Agenda

–About Aruba (2 minutes)

–Aruba portfolio overview (8 minutes)

–Aruba Instant (10 minutes)

WHO ARE WE?

Founded: 2002, IPO: 2007, Joined HPE: 2015

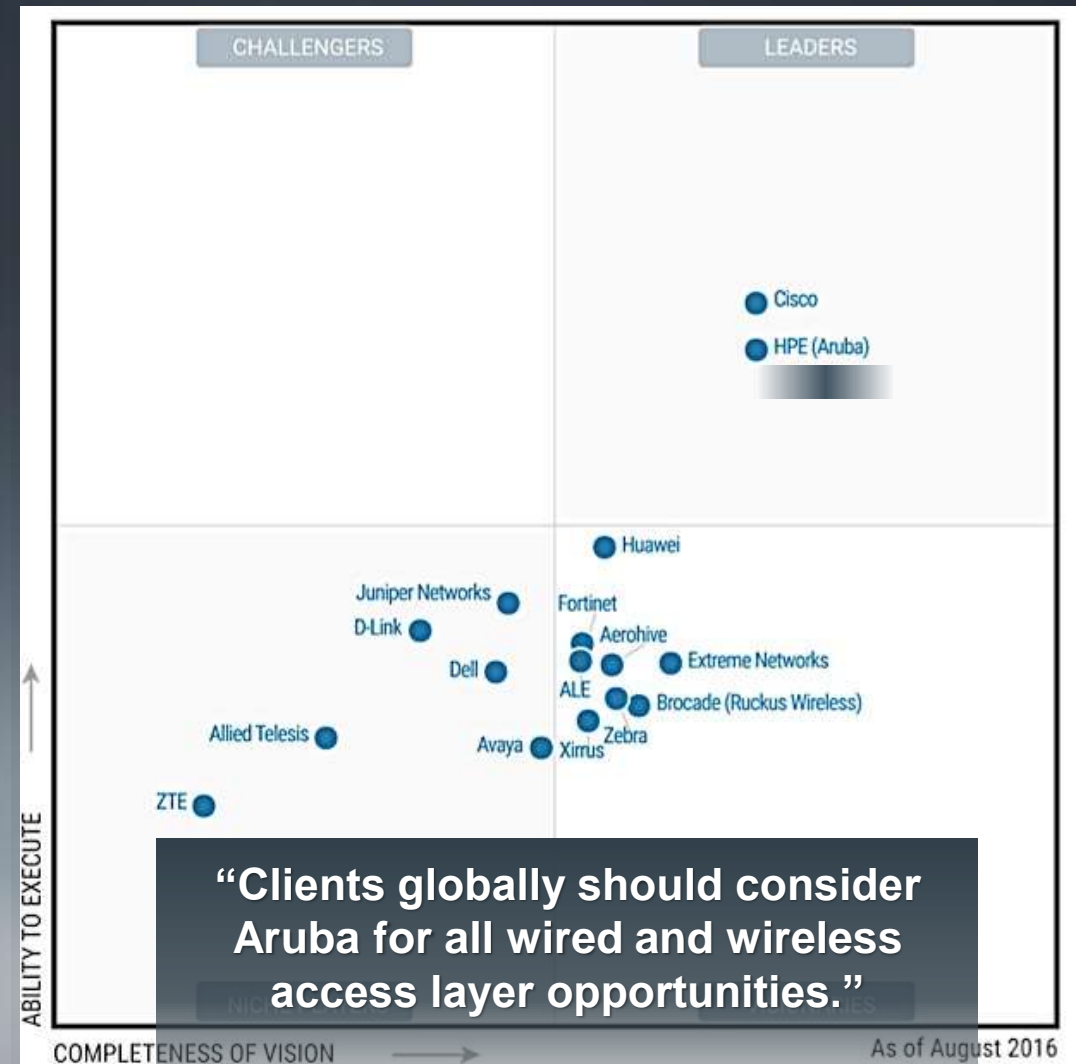**Intelligent Edge portfolio**

$2.4B+ annual revenue run rate

"Biggest Small Company"

High touch business model

"Customer First, Customer Last"

Home of 50K+ Mobility Engineers
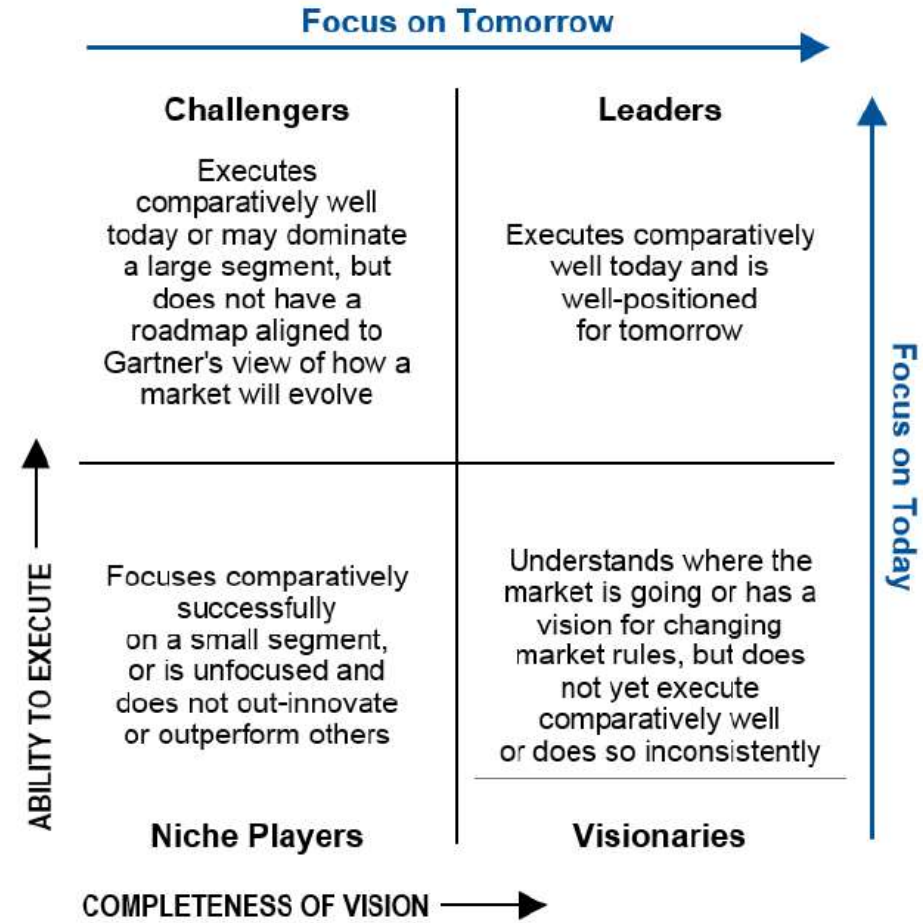
@ Airheads Community

CHALLENGERS | LEADERS

- Cisco
- HPE (Aruba)
- Huawei
- Juniper Networks
- Fortinet
- D-Link
- Aerohive
- Dell
- Extreme Networks
- ALE
- Brocade (Ruckus Wireless)
- Zebra
- Allied Telesis
- Avaya
- Xirrus
- ZTE

ABILITY TO EXECUTE

COMPLETENESS OF VISION

As of August 2016

"Clients globally should consider Aruba for all wired and wireless access layer opportunities."

Gartner MQ for Wired and Wireless LAN
Access Infrastructure, August 2016

Wired & WLAN Access Infrastructure

Figure 1. The Magic Quadrant

Aruba Products Overview

Wireless Infrastructure
APs, RAPs, Sensors, Beacons…

2930F

Wired Infrastructure
Switches

ARUBAOS

Network controls
AOS8 with REST APIs to share context and program infrastructure

Location analytics
Analytics and Location Engine (ALE) with northbound REST APIs

Cloud networking
Central with REST APIs to share context and program infrastructure

Network management
AirWave with northbound XML APIs for data consumption

Policy management
ClearPass with a unified API library and Extensions repository

Micro-location services
Meridian with mobile app development SDK and REST APIs

Evolving the Industry's Best 802.11ac Portfolio

Indoor Access Points

340 Series NEW
Highest Density
Dual uplink(one 802.3bz),
Dual 5GHz, 4.3Gbps, BLE

330 Series
Highest Density
Dual uplink(one 802.3bz),
2.5Gbps, BLE

320 Series
High Performance
Dual uplink, 2.5 Gbps, BLE

310 Series
High Performance
1.7 Gbps, BLE

300 Series
Medium Density
Single uplink, 1.7Gbps, BLE

200 Series
Medium density
~1.2 Gbps

207
Medium density
~1.3 Gbps, BLE

Hospitality Access Points

303H 4 ports
802.11ac
Wave 2

203H 2 ports
802.11ac
Flex radio

205H 4 ports
802.11ac

103H 4 ports
802.11n

Remote Access Points

203R
11ac
3 ports

RAP-109
2 ports

RAP-3
3 ports

Outdoor Access Points

370 Series NEW
Highest perf. (4SS)
802.1ac Wave 2, BLE

360 Series
High perf. (2SS)
802.11ac Wave 2

270 Series
Higher perf. (3SS)
802.11ac

Rugged Access Points

318 Series NEW
High Density/Perf.
Dual uplink (1 SFP),
2.0 Gbps, BLE

228 Series
High Density/Perf.
Dual uplink, 1.7 Gbps

Aruba 802.11ac Aruba Instant portfolio

WAVE 1

Model	Location	Density	Vertical
200 Series, 205H	Indoor	Moderate (50/75+ active)	K-12, Retail Hospitality
203H	Indoor	Low (15/25+ active)	Hospitality, Branch Offices, Remote Workers
203R	Indoor	Moderate (50/75+ active)	Branch Offices, Remote Workers
207 Series	Indoor	Moderate (50/75+ active)	K-12, Retail Hospitality
210 Series	Indoor	Moderate (50/75+ active)	K12, Hospitality, Retail, Carpeted space
220 Series	Indoor	High (75/115+ active)	Higher Ed, Enterprises
228	Indoor Rugged	High (75/115+ active)	Indoor Rugged, Warehouses
270 Series	Outdoor	High (75/115+ active)	Outdoor, Warehouses

WAVE 2

Model	Location	Density	Vertical
300 Series	Indoor	Moderate (50/75+ active)	K-12, Retail Hospitality
303H	Indoor	Moderate (50/75+ active)	Hospitality, Branch Offices, Remote Workers
310 Series	Indoor	High (75/115+ active)	Carpeted space across verticals
320 Series	Indoor	High (75/115+ active)	Higher Ed, Enterprises
330 Series	Indoor	Very High (100/150+ active)	Higher Ed, Enterprises
360 Series	Outdoor	Moderate (50/75+ active)	Outdoor, Warehouses

207 Series Access Points
Making fast 802.11ac affordable for everyone

- Dual radio 2x2:2SS VHT160
  - 5GHz: 867Mbps max, 2.4GHz: 400Mbps max
  - Support for approved 5GHz bands in the future
  - Transmit Beamforming and Advanced Cellular Coexistence
- Integrated BLE radio: locationing, beacon management
- Temperature range: 0C to +50C
- 1x GbE, 802.3af POE / 12Vdc, ~12W max
- Same size as 205 series (150mm x 150mm x 40mm)

Availability
ArubaOS 6.5: Q4'FY16
ArubaOS 8: Q1'FY17
Instant: Q1'FY17

300 Series Access Points
Entry level 802.11ac Wave 2

Availability
ArubaOS 6.5: Q4'FY16
ArubaOS 8: Q1'FY17
Instant: Q1'FY17

- Dual radio with internal (305) and external (304) antennas
  - 5GHz 3x3:3SS: **1300Mbp**s max (3SS VHT80 clients)
  - 2.4GHz: 400Mbps max (2SS VHT40 clients)
  - Up to two MU-MIMO clients on 5GHz
  - Support for approved 5GHz bands in the future
  - Transmit Beamforming and Advanced Cellular Coexistence
  - AP-304/IAP-304: 3 x RP-SMA connectors for dual-band antennas
- Integrated BLE radio: locationing, console access
- Temperature range: 0C to +50C
- USB host interface, 1x GbE, 802.3af/at POE / 12Vdc
  - New: Ethernet and power interfaces oriented parallel with back surface (instead of perpendicular)
- ~12.9W normal operation, 19.2W with full USB load
- Slight larger size than 205 series (165mm x 165mm x 45mm)

330 Series Access Points: Flagship 11ac Wave 2

- **Flagship AP, Wave 2 without restrictions or compromises**
  - Adding VHT160 and 2.5Gbps (Smart Rate) Ethernet to 320 Series
  - Hitless POE failover, antenna polarization diversity (5GHz radio)
- **Dual radio, 802.11ac 4x4:4SS VHT160 and integrated BLE**
- 5GHz: 802.11ac 4x4:4SS MU-MIMO
  - **1,733Mbps** peak datarate, and up to 3 simultaneous MU-MIMO client devices
- 2.4GHz: 802.11n/ac 4x4:4SS
  - 800Mbps peak datarate (4SS/VHT40), 450Mbps at 3SS/HT40 and 144Mbps at 2SS/HT20
- Other: ACC feature for interference immunity, TPM for security, USB interface
- Power: 802.3af/at POE or 48Vdc, 25.5W max from POE (25.3W without USB), 30.9W (25W) from DC
- New: Intelligent Power Monitoring (IPM) to monitor and optimize power consumption
- Size: ~10% larger than AP-325: 225mm x 224mm x 52mm
- Availability:
  - Controller-base (AP): May price list, June shipping
  - Controller-less (IAP): August price list & shipping

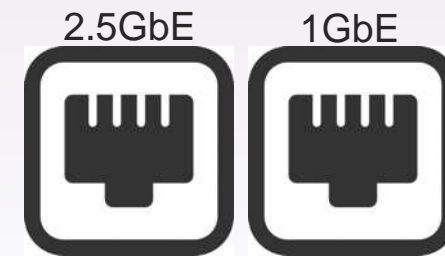# Positioning Multi-gigabit Ethernet with AP-330 Series

330 Series (Wave 2)

Supports HPE SmartRate; NBASE-T
Transmit 4SS to **3** Wave 2 clients

Upgrade to SmartRate capable switches to maximize Wi-Fi experience

Wired refresh cycles are longer than Wi-Fi. Future-proof with HPE SmartRate.

2.5GbE   1GbE

Ensure AP power redundancy with hitless PoE failover in case of primary link disruption

340 Series Access Points
Highest Performance and Density 802.11ac Wave 2

Availability

Pricelist: Nov 6th, 2017

S/W: ArubaOS/InstantOS 8.3.0.0

List Price
$1395 US

- Dual radio with internal (345) and external (344) antennas
  - 5GHz: 2,166 Gbps max (4SS VHT80 or 2SS VHT160, 1024-QAM)
  - 2.4GHz: 800Mbps max (4SS VHT40 clients, 1024-QAM)
  - Transmit Beamforming and Advanced Cellular Coexistence
  - AP-344: 4 x RP-SMA for dual-band antennas + 4 x RP-SMA for 5GHz antennas when operating in Dual-5GHz mode (remove snap-on cover to utilize)
  - AP-345: 8 x cross-polarized downtilt omni antennas (four dual-band, four 5GHz)
- Dual-Radio (peak 3.0 Gbps), **Dual-5GHz** (peak 4.3 Gbps) or Auto Modes
- Dual uplinks with hitless PoE failover (one 2500BASE-T, one 1000Base-T)
- Integrated BLE radio
- Temperature range: 0C to +50C
- Max PoE+ Power: 21.9W in Dual-Radio mode, 25.1W in Dual-5GHz mode
- Intelligent Power Mode enables operation with 802.3af or 802.3at
- How does it compare to 330 Series?
  - Same size (225mm x 224mm x 52mm)
  - Eliminates 5GBASE-T (optimize cost; no need for >2.5GBASE-T)
  - Eliminates dynamic antenna polarization (optimize cost; minimal loss)
  - Adds Dual-5GHz Mode

270 Series and 228 Hardened AP Portfolio

AP-275
Integrated Omnis
Dual Radio 11ac 3x3:3SS

AP-274
Connectorized
Dual Radio 11ac 3x3:3SS

AP-277
Integ. Directional
Dual Radio 11ac 3x3:3SS

AP228
6 x RPSMA
Dual Radio 11ac 3x3:3SS

370 Series Access Points
High Performance 802.11ac Wave 2 for outdoor environments

Availability
Pricelist: Nov 6th, 2017
S/W: ArubaOS/InstantOS 8.3.0.0

List Price
$1595 (374) | $1995 (375,377)

- Dual radio with external antennas
  - 5GHz: 1,733 Gbps max (4SS VHT80 or 2SS VHT160)
  - 2.4GHz: 300 Mbps max (2SS VHT40 clients)
  - Transmit Beamforming and Advanced Cellular Coexistence
  - AP-374: antenna connectors: four Nf for 5GHz, two Nf for 2.4GHz
  - AP-375: integrated omni antennas
  - AP-377: integrated directional (80°H x 80°V) antennas
- Dual uplinks (one 1000Base-T, one 1000BASE-X SFP port)
- Integrated BLE radio for location, wireless console access
- Temperature range: -40C to +60C; IP66/IP67 for water and dust
- Max Power: 23W (PoE or AC)
- How does it compare to 270 Series?
  - Same sizes
  - Replaces one RJ-45 port with SFP (for LX or SX optics)
  - Adds BLE radio

318 Series Access Points
Hardened 802.11ac Wave 2 for warehouses, freezers, stadiums

Availability
Pricelist: Nov 6th, 2017
S/W: ArubaOS/InstantOS 8.3.0.0

List Price
$1395 US

- Dual radio with external antennas
  - 5GHz: 1,733 Gbps max (4SS VHT80 or 2SS VHT160)
  - 2.4GHz: 300 Mbps max (2SS VHT40 clients)
  - Transmit Beamforming and Advanced Cellular Coexistence
  - Connectorized antenna ports for high gain large public venue antennas
  - 4 x RP-SMA for 5GHz antennas; 2 x RP-SMA for 2.4GHz antennas
- Dual uplinks (one 1000Base-T, one 1000BASE-X SFP port)
- Integrated BLE radio for location, wireless console access
- Temperature range: -40C to +60C; IP55 for water and dust
- Max Power: 23W (PoE only; must use PoE injector when using fiber SFP)
- How does it compare to 228 Series?
  - Same size (222mm x 150mm x 75mm)
  - Replaces one RJ-45 port with SFP (for LX or SX optics)
  - Adds BLE radio

Extending Your Enterprise with Remote APs

– Light up a remote office with simple plug-and-play

– Extends corporate Wi-Fi, wired, VPN and firewall

– Easily connect printers and power VoIP phones

– Enhanced failover options with a 2nd ISP or cellular handoff

Deployment flexibility for access points

Controller Based

Centralized encryption/switching

Larger mobility domains

Same AP hardware

Controllerless (Instant)

Many individual remote sites

One user interface per cluster

CONTROLLER   INSTANT

AirWave

Large sites, many branches

Multi-vendor controller and switch support

End to end diagnostics and health checks

Same workflows

INSTANT

Central

Cloud-based management

Many independent branches

Switching That Meets the Needs of Today and Tomorrow

Gigabit Access

Multi-Gig Access

	Aruba 2530	Aruba 2930F	Aruba 2920	Aruba 3810	Aruba 5400
Smart Rate Multi-Gig Ports				●	●
Stacking			●	●	● VSF
SDN Ready		●	●	●	●
POE+	●	●	●	●	●
AirWave & ClearPass	●	●	●	●	●

Cloud-based management with Aruba Central, and zero-touch

ZERO-TOUCH PROVISIONING

NO ON-SITE EXPERT NEEDED

*Now DHCP-based ZTP with 16.01
Activate-based ZTP with 16.02

3 Central* sends config details to AP/Switch

2 Secure connection (HTTPS)

4 Network configured & running

1 Plug in Aruba Instant AP or Aruba Switch
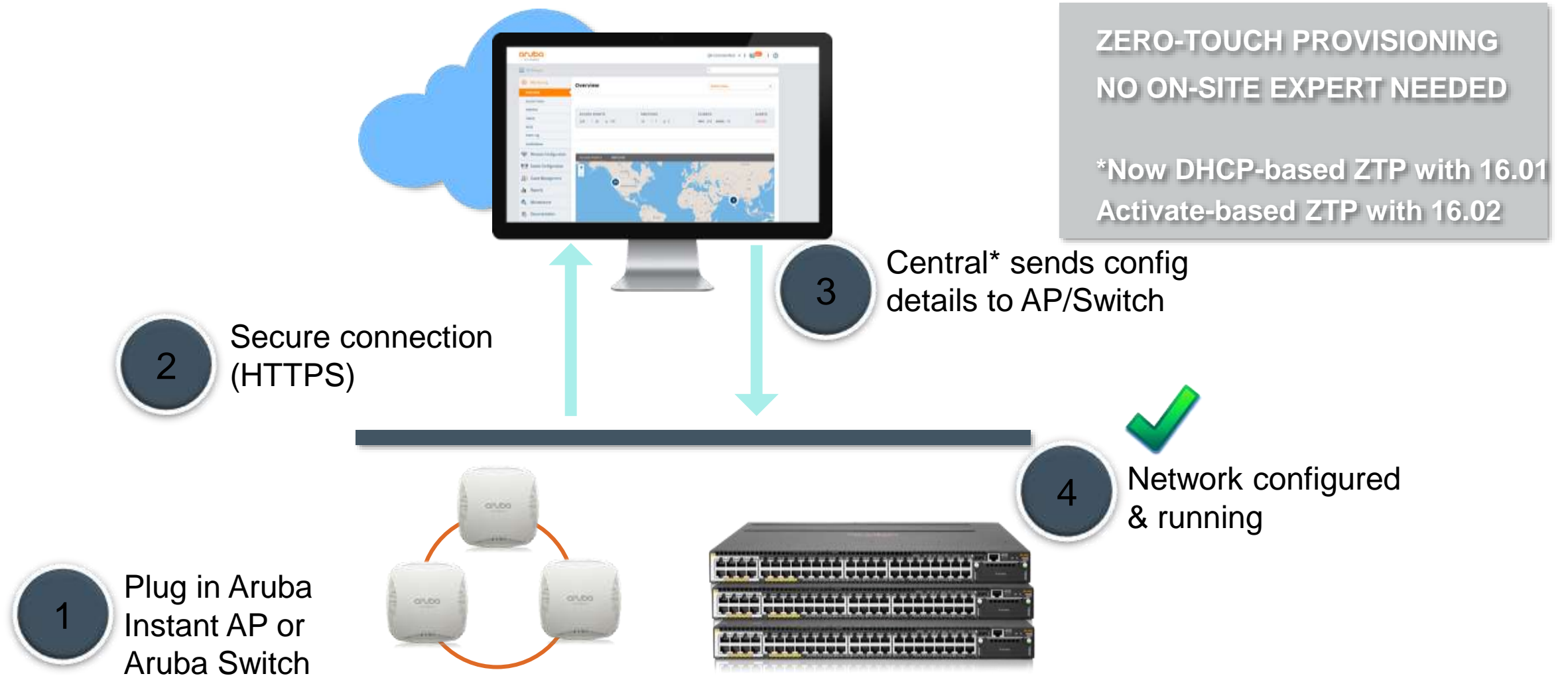
Controllers scale from branch to campus

7240

7220

7210

7205

7030

7024 (24 PoE+)
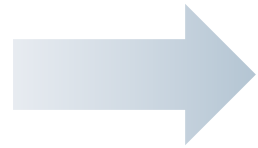
7010 (12 PoE+)

VMC-TACT (8/16 AP)

7005/7008 (16 AP)

Large Campus
High performance, redundant power/fan
512 – 2048 APs, up to 40Gbps 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
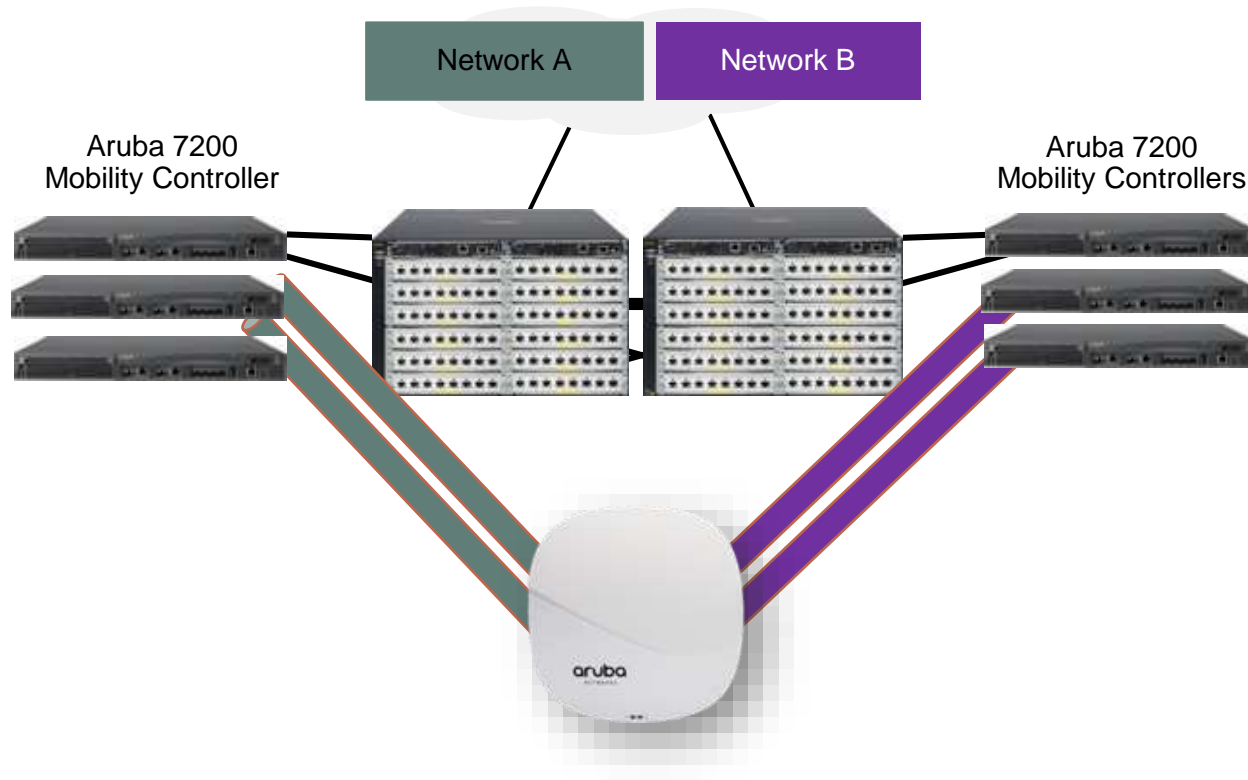12 or 24 ports of PoE+ for unified branches
Up to 32 APs

Small branch
Virtualized or PoE-powered controllers

Branch

Campus

AOS8 : Multiple tenants on the same access point with MultiZone

Network A

Network B

Aruba 7200
Mobility Controller

Aruba 7200
Mobility Controllers

NEW

- Requires Mobility Master and AOS8
- SSIDs terminate on different controllers to ensure physical separation of traffic flows
- Efficient use of Wi-Fi resources and reduced cost of AP hardware deployment

MultiZone: Use Cases and Benefits

Airport

British Airways Wi-Fi

Security Wi-Fi

Air France Wi-Fi

United Airlines Wi-Fi

Public Wi-Fi

Singapore Airlines Wi-Fi

Shopping Mall

Shopping Mall public Wi-Fi

Uniqlo Private Wi-Fi

H&M Private Wi-Fi

Levi's Wi-Fi

Offer significant cost savings to operators of public venues, by eliminating use of separate Wi-Fi systems

Give additional Wi-Fi sponsorship opportunities to your existing customers in public venues
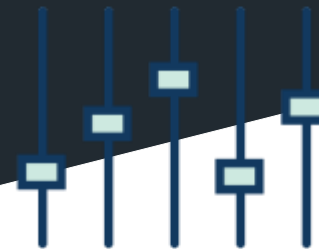
Aruba Instant

How Aruba Instant works

First Access Point configured

Ready …

It becomes the "master" & performs firewall and controller functions

Set …

New APs automatically connect to the "master" & download configuration

Go!!

Instant APs

✓ **NO ONSITE IT NEEDED**
✓ **NETWORK SURVIVABILITY**

Aruba Instant Basic features

- Up to 128 APs allowed

- APs must be in same broadcast domain (management VLAN) or connected via mesh (next slides)

- Local breakout (SSID to VLAN mapping)

- No licensing

- Each IAP (Instant AP) can be converted to controller based AP with a single click

  (but not the other way around AP cannot become IAP)

- Mixing of different AP series is allowed (as long as they are on same firmware)

- Mixing of indoor and outdoor APs is allowed.

- Internal or external DHCP

Instant APs

Aruba Instant Features – Virtual Controller

- Virtual Controller is functionality running on one of APs in the Instant cluster

- Upon boot – one of the AP is elected as Master AP (longest uptime, or presence of 3G/4G uplinks, it can be also manually forced) performing virtual controller function

- Provides "n out of n" redundancy (cluster is running if at least one AP is up).

Instant APs

Aruba Instant Features - Intelligent traffic control with application visibility

On-Board DPI
- − Depth - common apps
- − Enterprise traffic

+

Cloud-Based Web Policy Enforcement
- − Breadth - less common apps
- − Web traffic

GRANULAR VISIBILITY & CONTROL

- ❑ App category
- ❑ Individual app
- ❑ Web category
- ❑ Web reputation

- ❑ Allow/deny
- ❑ QoS
- ❑ Throttle
- ❑ Log
- ❑ Blacklist

☑ Prioritize business critical apps

☑ Block inappropriate content

☑ Enforce per user/device/location

Aruba Instant Features – Zoning

- Multiple SSIDs can be created

- An IAP can belong to only one zone and only one zone can be configured on an SSID.

- If an SSID belongs to a zone, all IAPs in this zone can broadcast this SSID. If no IAP belongs to the zone configured on the SSID, the SSID is not broadcast.

- If an SSID does not belong to any zone, all IAPs can broadcast this SSID.

Aruba Instant Features – Captive portals

- Internal Captive portal

- External Captive portal

- Authenticate or Acknoweledge

- Internal or External user database (RADIUS)

- Facebook Wi-Fi (with override)

- Walled Garden Functionality

- Full ClearPass integration

Aruba Instant Features ARUBA CLIENTMATCH™ (PATENTED)

REAL-TIME RF CORRELATION

DEVICE TYPE   **LOCATION**   **CONGESTION**   **INTERFERENCE**

Match to another AP
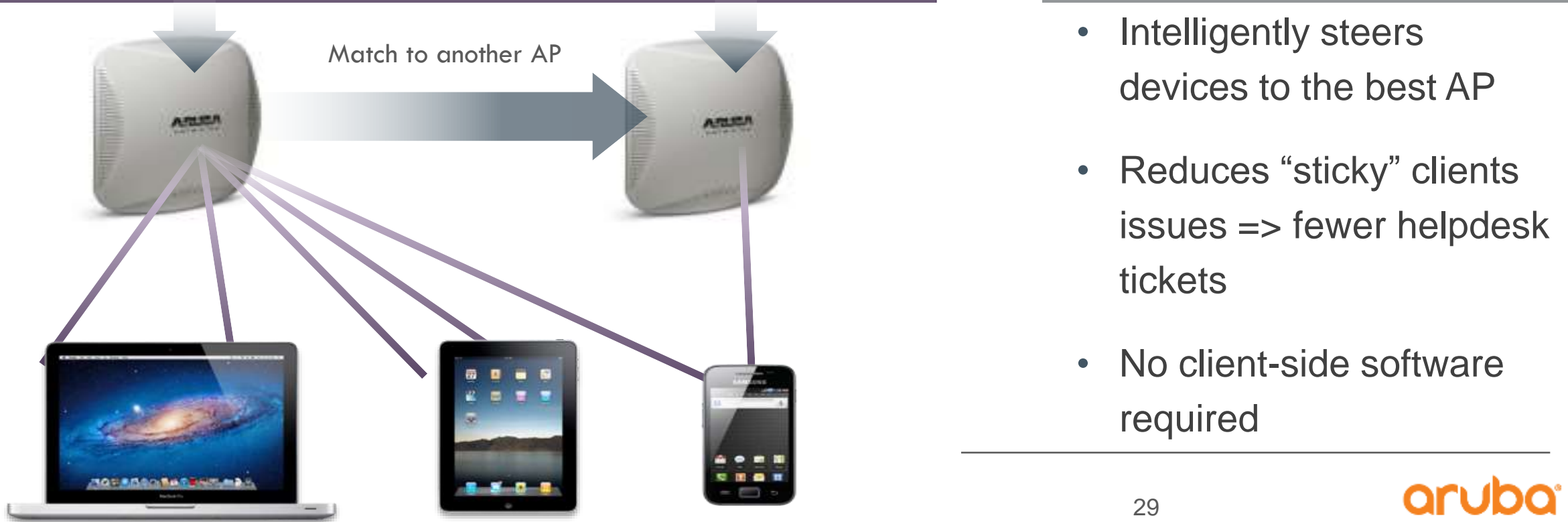
✓ **PREDICTABLE WI-FI PERFORMANCE**

- Intelligently steers devices to the best AP

- Reduces "sticky" clients issues => fewer helpdesk tickets

- No client-side software required

aruba
N E T W O R K S
an HP company

Aruba Instant Features - built-in management interface

- **Network management**
- **Single site/cluster**
- **Guest access mgmt**
- **Free**
- **Web/SSH/AirWave/VPN to Mobility controller**

Aruba Instant Features – Mesh

- Available with all APs with latest FW (both 'n' and 'ac', indoor and outdoor)

- Connect the IAPs to a wired switch.

- Ensure that the Virtual Controller key is synchronized and the country code is configured.

- Ensure that a valid SSID is configured on the IAP.

- If the IAP has a factory default SSID (instant SSID), delete the SSID.

- If an extended SSID is enabled on the virtual controller, disable it and reboot the IAP cluster.

- Disconnect the IAPs that you want to deploy as mesh points from the switch and place the IAPs at a remote location. The IAPs power on without any wired uplink connection and function as mesh points and the IAPs with valid uplink connections function as the mesh portal.

Point to Point Mesh Link (PtP)

- The portal is wired in to the building LAN, and the point builds a mesh link to the portal over the 5Ghz

- Both portal and point can serve clients on their 2.4Ghz radios just as any other AP would, as well as the mesh point could backhaul a wired device, like a camera, another network, etc.
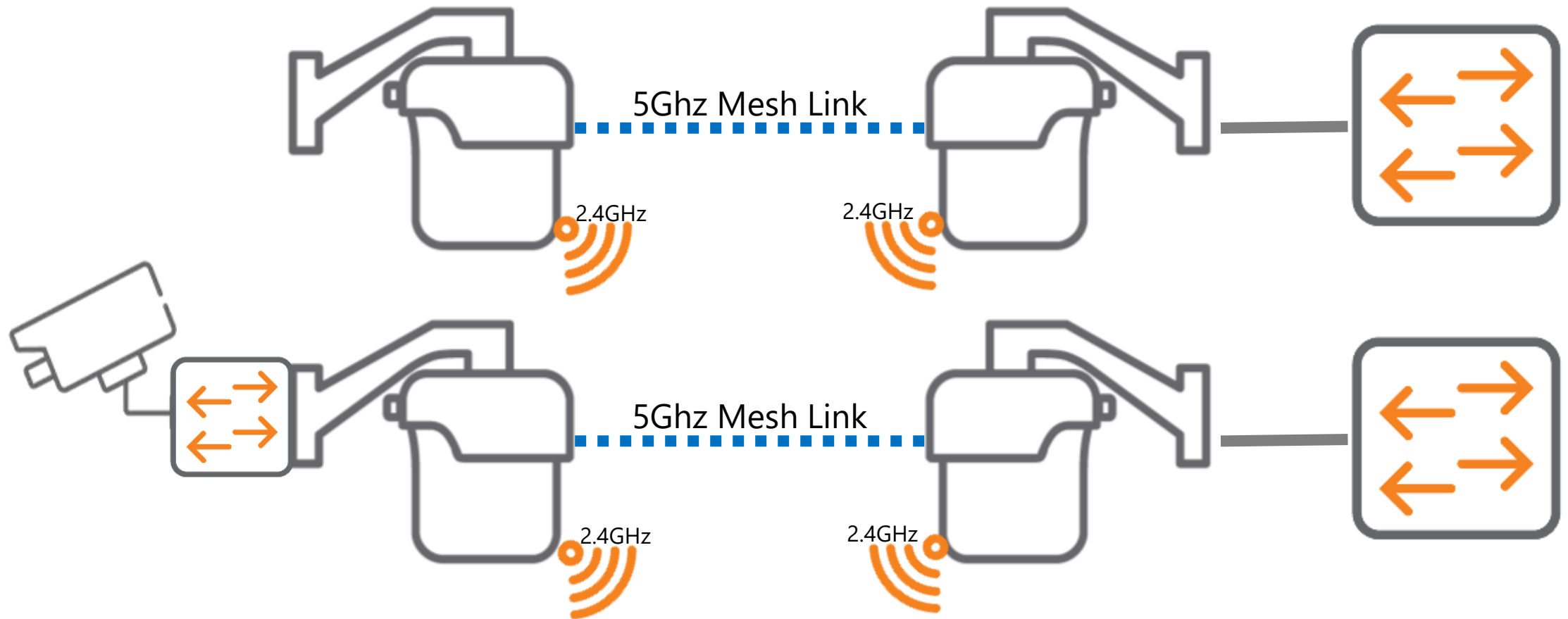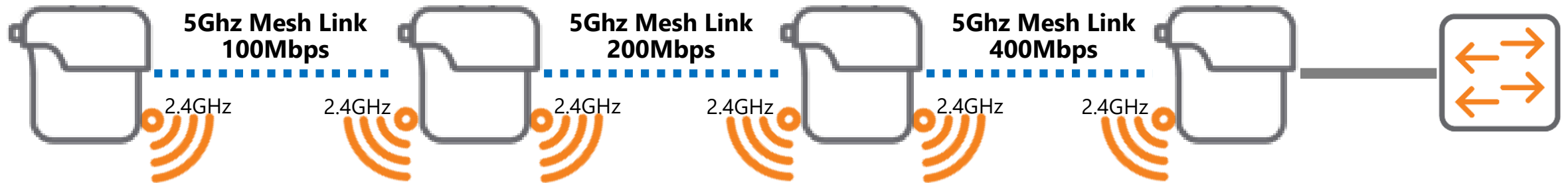
Point to Multi-Point (PtMP)

• The portal is wired in to the building LAN, and multiple points build mesh links back to the portal over the 5Ghz

• Caveat here is you want the points to be able to hear the other points, or hidden node issues could decrease performance.

• Per-point performance will be determine by how many points per portal there are, as well as by the load on each node.

• As with a Point-to-Point, I can also use mesh to extend the wired network to another switch, camera, etc.
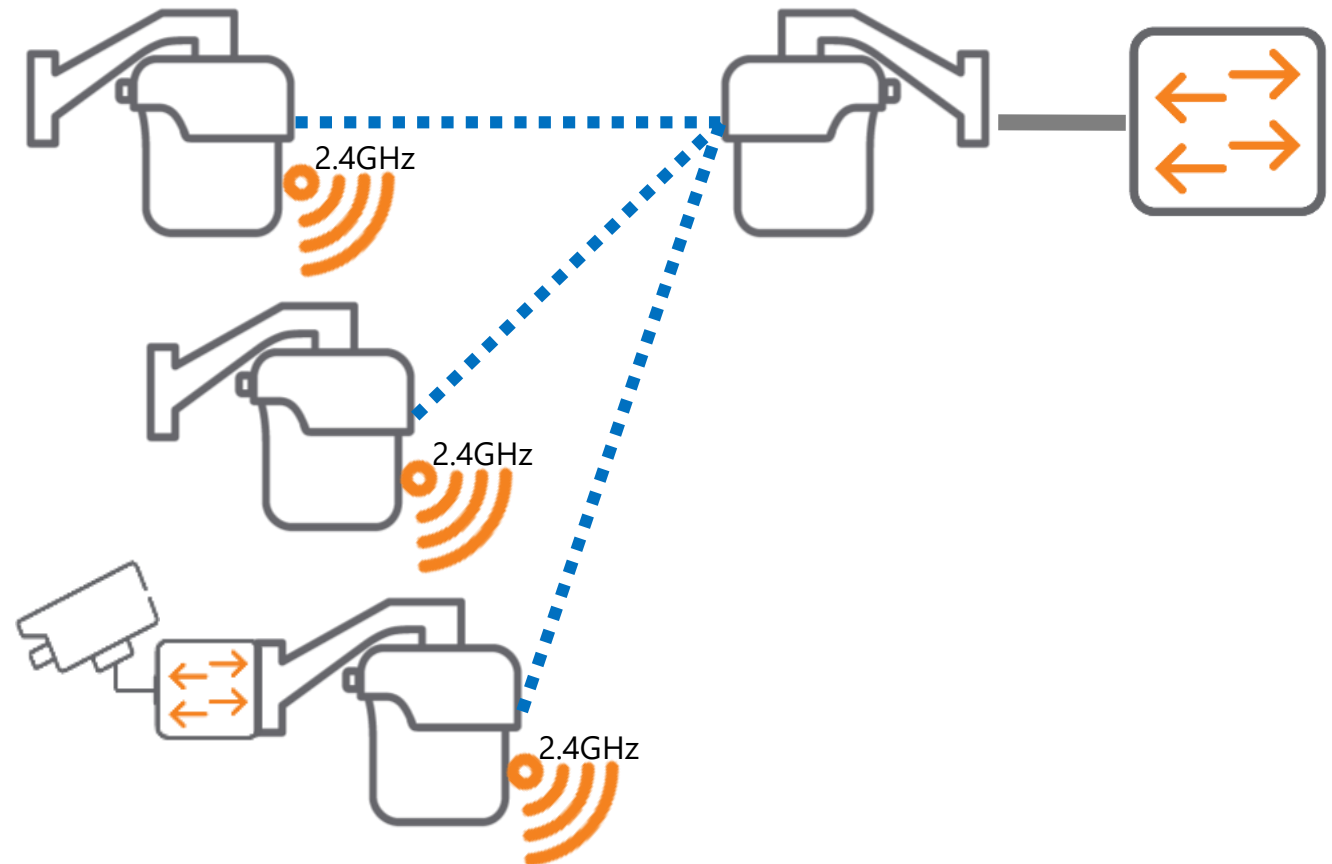
Single-Channel Multi-hop Mesh

- Multiple points will build mesh links, or 'hops' to other points to extend the mesh using the same 5Ghz radio on each point, in a hop-by-hop fashion

- This means that every 'hop' cuts the available bandwidth on each hop in approximately half (less some additional overhead)

- This should only be used in cases where latency and throughput are NOT a priority

**5Ghz Mesh Link
100Mbps**

**5Ghz Mesh Link
200Mbps**

**5Ghz Mesh Link
400Mbps**

2.4GHz   2.4GHz   2.4GHz   2.4GHz   2.4GHz   2.4GHz

Thank you

markov@hpe.com