

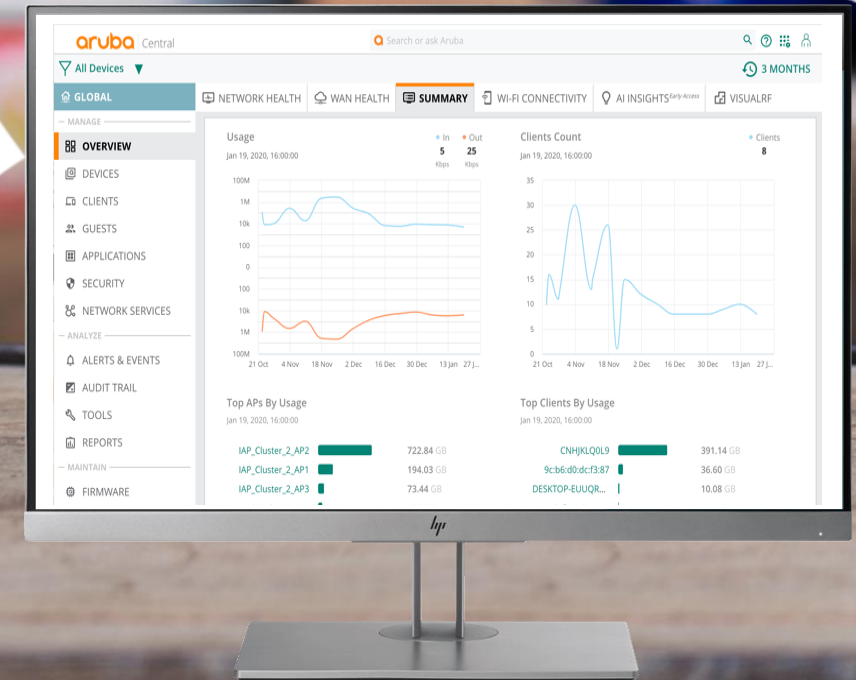
January 2022



a Hewlett Packard
Enterprise company

Aruba

Cloud Native Networking



Заказчики Aruba

- H&M
- Zara
- Auchan
- Puma
- IKEA
- RiverMall
- BlockBuster II
- АТБ
- Eldorado
- Brocard
- Дніпро-М
- Ева
- Microsoft
- Novus



Заказчики Aruba

– Проект Построение сети Пентагон

The screenshot shows a web browser displaying a Bloomberg news article. The browser's address bar shows the URL: <https://www.bloomberg.com/press-releases/2020-10-26/the-pentagon-modernizes-wire...>. The Bloomberg logo is visible in the top navigation bar, along with 'Menu', 'Search', 'Sign In', and 'Subscribe' links. The article is categorized under 'Business' and has a main headline: 'The Pentagon Modernizes Wired and Wireless Connectivity, Across All Classification Levels, with Aruba Infrastructure'. The byline indicates the article was published on '26 ЖОВТНЯ 2020 р., 14:00 GMT+2'. On the left side, there are social media sharing options for Facebook, Twitter, LinkedIn, and Email. The main text of the article begins with 'The Pentagon Modernizes Wired and Wireless Connectivity, Across All Classification Levels, with Aruba Infrastructure' and continues with 'Upgraded Networks Will Support Tens of Thousands of Devices Daily at United States Department of Defense's 6.5 Million Square-foot Headquarters'. The article is dated 'SANTA CLARA, Calif. -- October 26, 2020' and mentions that 'Aruba, a Hewlett Packard Enterprise company (NYSE: HPE), today announced that the Pentagon, headquarters of the United States Department of Defense (DoD), is modernizing its classified and unclassified networks to support over tens of thousands of devices daily at its 6.5 million square-foot headquarters'.

Business

The Pentagon Modernizes Wired and Wireless Connectivity, Across All Classification Levels, with Aruba Infrastructure

26 ЖОВТНЯ 2020 р., 14:00 GMT+2

SHARE THIS ARTICLE

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- Twitter Tweet
- LinkedIn Post
- Email

The Pentagon Modernizes Wired and Wireless Connectivity, Across All Classification Levels, with Aruba Infrastructure

Upgraded Networks Will Support Tens of Thousands of Devices Daily at United States Department of Defense's 6.5 Million Square-foot Headquarters

Business Wire

SANTA CLARA, Calif. -- October 26, 2020

Aruba, a Hewlett Packard Enterprise company (NYSE: HPE), today announced that the Pentagon, headquarters of the United States Department of Defense (DoD), is modernizing its classified and unclassified networks to support over tens of thousands of devices daily at its 6.5 million square-foot headquarters.

Решения Aruba

- 1) Для Заказчиков, которые рассматривают планы по миграции в Облачную или Гибридную инфраструктуру
 - **Aruba EdgeConnect SD-WAN решение**
- 2) Для Заказчиков, которым интересен вопрос эффективного подключения удаленных сотрудников и филиалов
 - **Aruba SD-Branch решение (SD-Branch = SD-LAN + SD-WAN)**
- 3) Для Заказчиков, которые думают над внедрением системы контроля доступа к IT ресурсам на основе централизованных унифицированных политик как для пользователей так и для IoT
 - **Aruba ClearPass**
- 4) Для Заказчиков, которые думают над обновлением своей проводной инфраструктуры
 - **Новое (7-мое) поколение коммутаторов Aruba на основе облачной операционной системы Aruba OS CX, системы телеметрии Network Analytics Engine (NAE) и системы автоматизации конфигурирования NetEdit**
- 5) Для Заказчиков, которые внедряют в офисе и филиалах мобильные рабочие места
 - **Построение стабильной, безопасной и масштабируемой WiFi сети на основе WiFi6 иWiFi6e технологий + навигация, геолокация и IOT**
- 6) Для Заказчиков, которым необходимо построить современный распределенный Датацентр с различными локациями и автоматизацией управления сетевой инфраструктурой ДЦ
 - **Архитектура построения сетевой инфраструктуры ЦОД с системой конфигурирования и оркестрирования Aruba Fabric Composer.**





Aruba WLAN

A Complete Enterprise AP Platform Portfolio

Campus Access Points



Hospitality and Remote Access Points



Hardened/Ruggedized Access Points



Outdoor Access Points



Aruba AP-635. 802.11ax 6GHz (WiFi 6E certified)



R8L32A Aruba AP-635 (WW) Campus AP

Band	Channel Size	Maximum throughput
6 GHz	160 MHz	2.4 Gbps
5 GHz	80 MHz	1.2 Gbps
2.4 GHz	20 MHz	287 Mbps
Total		3.9 Gbps

KEY FEATURES

- Unlocks the 6 GHz band to more than double the available capacity
- Comprehensive tri-band coverage across 2.4 GHz, 5 GHz, and 6 GHz to deliver 3.9 Gbps maximum aggregate data rate
- Up to seven 160 MHz channels in 6 GHz support low-latency, bandwidth-hungry applications like high-definition video and augmented reality/virtual reality applications
- Unique ultra-triband filtering enables 5 GHz and 6 GHz to operate without restrictions or interference
- High availability with 2.5 Gbps dual ethernet port for hitless failover of ethernet and power

ARUBA ACCESS POINT PORTFOLIO



550 Series
Extreme Density
Wi-Fi 6



530 Series
Very High Density
Wi-Fi 6



510 Series
High Density
Wi-Fi 6



500 Series
Mid Density
Wi-Fi 6



500H Series
Hospitality/Remote
Wi-Fi 6



518 Series
Ruggedized
Wi-Fi 6



570 Series
Outdoor
Wi-Fi 6



570EX Series
Hazardous Location
Wi-Fi 6



340/330/320/318/310/300 Series
Very High to Mid Density Wi-Fi 5
Indoor Ceiling/Wall Mount/Ruggedized



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



370/360 Series
Very High to Mid Density
Omni/Directional



370EX Series
Hazardous
Location



387 Series
Point to Point
802.11ad

Основные принципы Aruba WiFi – 4S

Simple (Просто)

Secured (Безопасно)

Stable (Стабильно)

Scalable (Масштабируемо)

Основные принципы Aruba WiFi – Simple (Просто)

Aruba WiFi



Традиционный WiFi



Основные принципы Aruba WiFi – Simple (Просто)

Aruba WiFi

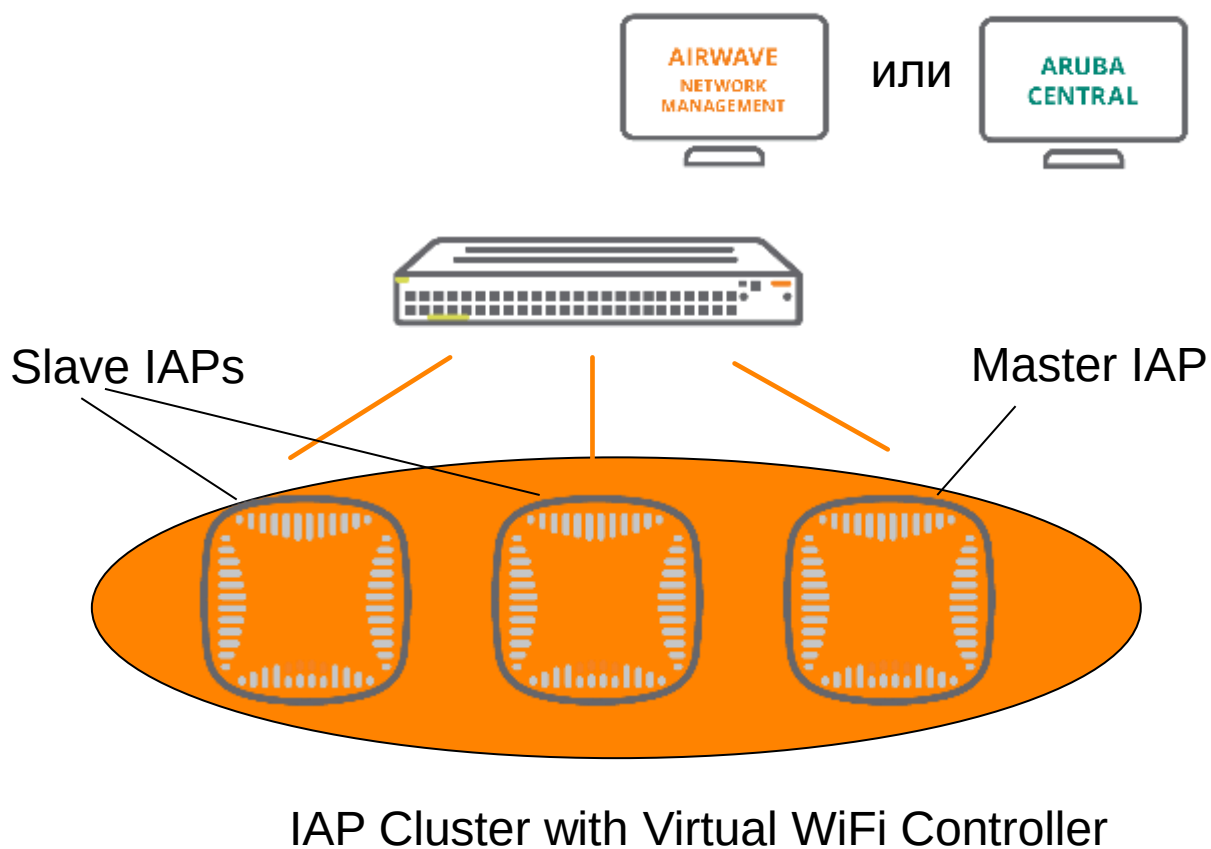


Традиционный WiFi

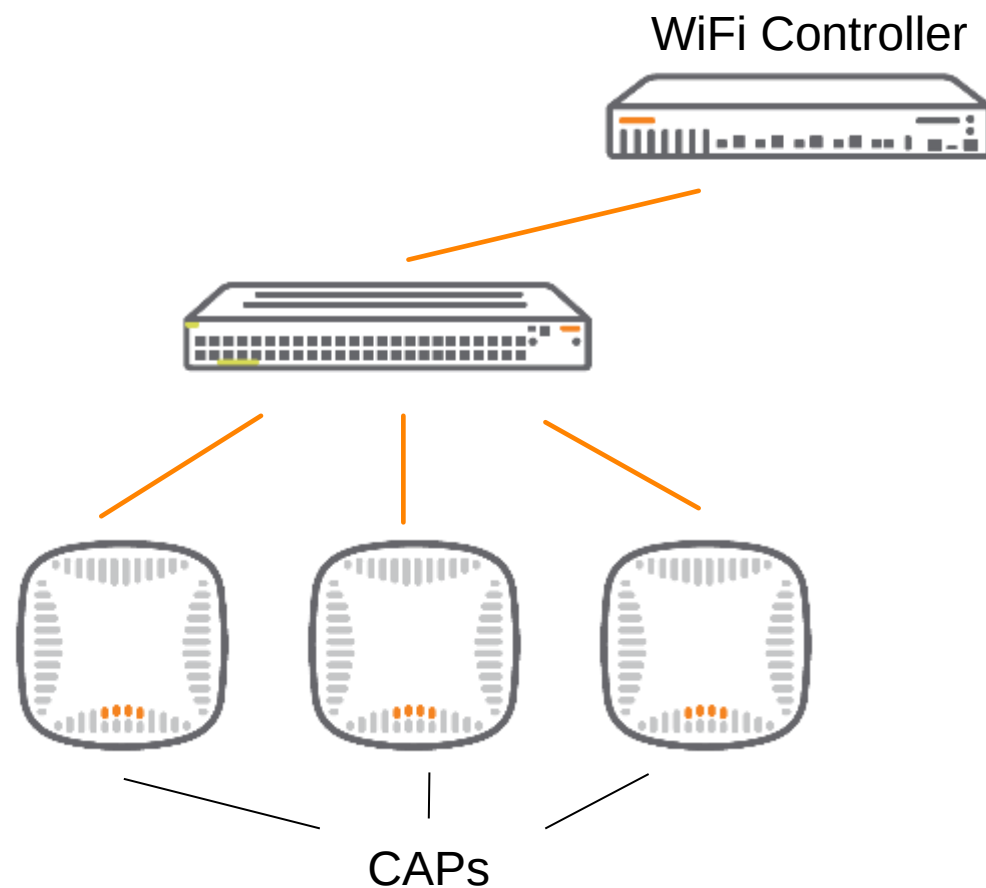


Вариант построения Aruba WiFi сетей

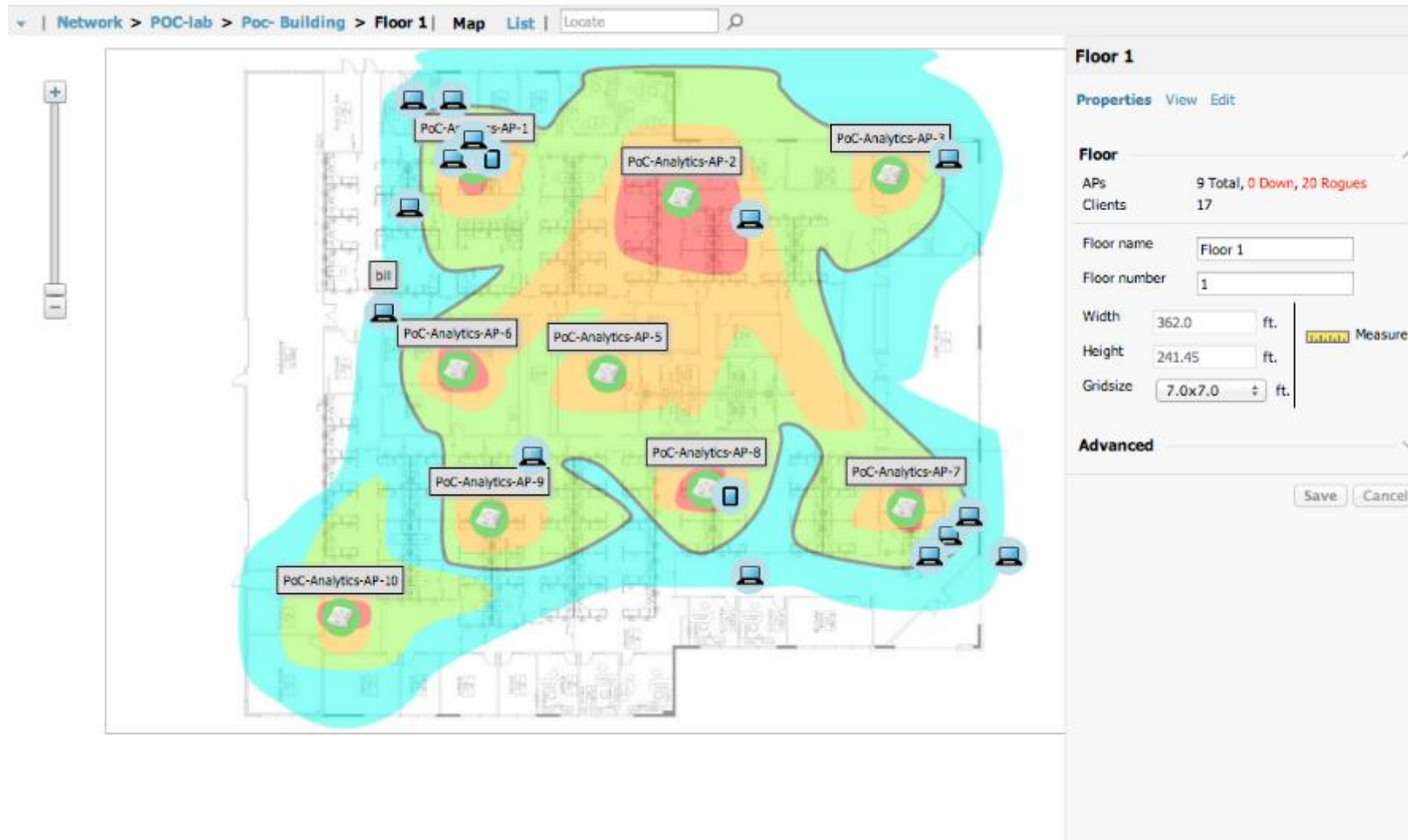
Aruba Instant AP (IAP)



Aruba Controller Based AP (CAP)



Aruba VisualRF



Aruba ALE. Розничная аналитика на основе WiFi



Aruba сервисы по навигации на основе BLE



- Карта помещения
- Поиск необходимых объектов/товаров
- Прокладка маршрутов от текущего местоположения.
- Отправка рекламных сообщений (proximity marketing)
- Интеграция с мобильными приложениями



Meridian-Powered Mobile App
White-label or custom app w/ SDK



Aruba Beacons
Blue dot directions and notifications based on real-time position



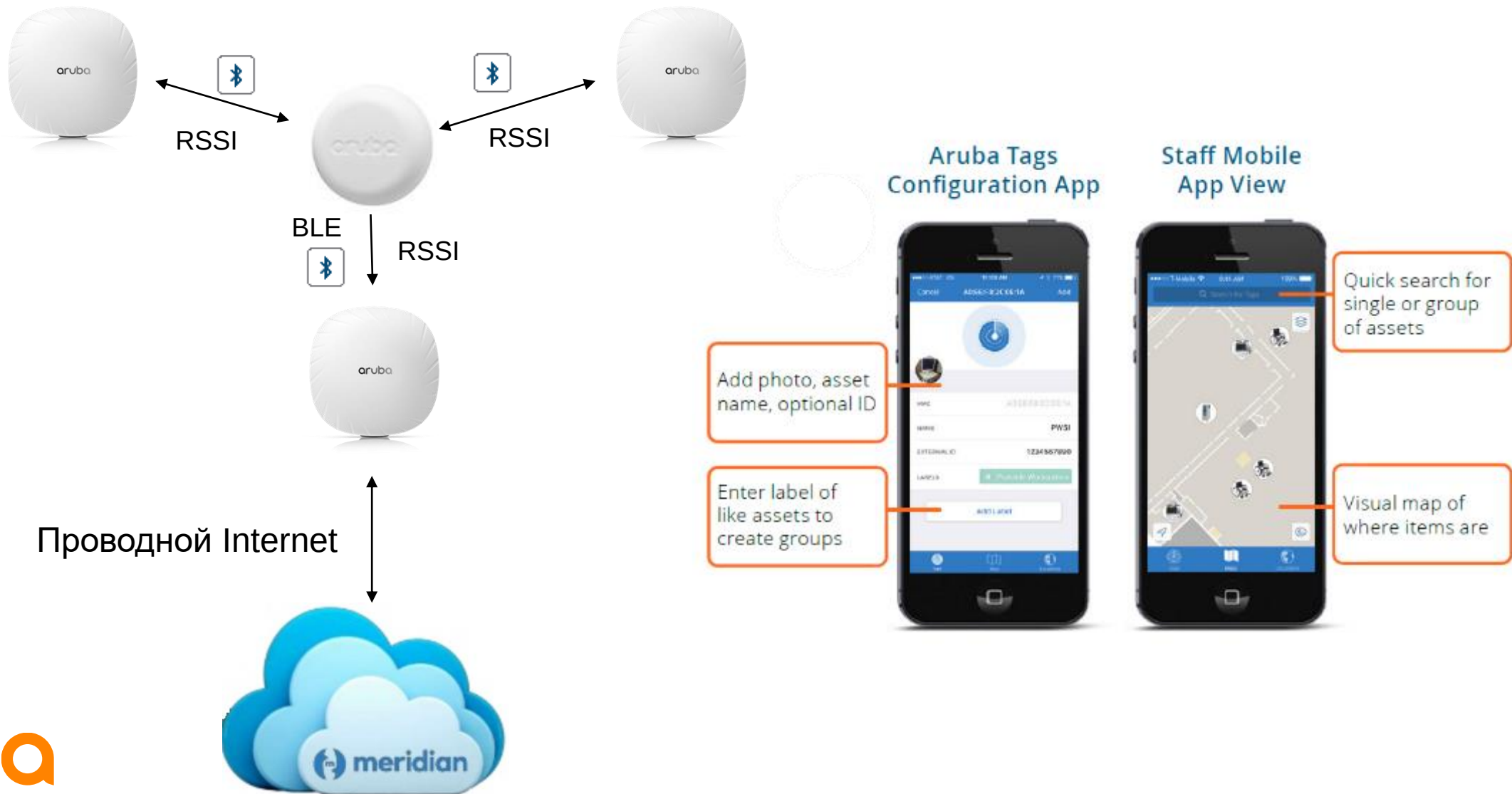
Aruba AP w/ integrated Beacon
Communicates with Aruba Beacons and Meridian Platform



Meridian Platform
Location-based and personalized content for apps
Monitor and manage beacon battery level, operating mode / firmware

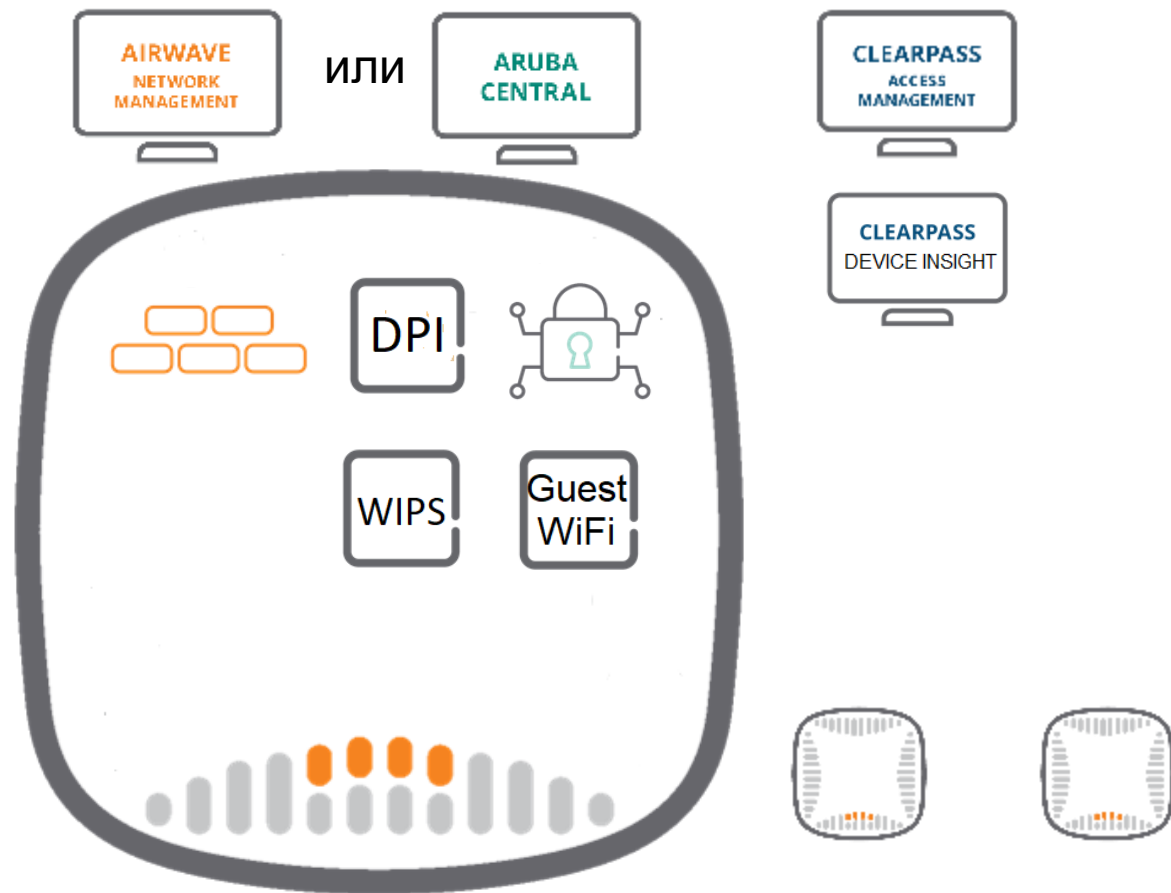


Aruba сервисы по определению местоположения



Основные принципы Aruba WiFi – Secured (Безопасно)

Aruba WiFi



Традиционный WiFi



AppRF



Monitoring

Performance

Usage

Security

> **AppRF**

Potential Issues

WLANs

Access Points

Clients

AirGroup

Voice/UCC

Monitoring

Configuration

Diagnostics

Maintenance

AppRF Summary

Application = Facebook (20% of total traffic, 70/350 Mbps)

Block

Throttle

QoS

Application Groups

Chart

Table



Details

Throttle Application Facebook

Bandwidth contract for Facebook:

Upstream limit: Mbps

Downstream limit: Mbps

[Show bandwidth contract table](#)

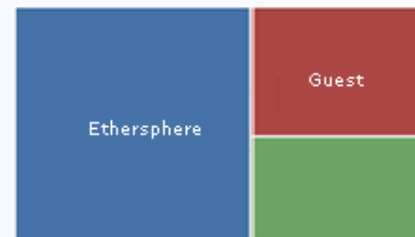
OK

Cancel

WLANs

Chart

Table

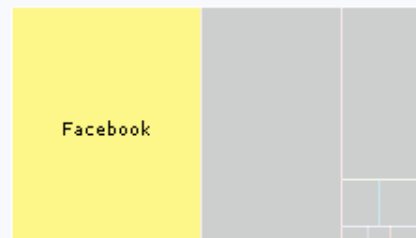


Details

Applications

Chart

Table



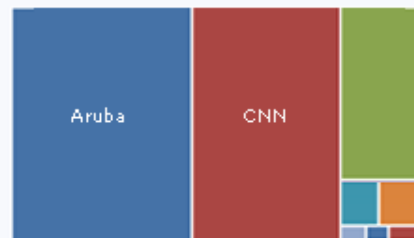
[Remove filter on Facebook](#)

Facebook users

Destinations

Chart

Table

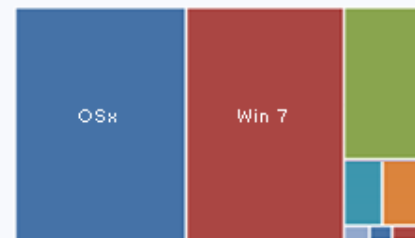


Details

Devices

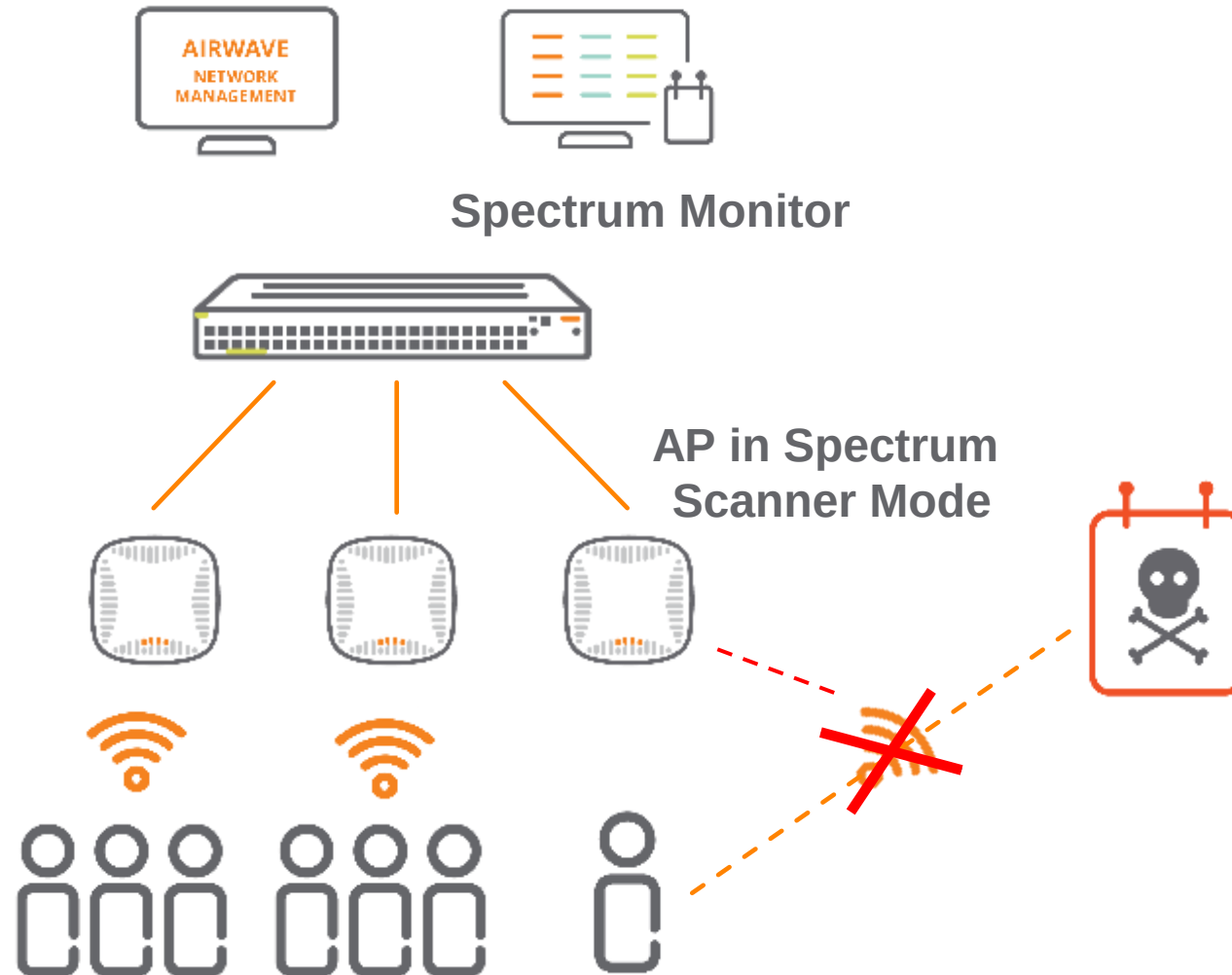
Chart

Table

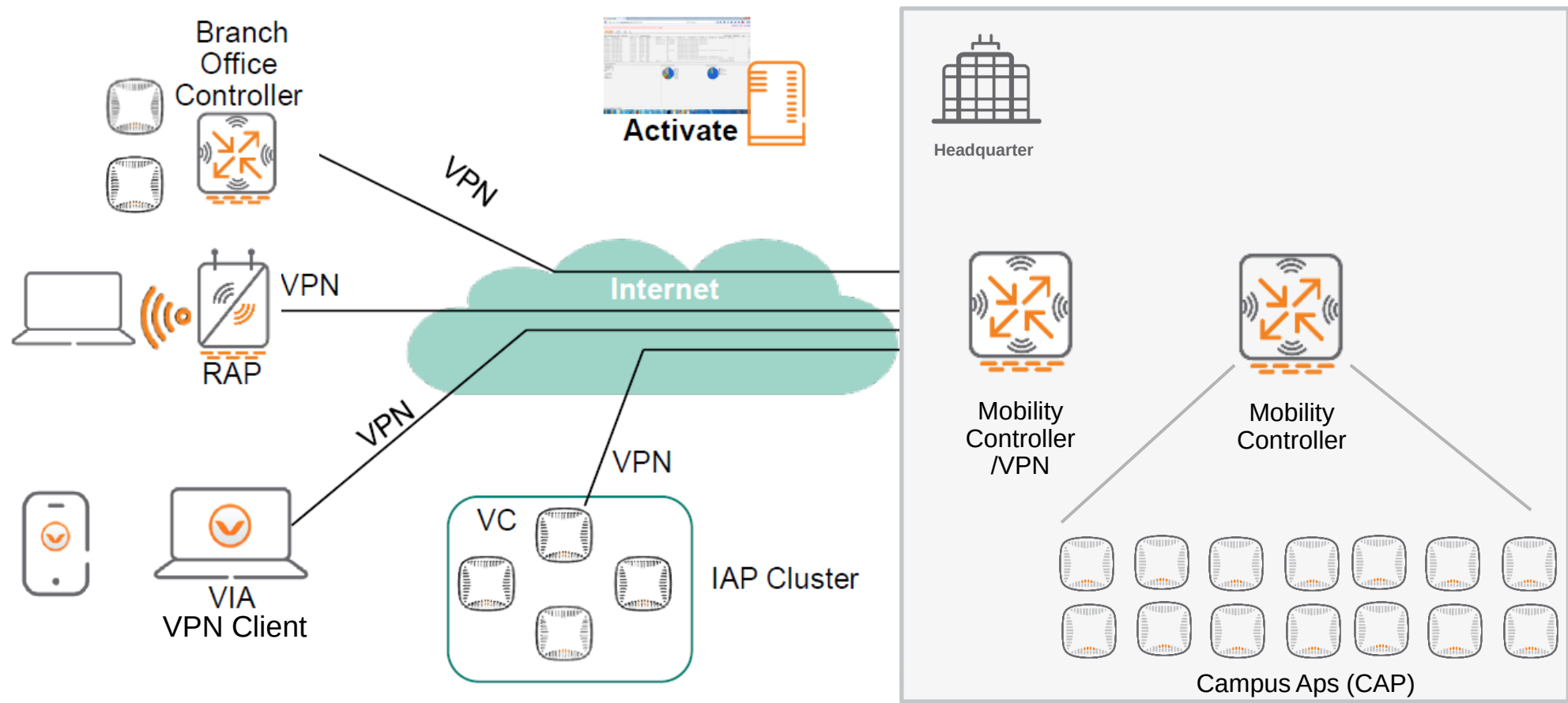


Details

RAPIDS & WIPS

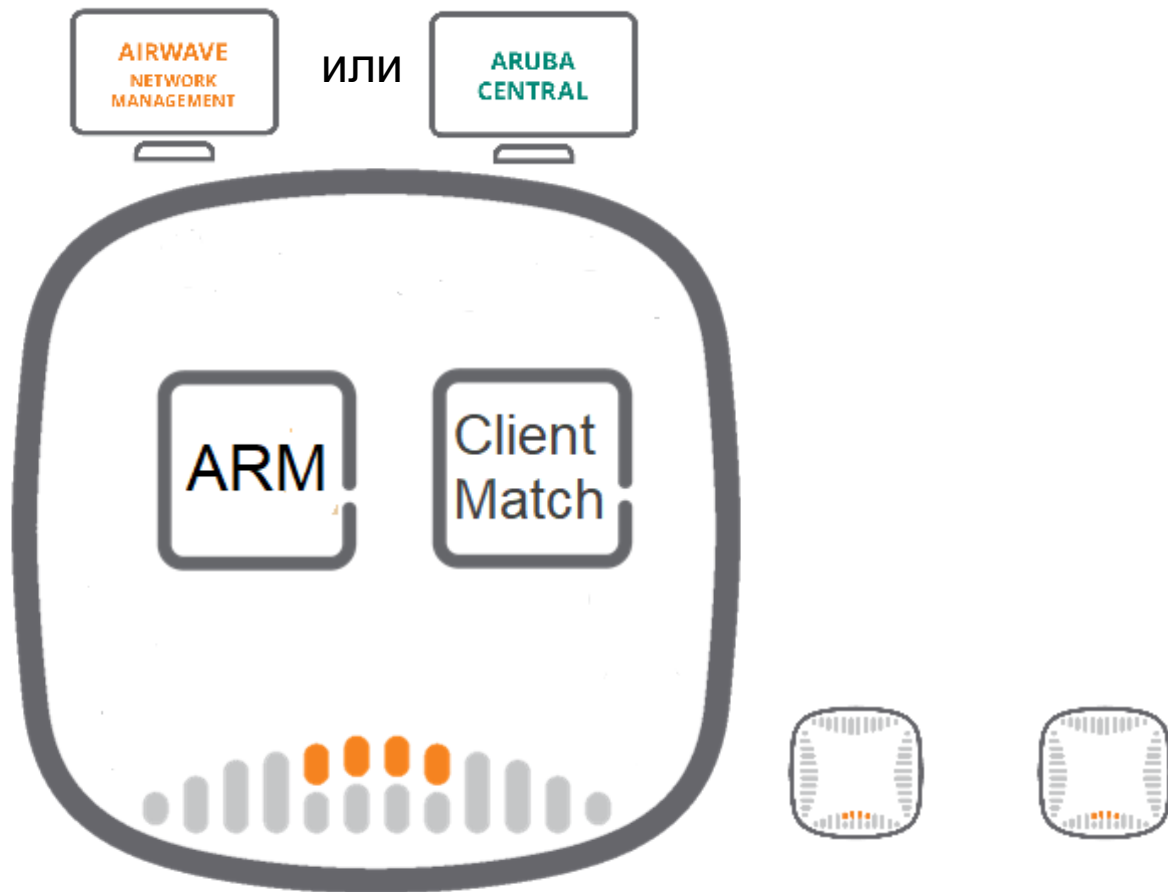


Aruba VPN



Основные принципы Aruba WiFi – Stable (Стабильно)

Aruba WiFi

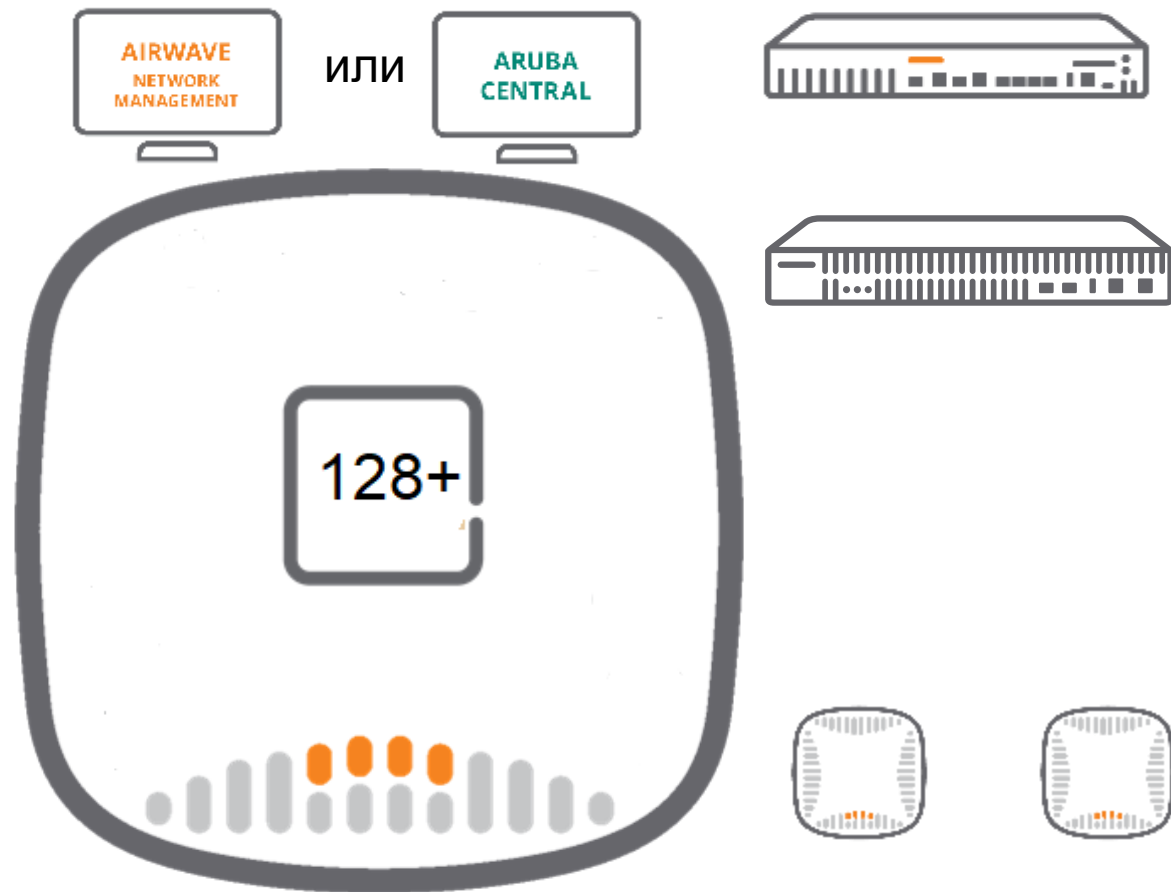


Традиционный WiFi



Основные принципы Aruba WiFi – Scalable (Масштабируемо)

Aruba WiFi

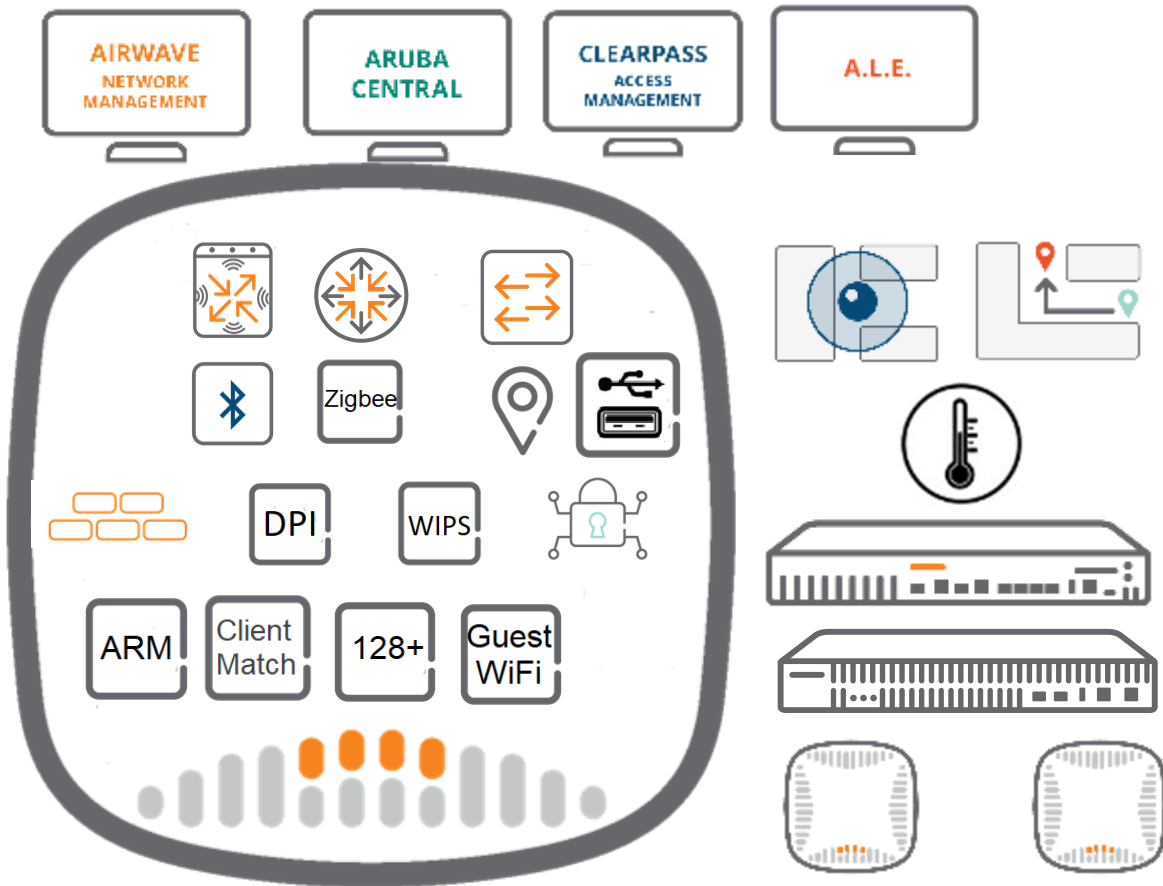


Традиционный WiFi

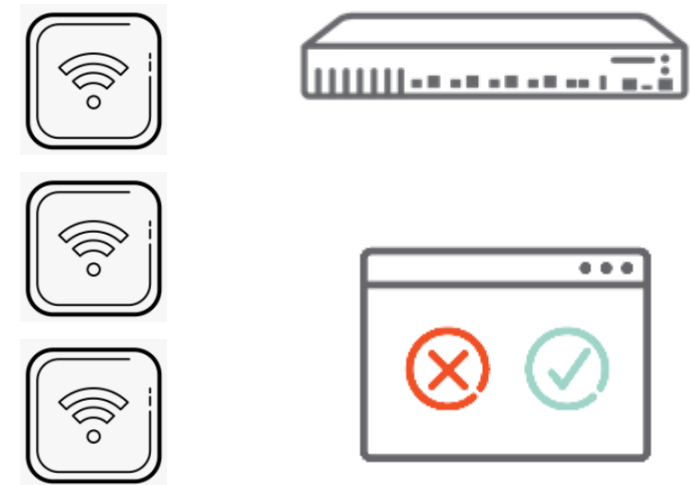


Основные принципы Aruba WiFi – 4S

Aruba WiFi

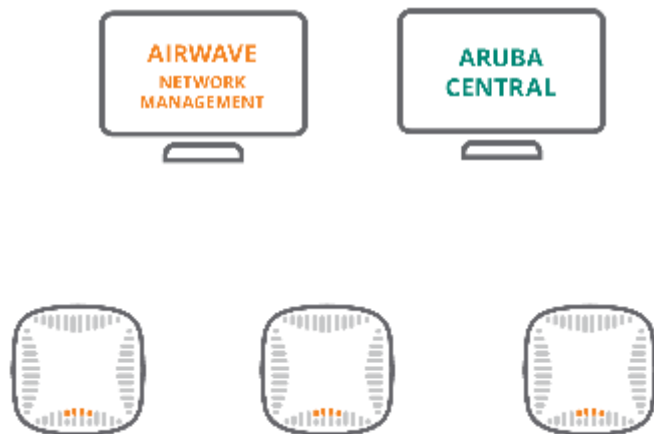


Традиционный WiFi

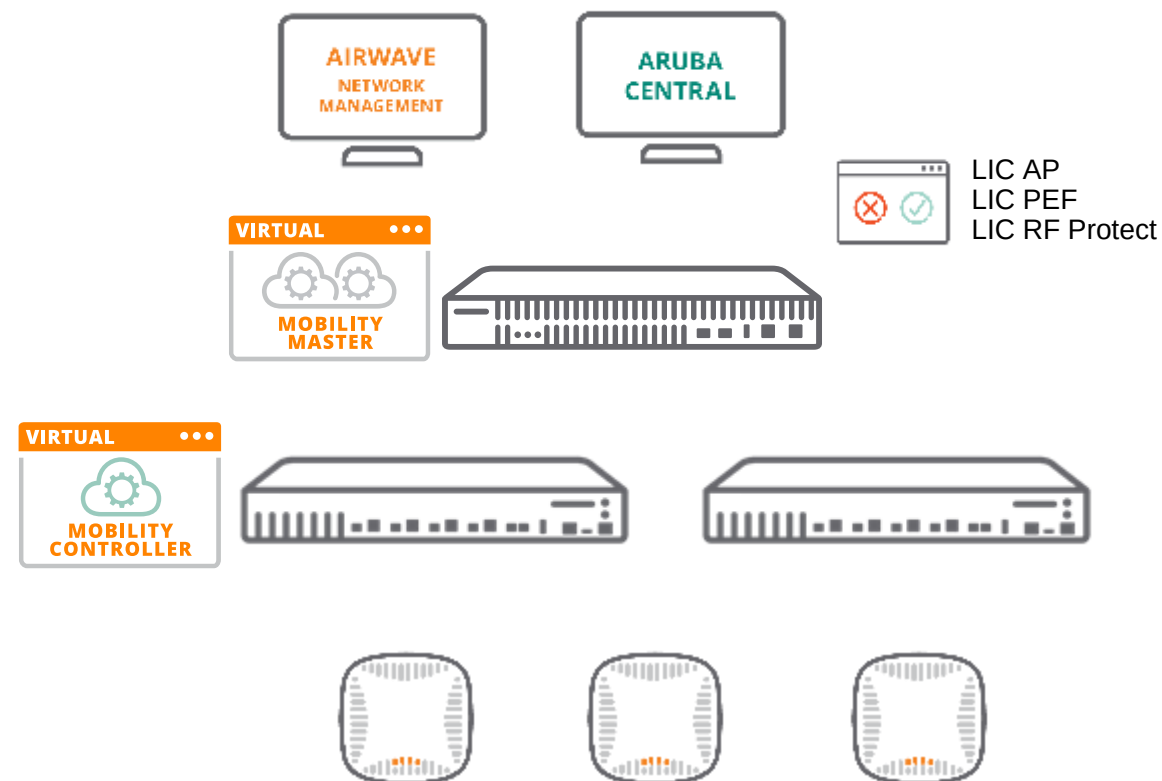


Aruba WiFi – IAP или CAP

Aruba WiFi – IAP



Aruba WiFi - CAP



На 99%

По функционалу IAP = CAP

Aruba WiFi – что такое Mobility Master (Mobility Conductor)



**Aruba Mobility
Master-VA**

The image shows a computer monitor displaying the Aruba Mobility Master web interface. The interface has tabs for 'Usage', 'Mobility Master Licenses', and 'Managed Node Licenses'. The 'Mobility Master Licenses' tab is active, showing a table with columns for AP, PEF, RF Protect, ACR, and WebCC. Below this is a section for 'Change the license pool' with a table showing various license metrics.

	AP	PEF	RF Protect	ACR	WebCC
Global License Pool	0/1000	0/1000	0/1000	0/0	0/0
mm	--	--	--	--	--
md	--	--	--	--	--

	AP	PEF	RF Protect	ACR	WebCC
Feature Enabled	☒	☒	☐	☐	☐
Scope	Per-AP	Per-AP	Per-AP	Per-Session	Per-AP
Pool Size	1000	1000	1000	0	0
Expired Licenses	0	0	0	0	0
Actual Pool Size	1000	1000	1000	0	0
Licenses Used	0	0	0	0	0
Licenses Remaining Available	1000	1000	1000	0	0



**Aruba Mobility
Master - HW**



Mobility Master (Mobility Conductor) выполняет роль «Контроллера Контроллеров» для обеспечения высокой масштабируемости и отказоустойчивости.

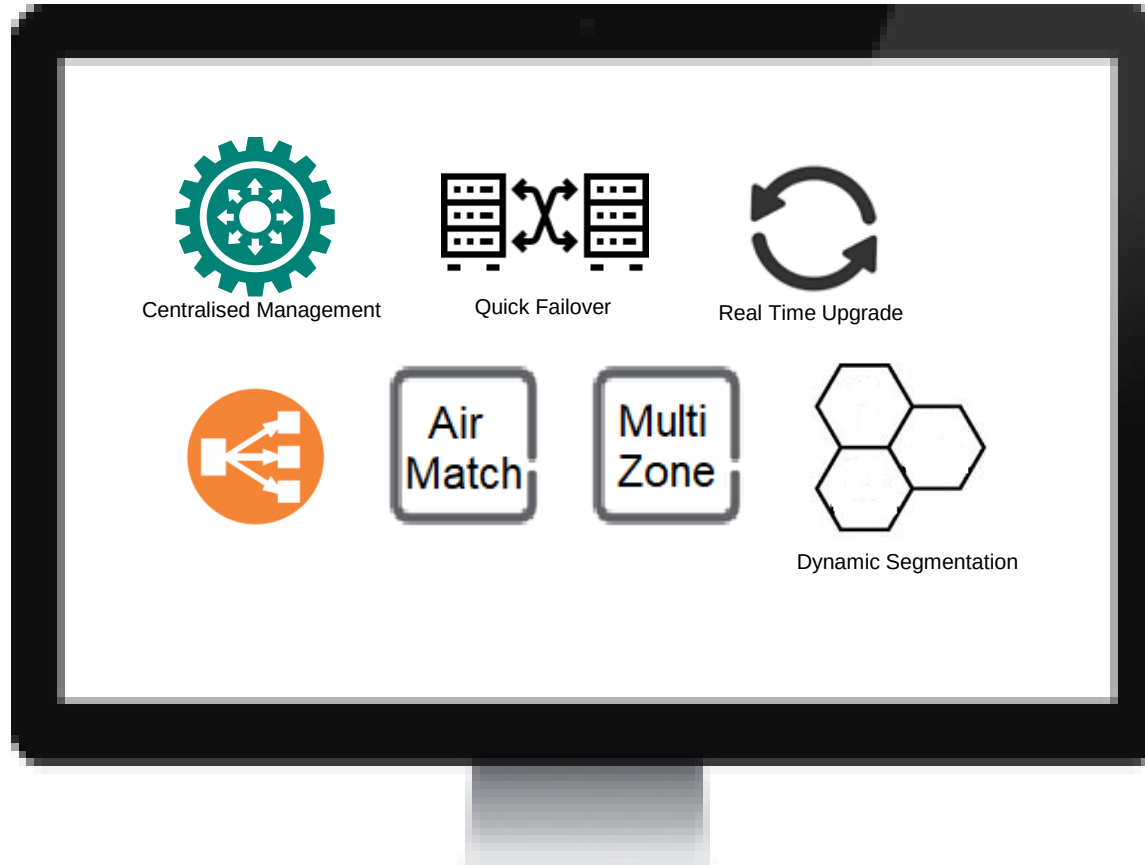
Управляет контроллерами 7200 и 7000 серий (кластер может состоять из любых физических и виртуальных контроллеров)

Поддерживает до 100К пользователей, 10К точек доступа и до 1К контроллеров в кластере.

Aruba WiFi – что такое Mobility Master (Mobility Conductor)



**Aruba Mobility
Master-VA**

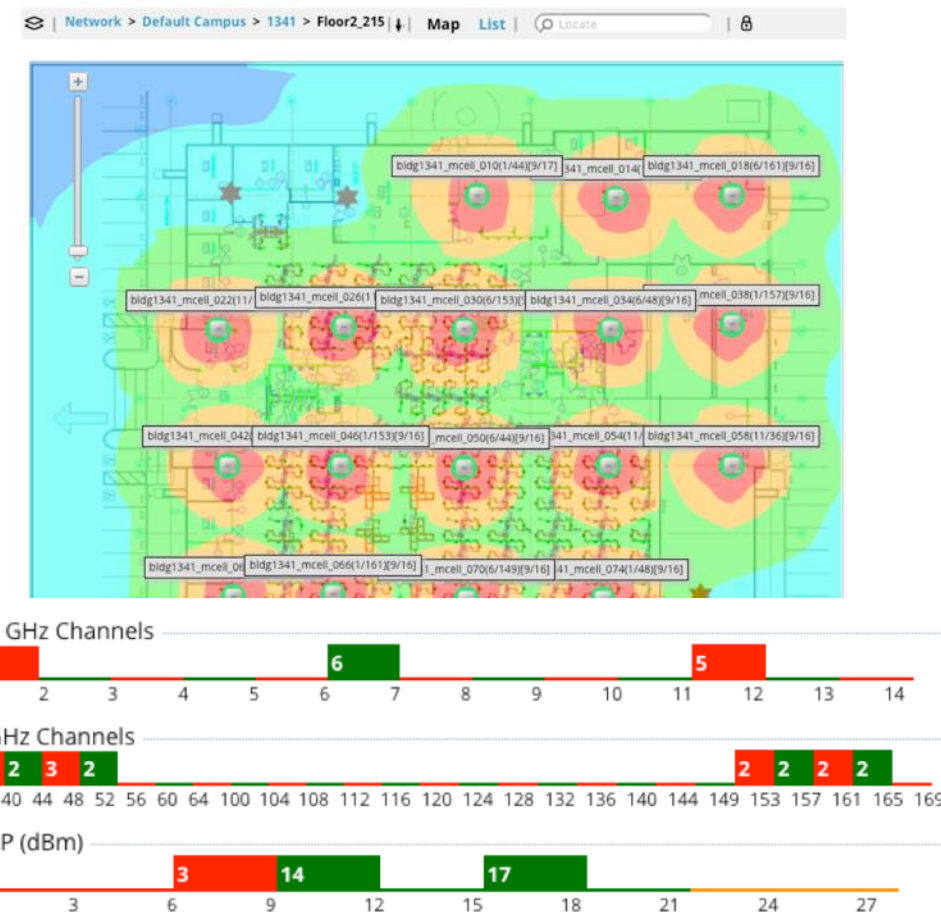


**Aruba Mobility
Master - HW**

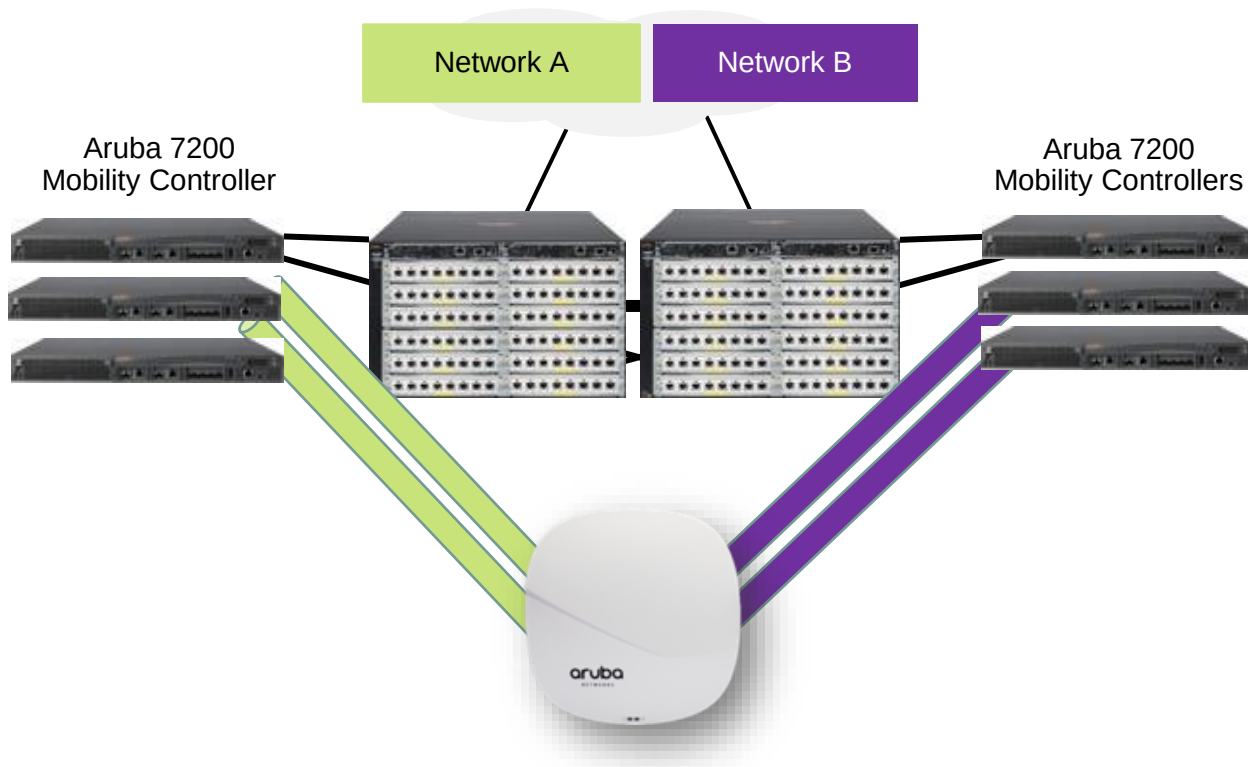
AI-powered RF controls with AirMatch

- Требуется Mobility Master и AOS8
- Автоматическая, централизованная настройка РЧ: Мощность, Каналы, Ширина Каналов
- Используется для достижения долгосрочной стабильности и производительности сети посредством ИИ и машинного обучения
- Настройки РЧ обновляются каждые 24 часа по умолчанию, частота обновлений может быть изменена ИТ персоналом

NEW

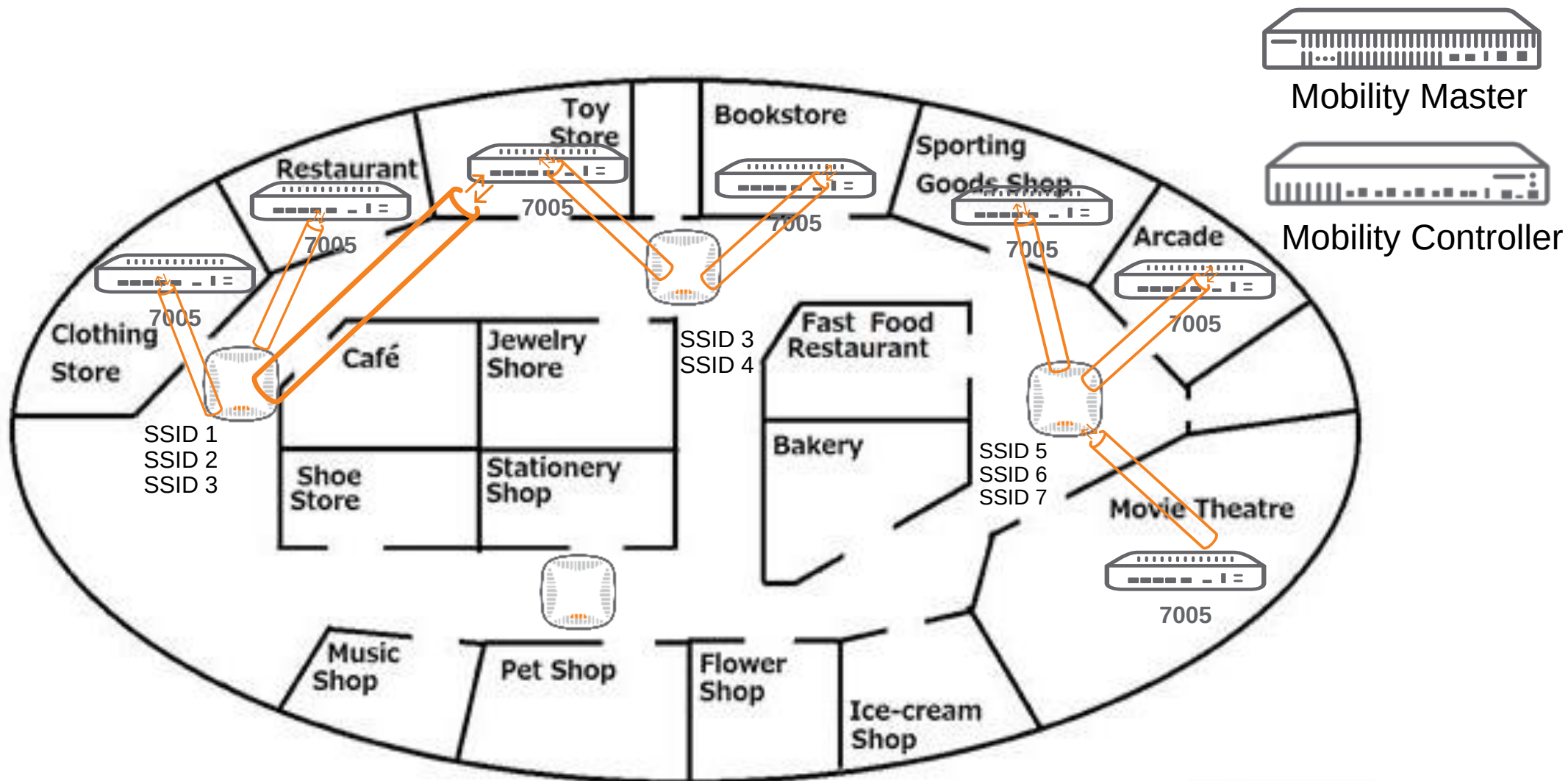


Multiple tenants on the same access point with MultiZone



- Требуется Mobility Master и AOS8
- SSIDs терминируются на различных контроллерах с целью обеспечения физического разделения потоков трафика
- Эффективное использование WiFi ресурсов и снижение общей стоимоститочек доступа

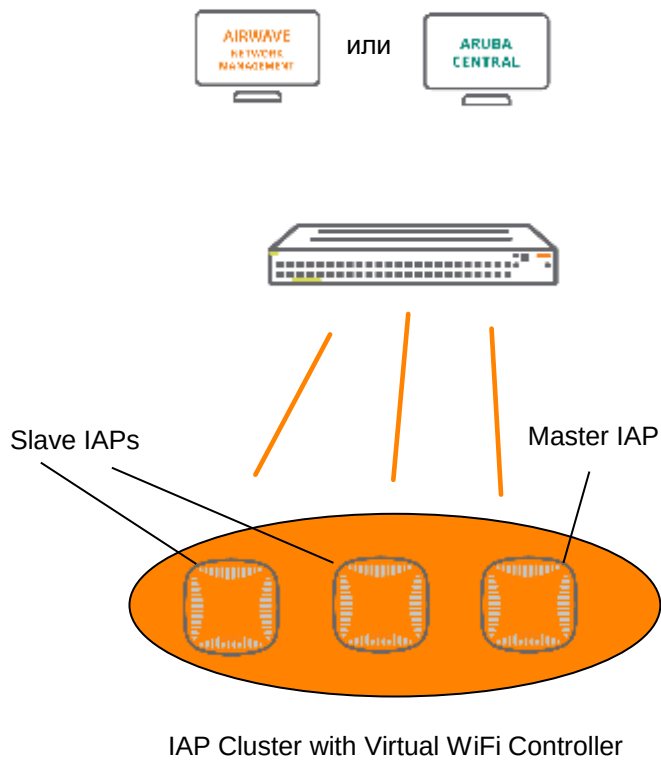
Пример MultiZone



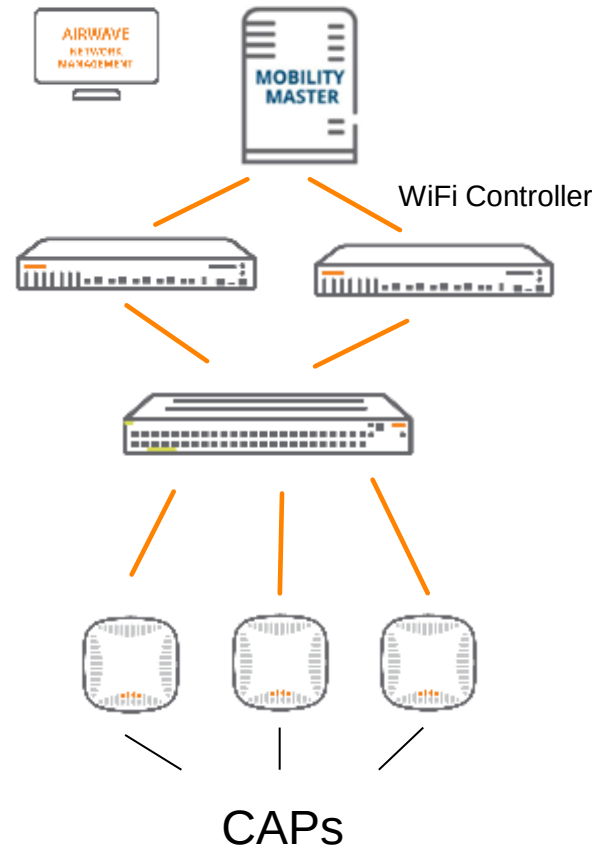
Туннель между Точкой Доступа и Контроллером

Вариант построения Aruba WiFi сетей

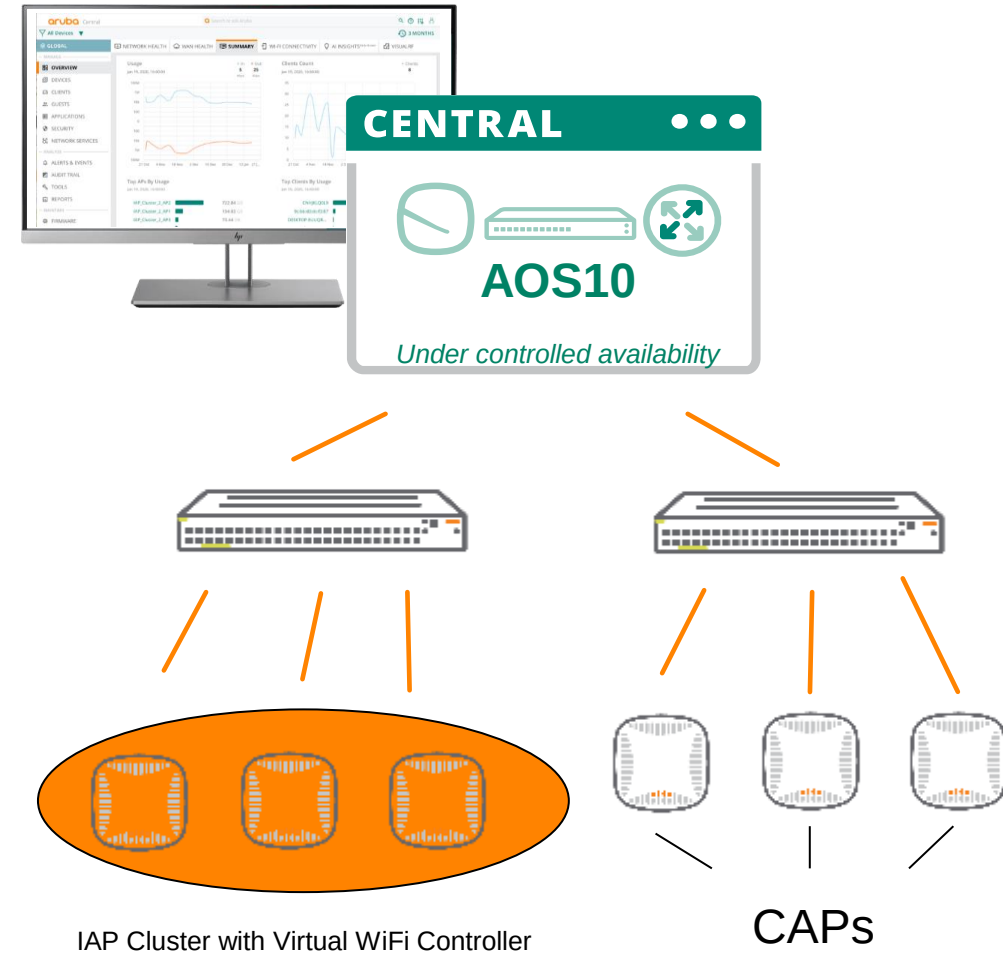
Aruba Instant AP (IAP)



Aruba Controller Based AP (CAP)



Aruba Edge Services Platform (ESP)



Aruba WLAN сеть с интегрированным IoT

Приложения

Southbound API

HTTP POST ответ
Ответ в Header в формате JSON

Или

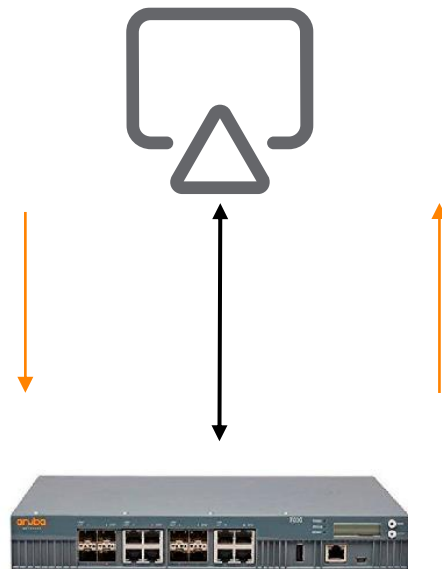
Websocket ответ
Обмен данными в формате Protocol
Buffer

Northbound API

HTTP POST запрос
Данные в Header в формате JSON

Или

Websocket запрос
Обмен данными в формате Protocol
Buffer



WLAN

Датчики (Things)

SAAS BUSINESS MODEL

Sensor: 2 minutes to install
Dashboard: 2 minutes to learn





Experience

- Conference Room
- Main Office
- Boardroom
- New York Office
- Lobby



WiFi

- Stark Guest WiFi
- Stark Secure



Network

- DHCP
- DNS



Internal

- 3rd Floor Printer
- AWS Server
- Captive Portal
- Microsoft Exchange
- Salesforce



External

- Dropbox
- Facebook
- Gmail
- Google Apps
- YouTube

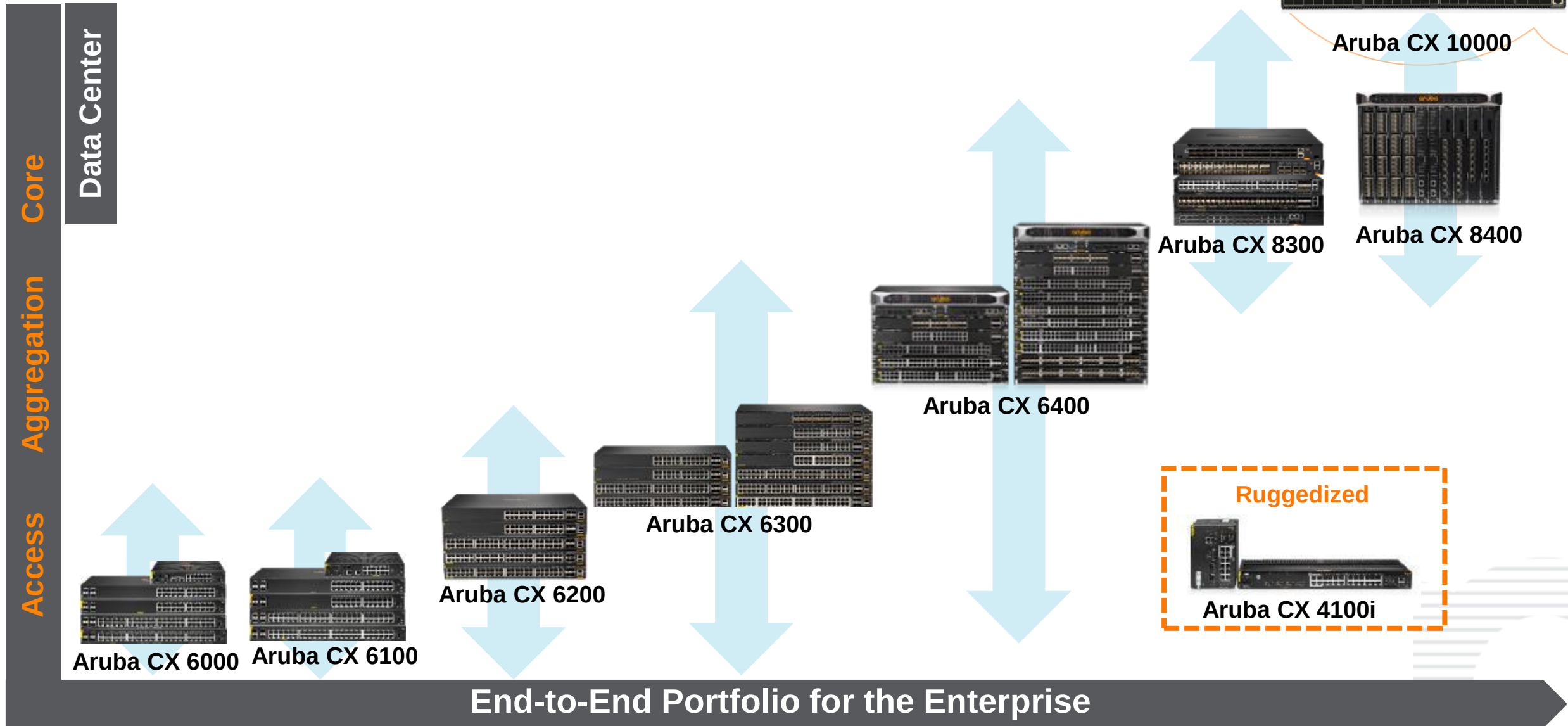
October 2021



Aruba OS CX Switch Series

Edge to Data Center

Aruba CX Switching



AOS-CX: BUILT ON CLOUD- NATIVE PRINCIPLES

Modularity

Faster innovation
with independent
processes

Programmability

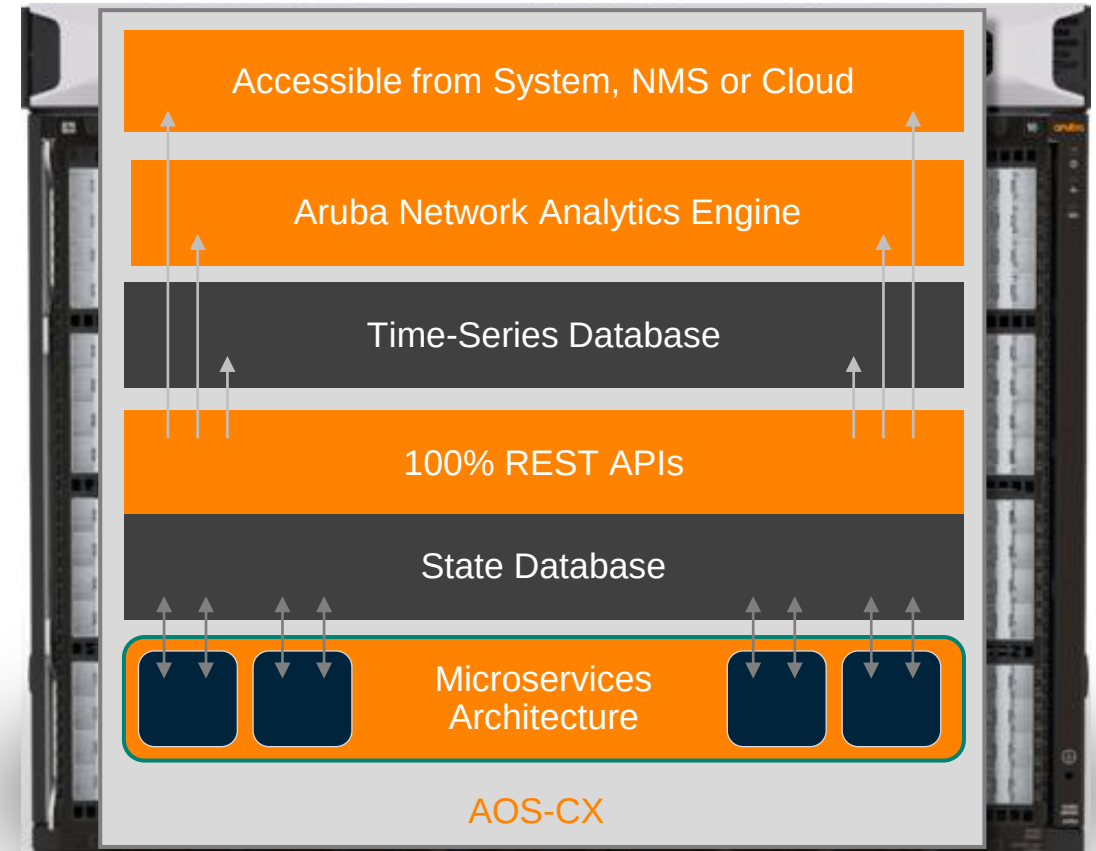
Simplified
operations
through automation

Resiliency

Stable and reliable
microservices
design

Elasticity

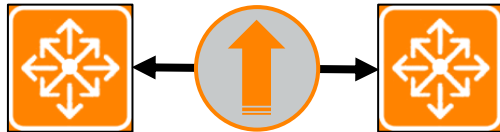
One operating model
from edge access
to data center



AOS-CX KEY FEATURES

DRIVERS: SHRINKING MAINTENANCE WINDOWS, SECURITY, WI-FI 6

VSX Live Upgrades



Extended to Access

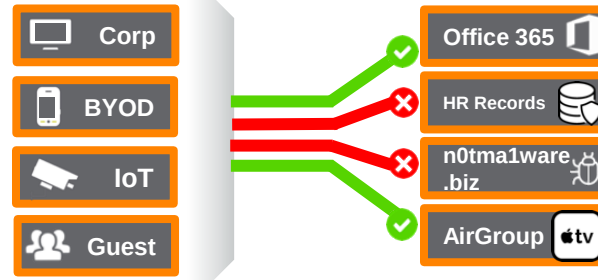
Dual control and data planes with improved performance to bring live upgrades to modular access

Always-on PoE



Enable APs, healthcare devices, sensors, and IoT devices to keep power during upgrades

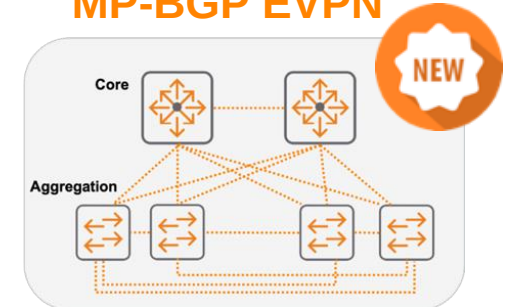
Dynamic Segmentation



Extended to Access and AOS-CX

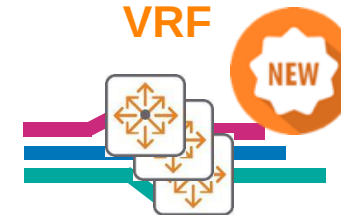
Secure, unified access across wired and wireless for users and IoT, enabled by policy-based automation

VXLAN with MP-BGP EVPN



Industry-standard segmentation that scales and provides consistent architecture across campus and data center

VRF



Simplified routing segmentation used across distributed VXLAN

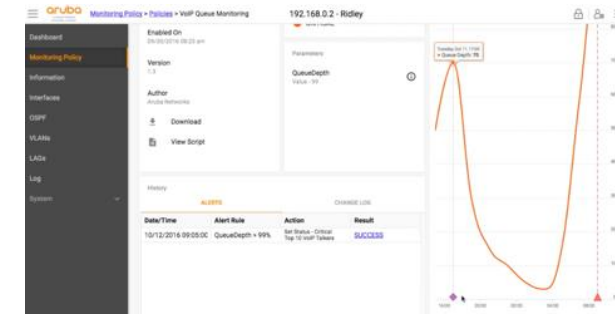
The AOS-CX Difference: Optimized for Operator Experience

Unique Tools and Capabilities for the Next Generation

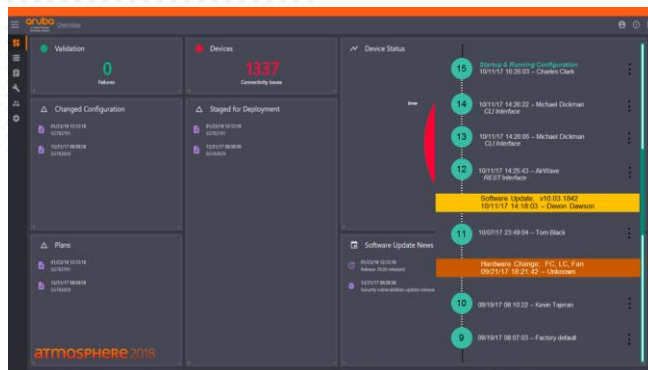
Fully Programmable
Network Operating System



Network Analytics Engine (NAE):
Closed-loop, trigger-based automation



NetEdit: Modernizing Configuration



Aruba CX mobile app: Transforming Bring-up



Under the hood – Aruba ASICs



Faster Innovation

Tight integration between hardware and software gets new capabilities to market faster



30+

Years of IP



Flexible Programmability

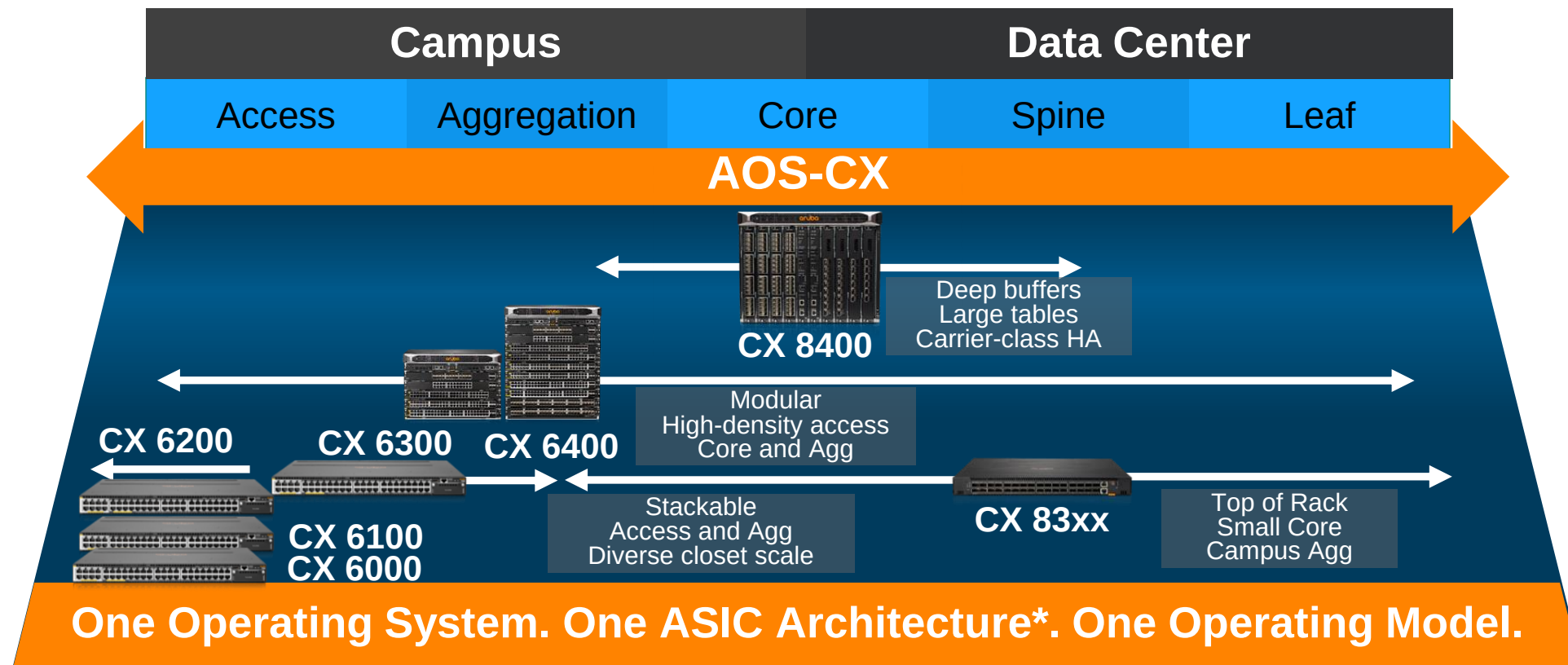
Dynamic programming of network resources for use case optimization

6th

Generation Architecture
(CX 6000)

ARUBA CX SWITCHING FOR THE ENTERPRISE

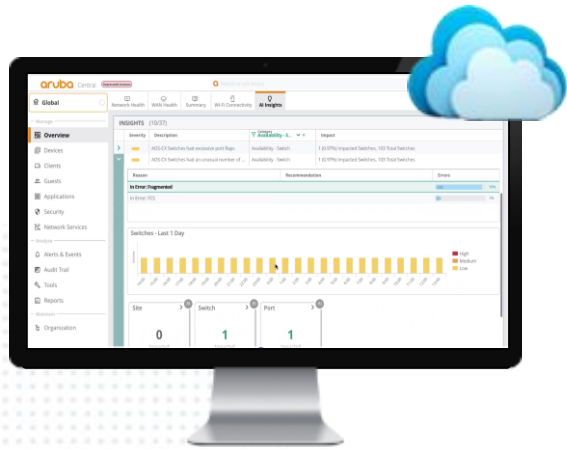
NEW PLATFORMS COMPLETE END-TO-END SWITCHING PORTFOLIO



Simplify Operations with a Unified Infrastructure

Unique architecture provides management flexibility with same switch

Central



**Cloud-based
wired + wireless access
network management**

COP



**On-prem
wired + wireless access
network management**

CLI

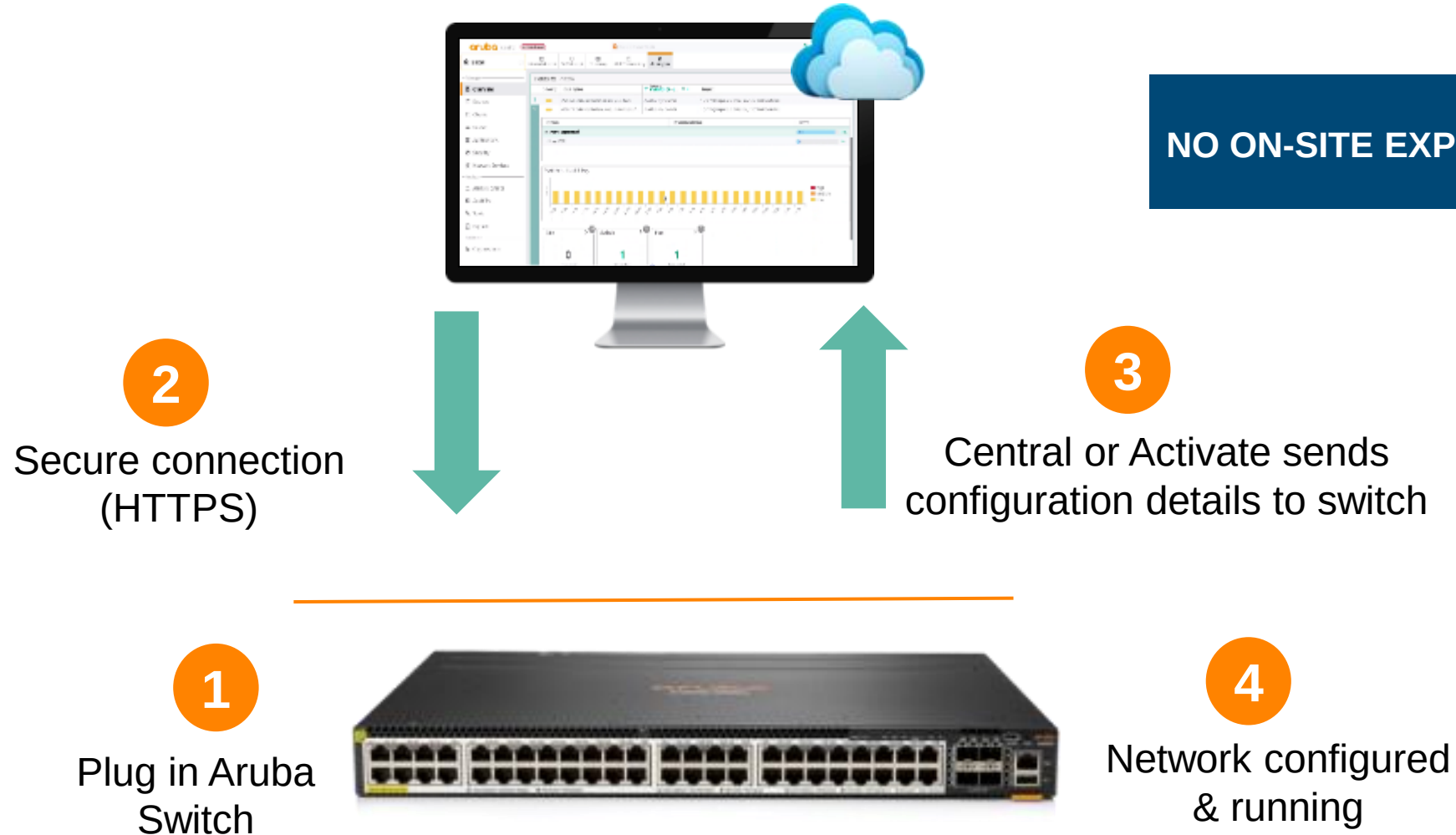
NetEdit
for AOS-CX

Web GUI



**Web interface for
single switch network
management**

Save time with ZTP for Simple And Fast Installs



AOS-CX 10.3

Software Value without Licensing Complexity

Category	Features
Layer 1	* 1/10/25/40/100G Transceivers, Bluetooth Dongle Support, Support for 1G SFP and 1G Base-T (limited to 32) Transceivers on the 8325
Layer 2/Bridging	STP, STP features – Root Guard, Loop Guard etc., MSTP, RSTP, RPVST+, Loop Protect, LAG/MC-LAG, LACP, MVRP, LLDP, support over OOBM, Unidirectional Link detection (UDLD), Ethernet Ring Protection Switching (ERPS), VLAN Translation, Data Center Bridging (DCB) – ETS, PFC, QCN, DCBx
Layer 3/Routing	OSPFv2/v3, MP-BGP, BGP EVPN , VRRPv3, Policy Based Routing (PBR), Bidirectional Forwarding Detection (BFD) for all routing protocols, IPv4 & IPv6 Static Routing
High Availability	In-Chassis HA , VSX – Virtual Switching Extension (Chassis), VSX Live Upgrade, VSX Configuration Synchronization, OS Resiliency – Time-Series Database, VSX enhancements including interoperability with RPVST+, VSX graceful upgrade for routing features, LACP Fallback with VSX LAG, VSX Sync enhancements
Multicast	IGMPv3, MLDv2, PIM-SMv4 & v6, Multicast Source Discovery Protocol - MSDP
Security	Local AAA, Remote AAA with TACACS+ & RADIUS, PKI, IPv4/IPv6 ACL, VLAN ACL, Control Plane ACL, Object Group ACL, RBAC, IPv4/IPv6ACL, BPDU Filtering, BPDU Throttle, Time-Based ACL with NAE, AAA Channels, PIM-SM RP ACL
QoS	Strict Priority Scheduling, DWRR Scheduling, Map to output queue by 802.1p, DSCP, IP precedence, Classifier-based QoS, Committed Information Rate (CIR) – Ingress/Egress, CoPP, Traffic Policing, Port & Remote Mirroring, Global Port Mirror (8400), Shaping, Egress Queue Shaping, Trust (802.1p, DSCP)
Management & Usability/ Operator Experience	DHCP v4/v6 Server, DHCP Relay, DNS v4/v6, Syslog v4/v6, NTP Server, RMON/SFTP/SSH, SNMP, Local/Remote Mirroring, IP SLA, Web GUI, sFlow, Analytics, Dynamic action/remediation, REST API programmability, NetEdit - Config automation, Config verification, Config validation, Airwave and Central Support, Network Analytics Engine (NAE), NAE Script Upgrade
Segmentation	L2 VXLAN, L3 VXLAN**, VRF-Lite , L3 GRE, v6-over-v4 Tunnels, BGP over GRE

VXLAN + MP-BGP EVPN and Data Center Bridging*

VMware NSX Integration*

Fourth Major AOS-CX Release

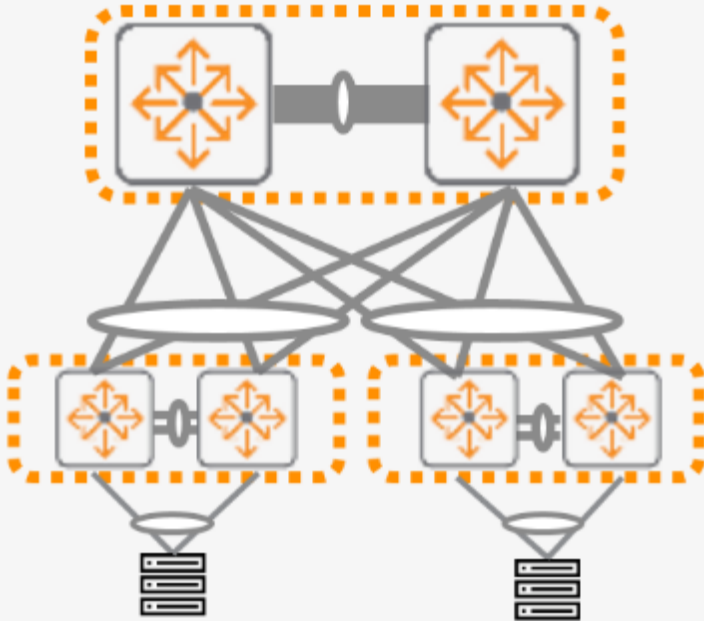
*Font Color =Orange = 10.3 features

Bold Orange = 10.3 DC features, Bold =10.2 and earlier Features applicable to DC

**Supported only on 8325 in 10.3

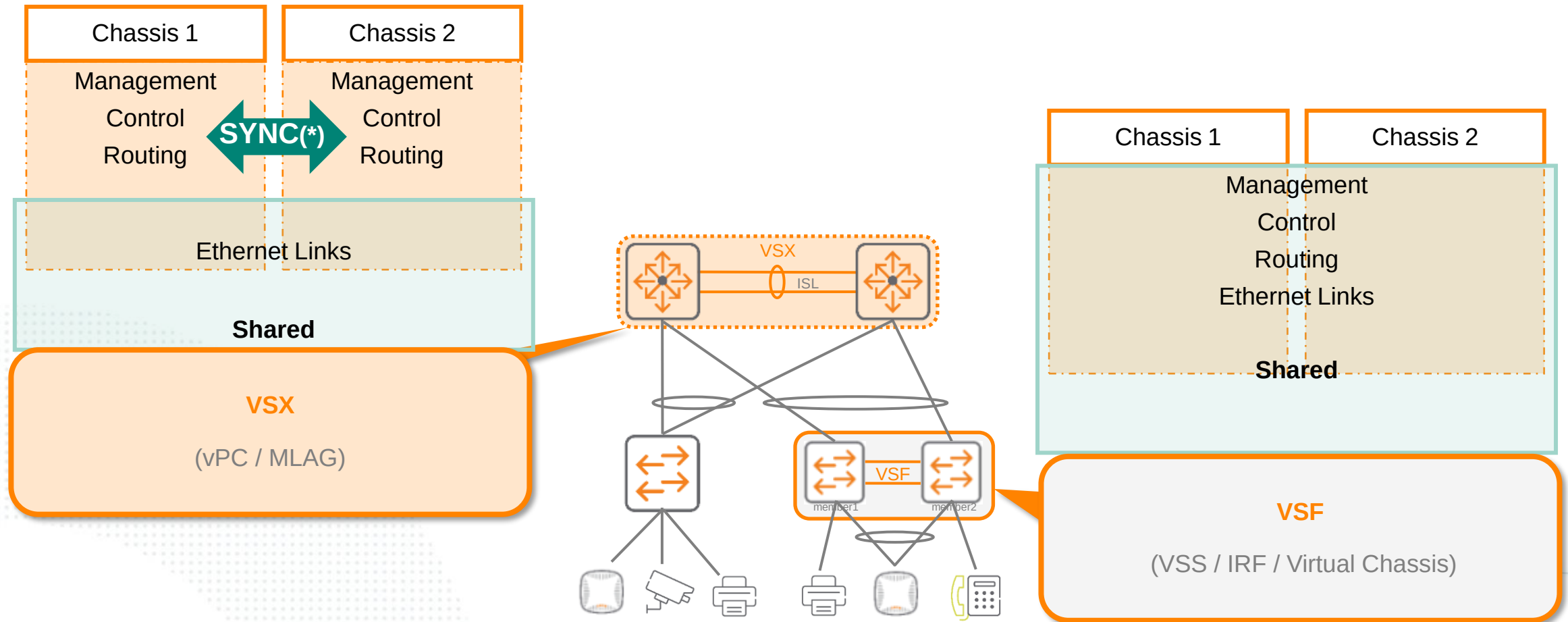
Стекирование VSX & VSF

Virtual Switching Extension (VSX)



- **Multi Chassis Link Aggregation**
- **Redundancy in both hardware and software**
- **High Availability during upgrades**
- **Flexibility for network designs**
- **Operational simplicity with VSX Sync**

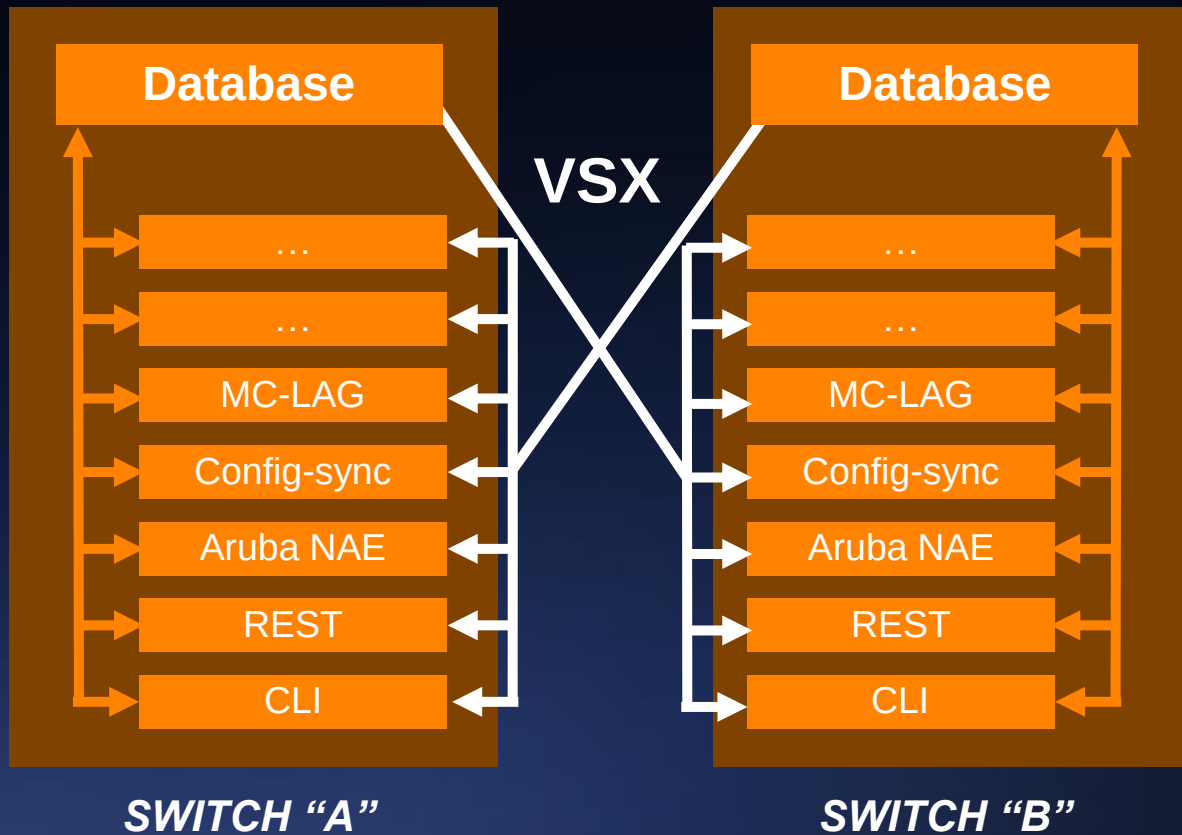
Switch Virtualization Comparison



(*) configurable levels of synchronization

Thank you

LIVE UPGRADES WITH VSX



Reliability without Compromise

Orchestrated Upgrades

Delivers on the promise of ISSU

No maintenance windows mandated

Gradual and planned traffic re-balancing

Dual Control-Plane = Software Redundancy

Network Analytics Engine (NAE)

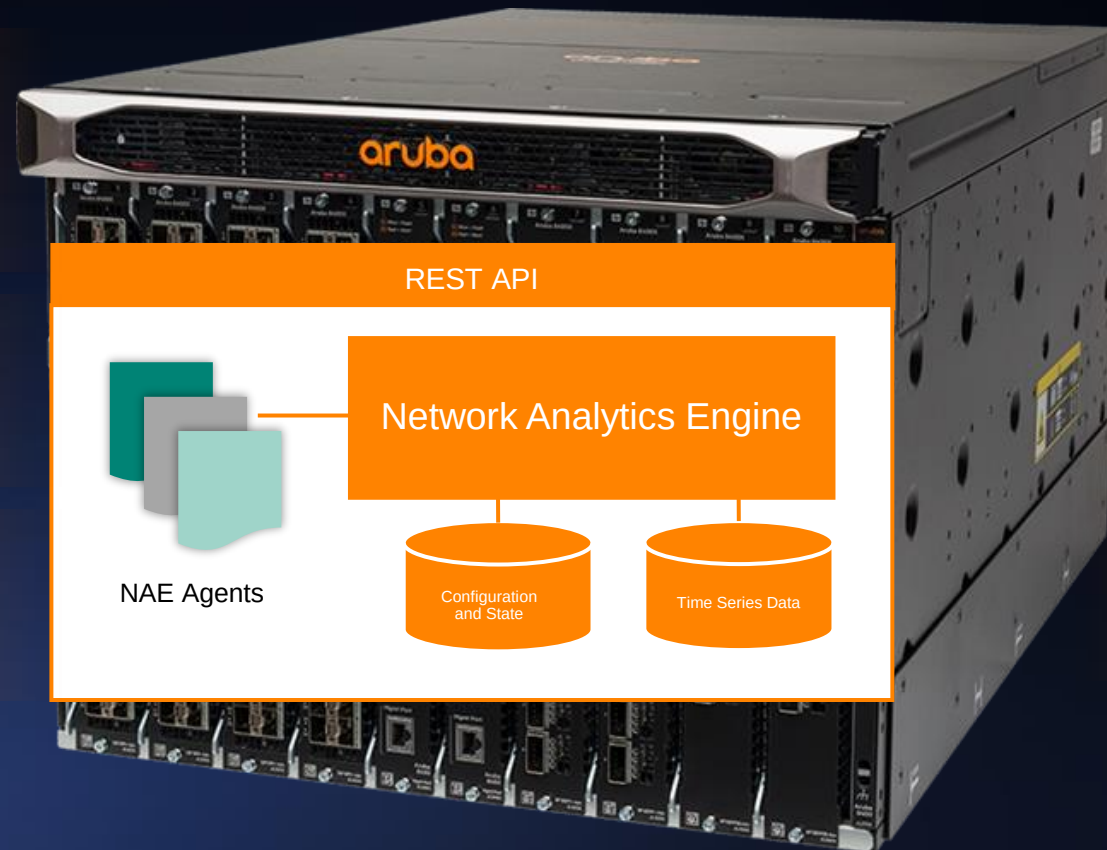
NAE WITH EMBEDDED ANALYTICS

‘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’



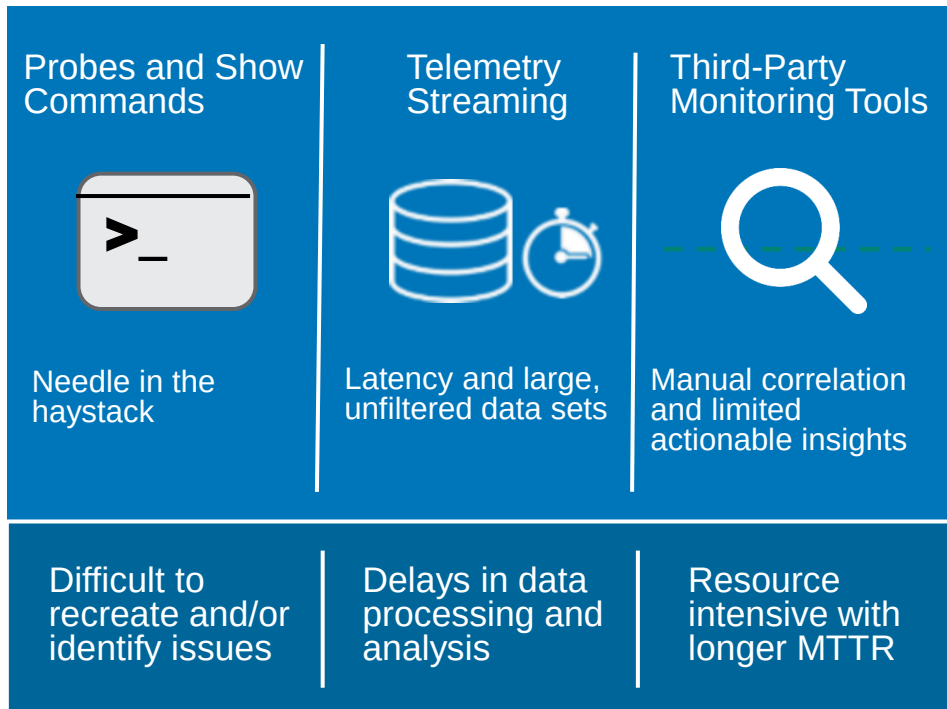
Complete telemetry for all system information

Can capture info from neighbor infrastructure

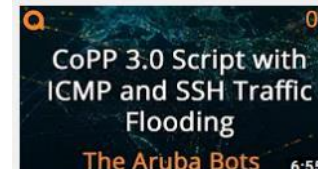
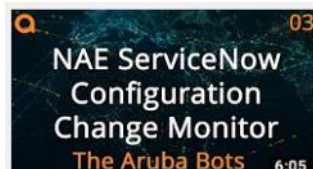
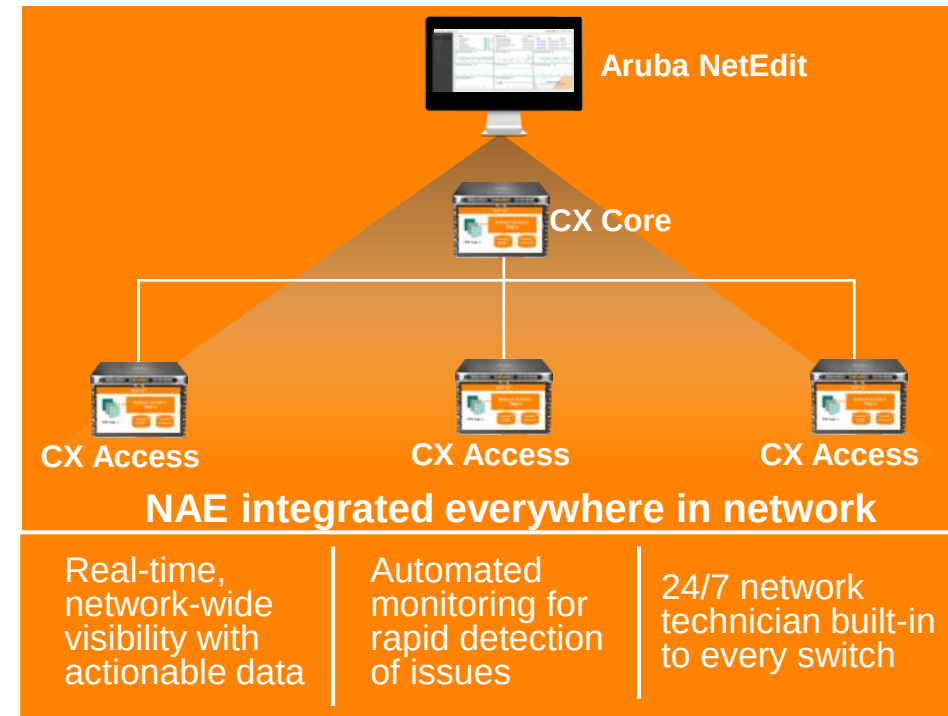
Notification with automatic diagnostics

INTELLIGENT EMBEDDED DISTRIBUTED PRE-PROCESSING WITH ARUBA NETWORK ANALYTICS ENGINE (NAE)

Other Monitoring Approaches



Aruba CX Approach



Aruba NAE Addresses Wide Range of Use Cases

System Health	Network Health	Security Analytics	Application Visibility	Network Optimization
• Monitor system statistics	• Monitor network statistics to assist with issues • Track the state to collect insight on change	• Analyze network traffic learn about anomalies	• Discover anomalies in application performance, cloud or on-prem.	• Dynamically insert policies for optimization. • Redirect traffic

CUSTOMER FOCUS BRINGS ANALYTICS TO LIFE

IT Workflow Integrations



ITSM integrated change mgmt.
with ServiceNow / TopDesk



Proactive Email notifications for
critical events and errors



Auto-config archiving with TFTP
config updates

Network Health Reporting



Transceiver Diagnostics for Health
and Failure Root Cause



VSX Health Monitor to Highlight
VSX Stability



Monitor and Change Route when
Failure Detected

Proactive Monitoring



Predictive Fault Finder for General
Network Health



VoIP monitor based on IPSLA
transactions



MAC and ARP Count Analytics to
Ensure Proper Device Load

CUSTOMER USE CASE CO-DEVELOPMENT

Deep R&D engagements with numerous customers, delivering customer focused solutions

NAE Scripts Published on Aruba Solutions Exchange (ASE)

AVAILABLE AOS-CX INTEGRATIONS

<https://developer.arubanetworks.com/aruba-aoscx>

Python SDK

– Available functions

- ACL
- BGP
- DHCP
- EVPN
- OSPF
- Interface
- Lag
- LLDP
- MAC
- Loop protect
- QoS
- VRF
- VSX
- VxLAN
- System

Ansible

– CX Modules

- ACLS
- L2 Interfaces
- L3 Interfaces
- Static Routes
- VLANs
- VRFs
- DNS
- Banner
- Firmware Upgrade
- Config backup & restore
- Config Audit
- Config command
- Get Facts

NAPALM

– Available functions

- Get Facts
- Get interfaces
- Get LLDP
- Get BGP
- Get ENV
- Get ARP
- Get NTP
- Get mac table
- Get route
- Get SNMP
- Ping
- Traceroute
- Get users
- Get optics
- Get config
- Compliance report

StackStorm

– Sensors/Actions

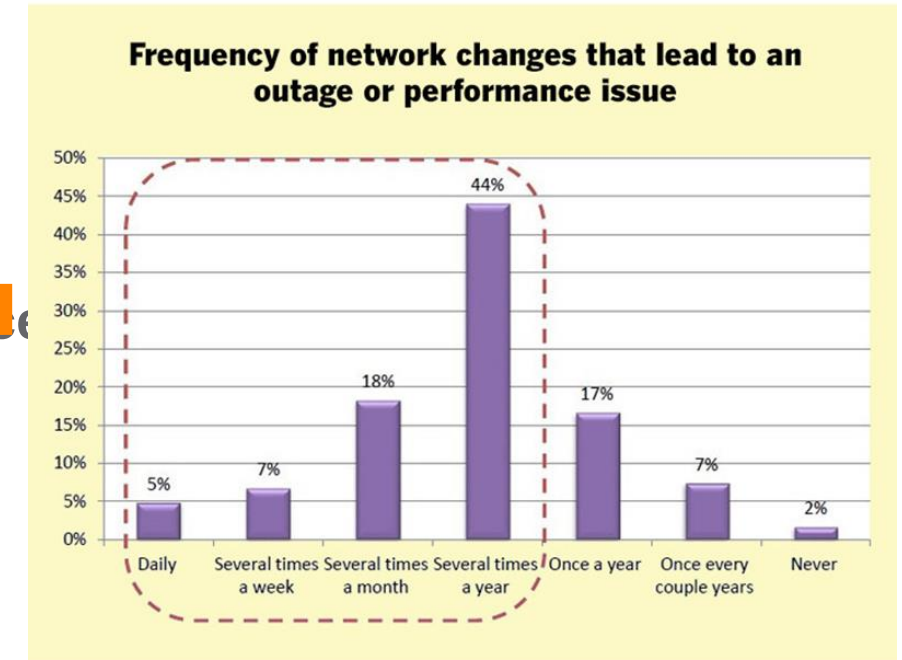
- Interface Admin Status
- Link Status
- Websocket Port Sensor

NetEdit



Top 10 Causes of Outages

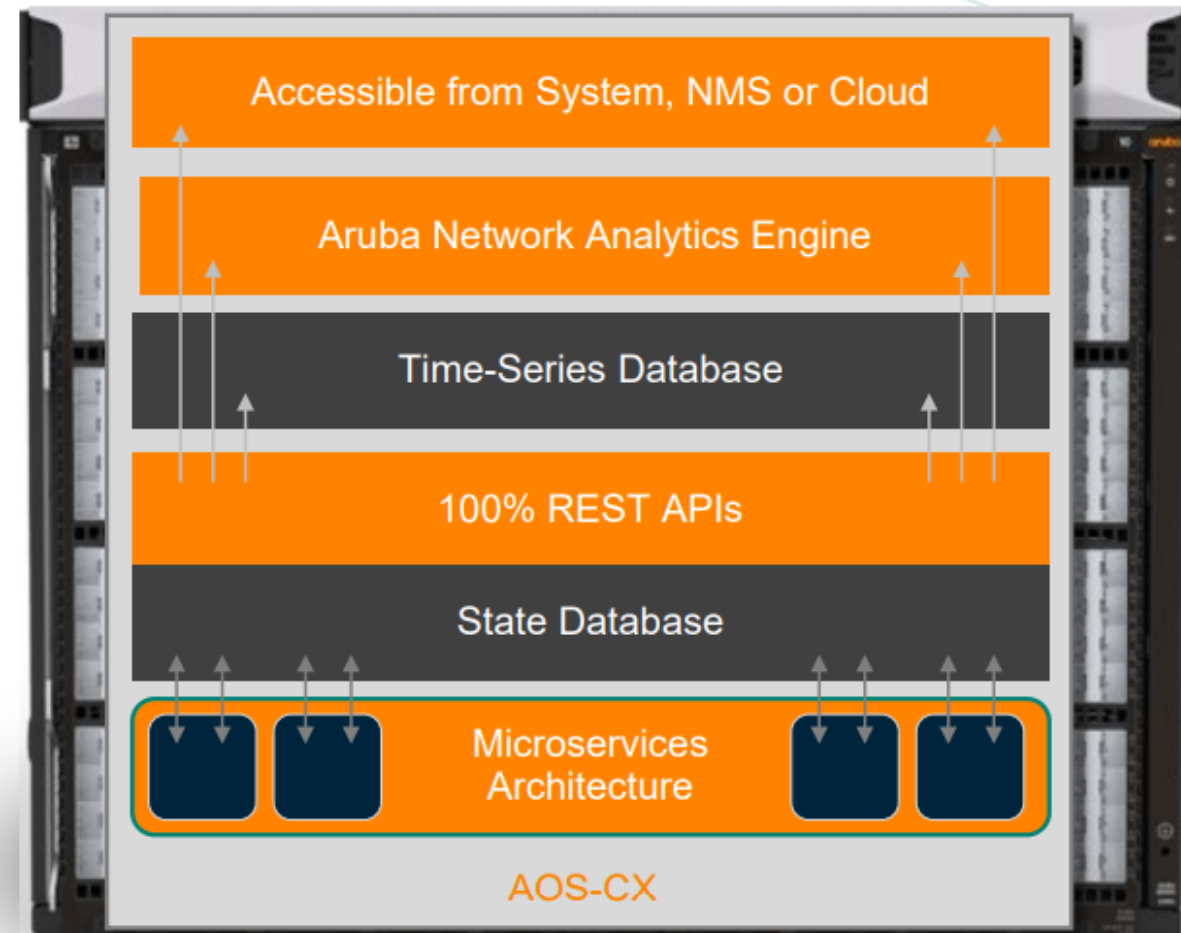
1. Faults, errors or discards in network devices
2. Device configuration changes
3. Operational human errors and mismanagement of change
4. Link failure caused due to fiber cable cuts
5. Power outages
6. Server hardware failure
7. Security attacks such as denial of service (DoS)
8. Failed software and firmware upgrade or patches
9. Incompatibility between firmware and hardware device
10. Unprecedented natural disasters and ad hoc mishaps on the network such as a minor accidents, or even as unrelated as a rodent chewing through a network line, etc.



AOS-CX: BUILT ON CLOUD- NATIVE PRINCIPLES

- Database driven
- Publish / Subscribe model
 - ✓ Publish “I have changed attribute #2”
 - ✓ Subscribe “let me know when there is a change on attribute #42”
- Analytics built-in

Benefits : Easy to interact with – NetEdit is extensively using those capabilities



NetEdit for Configuration, Automation and Verification

Search

Edit

Validate

Deploy

Audit

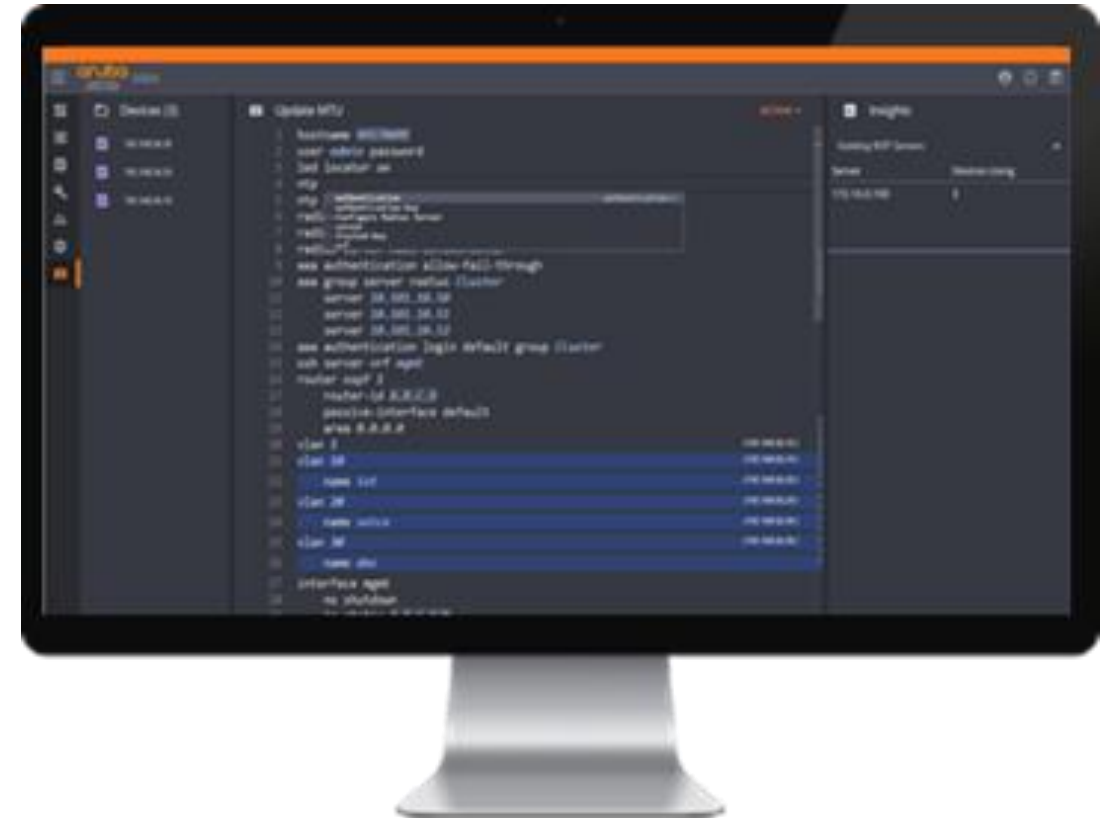
Anomaly
Detection

Predictive
Assistance

Auto-Change
Verification

Continuous
Validation

Repetitive Task
Automation

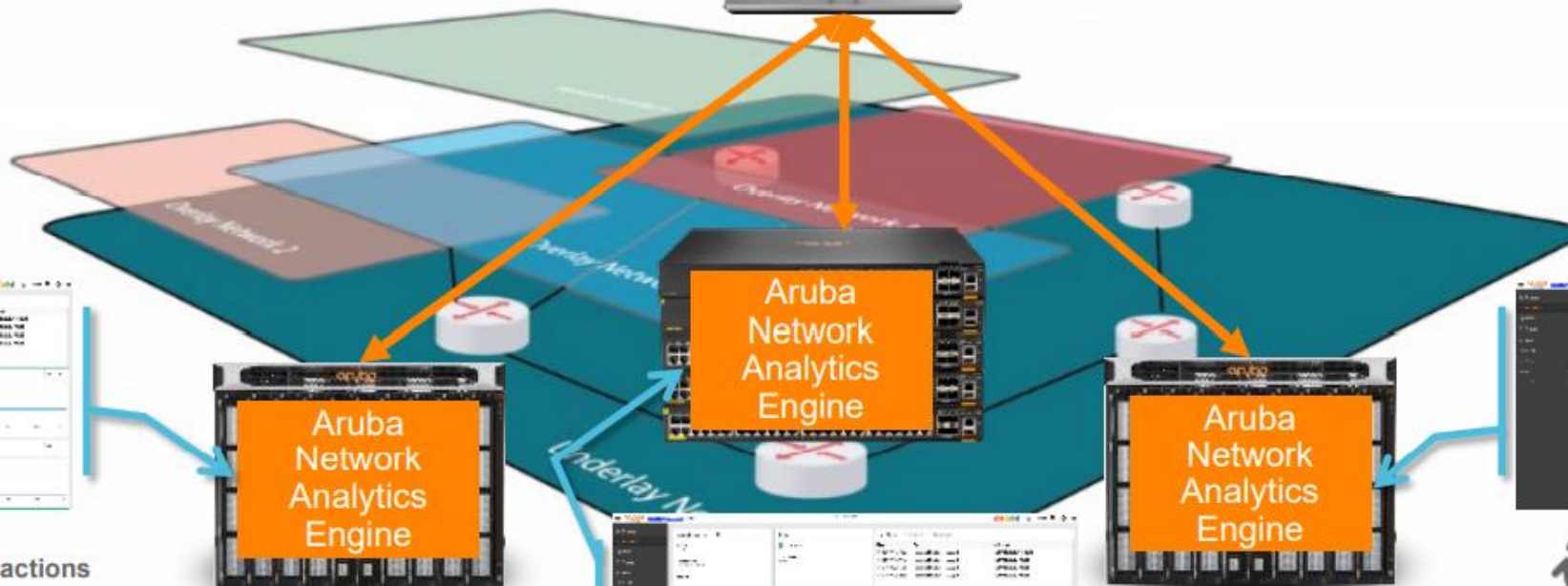


Network Analytics Engine

The “Magic” behind the scene



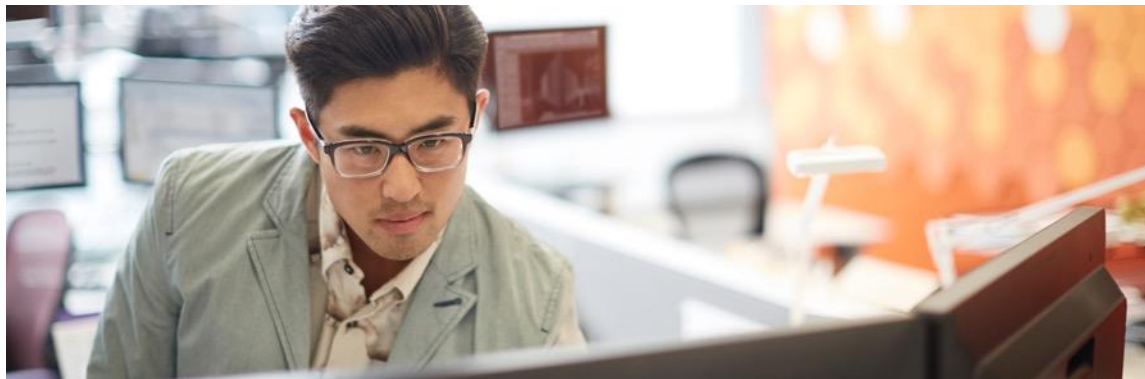
NetEdit receives and aggregates Status updates from ALL AOS-CX switches



Aruba Fabric Composer для Датацентра

Software-Defined Network Automation & Orchestration

Introducing Aruba Fabric Composer



INFRASTRUCTURE & NETWORK TEAMS

- Automate fabric provisioning for faster network deployment
- Minimize repetitive tasks through workload-centric orchestration
- Speed troubleshooting with visibility across physical & virtual

SERVER ADMINS

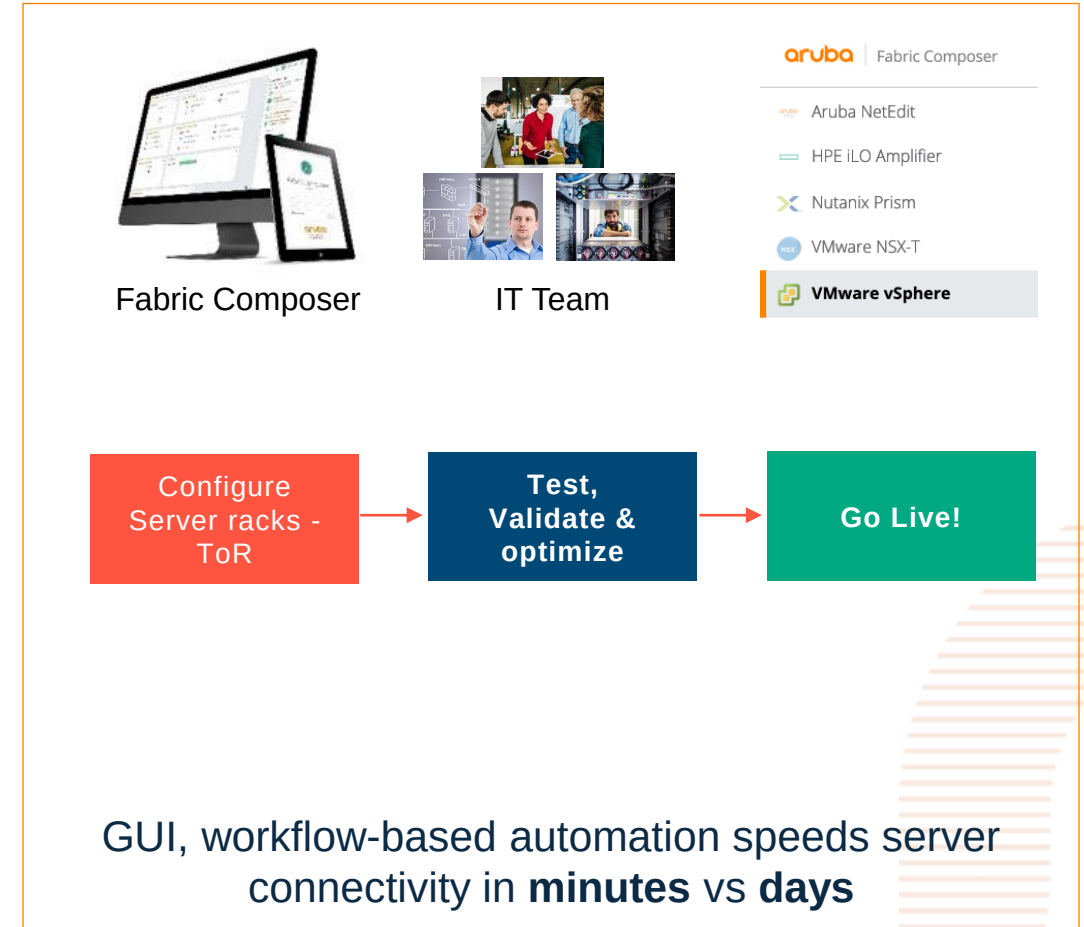
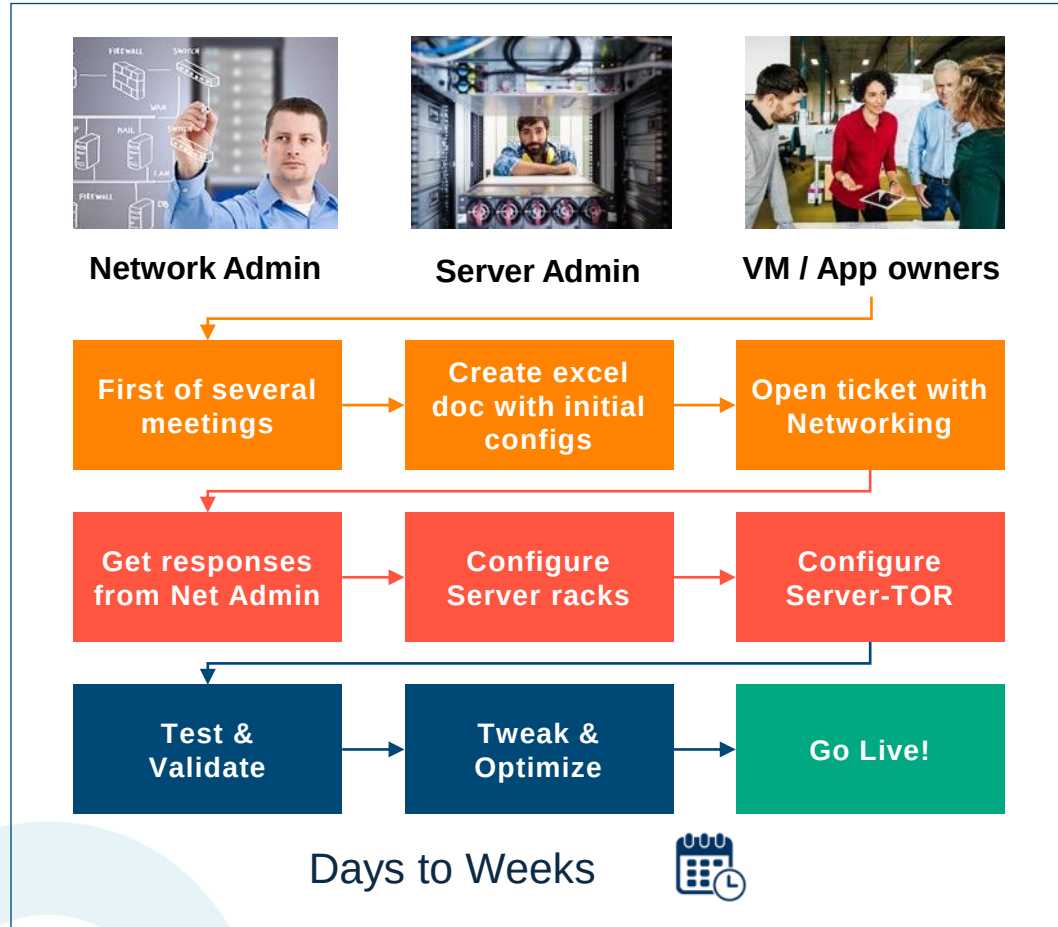
- Eliminate bottlenecks with real-time network provisioning
- Reduce the need for specialized training and skillsets
- Streamline ops & improve collaboration with unified toolset

VM / APPLICATION OWNERS

- Speed service & application delivery
- Ensure secure and prioritized traffic for critical workloads
- Gain visibility and control of workload performance

Reduce Network Provisioning Time From Days to Minutes

Legacy provisioning vs. Aruba software-defined network automation with AFC



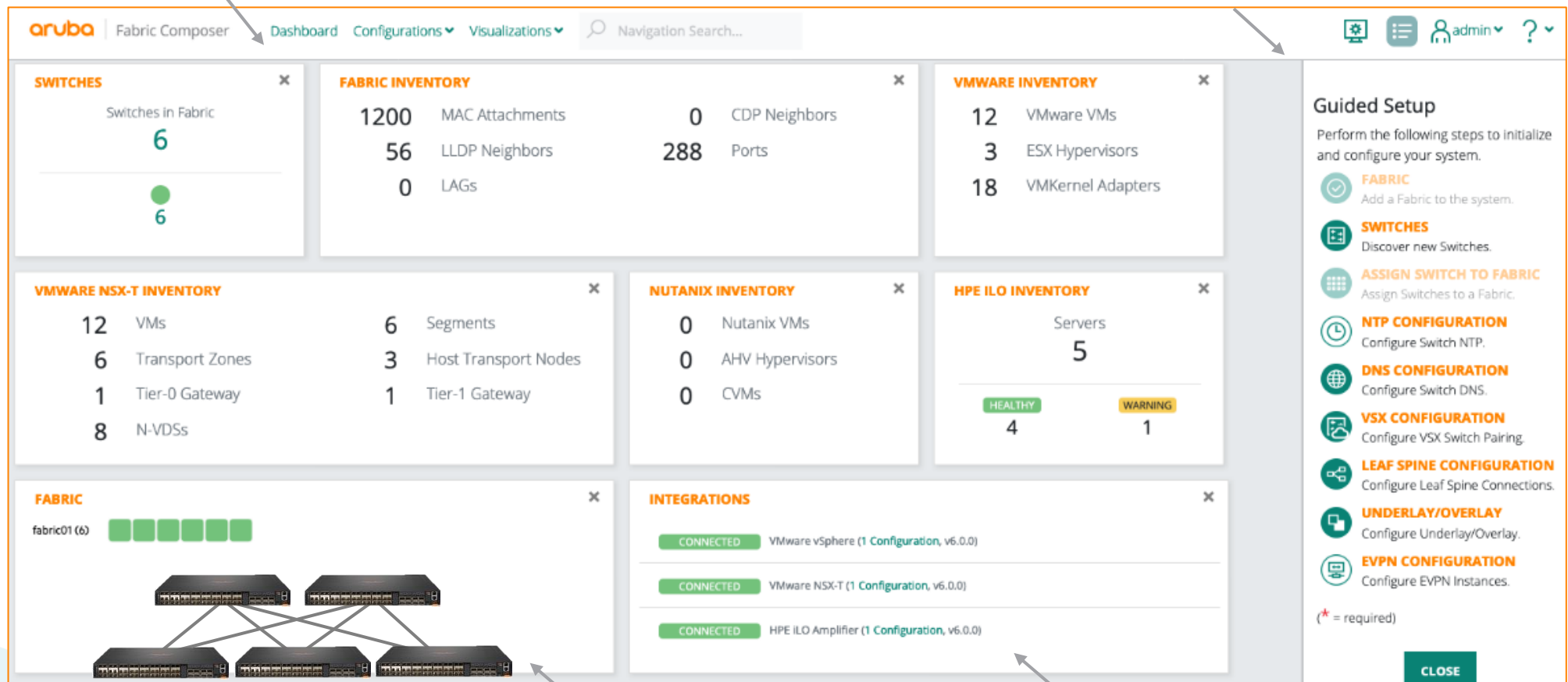
Aruba Fabric Composer Dashboard

Dashboard View

Includes information about fabrics, switches, hosts, and VMs

Workflow Automations and Guided Setup

Point and click GUI streamlines and automates away complexity



Network and Switch Visualization

Hosts, MAC, Neighbors, Switch inventory, health status

API level integrations with various environments

Including HPE, Aruba, VMware vSphere, ESX, NSX and Nutanix

THE COMPETITION VS **ARUBA CX**

BUILT FOR VENDOR LOCK-IN

Disparate Operating Models

Off-Box Analytics

Proprietary & Inflexible

Legacy Hardware

Oversubscribed

10G for price of 10G

Ongoing licensing
& subscriptions

BUILT FOR NETWORK OPERATORS

1 Operating Model
with CX portfolio end-to-end

Embedded Analytics
in every switch

Intelligent Automation
with cloud-native OS

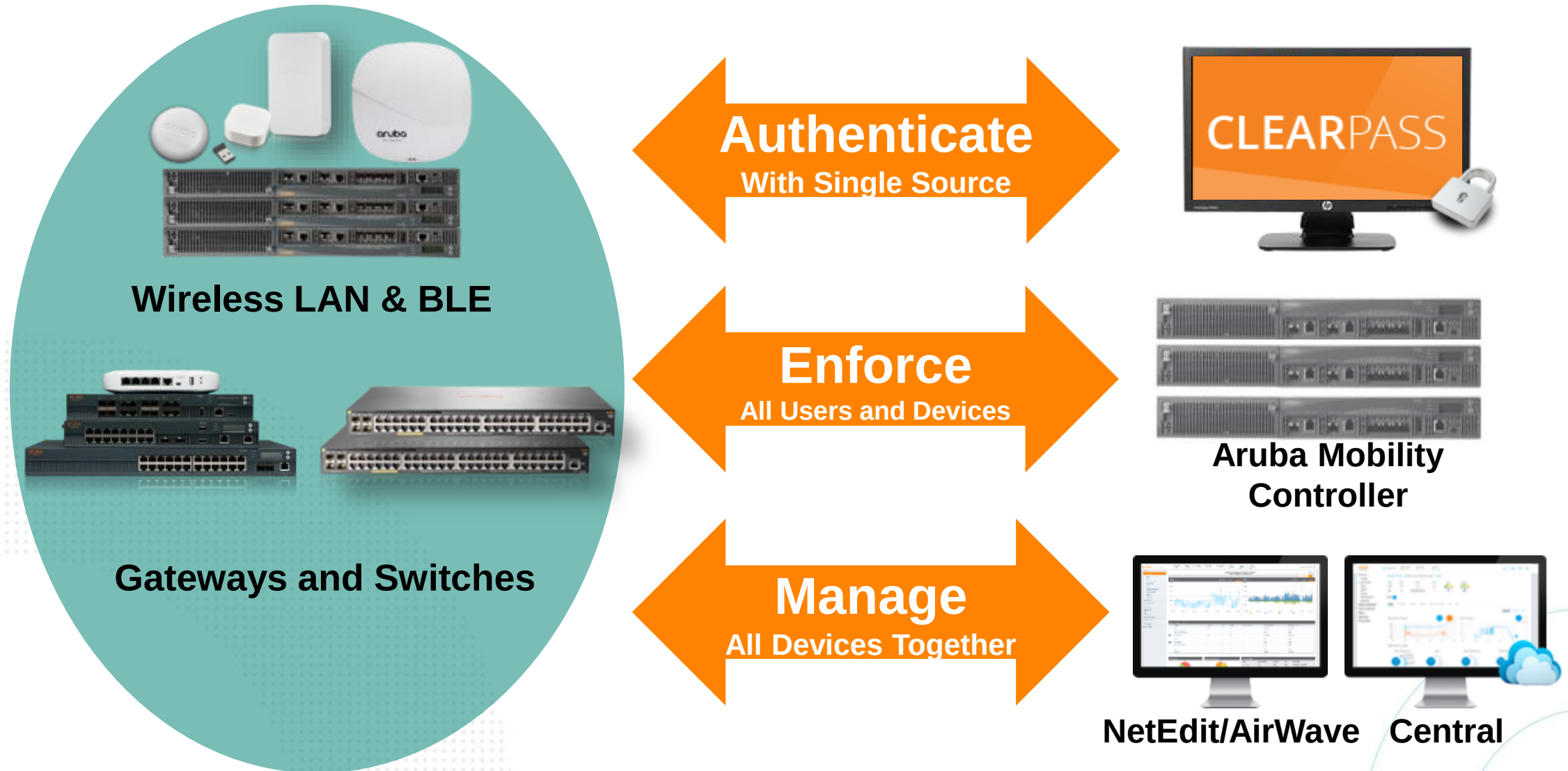
7th Gen ASIC
Data center class performance

Non-Blocking
Distributed architecture

50G for the price of 10G
for investment protection

No software licensing or
subscription costs

Aruba Portfolio is Better Together



October, 2021

Aruba SD-Branch

Вячеслав Самойленко

aruba

a Hewlett Packard
Enterprise company



SD-WAN против WAN

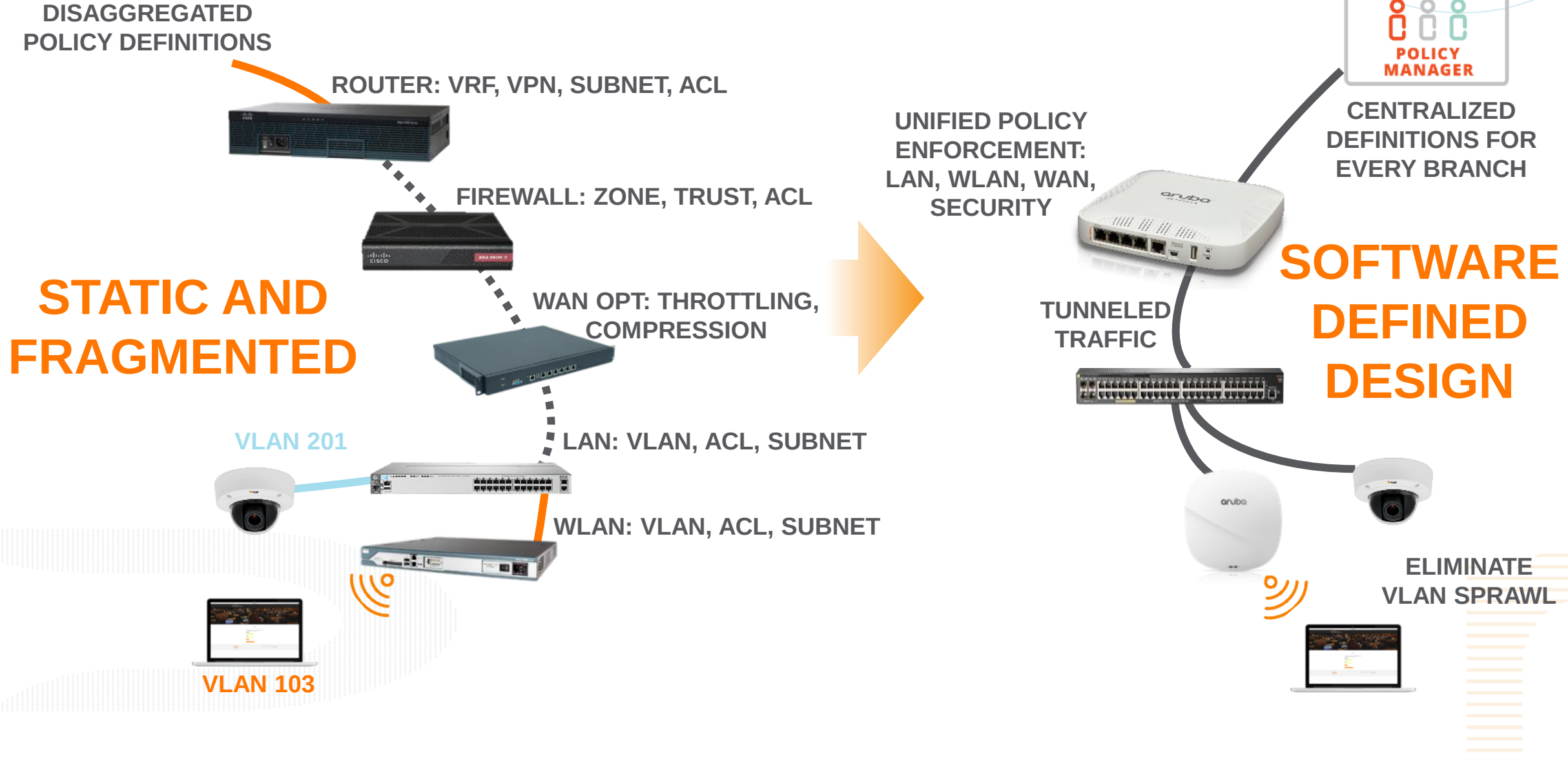
SD-WAN

- Уровень автоматизации настройки и управления – **Высокий**
- Простота масштабируемости - **Высокая**
- Предоставление SLA на основе Приложения – **Да**
- Динамический выбор для передачи информации каналов с лучшими показателями - **Да**
- Мониторинг состояния каналов в реальном времени и переход на альтернативные каналы в случае деградации сервисов - **Да**
- Экономия за счет использования в филиалах одного устройства (3 в 1: маршрутизатор, фаервол, WAN оптимизатор) – **Да**
- Цена - **Высокая**

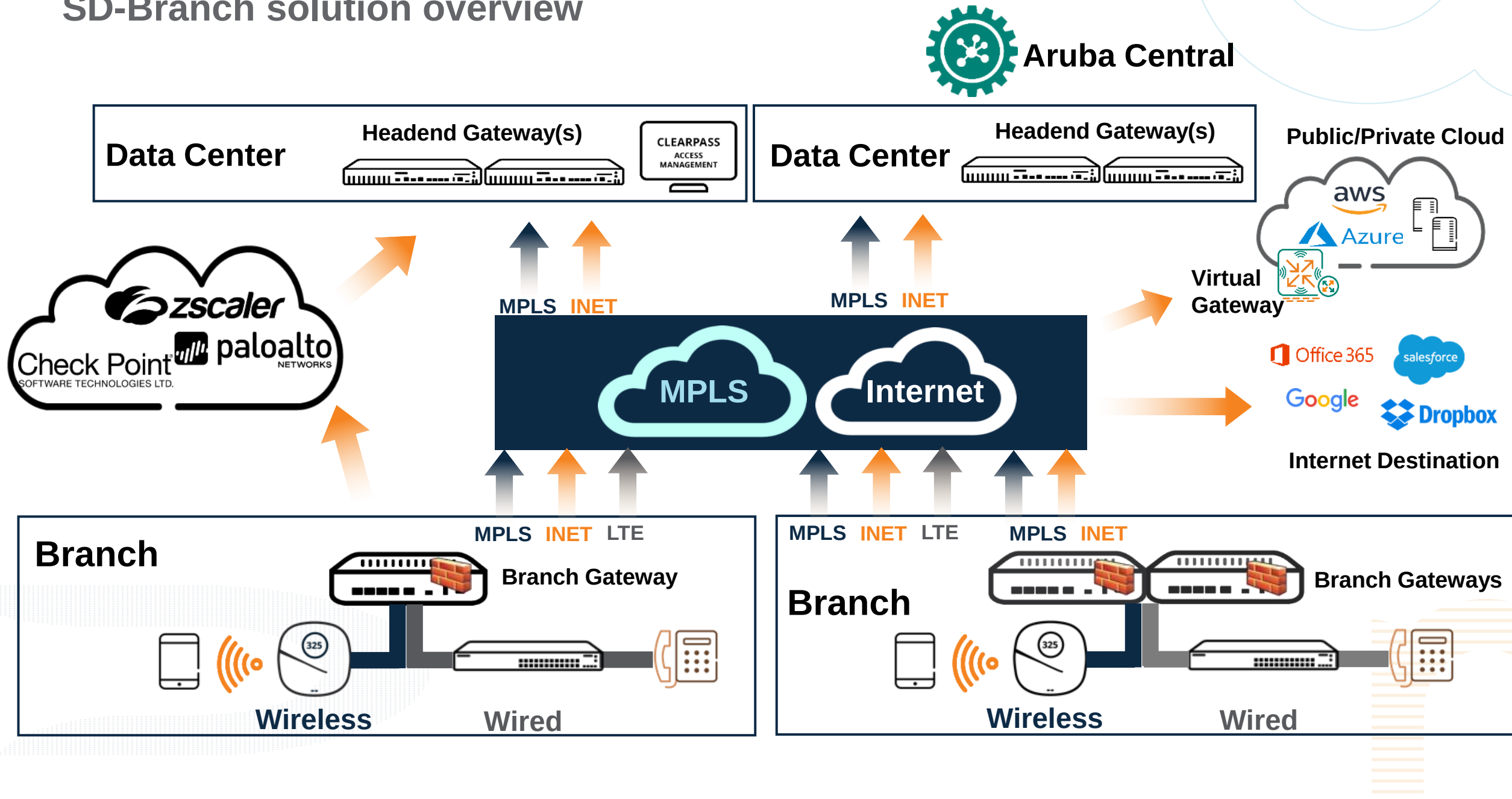
Традиционный WAN

- Уровень автоматизации настройки и управления – **Низкий**
- Простота масштабируемости - **Низкая**
- Предоставление SLA на основе Приложения – **Нет, только на основе устройства**
- Динамический выбор для передачи информации каналов с лучшими показателями - **Нет**
- Мониторинг состояния каналов в реальном времени и переход на альтернативные каналы в случае деградации сервисов – **Нет, только в случае падения линка**
- Экономия за счет использования в филиалах одного устройства (3 в 1: маршрутизатор, фаервол, WAN оптимизатор) – **Нет**
- Цена - **Низкая**

SD-Branch vs traditional policy



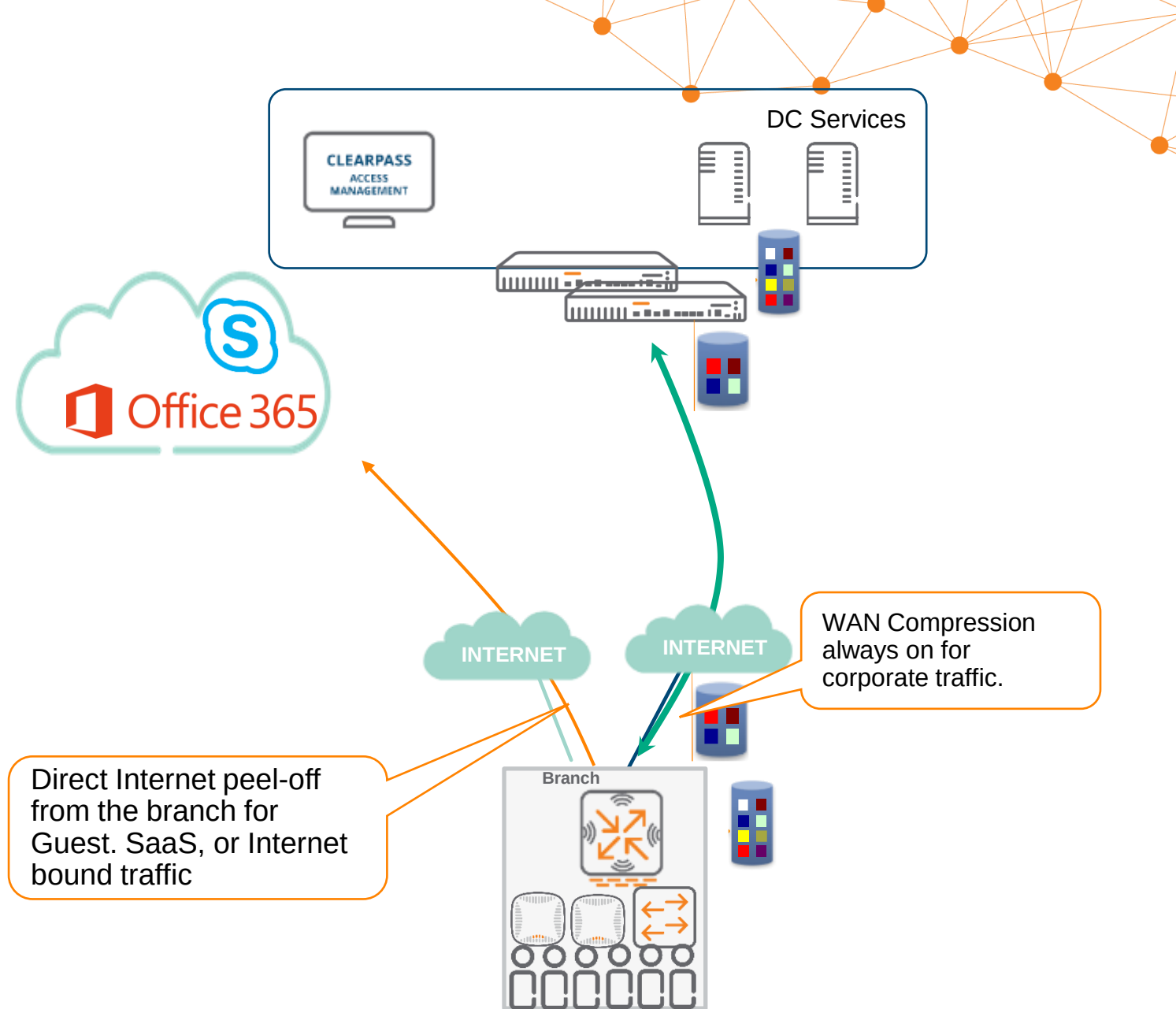
SD-Branch solution overview



SD-Branch

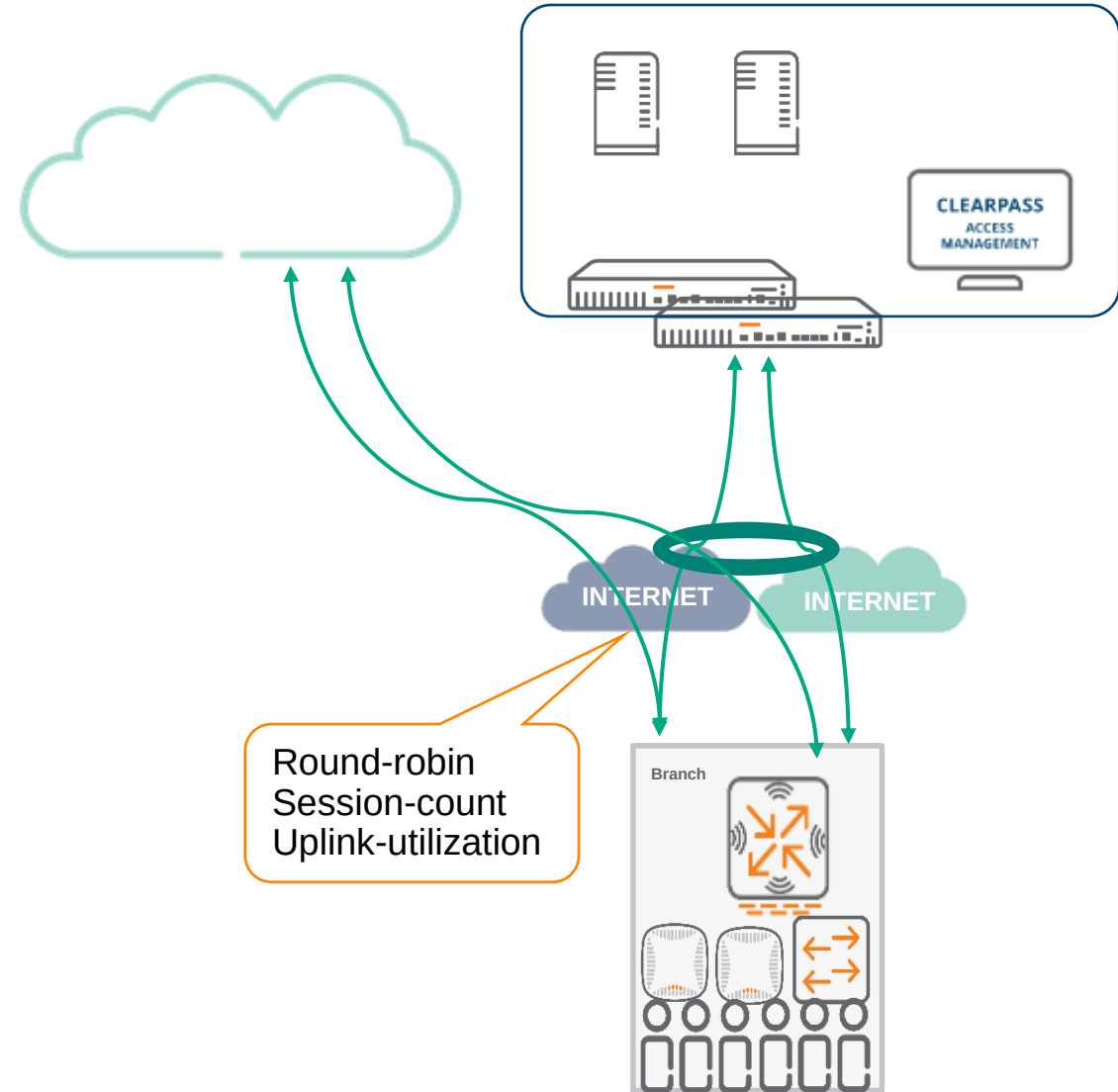
✓ Optimizing WAN usage

- ✓ WAN Compression
- ✓ Split tunneling



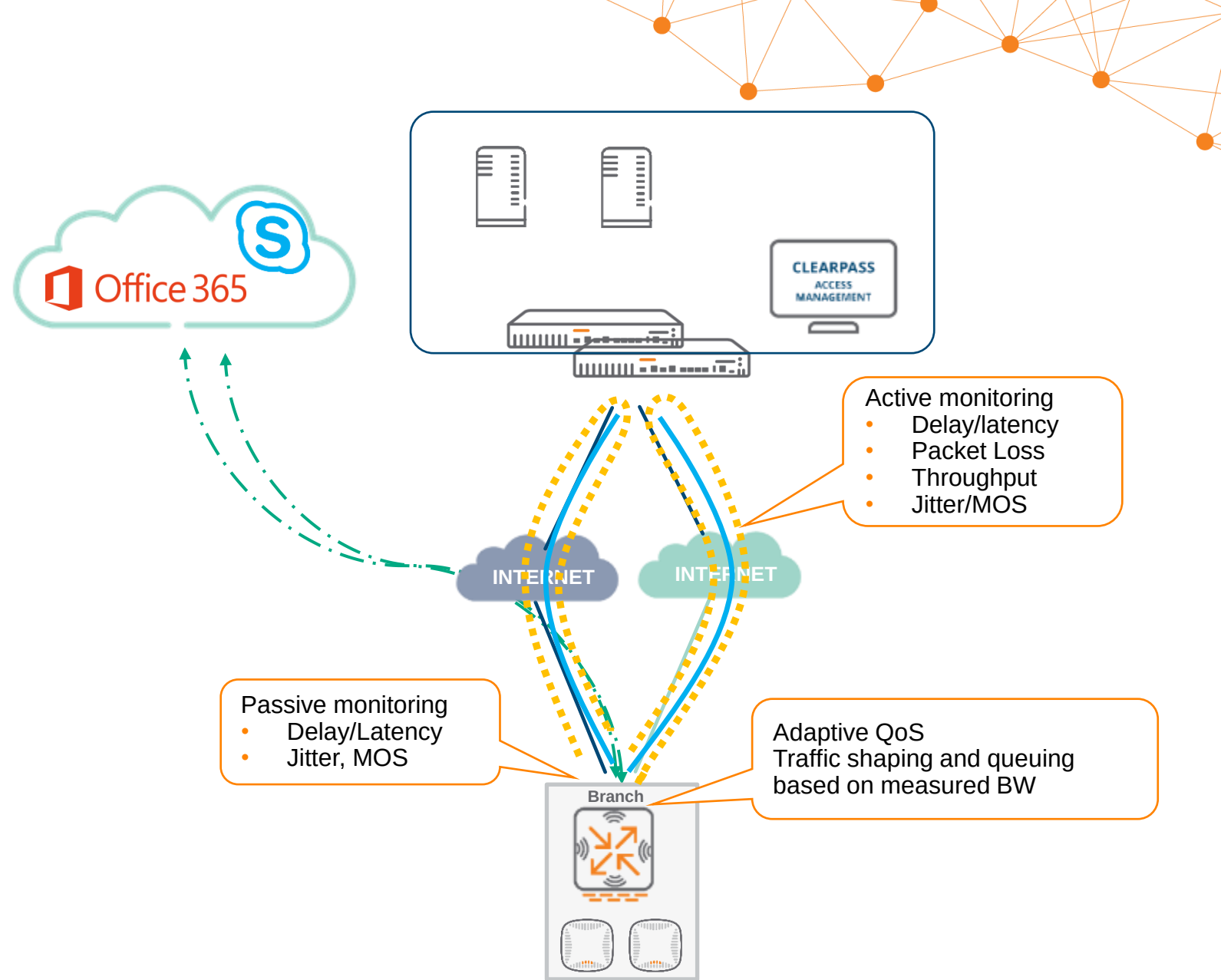
SD-Branch

- ✓ Optimizing WAN usage
 - ✓ WAN Compression
 - ✓ Split tunneling
- ✓ Uplink aggregation (4 +1)



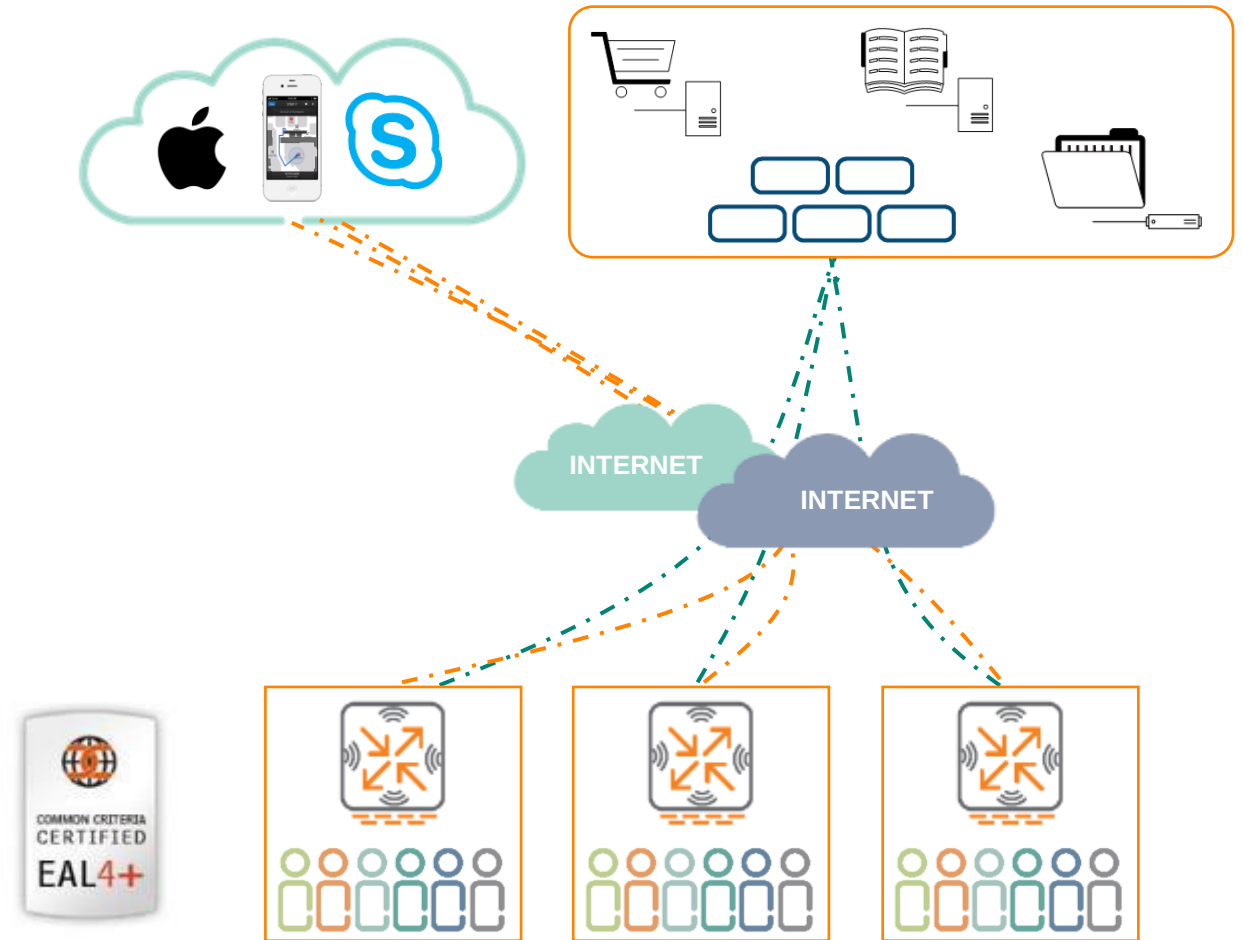
SD-Branch

- ✓ Optimizing WAN usage
 - ✓ WAN Compression
 - ✓ Split tunneling
- ✓ Uplink aggregation (4 +1)
- ✓ Context-aware Dynamic Path Steering (DPS)

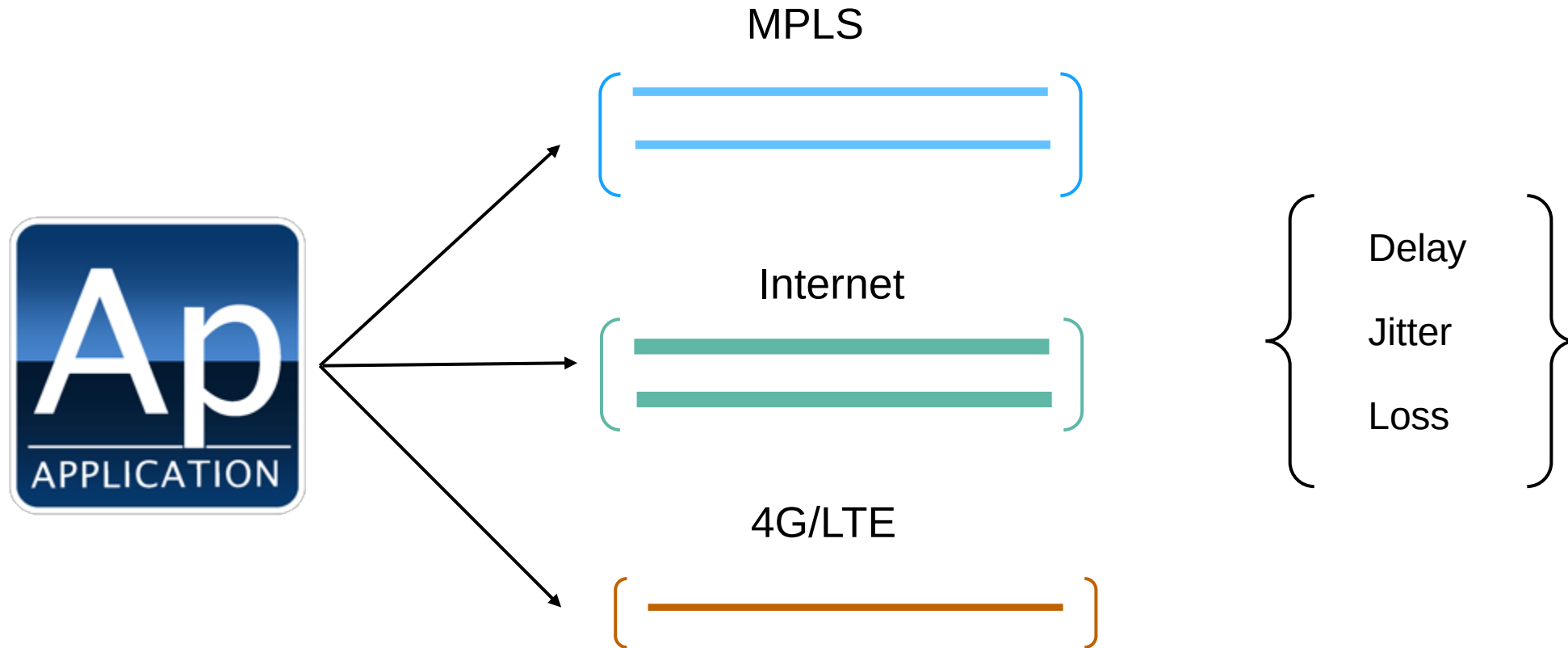


SD-Branch

- ✓ **Optimizing WAN usage**
 - ✓ WAN Compression
 - ✓ Split tunneling
- ✓ **Uplink aggregation (4 +1)**
- ✓ **Dynamic Path Steering**
- ✓ **User Centric Security and routing policies**



Dynamic Path Selection

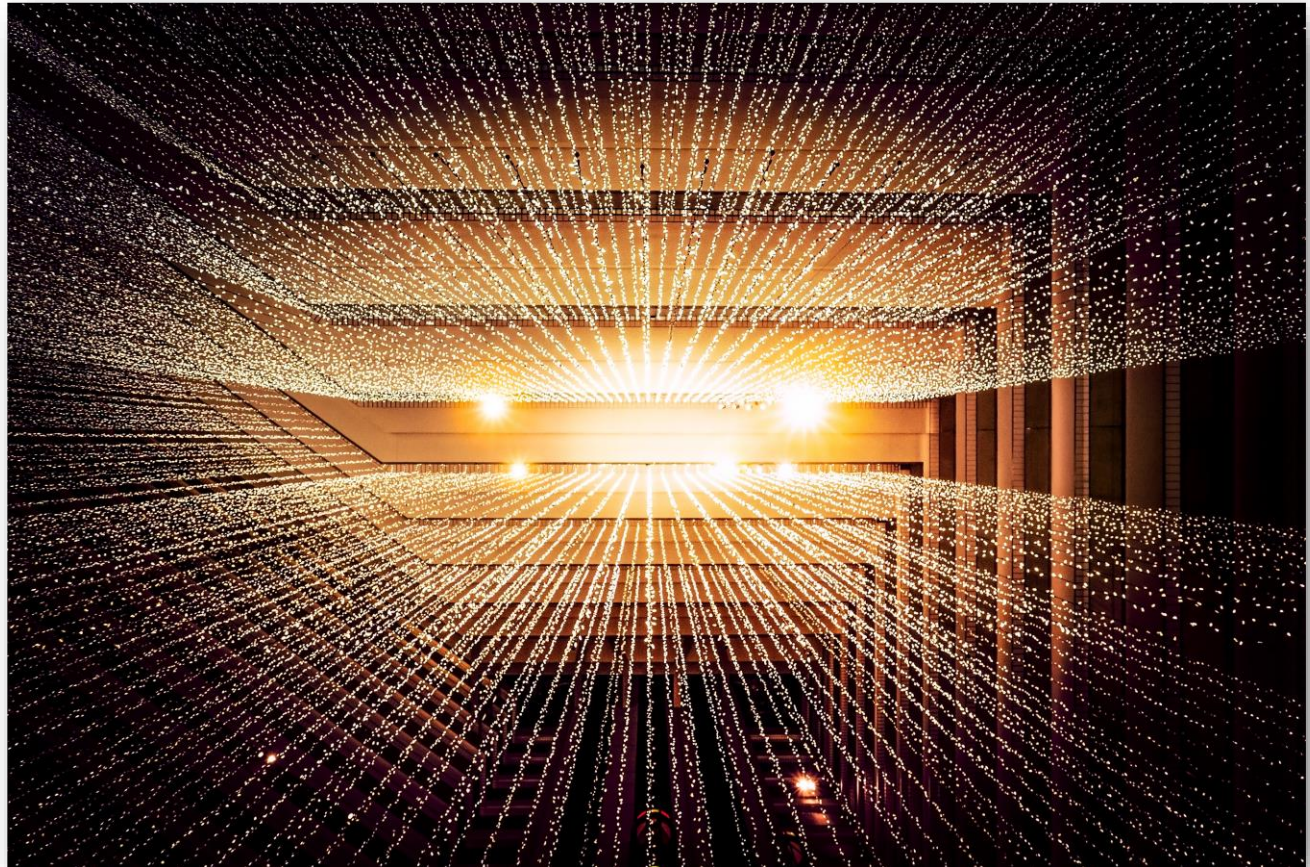


1 Use AppRF application categories, for e.g. Business Critical, Voice, Best-Effort

2 Configure path preference and fallback options per application category

3 Configure SLA parameters per user & application category

Automated Onboarding



Simple Onboarding

Provisioning tools for AP/Switch/Gateway Installer App

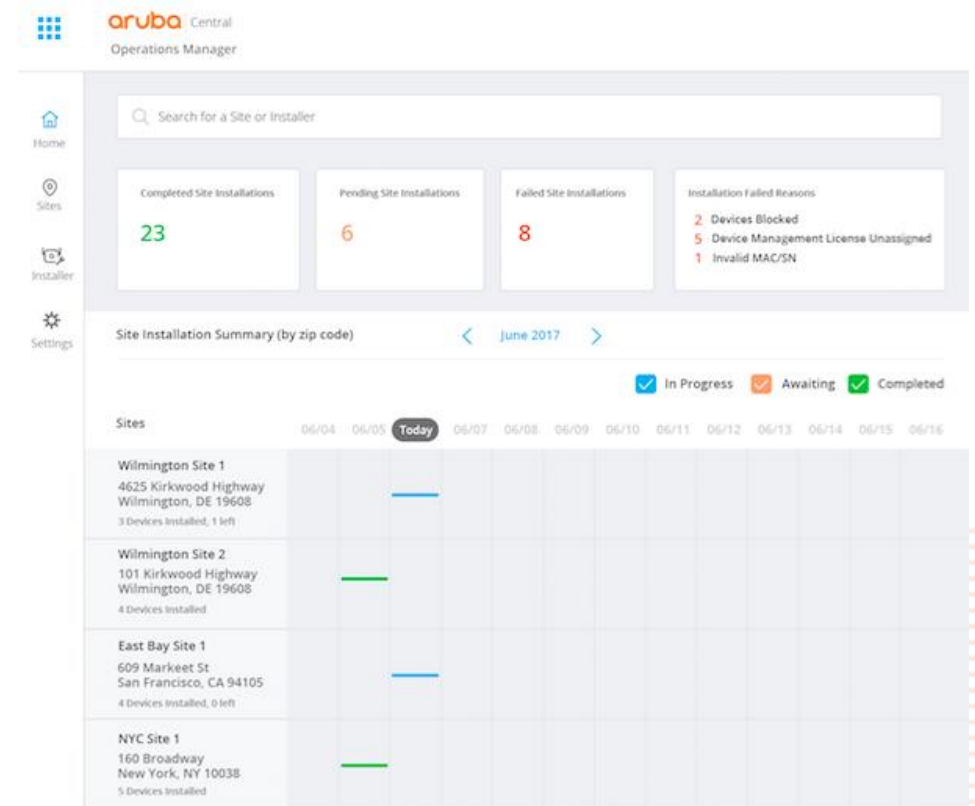


1. Scan

2. Power-on

3. Connect

Ops Manager Dashboard





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a Hewlett Packard
Enterprise company

Thank you