules-based determination of what a rogue AP means to the existing environment.
- Correlates data gathered from wired and wireless infrastructures to reduce false positives.
- Central management console for RFProtect software module monitors intrusion detection and prevention activity, while identifying and neutralizing rogue APs.
- Utilizes location data from VisualRF.
- Compliance reporting, including the payment card industry (PCI) data security standard.

Rogue Device And Client Visualization

- Integrates with VisualRF to display the location of each rogue device and client on a building floor plan.

Intrusion Detection System Events

- Aggregates, correlates, alerts and logs wireless attacks that are detected and reported on the network, providing a comprehensive picture of infrastructure security.

Strong Enterprise-Grade Security

- View locations of rogue APs discovered by AirWave RAPIDS for faster investigation and threat removal.
- Plan the precise locations to deploy dedicated Wi-Fi sensors, such as Aruba air monitors, to ensure complete coverage.
- Compares wired and wireless scanning results to eliminate duplicates and refine threat assessment.

Rules-Based Threat Classification

- Classify potential threats based on customized rules that define the characteristics of rogue devices.
- Reduce false-positives and enable the network security staff to focus on the most significant threats.

Automated Alerts and Reports

- Predefined, customizable reports address common security, compliance and client needs, such as rogue device tracking, PCI compliance, and client session reporting.
- Supports syslog and SNMP traps from other networked devices, allowing administrators to search for these devices, set triggers to alert on device issues, and use device context for additional troubleshooting.
- Reports exportable to an external server in PDF, HTM and CSV formats

Automatic and Manual Containment

- Manual and automated rogue AP containment with Aruba and Cisco controllers.
- Customize and define rules-based classification to determine when to automatically contain devices.
- Coordinate with the ArubaOS RFPProtect software to notify administrators which switch ports have rogue APs attached to them.

ORDERING INFORMATION

Part Number	Description
AW-25	AirWave software to manage up to 25 devices (including controllers, APs, Aruba Mobility Access Switches and third-party switches)
AW-50	AirWave software to manage up to 50 devices
AW-100	AirWave software to manage up to 100 devices
AW-200	AirWave software to manage up to 200 devices
AW-500	AirWave software to manage up to 500 devices
AW-1000	AirWave software to manage up to 1,000 devices
AW-2500	AirWave software to manage up to 2,500 devices
AW-EXP1-50	AirWave expansion license for one additional AP/device for systems with 50 or greater existing device licenses
AW-EXP1-2500	AirWave expansion license for one additional AP/device for systems with 2,500 or greater exiting device licenses
AW-MASTER	AirWave software license to manage multiple AirWave servers from a single console
AW-25-FR	AirWave failover software license for 25 devices
AW-50-FR	AirWave failover software license for 50 devices
AW-100-FR	AirWave failover software license for 100 devices
AW-200-FR	AirWave failover software license for 200 devices
AW-500-FR	AirWave failover software license for 500 devices
AW-1000-FR	AirWave failover software license for 1,000 devices
AW-2500-FR	AirWave failover software license for 2,500 devices
AW-EXF1-50	AirWave failover expansion license for one additional AP/device for systems with 50 or greater existing device licenses
AW-EXF1-2500	AirWave failover expansion license for one additional AP/device for systems with 2,500 or greater existing device licenses



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