AIRHEADS 2013

TAC

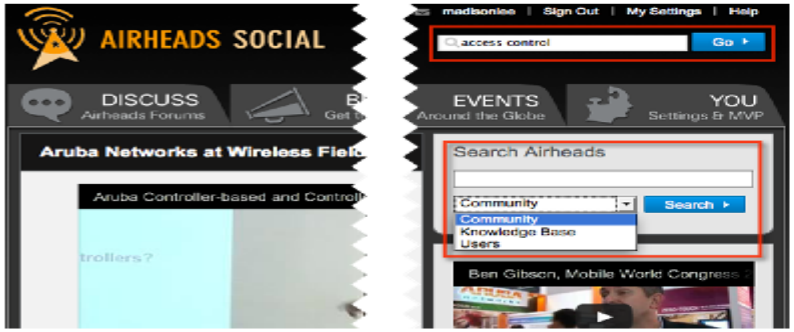
Madison Lee

Giles Scott

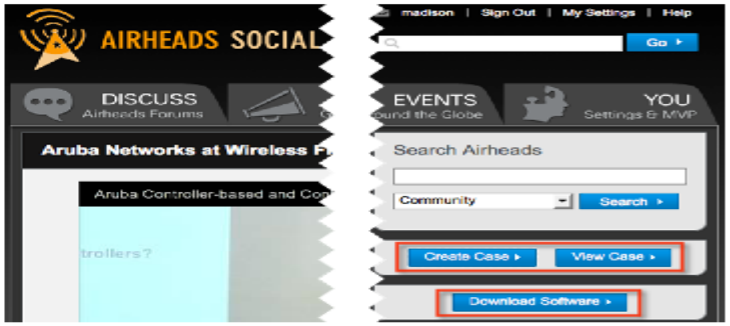
eSupport Project Update

- Enhanced Airheads Community Experience
  - ✓ Integrated Support Site with Airheads Community and Partner Center
  - ✓ Integrated Federated Search (all sites for all technical contents
  - ✓ Create & Manage TAC Cases directly from Community
  - ✓ Expanded Knowledge Base
- Entitlement Improvements
  - ✓ Investment in foundational Systems for streamlining Entitlement Information

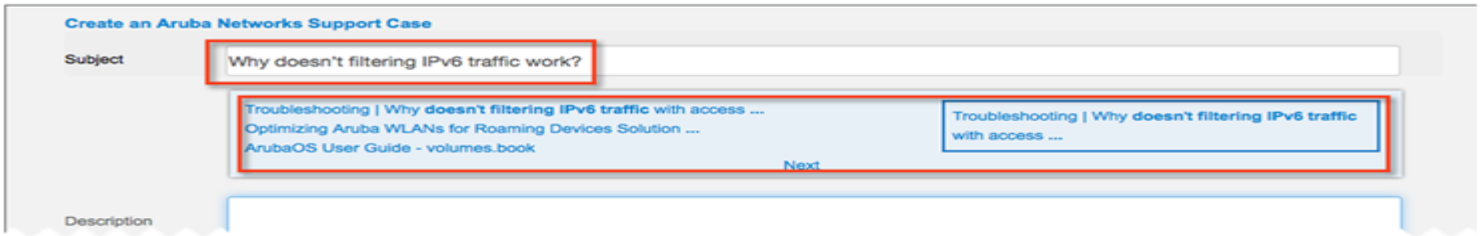
Find info using Federated or Site Search



Create/Mange TAC Cases or Access Software



Create TAC Cases directly from Community



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We have listened!

AIRHEADS 2013

Coming soon is Aruba Solutions exchange!

A way of pre-building sample config's for various complex configurations.

Internal beta now, external beta August

Solutions Exchange

ARUBA networks **Solution Exchange** Demo Suggest a Solution Send Feedback Giles Scott

Sort by: Views Votes Date Modified Alphabetical

Order by: Ascending Descending

[In-Dev] MAS Captive Portal May 31, 2013 4 Views 0 Votes CPPM CPG MAS	Captive Portal (Basic) May 31, 2013 48 Views 3 Votes AOS	Captive Portal (Advanced) May 31, 2013 54 Views 0 Votes CPPM AOS CPG	L2 GRE to DMZ controller with Captive Portal SSID May 31, 2013 31 Views 2 Votes CPPM AOS CPG	Tunnel Node configuration of MAS May 30, 2013 23 Views 1 Vote AOS MAS	Bandwidth Contract to Role May 23, 2013 5 Views 0 Votes AOS
Internal DHCP Server Scope May 23, 2013 3 Views 0 Votes AOS	NTP Server May 23, 2013 8 Views 0 Votes AOS	Wireless SSID (All Opmode) May 23, 2013 5 Views 0 Votes AOS	High Density SSID May 22, 2013 32 Views 1 Vote AOS	VIA VPN using IKEv1 and Internal User DB May 15, 2013 36 Views 0 Votes AOS	Point to Point Mesh May 15, 2013 29 Views 1 Vote AOS
Backup Controller May 10, 2013 20 Views 1 Vote AOS	Guest Portal with ClearPass May 08, 2013 63 Views 2 Votes CPPM AOS	Phone Home May 07, 2013 27 Views 0 Votes AOS			

Solutions Exchange

ARUBA networks **Solution Exchange** Demo Suggest a Solution Send Feedback

Captive Portal (Basic) - Create an Open System SSID using Internal Captive Portal and Database.

Description | SSID | VLAN | DHCP | Create User

Actions ▾ Previous Next Finish

3 Votes

Create user in Internal Database

Username

giles

Specify the username

Password

giles-123

Specify the password

Live Preview

```
  redirect-pause 3
  exit

user-role "tpl-test-logon"
  captive-portal "tpl-test"
  exit

aaa profile "tpl-test"
  initial-role "tpl-test-logon"
  exit

wlan virtual-ap "tpl-test"
  aaa-profile "tpl-test"
  ssid-profile "tpl-test"
  vlan 2010
  exit

ap-group "tpl-test"
  virtual-ap "tpl-test"
  exit
end

local-userdb add username "giles" password "giles-123" role "tpl-test"
```

Solutions Exchange

ARUBA networks **Solution Exchange** Demo Suggest a Solution Send Feedback

Captive Portal (Advanced) - Create an internal or external captive portal configuration

Description | SSID | Captive Portal Host | RADIUS Host | VLAN | DHCP | Create User

Actions ▾ Previous Next Finish

0 Votes

Create an SSID profile

Profile Prefix

tpl

Specify prefix for the profiles. Default prefix is "tpl"

ESSID

test

Name that will be broadcasted

SSID Encryption Mode

No encryption

WPA Passphrase (PSK)

Passphrase required to join the SSID. The passphrase is also used to encrypt the wireless traffic.

Live Preview

```
wlan ssid-profile "tpl-test"
  essid "test"
  wpa-passphrase "%wpa_passphrase%"
  opmode opensystem
  exit

aaa authentication dot1x "tpl-test"
  exit

netdestination "tpl-test-allow-external-hosts"
  no invert
  host %external_captive_portal_host% position 1
  exit

ip access-list session "tpl-test-allow-external-hosts"
  user alias "tpl-test-allow-external-hosts" svc-http permit
  user alias "tpl-test-allow-external-hosts" svc-https permit
  exit

aaa authentication captive-portal "tpl-test"
  login-page "/auth/index.html"
  login-page "%external_login_page%"
  welcome-page "/auth/welcome.html"
```

ArubaOS – Version Selection

General Availability

AOS 6.2.1.2 this week!

Early Deployment

None at current

Technology Release

AOS 6.1.3.6 AirGroup

Valid User

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Protecting the User Table

Valid clients can for unknown reason

Smartphone Issues

- **Major smartphone Manufacturer;**

  The impossible is possible;

  Anything from basic ARP issues to DHCP problems to incorrect IP usage.

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Performance

Poor performance ?

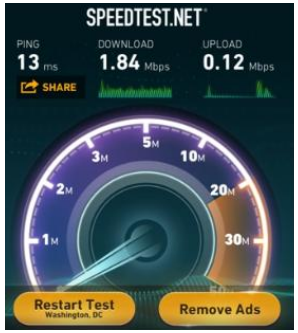
Signal Fluctuations ?

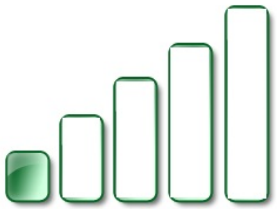
Low signal although client is near an Access-Point !

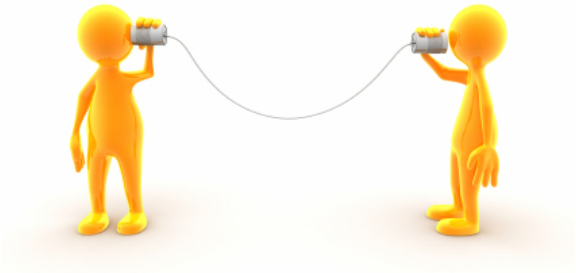
Poor Roaming ?

Choppy Voice ?

Getting lower speeds than what you should get ?







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Is your RF environment Healthy ?

- **Aruba Dashboard**

All Radios 5 GHz 2.4 GHz

Clients

Total: 394

Client PHY

a 3 a HT 58 a HT 40MHz 113
g 22 g HT 195 g HT 40MHz 0
b 3

SNR (dB)

10 29 59 81 80 54 36 9 2
< 10 15 20 25 30 35 40 45 50 55 60

Speed (bps)

16 23 24 32 55 103 67
0 6 M 12 M 24 M 36 M 54 M 108 M 450 M

Goodput (bps)

62 119 96 35 45 7
0 6 M 12 M 24 M 36 M 54 M 108 M 450 M

To Client (bps)

55 79 108 36 25 26 3
0 6 M 12 M 24 M 36 M 54 M 108 M 450 M

From Client (bps)

109 131 69 13 4
0 6 M 12 M 24 M 36 M 54 M 108 M 450 M

APs

Overall Goodput (bps): 19.6 M

	To Client	From Client
Goodput (bps):	22.2 M	15.9 M
Frames dropped:	1% (5.4 K/408 K)	N/A
Frames types:		
Frame rates:		

Noise Floor (dBm)

38 19 15
-110 -105 -100 -95 -90 -85 -80 -75 -70 -65

Channel Busy (%)

42 14 9 2 1 2 1 1
0 10 20 30 40 50 60 70 80 90 100

Interference (%)

72
0 10 20 30 40 50 60 70 80 90 100

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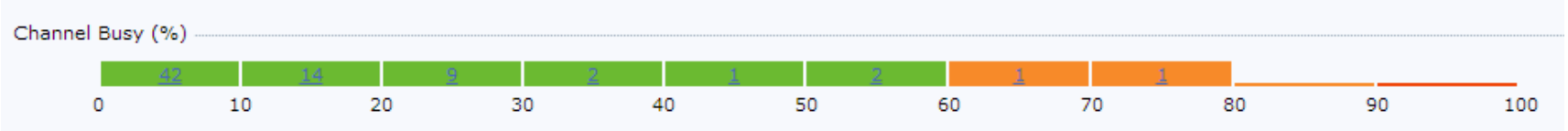
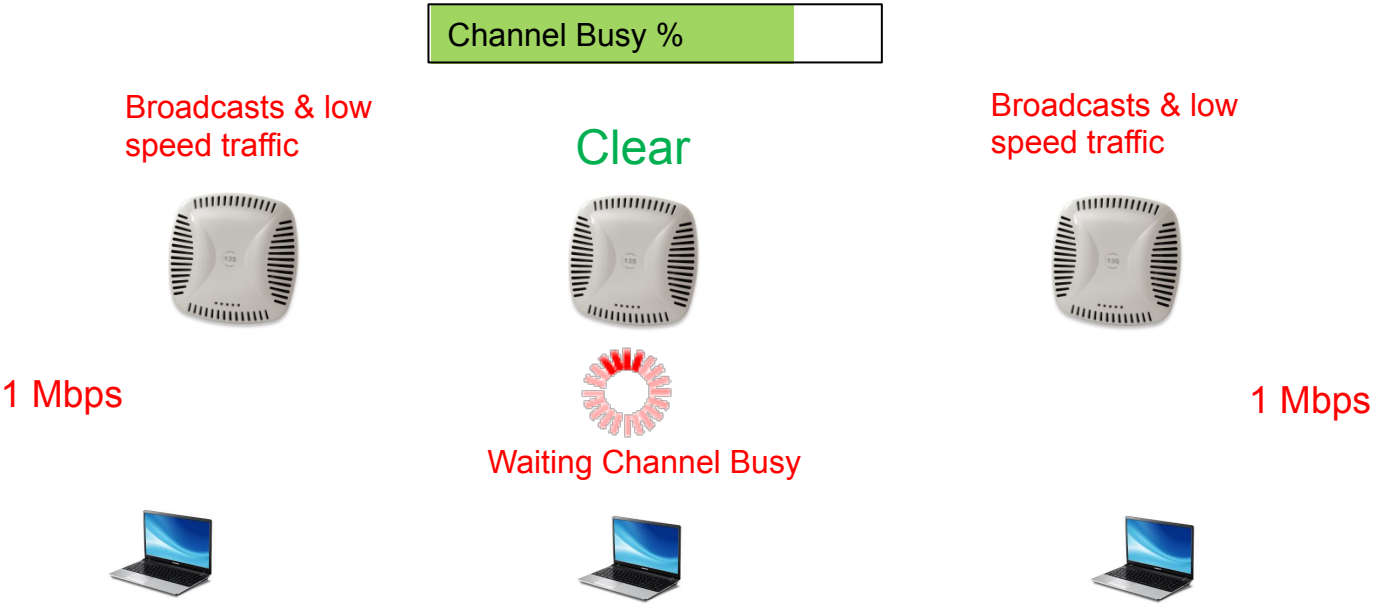
Channel Busy



- How many of your Access-Points are suffering from Busy Channel ?
- Why is Channel Busy ?
- How to reduce Channel Busy ?



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Why is Channel Busy

- Too many frames at low speed (1 , 2 Mbps) traffic
  - Broadcasts and Multicast
  - Beacons
  - Faraway Clients
- Too many surrounding APs transmitting on same channel
- Too Many IDS containments
- Non Wi-Fi interference sources

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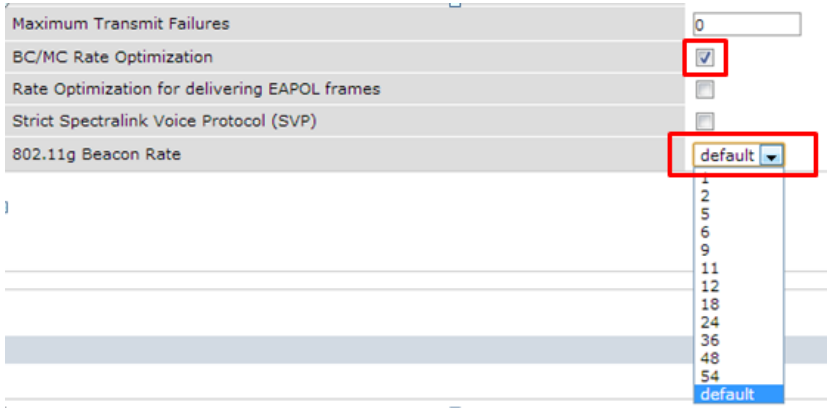
How to reduce Channel Busy ?

- Drop Broadcasts on Virtual-Aps as long as it is not required
- Remove data rates 1,2 Mbps from Tx and Basic rates (in ALL SSIDs)

- Enable (BC/MC Optimization) in ALL your configured SSIDs
- If you have many SSIDs (more than 4 SSID) make sure to use higher data rate for Beacons



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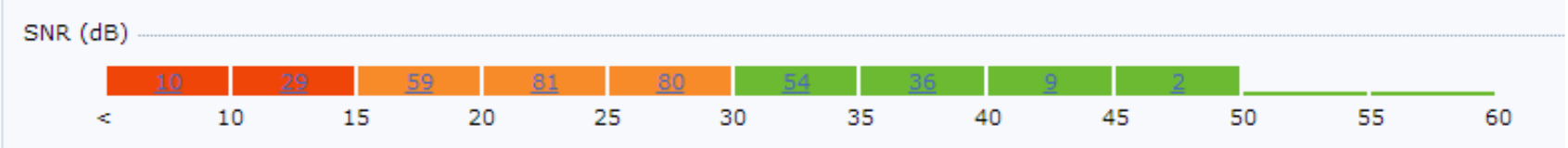
Low SNR



- Why Do I have Low SNR although I have good coverage?
- How can I Fix Low SNR ?

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Tin Can Telephone Analogy

Wi-Fi Client to AP RF association
Requires 2 devices.

Each device must transmit to,
and receive from the other device
for the connection to work.

The Tin Can Telephone requires
TWO cans.

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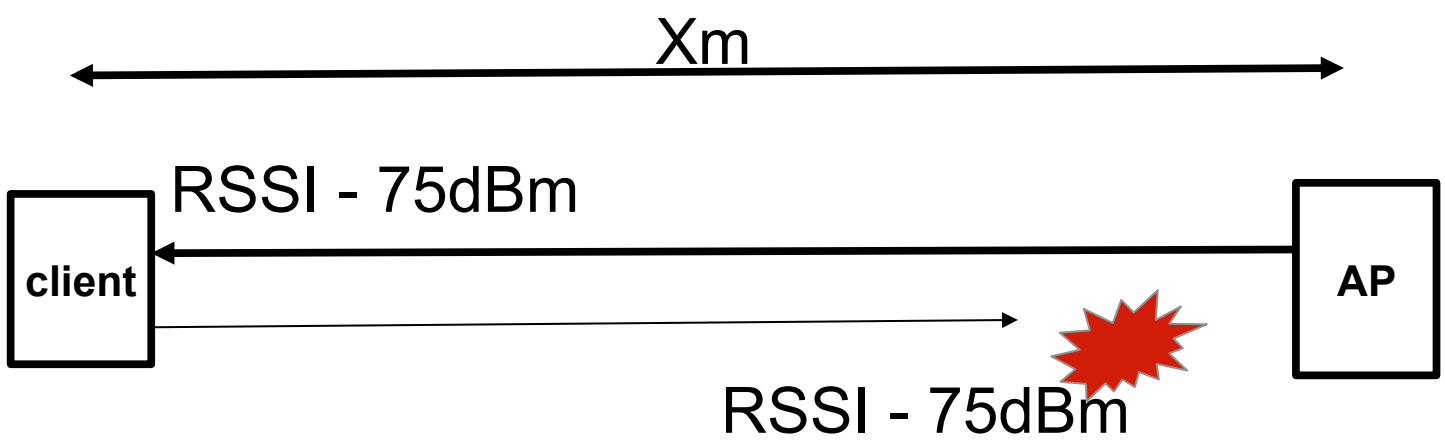
Tin Can Telephone Analogy

Wi-Fi Client RF association to an AP is **TWO WAY** communication
Each participant must send to, and receive from the other side.
Over a given distance, the client may “hear” the AP fine.

But if the AP cannot “hear” the client at the same distance...



The AP can transmit at higher raw power than a mobile device.

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Tin Can Telephone Analogy

More AP power is not necessarily the answer.
Good service depends on clean two-way communication.
Each side is **equally responsible** for the connection
(client drivers ?)

Low receive signal at one, or both ends will result in lost frames,
Frame retries, low data rates, and frame loss.

Use the controller dashboard/monitoring screens or CLI commands
To verify received signal strength, data rates, and retries at
both ends

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Tin Can Telephone Analogy

ARUBA networks MOBILITY CONTROLLER | Monitoring > Client Summary

Dashboard | Monitoring | Configuration | Diagnostics | Maintenance

Last updated: 02:01:29 pm | ? | Logout adr

Performance
Usage
Potential Issues
WLANs
Access Points
Clients

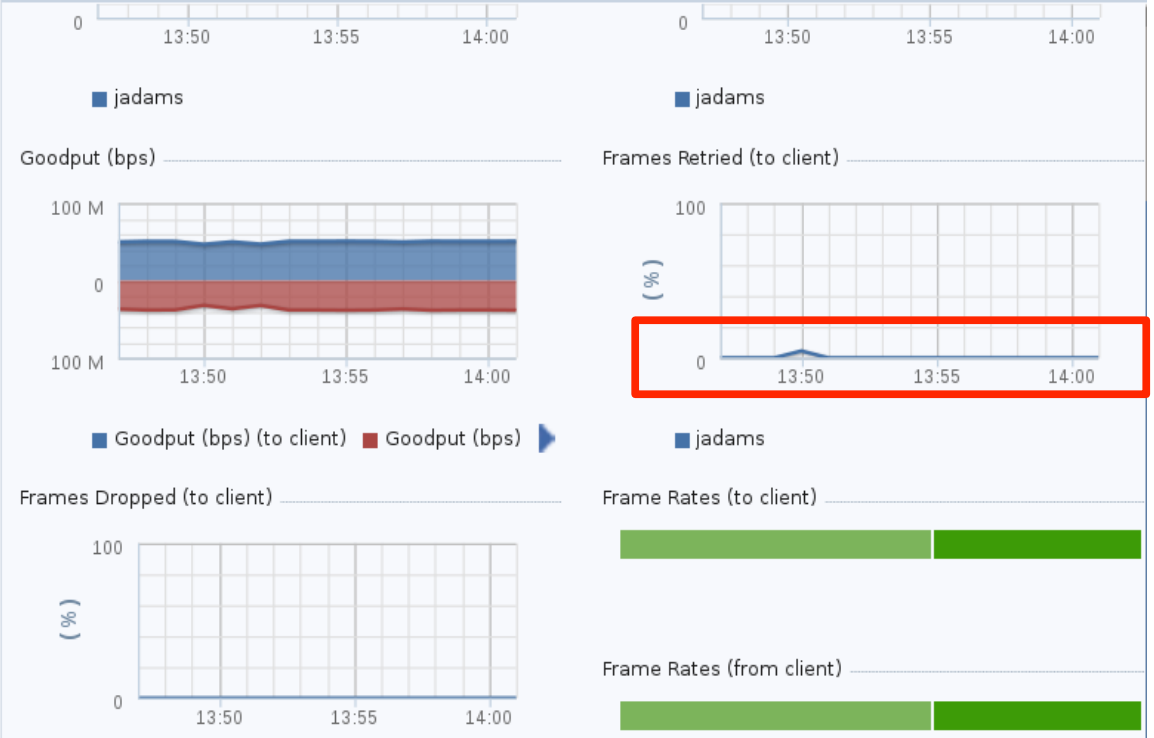
From Client: jadams

Frames Dropped (to client)	0%
Frames (from client)	60
Frames Retried (from client)	0%
WLAN	ssid_gtc
AP Name	ap105_9ddb
Channel	64
SNR Quality	normal
Speed Quality	normal
Goodput Quality	normal
Frames Retried (to client) Quality	normal
Frames Dropped (to client) Quality	normal

Air Quality

SNR (dB)	61
Speed (bps)	65 M
Max Speed (bps)	65 M
AP Name	ap105_9ddb
Channel	64
Noise Floor (dBm)	-92
Channel Utilization	
Channel Busy	2%
Channel Free	98%
Interference	< 1%
SNR Quality	normal
Speed Quality	normal

Charts: From Client: jadams



Retries over time
Correlate to frame loss

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Tin Can Telephone Analogy

Sort on SNR
Filter on SNR < X

ARUBA networks | MOBILITY CONTROLLER | Monitoring > Clients

NMS Enable

Dashboard | Monitoring | Configuration | Diagnostics | Maintenance

Last updated: 01:57:09 pm | ? | Logout admin

- Performance
- Usage
- Potential Issues
- WLANs
- Access Points
- > Clients

Clients (2) — Show: Default Columns

Client	Role	SNR (dB)	Speed (bps)	Max Speed (bps)	Goodput (bps)	Usage (bps)	Frames	Frames (to client)	Frames Retried (to client)	Frames D client)
jadams	authenticated	61	65 M	65 M	42.4 M	17.4 K	131	65	0%	
aadams	authenticated	80	65 M	65 M	12.2 M	2.2 K	119	59	3% (2/59)	

- ArubaOS CLI:

- Show ap debug client-table ap-name <apname>
- show ap debug mgmt-frames client-mac <mac address>

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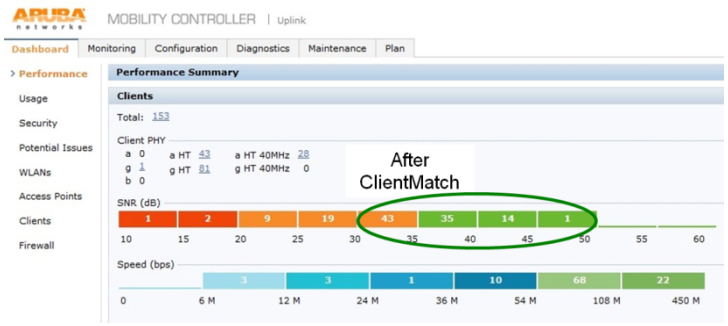
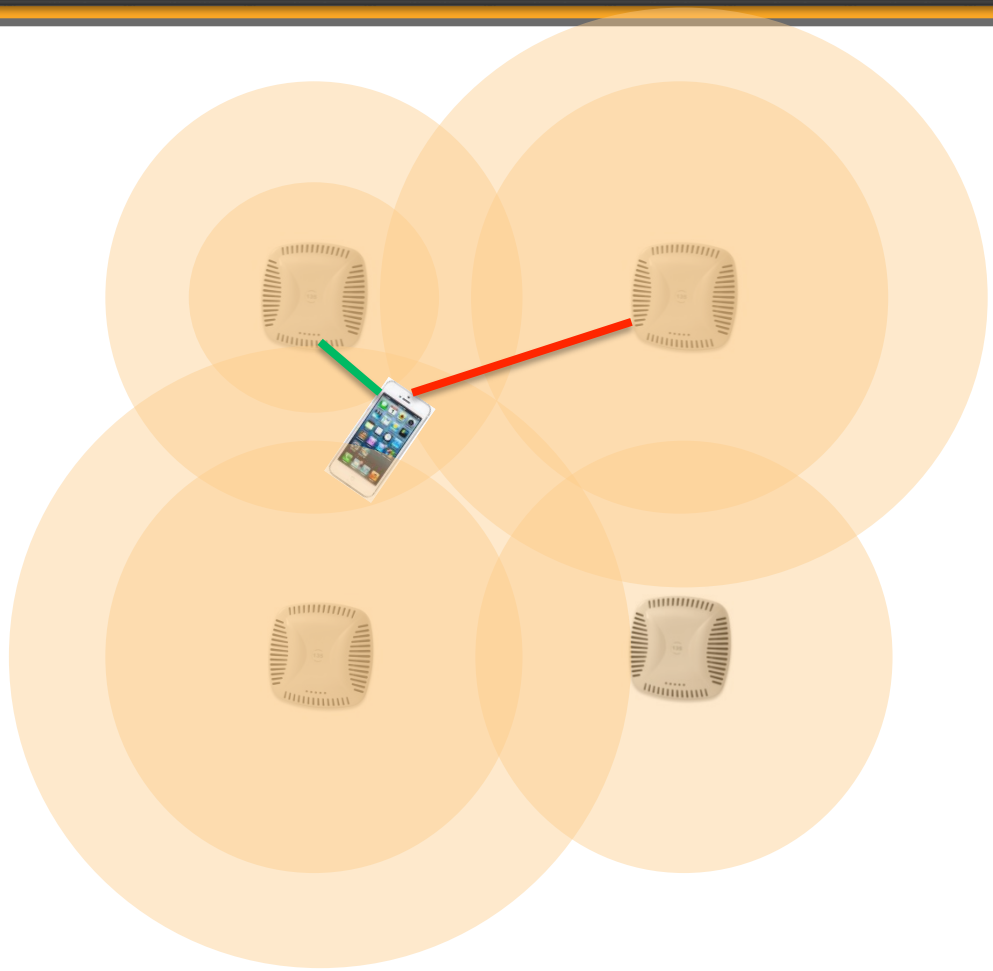
How can I Fix Low SNR ?

- ARM Settings

  Min Tx EIRP
  Max Tx EIRP
- Data Rate Settings

  Disable low data rates
- Local-Probe-Request threshold
- 6.3 Client-Match





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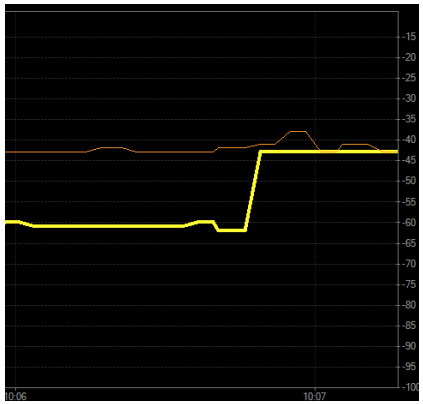
Advanced Features

- Temporal Diversity
- Feature in HT SSID Profile
- Disabled By Default
- Enables software retry mechanism that help decrease packet drops

- CSD Override
  - Enabled By default
  - Feature in HT Radio Profile
  - allows the AP to send control traffic using single Antenna
  - Required for some clients (Cisco phones / Motorola scanners …)
  - Can result in lower SNR when enabled



- Maximum Transmit Failures
  - Default is 0
  - If non-zero can cause client to disconnect after the transmit failure limit is reached (bad impact for apple Devices)

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AOS 6.3 New troubleshooting Tools

- **Client Packet Capture**

Search Results

Clients All | IPv4 | IPv6 |

	User Name	Device Type	MAC address	Client IP	User Role	A
○		Win 7	a0:88:b4:50:cf:f0	172.16.1.186	authenticated	
○		Win 7	a0:88:b4:50:cf:f0	10.240.104.158	authenticated	

1 | 1-2

Status | Profile | Client Activity | Packet Capture

```
(Aruba7210) #packet-capture destination ip-address 172.16.1.252
(Aruba7210) #packet-capture datapath wifi-client a0:88:b4:50:cf:f0 all
(Aruba7210) #show packet-capture

Active Capture Destination
--------------------------
Destination     IP          172.16.1.252


Active Capture (Controlpath)
----------------------------
Interprocess    Disabled
Sysmsg          Disabled
TCP             Disabled
UDP             Disabled
Other           Disabled


Active Capture (Datapath)
-------------------------
Wifi-Client     Enabled     Mac: a0:88:b4:50:cf:f0   Filter: All
Ipsec           Disabled
```

Enterprise Client 172.16.1.186 > Packet Capture (172.16.1.199)

Search Result

	ID	Type	Radio	Channel	Packets	Status	Target	Filter

None found.

Refresh | Stop | Delete | Pause | Resume | New

New Raw Packet Capture | Launch WildPackets

```
and
    STA IS a0:88:b4:50:cf:f0
    Packet Type IS All
```


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6.3 New troubleshooting Tools

- **Show Configuration Difference**

```
(Aruba7210) #show configuration diff

wlan virtual-ap "VAP1"
wlan virtual-ap "VAP1" broadcast-filter all
wlan virtual-ap "VAP1" broadcast-filter arp
wlan ssid-profile "SSID1"
wlan ssid-profile "SSID1" g-tx-rates
wlan ssid-profile "SSID1" g-tx-rates 1
wlan ssid-profile "SSID1" g-tx-rates 5 6
wlan ssid-profile "SSID1" g-tx-rates 5 6 11 12 18 24 36 48 54
wlan ssid-profile "SSID1" g-basic-rates 5 6
no packet-capture datapath wifi-client a0:88:b4:50:cf:f0 all
```

- **Extended Ping**

```
(Aruba7210) #ping 172.16.1.254 ?
count                   The number of ping packets [ 1 - 100 ] that are sent
                        to the target-ip-address.
df-flag                 Sets the Dont-Fragment Flag.
packet-size             The size in bytes [ 10 - 2000 ] of a ping datagram.
source                  Sets the source interface for a ping datagram.
<cr>
```

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Reminder

- **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**
  - https://kb.arubanetworks.com/
- **Raise a ticket for any product, RMA, anything !**
  - support@arubanetworks.com
- **Requests for Enhancements (RFE)**
  - Please discuss with your SE/Sales team
- **Outdoor planner tool**
  - https://outdoorplanner.arubanetworks.com/

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