

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

TECH TALK

aruba
a Hewlett Packard
Enterprise company

aruba

a Hewlett Packard
Enterprise company

TECH TALK

ARUBA AI OPS

TRANSFORMING IT OPERATIONS

ARUBA EDGE SERVICES PLATFORM

AIOPS

AI Insights | User Insights



UNIFIED INFRASTRUCTURE

Wi-Fi | Switching | SD-WAN | 5G | IOT



ZERO TRUST SECURITY

Dynamic Segmentation | Device Insight

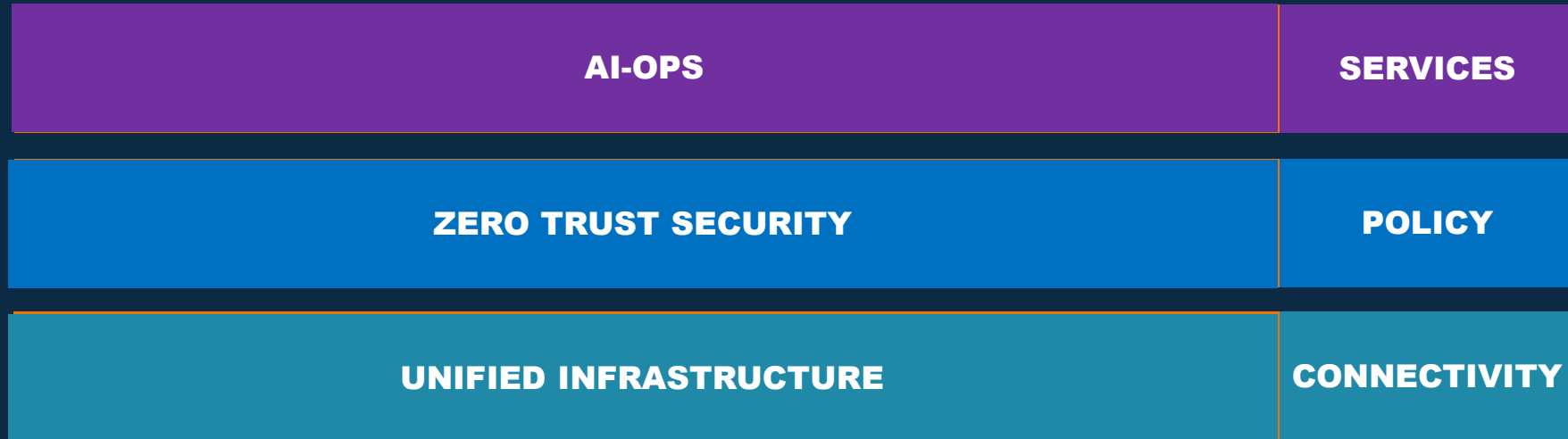


Financial and Consumption Flexibility

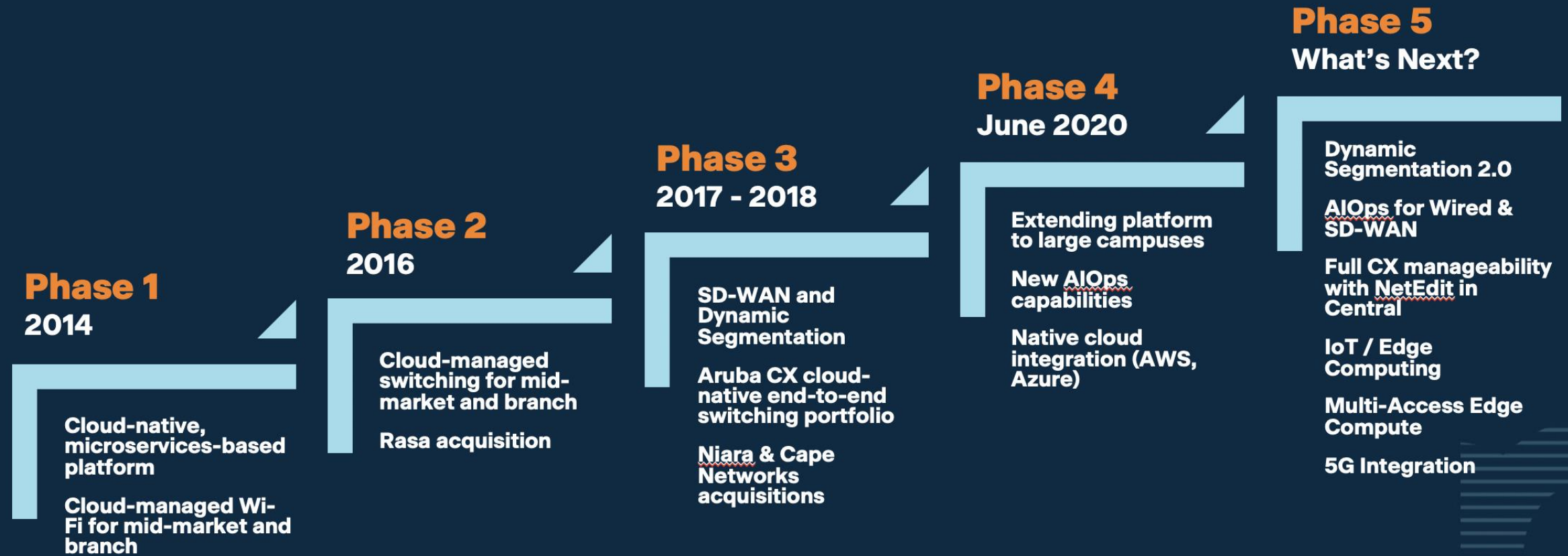
HPEFS | GreenLake



INTRODUCING Aruba ESP Architecture



ARUBA ESP IS THE CULMINATION OF INVESTMENTS IN **A CLOUD-NATIVE, AI-DRIVEN PLATFORM**





WHAT IS AIOPS?

“AIOps (Artificial Intelligence for IT operations) combines big data and machine learning to automate IT operations processes, including event correlation, anomaly detection and causality determination.”

Gartner 2019¹

WHY AIOPS, WHY ARUBA

CUSTOMER CHALLENGES

New Business Models

**WFH and IoT-Driven
Network Complexity**

Reactive to Predictive

Need for Automation

**Aruba
AIOps**

ARUBA STRENGTHS

The Rise of Data

Domain Expertise

Proven AI Solutions

Cloud Delivery



GREAT AIOPS **STARTS WITH DATA**

DATA LAKE



Verticals

Education
Healthcare
Enterprise
Retail
Large Public Venues
Public WiFi



Infrastructure

Wi-Fi
WAN
Wired
Data Center



Client Devices

Mobile Devices
Building Systems
OT Devices
Classroom Laptops
Gaming Devices
Medical Instruments
Legacy Devices

USE CASES | TOPOLOGIES | VOLUME

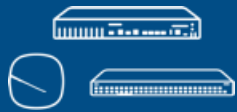


AIOps DE-MYSTIFIED

CONVERTING DATA AND DOMAIN EXPERTISE INTO ACTIONABLE INSIGHTS

DATA INPUT

Device model, Version, Path loss, SNR, PoE, Port flaps, Port errors, Tunnel, Uplink performance, routes, DPS



1M+
NETWORK DEVICES

Mobility, capability, SNR, TX/RX rate, Outdoor/Indoor, App QoE & more



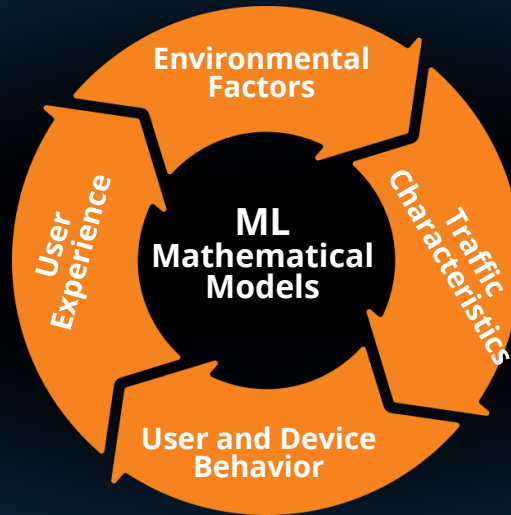
55M
CLIENTS

BW, Channel #, Max/Min pwr, SNR Threshold, TX rates, Beacon Rates, PoE Budget, STP, VLAN, IAG, Tunnel, DPS, Uplink, Routings



65K+
CUSTOMER CONFIG

MACHINE LEARNING



AI-DRIVEN OUTCOMES

Automate root cause analysis

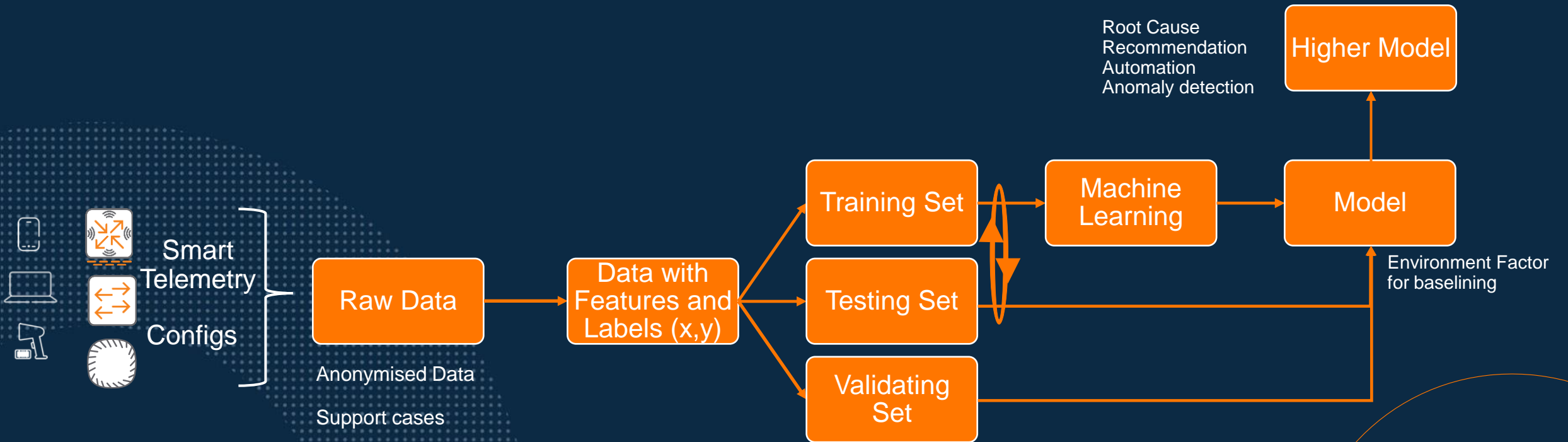
Anomaly Detection; Preempt issues before broad based impact

Peer benchmarking and proactive performance tuning with config recommendations

Quantify the "before" vs *after* & validate impact of change

High Level Workflow for Machine Learning

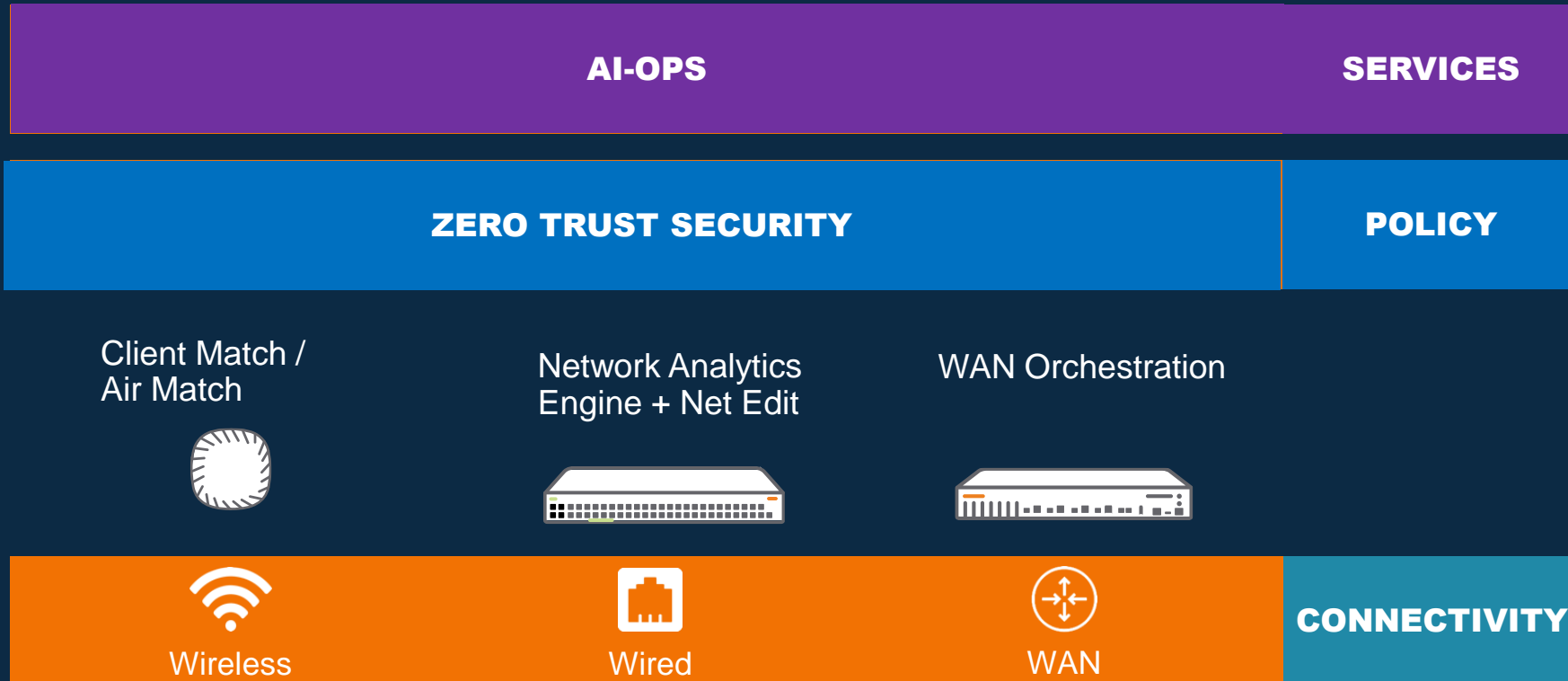
Supervised Learning Example



DOES YOUR NETWORK HAVE A

NOW IT CAN

INFRASTRUCTURE DESIGNED FOR AI

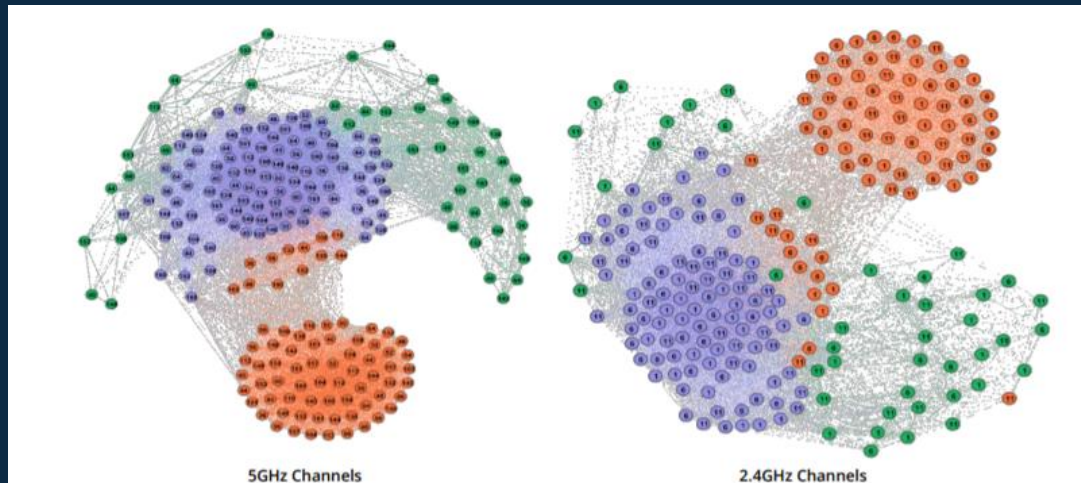


AI OPERATIONS AUGMENT THE OPERATOR

Client Match
Air Match

Year: 2014
Year: 2016

Continuously monitor and optimize WiFi setting such as power, Channel, connections and bandwidth.



- No more sticky clients
- Load balance clients across APs
- Improve WiFi performance in high density environments (eg lecture theatres, public venues)

AI Generated RF clusters



AI OPERATIONS AUGMENT THE OPERATOR

NET EDIT

YEAR: 2017

Search

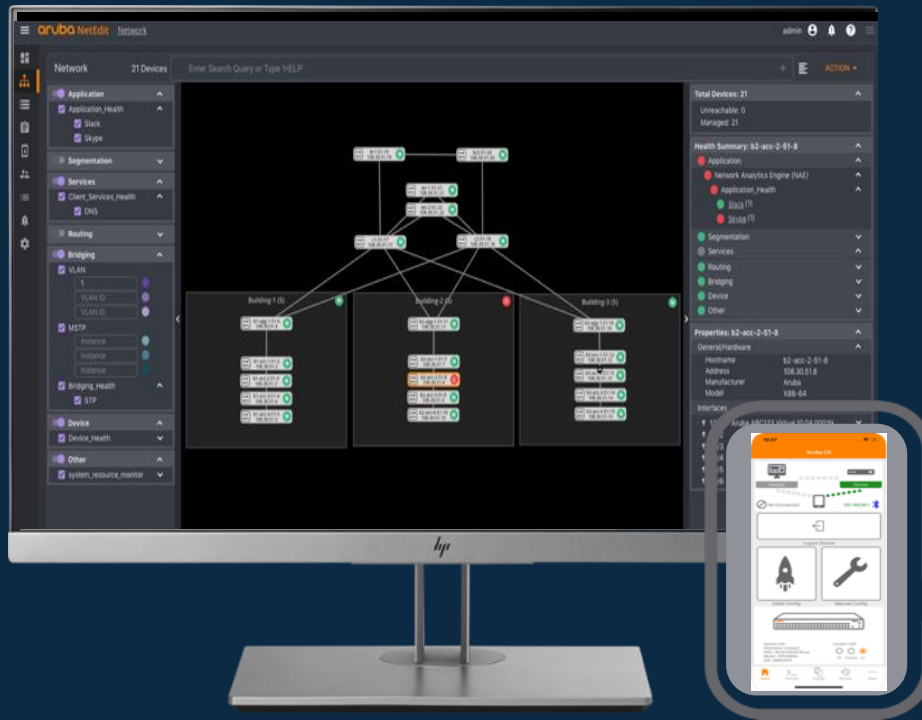
Edit

Validate

Deploy

Audit

Troubleshoot



Aruba CX Mobile App

Management Simplicity

Topology for fast view into network health, including devices with config issues

GUI-driven solution configs to implement common configurations easily across multiple systems

Auto-Change Verification to minimize change windows and reduce errors

Continuous Validation to monitor for deviations from intended policy or design

One Touch Deployment with Aruba CX Mobile App

Accelerate day zero config, view and manage using your mobile device

Visibility and Analytics via NAE

Embedded analytics with real-time health status and diagnostics for efficient root cause analysis

Health reports on devices, apps, and network services

Script tags indicate what layer is contributing to issues, speeding root cause analysis

Workflow Integration with 3rd Party Tools

Immediate notifications from Slack, TOPdesk, ServiceNow, etc.



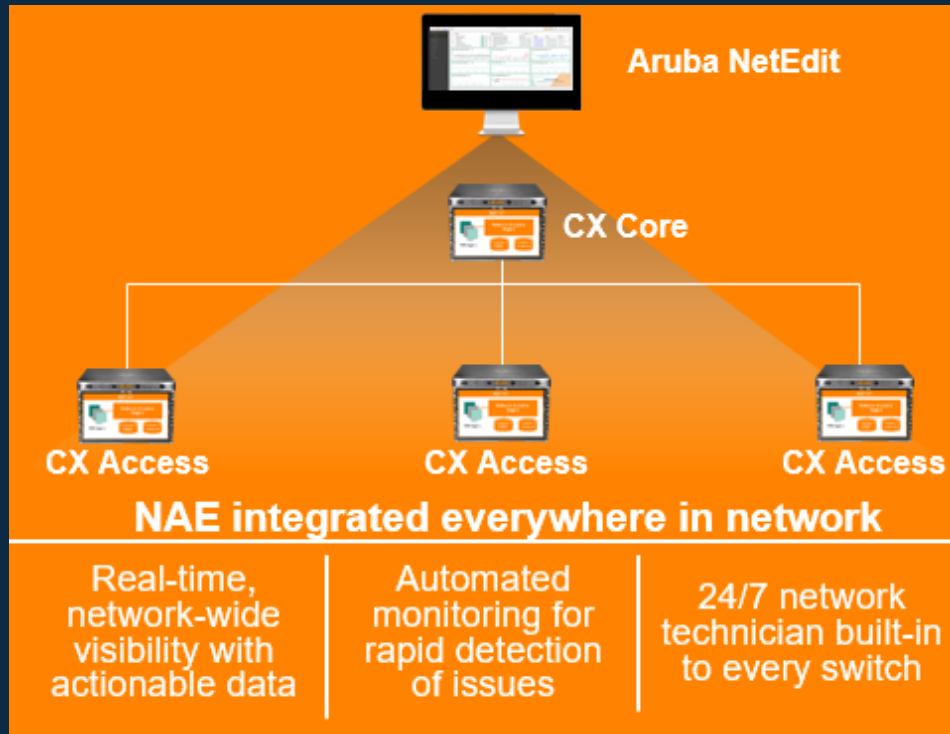
AI OPERATIONS AUGMENT THE OPERATOR

NETWORK ANALYTIC ENGINE

YEAR: 2017

Distributed Analytics

Monitor critical applications/resources

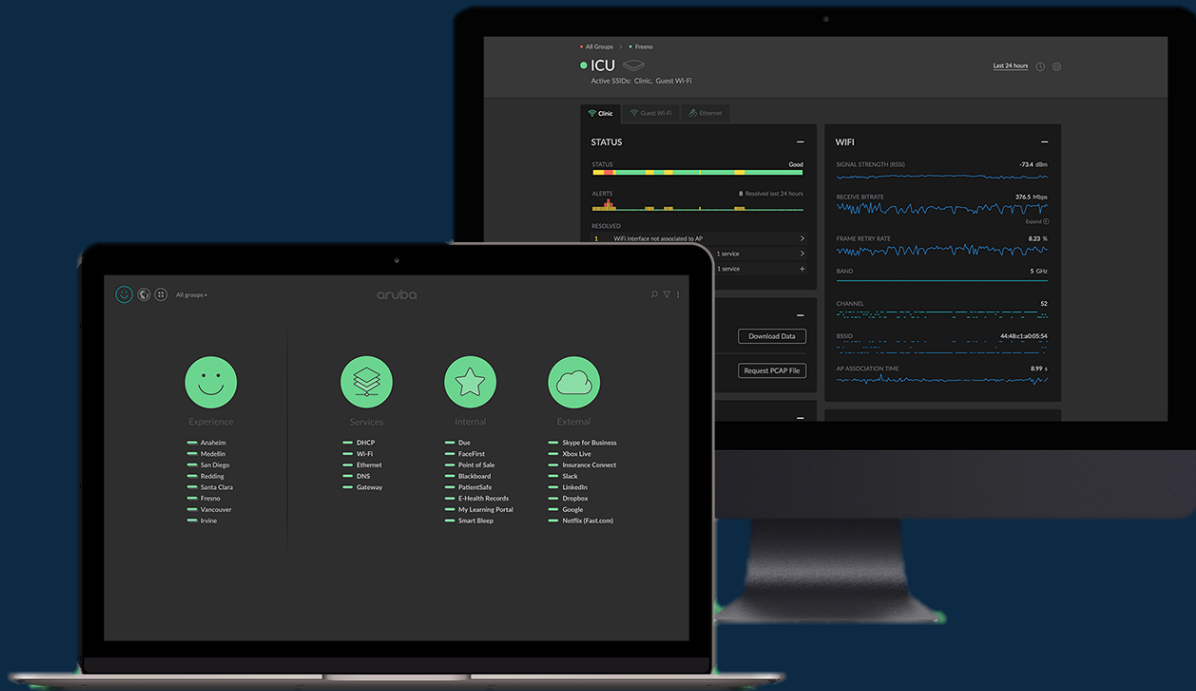


NAE alert: Video chat down, switch needs a config change
Solves with quick visual health of network with easy to use dashboard to pinpoint issue

AI OPERATIONS AUGMENT THE OPERATOR

USER EXPERIENCE INSIGHT

YEAR: 2018



User and Application Assurance

Gain a user's perspective of the network and application performance by mimicking user behavior and actions

AI Alerts for troubleshooting

Use machine learning and synthetic testing for proactive validation of network health

Simple to manage and deploy

Intuitive user interface for administration, real-time monitoring, and zero-touch provisioning

WLAN, LAN, and App Assurance

Collect data from APs, switches, internal services, and cloud-based applications

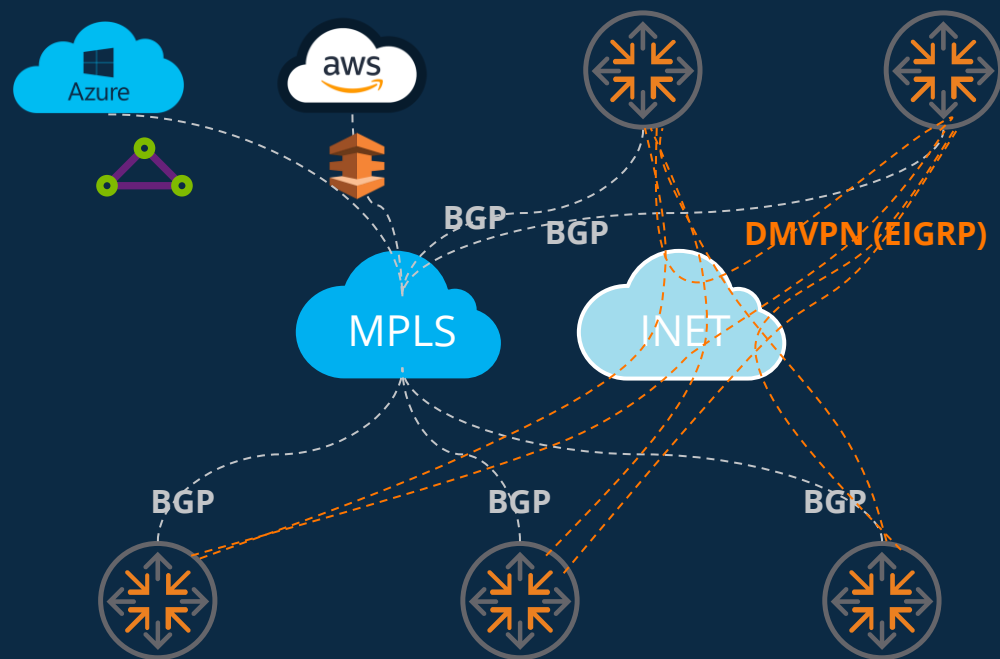


AI OPERATIONS AUGMENT THE OPERATOR

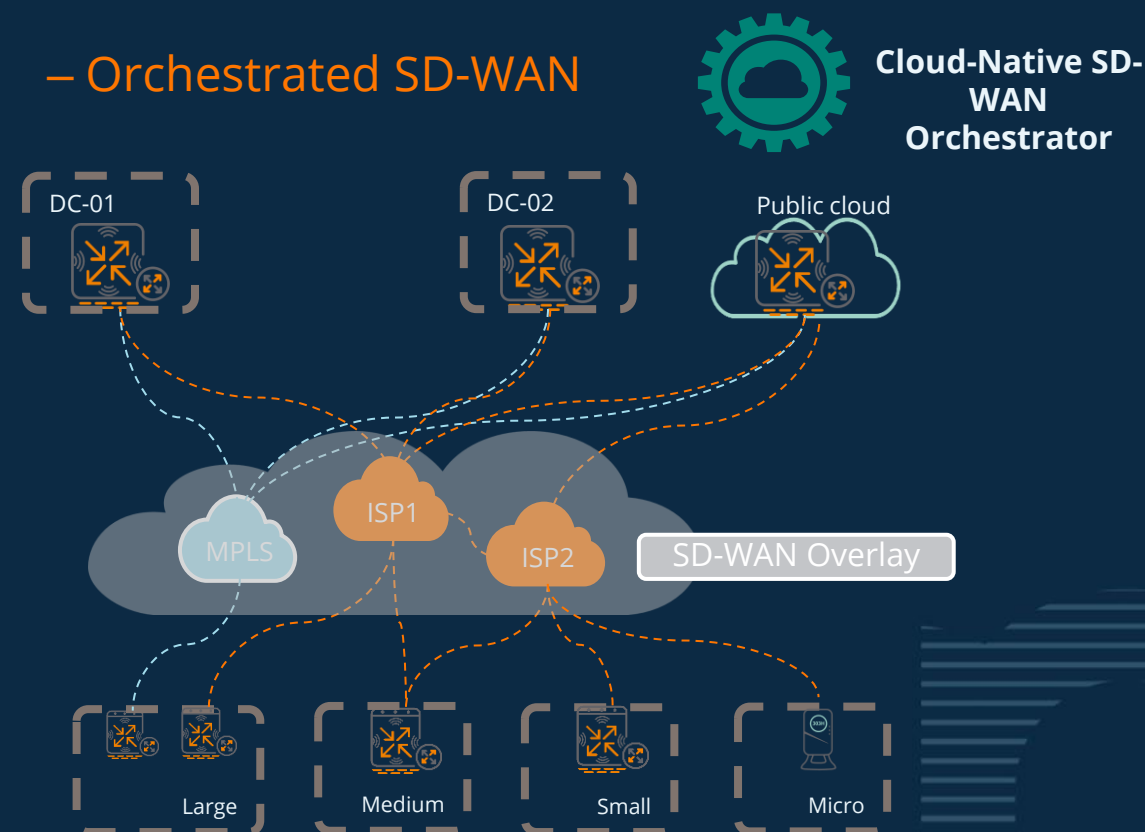
ARUBA SD BRANCH

YEAR: 2019

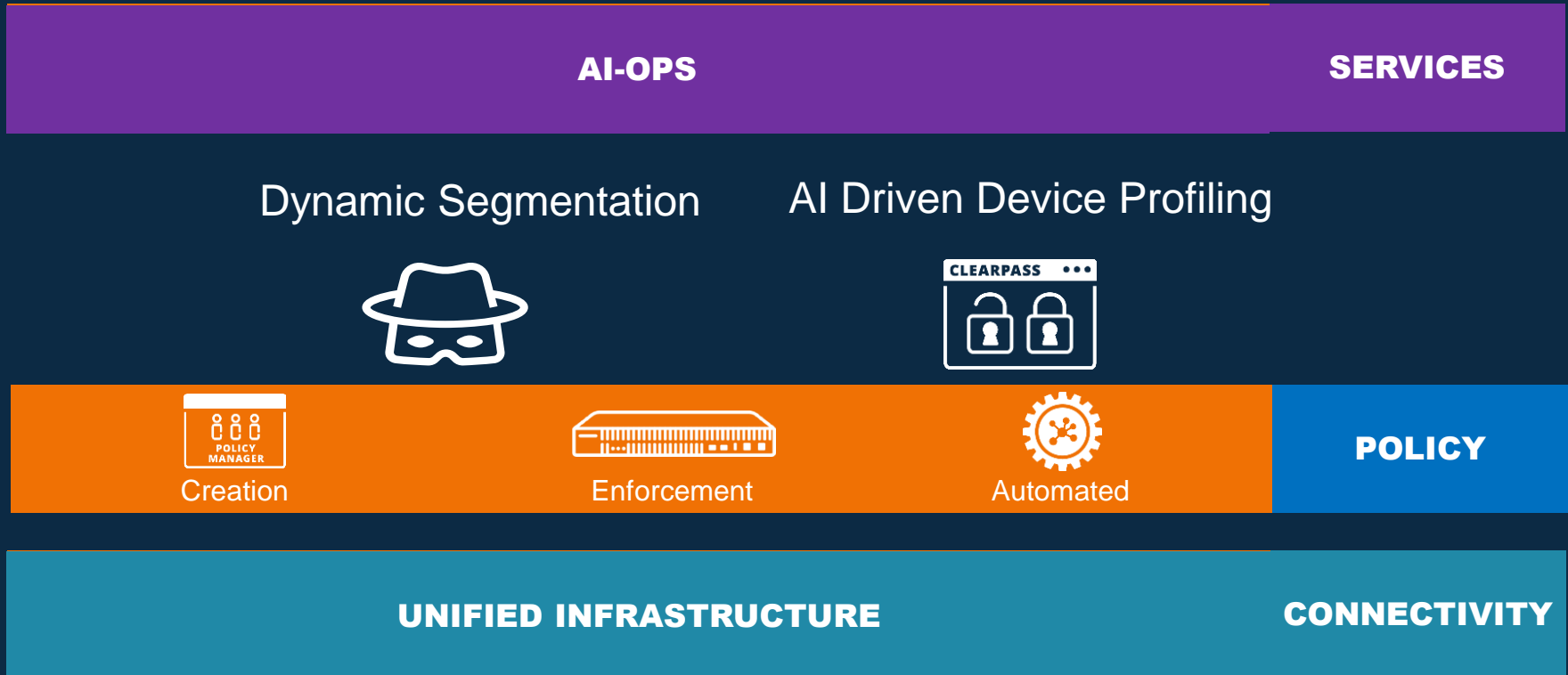
– How did we connect things before?



– Orchestrated SD-WAN



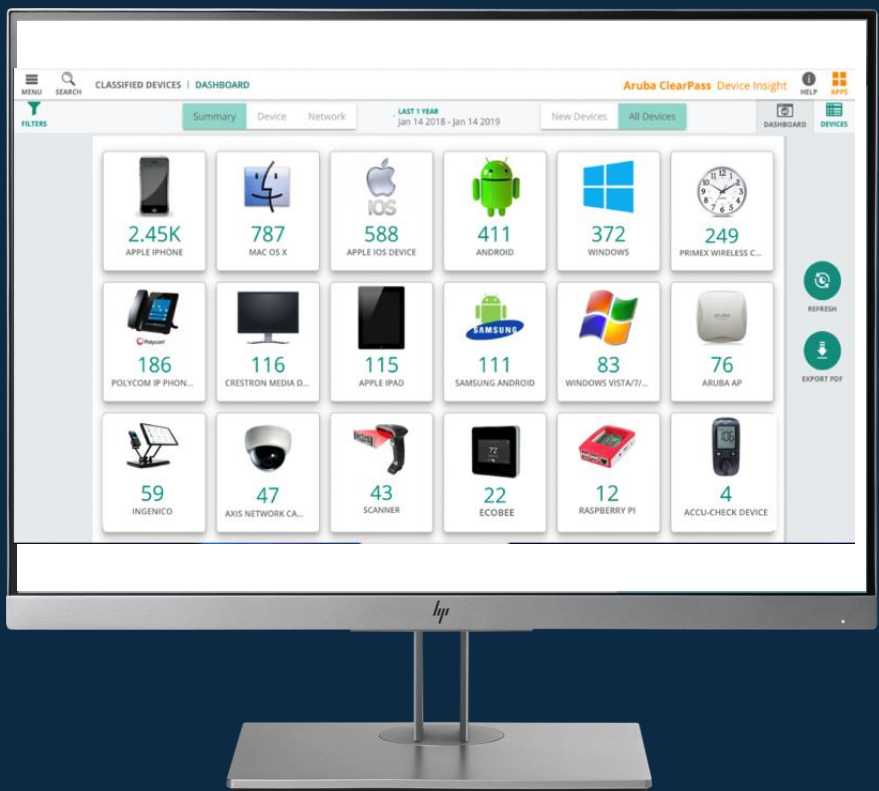
INFRASTRUCTURE DESIGNED FOR AI



AI OPERATIONS AUGMENT THE OPERATOR

CLEARPASS DEVICE INSIGHT

YEAR: 2019



AI-
Powered



Cloud-
Enabled



Enhanced by
Crowdsourcing



Integration
with Policy
Manager



INFRASTRUCTURE DESIGNED FOR AI

AI Insights

Automated
anomaly detection
and network
optimization



AI Search

Natural language
queries



AI Assist

Automated trouble
ticket generation



Onboarding



Provisioning



Orchestration



Analytics



Location



Management

SERVICES

ZERO TRUST SECURITY

POLICY

UNIFIED INFRASTRUCTURE

CONNECTIVITY



REACT AND REMEDIATE

AI SEARCH

AI INSIGHTS

AI ASSIST

Problem

“Wi Fi Doesn’t Work” user complaint

Why? What?
Where? Fix?

Solution

AI Insights identifies issue and makes setting recommendation

Result

Faster issue resolution

Increased user satisfaction



PREDICT AND PREVENT

AI INSIGHTS

Complete understand of customer's network

65K customers, 1 million devices, 50M client clients, 1.5B records daily

Peer-based recommendations using similar environmental, traffic, network and client characteristics

Problem

Identical AP's had significantly different uplink speeds



Solution

Aruba AI Insights used peer comparisons to recommend new AP config setting

Result

50% improvement in client uplink speed

Reduction in trouble tickets



CONTINUOUSLY MONITOR AND OPTIMIZE

AI INSIGHTS

Problem

Passerby traffic dragging down network performance



Solution

Aruba AI Insights recommended setting changes to reduce passerby traffic by 95% while maintaining inside traffic

Result

25% improvement in network performance with no additional hardware



ARUBA CENTRAL INSIGHTS

Wi-Fi Connectivity

- MAC Auth Failures
- 802.1x Auth Failures
- 4-way Handshake (EAPOL Key) Failures
- High DHCP Failures
- Excessive Association Failures*
- Excessive Captive Portal Auth Failures*
- Excessive DNS Request Failures*
- Excessive DNS Delays*
- Excessive DNS Connection Failures*

Health: Availability, Performance and Optimization

Wireless:

- Excessive AP Radio Channel Changes
- Client Low SNR Connections
- AP High 2.4GHz Utilization
- AP High 5GHz Utilization
- Frequent AP Tx Power Changes
- AP High CPU Utilization
- AP High Memory Utilization
- Excessive AP Reboots
- Missing AP Telemetry
- Excessive 2.4GHz Dwell Time**
- Probe SNR Threshold**
- Coverage Hole**
- High Roaming Latency*
- Excessive Roaming*

SD-WAN:

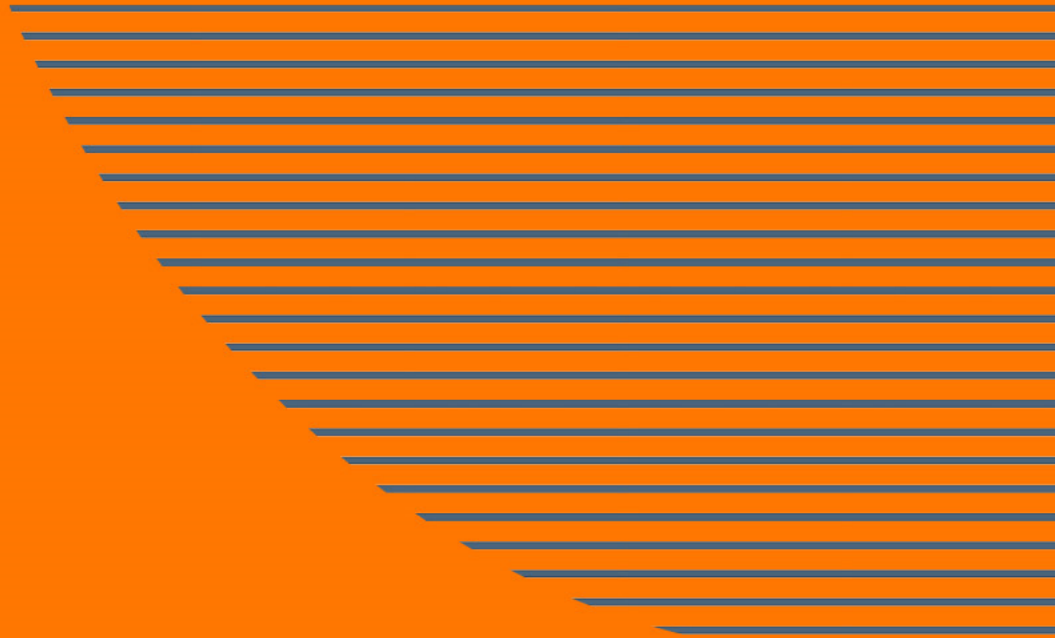
- Gateway Down*
- VPNC Down*
- Tunnel Down*
- High CPU Utilization*
- High Memory Utilization*

Wired:

- High CPU Utilization*
- High Memory Utilization*
- Excessive Port Flaps*
- PoE Failures*
- Excessive Port Failures*



QUIZ TIME



AI OPs Quiz

QUIZ
TIME

What is critical to deliver great AI?

A) Variety and velocity of data

B) Interactive dashboard

C) Robust machine learning algorithms



AI OPs Quiz

Which of the following Aruba products is designed for AI?

A) Transceivers

B) Aruba 1900 series switch

C) Aruba CX Switches

QUIZ
TIME



AI OPs Quiz

QUIZ
TIME

Which is NOT value of AI-Ops?

- A) Visibility into issues before they impact users
- B) Blacklist a client from the WiFi network
- C) Continuous network optimization



AI OPs Quiz

QUIZ
TIME

What are the three features of Aruba's AI-Ops?

A) AI-Search, Helpdesk, AI-Insights

B) AI-lookup, Talking dashboard, Pretty graphs

C) AI-Search, AI Assist & AI-Insights



AI OPs Quiz

QUIZ
TIME

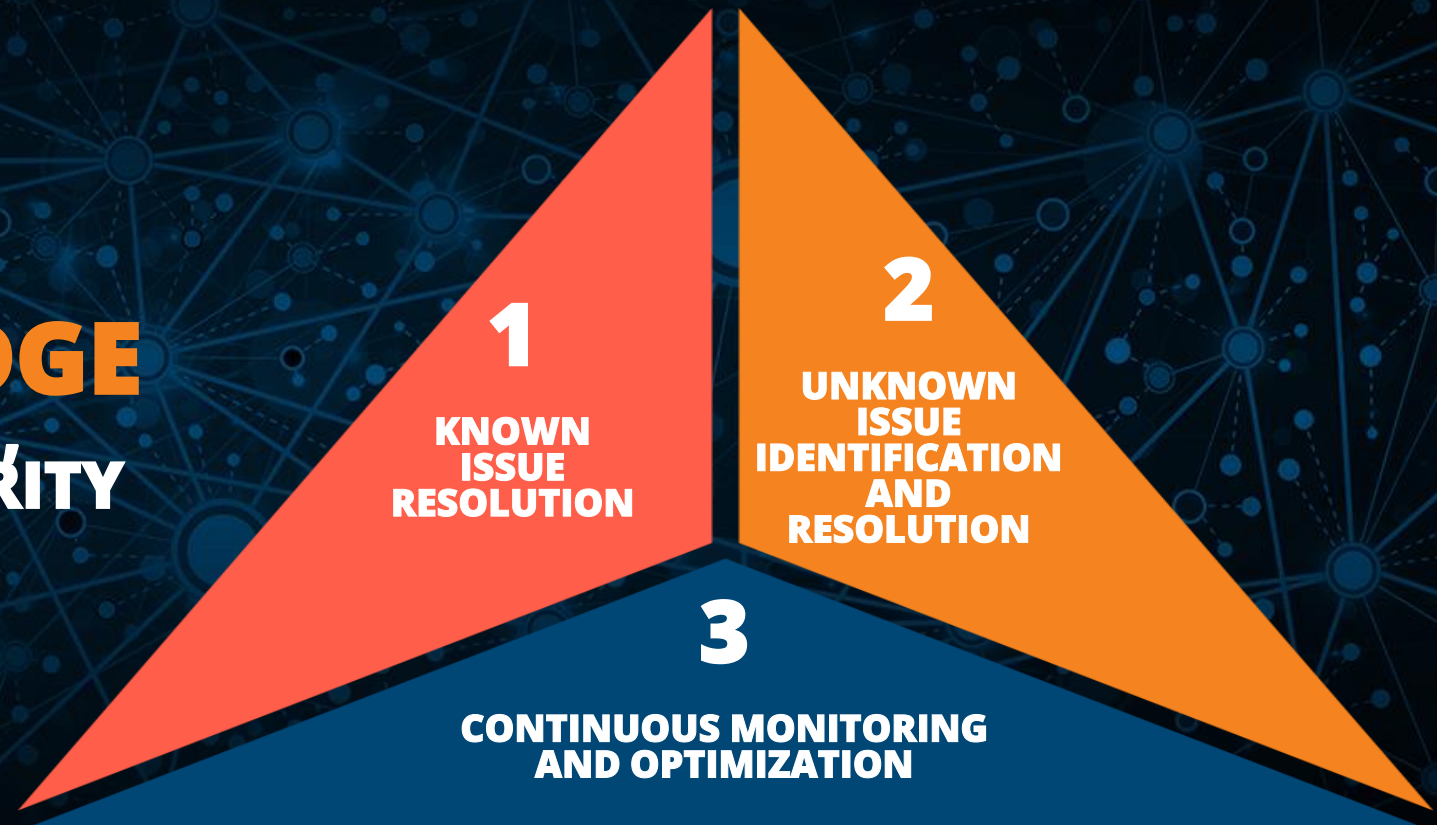
Which best describes the value of AI-Ops to the business

- A) Replace the IT Ops team
- B) Augment the IT Ops team to enable them to focus on higher value/revenue generating projects
- C) No value as there are engineers testing every piece of infrastructure in my network 24x7



ARUBA AIOPS **THE AI POWERED EDGE** DATA, DOMAIN EXPERTISE, DATA SCIENCE, SCALE, MATURITY

3 KEY ESP AIOPS OUTCOMES



Q&A

Please ask questions or type into the chat

aruba

a Hewlett Packard
Enterprise company

Thank You