



**aruba**

a Hewlett Packard  
Enterprise company

# Aruba CX Switching Portfolio and Wi-Fi Solutions

Product Overview

Florin Berea – presales engineer

[f.berea@logicom.net](mailto:f.berea@logicom.net)

Figure 1. Magic Quadrant for Wired and Wireless LAN Access Infrastructure



a Hewlett Packard Enterprise company

Market Leader 15 Years Running<sup>1</sup>

Positioned Furthest in Completeness of Vision



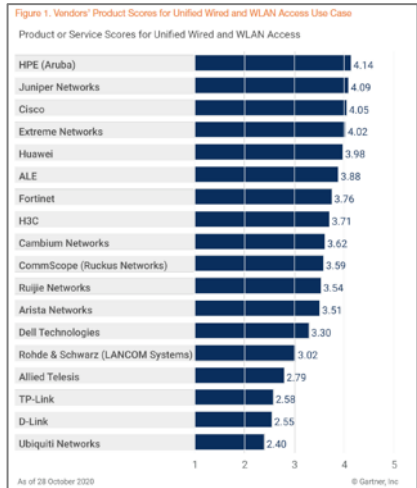
<sup>1</sup> Aruba's 15 years of placement includes HPE (Aruba) in the Magic Quadrant for the Wired & Wireless LAN Access Infrastructure from 2015-2020 (6 years), Aruba Networks in the same Magic Quadrant from 2012-2014 (3 years) and in the Magic Quadrant for Wireless LAN Access Infrastructure from 2006-2011 (6 years).

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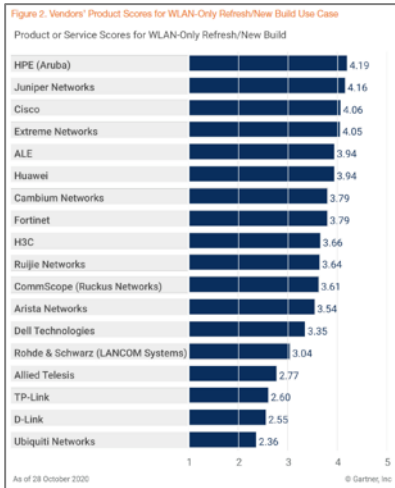
# Aruba #1 In All Uses Cases in 2020 Gartner Critical Capabilities Report

Aruba has received the highest product scores for all Wired and Wireless LAN Access Infrastructure Use Cases in Gartner's Critical Capabilities for Wired and Wireless LAN Access Infrastructure

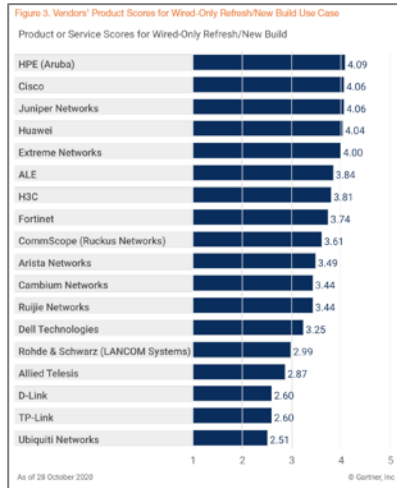
## #1 Unified Wired & WLAN Access



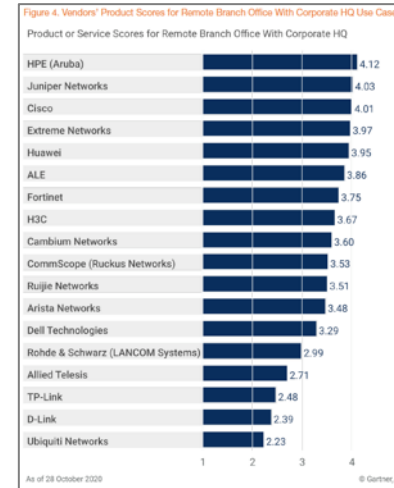
## #1 WLAN Only Refresh/New Build



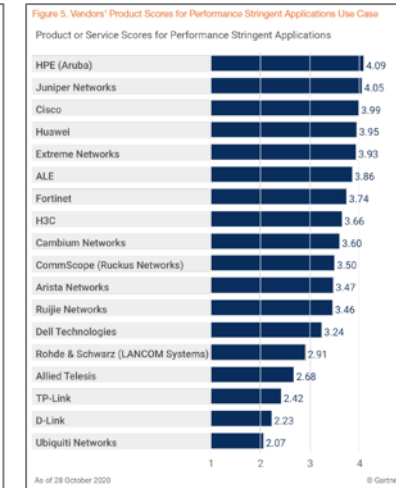
## #1 Wired Only Refresh/New Build



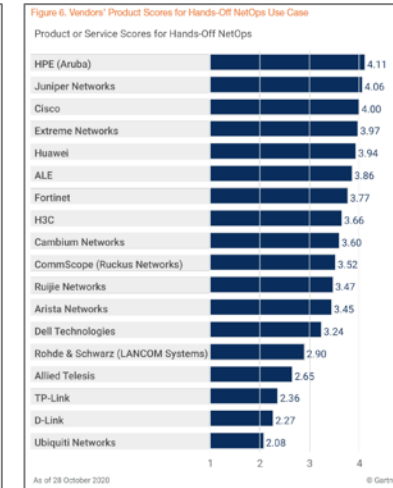
## #1 Remote Branch Office w/Corp HQ



## #1 Performance Stringent Apps



## #1 Hands Off NetOps



Gartner Critical Capabilities for Wired and Wireless LAN Infrastructure, Christian Canales, Tim Zimmerman, Bill Menezes, Mike Toussaint, 11 November 2020

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# Access insights and program the network in real-time

## Components of the Aruba Mobile First Platform



### Network controls

AOS8 with REST APIs to share context and program infrastructure



### Network management

AirWave with northbound XML APIs for data consumption



### Policy management & Security ClearPass



### Cloud networking

Central with REST APIs to share context and program infrastructure



### Location analytics

Analytics and Location Engine (ALE) with northbound REST APIs



### Micro-location services

Meridian with mobile app development SDK and REST APIs



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# **Wireless & Wired Network Infrastructure**

# WI-FI 6 CERTIFIED COMPLETE INDOOR PORTFOLIO



**500 Series**  
Medium-density  
offices, schools  
or retail spaces



**510 Series**  
Mid-range  
campus  
deployments



**530 Series**  
High-density  
mobile and IoT  
deployments



**550 Series**  
Extreme-density  
mobile and IoT  
deployments



**500H Series**  
High-performance  
hospitality, branch  
and teleworker

# ARUBA Wi-Fi 6 HARDENED AND OUTDOOR PORTFOLIO



**518 Series**  
Multi-Gigabit  
Ruggedized  
Indoor/Outdoor



**560 Series**  
Small form factor  
Outdoor



**560EX Series**  
Small form factor  
HazLoc Certified



**570 Series**  
Extreme Density  
Outdoor



**570EX Series**  
Extreme Density  
HazLoc Certified



**387 Series**  
Multi-Gigabit  
Point to Point  
802.11ad

# ARUBA Wi-Fi COMPLETE PORTFOLIO



**550 Series**  
Extreme Density  
Indoor  
Wi-Fi 6



**530 Series**  
Very High Density  
Indoor  
Wi-Fi 6



**510 Series**  
High Density  
Indoor  
Wi-Fi 6



**500 Series**  
Mid Density  
Indoor  
Wi-Fi 6



**500H Series**  
Hospitality/Remote  
Indoor  
Wi-Fi 6



**518 Series**  
High Density  
Ruggedized  
Wi-Fi 6



**560/560EX**  
Small Form  
Outdoor /HazLoc  
Wi-Fi 6



**570/570EX**  
Extreme Density  
Outdoor/HazLoc  
Wi-Fi 6



**340/330/320/310/300 Series**  
Very High to Mid Density  
Indoor Ceiling/Wall Mount  
Wi-Fi 5



**303H/203R Series**  
Mid Density  
Wall, Hospitality and Remote  
Wi-Fi 5



**370/360 Series**  
Very High to Mid Density  
Omni/Directional  
Wi-Fi 5



**370EX Series**  
Hazardous  
Location  
Wi-Fi 5



**387 Series**  
Point to Point  
802.11ad





# INTRODUCING ARUBA AP-635

## EXTENDING WI-FI CONNECTIVITY TO THE 6 GHZ BAND

### 3 RADIOS

**3.9 GBPS MAX AGGREGATION RATE**  
**2X 2.5GBPS PORTS**  
**UP TO 512 CLIENTS PER RADIO**

**2.6X GREATER MAX**  
**AGGREGATE THROUGHPUT**

**UP TO SEVEN 160 MHZ**  
**CHANNELS IN 6 GHZ**

**NEW USE CASES:**  
**8K VIDEO, AR/VR**



**AP-635**



Comprehensive tri-band coverage using three dedicated radios

Unique ultra tri-band filtering to enable simultaneous 5 GHz and 6 GHz operation with optimal performance

High-performance wired connectivity with dual Ethernet Smart Rate ports (2.5Gbps each) for Ethernet and power resiliency

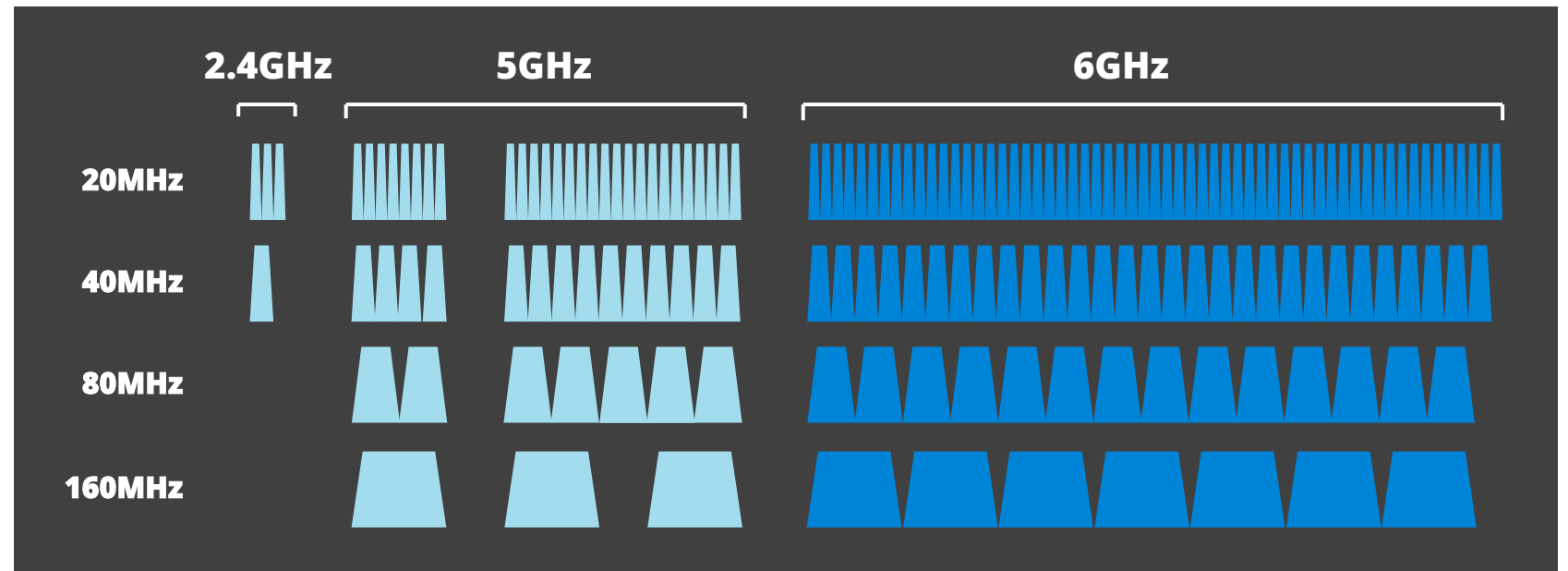
AP acts as a platform for IoT connectivity with Bluetooth Low Energy, 802.15.4/Zigbee and USB support

Automated updates of regulatory rules to support the ongoing Wi-Fi 6E global rollout

# INTRODUCING WI-FI 6E WI-FI 6 IN THE 6 GHZ BAND

## WI-FI 6 EXTENDED

**MORE CAPACITY  
WIDER CHANNELS  
CONTIGUOUS SPECTRUM  
LESS INTERFERENCE**



# 802.11ax (Wi-Fi 6) technology

Increase **4x average throughput** in a dense deployment scenario

**Maximizing capacity and efficiency** and ensuring that **all devices in a crowded network** get the bandwidth they require

**Improve power efficiency** of client devices- battery saving



# WI-FI security needs an **upgrade**

## WPA2 is over 10 years old (a senior citizen in Internet years)

- **Open SSIDs and WPA2-PSK** are not secure (e.g. in public spaces like coffee shops)
- **WPA2-Personal** was ‘broken on arrival’ and every couple years someone “rediscovers” **off-line dictionary attacks** and releases a much hyped paper
- **WPA2-Enterprise** is still solid security-wise, but **can be used in ways that lessen its overall security**, and makes it more complicated to provision.

# Intruding WPA3 and Enhanced Open Aruba APs are the first to be certified

# What is WPA3? Two New WFA Certifications

## 1. Enhanced Open - OWE (Opportunistic Wireless Encryption) replaces Open

- Problem: all wireless traffic is passed in the clear
- Solution: all wireless traffic gets encrypted
- Not part of WiFi Alliance WPA3 Cert

## 2a. SAE (Simultaneous Authentication of Equals) replaces WPA2-PSK

- Problem: passive attack results in off-line dictionary attack to discover session key
- Solution: protocol is resistant to active, passive, and dictionary attack

## 2b. Suite B/Commercial National Security Algorithms ciphers

- Problem: mix-and-match nature of WPA2-Enterprise can result in less-than-optimal security
- Solution: create a cipher suite and a set of rules to ensure consistent primitive security
- WFA requires basic (similar to WPA2 with enforced Protected Mgmt Frame settings)
- Optional Mode for 256-bit + security protocols

# Flexible WLAN architecture supports both a centralized as well as a distributed controllerless (Instant) deployment mode

Remote APs,  
VIA Mobile/Laptop Client



Small, temporary &  
home office Wi-Fi

Distributed, controllerless  
WLAN with Aruba Instant



Simplified branch  
deployment with clusters

Controller-based  
WLAN with ArubaOS



Centralized encryption with  
advanced services at scale

**SINGLE ACCESS POINT PRODUCT PORTFOLIO**

# Controller? Controllerless?



Web-based management and automatic cloud updates  
-----

Master AP as virtual controller  
-----

Automatic configuration download  
-----



Faster setup



Faster network



Faster maintenance



Stronger security

# Customer Journey – Investment, not replacement

Starting

**Maintenance** [Help](#)

About Configuration Certificates Firmware Reboot **Convert**

Convert one or more Access Points to:

Campus APs managed by a Mobility Controller ▼

Hostname or IP Address of Mobility Controller:

aruba-master.airheads.

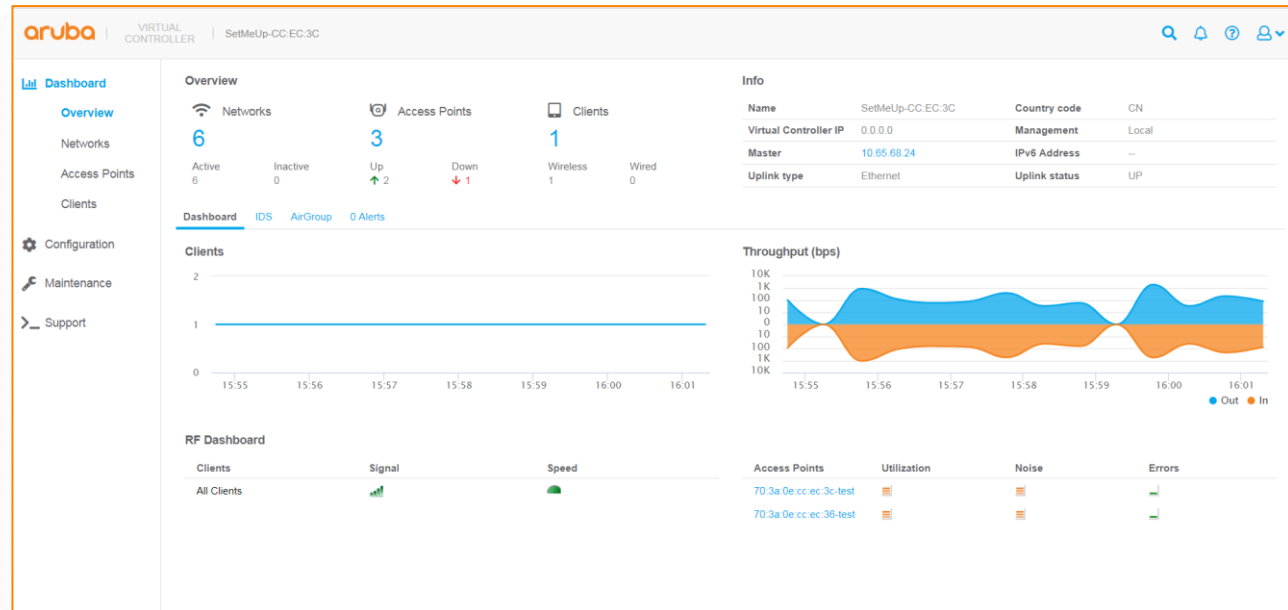
After conversion, all Access Points will be managed by the Controller specified above.

Convert Now



# ENTERPRISE-GRADE AND AFFORDABLE

– Aruba’s controller-less solution (Instant)



## Rich experiences

- Context-aware user roles
- Easy-to-use guest access portals
- Patented RF & client optimization

## Seamless management

- Zero Touch Provisioning
- Simple user navigation
- Fully featured out of the box

*(no licenses required)*

## Integrated intelligence and security

- Dynamic segmentation for wireless traffic
- Rogue detection and spectrum analysis
- High resiliency w/ uplink & site redundancy

# Instant Wi-Fi : Summary of Key Features

## Enhanced User and application performance

- Adaptive Radio Management for best RF configuration
- ClientMatch for better roaming
- Multi-user capabilities – MU-MIMO and OFDMA ( 802.11ax only)
- Spectrum load balancing- evens out clients load across channels

## Built in security with smart application handling

- Role based access
- Application visibility
- URL filtering
- Built in IPS and spectrum

## Flexible deployment and management

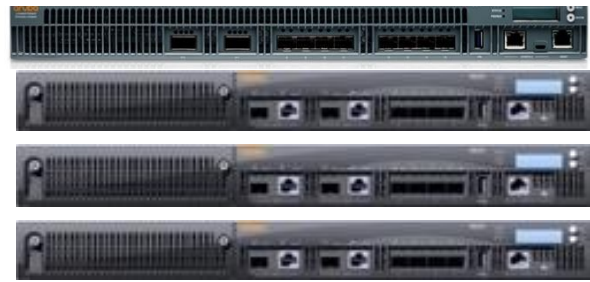
- Local configuration and management
- Zero touch provisioning
- Cloud management and on- premis management

## Highly resilient Wi-Fi

- AP network survivability
- Cellular connectivity
- Flexible image upgrades



# Controllers scale from branch to campus



7280

7240

7220

7210



7205



7030



7024 (24 PoE+)



7010 (12 PoE+)



VMC-TACT (8/16 AP)

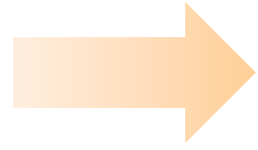


7005/7008 (16 AP)



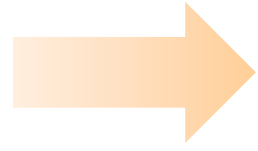
## Large Campus

High performance, redundant power/fan  
512 – 2048 APs, up to 80Gbps throughput



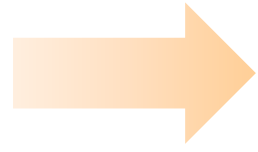
## Midsize Campus

High performance, fixed form factor  
Up to 256 APs, 12 Gbps throughput



## Large branch

Up to 64 APs and up to 8Gbps throughput



## Midsize branch with integrated switch

12 or 24 ports of PoE+ for unified branches  
Up to 32 APs



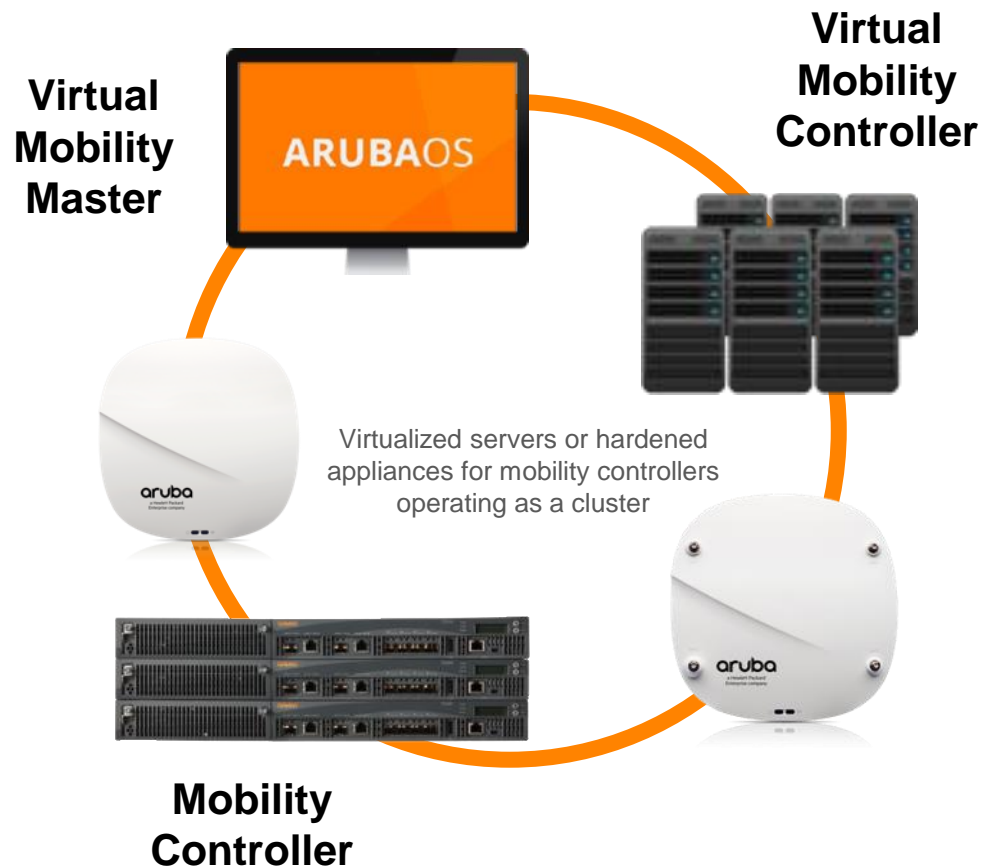
## Small branch

Virtualized or PoE-powered controllers

Branch

Campus

# Improved reliability and ease of operations with ArubaOS 8.x



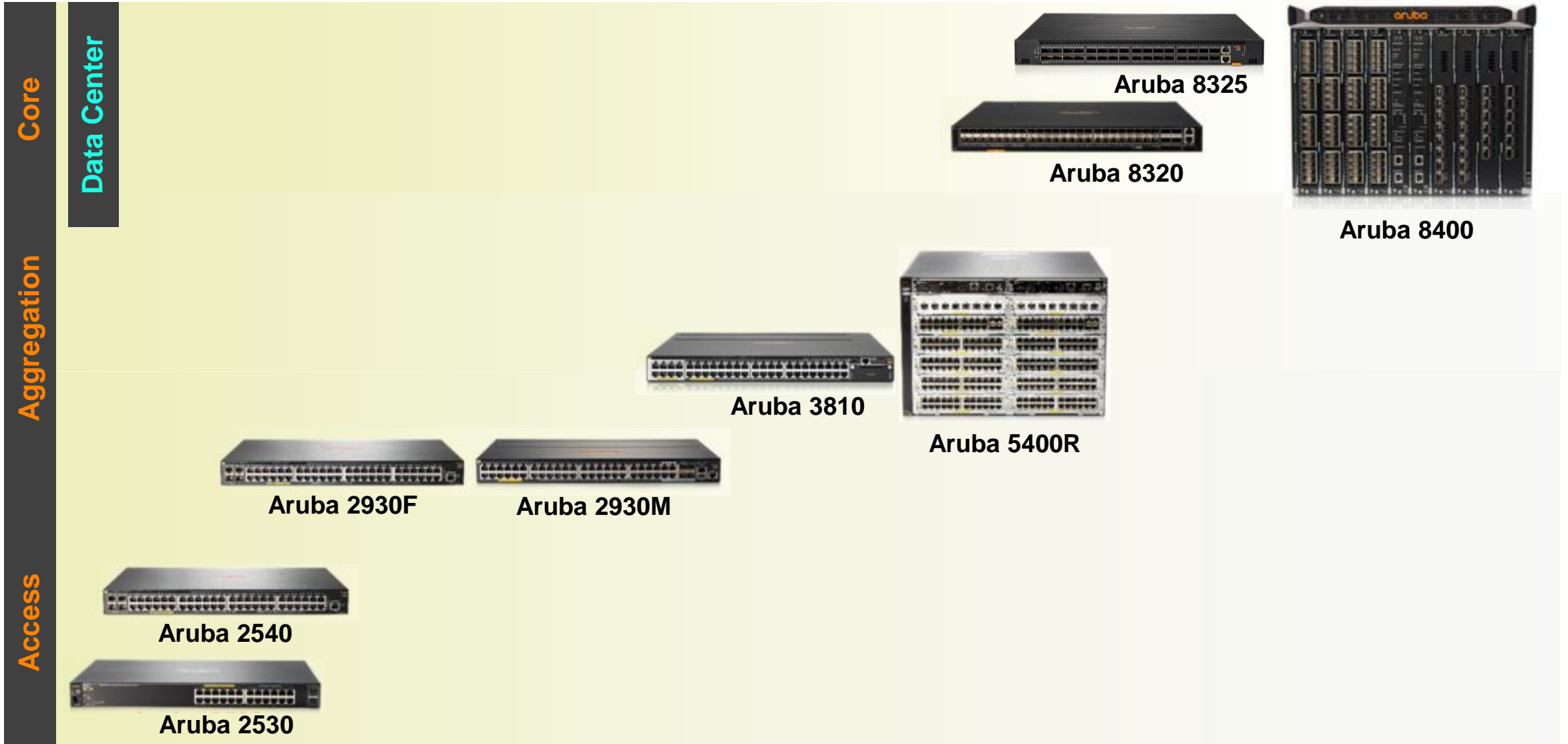
- *Hitless failovers* during controller failures within a cluster, without disruption to real-time voice and video apps
- Automated *user & AP load-balancing* with congestion across the members of the controller cluster
- *Multiple OS releases* across different clusters within the same network, easing the migration from old to new
- *In-service upgrades* for major features and functions, such as NB APIs, AirGroup, AppRF, ClientMatch

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# Wired Network Infrastructure

# Aruba Switching Portfolio



# Aruba mobile-first switch portfolio

**2530**



- Layer 2
- 8, 24 or 48 ports w/ 10/100/1000BaseTX
- sFlow, ACLs, IPv6
- Fanless & compact models
- Models with 10GbE uplinks
- PoE+ models

**2540**



- Basic Layer 3 Static routing & RIP
- 24 or 48 ports with 10/100 or Gig
- sFlow, ACLs, IPv6
- Models with 10GbE uplinks
- PoE+ models

**2930F**



- Basic Layer 3 Static Routing, RIP & Access OSPF
- 8, 24, 48 ports Gig
- PoE+ models
- Models with 1GbE or 10GbE Uplinks
- Internal Power supply
- **VSF stacking (4x Units) front plane stacking**
- OpenFlow

**2930M**



- Layer 3 Static routing, RIP & Access OSPF
- 24 or 48 port Gig
- **Smart Rate multi-gigabit Ethernet**
- Wire speed 40GbE
- Modular uplinks
- Redundant power
- **10 unit stacking**
- 480x 1GbE PoE+ ports in a stack
- 40x SmartRate ports in a stack
- OpenFlow

**3810**



- Advanced Layer 3
- OSPF & BGP
- 24 or 48 port Gig
- **Smart Rate multi-gigabit Ethernet**
- Wire speed 40GbE
- PoE+ models
- Modular uplinks
- Redundant power
- **10 unit stacking**
- 480x 1GbE PoE+ ports in a stack
- 80x SmartRate ports in a stack
- OpenFlow

**5400R**



- Advanced Layer 3
- OSPF & BGP
- 6- and 12- slot compact chassis
- **VSF support (2x Units)**
- **Smart Rate multi-gigabit Ethernet**
- Wire speed 40GbE
- Redundant mgmt. & power
- 288x 1GbE ports, 96x 10GbE ports, 96x SmartRate ports or 24x 40GbE ports
- 288 ports full PoE+ capable
- OpenFlow

**8400**



- Advanced Layer 3
- 8-slot chassis
- **19.2Tbps**
- **High Speed Modules**
- Redundant mgmt. and power
- VSF support (2x Units)
- 256x 10GbE ports, 192x 25GbE ports, 64x 40GbE ports or 48x 100GbE ports
- **Next-Gen OS**

# ARUBA CX PORTFOLIO

## CX 6300



## CX 6400



## CX 8320



## CX 8325



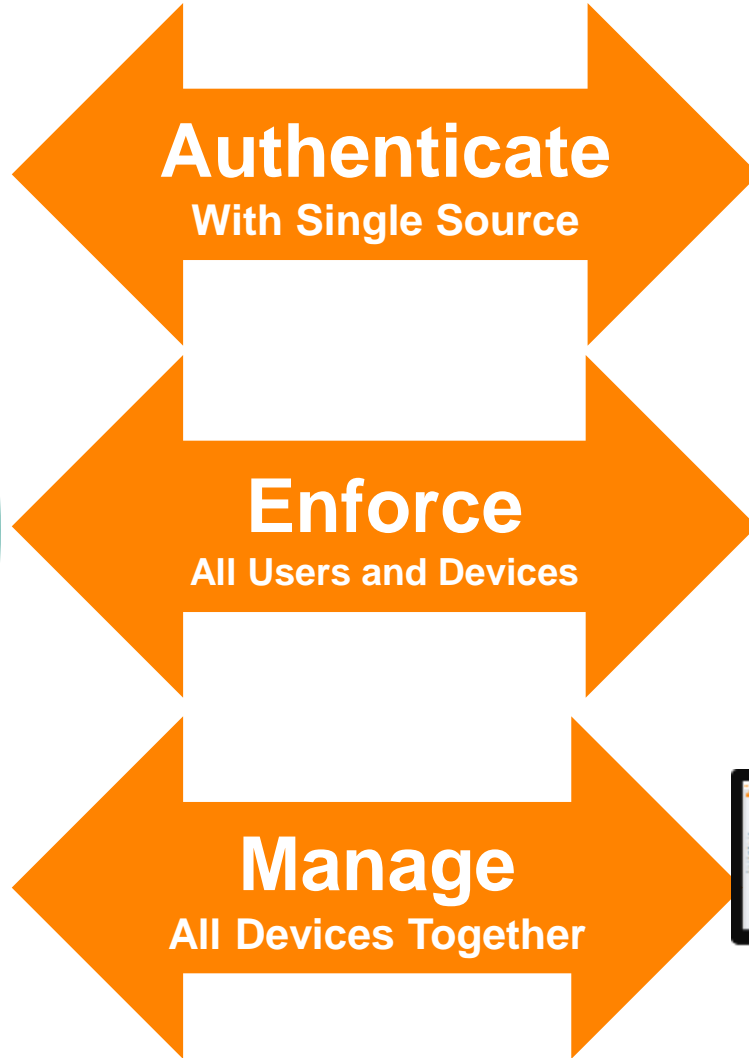
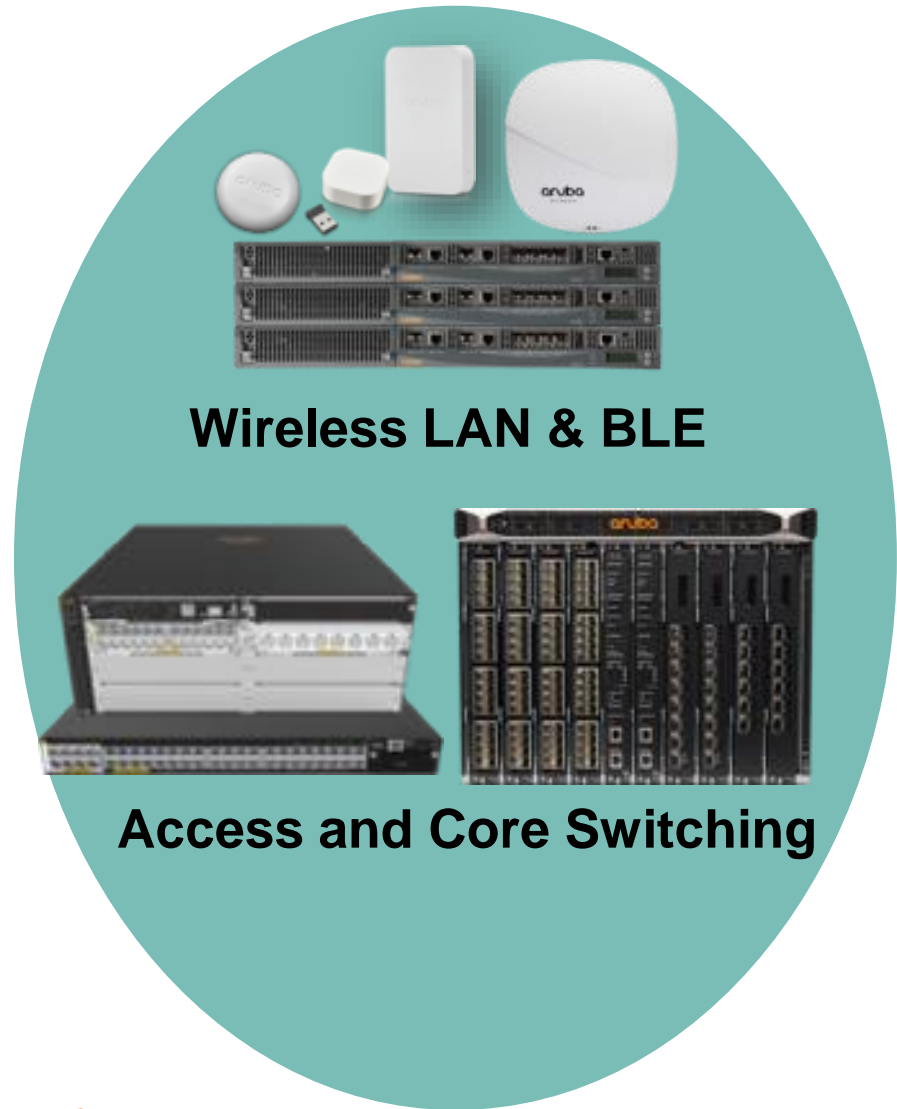
## CX 8400



Speeds	1/10/25/50G	1/10/25/40/100G	1/10/40G	1/10/25/40/100G	1/10/25/40/100G
Form Factor	Compact 1 U models with stacking (10)	Compact 5 (7 RU) and 10 slot (12 RU) modular chassis	Compact 1U models	Compact 1U models	Compact 8 slot (8U) modular chassis
Positioning	Aggregation, Access	Core, Agg, Access Data Center: Collapsible Spine/Leaf	Aggregation, Small Campus Core Data Center: Leaf, ToR	Core, Aggregation Data Center: Leaf, Spine, ToR, EoR	Core and Aggregation Data Center: Spine, EoR, MoR
AOS-CX	●	●	●	●	●
Onboard Analytics (NAE)	●	●	●	●	●
API-driven Orchestration (NetEdit)	●	●	●	●	●
Carrier-class HA, deep buffers, large tables					●
REST APIs, Python Scripting	●	●	●	●	●
Dynamic Segmentation	●	●			
Wi-Fi 6 Ready (Smart Rate, 60W PoE, Always-On PoE)	●	●			
Stacking (VSF), Virtualization (VSX)	VSF ●	VSX ●	VSX ●	VSX ●	VSX ●
VSX Live Upgrade		●	●	●	●



# Aruba Portfolio is Better Together



# Modernizing Campus Core, Aggregation and Data Center

## Aruba 8000 Series with AOS-CX



### Aruba 8400

- Highest reliability, flexibility, performance, port density
- 19 Tbps system, 8-slot chassis
- Redundancy everywhere: Mgmt. Module, Fabric, Power, Fans
- Up to 512 10GbE, 128 40GbE, 96 100GbE in a 2-chassis pair

### Aruba 8320

- Workhorse for mid-size core/aggregation use cases
- 2.5 Tbps system, 1RU
- N+1 redundant hot swappable power supplies, fans
- Three models: 48 x 10GbE, 48 x 10GBASE-T, 32 x 40GbE

### Aruba 8325

- Mid-size core/aggregation use cases and DC ToR or EoR
- 6.4 Tbps system, 1RU
- N+1 redundant hot swappable power supplies, fans
- 32 ports of 40/100 GbE or
- 48 ports of 10/25 GbE and 8 ports of 40/100 GbE
- Front to back or back to front airflow



# Aruba's Core, Aggregation and Data Center Solutions

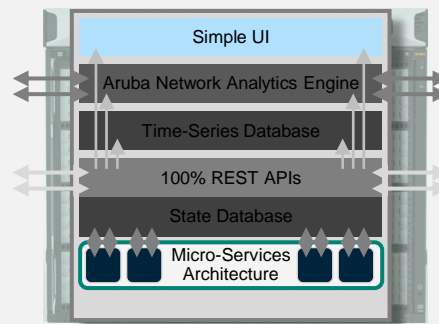
## HARDWARE



Aruba 8400

Aruba 832X

## SOFTWARE



AOS-CX

## ANALYTICS & AUTOMATION



Aruba Network Analytics Engine

Aruba NetEdit

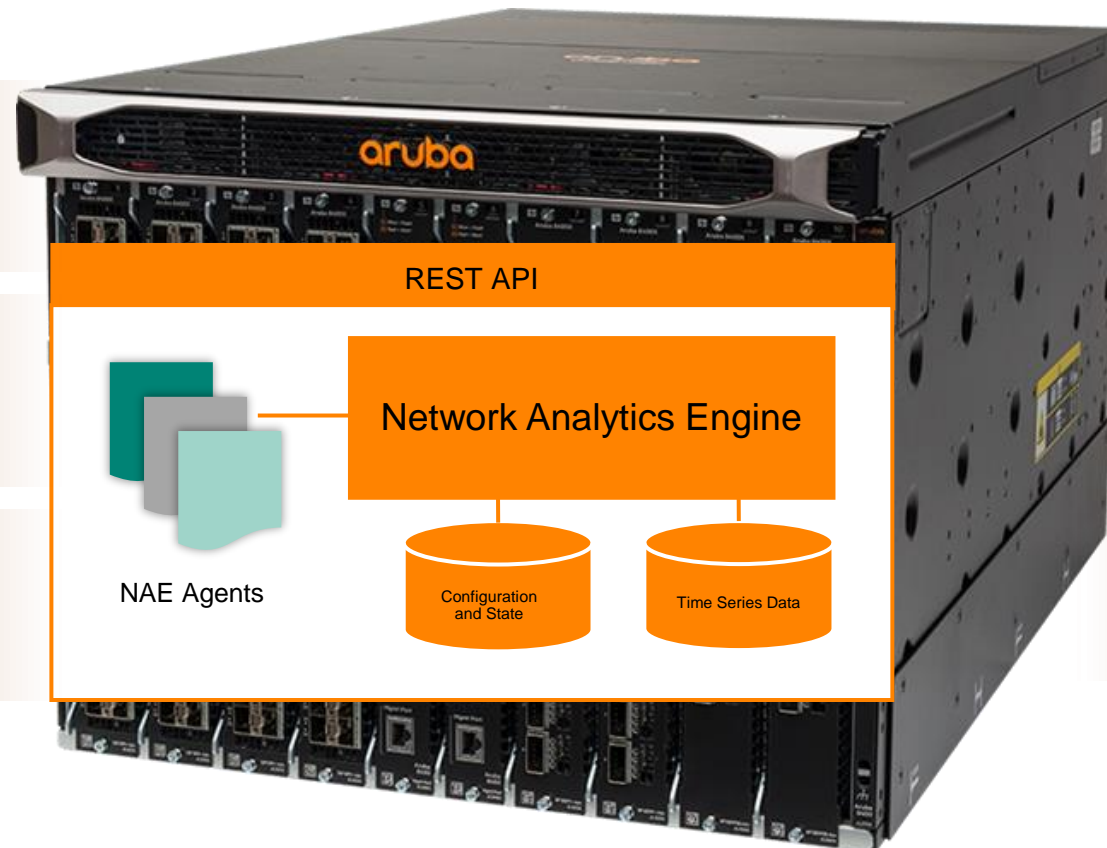
# NAE WITH EMBEDDED ANALYTICS

'It's like having a 24/7 network technician as part of the network'

Relevant historical data correlated with configuration changes

Automated service impact and root cause analysis

Intelligent monitoring agents 'always on'



Complete telemetry for all system information

Can capture info from neighbor infrastructure

Notification with automatic diagnostics

# Aruba NAE Addresses Wide Range of Use Cases

System Health	Network Analytics	Security Analytics	Application Visibility	Network Optimization
<ul style="list-style-type: none"><li>• Monitor system statistics</li></ul>	<ul style="list-style-type: none"><li>• Monitor network statistics to assist with issues</li><li>• Track the state to collect insight on change</li></ul>	<ul style="list-style-type: none"><li>• Analyze network traffic learn about anomalies</li></ul>	<ul style="list-style-type: none"><li>• Discover anomalies in application performance, cloud or on-prem.</li></ul>	<ul style="list-style-type: none"><li>• Dynamically insert policies for optimization.</li><li>• Redirect traffic</li></ul>

# NetEdit for Configuration, Automation and Verification

Search   Edit   Validate   Deploy   Audit

Anomaly  
Detection

Predictive  
Assistance

Auto-Change  
Verification

Continuous  
Validation

Repetitive Task  
Automation



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**Thank you**