Mobile First Architecture Customer Scenario

aruba
a Hewlett Packard Enterprise company

September 4, 2018

Agenda

Part 1: Financial Services Customer Network Transformation

Part 2: Powering Ping An Finance Centre

Part 1: Agenda

Customer Brief
Network Transformation Requirements
Mobile First Architecture
Why Aruba?

Customer Brief

Global Financial Services Organisation

– Forbes Global 2000

– Headquartered in Australia

– Over 100 office locations across the globe

– Over 15,000 employees

– 24/7 market coverage

– Aruba WLAN customer for 8+ years

– Aruba ClearPass customer for 4+ years

Project Drivers

- Customer Reorg
- Outsourced Managed Service moving to In-house Model
- End of Life Hardware
- New Office Build
- All* Wireless Office

Network Transformation Requirements

– Simplify the Network

– Automate Deployment and Management

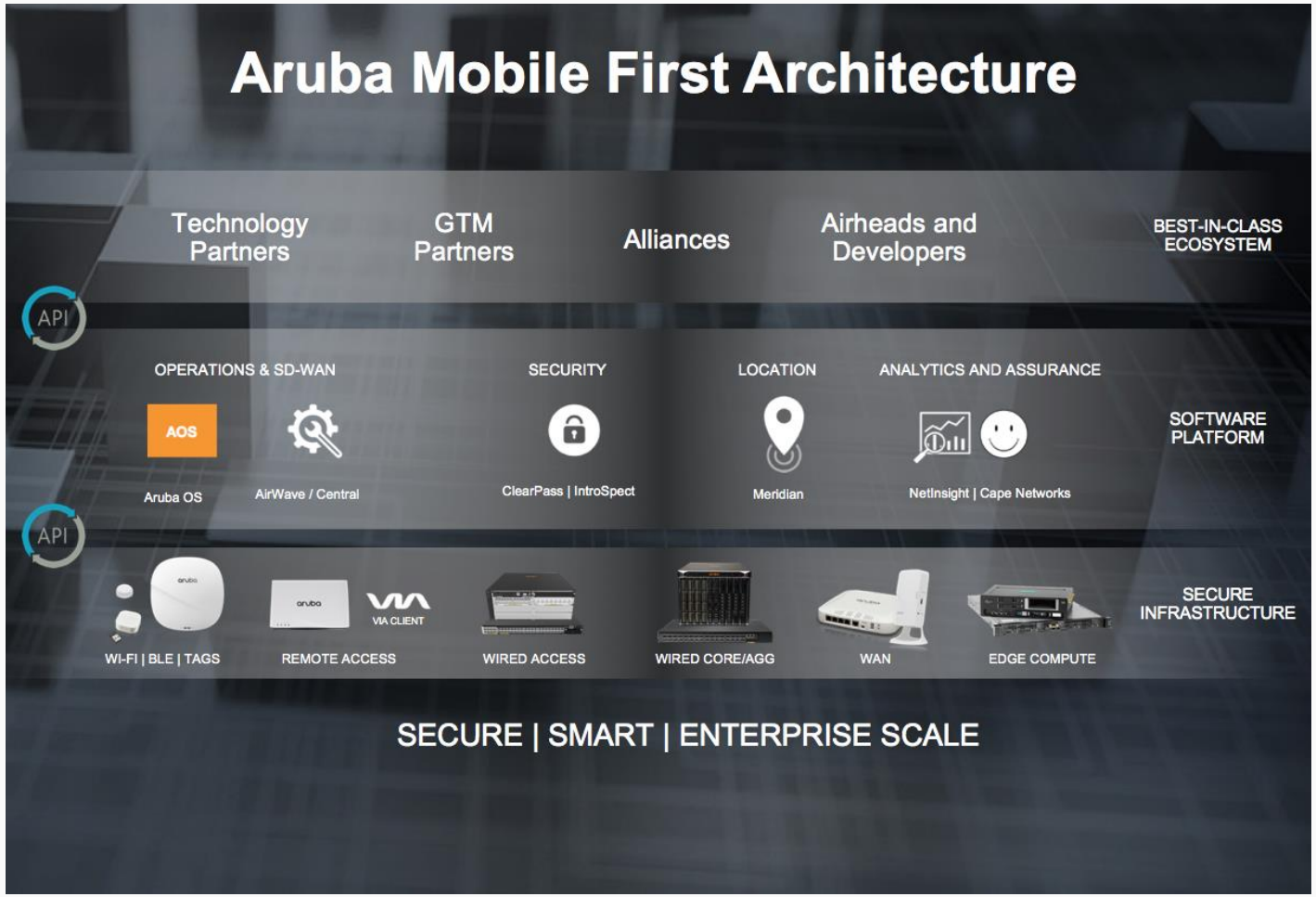
– Ensure Interoperability / Open Standards

– Security Without Compromises

– Enhance User Experience

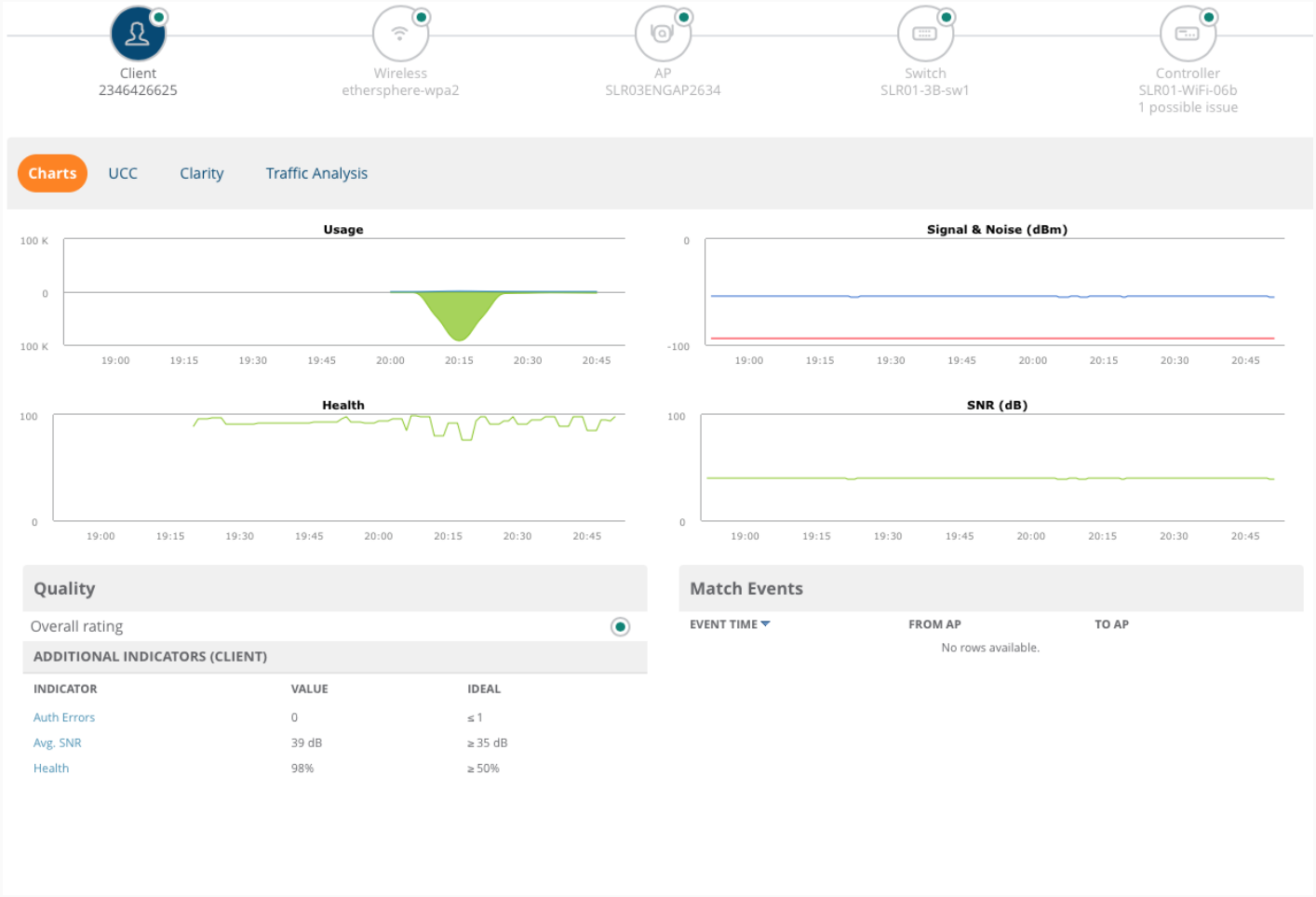
– Deliver TCO Benefit

Simplification



Consistent end to end architecture

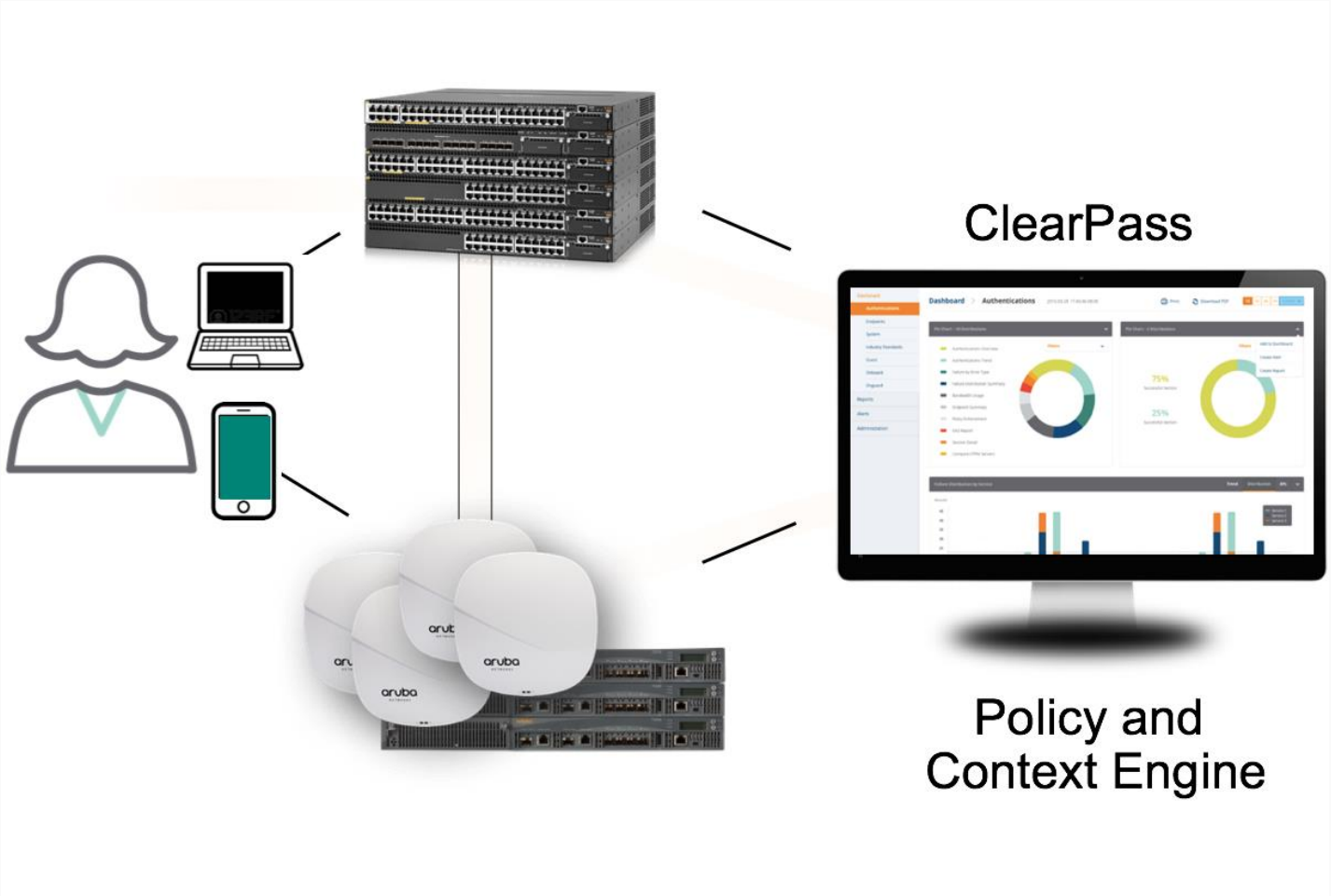
Simplification



Consistent end to end architecture

Common management and monitoring platform

Simplification



Consistent end to end architecture

Common management and monitoring platform

Unified network policy enforcement

Automation, Interoperability, and Open Standards

ArubaOS-Switch

ArubaOS 8.0

ClearPass

ArubaOS-CX

ALE

Aruba Central
Airwave 10

Open REST API Framework

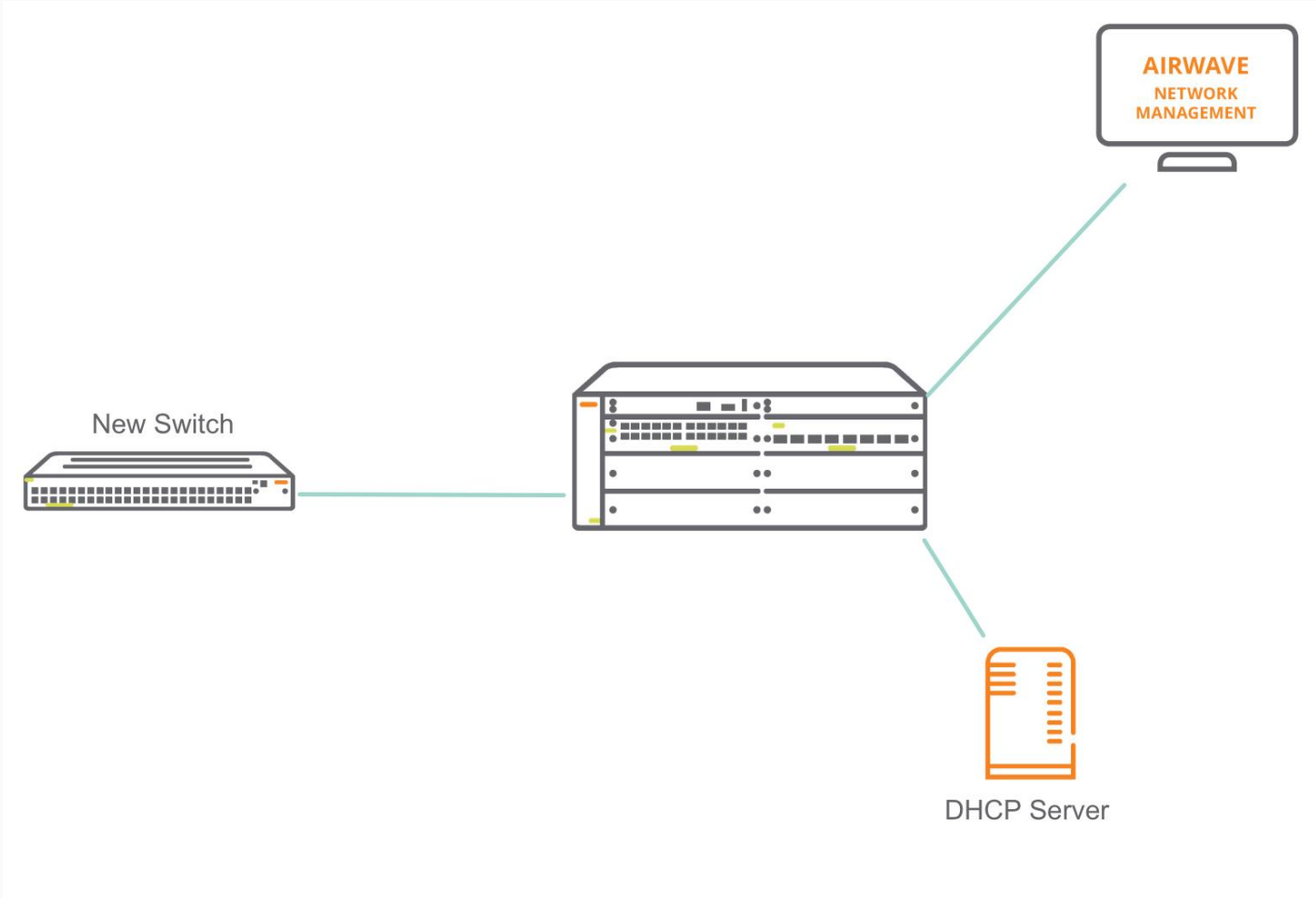
Automation, Interoperability, and Open Standards

~/Desktop/Ansible Playbook/Firmware_Update.yml (functions

```yaml
# file: switch_vlan_create_modify.yml
- name: Firmware Update
  hosts: switches
  connection: local
  force_handlers: True
#  environment:
#     https_proxy: 10.251.61.162:8888


  tasks:
  - name: login
    uri:
       url: 'https://{{ inventory_hostname }}:443/rest/v3/login-sessions'
       method: POST
       return_content: yes
       validate_certs: no
       body_format: json
       body: {"userName":"{{ username }}","password":"{{ password }}"}
       status_code: 201
    register: sessionId

  - debug:
       var: sessionId.json.cookie
       var: sessionId.json

  - block:
      - name: upload new firmware
        uri:
           url: 'https://{{ inventory_hostname }}:443/rest/v3/file-transfer'
           method: POST
           return_content: yes
           validate_certs: no
           body_format: json
           body: >
              {"url":"http://{{ fw_server }}/{{ fw_image }}",
              "file_type":"FTT_FIRMWARE",
              "action":"FTA_DOWNLOAD",
              "boot_image":"BI_SECONDARY_IMAGE"}
           status_code: 202
           HEADER_cookie: '{{ sessionId.json.cookie }}'
        register: response

      - debug:
           var: response.json

      - name: check firmware
        uri:
           url: 'https://{{ inventory_hostname }}:443/rest/v3/cli'
           method: POST
```

Open REST API Framework

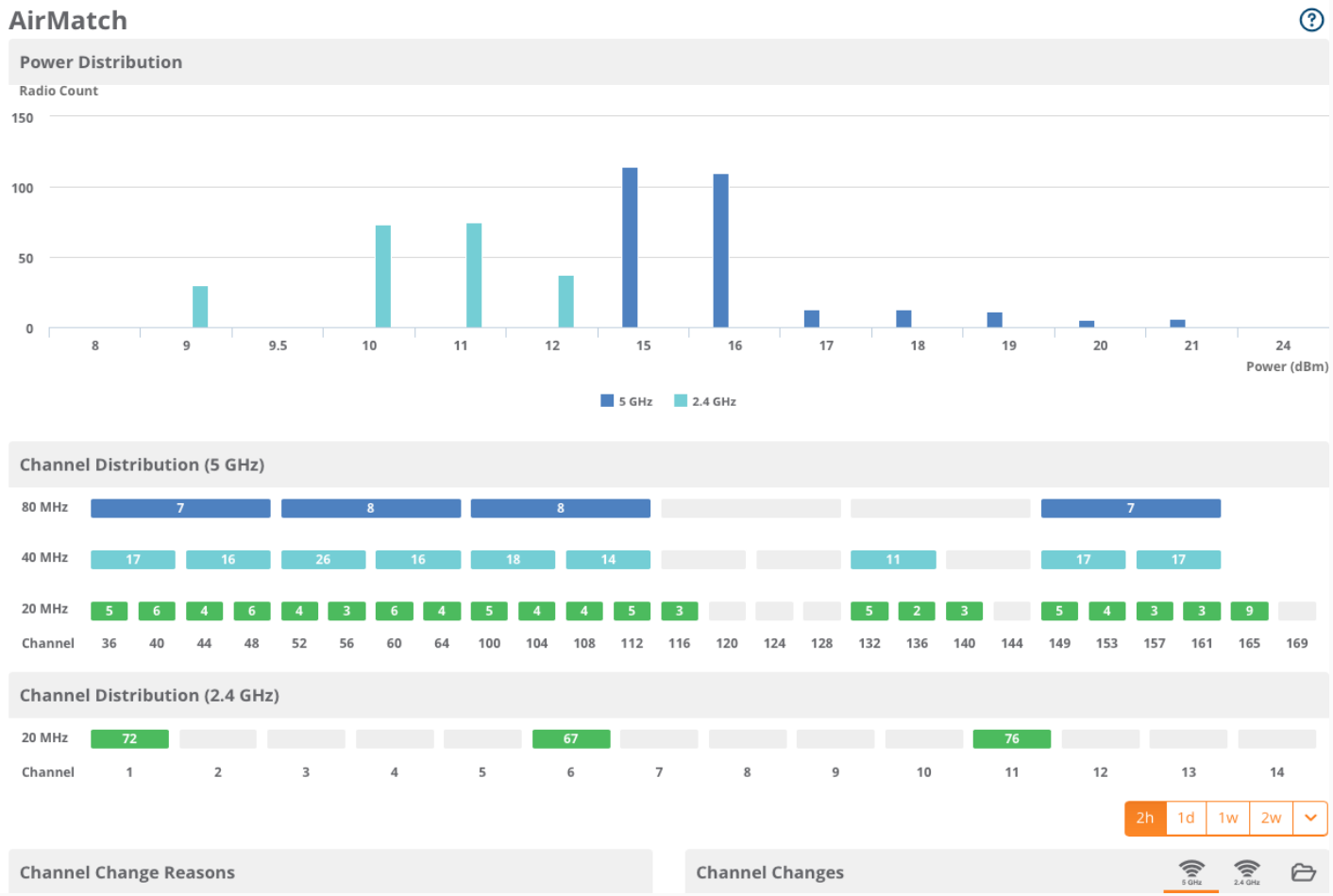
Automation, Interoperability, and Open Standards



Open REST API Framework

Zero-Touch Provisioning

Automation, Interoperability, and Open Standards

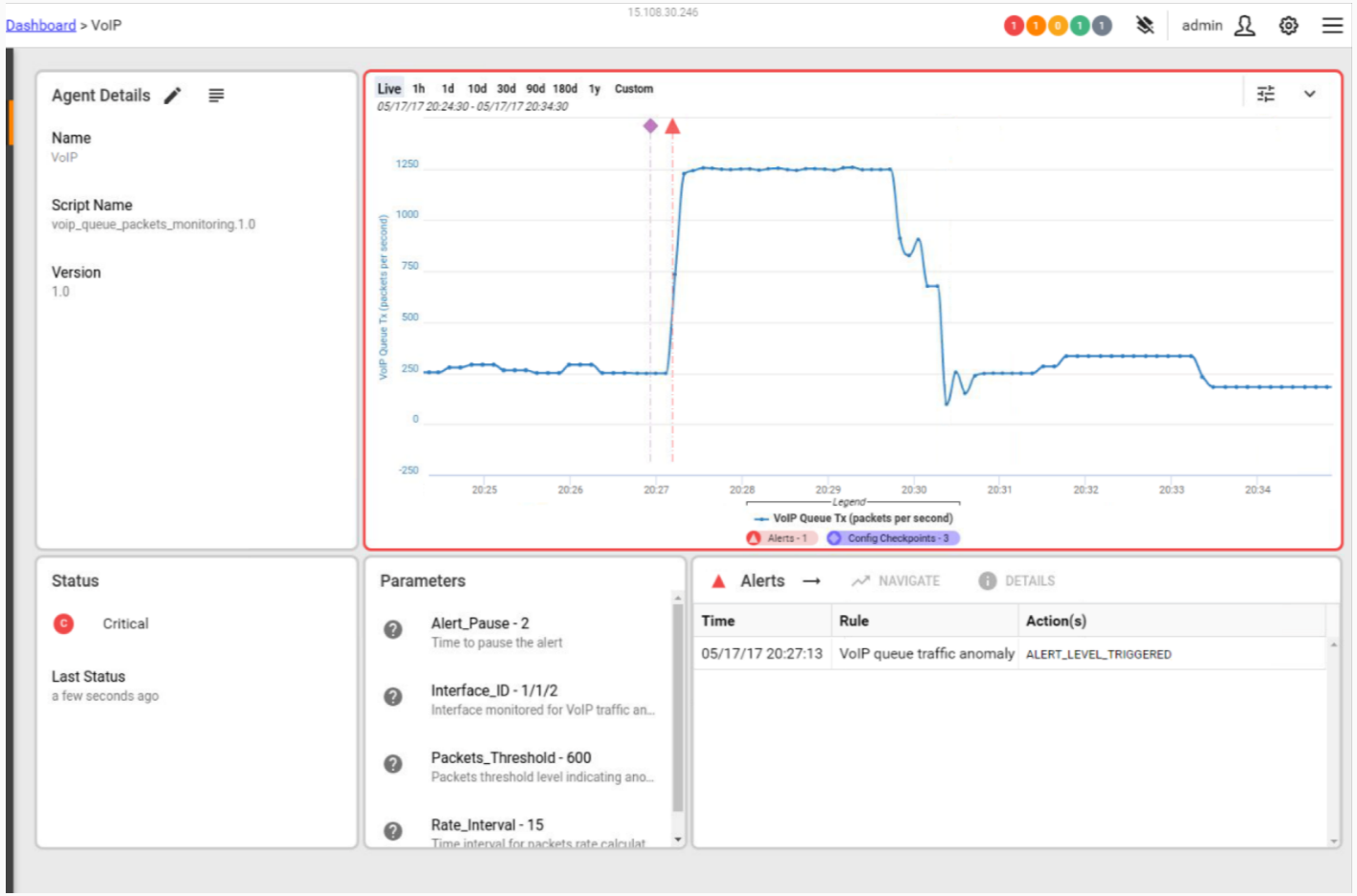


Open REST API Framework

Zero-Touch Provisioning

Self-Driving Network

Automation, Interoperability, and Open Standards



Open REST API Framework

Zero-Touch Provisioning

Self-Driving Network

Automation, Interoperability, and Open Standards

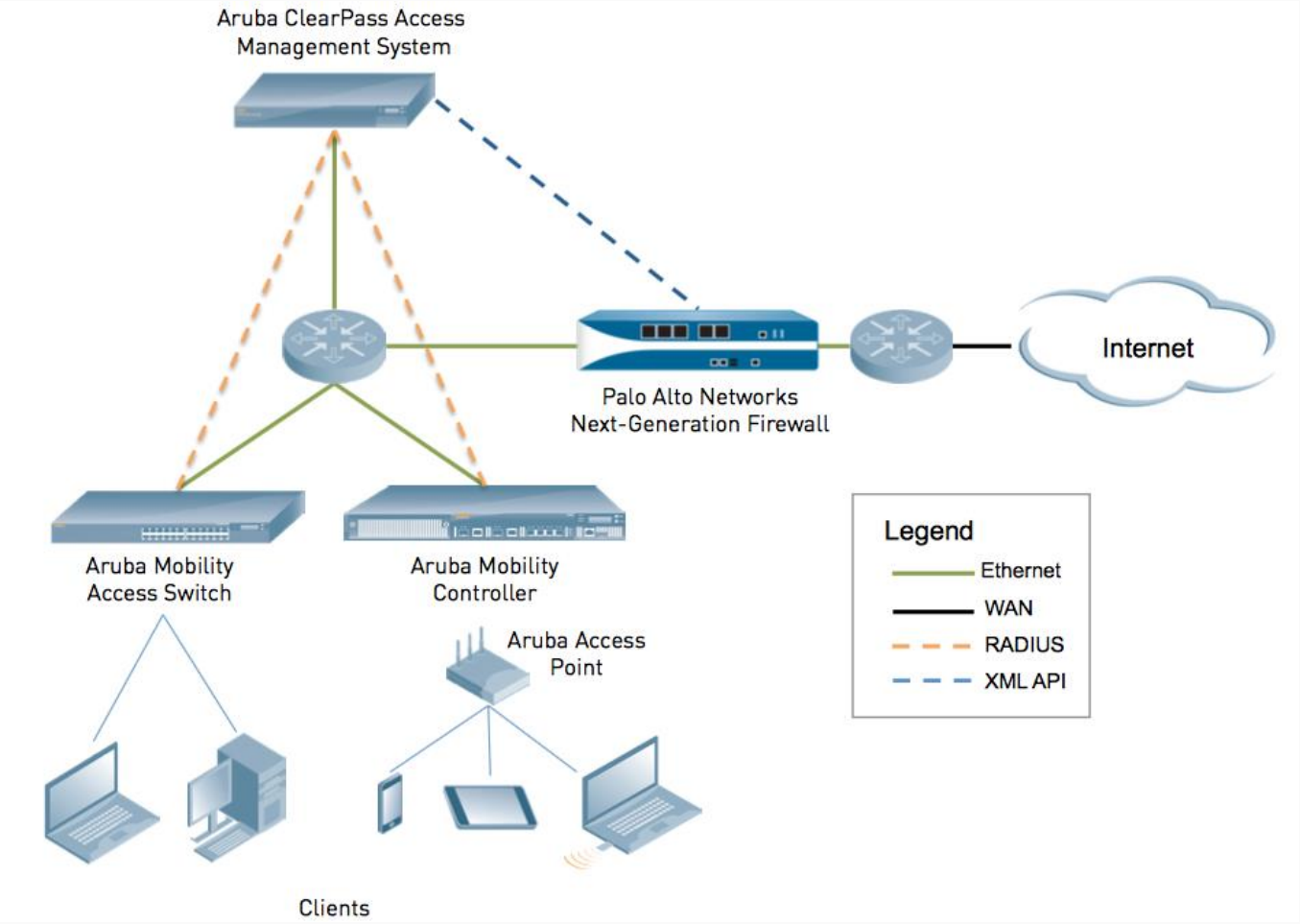
Open REST API Framework

Zero-Touch Provisioning

Self-Driving Network

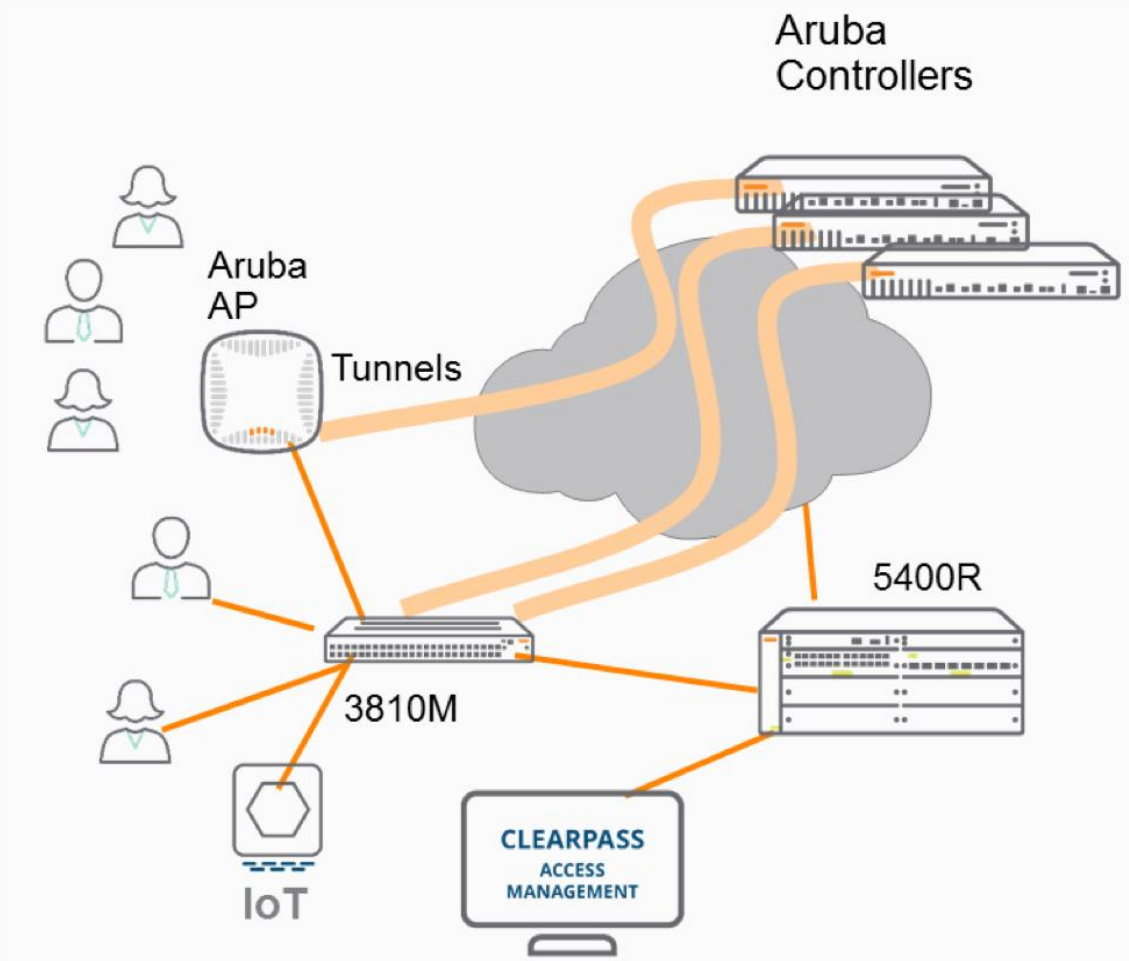
Open Standards

Security



Palo Alto Networks Integration

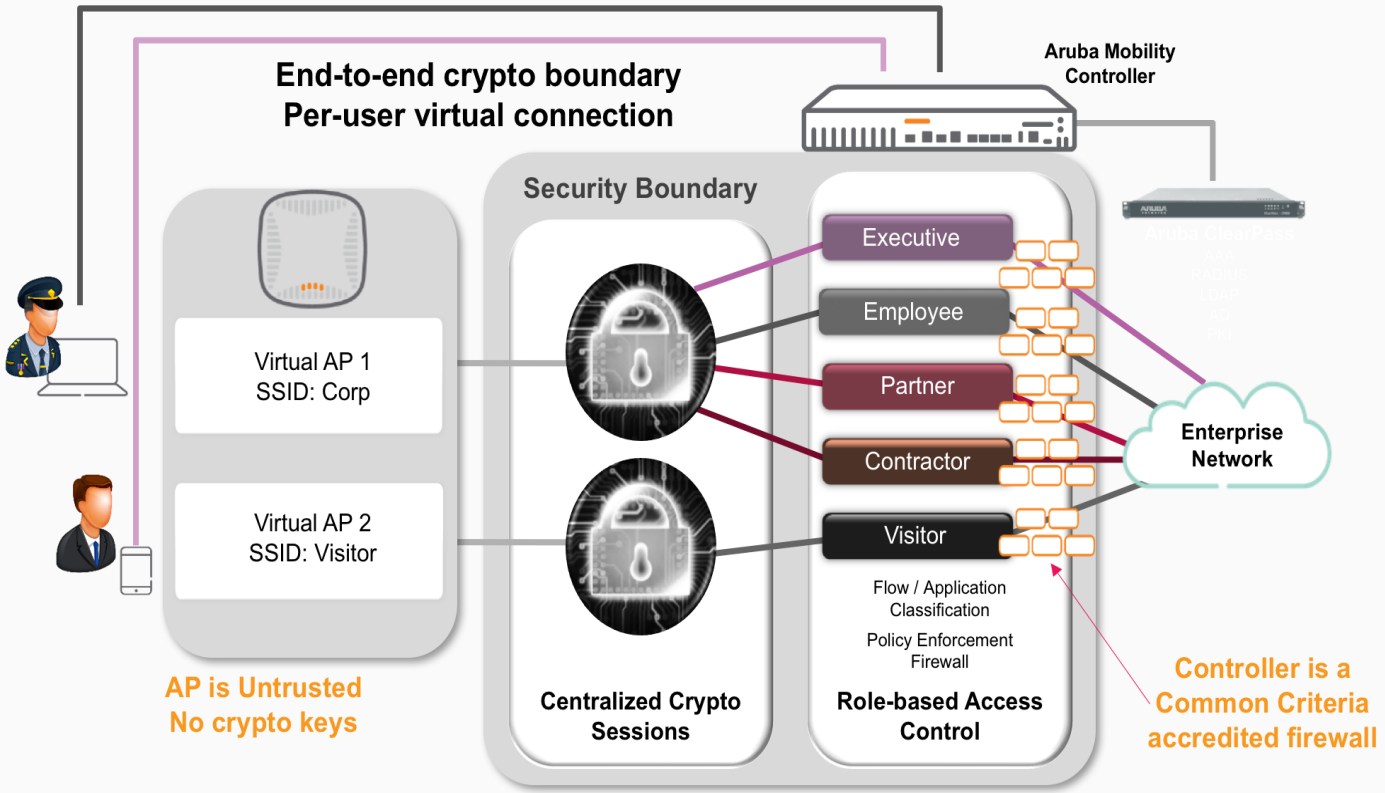
Security



Palo Alto Networks Firewall Integration

Next-Gen Wired

Security



Palo Alto Networks Firewall Integration

Next-Gen Wired

Security First

Unmatched User Experience

INDUSTRY'S ONLY NONSTOP NETWORK

Nonstop Wi-Fi and end-to-end networking solution with self-tuning performance and comprehensive assurance

Live Upgrades

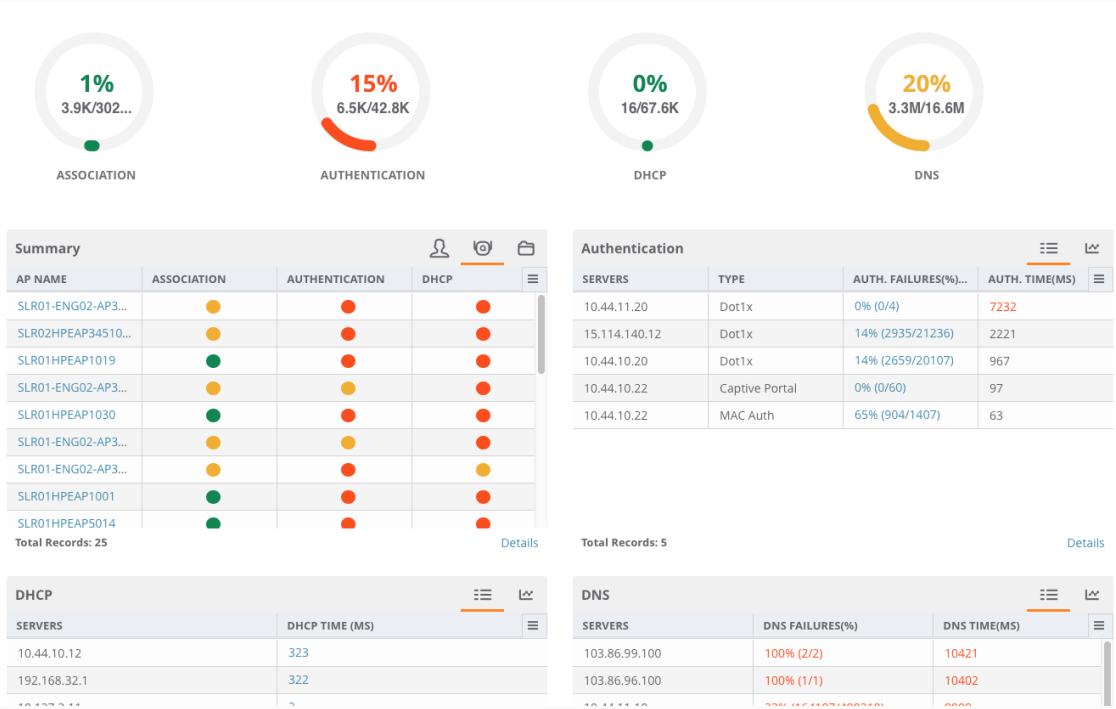
User and AP Load Balancing

Stateful Failover

ClientMatch

AirMatch

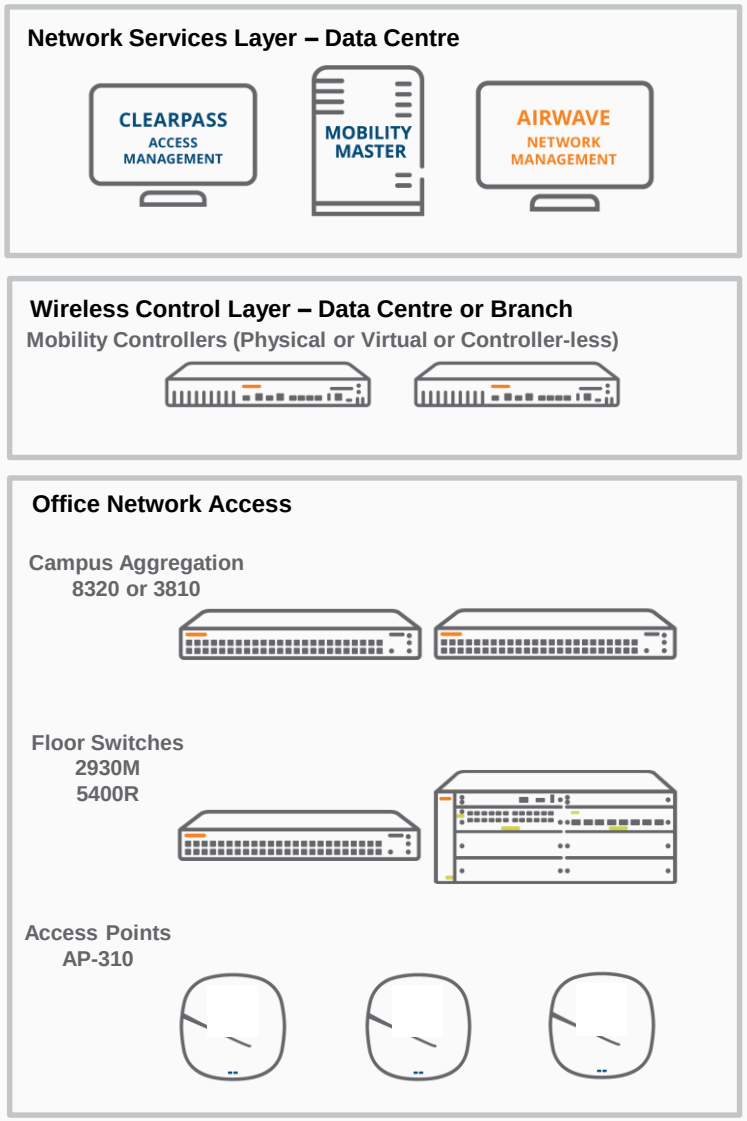
Unmatched User Experience



Clarity Live – Global – Site View

Clarity Live – Client Focus

High Level Architecture



Large Office

Campus Aggregation
8320

Floor Switches
5400R

Access Points
AP-315

MAN

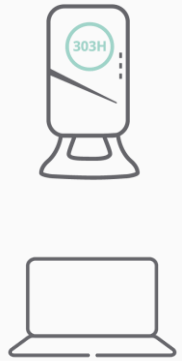
DATA CENTRE

Mobility Master

Mobility Controller

INTERNET

Home Office / Portable Office



WAN

Medium Office

Mobility Controller
Virtual or Hardware

Campus Aggregation
3810

Floor Switches
2930M

Access Points
AP-315

Small Office

Mobility Controller
Virtual / Hardware / Controller-less

Floor Switch
2930M

Access Points
AP-315

Why Aruba?

The Winning Formula

- Class Leading Wireless Features
- Deep Platform Integration
- Zero-Touch Provisioning
- Colourless Ports
- Unmatched Security Pedigree
- Open Platform
- Innovative Core / Aggregation
- Unmatched Warranty
- **Mobile First Architecture**

Part 2: Agenda

- PAFC ---- the First AWW project in China
- Requirements & Challenges
- Aruba Solutions
- Why Aruba

PAFC (HQ building of Ping An Insurance)

The first AWW project in China

Ping An Insurance & PAFC

One of our biggest account in China.

– **Ping An Insurance (Group) Company of China, Ltd** was founded in 1988 and has its headquarter in Shenzhen. The Group is the first insurance company in China. Ping An has about 900,000 life insurance sales agents and 300,000 full-time employees.

- No.10 in Forbes' Global 2000 league table in 2018.
- No.29 in U.S. Fortune Magazine's Global 500 Leading Companies ranking.
- The world's top global insurance brand, and as of 2018.
- The third most valuable global financial services company in the world.
- The world's largest and most valuable insurer, worth US$217 billion, as of January 2018.

– **Ping An Finance Centre** (also known as the **PAFC**) is a 118-storey Megatall skyscraper in Shenzhen, China. The building was commissioned by Ping An Insurance and designed by the American architectural firmKohn Pedersen Fox Associates. It is the 4th highest building in the world.

PAFC ---- a Megatall skyscraper

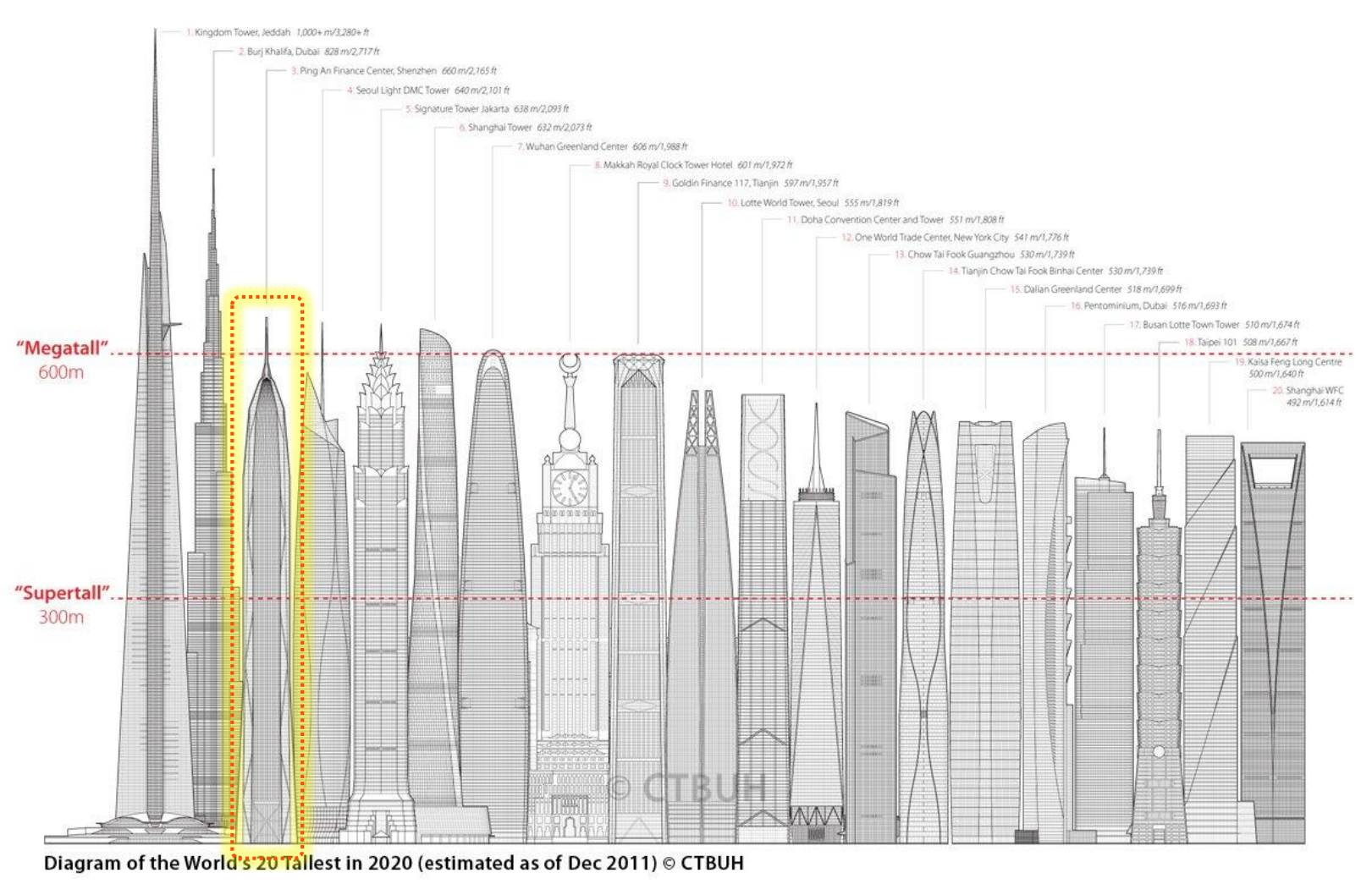


Diagram of the World's 20 Tallest in 2020 (estimated as of Dec 2011) © CTBUH

“All Wireless Workplace solution that Aruba provided for our HQ building is excellent. All the user in this building including our staffs, guests, even our CEO are satisfied with this system. They can access the network wherever they are, even in the elevators. Each mobile devices and IoT devices can be derived a unique role with appropriated policy.”

Anxin Fan, IT Architect , Ping An Insurance

Requirements & Challenges

First try to deploy AWW, very high density, VoIP with Wi-Fi, elevators Wi-Fi coverage, IoT devices secure access etc

How and Whether

No AWW experience and related case studies in China

– Is it possible to deploy All Wireless Workspace?

– How to deploy very high density Wi-Fi solution?

– Is it a reliable Wi-Fi Solution?

– How to improve the experience for everyone?

– How to solve devices security challenges?

– How to simplify network monitor and management?

– Is it prepared for the future use?

Very High Density

AWW, modern and smart office

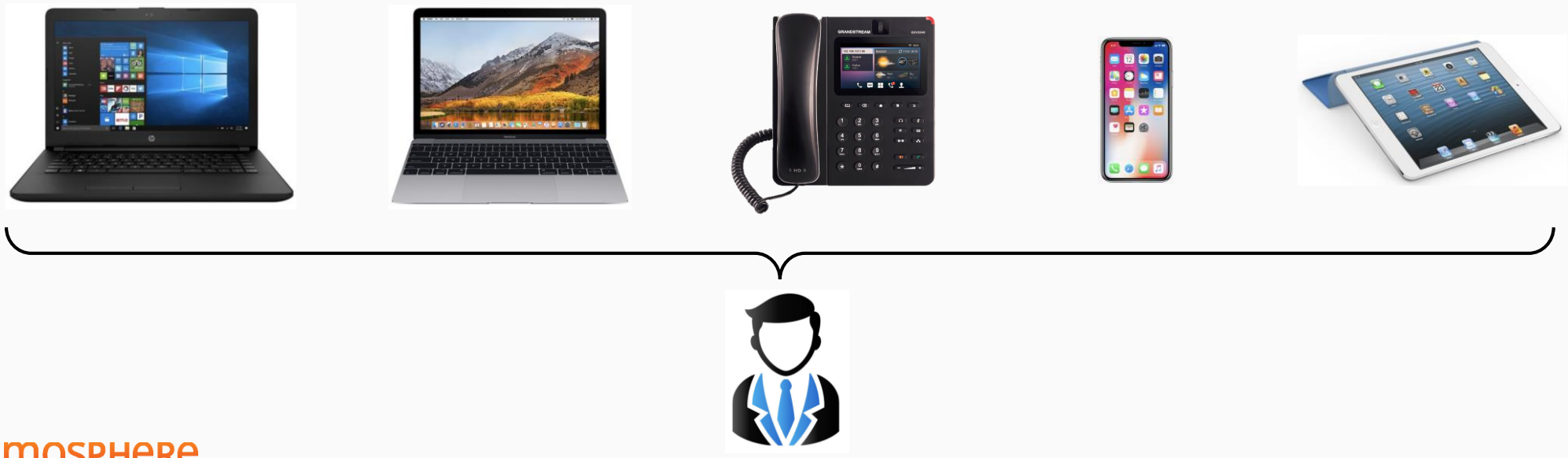
– Real AWW, no wire at all

– Design for 5 devices per seat

  – Laptop + Wi-Fi IP Phone + mobile phone + tablet / 2nd mobile phone + MacBook / Future device

– Prepare for 6,500 employees

– Wi-Fi signal broadcast across 60 floors including tens of elevators



Better Experience for everyone

Provide seamless wireless network service

– When employees move into their modern facility, they should embrace the new paradigms

– Enterprise-wide VIP experiences

– Simplify building and Wi-Fi access

– Dynamic intelligence delivers optimal experience

– Quality of Services fine-tune the Voice over Wi-Fi application

Unifies and Streamlines Security

Tens of thousands devices access the Wi-Fi network

– Corporate Windows laptop secure access

– MacBook of senior manager secure access

– BYOD internet access

– Mobile apps development devices secure access

– Wireless IP phone secure access

– Future IoT devices access

Elevators Wi-Fi coverage

No fibers, no ethernet cables, no telephone cables prepared

– 40 of the 70 elevators need Wi-Fi signal coverage requested by CEO

– Wi-Fi signal coverage in elevator cars

– Seamless Wi-Fi connectivity

– High quality voice application guarantee

– High performance Wi-Fi network guarantee

Future-proof the network for next generation

Smart workspace, real-time location context, big data analysis

– Workspace management, improve workspace utilization

– Meeting room automatic check-in, maximized meeting room resources

– Employee behavioral analysis

– Smart energy, energy-saving in multi areas

Aruba solutions

Aruba Mobile First Architecture solve all the problems

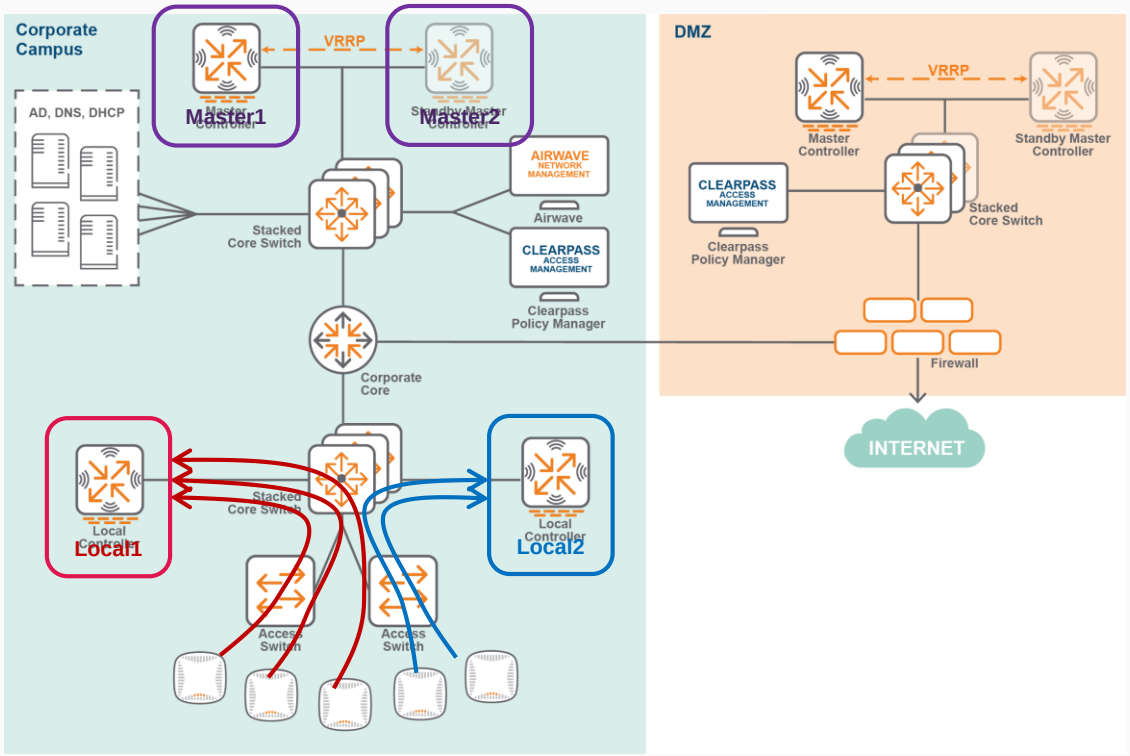
Improved network reliability

Legacy AOS 6.x design, but still stable and reliable

– Four 7200 series controllers deployed in HQ Datacenter, two masters and two locals

– HA with two locals in Active-Active mode

– Planning to upgrade to AOS 8.x this year



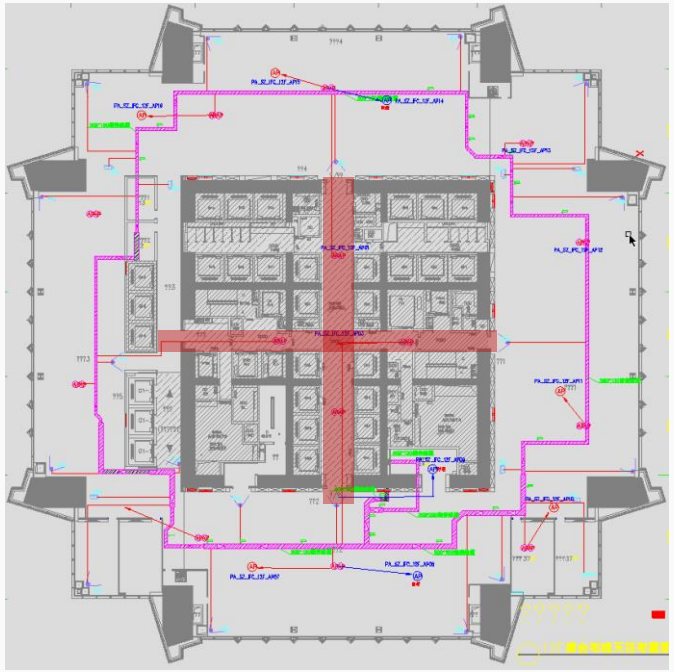
Very High Density design

System dimension & RF design

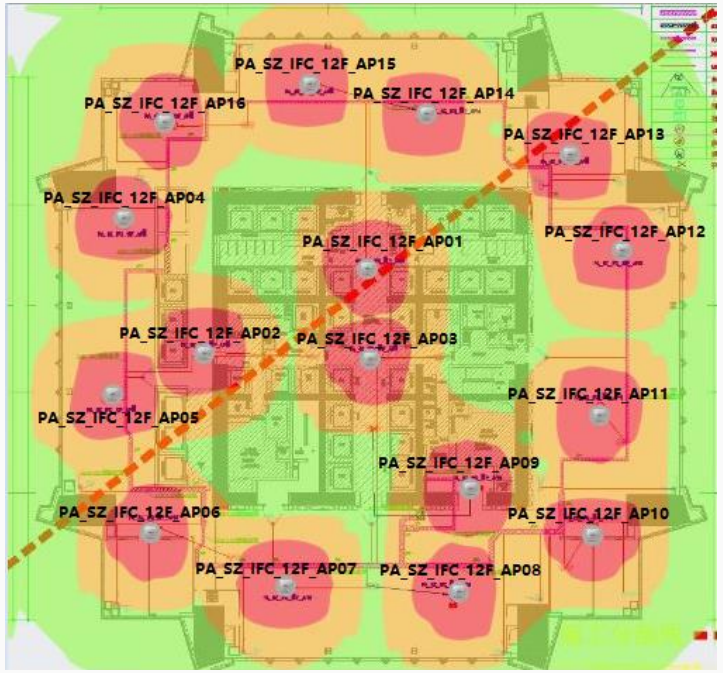
– 6,500 employees in 60 floors

– Five devices per seat

– Averagely deployed 16 APs per floor, 12 APs of them cover office area



Floorplan



Heatmap

Very High Density design (cont.)

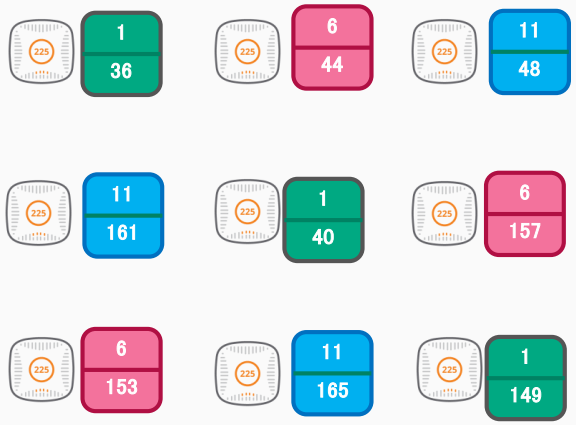
System dimension & RF design

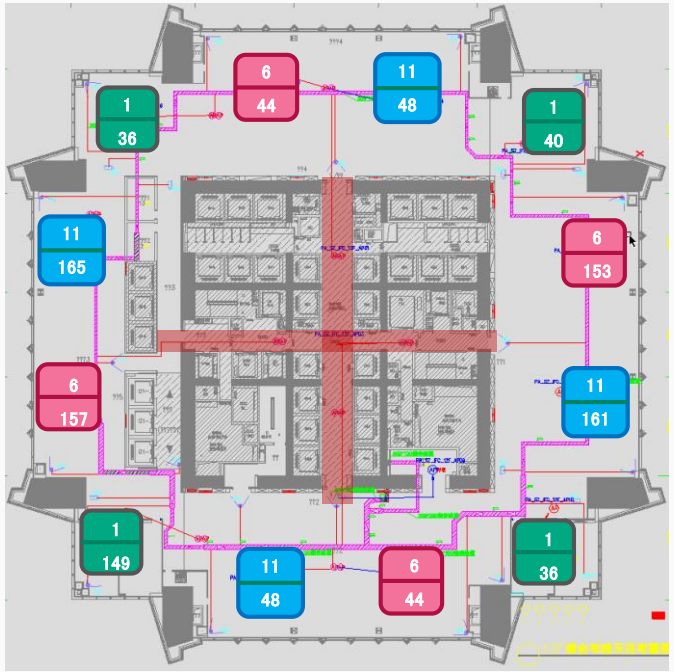
– ONLY 13 5GHz channels can be used in China, but 4 of them are DFS channels, so the actual number is 9

– Maximum 150 devices associating an AP

– Three regulatory-domain group,

ch1_domain	ch6_domain	ch11_domain
2.4GHz: 1	2.4GHz: 6	2.4GHz: 11
5GHz: 36, 40, 149	5GHz: 44, 153, 157	5GHz: 48, 161, 165





Very High Density design (cont.)

System dimension & RF design

– Adjust the ARM and ClientMatch configurations

– 20 MHz ONLY on both bands

– 6 dB higher on the dot11a ARM profile then dot11g ARM profile

– Increase the ClientMatch load-balance client thresh to 80

– Maximize rate of 802.11a and 802.11n data frames by “Trimming” low rates

– Increase data rate of control and management frames

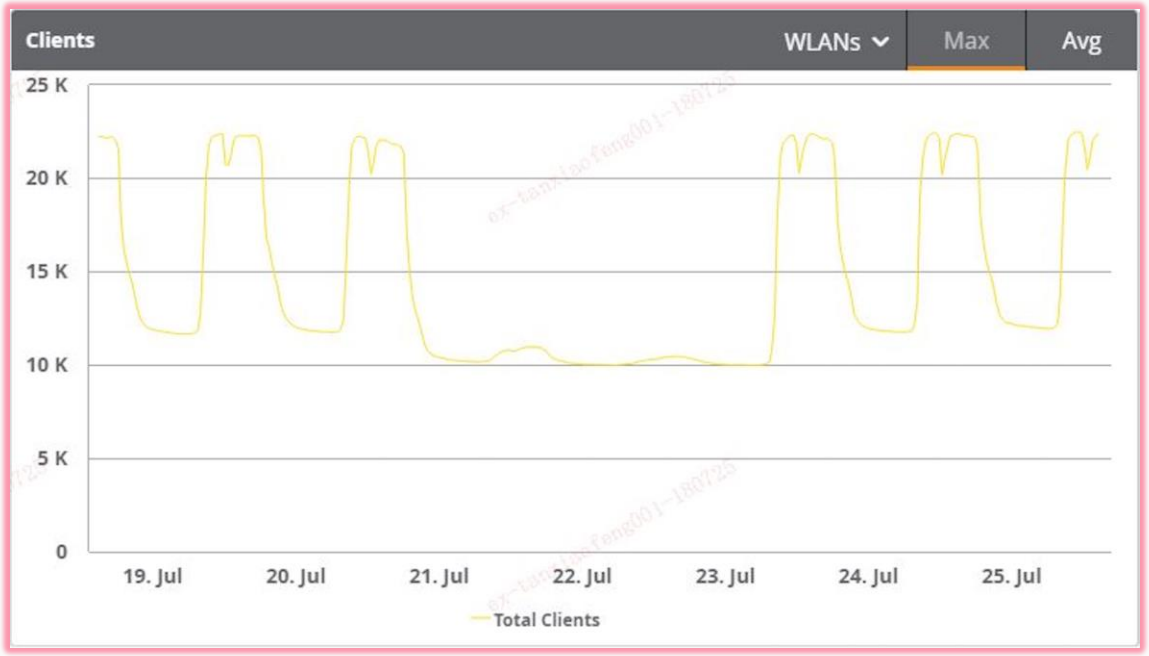
– Enable Dynamic Multicast Optimization (DMO)

Very High Density design (cont.)

System dimension & RF design

– Maximum 23,000 concurrent devices

– Maximum 129 devices associating a 5 GHz radio



Access Points (828) **Radios (1577)**

AP Name (15F)	Band	Radio Mode	Clients	Channel	EIRP (dBm)...	Noise Floor (dBm)...	Channel Utilization...
PA_SZ_IFC_15F_AP12	5 GHz	Access	129	165	21	-95	
PA_SZ_IFC_15F_AP07	5 GHz	Access	125	36	23	-96	
PA_SZ_IFC_15F_AP15	5 GHz	Access	96	161	23	-94	
PA_SZ_IFC_15F_AP14	5 GHz	Access	95	44	18	-95	
PA_SZ_IFC_15F_AP10	5 GHz	Access	91	149	18	-94	
PA_SZ_IFC_15F_AP08	5 GHz	Access	85	157	21	-95	
PA_SZ_IFC_15F_AP11	5 GHz	Access	83	44	21	-95	
PA_SZ_IFC_15F_AP13	5 GHz	Access	80	149	18	-93	
PA_SZ_IFC_15F_AP16	5 GHz	Access	66	44	18	-96	
PA_SZ_IFC_15F_AP06	5 GHz	Access	55	161	18	-95	
PA_SZ_IFC_15F_AP05	5 GHz	Access	47	157	18	-95	
PA_SZ_IFC_15F_AP04	5 GHz	Access	46	40	23	-95	
PA_SZ_IFC_15F_AP01	5 GHz	Access	5	40	9	-95	
PA_SZ_IFC_15F_AP02	5 GHz	Access	1	48	9	-96	
PA_SZ_IFC_15F_AP09	5 GHz	Access	1	165	9	-95	
PA_SZ_IFC_15F_AP03	5 GHz	Access	0	153	9	-96	

Secure access for corporate devices, Wi-Fi IP phones, BYOD

ClearPass simplify connectivity, onboarding and endpoint configuration

– Corporate windows laptop access, user and machine two-factor authentication

– MacBook access, 802.1X + JAMF integrating

– Corporate Windows laptop and MacBook internet access, SSO with Sinfor Gateway

– Wi-Fi IP phone access, finger printing + PSK

– Mobile apps development devices access, ClearPass Onboard

SSID	Authentication	Roles	Policy
PA_WLAN	802.1X (For windows laptop, user and machine authentication) 802.1X (For MacBook, JAMF integrating)	Windows_role_x MacBook_role_x	Permit to internal network (different rules with different role) Deny all
PA_Voice	WPA2-PSK + Device Finger Printing	Phone_role	Permit to Voice Gateway Deny all
PA_MA	EAP-TLS	MA_role	Permit to MA server Deny all

Wireless Voice application significantly enhanced

Wireless IP phone secure access and QoS for voice application

– Over 6,500 Grandstream GXV3240D IP phones in PAFC

– User-defined device fingerprint and update fingerprint dictionary in ClearPass

– Fingerprint as one of the authentication factors

– Steering the IP phones to connect 5GHz radios

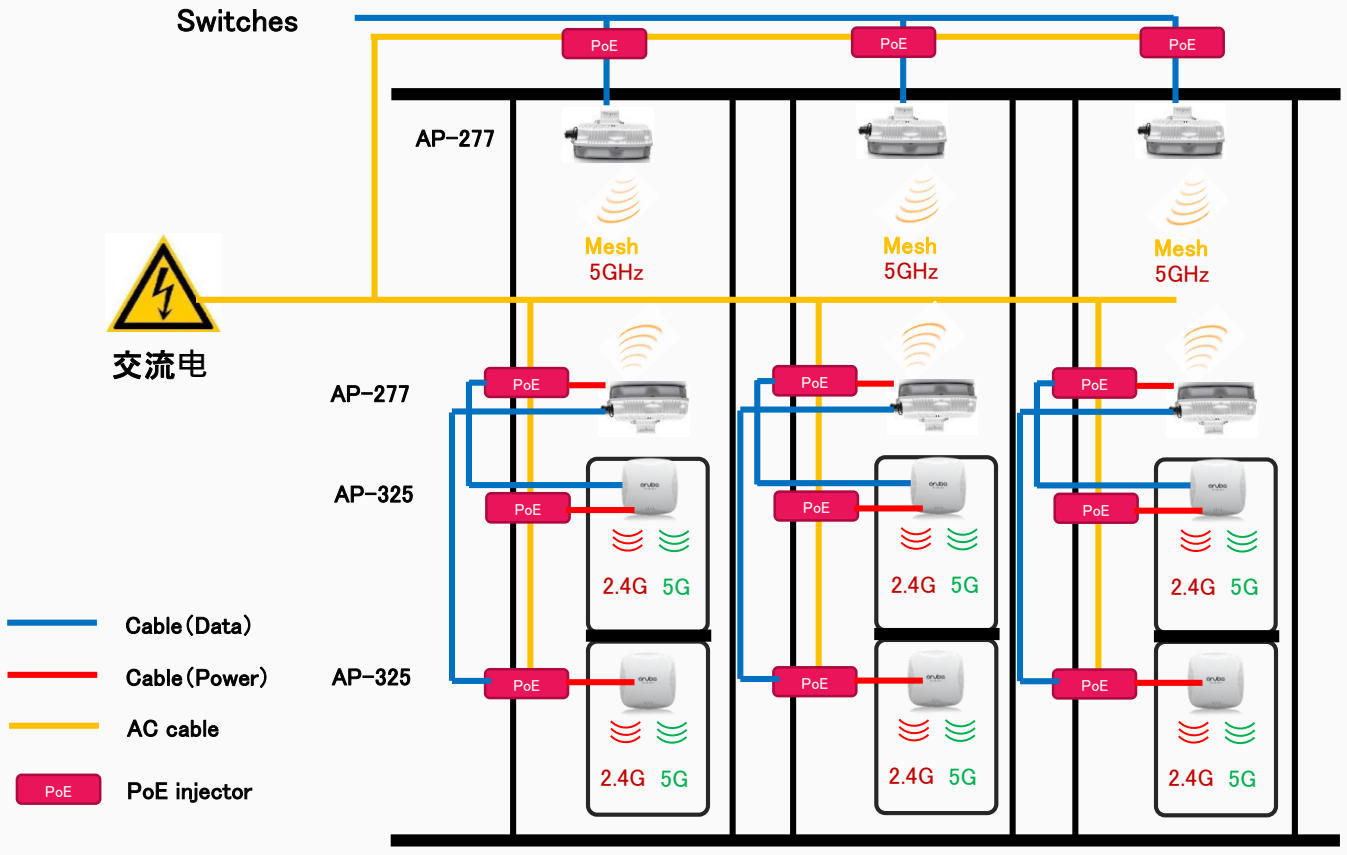
– Enable WMM and tagging, adjust the related radio configurations

- Android OS
- Dual band wireless
- 4.3’ Touch monitor
- Video support
- No support 802.1X

Continuous Wi-Fi signal in Elevator Cars

Connecting the elevator cars to the network with Aruba Mesh technology

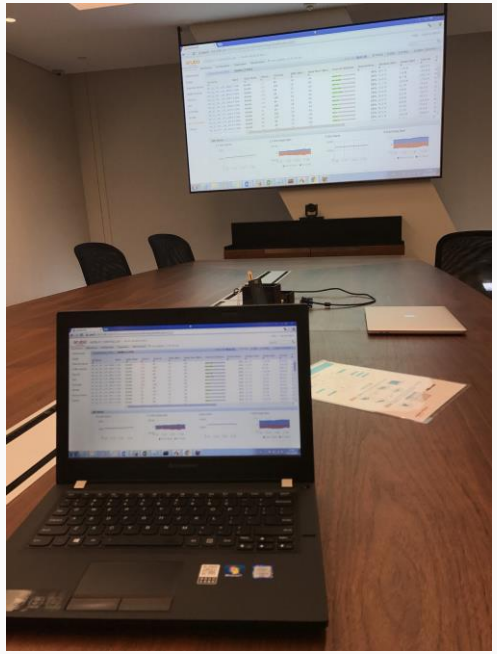
- Most of the elevators need Wi-Fi signal coverage requested by CEO
- No any data cable prepared for PAFC elevators, it will cost 1.5M USD per elevator if add it in
- All Aruba APs support secure enterprise mesh to expand network coverage
- Point-to-Point mesh link with AP-277 in elevator shaft
- AP-325 establish secure tunnels to controllers through AP-277 mesh links



Innovating for Today and Tomorrow

Ping An expects Aruba infrastructure to enable expanded Wi-Fi capabilities

- Mobility lets employees be more productive, which increases satisfaction and loyalty.
- Embracing a digital workplace to improve employee experience and to create smarter, more efficient workspaces with intelligent meeting rooms
- Extending VIP mobile experiences to everyone, whether employees, customers or partners
- Location services ready
- Future-proof the network for the next generation of devices



Why Aruba

How can we win this case competing other vendors

ARUBA'S SOFTWARE-DEFINED

EDGE PLATFORM

SECURE
Software-defined policy and embedded security

SMART
Learning for self-tuning and contextual experiences

ENTERPRISE
Best-in-class, unified platform for amazing experiences

Amazing **Experiences** with Amazing **Simplicity**.

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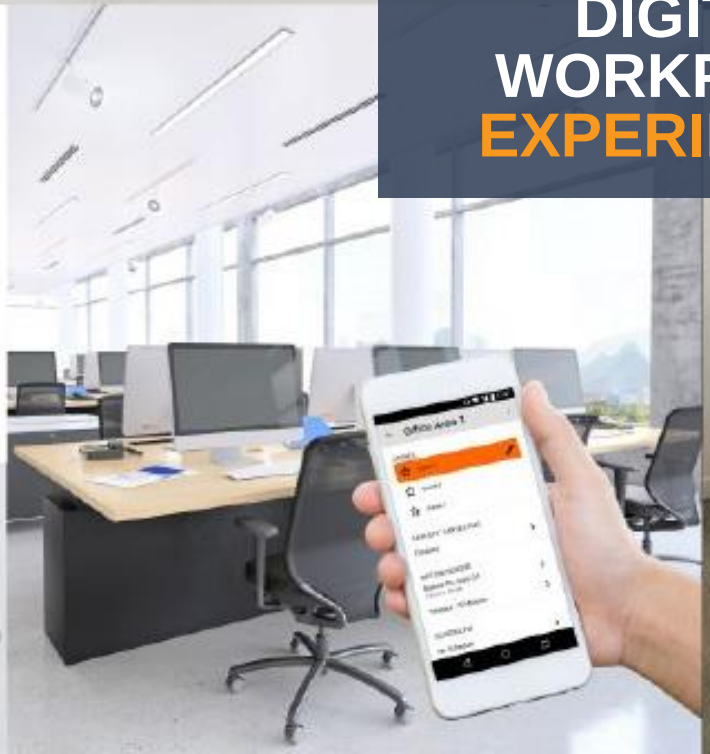
SMART
DIGITAL WORKPLACE
EXPERIENCES



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MEET THE NEEDS OF THE ENTERPRISE
WHILE SAVING TIME

Put automation to work and handle mobile, IoT, and cloud demands at scale, without compromising end user experiences

UNMATCHED SCALE

From the pioneers of the industry's game-changing and prevailing controller-based Wi-Fi architecture

+

INDUSTRY'S ONLY NONSTOP NETWORKING

Nonstop Wi-Fi and end-to-end networking solution with self-tuning performance and comprehensive assurance

Amazing **Experiences** with Amazing **Simplicity**.

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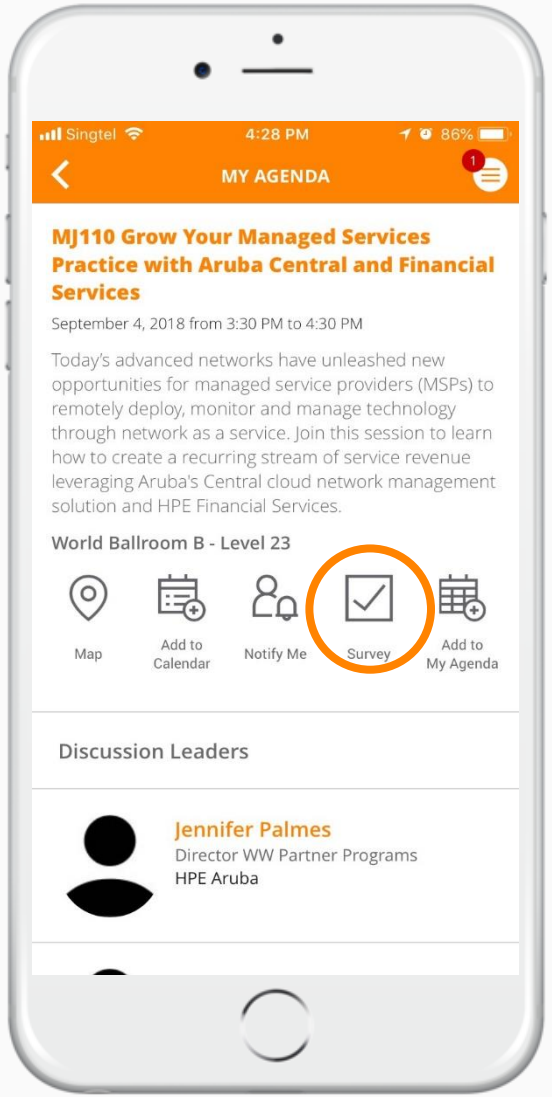

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