

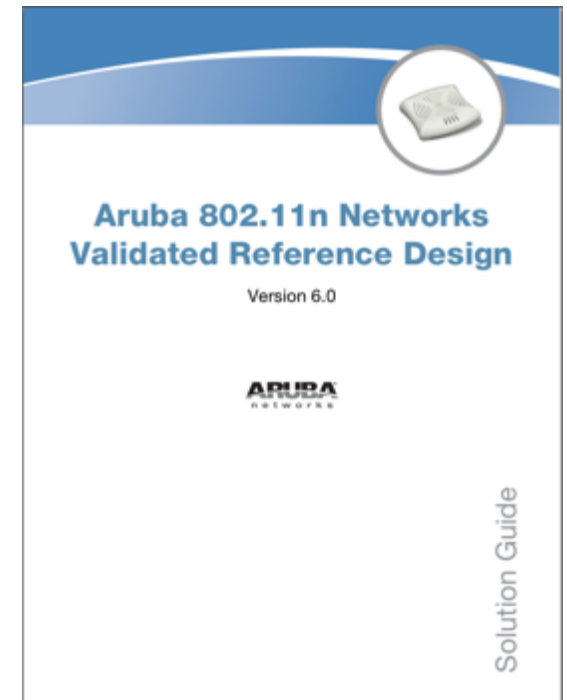
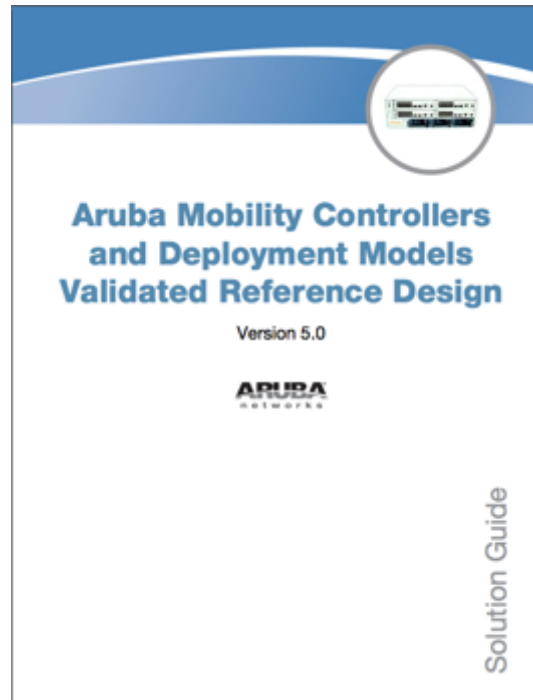
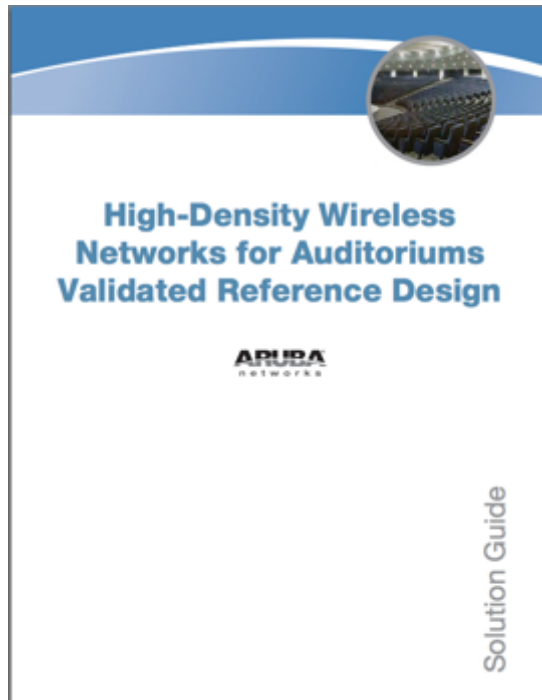
Presented by
Andy Logan
Feb 2012



NETWORK DESIGN FUNDAMENTALS



Validated Reference Designs (VRD)



<http://www.arubanetworks.com/vrd>

The WLAN Lifecycle

- Requirements Definition
- Site Surveys

Define

- Network Design
- RF Design
- Security Design
- QoS Design

Design

Deploy

- Staging & Provisioning
- Installation & Validation

- Administration
- Monitoring
- Troubleshooting

Operate

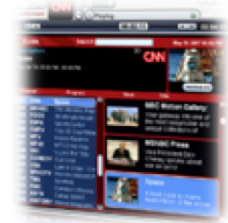
Define

Understand Mobility Requirements

Mobile Devices



Multimedia



Collaboration



Virtual Desktops



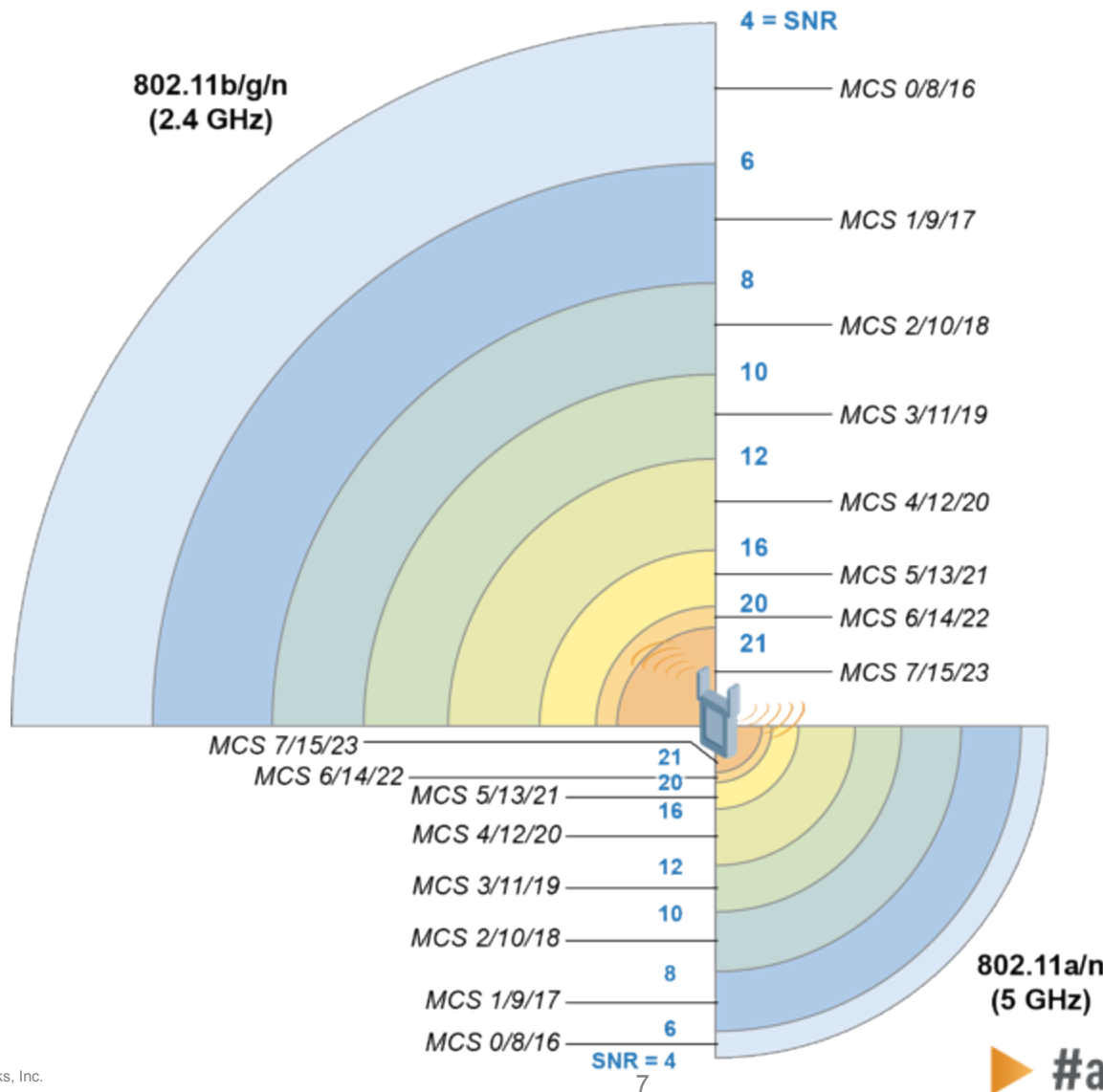
► #airheadsconf



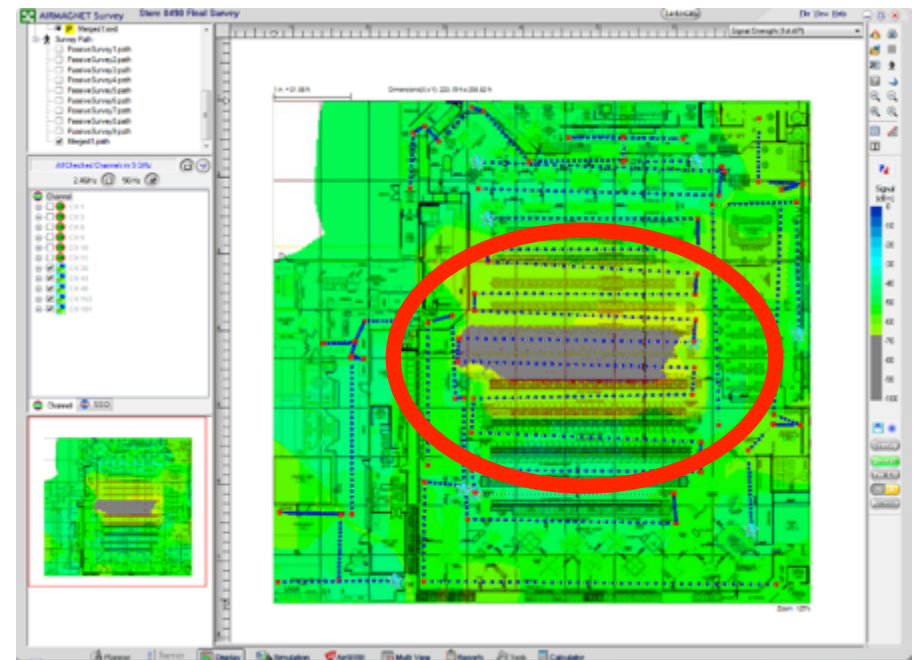
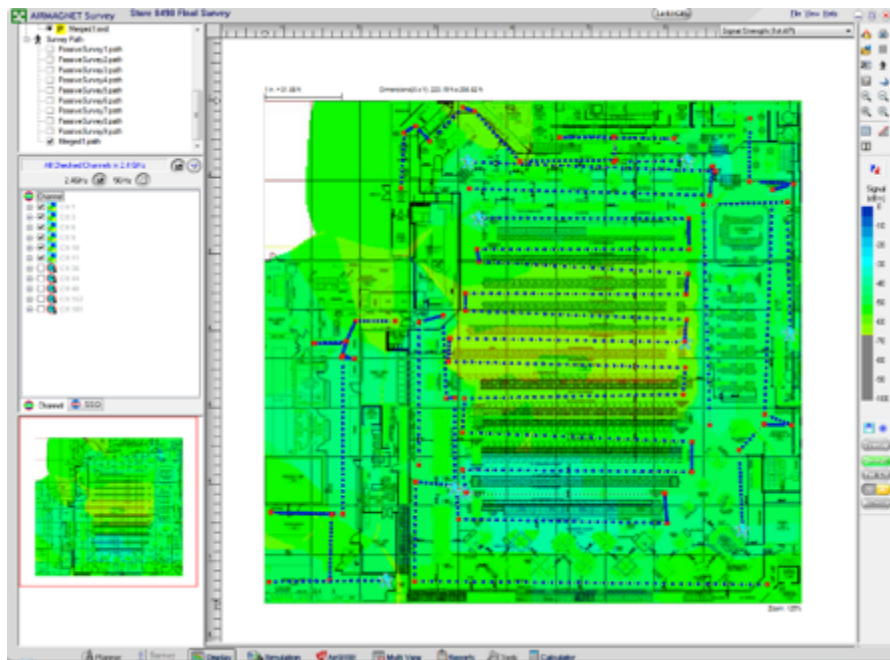
Site Surveys

	Virtual Survey	Passive Survey	Active Survey	Spectrum Clearing Survey
Description	Uses customer-supplied building drawings in JPG, PDF, or DWG format to place APs.	Involves passive data collection of the ambient RF environment to validate coverage or identify interference.	Involves active testing of real APs throughout a facility (indoor or outdoor) to determine the actual AP coverage footprint and throughput levels.	Same as Active Survey, but also includes a spectrum analysis (using a portable or handheld spectrum analyzer) at each active test location to locate and measure interference sources.
Location	Remote	Onsite	Onsite	Onsite
Deliverables	<ul style="list-style-type: none"> Marked-up JPG file indicating AP locations and controller location codes. Site bill of materials 	<ul style="list-style-type: none"> Heat maps of existing 2.4 GHz and 5 GHz RF environment. Marked-up JPG file showing AP locations. Summary narrative analysis. 	<ul style="list-style-type: none"> Heat maps of test APs with actual measured coverage. Marked-up JPG file showing AP locations. Detailed data analysis. 	<ul style="list-style-type: none"> Same as Active Survey but including 2.4 GHz and 5 GHz noise and interference sources, locations and duty cycles.
Cost	Low	Moderate	High	Highest

AP Coverage

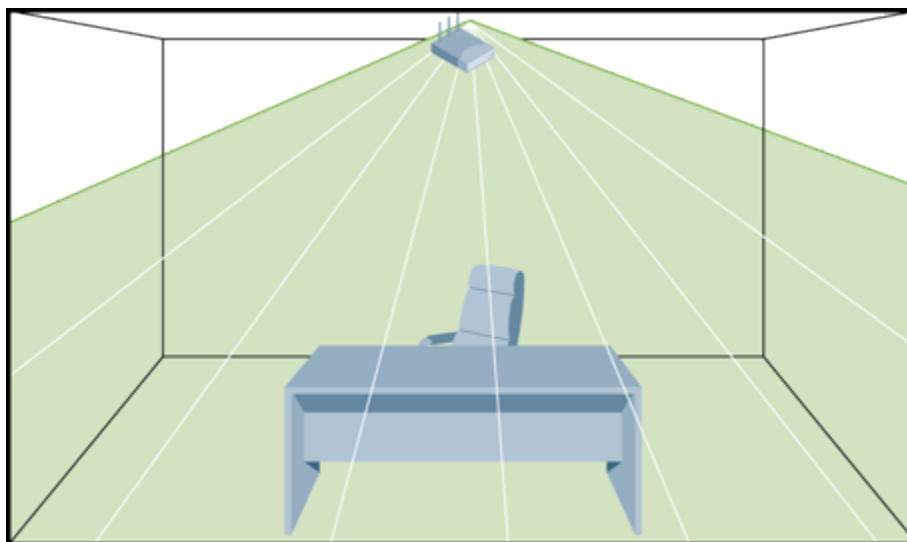


5 GHz Coverage in a 2.4 GHz Plan

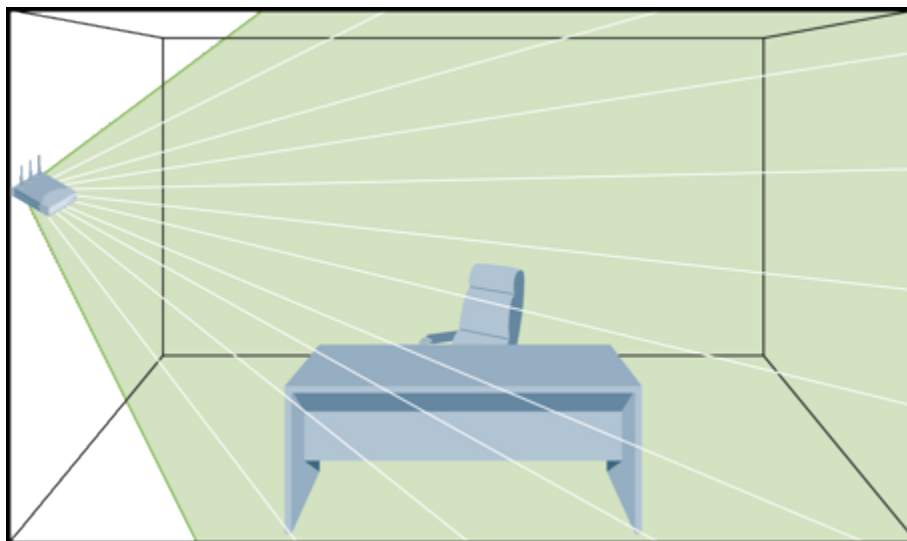


Mounting APs

Ceiling

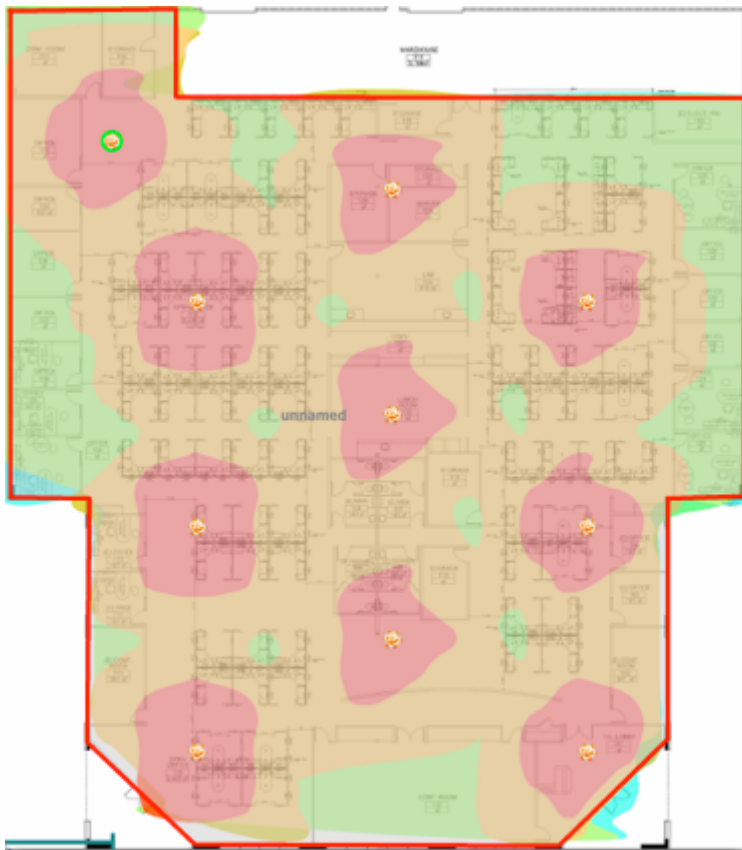


Wall

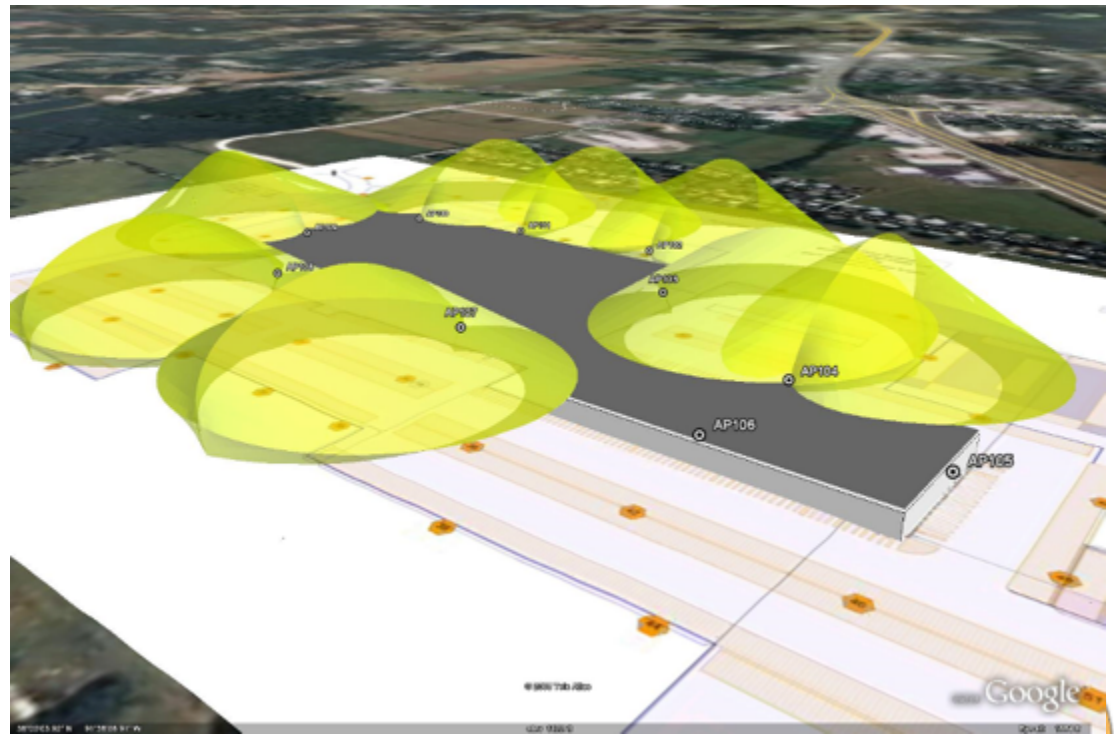


Virtual Survey Tools

VisualRF Plan



Outdoor 3D Planner



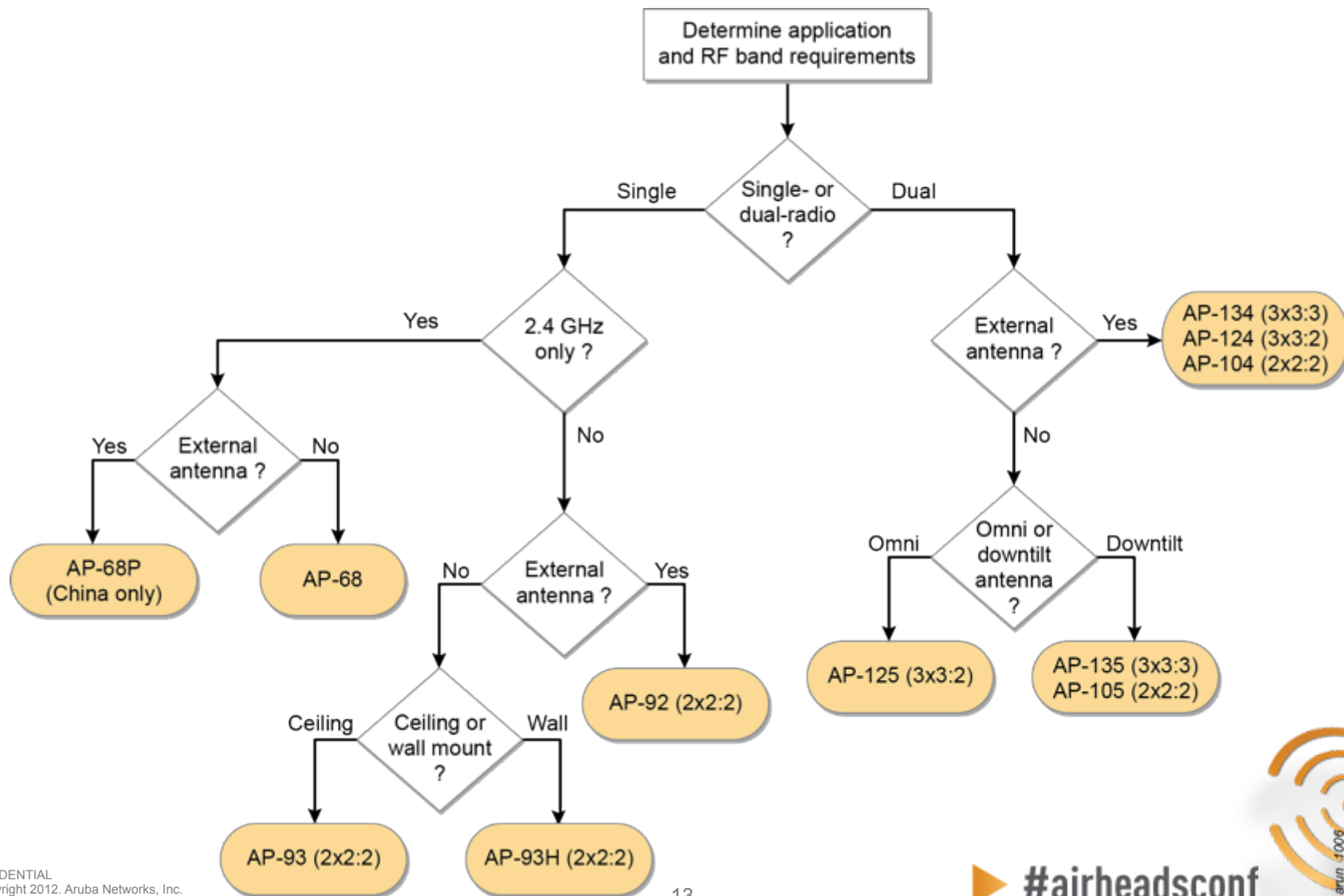
Design

Aruba Controller vs. Aruba Instant

	Aruba Campus Solution	Aruba Instant
Relative cost	\$\$\$	\$
Scalability	Thousands of APs Hundreds of thousands of users/ devices	16 APs 256 users/ devices
Policy management	Centralized policy store	Autonomous WLAN Can centralize policies via AirWave
User security	Context-aware security by role, device, location	User based
Mobility	Voice ready Layer 3	Voice ready single subnet
Provisioning and software upgrades	Controller	Virtual Controller, cloud-based image server, or AirWave
Onsite IT required?	Yes, at installation and periodically during operations	No
Operations management	AirWave	AirWave



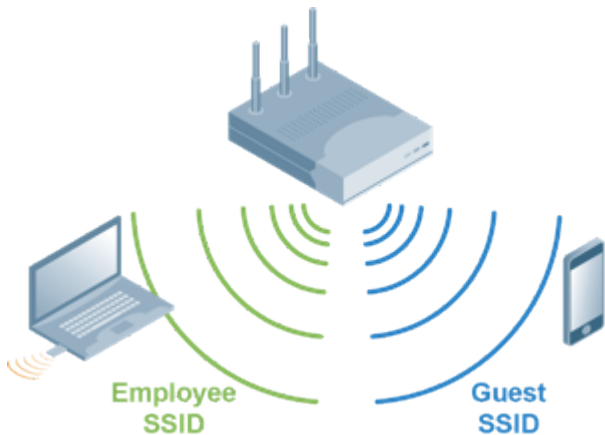
AP Decision Tree



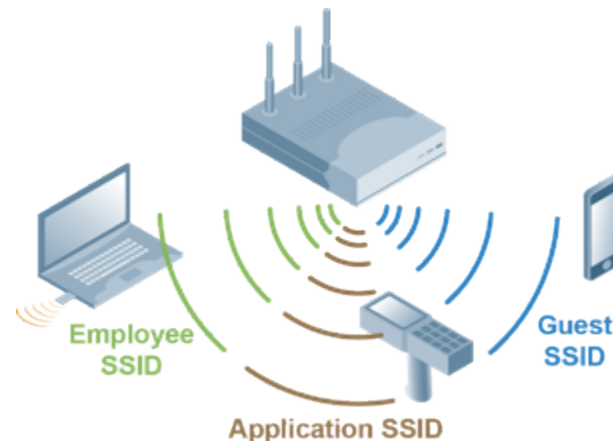
SSID Design

Most common SSID design for enterprise organizations includes 2-3 different SSIDs

- Employee users – strong authentication and encryption suite
- Application – devices not capable of strong authentication and encryption levels
- Guest access – will not run any encryption; requires authentication

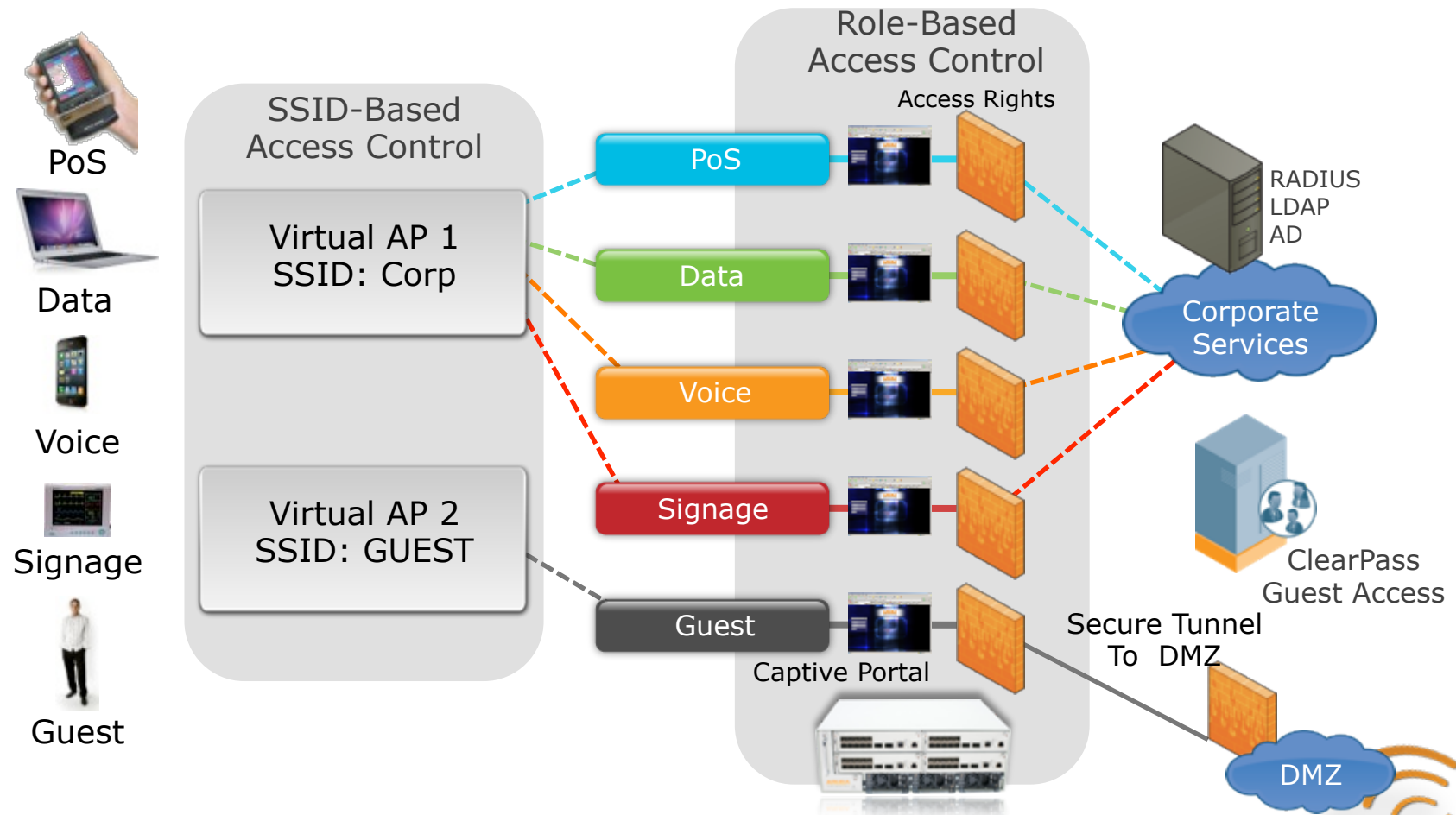


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arun_1031

Role-Based Security Architecture



Wireless Threat Protection Framework

Discover

Complete 802.11 Spectrum Monitoring

Continuous RF monitoring of wireless devices, activity and configuration across all 802.11 channels

Classify

Policy-Based Threat Prioritization

Automatic classification of threats and non-threats is critical to RF security

Alert and Audit

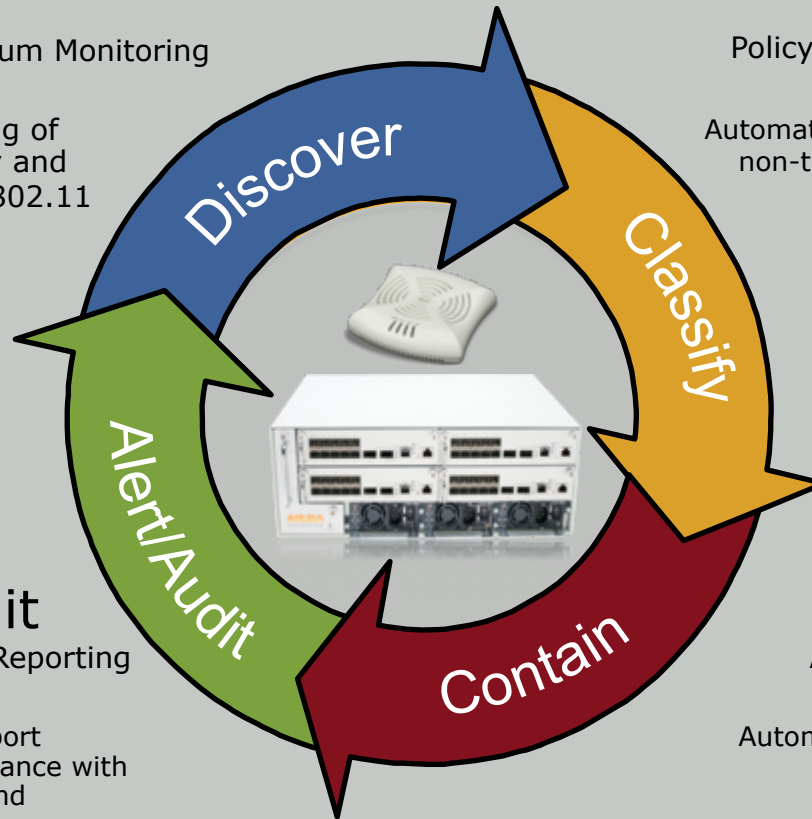
Automated Compliance Reporting

Automated logging and report distribution ensures compliance with wireless security policies and regulations

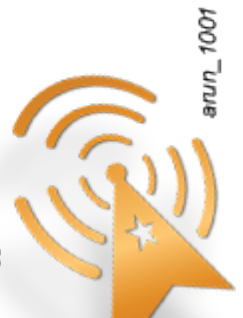
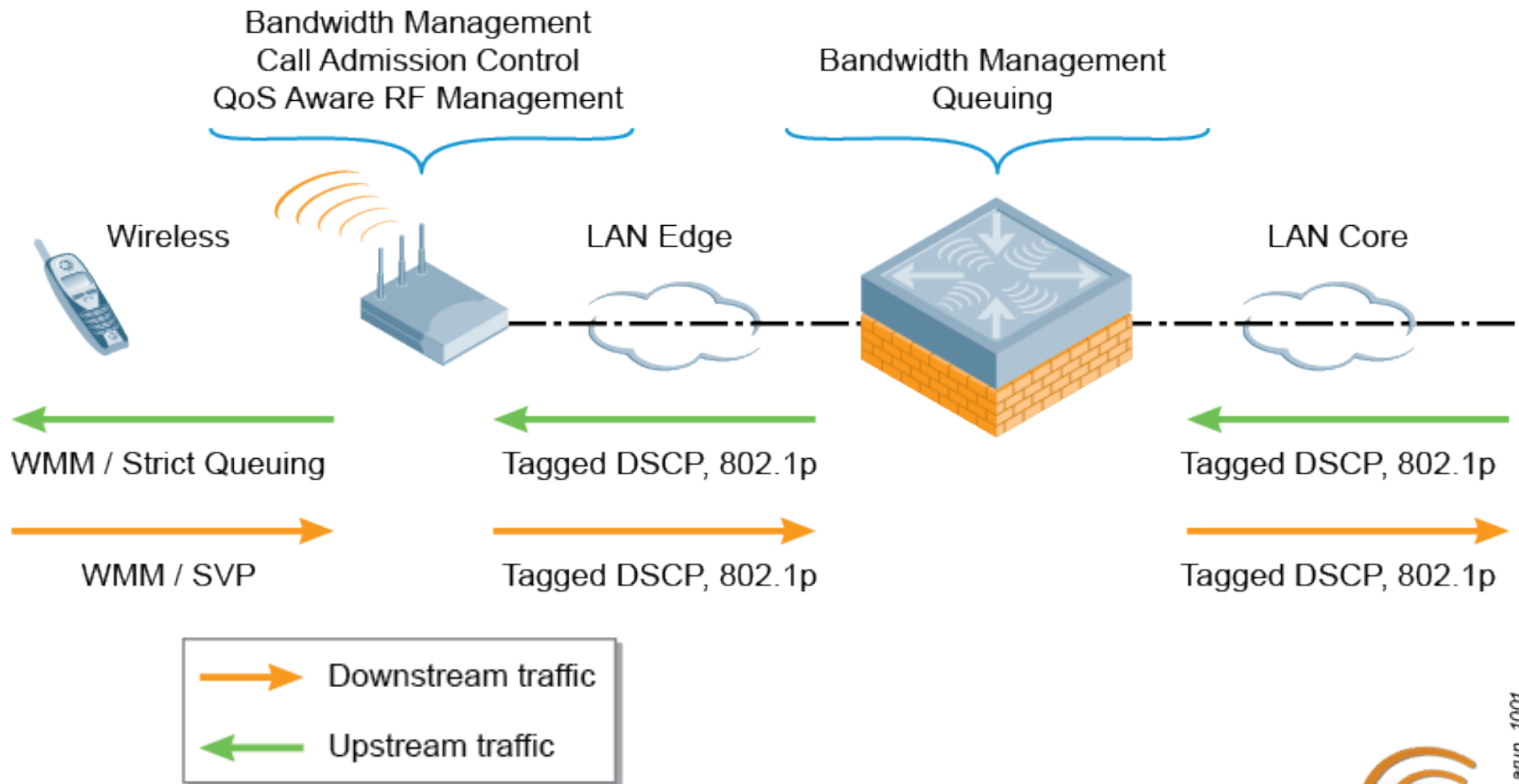
Contain

Automated Threat Mitigation

Automated containment to block any rogue or intruder

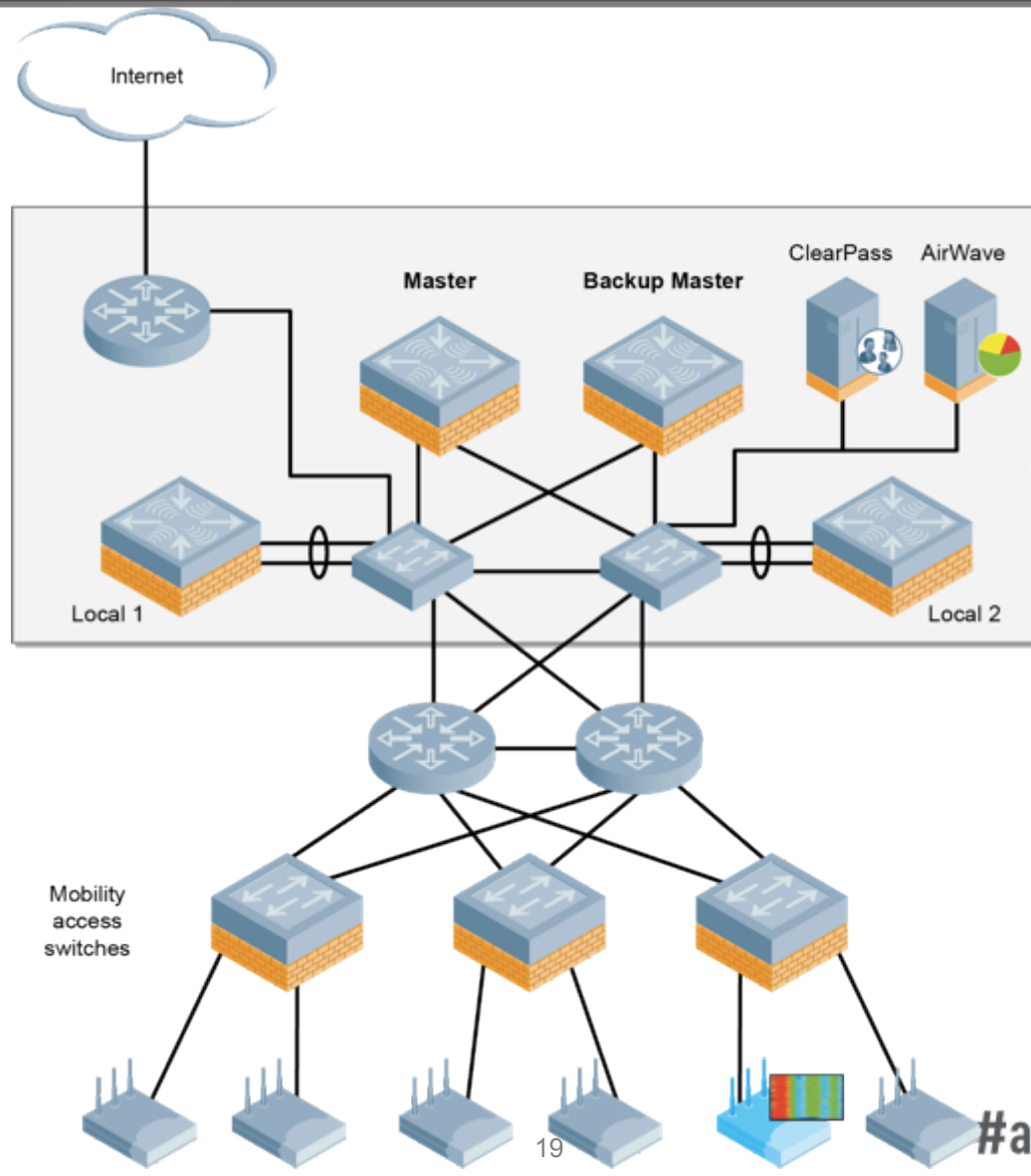


Quality of Service (QoS)

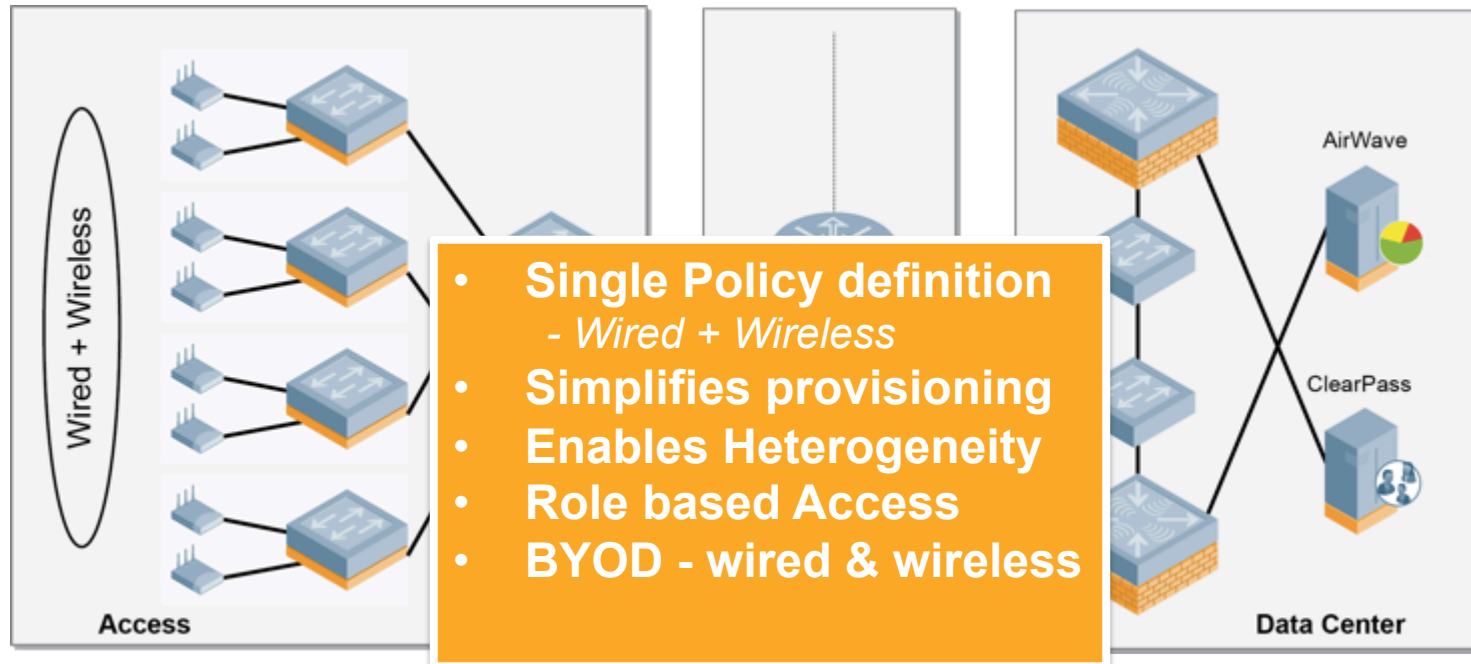


Deploy

Mobility Controller Deployment



Wired + Wireless Access



Dynamic Policies	Authentication	Policy Definition Point
<ul style="list-style-type: none"> • Simplified Access Provisioning • Eliminate policy definition on mobility switch & controller • Users authenticate against ClearPass Policy Manager 	<ul style="list-style-type: none"> • Authentication result returns role via RADIUS • Associated role's policy dynamic pushed to switch / controller 	<ul style="list-style-type: none"> • Single portal for policy definition – wired or wireless • Role and policy association definition • Supports Heterogeneous Networks

Mobility Controllers



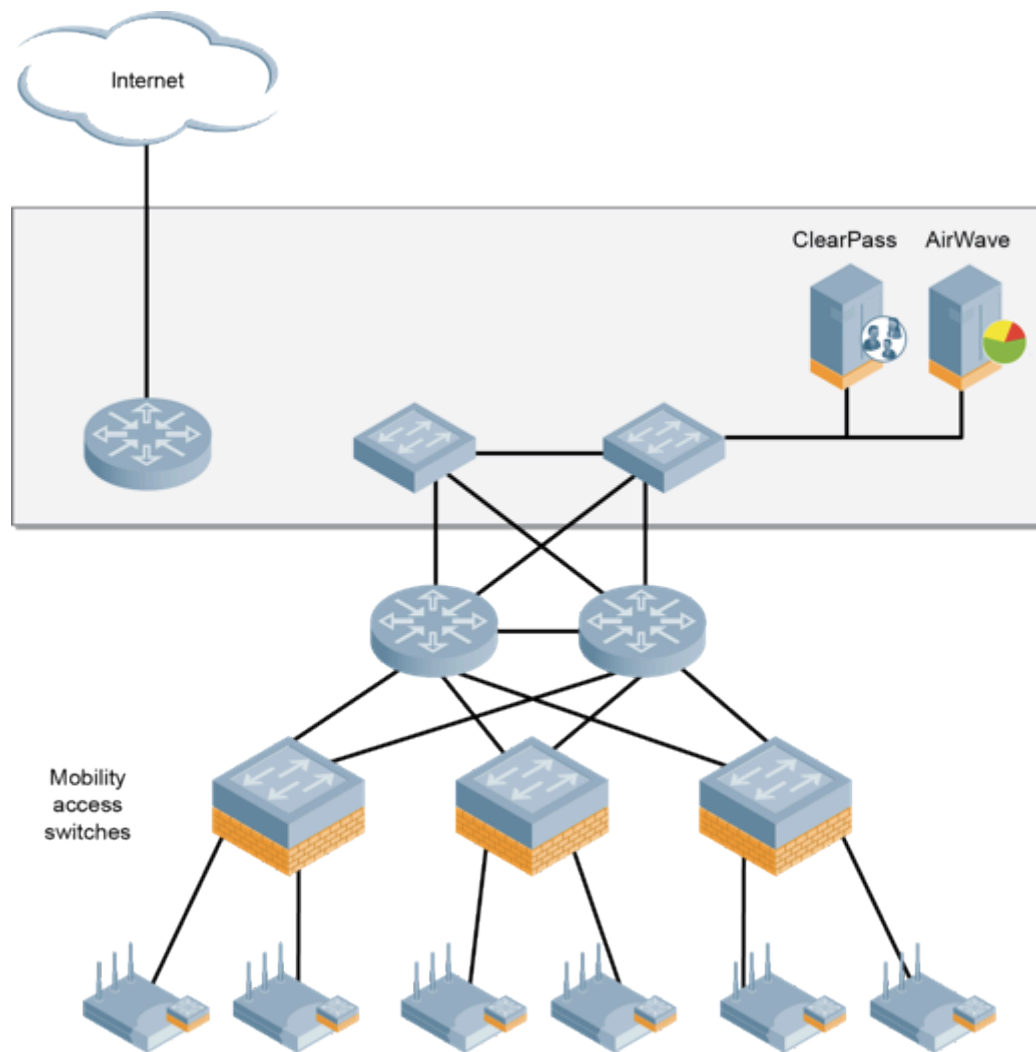
Access Points



Mobility Access Switch



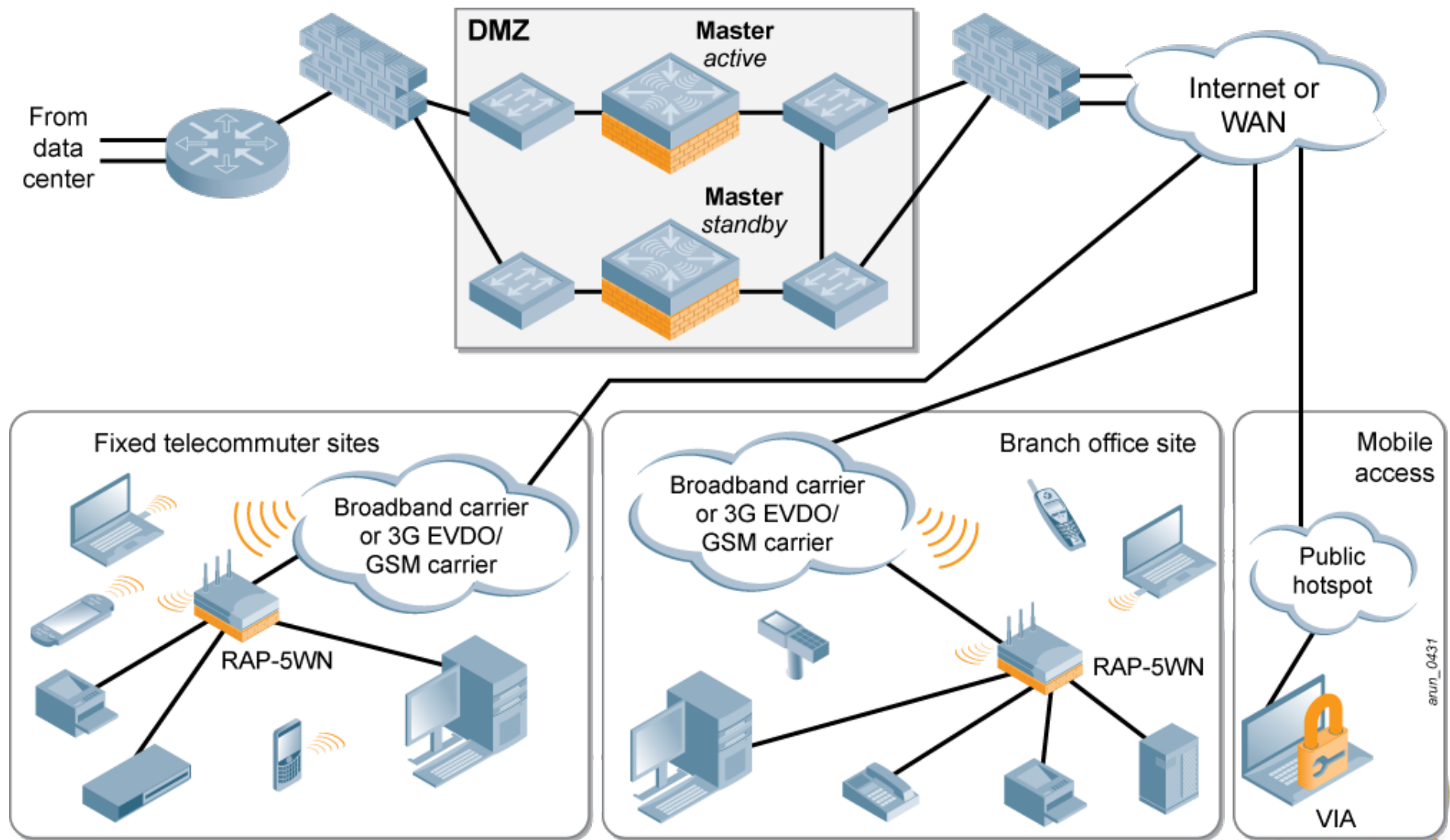
Instant Deployment



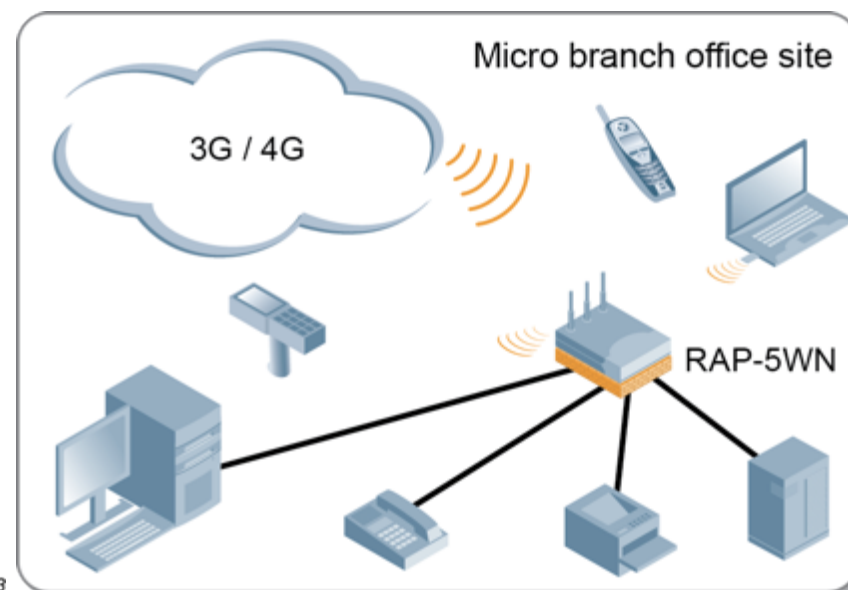
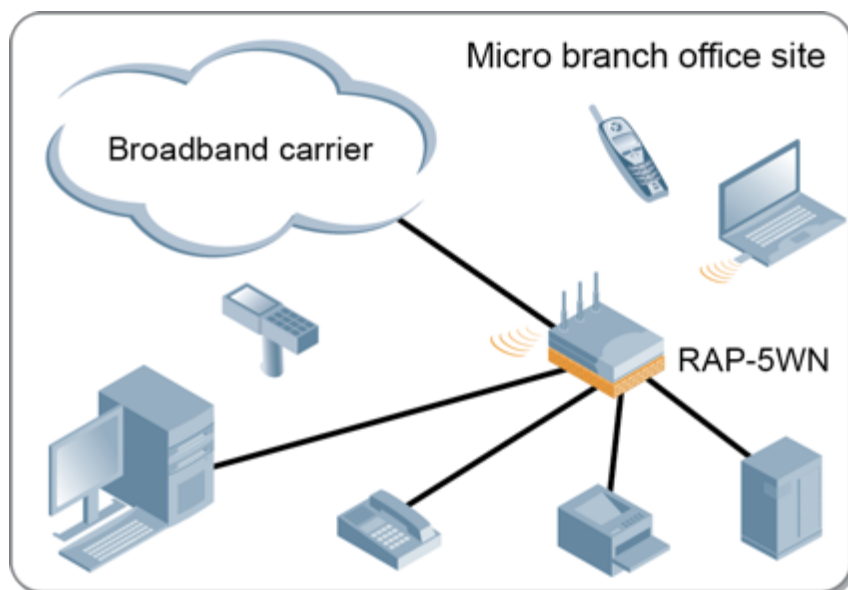
Instant Access Points



Remote Access



Wired or Wireless Backhaul

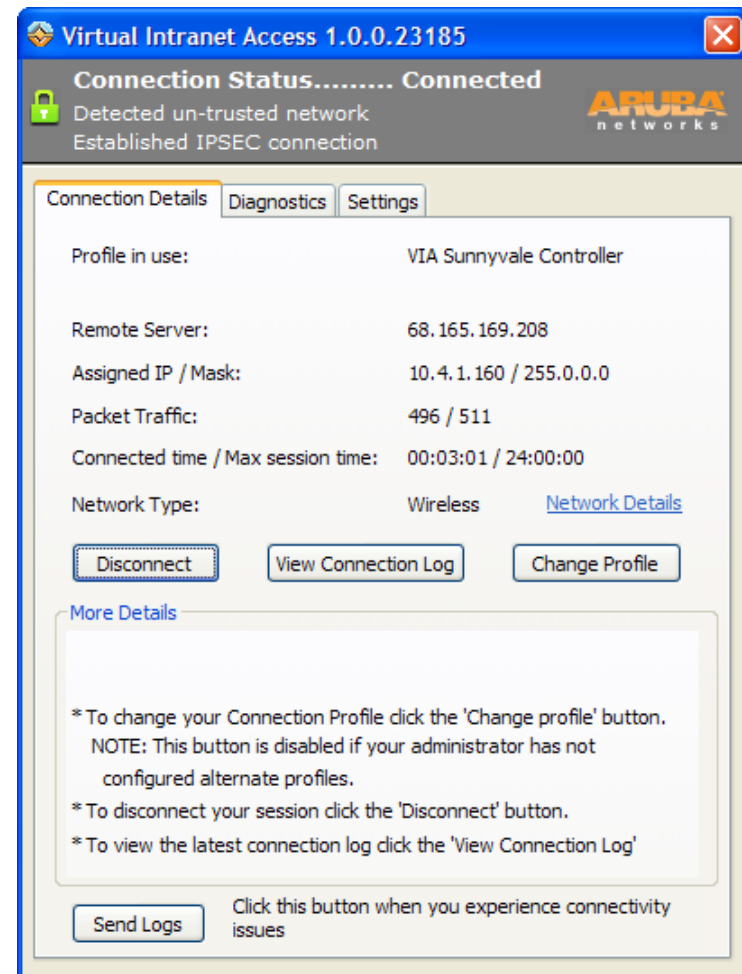
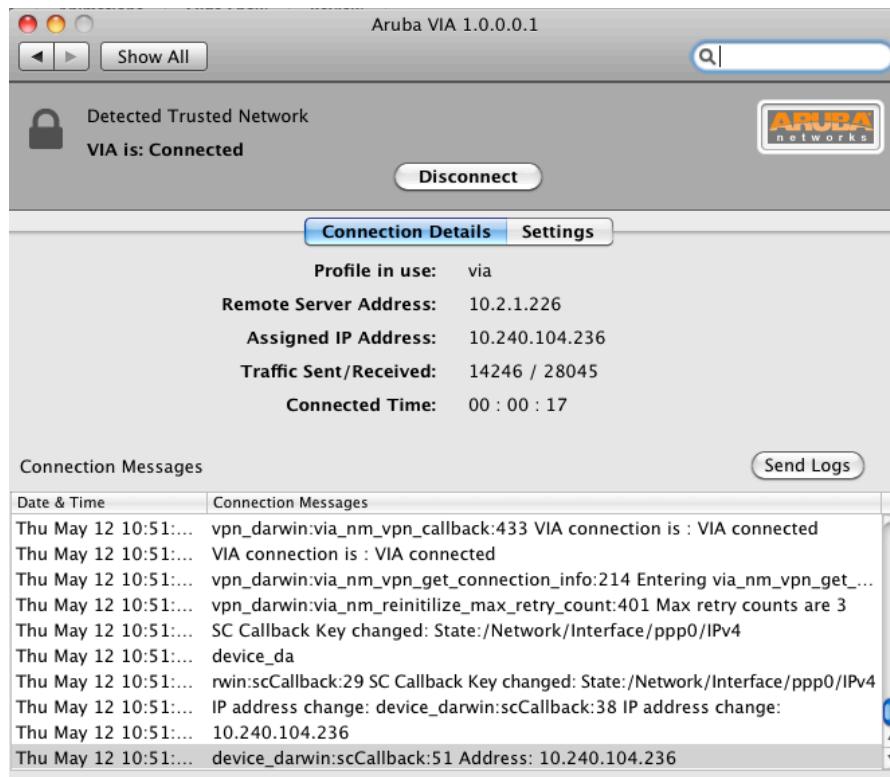


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Branch Office



Aruba VIA



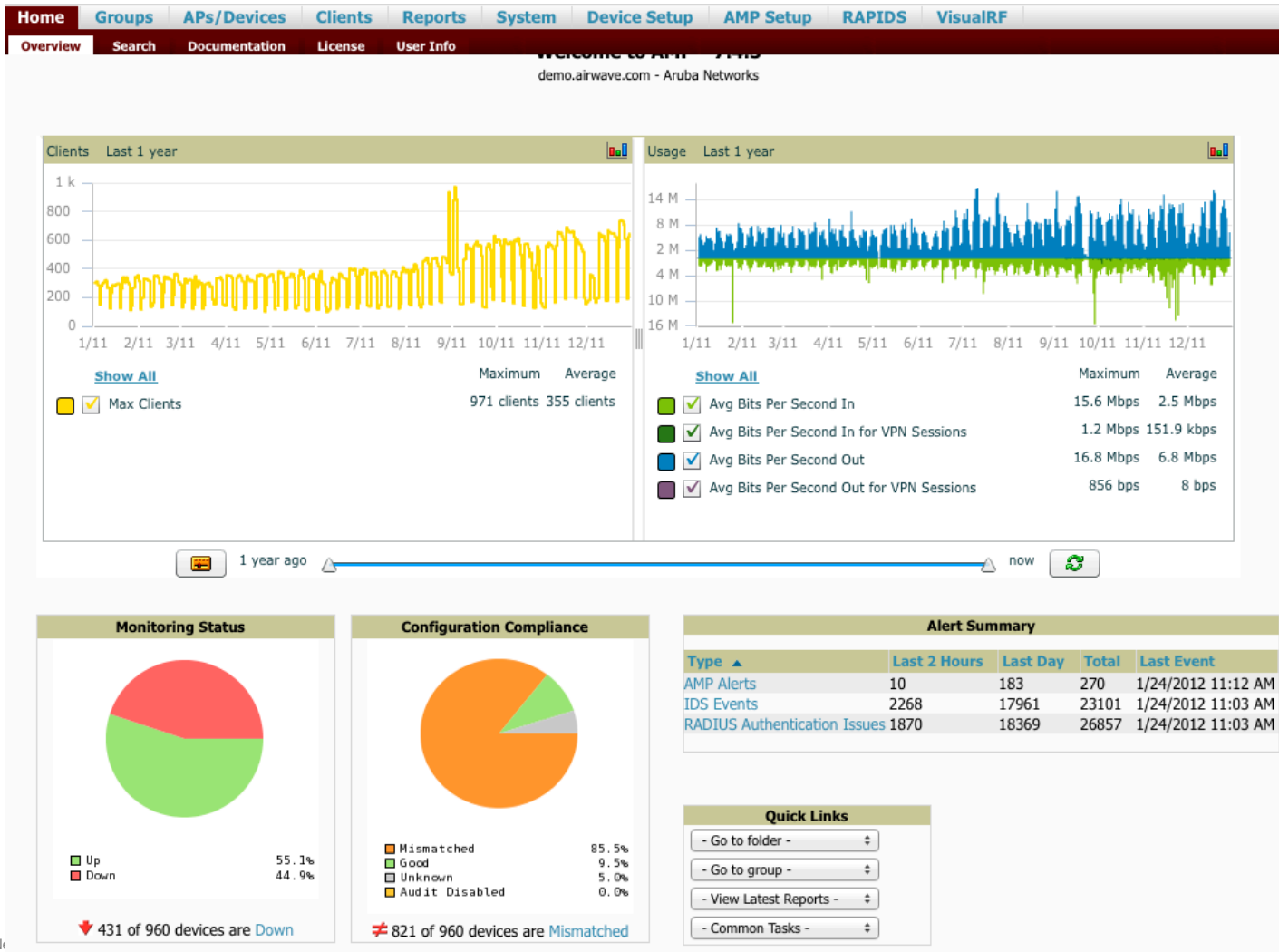
Operate



Monitoring



New Devices: 29 Up: 529 Wired: 18 Wireless: 511 Down: 431 Mismatched: 821 Rogue: 522 Clients: 562
Alerts: 270



Troubleshooting



New Devices: 29 Up: 529 Wired: 18 Wireless: 511 Down: 431 Mismatched: 821 Rogue: 522 Clients: 525

Log out alog

Alerts: 271

alogan

[Home](#) [Groups](#) [APs/Devices](#) [Clients](#) [Reports](#) [System](#) [Device Setup](#) [AMP Setup](#) [RAPIDS](#) [VisualRF](#)

[Connected](#) [All](#) [Rogue Clients](#) [Guest Users](#) [Client Detail](#) [Diagnostics](#) [VPN Sessions](#) [VPN Users](#) [Tags](#)

Detail for 58:B0:35:85:7E:8A

Device Info

Username: alogan

First Seen: 5/11/2010 2:17 PM on <Deleted> for 5 mins

Last Seen: 1/24/2012 11:22 AM on 196C for 2 hrs 44 mins

Device Type: ☐ Apple Mac

OS: ☐ Mac OS X

OS Detail: ☐ 10_7_2

Manufacturer: ☐ Apple

Model: ☐ Mac

Network Interface Vendor: Apple

AOS Device Type: OS X

Aruba HTTP Fingerprint: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_7_2) AppleWebKit/535.7 (KHTML, like Gecko) Chrome/16.0.912.75 Safari/535.7

Classification:

Notes:

[Show additional properties](#)

Current Association

Username: alogan

Role: employee

Signal Quality: 29

Association: 1/24/2012 8:38 AM

Duration: 2 hrs 44 mins

Mode: 802.11n (5 GHz)

Usage: 148.74 Kbps

SSID: ethersphere-wpa2

Ch. BW: HT40

LAN IP 1: 10.6.5.45

Auth Type: WPA2/EAP

Cipher: AES

AP/Device: 196C

Controller: ethersphere-lms3

Group: Ethersphere-lms3

Folder: Top > Sunnyvale HQ

AP/Device Location: -

Radio: 802.11an

VLAN: 65

Forward Mode: Tunnel Encrypted

LAN Hostname 1:

Auth Time: 2 hrs 34 mins

SNMP Source: Poll

Signal Quality

Usage Goodput Speed

Signal Quality for 58:B0:35:85:7E:8A Last 2 hours

9:22 10:22 11:22

[Show All](#) Maximum Average

Signal Quality

Usage Goodput Speed

Signal Quality for 58:B0:35:85:7E:8A Last 2 hours

9:22 10:22 11:22

[Show All](#) Maximum Average

Client Diagnostics




New Devices: 29 Up: 529 Wired: 18 Wireless: 511 Down: 431 Mismatched: 821 Rogue: 522 Clients: 525 Alerts: 271

alogan


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[Connected](#) [All](#) [Rogue Clients](#) [Guest Users](#) [Client Detail](#) **[Diagnostics](#)** [VPN Sessions](#) [VPN Users](#) [Tags](#)


Client
alogan


good


Network
ethersphere-wpa2


good
3 possible issues

AP
196C

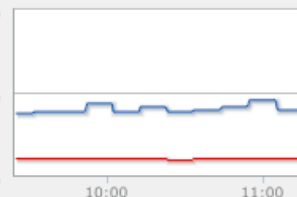
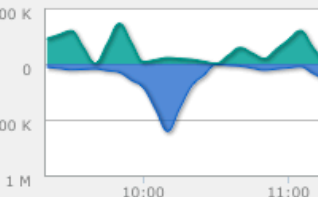
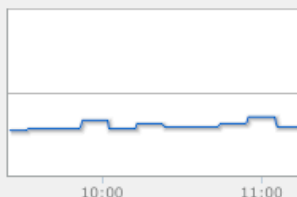

good

Controller
ethersphere-lms3


good
1 possible issue

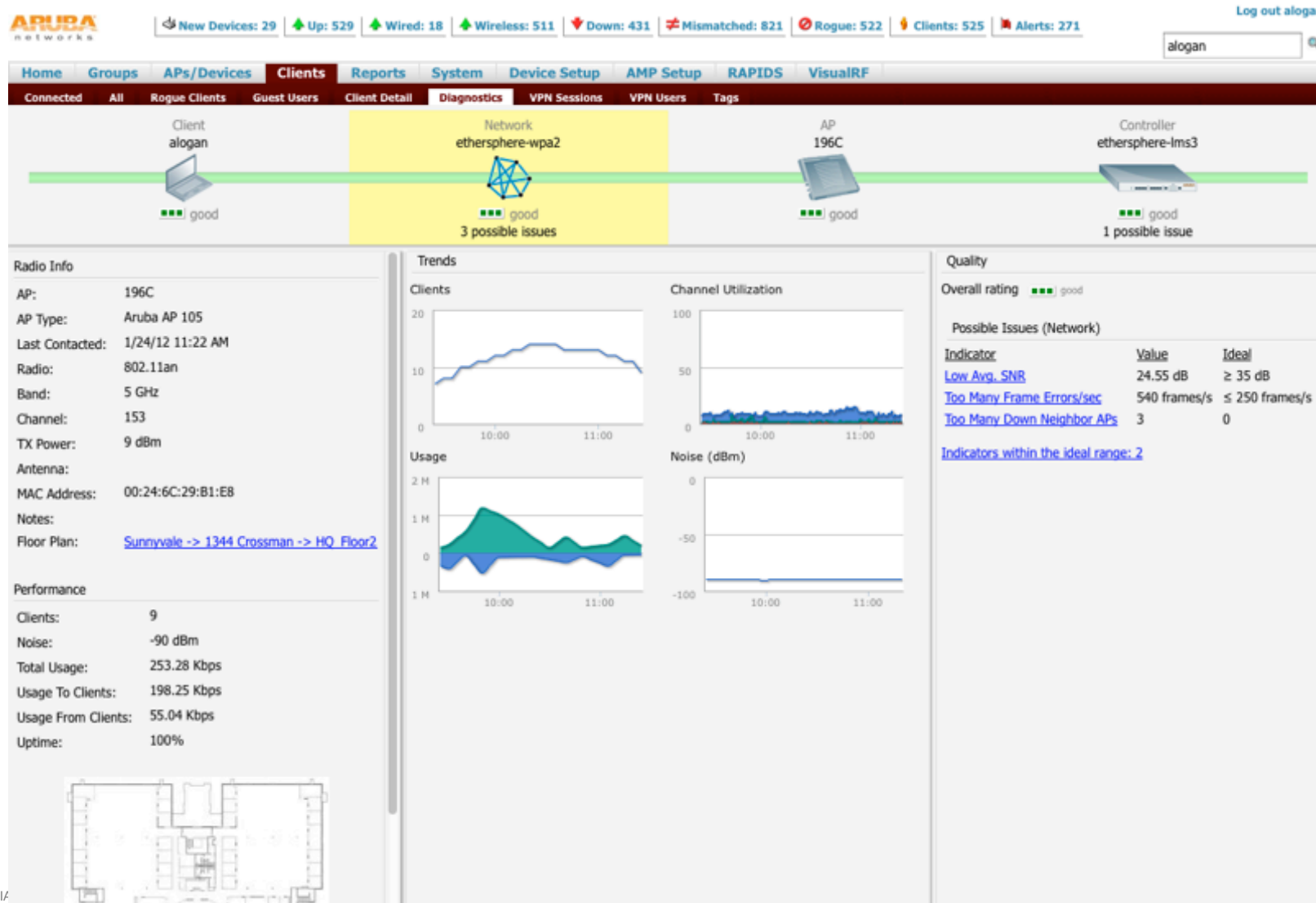
Device Info
Username: alogan
Device Name:
OS type: Apple Mac
MAC Address: 58:B0:35:85:7E:8A
Role: employee
Notes:

Current Association
Connection Mode: 11n 5 GHz (40)
Duration: 2 hours 46 minutes
IP Address: 10.6.5.45
Hostname:
SNR (dB): 29
Usage: 148.74 Kbps
Auth type: WPA2
Cipher: AES
VLAN: 65
Forward Mode: unknown
Floor Plan:

Trends
Signal & Noise (dBm)

Usage

SNR (dB)


Quality
Overall rating good
[Indicators within the ideal range: 2](#)

Network Diagnostics



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- Site Surveys

Define

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- RF Design
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**Coming Up:
Tech Playground 12pm – 1:30pm**

▶ community.arubanetworks.com

▶ [#airheadsconf](https://twitter.com/airheadsconf)