

Lab Testing Summary Report

November 2005
Report 051107

Product Category:
**Wireless Security
and Control**

Vendor Tested:
Aruba Networks

Product Tested:
**Aruba A2400
Mobility Controller**

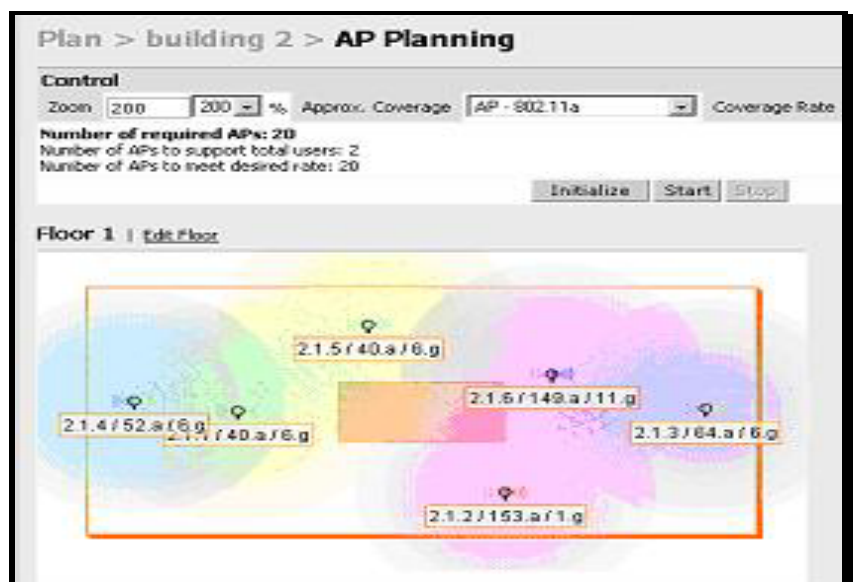


Key findings and conclusions:

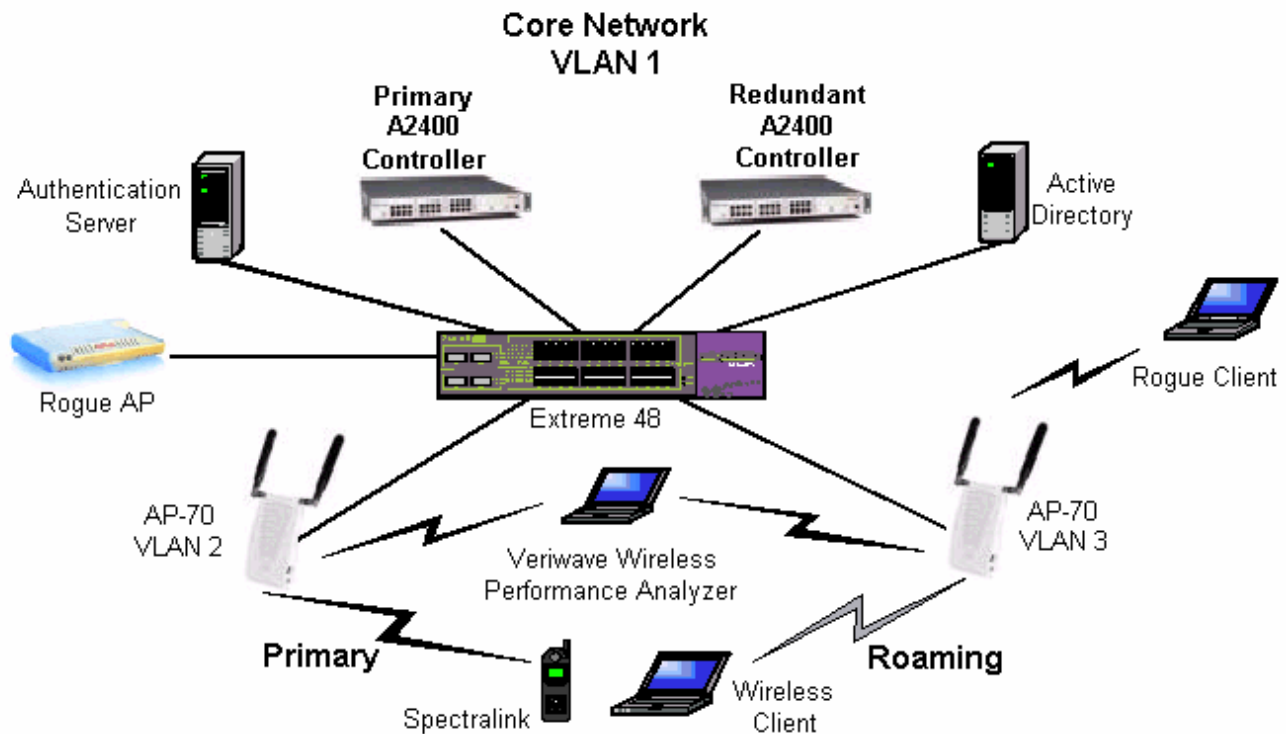
- Aruba Networks' wireless package exhibits superior security capabilities, secure mobility features, and mixed-media bandwidth and QoS management
- Solid wireless-client authentication and rogue-AP detection and mitigation are supported
- "Remote AP" provides portable, secure wireless access for hotel stays and transient work sites
- Software Options include firewall, VPN, and IPS modules, as well as client software featuring 256-bit, Layer-2 encryption capabilities.
- Supports, CAC based VoIP auto-detection and auto-prioritization, and multimedia bandwidth management

Aruba Networks' A2400 Mobility Controller was recently evaluated by Miercom, which applied a comprehensive test plan to exercise the wireless security and control system's capabilities and features.

Aruba's leading role in the wireless industry was evidenced by its comprehensive package, featuring the modular A2400 and numerous hardware and software options. Reviewed as part of the package were: Aruba's firewall module; its IPS (Intrusion Prevention System) module; and 24-port Power-over-Ethernet (PoE) switch module, to which the vendor's own wireless Access Points (APs) typically attach directly. The modules are all integrated components of the A2400 platform and are conveniently consolidated for power, access and management. The A2400 system itself consists of a high-speed packet processor and hardware encryption engine.



Aruba Networks' AP Planning feature automatically positions Access Points (APs) in strategic locations to provide optimum coverage in specified areas. This verifies full coverage (no dead spots) prior to system deployment.



The test bed network included windows 2003/Exchange 2003-based Domain Controller, DNS server and DHCP server. For IEEE 802.1x authentication of wireless clients we used Funk Software's Steel Belted RADIUS server v5.0, running on a Windows 2000 server. The RADIUS server worked in conjunction with Windows' Active Directory.

We reviewed each wireless package using a mix of laptops running Microsoft XP Pro and Windows 2000. We intentionally used a different wireless adaptor in each laptop, including units from Broadcom, Proxim Orinoco, D-Link AirPlus, and Linksys.

Veriwave's AP Management Performance Test Suite v2.5 package, running on an IBM platform was used to test AP performance. Test traffic passed between Veriwave's wireless traffic generator/performance analyzers and the APs under test. Each laptop client was required to be RADIUS-authenticated, and then all traffic was encrypted using "WPA TKIP."

For checking VoIP performance we used Veriwave's VOIP over WLAN suite v2.5 with a dozen SpectraLink NetLink e340 Wireless Telephones. These interconnected using H.323-based call control and SpectraLink's NetLink SVP Server.

AP recovery time -- the time it took a "mistakenly unplugged" access point to "re-insert" in the network, and begin passing wireless traffic again -- was measured by a continuous ping stream as well as the Veriwave test system.

For "rogue AP detection" we inserted Avaya AP-3 AE and AP-7 access points into the network. We then noted each system's ability to identify, locate and issue a notification that the rogue APs had been detected. We also then exercised the abilities of the Aruba and Symbol systems to "mitigate" the connections and traffic of the rogue APs and clients connected to them.

Security Capabilities

The controller supports wireless clients running 256-bit Advanced Encryption Standard (AES) encryption when using Optional xSec client software. The latest wireless security standards, including 802.11i, WPA and WPA2, are all supported. The A2400 can also maintain its own user-authentication database, which is particularly useful for guest and temporary accounts.

Aruba provides an additional level of access control before allowing client entry to the network. In conjunction with Sygate, Aruba delivers the "Sygate On-Demand Agent" to a client device when first

contacting the network. Based on the results of the "health checks" performed by the Sygate Agent, the determination is made whether the client device is allowed to use or be included on the network. And in this manner configured security policies are enforced.

An applet is downloaded and run to determine the minimum software requirements on the user's PC (such as version of anti-virus software running). If the requirements are met, the client is then asked for user authentication and allowed access to the network. Otherwise the

client is redirected to a Web site designed to update or correct the client's software environment, assuring policies required for network compliance are satisfied.

Once authenticated, information pertaining to that client is stored on the mobility controller. Then, if the client moves to another AP within this or another switch, re-authentication can be done automatically, without requiring re-verification.

Remotely connected Aruba APs support the 802.1af PoE standard. To enhance security, IPsec-based encryption can be applied to all authentication information exchanged between APs and the mobility controller over the LAN, WAN & Internet.

Mobility Features

Aruba has come out with a new and valuable addition to its package – called “Remote AP.” Using the IPsec protocol, the Remote AP software can run on any Aruba AP and allows it to securely communicate with the Aruba A2400, from any remote location across the Internet. IPSec, of course, is the widely trusted basis for deploying Virtual Private Network (VPN) connections through the Internet. “Remote AP” can be used for small remote offices, telecommuters, and temporary work sites. It enables seamless corporate wireless data and voice access from any remote location.

Since Aruba supports the IEEE's 802 “af” PoE standard, APs can be directly connected to an A2400 port, or any other PoE-enabled port, without requiring separate power supply. Additionally, Aruba APs have multi-directional, movable, and interchangeable antennas, which provide excellent wireless coverage and eliminate the need for additional antenna installation.

While Aruba's APs provide users with the full range of capabilities, management and inter-VLAN mobility support is provided for all standard third-party APs.

QoS and VoIP Management

Voice-over-wireless phones can connect through a remote Aruba AP and work as if they were at the central corporate site. Aruba's QoS-enabled, voice protocol-aware architecture delivers a toll-quality voice experience, even over remote links.

All 802.11-standard-based VoIP devices are supported, including SpectraLink, Vocera, as well as SIP phones including Cisco, Hitachi, Samsung and others. Aruba can prioritize voice traffic over data traffic over the wired network infrastructure, on all segments of a centralized WLAN architecture. A Voice-aware RF management option identifies an active voice call on an access point. This option disables off-channel scanning on the access point during that voice call.

Once a VoIP call is established, the AP will not go “off-channel” to scan other channels. This enables the device to be identified as a voice user (or other converged device) and permits Advanced Call Admission Control algorithms to be applied without requiring any additional, special client software.

The A2400 can ensure that voice and data are allotted defined portions of the total overall bandwidth. The network administrator/designer can configure a threshold for the number of concurrent VoIP calls per AP, which then triggers load balancing. This ensures that no single access point is overloaded with voice devices. This feature is handled on the controller, which also mitigates the need for any additional client software.

Aruba A2400 System Recap

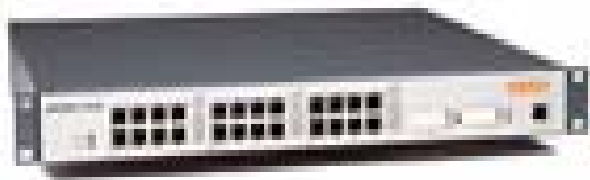
	Aruba Networks www.arubanetworks.com
Product tested, version	A2400 Mobility Controller v2.5 24; AP-70 and AP-61 APs; xSec Odyssey Client v3.50 (1)
Description	Modular appliance (controller) with vendor's APs; optional sensors; and optional PC-client software (1)
AP support	Aruba APs, or special models from Alcatel or Netgear, required for full functionality; can work with any AP
Main functions performed	<ul style="list-style-type: none"> • Client authentication • Enhanced encryption • Rogue AP detection and mitigation • VoIP auto-detection and prioritization • QoS / prioritization by application • Firewall • IPS
Price, US list	\$8,995 for A2400 controller; \$295 to \$595 each for APs (several models offered)

Source: Aruba Networks

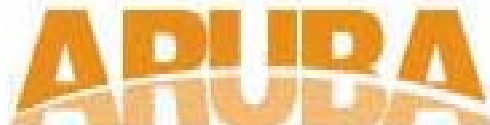
Miercom Verified Performance

Based on Miercom's thorough workout of this system, and validation of capabilities, operation, and features, as described herein, Miercom proudly attests as follows:

- Aruba Networks demonstrated excellent performance in its breadth of security features, mobility features, and mixed-media bandwidth and QoS management
- The system features excellent client authentication, rogue-AP detection and mitigation, and supports optional firewall and IPS modules
- "Remote AP" provides efficient, secure wireless access for any remote locations including hotels, transient work sites, SoHOs and regional offices.
- Optional client software features 256-bit, layer-2 encryption
- The system delivers effective VoIP auto-detection, auto-prioritization, and mixed-media bandwidth



Aruba A2400 Mobility Controller



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