



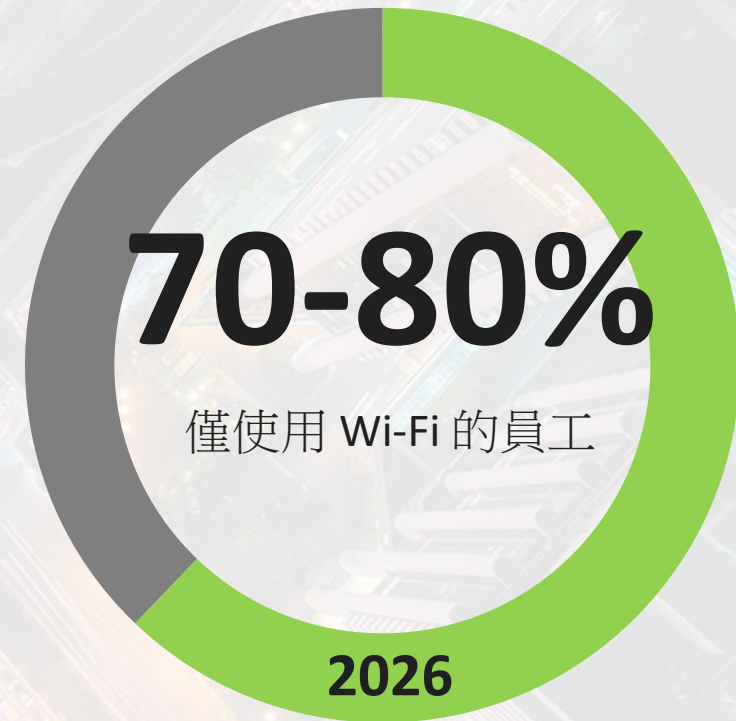
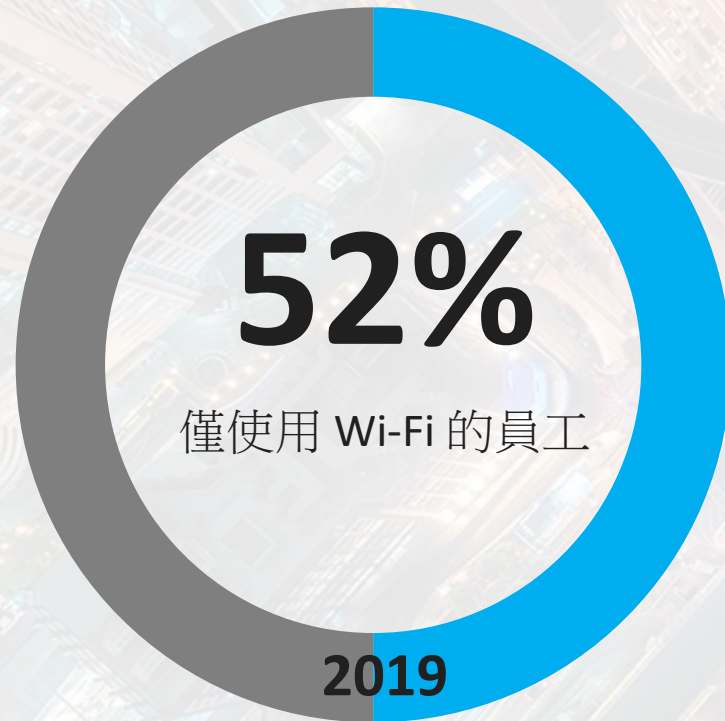
Ruckus AI 如何重新定義網路維運

18 Sep

Calvin Su

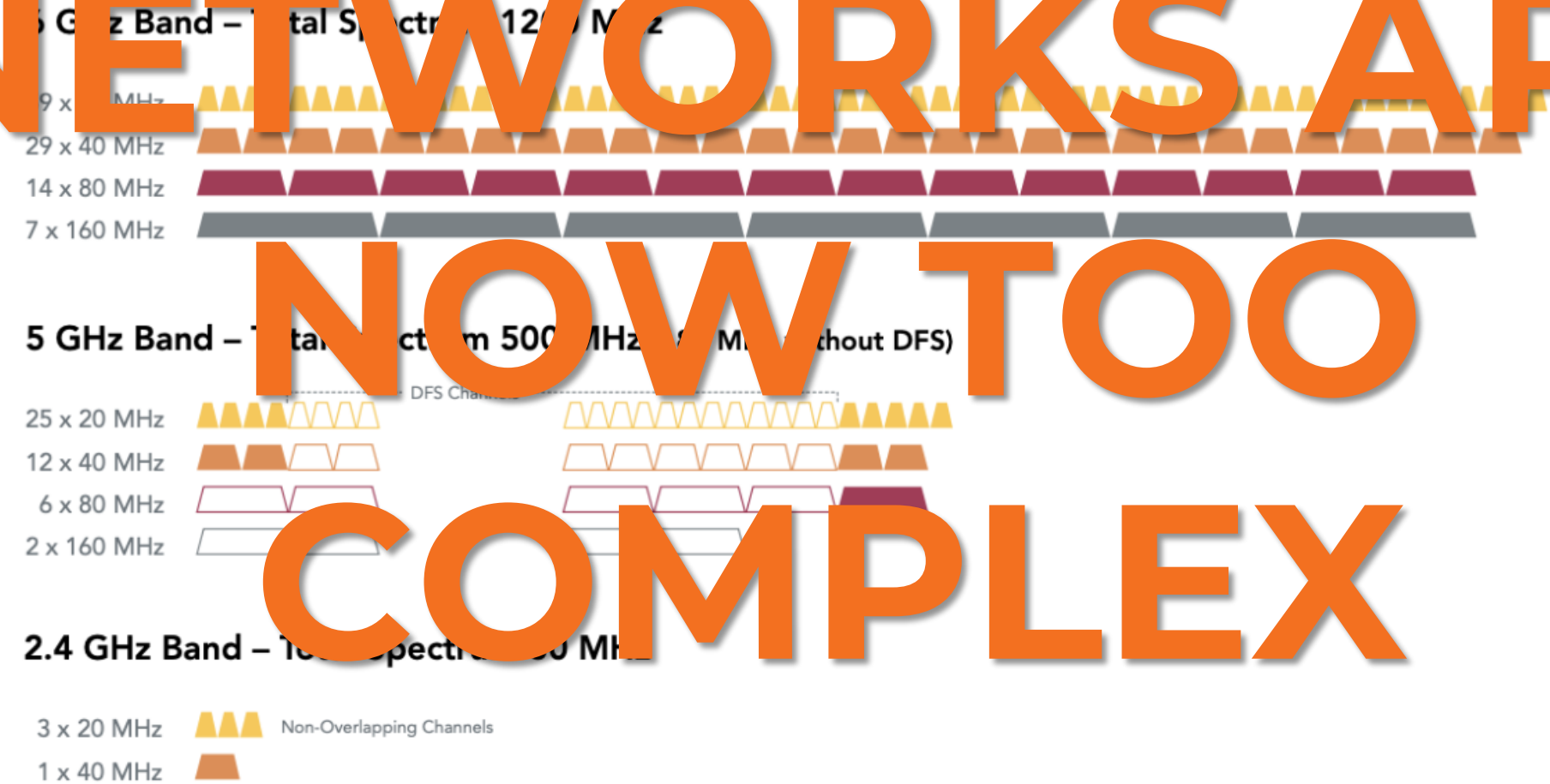
Technical Consultant

Wi-Fi 連線使用場景越來越多



Source: IHS Markit WLAN strategies North American enterprise survey

Comparative Channel schema

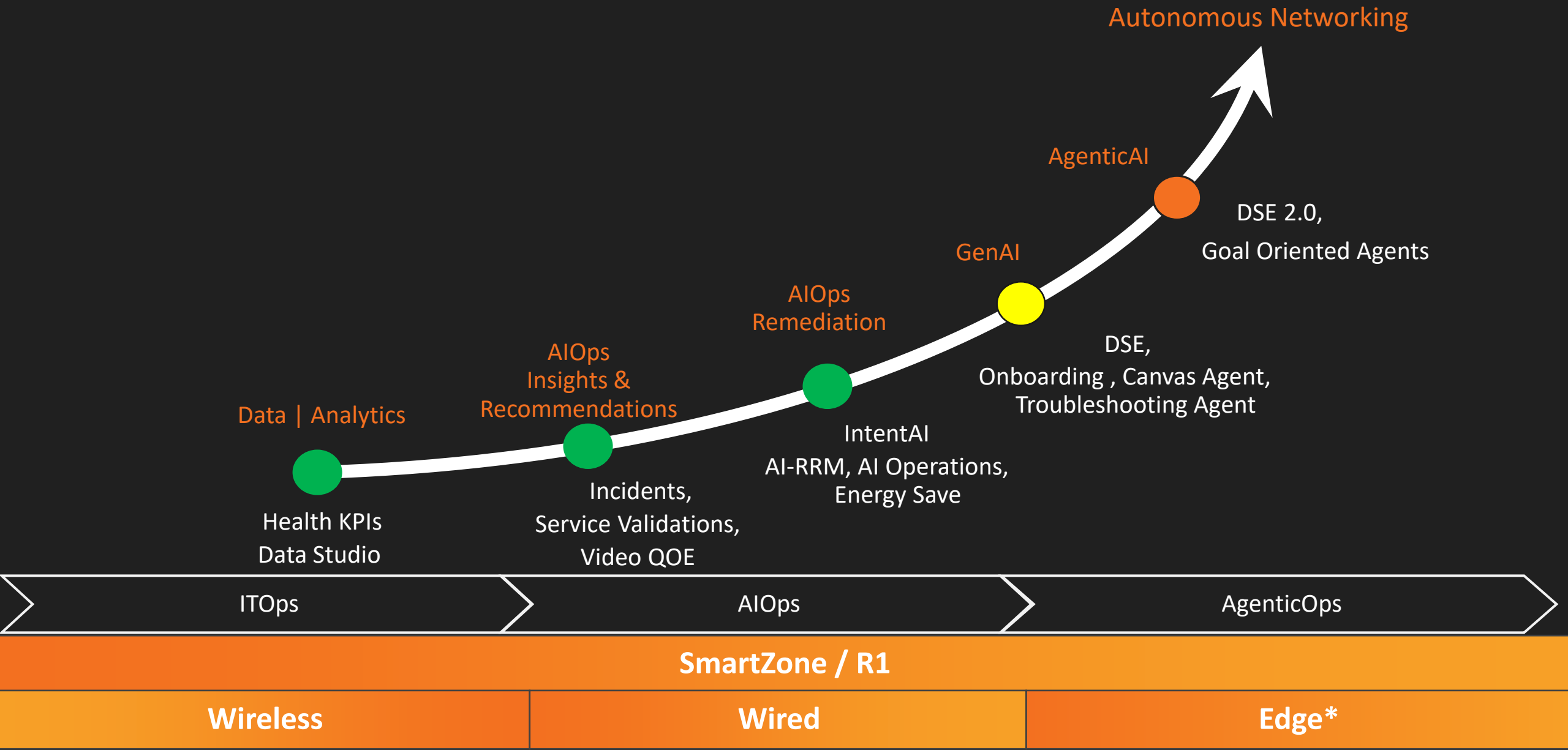


From: litepoint.com. Comparison of WiFi spectrum between 6GHz, 5GHz and 2.4GHz

AI 未來的願景



RUCKUS AI – 發展歷程與未來願景



RUCKUS Data & Analytics

Health Monitoring, KPIs & Reporting

Health Monitoring for Wired/Wireless Networks

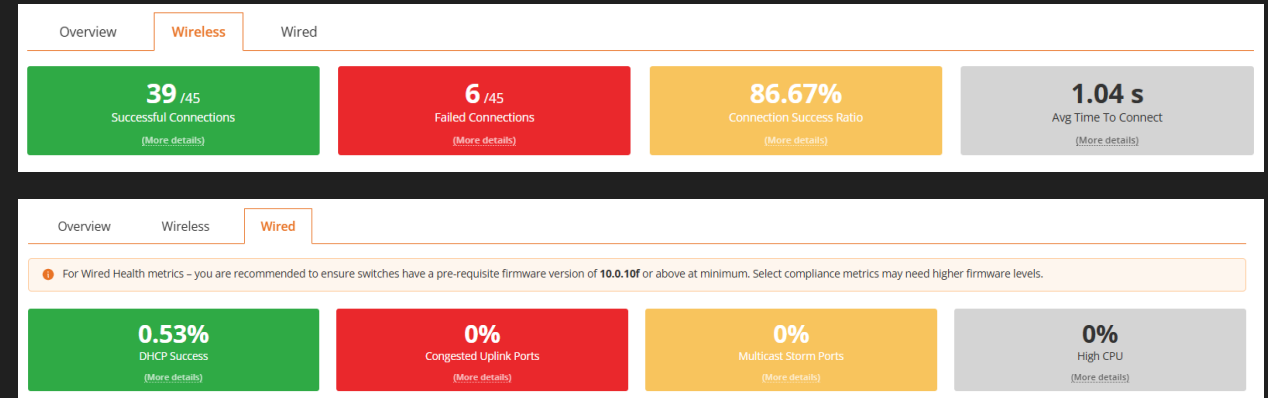


Streaming Telemetry – Wired and Wireless

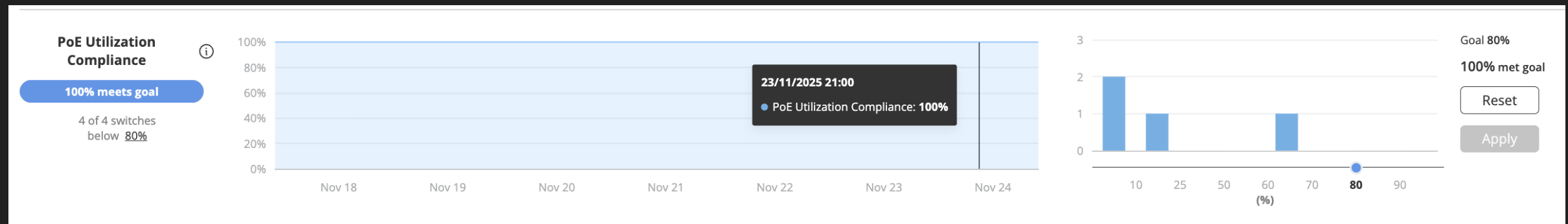
13 Wi-Fi KPIs, 10 Wired KPIs

Monitor up to 30 Days

Custom threshold levels, Track Non-Compliance



Example of a KPI – POE Compliance



Business Data Studio

12 Months Historic Analytics

Out of the Box / Custom Dashboards / Vertical Templates

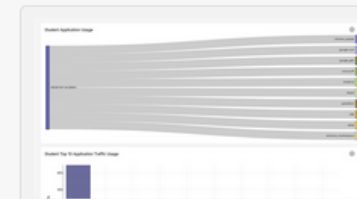
Scheduled Delivery / Data Connector

Data Studio with Statistical & Predictive Models

Executive Reports for big picture

Education

Vertical specific dashboards targeting Education customers.



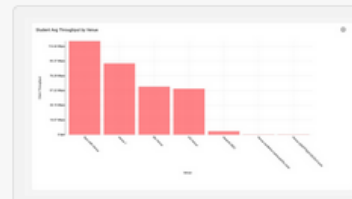
Student Experience

Displays information about the students and their Wi-Fi experience.



Student Devices

Displays information about the number of student devices based on the...



Student Bandwidth Rep...

Displays the throughput estimates per zone, for student devices.



Hospitality

Vertical specific dashboards targeting Hospitality customers.



Guest Experience

Displays insights about the guest experience in the property.



RF Coverage

Displays information about the Wi-Fi experience in various parts the...



Assets LifeCycle

Displays information about assets in the property that are nearing End of...



Brand Standard Complia...

Displays compliance reports detailing brand compliance for the property.



Wireless Performance

Displays detailed information about the quality of Wi-Fi performance...



RUCKUS AI Ops

Insights & Recommendations

AI Incidents for Wired/Wireless Networks

High Efficacy Network Impacting Incidents

Patented AD – Temporal, Spatial, Clustering

Triaging, RCA, Scope of Impact & Recommendations

20 Wi-Fi, 9 Wired Incidents

Total Incidents

37 +24

P1 0

P2 1

P3 6

P4 30

DHCP Failure Incident saved a POC!

AI Assurance / AI Analytics / Incidents /

Incident Details P4

DHCP failures are unusually high in Access Point: AP-R670-Corridor2 (00:33:58:35:8B:A0)

Client Impact Count:
9 of 11 clients (81.82%)

Incident Category:
Connection

Incident Sub-Category:
DHCP

Type:
Access Point

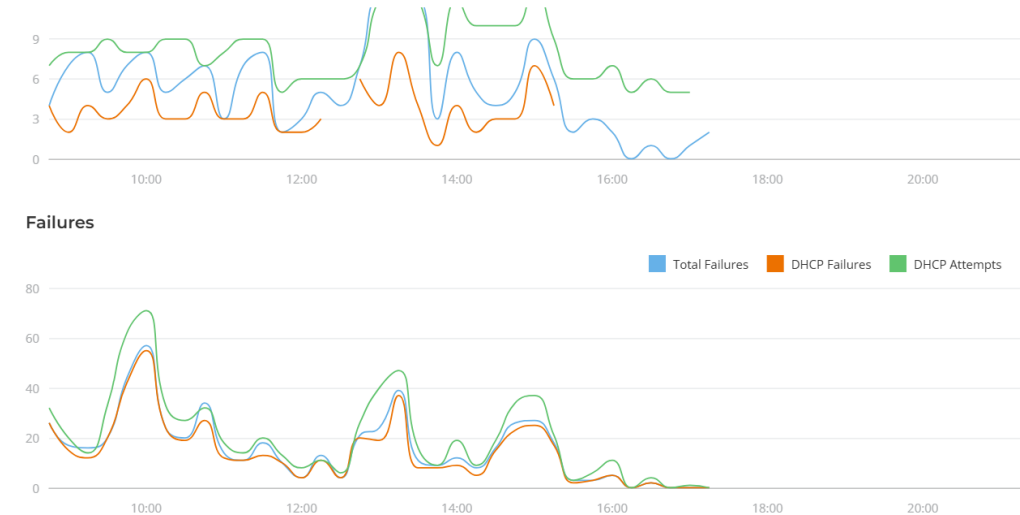
Scope:
AP-R670-Corridor2
(00:33:58:35:8B:A0)

Duration:
42 m

Event Start Time:
11/12/2025 14:45

Event End Time:
11/12/2025 15:27

Visibility:



有線/無線網路異常事件

	Wi-Fi	Wired
連線	1. 802.11 Authentication 2. DHCP 3. RADIUS 4. Association 5. EAP 6. Time to Connect	1. Bad Cable* 2. DHCP* 3. Negotiation Mismatch*
效能	1. Coverage issues 2. Channel Issues 3. Load issues	1. Memory 2. Port Congestion 3. Uplink Port Congestion
架構	1. Controller Cluster Timestamp issues 2. AP – Smartzone connection 3. AP Reboots	1. VLAN Mismatch 2. POE Power Denied 3. Speed/Duplex Mismatch on Link 4. L2 Loop Detected 5. LLDP Status 6. Port Flap 7. MTU Mismatch*

Service Validation: Wi-Fi / Wired Services

Catch issues even without the clients!

Wireless & Wired*

Virtual Wireless Clients; Extensive test Suites

Network * 

SG-EBC-WiFi 

Authentication Method * 

Pre-Shared Key (PSK) 

Pre-Shared Key

Using configured password

Radio Band 

☒ 2.4 GHz ☐ 5 GHz ☐ 6 GHz

DNS Server

☒ Default ☐ Custom

Ping Destination Address

Enter an IP address or a domain

Traceroute Destination Address

Enter an IP address or a domain

Settings

APs Selection

Summary

Test Name *

RAI Wi-Fi Test 

Client Type 

☒ Virtual Client ☐ Virtual Wireless Client

MJ-SV-Test

APs Under Test: 2 APs | Test Result: 50% pass | WLAN: mgmt | Radio Band: 2.4 GHz | Authentication Method: WPA2-Personal

RE-RUN TEST

TEST TIME Feb 23 2023 19:42:44

Overview

Details

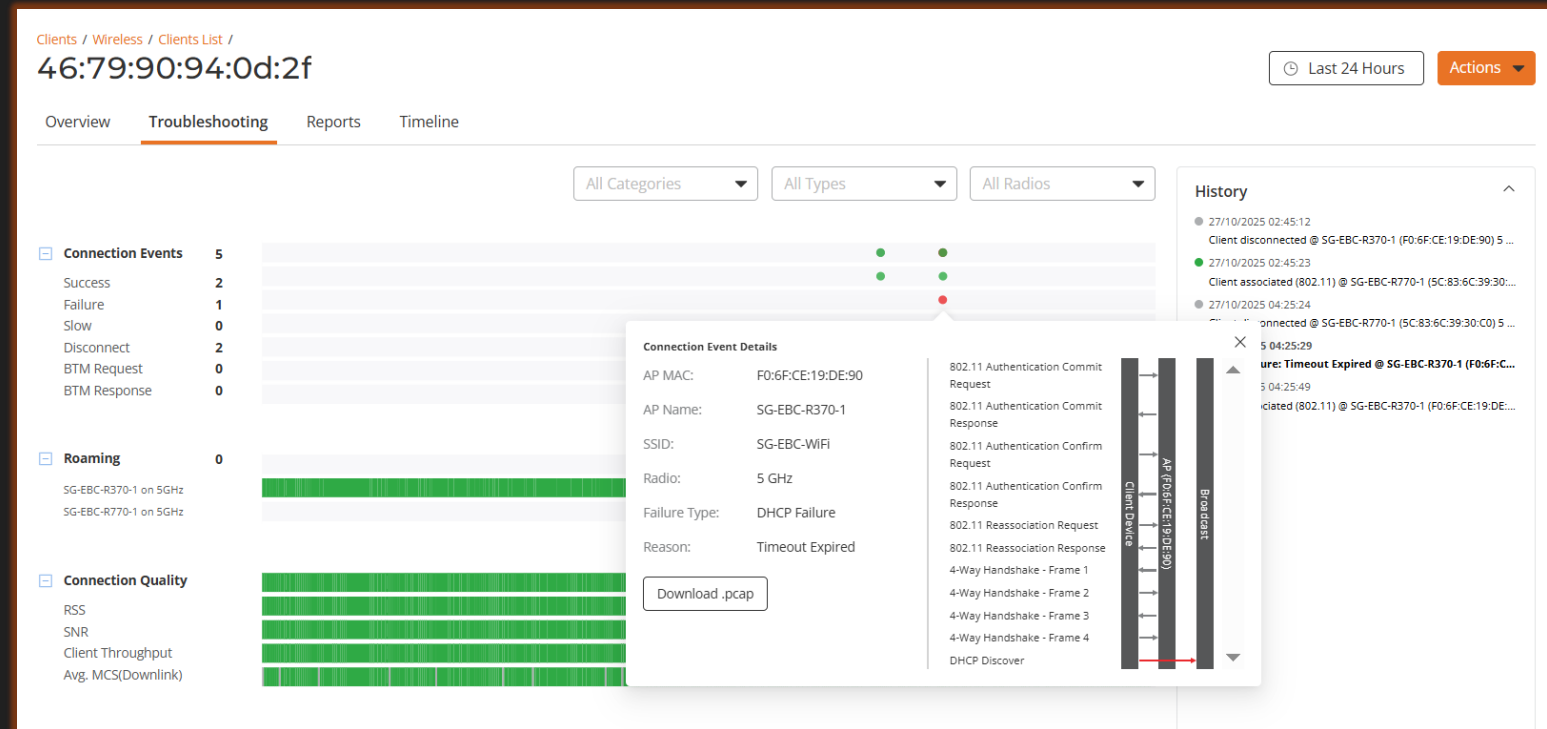
AP Name	AP MAC	802.11 Auth	Association	PSK	DHCP	DNS	Ping	Traceroute	Upload	Download
MJ_R550_lab	70:CA:97:2D:09:20	Pass	Pass	Pass	Pass	Pass	5ms		Fail	Fail
mj_mdf	DC:AE:EB:01:DA:F0	Pass	Pass	Pass	Pass	Pass	5.56ms		57.6 Mbps	125 Mbps

Client Troubleshooting

30 Days of historic Client troubleshooting

Dynamic Packet Captures

No Site Visits, No waiting for issue recreation



The screenshot displays the Ruckus Client Troubleshooting interface. At the top, the breadcrumb navigation shows 'Clients / Wireless / Clients List /'. The main header displays the MAC address '46:79:90:94:0d:2f' and a 'Last 24 Hours' filter. Below this, there are tabs for 'Overview', 'Troubleshooting' (which is active), 'Reports', and 'Timeline'. The interface is divided into three main sections: 'Connection Events', 'Roaming', and 'Connection Quality'. The 'Connection Events' section shows a summary of 5 events: Success (2), Failure (1), Slow (0), Disconnect (2), BTM Request (0), and BTM Response (0). The 'Roaming' section shows 0 events. The 'Connection Quality' section shows metrics for RSS, SNR, Client Throughput, and Avg. MCS(Downlink). A 'History' panel on the right shows a list of events, including 'Client disconnected @ SG-EBC-R370-1 (F0:6F:CE:19:DE:90) 5...' and 'Client associated (802.11) @ SG-EBC-R770-1 (5C:83:6C:39:30:...)'. A 'Connection Event Details' modal is open, showing details for a 'Timeout Expired' event. The modal includes fields for AP MAC, AP Name, SSID, Radio, Failure Type, and Reason. A 'Download .pcap' button is also present. The modal also displays a timeline of events, including '802.11 Authentication Commit Request', '802.11 Authentication Commit Response', '802.11 Authentication Confirm Request', '802.11 Authentication Confirm Response', '802.11 Reassociation Request', '802.11 Reassociation Response', '4-Way Handshake - Frame 1', '4-Way Handshake - Frame 2', '4-Way Handshake - Frame 3', '4-Way Handshake - Frame 4', and 'DHCP Discover'.

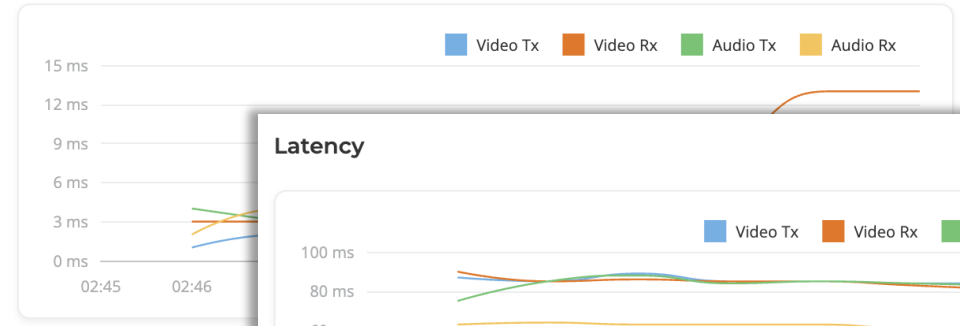
Video Call QOE

On-Demand tool

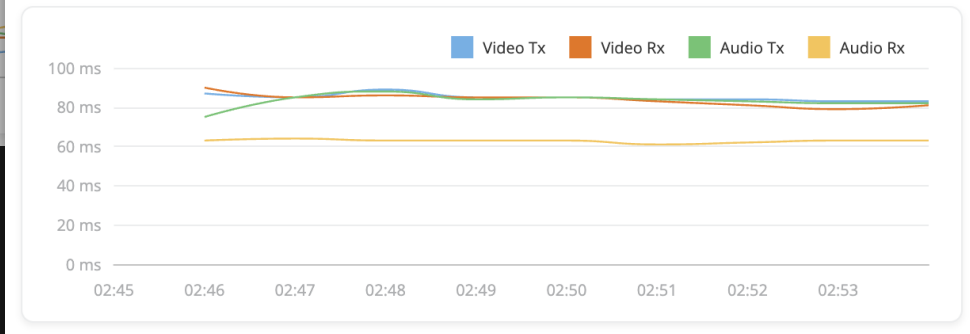
Measure Zoom call performance

Validate network readiness for Voice & Video

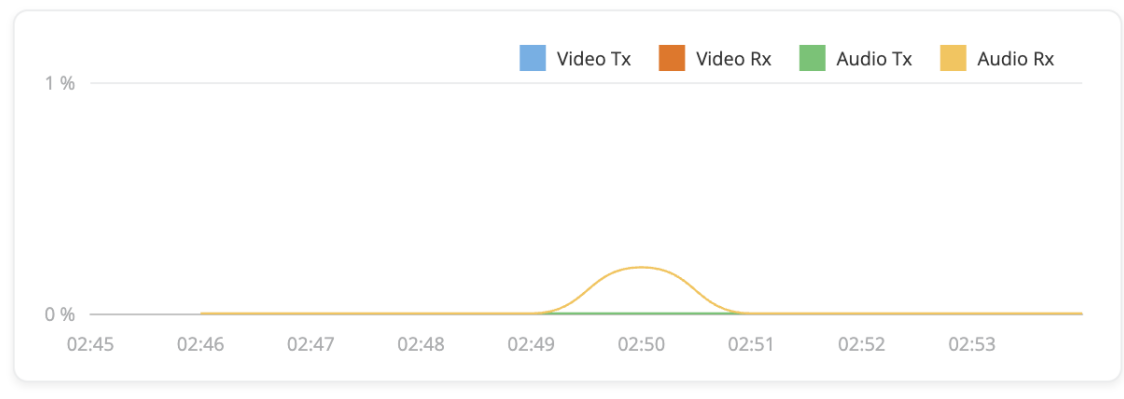
Jitter



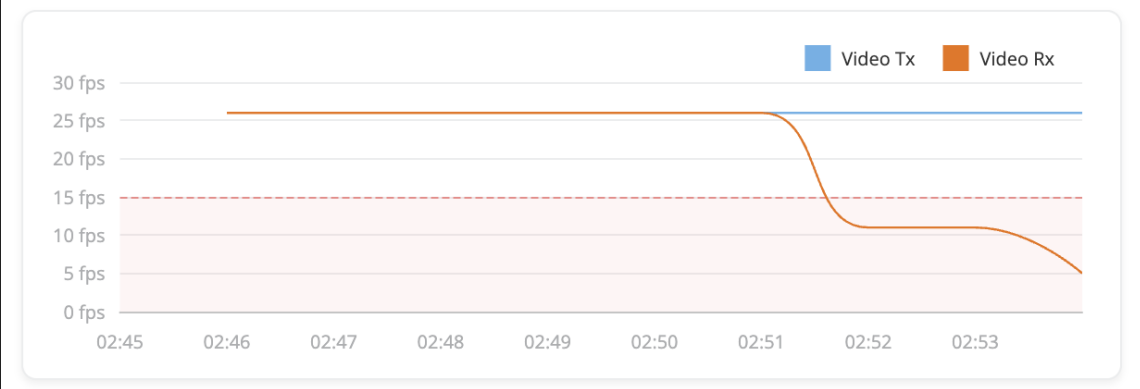
Latency



Packet Loss



Video Frame Rate



Configuration Change Analysis



Red is degradation, Green is improvement, Grey is not significant. Important to understand that this is correlation and not causation.

R1

Dashboard

AI Analytics

Incidents

Recommendations

Health

Config Change

Occupancy

Timeline

Reports

Services

Policies

Collapse

License for 20 APs will expire in 25 days
Ensure service level, Act now

Search

8

JS

AI Analytics /

Window width is fixed at 24 hrs

Config Change

Type: Network | APs: 451 | Clients: 551 | Switches: 33

Entire Organization

Last 24 hours

Reset Zoom

BEFORE

AFTER

Venue

WLAN

AP Group

AP

12/21/20 12:00 AM

12/22/20 12:00 AM

12/23/20 12:00 AM

12/24/20 12:00 AM

12/25/20 12:00 AM

12/26/20 12:00 AM

12/27/20 12:00 AM

Overview

Connection

Performance

Infrastructure

Connection Success

Before: 98% | After: 95%

-3%

Time to Connect

Before: 8s | After: 9s

+1s

Client Throughput

Before: 96% | After: 96%

=

AP Capacity

Before: 50 Mbs | After: 50 Mbs

=

AP-Controller Connection uptime

Before: 60% | After: 80%

+20%

Online AP Count

Before: 234 | After: 212

-9%

+ Add KPI filter

Date	Entity Type	Entity Name	Configuration	Change from	Change to
May 01 2022 12:00	AP	34:20:E3:2D:29:60	Wlan Service (6 GHz)	True	False
May 01 2022 12:00	AP	34:20:E3:2D:29:60	Wlan Service (6 GHz)	True	False
May 01 2022 12:00	AP	34:20:E3:2D:29:60	Wlan Service (6 GHz)	True	False
May 01 2022 12:00	AP	34:20:E3:2D:29:60	Wlan Service (6 GHz)	True	False
May 01 2022 12:00	AP	34:20:E3:2D:29:60	Wlan Service (6 GHz)	True	False
May 01 2022 12:00	AP	34:20:E3:2D:29:60	Wlan Service (6 GHz)	True	False
May 01 2022 12:00	AP	34:20:E3:2D:29:60	Wlan Service (6 GHz)	True	False

RUCKUS AI Ops

Remediation

意圖導向的自主運作

無線射頻效能自動最佳化

涵蓋範圍與承載能力的平衡；DFS 與非 DFS 頻道的智慧調度等

三大核心意圖，更多功能即將推出



AI-Driven RRM

Throughput vs Client Density

Optimize for maximum throughput or minimal interference in high-density areas.



EquiFlex

Time to Connect vs Client Density

Balance clients evenly across APs for consistent performance and optimal resource use.



AI Operations

Optimize Network with AI Insights

Detect, diagnose, and resolve network issues automatically using AI-driven insights.



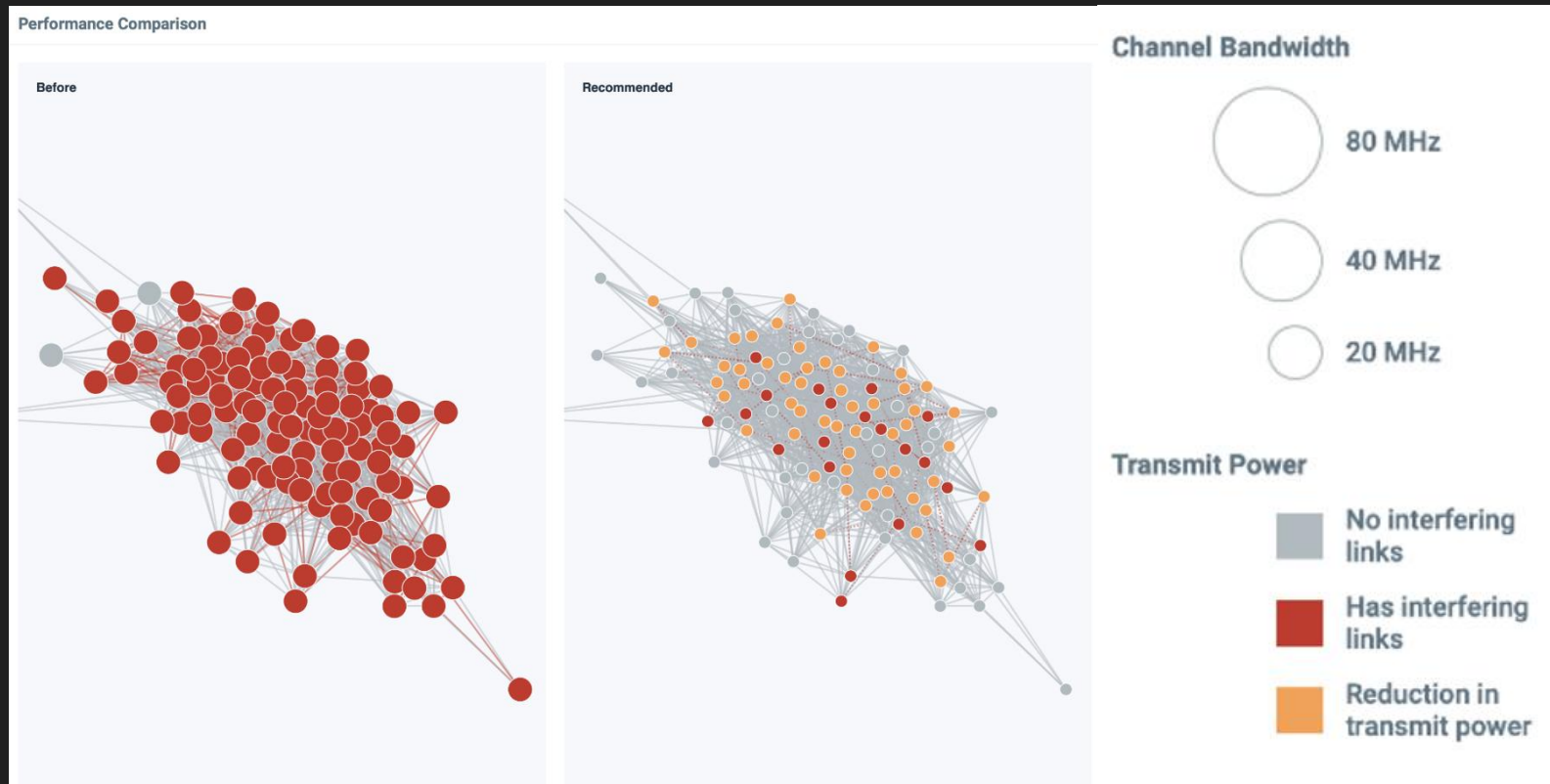
Energy Saving

Energy Footprint vs Mission Criticality

Reduce energy footprint for efficiency and sustainability.

Intent AI - AI Driven RRM

Digital Twin based pre validation to prevent trial & Errors



Proactive, Tx Power
Management

Optimized, Network
Performance

RUCKUS AI

GenAI & Agentic AI



Gen AI

- 內容生成
- 僅需一次 LLM 呼叫
- 瞬間即時生成回應

AI Agents

- 可執行多個由 LLM 驅動的處理步驟
- 能自我檢討並持續優化輸出結果
- 可串接與呼叫各種工具，完成超越單純文字生成的複雜工作

Agentic AI

- 負責管理與協調 AI 智能代理群組
- 支援超大容量上下文，輕鬆應對各種高難度的複雜工作



Digital System Engineer (DSE)

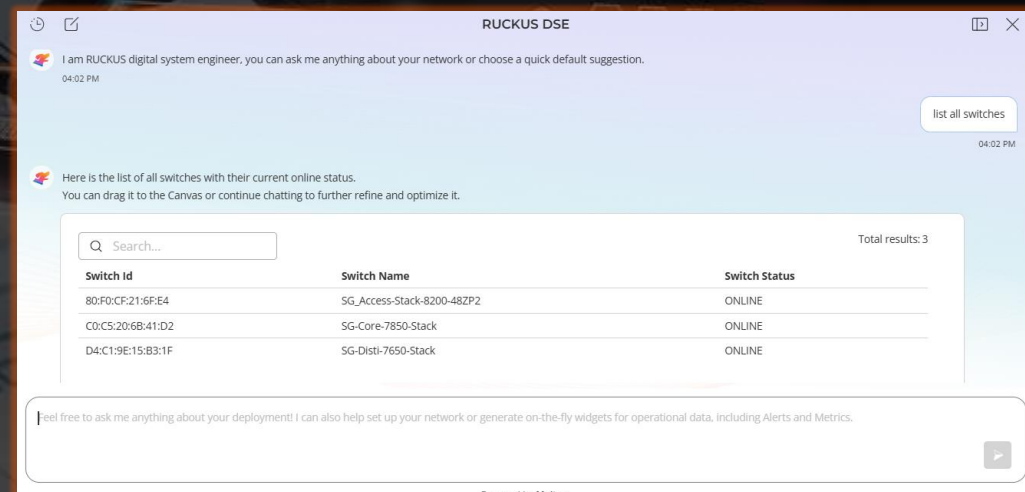
RUCKUS DSE: 網路自動化的未來趨勢

DSE是什麼?

- RUCKUS 數位系統工程師 (DSE)：內建於 RUCKUS One 的 AI 對話式助理。能通曉您的 RUCKUS 網路全貌，並持續學習您的網路運作模式。
- 智慧直覺，人人皆可上手 – 將複雜的網路維運任務，轉化為直白的自然語言互動
- 分析與儀表板建立的 Canvas 智能代理
- 故障排除 智能代理*

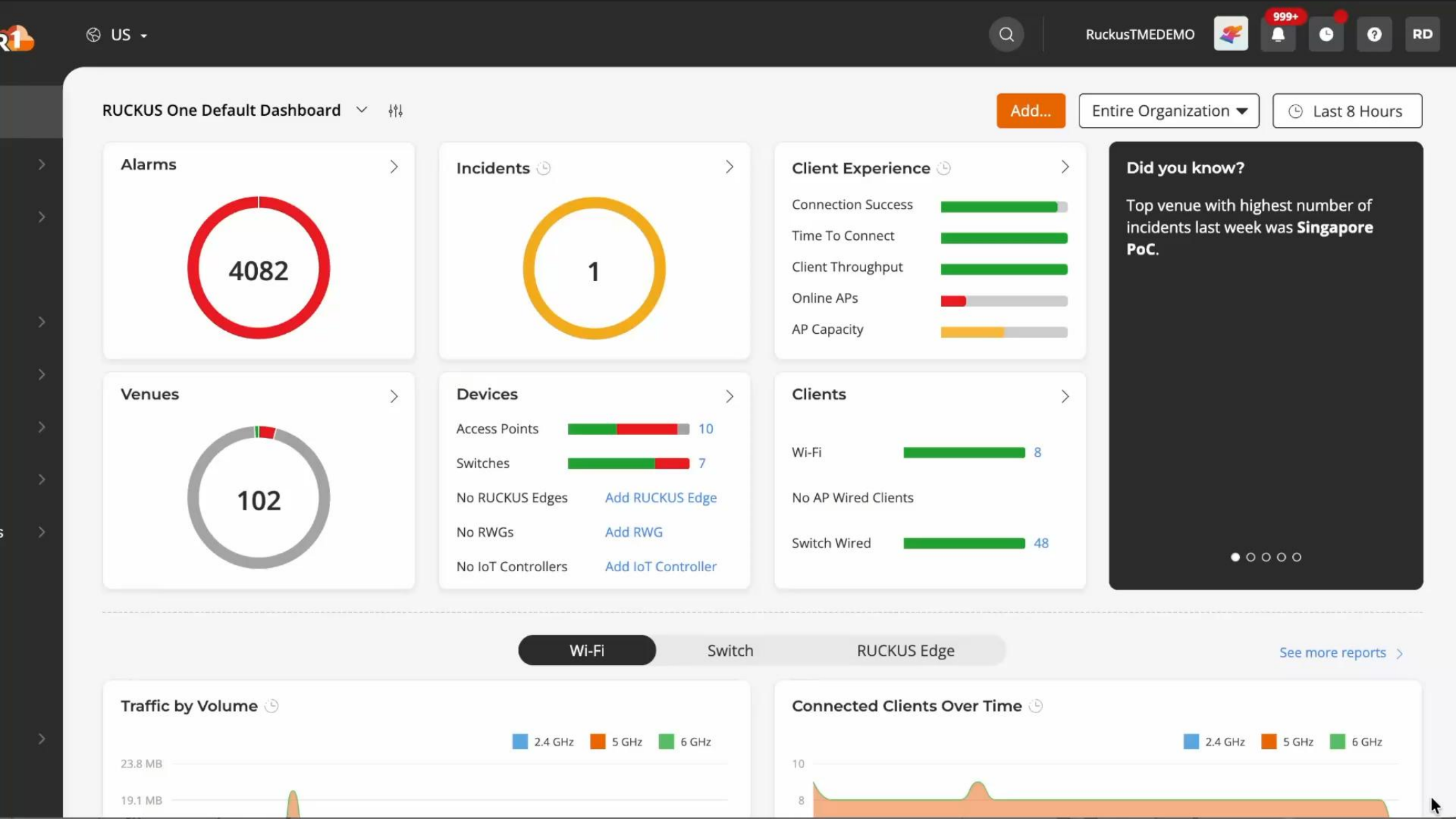
效益與優勢

- 無須具備專業網路技術
- 加速故障排除與數據分析
- 簡化網路部署與上線流程
- 直接給予處理建議，不必自行解讀資料



* Coming soon

DSE – Canvas Agent Demo



DSE – Client Troubleshoot Agent Demo



MCP – Agent Demo



Port 1/1/1 已停用, 172.16.20.11 應該已斷線。

開啟

Enable/Disable Port >

Port 1/1/1 已重新啟用。

just now



+ 直接關閉172.16.20.11所在的port,並顯示port的狀況

```
SSH@ICX8200#show arp
Total number of ARP entries: 4
Entries in default routing instance:
No.  IP Address      MAC Address      Type      Age  Port      Status
1    172.16.20.11      7cc2.c647.dd7b   Dynamic   1    1/1/1     Valid
2    192.168.2.1       085b.0eb7.989c   Dynamic   1    1/1/3     Valid
3    192.168.2.89      0023.ac0b.ba40   Dynamic   0    1/1/3     Valid
4    192.168.8.1       80f0.cf37.1aea   Dynamic   1    1/1/7     Valid

SSH@ICX8200#ping 172.16.20.11
Sending 1, 16-byte ICMP Echo to 172.16.20.11, timeout 5000 msec, TTL 64
Type Control-c to abort
Reply from 172.16.20.11 : bytes=16 time=2ms TTL=128
Success rate is 100 percent (1/1), round-trip min/avg/max=2/2/2 ms.

SSH@ICX8200#show run int et
    ethernet
SSH@ICX8200#show run int ethernet 1/1/1
interface ethernet 1/1/1
    disable
!

SSH@ICX8200#ping 172.16.20.11
Sending 1, 16-byte ICMP Echo to 172.16.20.11, timeout 5000 msec, TTL 64
Type Control-c to abort
Request timed out.
No reply from remote host.

SSH@ICX8200#show run int ethernet 1/1/1
SSH@ICX8200#ping 172.16.20.11
Sending 1, 16-byte ICMP Echo to 172.16.20.11, timeout 5000 msec, TTL 64
Type Control-c to abort
Reply from 172.16.20.11 : bytes=16 time=4ms TTL=128
Success rate is 100 percent (1/1), round-trip min/avg/max=4/4/4 ms.

SSH@ICX8200#ping 172.16.20.11
Sending 1, 16-byte ICMP Echo to 172.16.20.11, timeout 5000 msec, TTL 64
Type Control-c to abort
Reply from 172.16.20.11 : bytes=16 time=8ms TTL=128
Success rate is 100 percent (1/1), round-trip min/avg/max=8/8/8 ms.

SSH@ICX8200#ping 172.16.20.11
Sending 1, 16-byte ICMP Echo to 172.16.20.11, timeout 5000 msec, TTL 64
Type Control-c to abort
Reply from 172.16.20.11 : bytes=16 time=1ms TTL=128
Success rate is 100 percent (1/1), round-trip min/avg/max=1/1/1 ms.

SSH@ICX8200#ping 172.16.20.11
Sending 1, 16-byte ICMP Echo to 172.16.20.11, timeout 5000 msec, TTL 64
Type Control-c to abort
Reply from 172.16.20.11 : bytes=16 time=3ms TTL=128
Success rate is 100 percent (1/1), round-trip min/avg/max=3/3/3 ms.

SSH@ICX8200#ping 172.16.20.11
Sending 1, 16-byte ICMP Echo to 172.16.20.11, timeout 5000 msec, TTL 64
Type Control-c to abort
Reply from 172.16.20.11 : bytes=16 time=1ms TTL=128
Success rate is 100 percent (1/1), round-trip min/avg/max=1/1/1 ms.

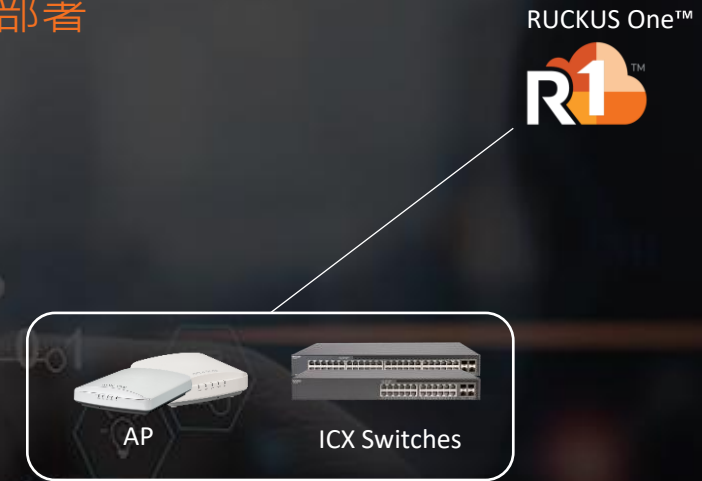
SSH@ICX8200#
```

SmartZone 部署



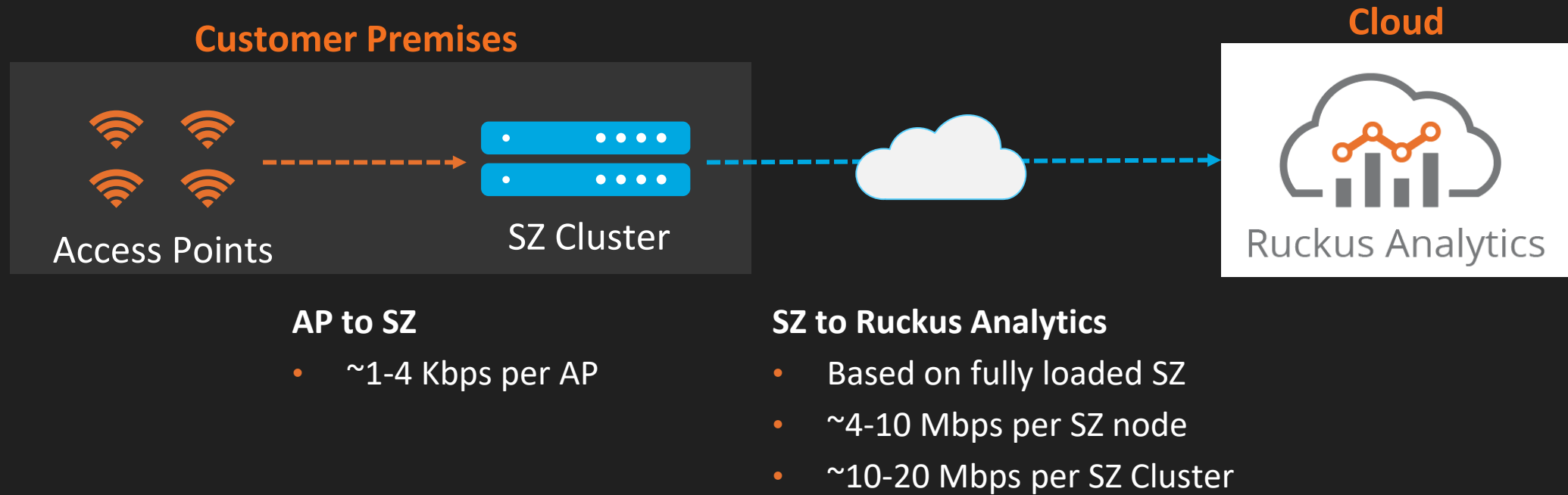
- AI is a bolt on cloud-service
- 'RAI' subscription
 - ~90% of AI (No DSE)
- <https://docs.vistancenetworks.com/bundle/ruckusai-licensing-guide/page/GUID-DA2BA274-F313-43A8-A198-2E8176377C64-homepage.html>

R1 Cloud 部署



- AI is integrated into R1
- R1 Subscriptions
 - Essentials : 80% of AI
 - Professional : 100% of AI
- <https://docs.vistancenetworks.com/bundle/ruckusone-licenseguide/page/GUID-1D8E7BF7-6E24-4A23-BF88-B183C8D55FDE-homepage.html>

* Coming soon



Notes

¹ Based on 2-node vSZ-H cluster with 10K APs and 100K clients

² Data volume will vary based on environmental variables (AP/client count, SZ-H vs SZ-E, client transience, failure rate, event rate, etc)

Thank You

