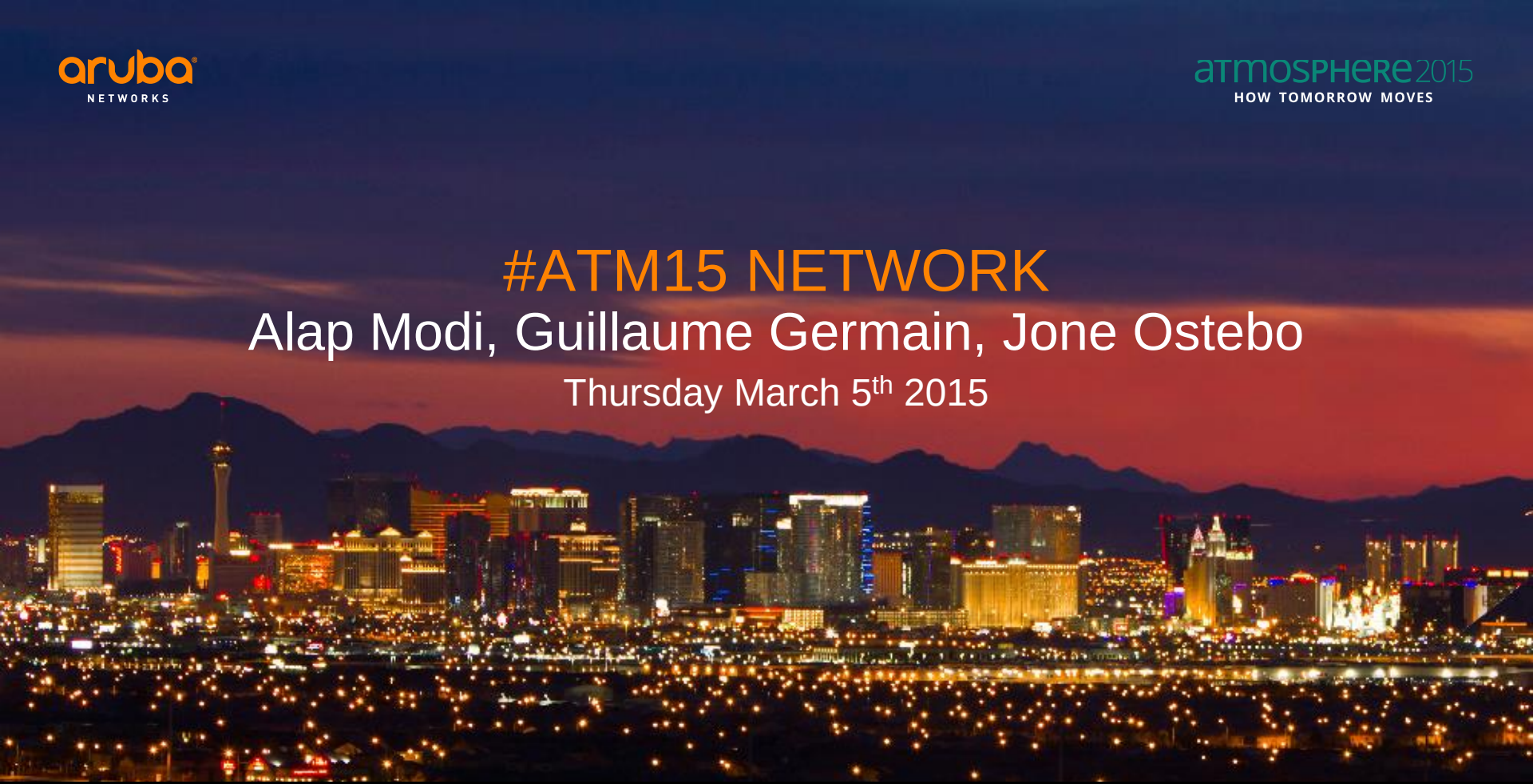


#ATM15 NETWORK

Alap Modi, Guillaume Germain, Jone Ostebo

Thursday March 5th 2015

WARNING

THE FOLLOWING WAS DONE WITH THE CO-OPERATION OF PATIENT USERS.

DO NOT TRY SOME OF THIS AT ~~HOME~~ WORK!

CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

Event Network

- **Event Network Design**
  - Network Layout
  - RF Planning
- **Configuration overview**
  - Controller configuration
  - CPPM configuration
  - BLE
  - Theatre design & configuration

CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

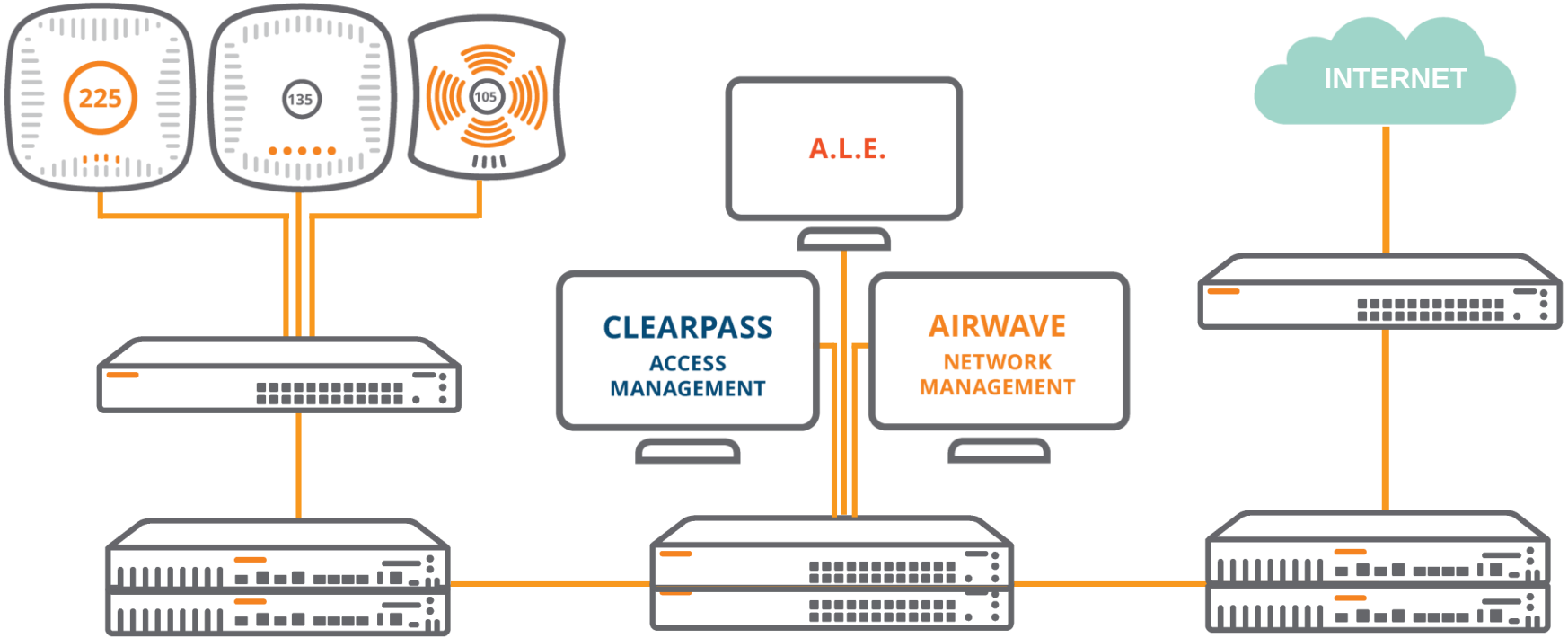
Event Network

- **Statistics**
  - RF stats
  - AppRF and general usage information
  - ClientMatch

CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

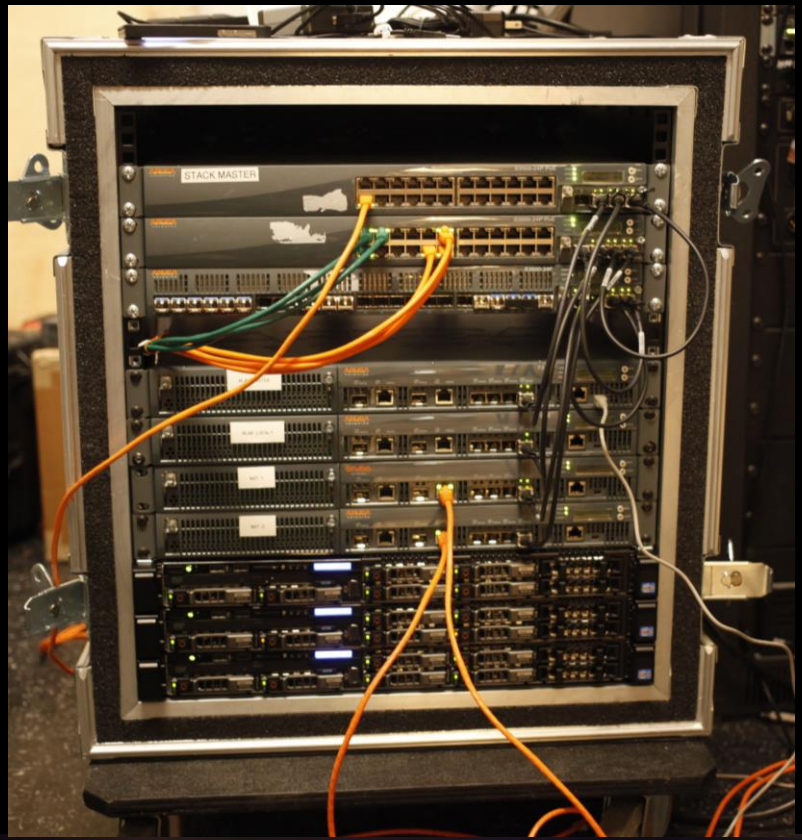
Network Design

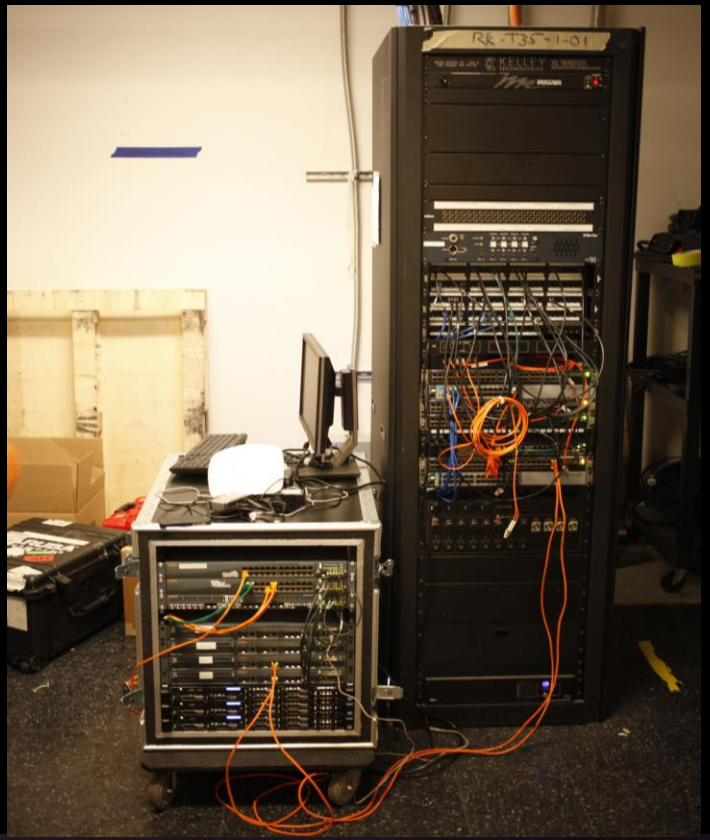
Network Layout



CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

Network Layout





CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

Network Design

Downsides

- *Find a hotel that is running your stuff*
- *Integrate into the hotel's network*
- *Live with a bit less recent hardware*

Upsides

- *No need to deploy AP's on stands*

CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

BlackHat 2014

CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

Network Design

Take-over of the Cosmopolitan Access Points

- *20 x AP-105 and on the 2nd floor*
- *51 x AP-105 on the 3rd floor*
- *33 x AP-225 and on the 4th floor*
- *78 x AP-134 and AP-135 in Chelsea (Keynote room)*

CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

RF Plan

P2.5-Chelse...
P2.5-Chelse...
P2.5-Chelse...

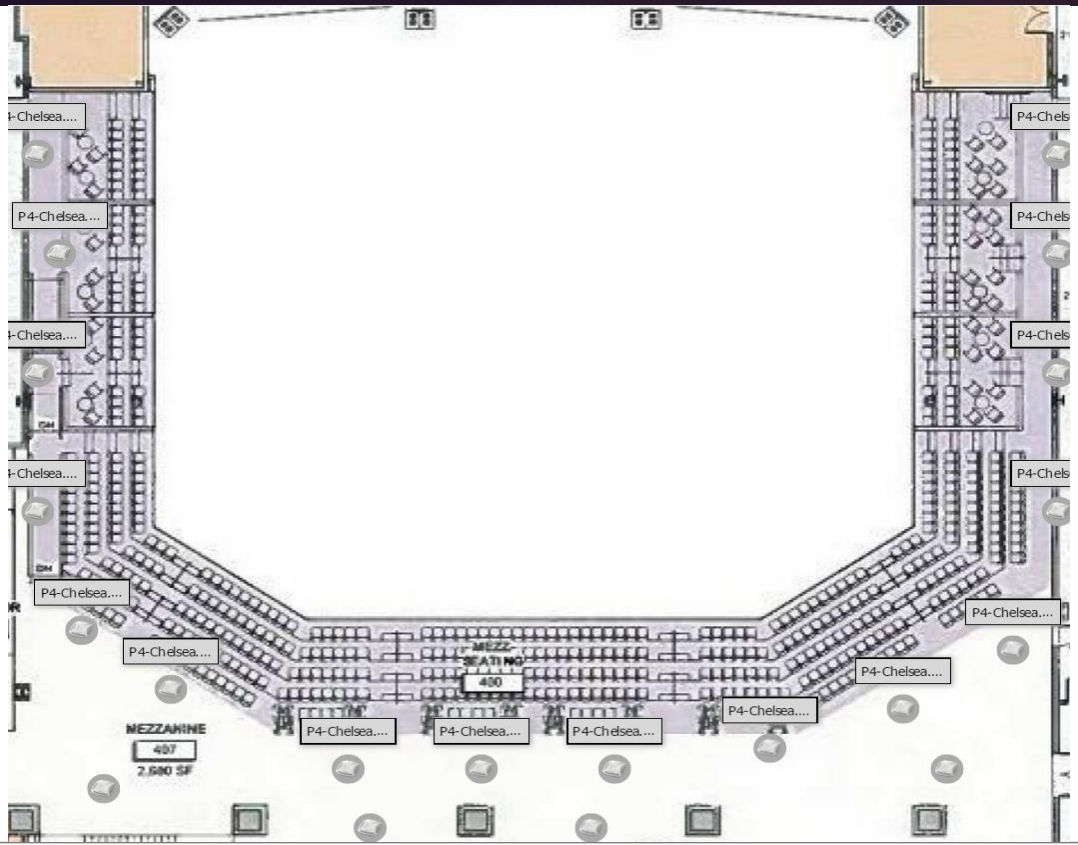
Chelsea

CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

Chelsea

CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

RF Plan



CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

Chelsea – Top Floor

CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

Configuration Overview

Radio Profiles


```
rf dot11g-radio-profile VHD-Ch01
  channel 1
  tx-power 12
  arm-profile VHD-arm_disabled
!

rf dot11g-radio-profile VHD-Ch07
  channel 8
  tx-power 12
  arm-profile VHD-arm_disabled
!
```

```
rf dot11g-radio-profile VHD-Ch04
  channel 4
  tx-power 12
  arm-profile VHD-arm_disabled
!

rf dot11g-radio-profile VHD-Ch11
  channel 11
  tx-power 12
  arm-profile VHD-arm_disabled
!
```

Just Kidding

CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

Radio Profiles


```
rf dot11g-radio-profile VHD-Ch01
  very-high-throughput-rates-enable
  channel 1
  tx-power 9
  arm-profile VHD-arm_disabled
  disable-arm-wids-functions dynamic
  no dot11b-protection
!
```

```
rf dot11a-radio-profile VHD-Ch036
  channel 36
  tx-power 15
  arm-profile VHD-arm_disabled
  disable-arm-wids-functions dynamic
!

rf arm-profile VHD-arm-disabled
   assignment disable
   cm-band-g-max-signal 10
   cm-steer-timeout 3
   cm-lb-thresh 60
   cm-lb-client-thresh 80
!
```


CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

SSID Profiles


```
wlan ssid-profile Airheads-VHD
   a-basic-rates 24
   a-tx-rates 18 24 36 48 54
   g-basic-rates 11 24
   g-tx-rates 11 12 18 24 36 48 54
   max-retries 24
   max-clients 128
   local-probe-req-thresh 15
   mcast-rate-opt
   ht-ssid-profile "airheads-vegas"
   g-beacon-rate 24
   a-beacon-rate 24
!
```

```
wlan ssid-profile Airheads-HD
   a-basic-rates 12 24
   a-tx-rates 12 18 24 36 48 54
   g-basic-rates 11 12 18
   g-tx-rates 11 12 18 24 36 48 54
   max-retries 24
   max-clients 128
   local-probe-req-thresh 15
   mcast-rate-opt
   ht-ssid-profile "airheads-vegas"
   g-beacon-rate 12
   a-beacon-rate 12
!
```


CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

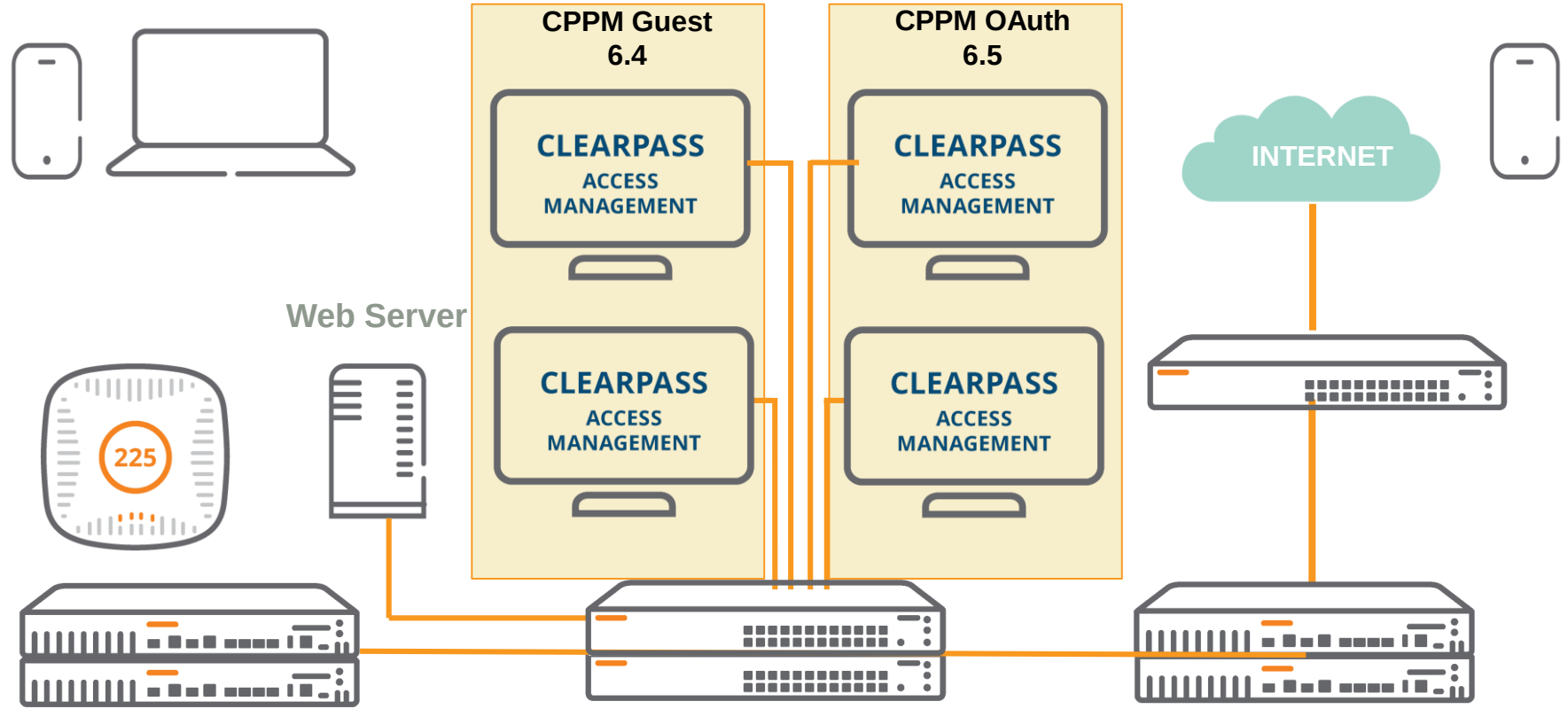
Configuration Overview


```
wlan virtual-ap Airheads-VHD
   aaa-profile Airheads-Vegas
   ssid-profile Airheads-VHD
   vlan user-vlan
   broadcast-filter all
   deny-inter-user-traffic
   no mobile-ip
   no blacklist
!
```

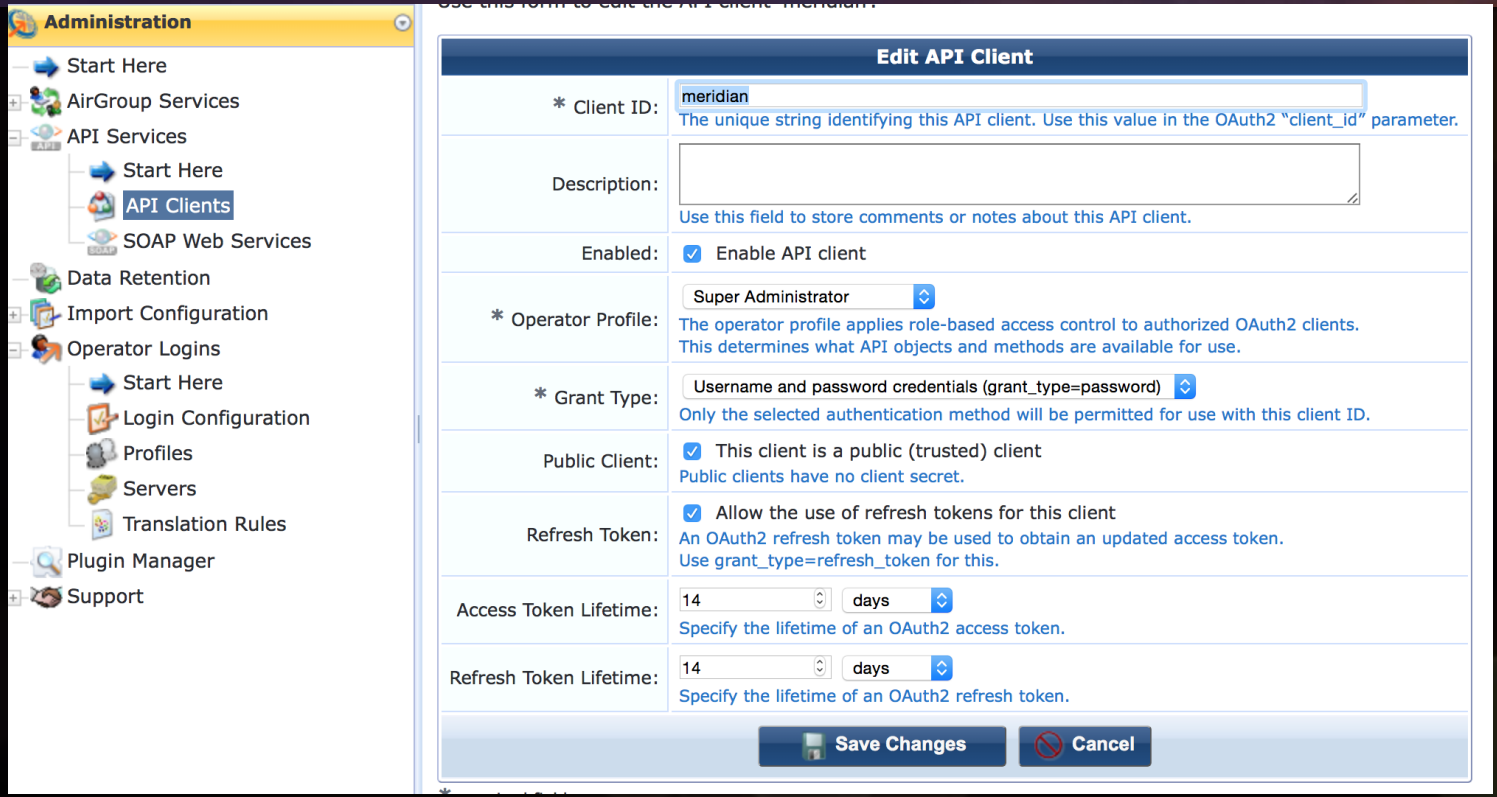
```
wlan ht-ssid-profile airheads-vegas
   no 80MHz-enable
   temporal-diversity
   supported-mcs-set 1-7,9-15,17-23
!
```


CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

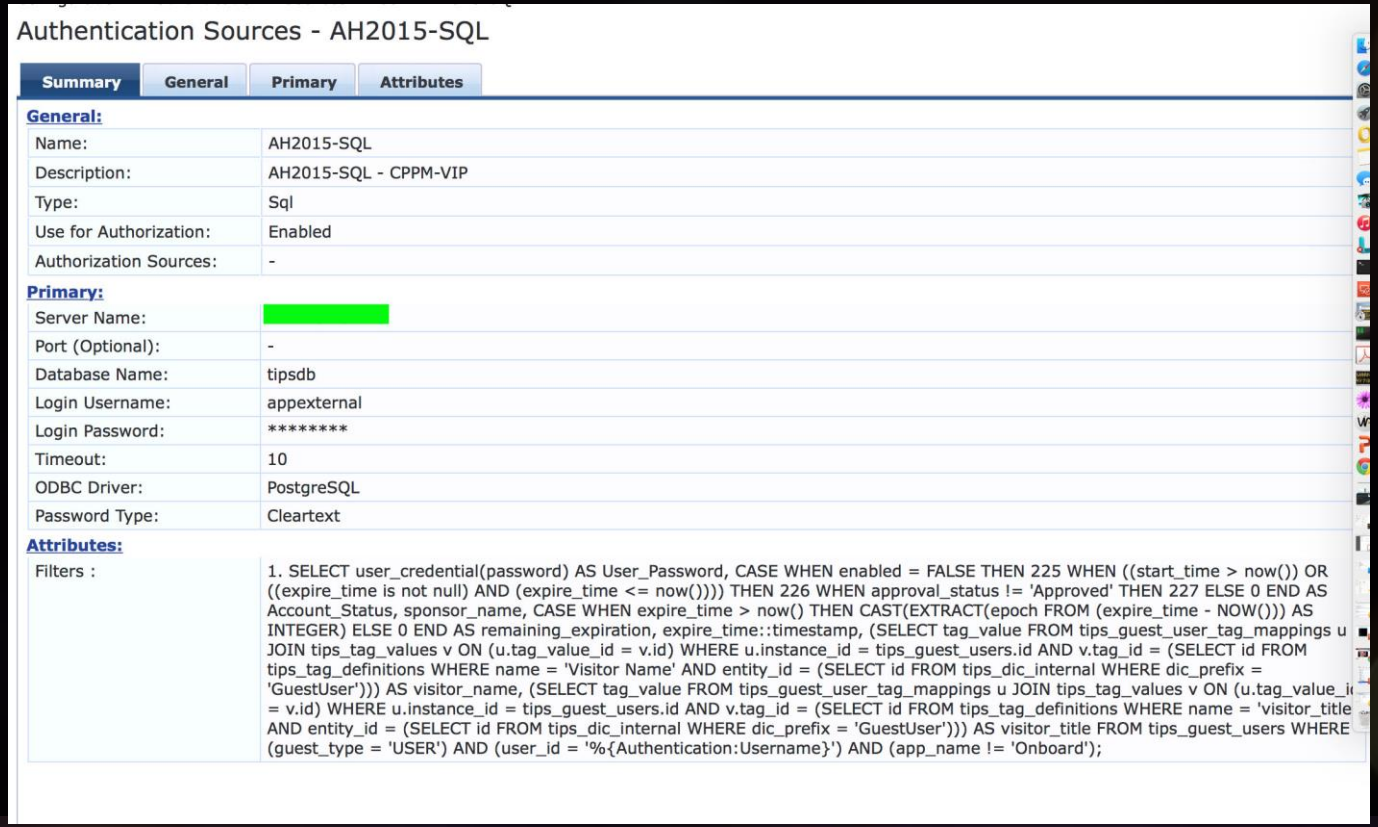
ClearPass Design



CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved



CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved



Authentication Sources - AH2015-SQL

Summary | General | Primary | Attributes

General:

Name:	AH2015-SQL
Description:	AH2015-SQL - CPPM-VIP
Type:	Sql
Use for Authorization:	Enabled
Authorization Sources:	-

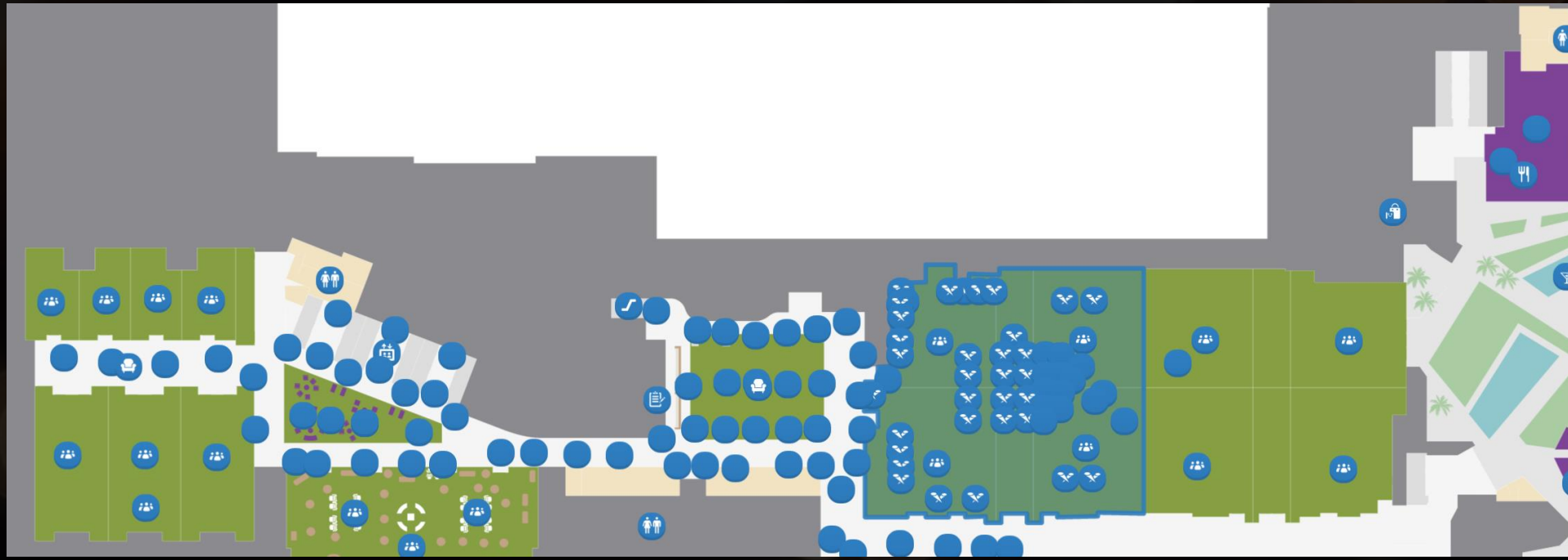
Primary:

Server Name:	[redacted]
Port (Optional):	-
Database Name:	tipsdb
Login Username:	appexternal
Login Password:	********
Timeout:	10
ODBC Driver:	PostgreSQL
Password Type:	Cleartext

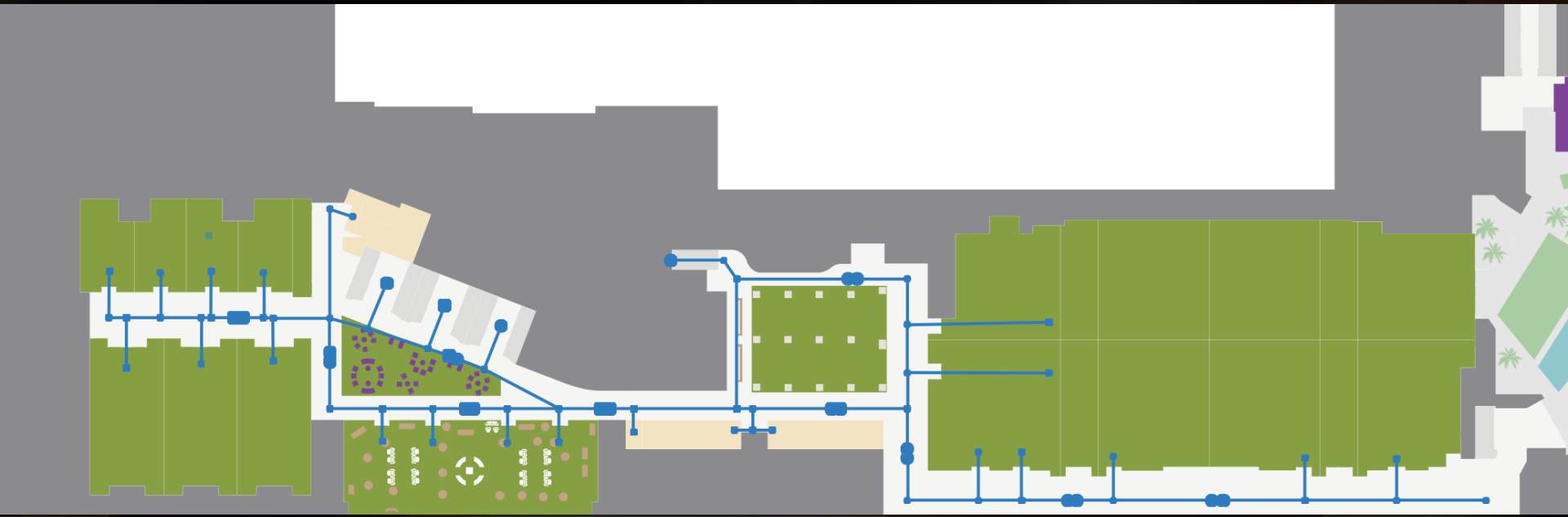
Attributes:

Filters :	1. SELECT user_credential(password) AS User_Password, CASE WHEN enabled = FALSE THEN 225 WHEN ((start_time > now()) OR ((expire_time is not null) AND (expire_time <= now()))) THEN 226 WHEN approval_status != 'Approved' THEN 227 ELSE 0 END AS Account_Status, sponsor_name, CASE WHEN expire_time > now() THEN CAST(EXTRACT(epoch FROM (expire_time - NOW())) AS INTEGER) ELSE 0 END AS remaining_expiration, expire_time::timestamp, (SELECT tag_value FROM tips_guest_user_tag_mappings u JOIN tips_tag_values v ON (u.tag_value_id = v.id) WHERE u.instance_id = tips_guest_users.id AND v.tag_id = (SELECT id FROM tips_tag_definitions WHERE name = 'Visitor Name' AND entity_id = (SELECT id FROM tips_dic_internal WHERE dic_prefix = 'GuestUser'))) AS visitor_name, (SELECT tag_value FROM tips_guest_user_tag_mappings u JOIN tips_tag_values v ON (u.tag_value_id = v.id) WHERE u.instance_id = tips_guest_users.id AND v.tag_id = (SELECT id FROM tips_tag_definitions WHERE name = 'visitor_title' AND entity_id = (SELECT id FROM tips_dic_internal WHERE dic_prefix = 'GuestUser'))) AS visitor_title FROM tips_guest_users WHERE (guest_type = 'USER') AND (user_id = '%{Authentication:Username}') AND (app_name != 'Onboard');

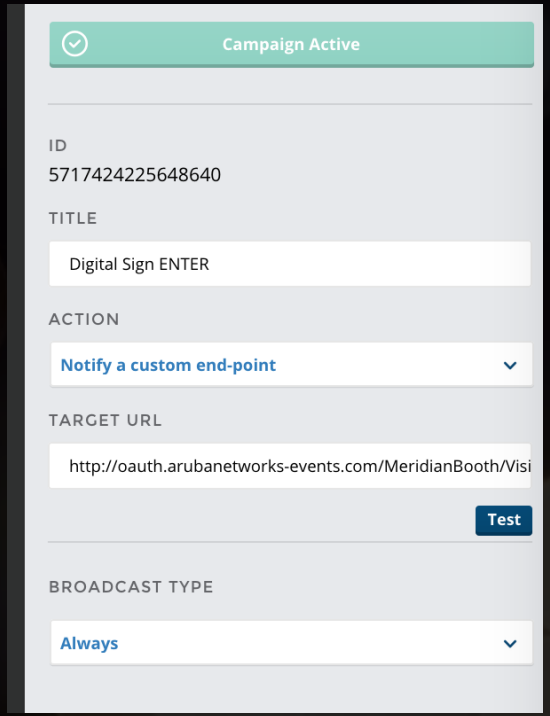
CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

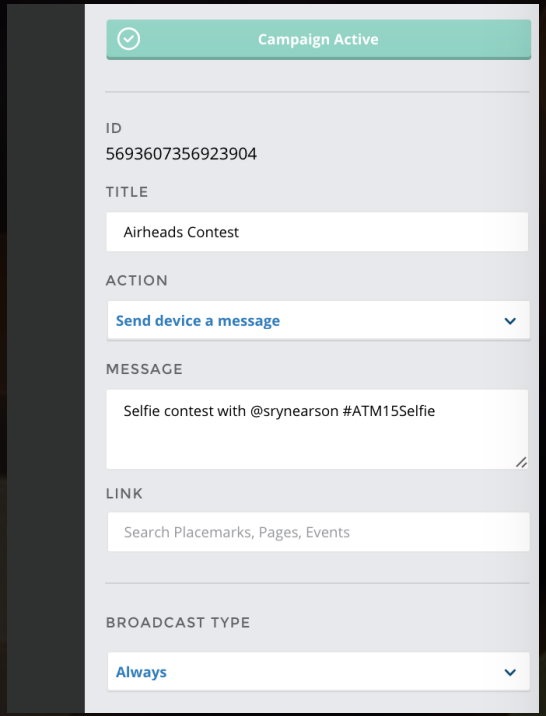


CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved



CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved





CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

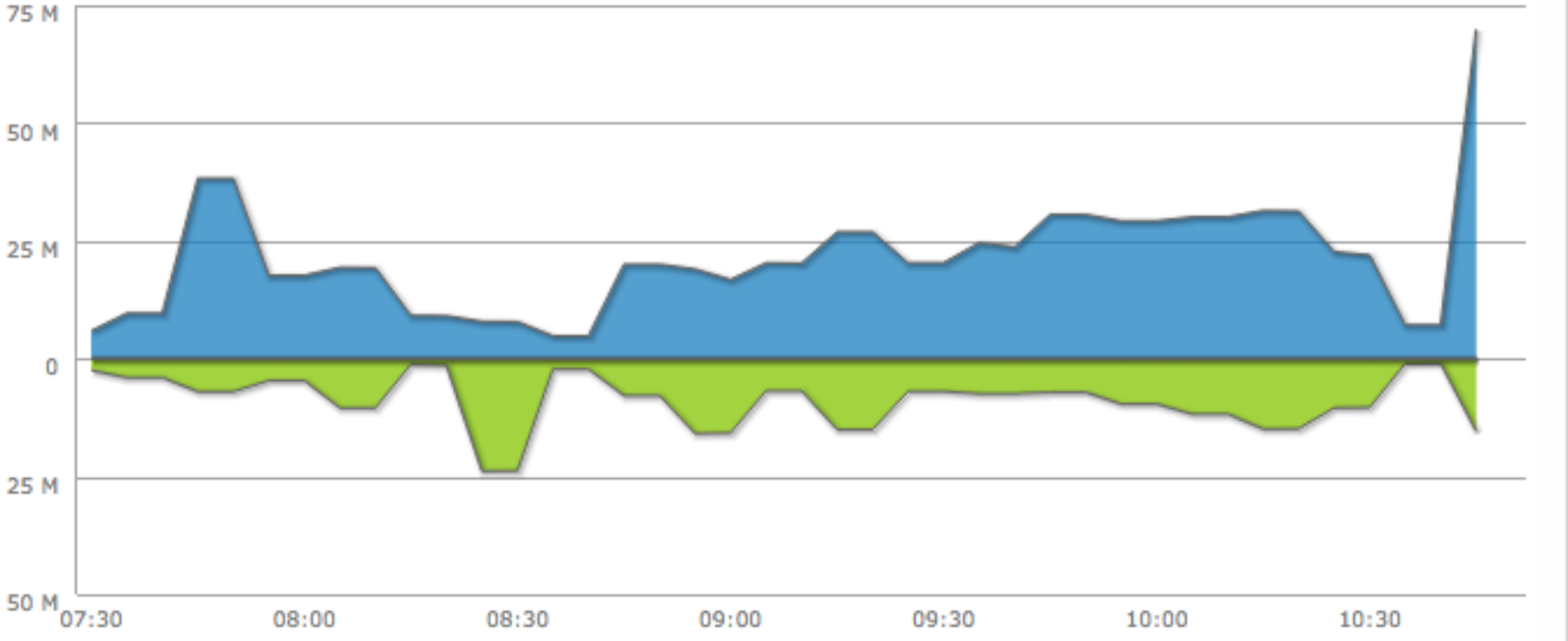
wlan ssid-profile Airheads-VHD

settings…

settings…

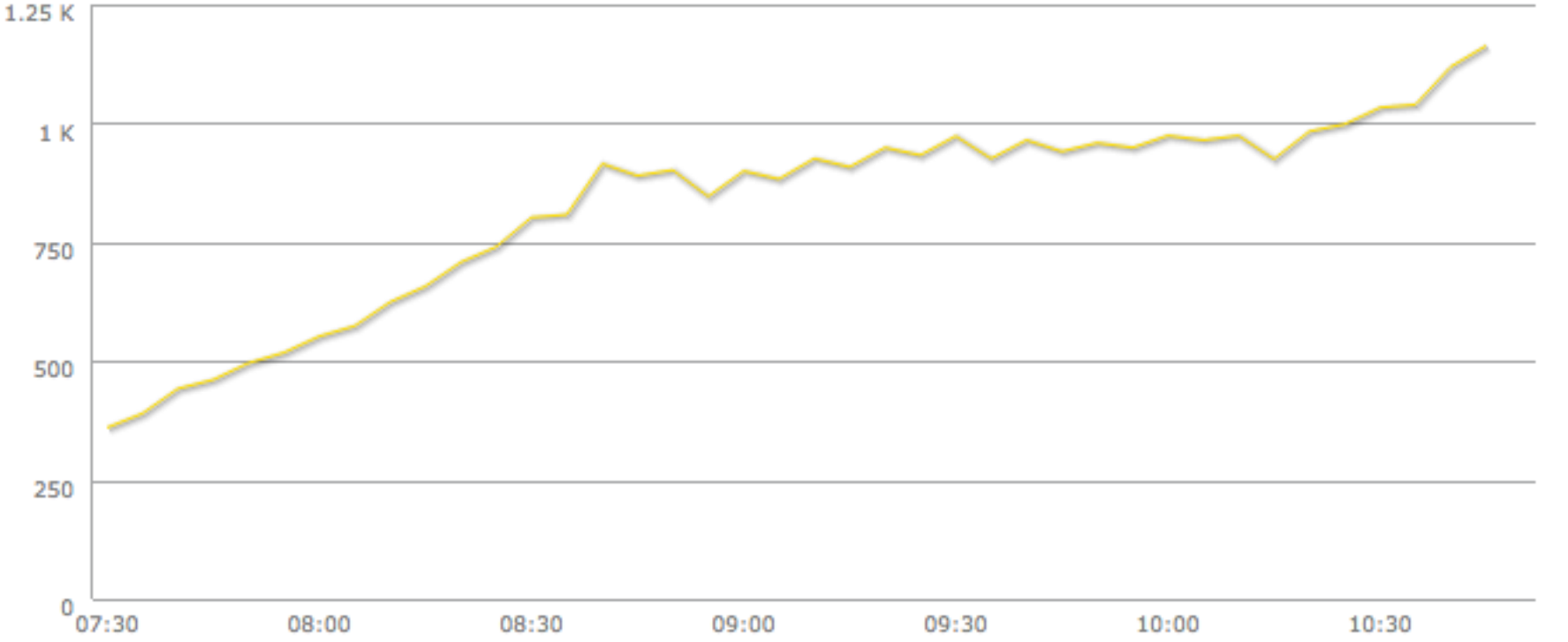
Statistics

Download (blue) and Upload (green) rates



CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

Client Count



CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

ClientMatch 802.11v BSS Transition

- *Out of 1301 unique clients, we have 568 802.11v capable devices (134 Android, 434 iOS)*
- *Sent 8891 move messages*
- *We had 1339 successful moves*

CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

Channel split

2.4 Ghz	
Devices	Frequency
4	1
17	1
8	1
21	6
18	6
4	11
29	11
5	11
106	TOTAL

U-NII-1	
Devices	Frequency
31	36
30	36
17	40
35	44
50	44
48	48
32	48
243	TOTAL

U-NII-2/2e	
Devices	Frequency
44	52
16	52
18	56
50	64
34	100
35	104
58	108
255	TOTAL

U-NII-3	
Devices	Frequency
15	149
10	153
22	157
2	157
37	157
26	165
15	165
127	TOTAL

CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

Lessons Learned

Lessons Learned

- *Need proper IP space for session capacity*
- *DNS servers can be a problem*
- *These networks always take more time to build than expected*

CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

Try not to go crazy

CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved

THANK YOU

… Before You Go

Give feedback!

Sign up, save $200!

arubanetworks.com/atmosphere2016

CONFIDENTIAL © Copyright 2015. Aruba Networks, Inc. All rights reserved