

Top 10 Tips from Aruba TAC

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Agenda



- Introduction to eSupport
- Before you open a ticket
- ArubaOS
- Aruba Instant
- AirWave
- ClearPass Product Family
- Mobility Access Switches



Before you open a ticket...



- **Check online resources such as**
 - Airheads Social (community.arubanetworks.com)
 - Aruba Knowledge Base (support.arubanetworks.com)
 - Aruba Validated Reference Design Guides (VRDs)
 - Software Release Notes

Before you open a ticket...



- Phone Home allows an Aruba mobility controller to securely contact Aruba TAC server over the Internet to upload reports. Files are encrypted.
- All the phonehome commands are local commands
- Enable PhoneHome on all controllers

```
phonehome enable
```

```
phonehome auto-report
```

```
phonehome smtp <mail server ip address> <email address>
```

Before you open a ticket...



Maintenance x

← → ↻ https://127.0.0.1:4343/screens/switch/switch_action.html?mode=phonehome ☆ ☰

ARUBA networks MOBILITY CONTROLLER | Filthblinks-650

Dashboard Monitoring Configuration Diagnostics **Maintenance** Plan

[Logout admin](#)

CONTROLLER

- About
- Image Management
- Reboot Controller
- Clear Config
- Synchronize Database
- Boot Parameters

FILE

- Copy Files
- Copy Logs
- > **Aruba TAC server**
- Copy Crash Files
- Backup Flash
- Restore Flash
- Delete Files

WLAN

- Reboot AP
- WMS Database

File > Aruba TAC Support

Phone Home ☒ Enable ☐ Disable

View PhoneHome Report Status ☒

SMTP Configuration

SMTP ☒

Server IP Address Server Port

User Name Password

Email-ID

Max size of attachment (1 to 10 MB)

Report Type ☒ Auto Report ☒ Report Now

Apply

Statistics

Manual	Count
Manual phonehome:	0
Auto-report:	0
Success:	0
Failed:	0
Retries:	0

Transaction History

Transaction ID	Status
----------------	--------

Before you open a ticket...



- **Pre-empt the support info requests**
 - Be ready to supply logs `"tar logs tech-support"`
 - Best to attach it to the ticket through the customer support portal
 - Console output for RMAs (or a reason why there is none)
 - Send the controller logs to a Syslog Server
 - Controllers can only store fixed amount of logs,
 - (Higher logging verbosity) x (More network usage) = Shorter Log Time
 - Logs from other components in the network, such as controller, RADIUS servers, switches or clients

Before you open a ticket...



- **Try to simplify the issue**
 - Is it possible to replicate the issue on a simpler configuration?
 - Sometimes the configuration is over optimized/tweaked
Remove tweaks and optimizations that might be clouding the issue

Before you open a ticket...



- **Is this a new configuration?**
- **Did it break without any changes? If so, why?**
 - Increased load – users and/or network traffic?
 - Change in software version on the client side?
 - New device types or application on the network?
 - New interference source?





ArubaOS

ArubaOS – Version Selection and Upgrade process



- **General Availability Releases**
 - Aruba encourages adoption of these releases on large scale production network. e.g. ArubaOS 6.1.3.7
- **Early Deployment Release**
 - Introduces new software features and/or hardware platforms, may require unique topology and configuration considerations before the upgrade process. e.g. ArubaOS 6.2.0.3
- **Technology Release**
 - Separate release that is meant for customers who need a specific feature. e.g. ArubaOS 6.1.3.6-AirGroup

ArubaOS – Version Selection and Upgrade process



- **Recommended to stay with General Availability code**
 - Most of our customers are now running 6.1.3.x
 - Upgrade to the latest version of 6.1.3.x
- **Unless you need new features or platform support...**
 - DFS support on AP-9x, AP-10x and AP-13x (Supported under 6.2.x)
 - 7200 series controller support (Supported under 6.2.x)
 - RAP-3WN, RAP-108, RAP-109 Support (Supported under 6.2.x)
 - AirGroup Support (Supported under 6.1.3.6-AirGroup)

ArubaOS – Version Selection and Upgrade process



- **If upgrading from older version of code, upgrade hop to an intermediate version is required for most older ArubaOS versions**
 - Latest releases in most older streams are able to upgrade to 6.1 or 6.2 releases
 - Changes in the flash layout had to be made on the controllers to accommodate larger ArubaOS images
- **Please read the release notes “Upgrade Procedures” section**
 - 3.3.x (or 3.4.x) → latest 3.4.4.x → 6.1 or 6.2
 - 5.0.x → latest 5.0.4.x → 6.1 or 6.2
 - 6.0.x → latest 6.0.2.x → 6.1 or 6.2

ArubaOS – Version Selection and Upgrade process



- **If you need ArubaOS 6.2.x...**
 - And have a Non-XM version of the 3200 controller, you will need to buy a field kit (3200-MEM-UG) where you can upgrade the memory yourself
 - No, you can't use memory from the local PC shop
 - Watch out if you plan to use DFS channels
 - Radar events can cause issues, especially with voice applications.

ArubaOS – Version Selection and Upgrade process



- **Other issues you might run into**
 - A long running or heavily utilized 3200 controller may need to be rebooted to ensure there is enough free memory for the upgrade
 - at least 60 MB of free memory available (`show memory`)
 - at least 75 MB of flash available (`show storage`)
 - If you have RAP-2/RAP-5 deployed in your network, refer to the release notes before you upgrade as they will need to have their provisioning image on the backup-partition flashed/upgraded first before proceeding
 - Also, if upgrading from 3.x code, make sure to permit svc-ftp in the ap-role as it was not historically allowed. This will delay the upgrade process by about 15 minutes. *(Refer to the end of the slide deck for more information)*

ArubaOS – Version Selection and Upgrade process



- **If upgrading to 6.2.x, please ensure to read the Release Notes ...**
 - The default NAS-port-type for management authentication using MSCHAP-v2 is changed to “Virtual” instead of “Wireless”
 - If your pre-6.2 configuration contains an ACL with redundant firewall rules, upon upgrading, only the last rule will remain
 - 651 controllers will now function as 650 controllers and the internal AP will be disabled
 - User Idle Timeout Behavior Change

ArubaOS – Migrating to 7200 series controllers



- **All controllers need to be running 6.2.0.x**
- **The controller configuration needs to be migrated from previous platforms mainly because of interface name changes**
 - Ports are now named **slot/module/port** instead of **slot/port**
- **Before starting your migration you should transfer your licenses to the new controller platform**
 - <https://licensing.arubanetworks.com/>

- **Spectrum Load Balancing should only be enabled on APs in the same room**
- **Enabling Band-Steering in a sparse environment might cause issues with some clients**
- **Leave VLAN Pooling in “hashing” mode instead of “even”**
 - If you must use “even” mode, enable “`preserve-client`” knob under the virtual-ap profile
- **Mode-Aware-ARM can cause coverage holes**
- **It is not recommended to use controller as a DHCP server for more than two /24 IP-address ranges**

- **Rogue AP Containment will cause more issues than it solves – especially in busy networks – find the AP and disconnect it instead**
 - If you do have to automatically contain it, find it quickly
- **Limit invalid IP addresses from being added into the user table**
 - Modify the “validuser” ACL to restrict Server and Gateway IP addresses

ArubaOS – Troubleshooting Authentication issues



- **Incorrect time settings on clients and controllers can cause certificate validation issues, often silently**
- **For Windows clients**
 - use MSFT tracing `"netsh ras set tracing * enabled"` to debug issues on the client-side
- **Use ArubaOS command `"show auth-tracebuf"` for auth or roaming issues**
 - Compare the behavior of the problematic client with an healthy one so you can spot issues

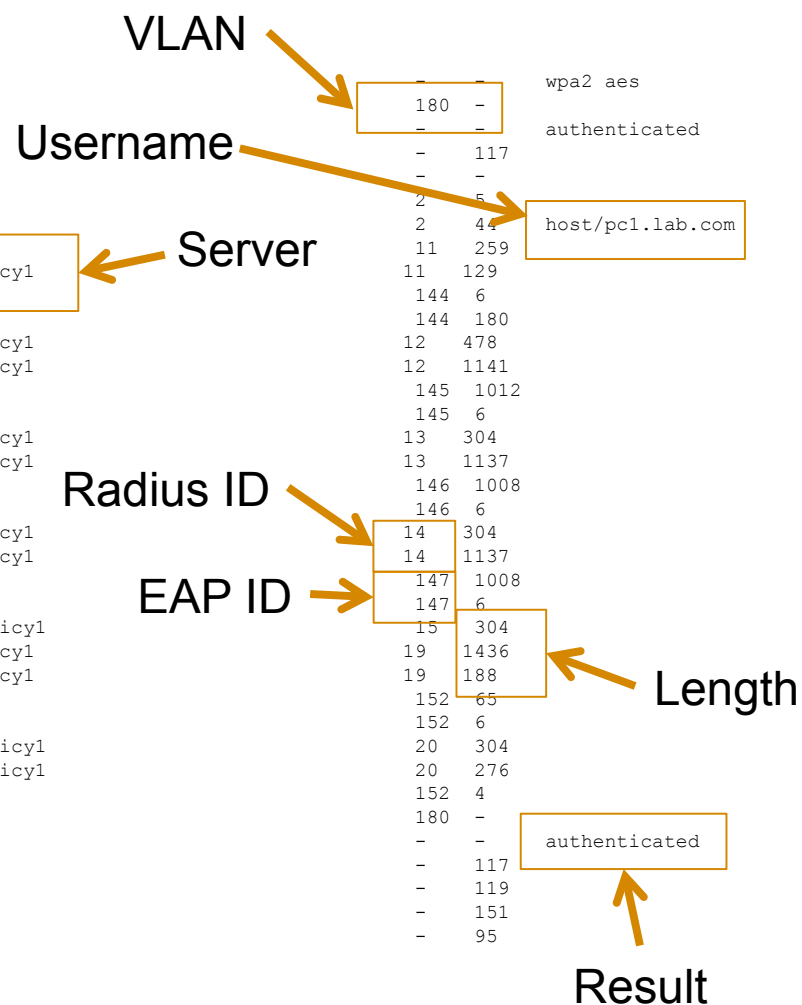
ArubaOS – Troubleshooting Authentication issues



show auth-tracebuf

```

Nov 3 11:08:02 station-up * 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 station-data-ready * 00:21:6a:8b:0a:dc 00:00:00:00:00:00
Nov 3 11:08:02 m-auth resp * 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 wpa2-key1 <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 eap-start -> 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 eap-id-req <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 eap-id-resp -> 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 rad-req -> 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 rad-req <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30/radpolicy1
Nov 3 11:08:02 eap-req <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 eap-req <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 rad-req -> 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30/radpolicy1
Nov 3 11:08:02 rad-req <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30/radpolicy1
Nov 3 11:08:02 eap-req <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 eap-req <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 rad-req -> 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30/radpolicy1
Nov 3 11:08:02 rad-req <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30/radpolicy1
Nov 3 11:08:02 eap-req <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 eap-req <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 rad-req -> 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30/radpolicy1
Nov 3 11:08:02 rad-req <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30/radpolicy1
Nov 3 11:08:02 eap-req <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 eap-req <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 rad-req -> 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30/radpolicy1
Nov 3 11:08:02 rad-req <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30/radpolicy1
Nov 3 11:08:02 eap-req <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 eap-req <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 rad-req -> 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30/radpolicy1
Nov 3 11:08:02 rad-req <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30/radpolicy1
Nov 3 11:08:02 eap-req <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 eap-req <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 rad-req -> 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30/ise-policy1
Nov 3 11:08:02 rad-req <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30/ise-policy1
Nov 3 11:08:02 eap-success <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 station-data-ready * 00:21:6a:8b:0a:dc 00:00:00:00:00:00
Nov 3 11:08:02 m-auth resp * 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 wpa2-key1 <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 wpa2-key2 -> 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 wpa2-key3 <- 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
Nov 3 11:08:02 wpa2-key4 -> 00:21:6a:8b:0a:dc 00:1a:1e:66:f7:30
    
```



ArubaOS – Troubleshooting Authentication issues



(Lab) #show aaa authentication-server radius statistics

RADIUS Server Statistics

Statistics	c ppm
Accounting Requests	0
Raw Requests	0
PAP Requests	65
CHAP Requests	0
MS-CHAP Requests	0
MS-CHAPv2 Requests	0
Mismatch Response	0
Bad Authenticator	0
Access-Accept	3
Access-Reject	46
Accounting-Response	0
Access-Challenge	0
Unknown Response code	0
Timeouts	20
AvgRespTime (ms)	76
Total Requests	65
Total Responses	49
Uptime (d:h:m)	12:18:38
SEQ Total/Free	255/255

Number of Timeouts from Auth Server

A High response time will make 802.1x auth fail.

Time since the controller had a Timeout from the RADIUS Server. If 0:0:0, it means that the server is not currently being used (Fail-over).

Orphaned requests = 0

- **Airtime usage per-radio**

```
(Lab) #show ap debug radio-stats ap-name <AP-NAME> radio <1 or 0> | include Busy
```

```
Channel Busy 1s          7
Channel Busy 4s          6
Channel Busy 64s         6
Ch Busy perct @ beacon intvl 7 7 13 6 5 6 7 6 7 6 6 6 6 8 9 6 5 5
```

* Radio 0 → 5 GHz

* Radio 1 → 2.4 GHz

- **Values > 50% should be investigated**
- **Values > 70% will make for very poor user experience**

- **Deployment tips**

- If AP coverage allows for it, use 5GHz as it is always much cleaner
 - If on 5GHz, verify which channels the handset support; *channel 165 is not supported on many phones*
- On the 2.4GHz, clip the lower data rates
 - `g-basic-rates 5 6`
 - `g-tx-rates 5 6 9 11 12 18 24 36 48 54`
- Make sure `voip-aware-scan` is enabled in the arm-profile
- Enable `"local-probe-req-thresh"` with a SNR of 25
- Limit EIRP power delta to a maximum of 6 dB
 - `min-tx-power 12`
 - `max-tx-power 18`

- **Troubleshooting tips**

- Make sure you have adequate coverage, rule of thumb is two cell-overlap of -67dB. Some of the phones have a survey mode to check coverage using the actual radio of the phone
- Use “**show auth-tracebuf**” to follow troubleshoot authentication issues as the phone roams and to follow the roaming pattern of the phone

- Use the “show ap remote debug mgmt-frames” to troubleshoot roaming issues

```
(Aruba620-Lab) #show ap remote debug mgmt-frames ap-name <AP-NAME>
```

Traced 802.11 Management Frames

Timestamp		stype	SA	DA	BSS	signal	Misc
-----		-----	--	--	---	-----	----
Mar 1 11:55:41		deauth	d8:c7:c8:8b:84:81	10:bf:48:be:a7:c7	d8:c7:c8:8b:84:81	15	-
Mar 1 11:38:45		assoc-resp	d8:c7:c8:8b:84:81	10:bf:48:be:a7:c7	d8:c7:c8:8b:84:81	15	Success
Mar 1 11:38:45		assoc-req	10:bf:48:be:a7:c7	d8:c7:c8:8b:84:81	d8:c7:c8:8b:84:81	43	-
Mar 1 11:38:45		auth	d8:c7:c8:8b:84:81	10:bf:48:be:a7:c7	d8:c7:c8:8b:84:81	15	Success
Mar 1 11:38:45		auth	10:bf:48:be:a7:c7	d8:c7:c8:8b:84:81	d8:c7:c8:8b:84:81	58	-



Aruba Instant

- **There is no need for a console/serial connection to build an IAP network**
 - Simply connect to the “instant” ESSID and configure away
- **Configure your IAP networks from the WebUI, not from the CLI**
- **Aruba Instant WebUI was designed to be used with an iPad**
- **Use the built-in WebUI Help ...**

Aruba Instant – Use the help feature



Instant

https://10.6.101.103:4343/#home

Settings RF PEF WIP VPN Wired | Maintenance Support | Help Logout

ARUBA networks Virtual Controller Airheads Instant

For Help, click any text in *green italics* Done

1 access point

Utilization
Utilization of the access point radios.

Name	IP Address	Mode	SpectrumClients	Type	Mesh Role	Channel Power (dB)	Utilization (%)	Noise (dBm)	Channel Power (dB)	Utilization (%)	Noise (dBm)
AP-01	10.6.101.103	Access	Disabled 1	105	Portal	11 17	69	-90	149+ 18	8	-93

Airheads Instant

Monitoring 0 Alerts IDS Configuration AirGroup

Info

Name: Airheads Instant
Country code: US
Virtual Controller IP: 10.4.1.8
Band: All
Master: 10.6.101.103
OpenDNS status: Not connected
MAS integration: Disabled
Uplink type: Ethernet
Uplink status: Up

RF Dashboard

Signal Speed Utilization Noise Errors

All clients All access points

Usage Trends

Clients

Throughput (bps)

AirWave Status: Not Set Up | Set Up Now

English

Pause

- **Watch out for security features on switches**
 - They can keep the Instant cluster from operating correctly
- **From the CLI, the following commands are interesting**
 - show stats ap
 - show stats client
 - show client
 - show datapath

- **Use the 'debug pkt' command to troubleshoot issues**
 - No need to be physically close to the AP to know what is being transferred!
 - Can redirect traffic or just analyze using traffic flows

```
IAP101# debug pkt mac 44:2a:60:af:5e:40
IAP101# debug pkt match mac
IAP101# debug pkt type dhcp
IAP101# debug pkt dump
Press 'q' to quit.
```


Aruba Instant



```
pkt at asap_firewall_forward,3249(firewall entry), vlan 0, egress CP, ingress aruba002:
mac: source 44:2a:60:af:5e:40, destination ff:ff:ff:ff:ff:ff, etype 800
ip: sip 0.0.0.0, dip 255.255.255.255, proto 17
udp: sport 68 dport 67
pkt at asap_firewall_check_dhcp_packet,1657(dhcp packet from client), vlan 1, egress CP
pkt at asap_firewall_subnet_from_dhcp,1784(13-mobility subnet discovery), vlan 1, egress CP
pkt at asap_firewall_forward,3851(bridge section), vlan 1, egress CP
pkt at asap_firewall_forward,3957(session section), vlan 1, egress vlan 1
pkt at asap_firewall_forward,4095(slowpath section), vlan 1, egress vlan 1
pkt at asap_firewall_forward,4550(route section), vlan 1, egress vlan 1
pkt at asap_firewall_forward,4571(cp route section), vlan 1, egress vlan 1
pkt at asap_firewall_forward,4688(forward section), vlan 1, egress vlan 1
pkt at asap_dhcp_to_stack,3069(dhcp packet going to stack), vlan 1, egress vlan 1
pkt at asap_firewall_flood,5693(flooding), vlan 1, egress vlan 1
pkt at asap_firewall_flood,6130(flooding packet to bond0), vlan 1, egress vlan 1
pkt at asap_firewall_flood,6160(flooding packet to bond0), vlan 1, egress vlan 1
pkt at asap_firewall_flood,6130(flooding packet to aruba000), vlan 1, egress vlan 1
pkt at asap_firewall_flood,6160(flooding packet to aruba000), vlan 1, egress vlan 1
pkt at asap_firewall_flood,6130(flooding packet to aruba002), vlan 1, egress vlan 1
pkt at asap_firewall_flood,6160(flooding packet to aruba002), vlan 1, egress vlan 1
pkt at asap_firewall_flood,6130(flooding packet to aruba102), vlan 1, egress vlan 1
pkt at asap_firewall_flood,6160(flooding packet to aruba102), vlan 1, egress vlan 1
pkt at asap_firewall_flood,6170(stack section), vlan 1, egress vlan 1
```



AirWave

- **Running out of drive space will ruin your day. Don't allow it to happen!**
 - Airwave has a built in trigger that can be set to alert you that your partition has exceeded your configured percent used threshold
 - Failing to address drive space issues in a timely manner can result in prolonged downtime

- **Use the default set of reports to get an understanding of what types of data is available**
- **Create your own custom reports based on the existing reports to provide the data you are most interested in**
- **Un-schedule (or delete) the default reports you don't care about. This will reduce clutter and improve AMP performance.**
- **Reports provide a valuable baseline for spotting anomalies on your network**

- **Triggers are a powerful tool for finding specific events that Airwave is aware of and notifying you**
- **SNMP Traps and Syslog messages have a way of warning of potential problems. Learn about the traps and syslog messages available in your device**

- **Make sure you finish adding all APs to your floorplan**
- **Take the time to make sure the scale is accurate and that your AP placement is correct**
- **Make sure your walls are properly drawn and the building materials are correct**
- **VisualRF works well when the configuration is complete and accurate**

- **Airwave remembers your list preferences.**
 - If you have chosen to tell Airwave to display “All” or “Custom” records on a list and find yourself in a situation where the number of results are so large that the page stalls, you can reset that option to defaults
 - Go to http://yourampnamehere/user_info and click “reset list preferences”

- **If you have Airwave, don't forget to enable AMON in your controller(s)!**
 - Enabling AMON will provide Channel Utilization and Active Interferers data
 - This will allow you to track performance and resource utilization which can prevent problems down the line
 - The RF performance tab also gets its information from AMON
 - To enable amon on the controller, do:
(test3400-0) (config) # mgmt-server type amp primary-server 1.2.3.4



ClearPass Guest and CPPM

- **Carefully choose the lifetime of client certs**
- **Create a process for handling client cert expiration**
- **Include OCSP responder information in the certificate**
- **Don't go crazy with key sizes. The larger the key size, the slower the performance. 1024 or 2048 bit is fine**

Policy Manager - Let the cluster work



- **Don't hinder or "optimize" ClearPass cluster communications**
- **Make sure that the following ports are open and left alone from WAN optimization or application proxies:**
 - UDP Port 123 NTP (Subscriber to publisher)
 - TCP Port 443 HTTPS (Bi-directional)
 - TCP Port 5432 PostgreSQL for DB replication (Subscriber to publisher)

- **Guest->Active Sessions**

- These are populated by RADIUS accounting.
- If something doesn't look right or is missing from here, check the RADIUS accounting configuration in your NAS.
- If you are using another vendor's NAS, make sure you have "Calling-Station-Id" set to use a MAC address instead of an IP address.
- If your ClearPass Guest is rejecting authentication requests due to authorization failures, you may be out of licenses.
- License count is based on the number of active sessions started within the past 1 hour.

Guest 3.9 - Slow Captive Portal Performance?



- **TCP Timestamps**

- Depending on your network environment, TCP Timestamps could cause the captive portal to load very slowly or timeout
- To disable TCP timestamps in ClearPass Guest 3.x:
- Paste the following two lines into the System Config page in ClearPass Guest:

Disable TCP Timestamps to resolve slow captive portal page loads

net.ipv4.tcp_timestamps = 0

- See Solution ID: 3568 in our knowledgebase at support.arubanetworks.com

- **Running out of drive space will ruin your day. Don't allow it to happen!**
 - ClearPass Guest 3.9 can be configured to alert you when drive space falls below separate levels of drive space percentage with increasing urgency
 - ClearPass Policy Manager can also alert you about drive space if you have your notification settings defined
 - If you get a notification about drive space, don't let it linger! Call us!

- **Don't forget about storage performance when considering running CPPM as a virtual machine.**
 - ClearPass can be EXTREMELY disk IO intensive and bursty in busy environments
 - AAA requires near real-time responsiveness from its own database as well as any external authentication and authorization sources
 - An unexpected back-end SAN or NAS slow-down can be catastrophic for your CPPM. Make sure you keep backups externally and/or make use of redundant VMs to mitigate this type of failure

Policy Manager 5.x - Slow Access Tracker



- **Activity Reports and Access Tracker can be slow if you keep too much history on your CPPM box.**
 - Loading the Access Tracker page or using Activity Reports queries the log database for data using your selected date range. On busy servers with thousands of authentications per day, this could be tens or hundreds of millions of rows of data.
 - Keep the number of days of user session data stored in the database to a minimum (3-5 days). The default is 30 days.
 - If you need to report on session data, consider using Insight rather than Activity Reports
 - ClearPass 6.x contains many performance improvements for managing large volumes of session log data

- **Leverage Aruba user roles and Captive Portal Profiles**

- With Captive Portal profiles on an Aruba WLAN, you can send users to a custom web login page on ClearPass Guest
- This provides opportunities to send instructions or display other content to users by having ClearPass assign a user role to them which triggers a captive portal profile
- For example, if an AD user account is locked out or a password needs to be changed, place the user into a lockout or reset role and define those roles in the controller such that their captive portal profiles take them to corresponding web login pages with information on how to resolve the problem

ClearPass + Airwave: Setup SNMP



- **You can monitor your Airwave or ClearPass Server using SNMP!**
 - Connect your favorite NMS to either Airwave or ClearPass with SNMP and track Disk, Memory, CPU and Process information
 - This will allow you to track performance and resource utilization which can prevent problems down the line
 - You can even monitor ClearPass from Airwave starting with 7.6!



Mobility Access Switch

- **Configure the same spanning-tree protocol as the rest of the neighbors**
 - MSTP is enabled by default in S2500/S3500
- **If there are multiple redundant uplinks, use LAGs whenever possible**
 - It eliminates the need to enable per-vlan spanning-tree protocols and increases throughput
- **Enabling Root Guard and BPDU Guard will keep someone from affecting the network if they connect a spanning-tree enabled switch**

Mobility Access Switch



- **Enable Portfast on Access Ports as it will reduce the time it takes for a port to move to a forwarding state**
- **For trunk ports, allow needed VLANs only**
- **It is better to disable split-detection under stack-profile for two-member stacks**



In conclusion

In conclusion



- **support@arubanetworks.com**
 - One email address for all products
 - You can always request your ticket to be moved to another time-zone
 - Upload files directly to the case via the support portal
 - Avoid unicasting emails/attachments to support staff
 - Using reply-all will get more eyes on your issue
- **Always call support for urgent issues**
- **Please exercise caution when making changes**
 - Always move your backups off the controllers/servers
 - When tweaking configuration, incrementally add changes

Takeaways



TAC Quick Reference Guide

- https://support.arubanetworks.com/DOCUMENTATION/tabid/77/DMXModule/512/Command/Core_Download/Default.aspx?EntryId=1371

Validated Reference Designs (VRD)

- <http://www.arubanetworks.com/technology/reference-design-guides/>

Airheads Social

- <http://community.arubanetworks.com/>

Aruba Knowledge Base

- <http://support.arubanetworks.com/KNOWLEDGEBASE/tabid/133/Default.aspx>

Raise a ticket for any product, RMA, anything !

- support@arubanetworks.com

Requests for Enhancements (RFE)

- Please discuss with your SE/Sales team
- You can now submit RFEs through our support portal, under Contact Support
 - Access Feature Requests via Idea Portal

Outdoor planner tool

- <https://outdoorplanner.arubanetworks.com/>



Thank You



AIRHEADS

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Upgrading RAPs to 6.1.x



- **The problem**

- ArubaOS has a check to ensure that an image that is downloaded during self upgrade is not of unexpected size
- Prior to 6.x, that maximum was 4MB
- ArubaOS 5.0.3.x and higher knows that 6.x is > 4MB and has a new maximum size check

- **Two common issues for RAP5**

- RAP is running 6.1.x due to correct upgrade sequence but has old provisioning image (pre 5.0.3.x)
 - if it is reset to default it will not be able to re-connect/re-upgrade as it reverts to the provisioning image
- “Brand new out of the box” RAP won’t connect to controller
 - It is running older provisioning image.

- **Provisioning image versus running image**
 - RAP5 or RAP2 has 2 s/w images on it
 1. the provisioning image that runs the rapconsole
 2. the production image that is downloaded after first connect to controller
 - The provisioning image can be upgraded via CLI in all releases **except 6.x**
 - CLI command removed in 6.1.x
 - **CLI command exists in 6.0.x but fails** (6.x cannot be saved)
 - provisioning image is **never** automatically upgraded.
 - Old in-service RAPs may still have 5.0.0.x or 3.3.2 RN code in it.

Upgrading RAPs to 6.1.x (continued)



- **History of RAP factory images**

- 3.3.2.18-RN (2009~2010)
- 5.0.0.2 (2010~2011)
- 5.0.4.0 (15 Oct 2011 ~ present)

- **What is on my RAP ?**

- “*show ap image version*”
- also visible on RAP console

```
Flash (Provisioning/Backup) Image Version String
-----
3.3.2.18-rn-3.1.5 (p4build@trinidad) #22927 Mon Nov 23
5.0.0.1 (p4build@cyprus) #24057 Wed May 5 19:15:32 PDT
```

```
rn-pilot-hk.homeip.net - KITTY

Access Points Image Version
-----
AP              Running Image Version String
                Matches  Num Matches  Num Mismatches  Bad Checksums  Bad Provisioning Checksums  Image Load Status  Flash (Provisioning/Backup) Image Version String
-----
172.18.163.139  6.1.3.0(p4build@corsica)#32142 Mon Jan 30 10:10:41 PST 2012  6.1.3.0(p4build@corsica)#32142 Mon Jan 30 10:10:41 PST 2012  3.3.2.18-rn-3.1.5(p4build@trinidad)#22927 Mon Nov 23
20 PST 2009 Yes 1 0 0 0 0 Done
172.18.163.138  6.1.3.0(p4build@corsica)#32142 Mon Jan 30 10:10:41 PST 2012  6.1.3.0(p4build@corsica)#32142 Mon Jan 30 10:10:41 PST 2012  5.0.0.1(p4build@cyprus)#24057 Wed May 5 19:15:32 PDT
Yes 1 0 0 0 0 Done
172.18.163.140  6.1.3.0(p4build@corsica)#32142 Mon Jan 30 10:35:23 PST 2012  6.1.3.0(p4build@corsica)#32142 Mon Jan 30 10:35:23 PST 2012
Yes 2 0 0 0 0 Done
172.18.163.142  6.1.3.0(p4build@corsica)#32142 Mon Jan 30 10:26:55 PST 2012  6.1.3.0(p4build@corsica)#32142 Mon Jan 30 10:26:55 PST 2012
Yes 1 0 0 1 0 Done
Total APs:4

networks All rights reserved
```

- **6.1 Upgrade challenge**

- The ArubaOS 6.x image is too big to be a provisioning image
- RAP just hangs after it is provisioned from RAP console
- Must upgrade provisioning image to 5.0.4.x before trying to upgrade to 6.1.x
 1. Ensure RAP is UP (*show ap active*)
 2. From CLI “**apflash ap-name *someRAP* backup-partition**”
- **apflash command will cause RAP to reboot**



- **A final comment about RAP upgrades**
 - During 3.x code timeframe, the ap-role did not allow svc-ftp, but it was added as a default in 5.x/6.x
 - Despite the fact a RAP communicates with IPSEC, there are generic protocols running inside the tunnel, ftp being one of them
 - FTP is used to upgrade the s/w on the RAP
 - By default RAP will try FTP a number of times before reverting to tftp, overall this can take 15 minutes or so to time out, delaying the upgrade.
 - Before upgrading a RAP network, please ensure that svc-ftp is permitted in one of the ACLs within the ap-role
 - “***show rights ap-role***” and look for entry allowing “user” to “controller” for svc-ftp

Upgrading RAPs to 6.1.x (continued)



(c620) #show rights ap-role

access-list List

Position Name Location

1 control
2 ap-acl

control

Priority Source Destination Service Action TimeRange Log Expired Queue TOS 8021P Blacklist Mirror

1 user any udp 68 deny Low 4
2 any any svc-icmp permit Low 4
3 any any svc-dns permit Low 4
4 any any svc-papi permit Low 4

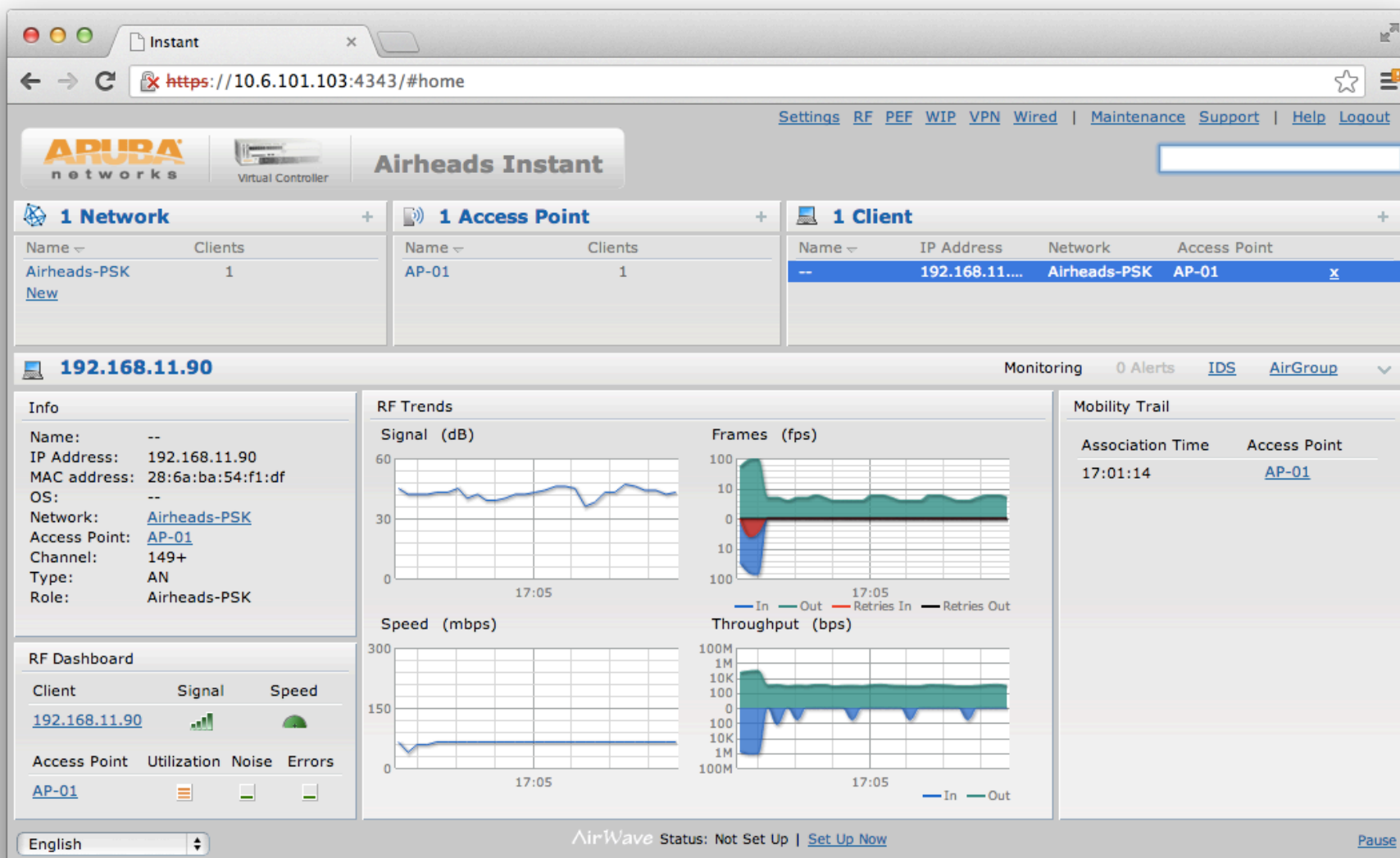
ap-acl

Priority Source Destination Service Action TimeRange Log Expired Queue TOS 8021P Blacklist Mirror

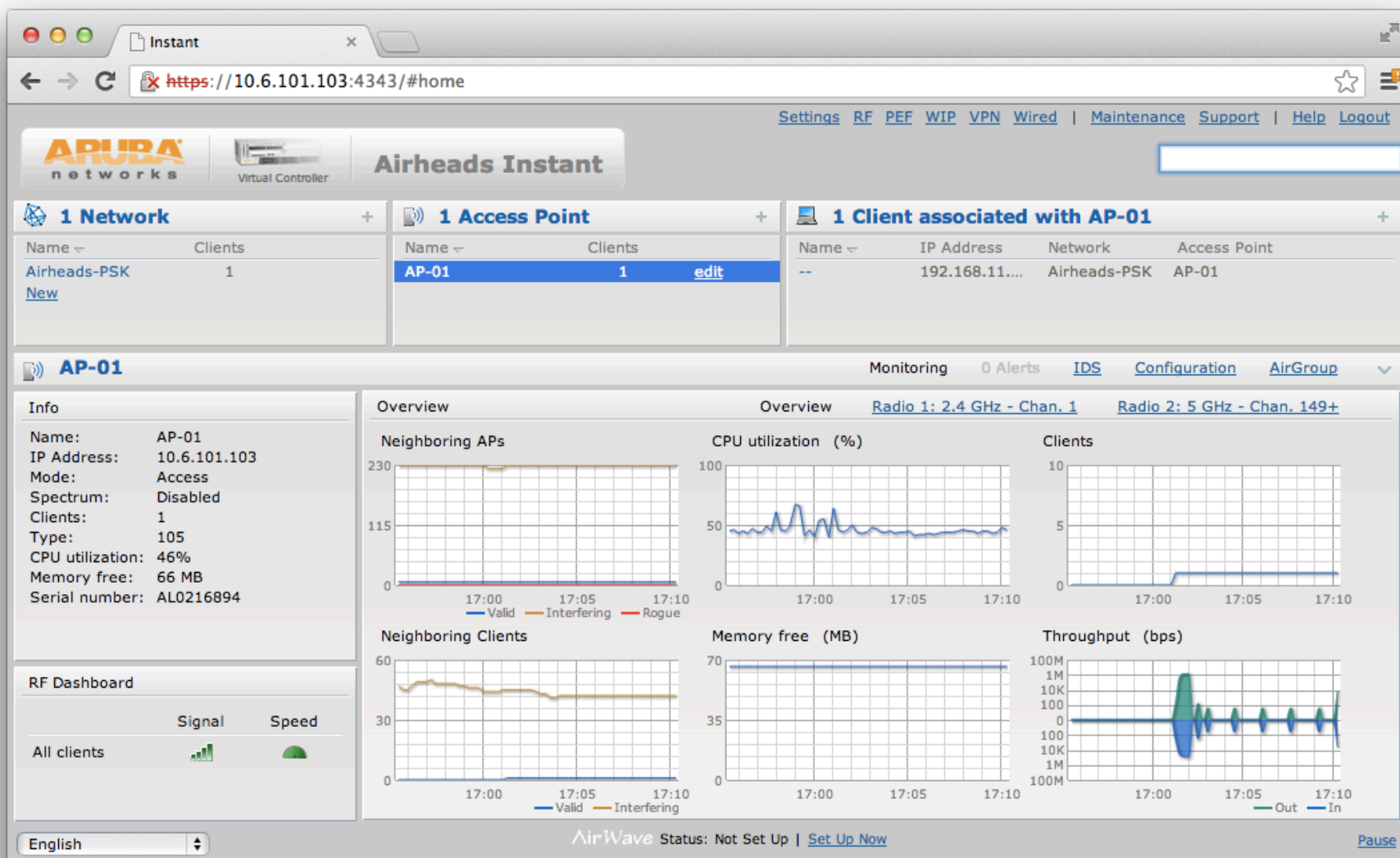
1 any any svc-gre permit Low 4
2 any any svc-syslog permit Low 4
3 any user svc-snmp permit Low 4
4 user any svc-http permit Low 4
5 user any svc-http-accl permit Low 4
6 user any svc-ntp permit Low 4
7 user controller svc-ftp permit Low 4

(c620) #

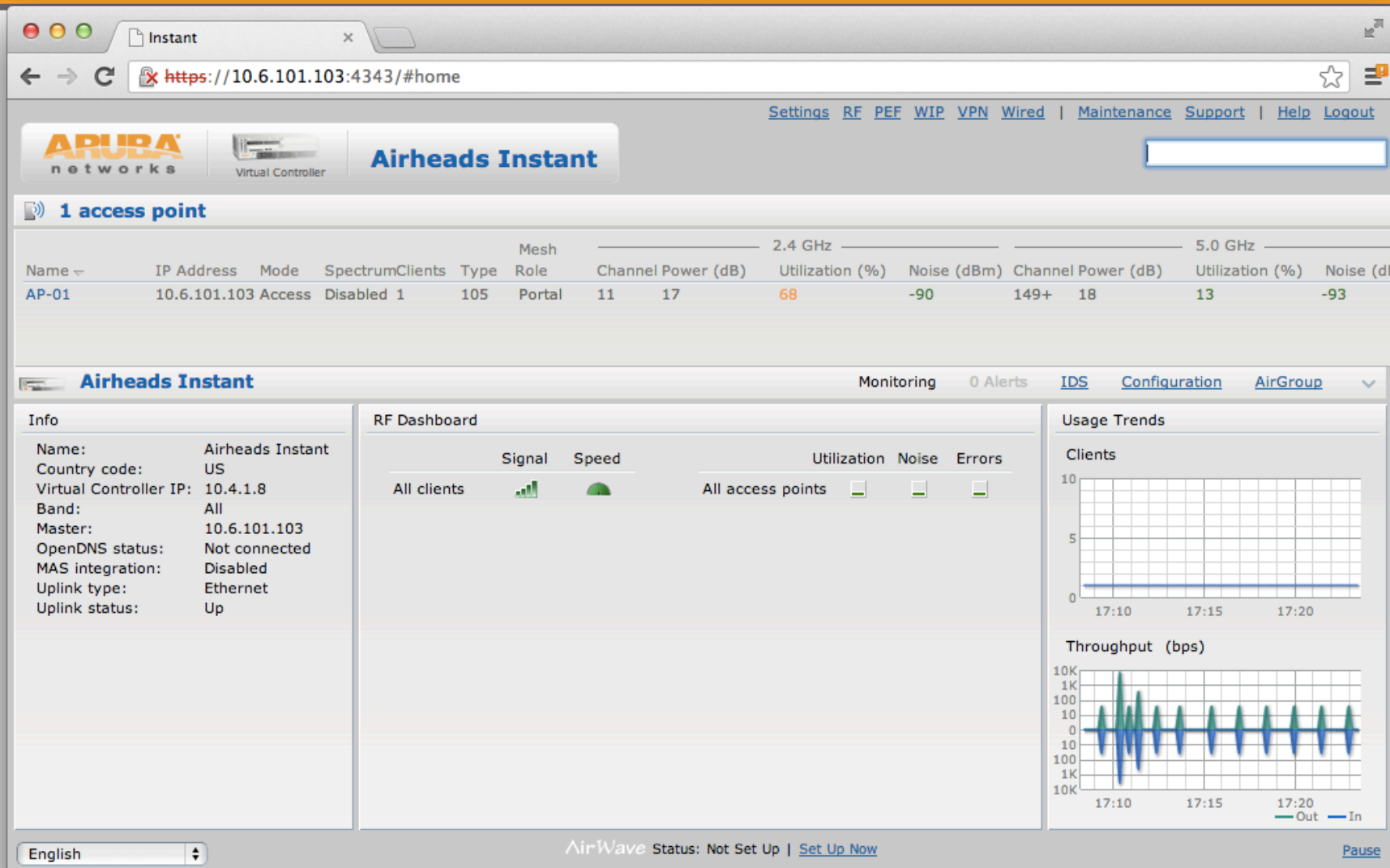
Aruba Instant – Client Information



Aruba Instant – AP Information



Aruba Instant – Radio information



Aruba Instant – Run commands from the Support screen



The screenshot shows the Aruba Instant web interface. The browser address bar displays `https://10.6.101.103:4343/#home`. The top navigation bar includes links for Settings, RF, PEF, WIP, VPN, Wired, Maintenance, Support, Help, and Logout. The 'Support' section is active, showing a command execution window.

Command: AP Radio 1 Stats ▼ Target: AP-01 (VC) ▼ Run Auto Run Filter Clear Save

AP-01

Rx Total CTS Frames Recvd	202662
Rx Total ACK Frames	211730
Rx Total Beacons Received	2070240
Rx Total Probe Requests	123531
Rx Total Probe Responses	235757
Rx Retry Frames	476
Channel Busy 1s	66
Channel Busy 4s	59
Channel Busy 64s	63
Ch Busy perct @ beacon intvl	63 63 63 65 65 66 67 65 74 71 65 76 58 61 82 69 68 57 56 59 59 62 61 57 55 58 58 58 60 55
Rx Time perct @ beacon intvl	53 53 55 54 56 55 55 53 65 59 51 70 37 45 65 59 47 42 43 47 49 39 51 48 44 48 48 52 46
Rx Discarded Events	703
Rx ARM Scan Frames	20930
Rx Data Frames Retried	180
Rx Data Frames	377
Rx Data Bytes	67469
Rx Time Data	76924
Rx Duplicate Frames	33
Rx Broadcast Data Frames	69

RADIO Stats

Parameter	Value
Rx Multicast Data Frames	161

Close

English ▼ AirWave Status: Not Set Up | Set Up Now Pause