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Enterprise company

# TECH TALK

# ARUBA AI OPS

TRANSFORMING IT OPERATIONS

# ARUBA EDGE SERVICES PLATFORM

#### **AIOPS**

Al 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

AI-OPS	SERVICES
ZERO TRUST SECURITY	POLICY
UNIFIED INFRASTRUCTURE	CONNECTIVITY



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

# **Phase 1** 2014

Cloud-native, microservices-based platform

Cloud-managed Wi-Fi for mid-market and branch

# **Phase 2** 2016

Cloud-managed switching for mid-market and branch

Rasa acquisition

#### Phase 3

2017 - 2018

SD-WAN and Dynamic Segmentation

Aruba CX cloudnative end-to-end switching portfolio

Niara & Cape Networks acquisitions

#### Phase 4

**June 2020** 

Extending platform to large campuses

New AlOps capabilities

Native cloud integration (AWS, Azure)

#### Phase 5

What's Next?

Dynamic Segmentation 2.0

AlOps for Wired & SD-WAN

Full CX manageability with NetEdit in Central

IoT / Edge Computing

Multi-Access Edge Compute

**5G Integration** 





# WHY AIOPS, WHY ARUBA

**CUSTOMER CHALLENGES** 

**New Business Models** 

WFH and IoT-Driven Network Complexity

**Reactive to Predictive** 

**Need for Automation** 

Aruba AlOps **ARUBA STRENGTHS** 

The Rise of Data

**Domain Expertise** 

**Proven Al 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

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

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

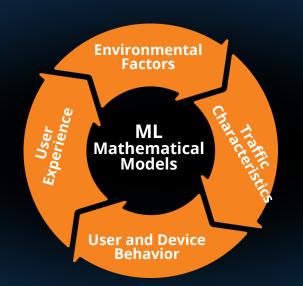






65K+
CUSTOMER
CONFIG

#### MACHINE LEARNING



#### **AI-DRIVEN OUTCOMES**

Automate root cause analysis

Anomaly Detection; Preempt issues before broad based impact

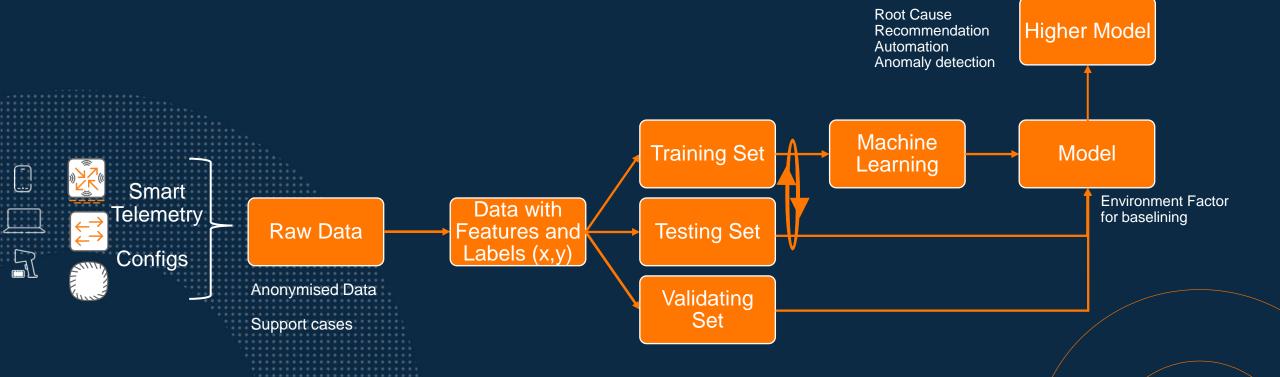
Peer benchmarking and proactive performance tuning with config recommendations

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



### High Level Workflow for Machine Learning

Supervised Learning Example



#### DOES YOUR NETWORK HAVE A

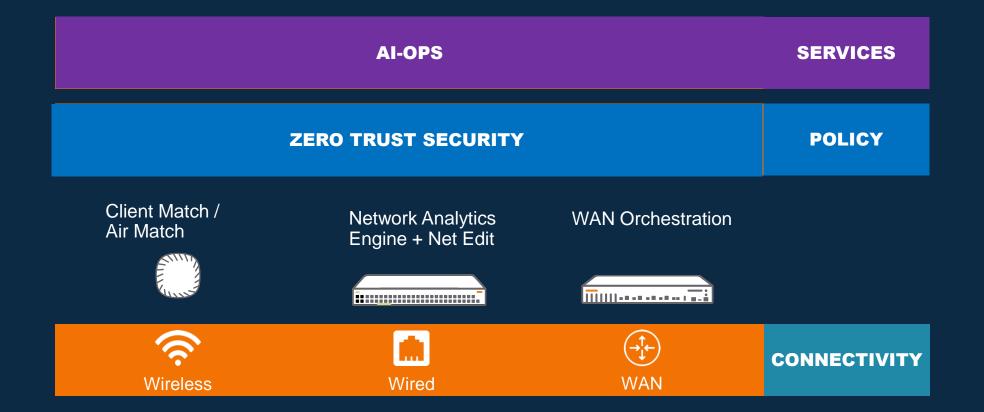
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# INFRASTRUCTURE DESIGNED FOR AI

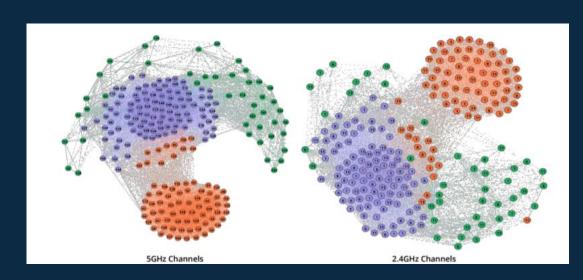


#### Client Match Air Match

Year: 2014

Year: 2016

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



Al Generated RF clusters

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



#### **NET EDIT**

**YEAR: 2017** 

Search

Edit

Validate

Deploy

Audit

Troubleshoot



#### **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 analysiss

#### **Workflow Integration with 3rd Party Tools**

Immediate notifications from Slack, TOPdesk, ServiceNow, etc.



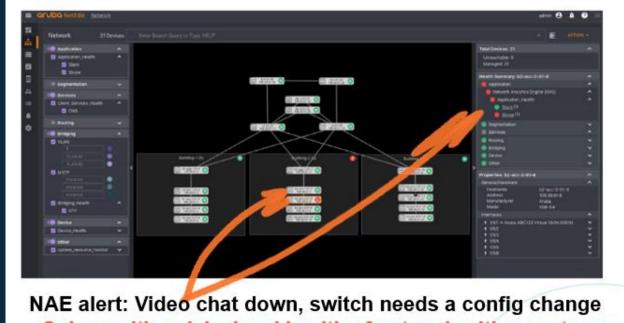
#### **NETWORK ANALYTIC ENGINE**

**YEAR: 2017** 

**Distributed Analytics** 

Aruba NetEdit CX Core **CX Access** NAE integrated everywhere in network Real-time. Automated 24/7 network network-wide monitoring for technician built-in visibility with rapid detection to every switch actionable data of issues

Monitor critical applications/resources



Solves with quick visual health of network with easy to use dashboard to pinpoint issue



#### **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

#### Al 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, realtime monitoring, and zero-touch provisioning

#### WLAN, LAN, and App Assurance

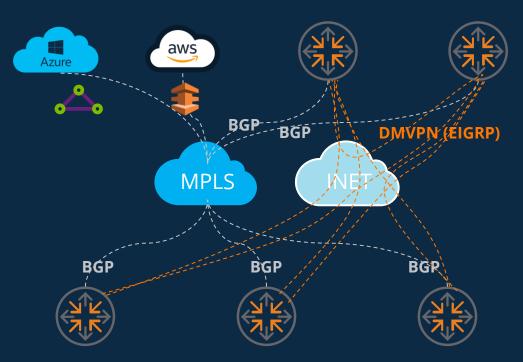
Collect data from APs, switches, internal services, and cloud-based applications

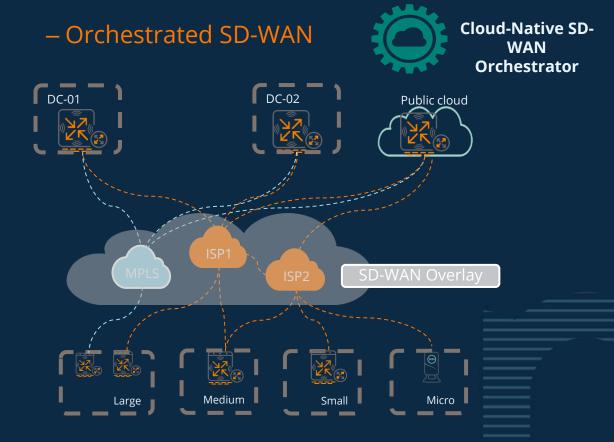


#### **ARUBA SD BRANCH**

**YEAR: 2019** 

– How did we connect things before?







# INFRASTRUCTURE DESIGNED FOR AL

AI-OPS

**SERVICES** 

Dynamic Segmentation

Al Driven Device Profiling











**POLICY** 

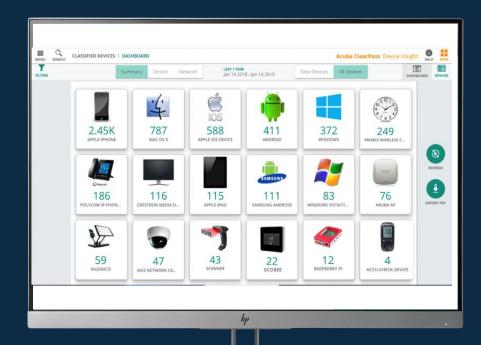
**UNIFIED INFRASTRUCTURE** 

**CONNECTIVITY** 



#### **CLEARPASS DEVICE INSIGHT**

**YEAR: 2019** 





Al-Powered



Cloud-Enabled







# INFRASTRUCTURE DESIGNED FOR AI

#### Al Insights

Automated anomaly detection and network optimization

#### Al Search

Natural language queries

#### AI Assist

Automated trouble ticket generation



















**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

Al 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



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

#### Result

50% improvement in client uplink speed Reduction in trouble tickets



#### Problem

Passerby traffic dragging down network performance

# CONTINOUSLY MONITOR AND OPTIMZE

**AI INSIGHTS** 



#### Solution

Aruba Al 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

What is critical to deliver great AI?

- A) Variety and velocity of data
- B)Interactive dashboard
- C)Robust machine learning algorithms





Which of the following Aruba products is designed for AI?

A)Transceivers

B)Aruba 1900 series switch

C) Aruba CX Switches





Which is NOT value of Al-Ops?



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



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



A)AI-Search, Helpdesk, AI-Insights

B)Al-lookup, Talking dashboard, Pretty graphs

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



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** 

KNOWN
ISSUE
RESOLUTION

UNKNOWN
ISSUE
IDENTIFICATION
AND
RESOLUTION

3

CONTINUOUS MONITORING AND OPTIMIZATION

# Q&A

Please ask questions or type into the chat





# Thank You