aruba
a Hewlett Packard Enterprise company

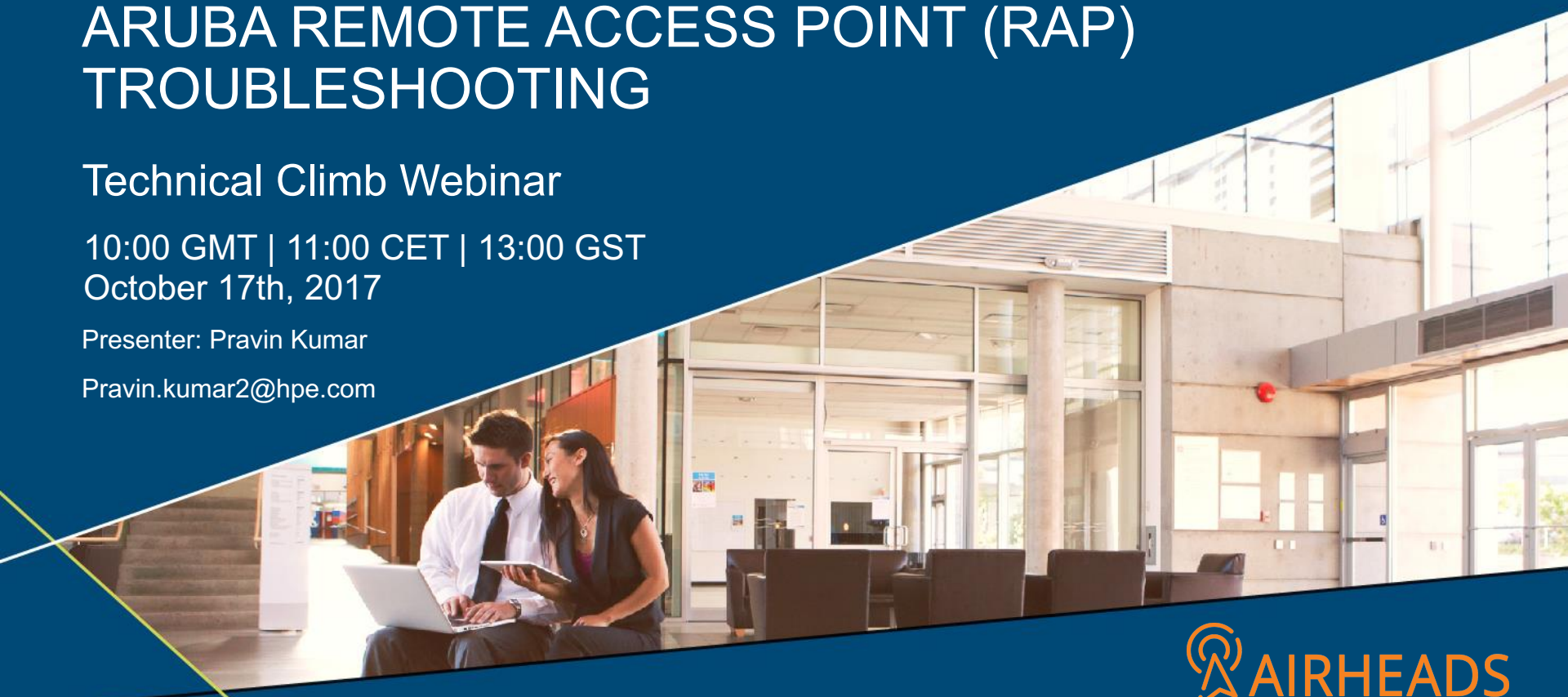
ARUBA REMOTE ACCESS POINT (RAP) TROUBLESHOOTING

Technical Climb Webinar

10:00 GMT | 11:00 CET | 13:00 GST
October 17th, 2017

Presenter: Pravin Kumar

Pravin.kumar2@hpe.com



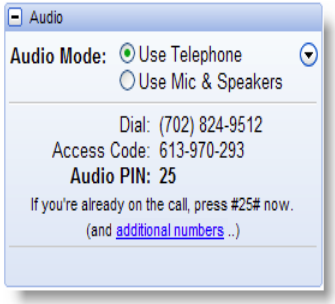
AIRHEADS COMMUNITY

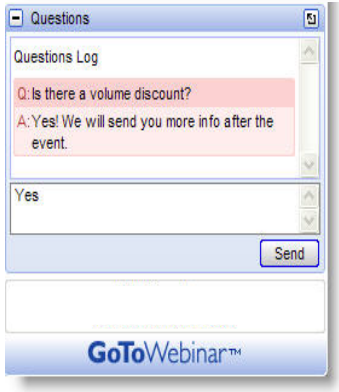
Welcome to the Technical Climb Webinar

Listen to this webinar using the computer audio broadcasting or dial in by phone.

The dial in number can be found in the audio panel, click additional numbers to view local dial in numbers.

If you experience any difficulties accessing the webinar contact us using the questions panel.



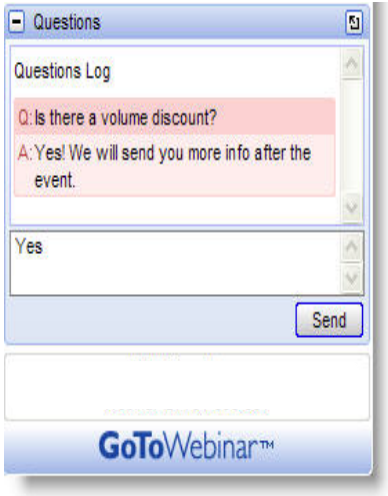


Housekeeping

This image cannot currently be displayed.

This webinar will be recorded

All lines will be muted during the webinar



This image cannot currently be displayed.

How can you ask questions?
Use the question panel on your screen

This image cannot currently be displayed.

The recorded presentation will be posted on Arubapedia for Partners (https://arubapedia.arubanetworks.com/afp/)

RAP SUPPORT IN 8.X

aruba
a Hewlett Packard
Enterprise company

Agenda

Introduction
RAP support in clustering
Terminology
Configuration
Troubleshooting and Logs
Debugging commands
Limitations

Introduction

Without Cluster:

- RAP should terminate on VRRP-IP or needs to configure lms & bkp-lms for redundancy
- Client will deauth when AP fail over to other controller
- Client traffic is interrupted during failover
- RAP needs to download entire config on every rebootstrap/failover

With Cluster (8.x):

- Classic cluster controller supports redundancy for both Aps and clients
- Dormant(standby) entry will be created for wireless users on standby controller
- RAP will establish tunnel with all cluster members with same inner-ip for easy of management.
- Cluster is limited to max 4 nodes in case of RAP

RAP SUPPORT IN CLUSTERING

aruba
a Hewlett Packard
Enterprise company

Terminology

A-AAC

Active AP anchor controller, role given to AP where it is terminated.
Config will be download from A-AAC controller.

S-AAC

Standby AP anchor controller, role given to AP where standby tunnel is established on controller.
When active goes down Standby controller becomes active

Terminology Contd..

UAC

User Anchor Controller, a role given to a controller from individual User perspective. UAC handles all the wireless client traffic, including association/disassociation notification, authentication, and all the unicast traffic between controller and the client.

The purpose of UAC is to fix the controller so that when wireless client roams between APs, the controller remains the same within the cluster.

S-UAC

Standby Controller from the User perspective

User fails over to this controllers on Active UAC down

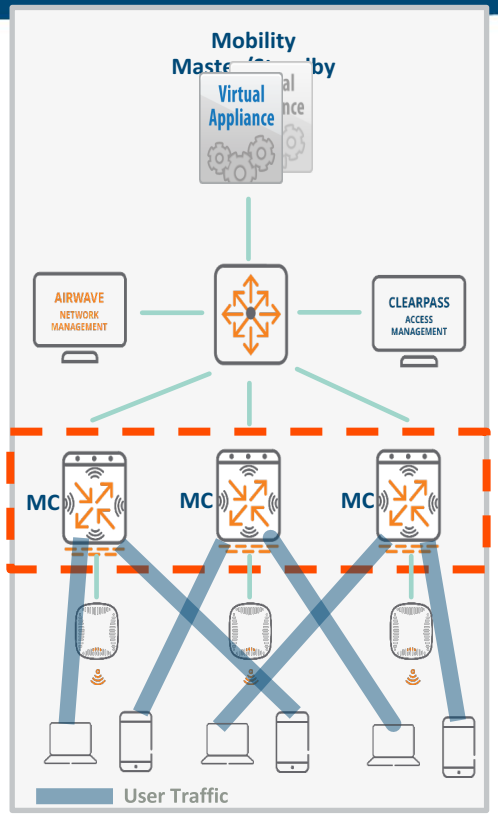
Clustering overview

Clustering for Mission Critical Networks

1. **Seamless Campus Roaming**
   Clients stay anchored to a single MD when roaming across controllers

2. **Hitless Client Failover**
   User traffic uninterrupted upon cluster member failure

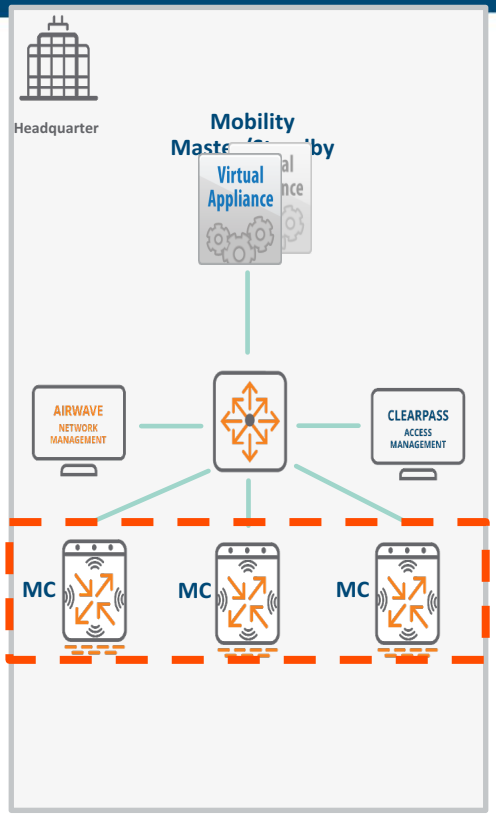
3. **Client Load Balancing**
   Users automatically load balanced across cluster members



Clustering

Highlights

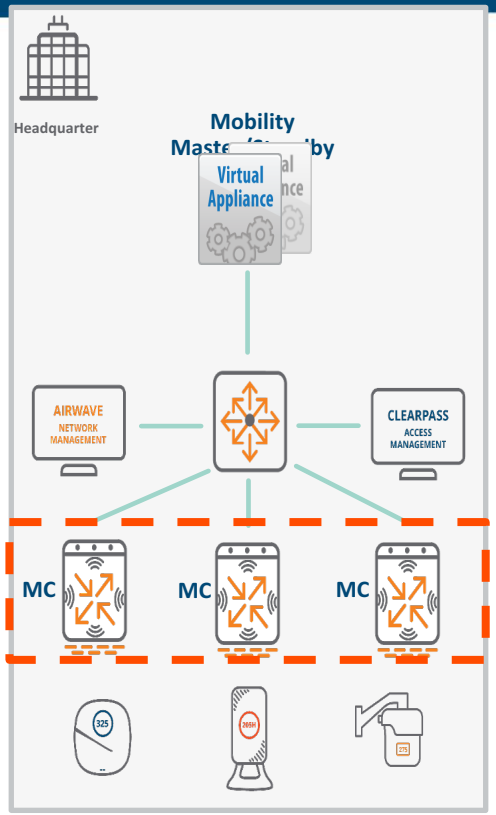
1. Available ONLY with Mobility Master
2. Only among Managed Devices (not MM)
3. No License needed



Clustering

Highlights

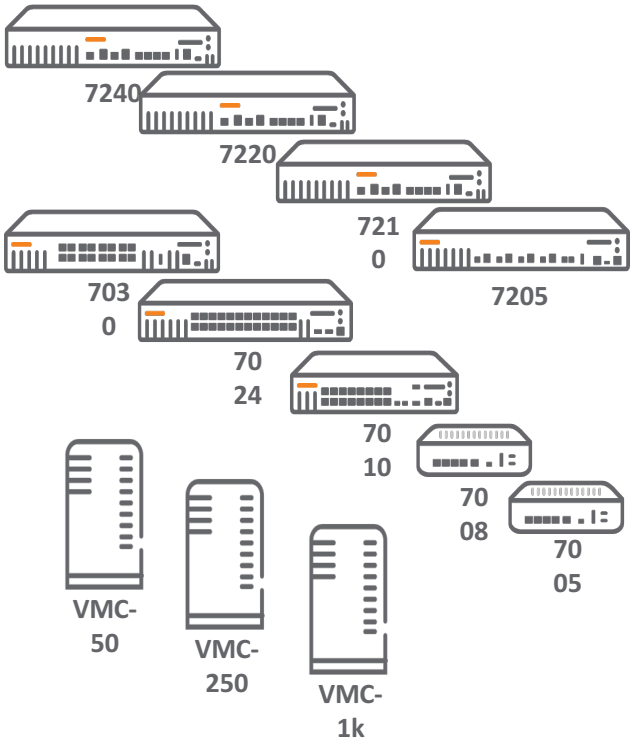
1. Available ONLY with Mobility Master
2. Only among Managed Devices (not MM)
3. No License needed
4. CAP, RAP and Mesh AP support



Clustering

Highlights

5 72xx, 70xx and VMC supported



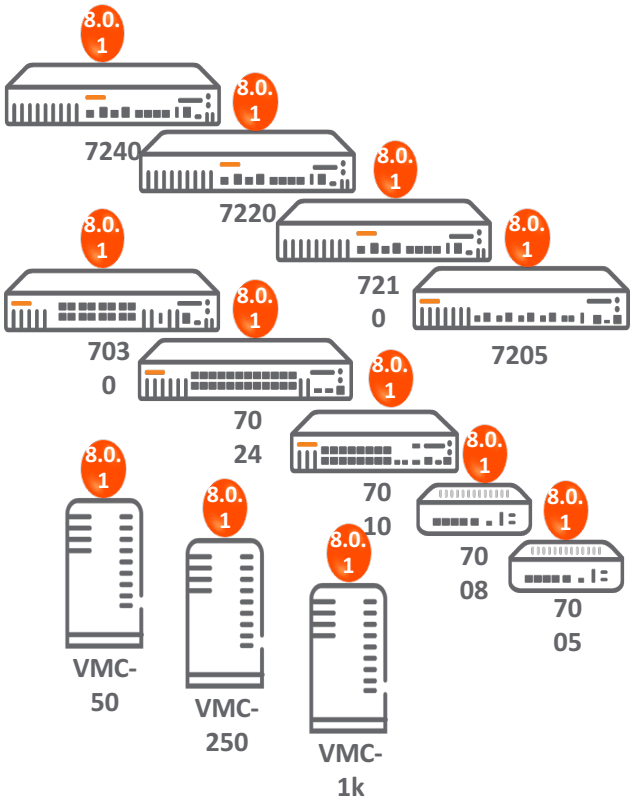
Clustering

Highlights

8.0.
0

5 72xx, 70xx and VMC supported

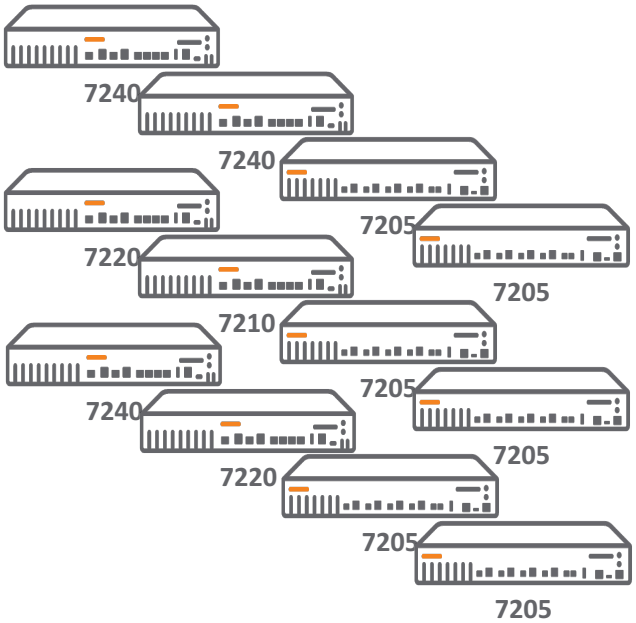
6 All Managed Devices need to run the same software version



Clustering

Cluster Capacity

1 Up to 12 nodes in a cluster when using 72xx devices

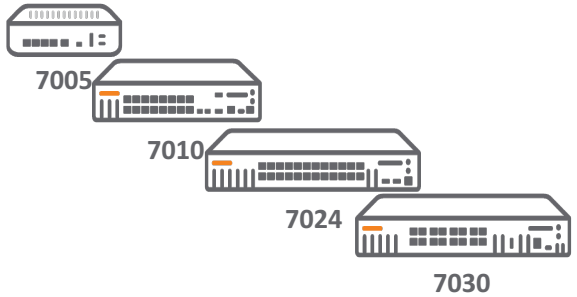


Clustering

Cluster Capacity

1. Up to 12 nodes in a cluster when using 72xx devices

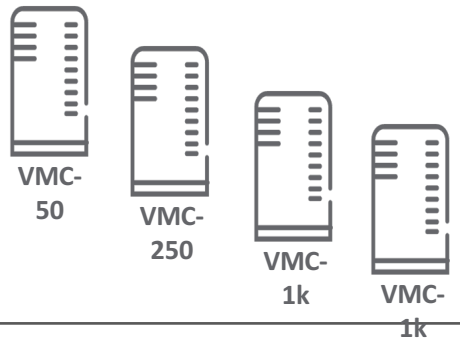
2. Up to 4 nodes in a cluster when using 70xx devices



Clustering

Cluster Capacity

1. Up to 12 nodes in a cluster when using 72xx devices
2. Up to 4 nodes in a cluster when using 70xx devices
3. Up to 4 nodes in a cluster when using VMC devices



Clustering

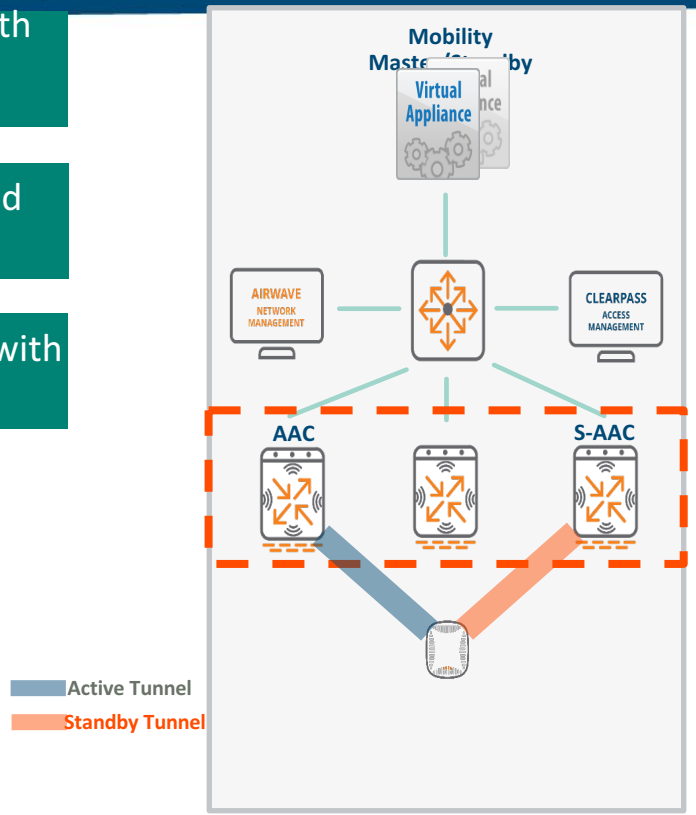
Key Considerations

1. Clustering and HA-AP Fast Failover mutually exclusive
2. Cluster members need to run the same firmware version
3. Size of Cluster terminating RAPs limited to 4
4. Mix of 72xx and 70xx devices in a cluster not recommended

Clustering

AP Anchor Controller (AAC)

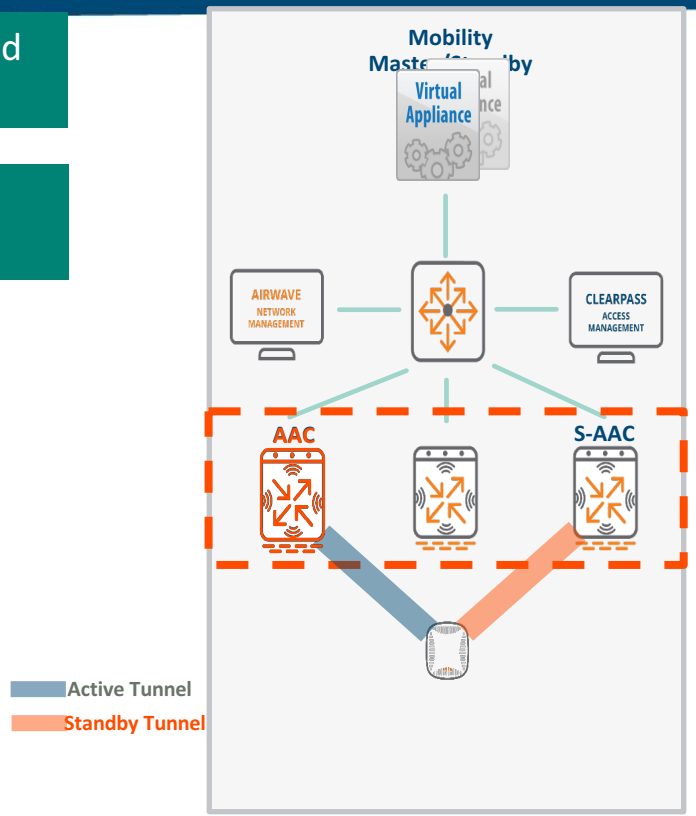
1. AP sets up Active Tunnels with its LMS (AAC)
2. S-AAC is dynamically assigned from other cluster members
3. AP sets up Standby Tunnels with S-AAC



Clustering

AAC Failover

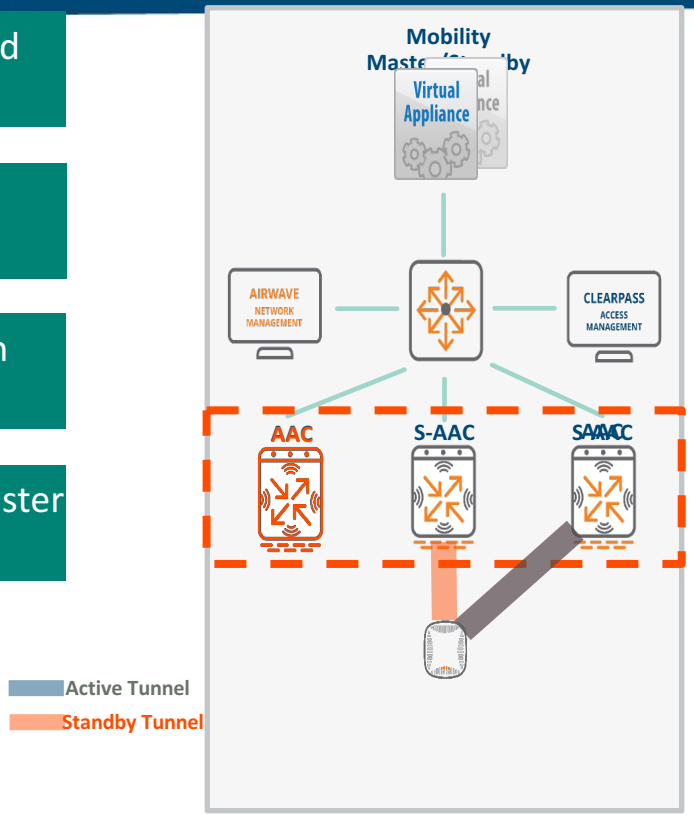
1. AAC fails and Failure detected by S-AAC
2. AP tears tunnel and S-AAC instructs AP to fail over



Clustering

AAC Failover

1. AAC fails and Failure detected by S-AAC
2. AP tears tunnel and S-AAC instructs AP to fail over
3. AP builds Active tunnels with new AAC
4. New S-AAC is assigned by Cluster Leader



CLI Configuration

- Create rap pool on MM/mynode node
  - lc-rap-pool cluster-rap-pool <StartAddress> <EndAddress>

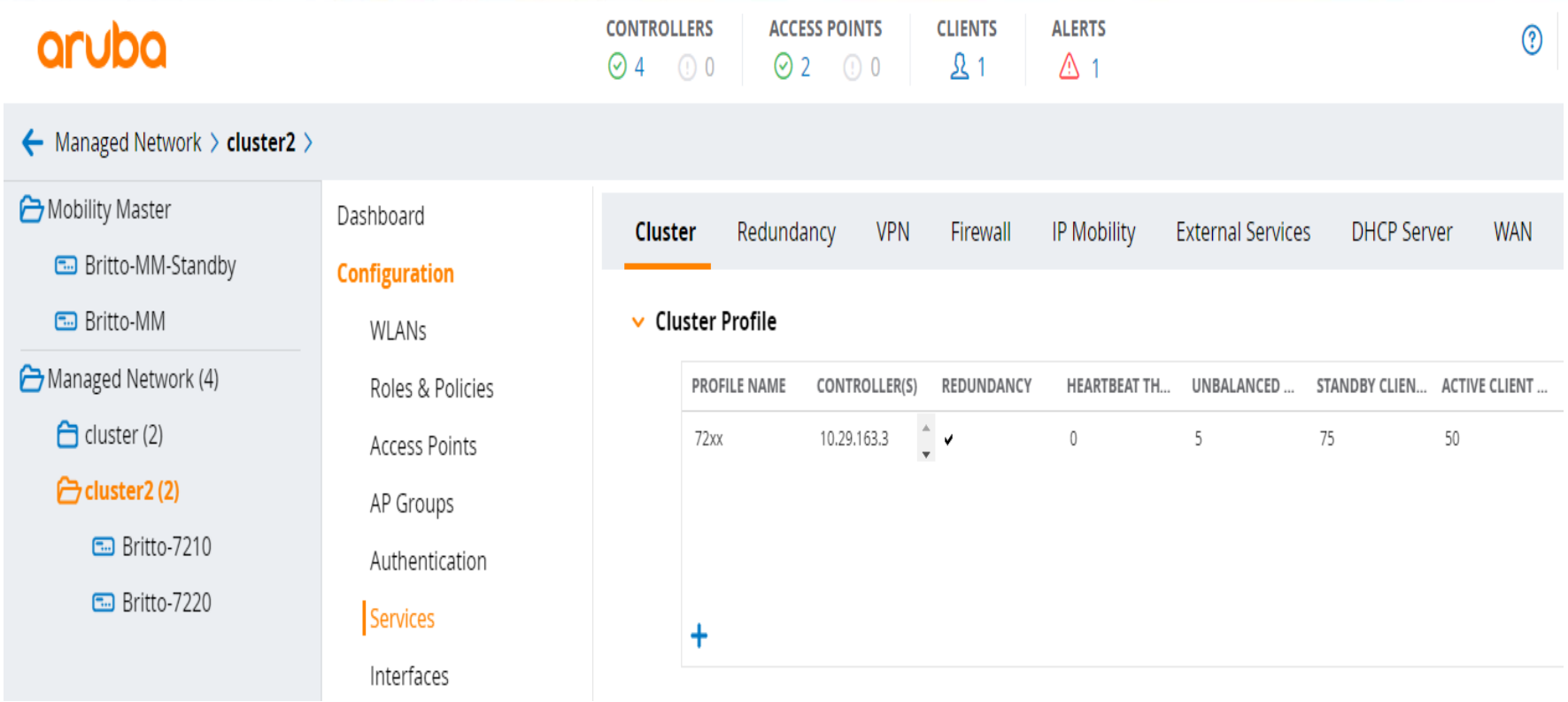
Configure cluster profile at node

```
(Aruba) [cluster2] (config) #lc-cluster group-profile 72xx
(Aruba) [cluster2] (Classic Controller Cluster Profile "72xx")#controller 10.29.163.2
(Aruba) [cluster2] (Classic Controller Cluster Profile "72xx")# controller 10.29.163.3
(Aruba) [cluster2] (Classic Controller Cluster Profile "72xx")# #redundancy
(Aruba) [cluster2] (Classic Controller Cluster Profile "72xx")# #write memory
```

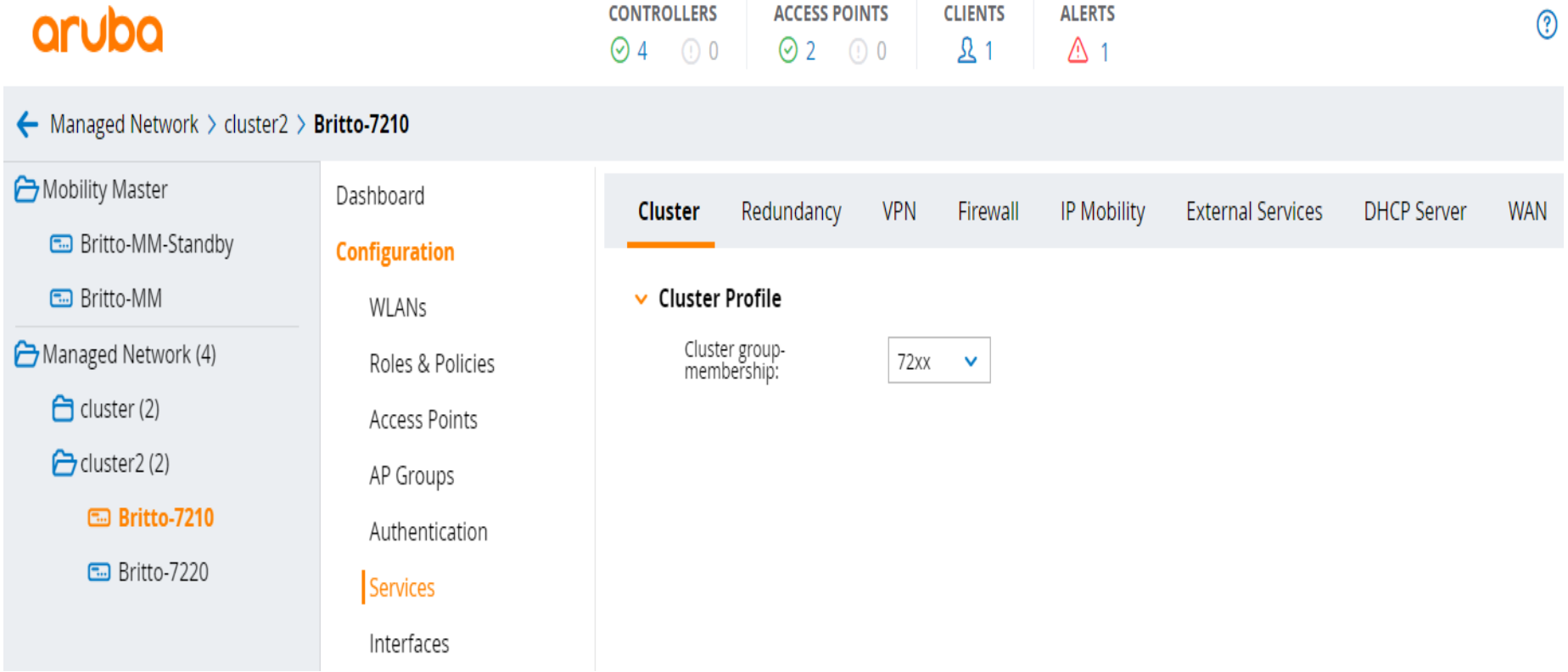
- Enable cluster membership on all nodes

```
(Aruba) [cluster2] (config) #change-config-node /md/cluster2/00:1a:1e:01:2f:58
(Aruba) [00:1a:1e:01:2f:58] (config) #lc-cluster group-membership 72xx
(Aruba) [00:1a:1e:01:2f:58] (config) #write memory
```

UI Configuration



UI Configuration Contd..



Config verification

(ArubaMM2)#show lc-cluster group-membership

```
Cluster Enabled, Profile Name = "72xx"
Redundancy Mode On
Active Client Rebalance Threshold = 50%
Standby Client Rebalance Threshold = 75%
Unbalance Threshold = 5%
Cluster Info Table
------------------
Type IPv4 Address    Priority Connection-Type STATUS
---- --------------- -------- --------------- ------
self     10.29.163.2      200             N/A CONNECTED (Leader)
peer     10.29.163.3      128    L2-Connected CONNECTED (Member, last HBT_RSP 49ms ago, RTD = 0.000 ms)
```

(ArubaMM3)#show lc-cluster group-membership

```
Cluster Enabled, Profile Name = "72xx"
Redundancy Mode On
Active Client Rebalance Threshold = 50%
Standby Client Rebalance Threshold = 75%
Unbalance Threshold = 5%
Cluster Info Table
------------------
Type IPv4 Address    Priority Connection-Type STATUS
---- --------------- -------- --------------- ------
peer     10.29.163.2      200    L2-Connected CONNECTED (Leader, last HBT_RSP 72ms ago, RTD = 0.508 ms)
self     10.29.163.3      128             N/A CONNECTED (Member)
```

Config verification

(ArubaMM2) #show ap database

```
AP Database
-----------
Name    Group     AP Type   IP Address      Status              Flags   Switch IP     Standby IP
----    -----     -------   ----------      ------              -----   ---------     ----------
AP105   72xx      105       1.1.1.3         Up 11h:17m:39s      Rc2     10.29.163.2   10.29.163.3
AP135   default   135       10.29.164.252   Up 13d:14h:55m:9s   2I      10.29.163.2   10.29.163.3
AP325   72xx      325       1.1.1.2         Up 10h:52m:52s      Rc2     10.29.163.2   10.29.163.3

Flags: U = Unprovisioned; N = Duplicate name; G = No such group; L = Unlicensed
       I = Inactive; D = Dirty or no config; E = Regulatory Domain Mismatch
       X = Maintenance Mode; P = PPPoE AP; B = Built-in AP; s = LACP striping
       R = Remote AP; R- = Remote AP requires Auth; C = Cellular RAP;
       c = CERT-based RAP; 1 = 802.1x authenticated AP; 2 = Using IKE version 2
       u = Custom-Cert RAP; S = Standby-mode AP; J = USB cert at AP
       i = Indoor; o = Outdoor
       M = Mesh node; Y = Mesh Recovery
       z = Datazone AP
```

(ArubaMM3) #show ap database

```
AP Database
-----------
Name     Group     AP Type   IP Address      Status              Flags   Switch IP     Standby IP
----     -----     -------   ----------      ------              -----   ---------     ----------
AP105    72xx      105       1.1.1.3         Up 12h:49m:53s      Rc2S    10.29.163.2   10.29.163.3
AP135    default   135       10.29.164.252   Up 13d:16h:26m:56s  2SI     10.29.163.2   10.29.163.3
AP325    72xx      325       1.1.1.2         Up 12h:25m:3s       Rc2S    10.29.163.2   10.29.163.3
RAP3WN   72xx      RAP-3WN   10.29.162.251   Down                2       10.29.163.3   0.0.0.0

Flags: U = Unprovisioned; N = Duplicate name; G = No such group; L = Unlicensed
       I = Inactive; D = Dirty or no config; E = Regulatory Domain Mismatch
       X = Maintenance Mode; P = PPPoE AP; B = Built-in AP; s = LACP striping
       R = Remote AP; R- = Remote AP requires Auth; C = Cellular RAP;
       c = CERT-based RAP; 1 = 802.1x authenticated AP; 2 = Using IKE version 2
       u = Custom-Cert RAP; S = Standby-mode AP; J = USB cert at AP
       i = Indoor; o = Outdoor
       M = Mesh node; Y = Mesh Recovery
       z = Datazone AP
```

Config verification

(ArubaMM2) #show whitelist-db rap

```
AP-entry Details
----------------
Name              AP-Group  AP-Name  Full-Name  Authen-Username  Revoke-Text  AP_Authenticated  Description  Date-Added              Enabled  Remote-IP  Remote-IPv6  Cluster-InnerIP
----              --------  -------  ---------  ---------------  -----------  ----------------  -----------  ----------              -------  ---------  -----------  ---------------
ac:a3:1e:ce:6e:cf  72xx      AP105                                            Provisioned                    Sun Feb 12 21:14:37 2017  Yes      0.0.0.0    ::           1.1.1.3
f0:5c:19:ca:43:64  72xx      AP325                                            Provisioned                    Sun Jan 15 01:10:31 2017  Yes      0.0.0.0    ::           1.1.1.2

AP Entries: 2
```

(ArubaMM3) #show whitelist-db rap

```
AP-entry Details
----------------
Name              AP-Group  AP-Name  Full-Name  Authen-Username  Revoke-Text  AP_Authenticated  Description  Date-Added              Enabled  Remote-IP  Remote-IPv6  Cluster-InnerIP
----              --------  -------  ---------  ---------------  -----------  ----------------  -----------  ----------              -------  ---------  -----------  ---------------
ac:a3:1e:ce:6e:cf  72xx      AP105                                            Provisioned                    Sun Feb 12 21:14:37 2017  Yes      0.0.0.0    ::           1.1.1.3
f0:5c:19:ca:43:64  72xx      AP325                                            Provisioned                    Sun Jan 15 01:10:31 2017  Yes      0.0.0.0    ::           1.1.1.2

AP Entries: 2
```

Troubleshooting commands

(ArubaMM2) #show crypto isakmp sa

```
ISAKMP SA Active Session Information
------------------------------------
Initiator IP                            Responder IP                            Flags       Start Time       Private IP
------------                            ------------                            -----       ----------       ----------
10.29.163.2                             10.29.161.149                           i-v2-p      Feb 14 13:13:03
10.29.165.247                           10.29.163.2                             r-v2-c-R    Feb 14 15:12:36    1.1.1.3
10.29.163.3                             10.29.163.2                             r-v2-c      Feb 14 16:39:00    -
10.29.164.252                           10.29.163.2                             r-v2-c-C    Feb 14 20:15:42    10.29.164.252
10.29.165.243                           10.29.163.2                             r-v2-c-R    Feb 14 20:21:22    1.1.1.2

Flags: i = Initiator; r = Responder
       m = Main Mode; a = Agressive Mode; v2 = IKEv2
       p = Pre-shared key; c = Certificate/RSA Signature; e =  ECDSA Signature
       x = XAuth Enabled; y = Mode-Config Enabled; E = EAP Enabled
       3 = 3rd party AP; C = Campus AP; R = RAP;  Ru = Custom Certificate RAP; I = IAP
       V = VIA; S = VIA over TCP

Total ISAKMP SAs: 5
```

(ArubaMM3) #show crypto isakmp sa

```
ISAKMP SA Active Session Information
------------------------------------
Initiator IP                            Responder IP                            Flags       Start Time       Private IP
------------                            ------------                            -----       ----------       ----------
10.29.165.247                           10.29.163.3                             r-v2-c-R    Feb 14 15:13:17    1.1.1.3
10.29.163.3                             10.29.163.2                             i-v2-c      Feb 14 16:38:56    -
10.29.163.3                             10.29.161.149                           i-v2-p      Feb 14 18:20:20    -
10.29.165.243                           10.29.163.3                             r-v2-c-R    Feb 14 20:21:53    1.1.1.2
10.29.164.252                           10.29.163.3                             r-v2-c-C    Feb 14 20:49:10    10.29.164.252

Flags: i = Initiator; r = Responder
       m = Main Mode; a = Agressive Mode; v2 = IKEv2
       p = Pre-shared key; c = Certificate/RSA Signature; e =  ECDSA Signature
       x = XAuth Enabled; y = Mode-Config Enabled; E = EAP Enabled
       3 = 3rd party AP; C = Campus AP; R = RAP;  Ru = Custom Certificate RAP; I = IAP
       V = VIA; S = VIA over TCP

Total ISAKMP SAs: 5
```

Troubleshooting commands

To check cluster IP entries, execute below command and it will work only on MM.

(Aruba) [mynode] (config) #show crypto isakmp clusterIP

```
Cluster RAPIP Table Entries:
1.1.1.3     ac:a3:1e:ce:6e:cf
1.1.1.2     f0:5c:19:ca:43:64

Total RAPIP Entries:  2
```

Troubleshooting commands

(ArubaMM2) #show user-table

```
Users
-----
   IP            MAC           Name    Role          Age(d:h:m)  Auth  VPN link  AP name  Roaming   Essid/Bssid/Phy                  Profile    Forward mode  Type   Host Name
----------    ------------      ------  ----          ----------  ----  --------  -------  -------   ---------------                  -------    ------------  ----   ---------
10.29.164.254  80:00:0b:52:2f:79          authenticated  00:00:06                AP325    Wireless  Aruba-8.0-psk/f0:5c:19:24:36:50/a-HT  aruba-psk  tunnel        Win 7

User Entries: 1/1
 Curr/Cum Alloc:6/438 Free:0/432 Dyn:6 AllocErr:0 FreeErr:0
```

(ArubaMM3) #show user-table standby

```
Dormant Mac Hash Table
----------------------
 IP            MAC              l2role         l3role    vlan    ua_done    Essid/Bssid/Tunnelid                  Counts(User/PTK)    UUID                  Active UAC IP
---           -----            --------       --------  ------  ---------  ----------------------                ----------------  ------                ---------------
10.29.164.254  80:00:0b:52:2f:79  authenticated           2164    1          Aruba-8.0-psk/f0:5c:19:24:36:50/0x10014  2/1               001a1e0136700000000901b5  10.29.163.2

Total Entries   : 1
```

Troubleshooting commands

(ArubaMM2) #show datapath station

```
Datapath Station Table Entries
------------------------------

Flags: W - WEP, T - TKIP, A - AESCCM, M - WMM N - .11n client
       S - AMSDU, G - AESGCM, R - DATA READY, I - INACTIVE, r - ROAMED, D - Dormant

       MAC             BSSID         TunId  VLAN Bad Decrypts Bad Encrypts RSN cap Aid  HomeVlan A-MsduSize A-MsduTxQ           Seq Flags
----------------- ----------------- -------- ---- ------------ ------------ ------- ---- -------- ---------- ------------------- --- -----
80:00:0B:52:2F:79 F0:5C:19:24:36:50 0001000f 2164            0            0    003C 0001     2164          0 8000/0000/0000/0000   4   AMNR
(Britto-7210) #
```

(ArubaMM3) #show datapath station

```
Datapath Station Table Entries
------------------------------

Flags: W - WEP, T - TKIP, A - AESCCM, M - WMM N - .11n client
       S - AMSDU, G - AESGCM, R - DATA READY, I - INACTIVE, r - ROAMED, D - Dormant

       MAC             BSSID         TunId  VLAN Bad Decrypts Bad Encrypts RSN cap Aid  HomeVlan A-MsduSize A-MsduTxQ           Seq Flags
----------------- ----------------- -------- ---- ------------ ------------ ------- ---- -------- ---------- ------------------- --- -----
80:00:0B:52:2F:79 F0:5C:19:24:36:50 00010014 2164            0            7    003C 0001     2164          0 0000/0000/0000/0000   0   AMND
(Britto-7220) #
```

Troubleshooting commands

(ArubaMM2) #show gsm debug channel user

```
user Channel Table
------------------
state  rkey  v_repkey  user_uuid              user_mac         user_name  user_role_name  user_wired  user_remote  user_traffic_prio  user_device_id  ap_name  user_auth_type  user_auth_subtype
  user_encrypt_type  user_conn_port  user_fwd_mode  openflow_enable  user_dot1xctx_flags
-----  ----  --------  ---------              --------         ---------  --------------  ----------  -----------  -----------------  --------------  -------  --------------  -----------------
  -----------------  --------------  ------------  --------------  -------------------
ACTV   7     3         001a1e013670000000901b5  80:00:0b:52:2f:79           authenticated   0           0            0                  22              AP325    0               0
  9                8448           0             1               1
```

(ArubaMM3) #show gsm debug channel user

```
user Channel Table
------------------
state  rkey  v_repkey  user_uuid              user_mac         user_name  user_role_name  user_wired  user_remote  user_traffic_prio  user_device_id  ap_name  user_auth_type  user_auth_subtype
  user_encrypt_type  user_conn_port  user_fwd_mode  openflow_enable  user_dot1xctx_flags
-----  ----  --------  ---------              --------         ---------  --------------  ----------  -----------  -----------------  --------------  -------  --------------  -----------------
  -----------------  --------------  ------------  --------------  -------------------
REPL   7     3         001a1e013670000000901b5  80:00:0b:52:2f:79           authenticated   0           0            0                  22              AP325    0               0
  9                8448           0             1               1
```

Troubleshooting commands

(ArubaMM2) # show aaa cluster essid-all users

```
Active Users for ESSID : Aruba-8.0-psk
---------------------------------------
BUCKET   MAC                IP              Active UAC    Standby UAC
------   ---                --              ----------    -----------
4        80:00:0b:52:2f:79  10.29.164.254   10.29.163.2   10.29.163.3
```

(ArubaMM2) #show aaa cluster essid-all bucketmap

```
Bucket map for Aruba-8.0-psk, Rcvd at : Tue Feb 14 08:41:51 2017

--------------------------------------------------------------------------
Item                    Value
----                    -----
Essid                   Aruba-8.0-psk
UAC0                    10.29.163.2
UAC1                    10.29.163.3
Active Map[0-31]        00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01
Active Map[32-63]       00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01
Active Map[64-95]       00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01
Active Map[96-127]      00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01
Active Map[128-159]     00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01
Active Map[160-191]     00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01
Active Map[192-223]     00 01 00 01 00 01 00 01 00 01 00 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01
Active Map[224-255]     01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01

Standby Map[0-31]       01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00
Standby Map[32-63]      01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00
Standby Map[64-95]      01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00
Standby Map[96-127]     01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00
Standby Map[128-159]    01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00
Standby Map[160-191]    01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00
Standby Map[192-223]    01 00 01 00 01 00 01 00 01 00 01 00 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Standby Map[224-255]    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

L2connect[0-31]         1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
L2connect[32-63]        1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
L2connect[64-95]        1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
L2connect[96-127]       1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
L2connect[128-159]      1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
L2connect[160-191]      1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
L2connect[192-223]      1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
L2connect[224-255]      1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

IsActive[0-31]          1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0
IsActive[32-63]         1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0
IsActive[64-95]         1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0
IsActive[96-127]        1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0
IsActive[128-159]       1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0
IsActive[160-191]       1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0
IsActive[192-223]       1 0 1 0 1 0 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
IsActive[224-255]       0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

Troubleshooting commands

(ArubaMM3) # show aaa cluster essid-all users

```
Dormant Users
-------------

ESSID            BUCKET   MAC                IP              Active UAC    Standby UAC
-----            ------   -----              ----            ----------    -----------
Aruba-8.0-psk    4        80:00:0b:52:2f:79  10.29.164.254   10.29.163.2   10.29.163.3
(Britto-7220) *#
```

(ArubaMM3) #show aaa cluster essid-all bucketmap

```
Bucket map for Aruba-8.0-psk, Rcvd at : Tue Feb 14 08:41:51 2017

--------------------------------------------------------------------------------
Item                    Value
----                    -----
Essid                   Aruba-8.0-psk
UAC0                    10.29.163.2
UAC1                    10.29.163.3
Active Map[0-31]        00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01
Active Map[32-63]       00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01
Active Map[64-95]       00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01
Active Map[96-127]      00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01
Active Map[128-159]     00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01
Active Map[160-191]     00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01
Active Map[192-223]     00 01 00 01 00 01 00 01 00 01 00 01 00 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01
Active Map[224-255]     01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01

Standby Map[0-31]       01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00
Standby Map[32-63]      01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00
Standby Map[64-95]      01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00
Standby Map[96-127]     01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00
Standby Map[128-159]    01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00
Standby Map[160-191]    01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00
Standby Map[192-223]    01 00 01 00 01 00 01 00 01 00 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Standby Map[224-255]    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

L2connect[0-31]         1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
L2connect[32-63]        1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
L2connect[64-95]        1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
L2connect[96-127]       1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
L2connect[128-159]      1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
L2connect[160-191]      1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
L2connect[192-223]      1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
L2connect[224-255]      1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

IsActive[0-31]          1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0
IsActive[32-63]         1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0
IsActive[64-95]         1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0
IsActive[96-127]        1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0
IsActive[128-159]       1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0
IsActive[160-191]       1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0
IsActive[192-223]       1 0 1 0 1 0 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
IsActive[224-255]       0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

Logging and Debugging commands

logging security level debugging
logging security level debugging process crypto
show ap remote debug bucketmap datapath ap-name <ap_name>
show ap remote debug bucketmap sapd ap-name <ap_name>
show ap remote debug bucketmap stm ap-name <ap_name>
show cluster-tech-support <filename>

CLI to show Active/standby Users:

show aaa cluster essid-all users <<< shows the active users for all the available essids
show aaa cluster essid-all users standby <<< shows the dormant users for all the available essids
show aaa cluster essid <essid> users <<< shows all the active users for a given essid
show aaa cluster essid <essid> users standby <<< shows all the dormant users for a given essid

Limitations

Cluster is not supported for PSK-RAPs

RAP whitelistdb entry should be configured only on MM-M.

Cluster is not supported for external whitelilstdb

Cluster supports only for Cert-based RAPs

Questions ?

THANK YOU!

aruba
a Hewlett Packard
Enterprise company