

COMMSCOPE®
RUCKUS®

真愛需等20年見證
最佳無線立即應證 不容錯過

Ray yu

Technical Consultant

Tomorrow's campuses need future-ready networks.

Discover how a converged network from CommScope can support your campus in improving the student experience, enabling smart learning and optimizing operational and IT systems through a smart campus.

Hide all labels



Smart Learning +

+ Smart Buildings

+ Residences

Smart Campus +

+ Vertical Campus

+ Stadiums

+ Mobile Access

+ Data Center

Student Experience +

Customer priorities

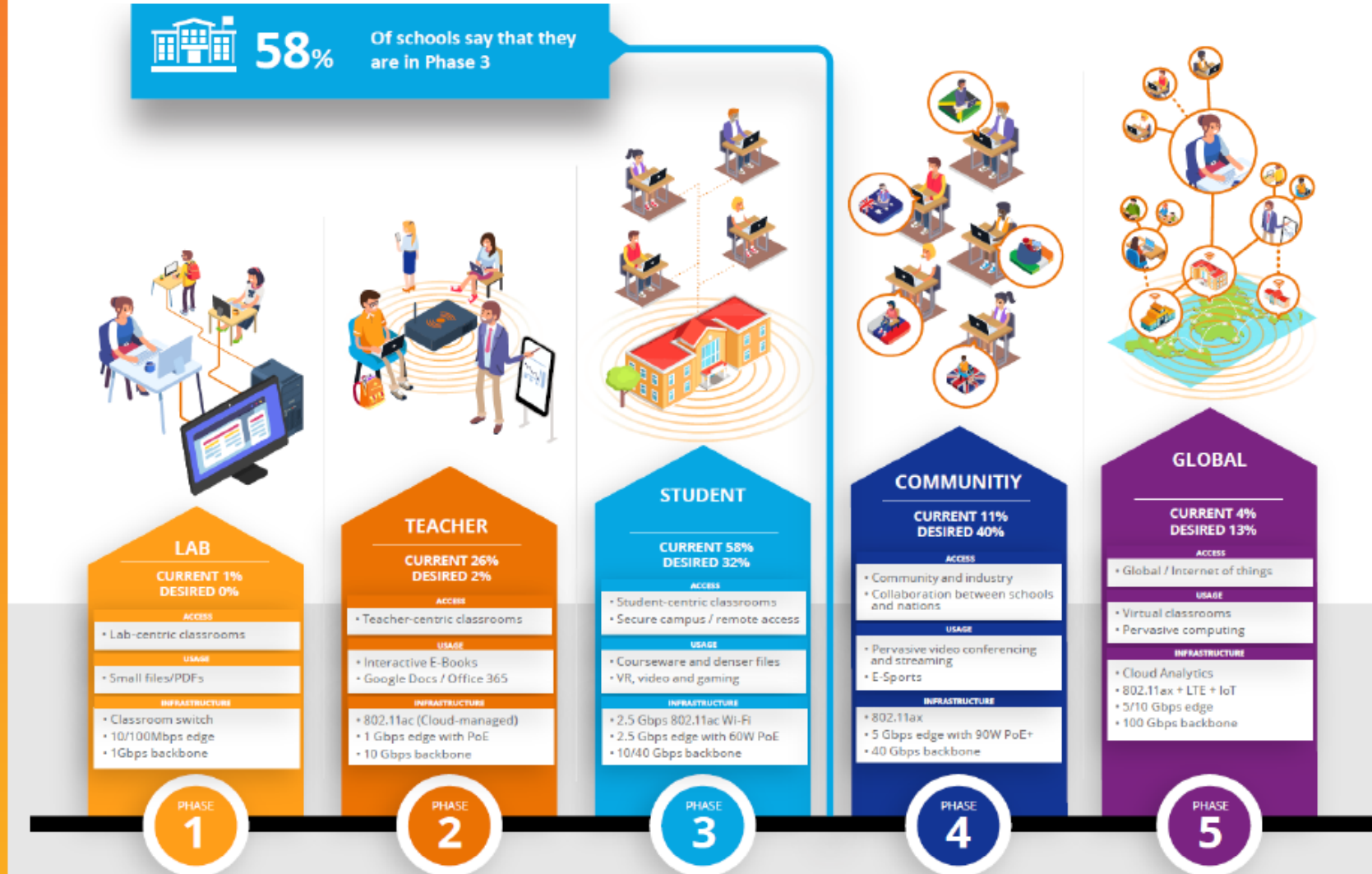
Primary & Secondary Schools

Transition to digital learning

Safe re-opening of schools

Student wellness

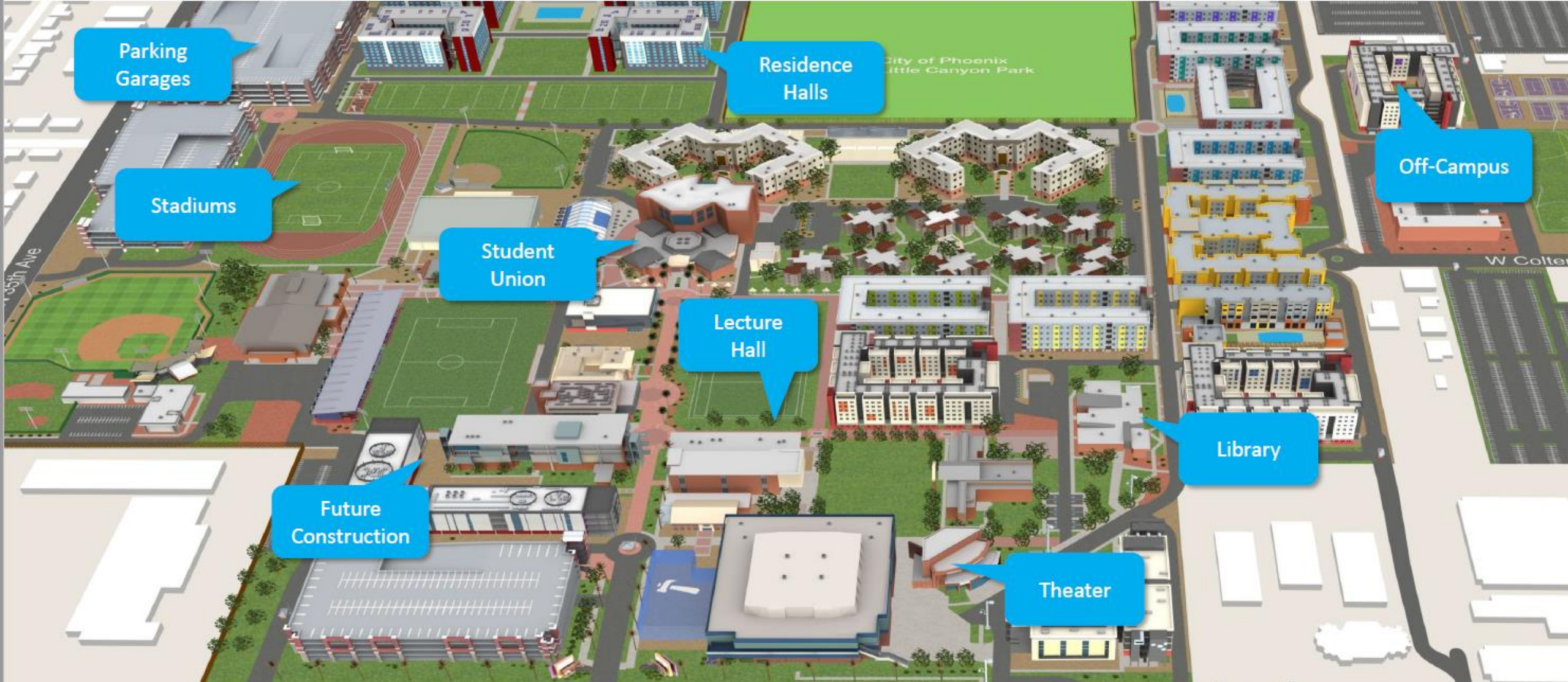
Digital equity



5 Phases of Digital Learning Transition

Creates increasing demand on network infrastructure

University Deployment Scenarios



University Deployment Scenarios





MoE New Zealand

John Dunbar (TAM) & Matt Hall (SE)

~2,500 schools

SmartZone Controller – zSZ High Scale

- Hosted across two datacenters
- End state 3x clusters with 20-24 servers

Access Points

- End state – approx 38,000
- Wi-Fi 6 – majority RUCKUS R650

Switches – ICX Switch Portfolio

- End state – approx. 12,000 switches
- RUCKUS ICX-7150 with 10G backbone

Authentication and authorization

- Cloudpath – approx 850,000 users
- Active/active across the two datacenters (99.99% uptime)

Why Wi-Fi 6 for New Zealand?

<https://www.commscope.com/resources/case-studies/new-zealand-ministry-of-education/>

Bandwidth Demand

- 30% growth YoY
- More video
- 1Gbps pipe to school

Exams Online

- Reliable connectivity critical
- Capacity for all laptops

Devices Increasing

- More devices per school
- Devices more capable
- 1:1 learning adoption

Future-proof 5+ years

- Standards-based
- Scalable design

NEW ZEALAND MINISTRY OF EDUCATION

COMMSCOPE RUCKUS®

New Zealand Ministry of Education Standardizes on CommScope RUCKUS for Country-wide Network Modernization in schools

Since 2023 the New Zealand Ministry of Education and Crown company Network for Learning have been providing managed ICT support for the country's 2,000+ state primary and secondary schools. The Ministry of Education's Te Mana Tihono ("the power of connection") programme aims to give every student the opportunity to learn and thrive in a safer and more secure online environments.

Customer
New Zealand Ministry of Education

Location
New Zealand

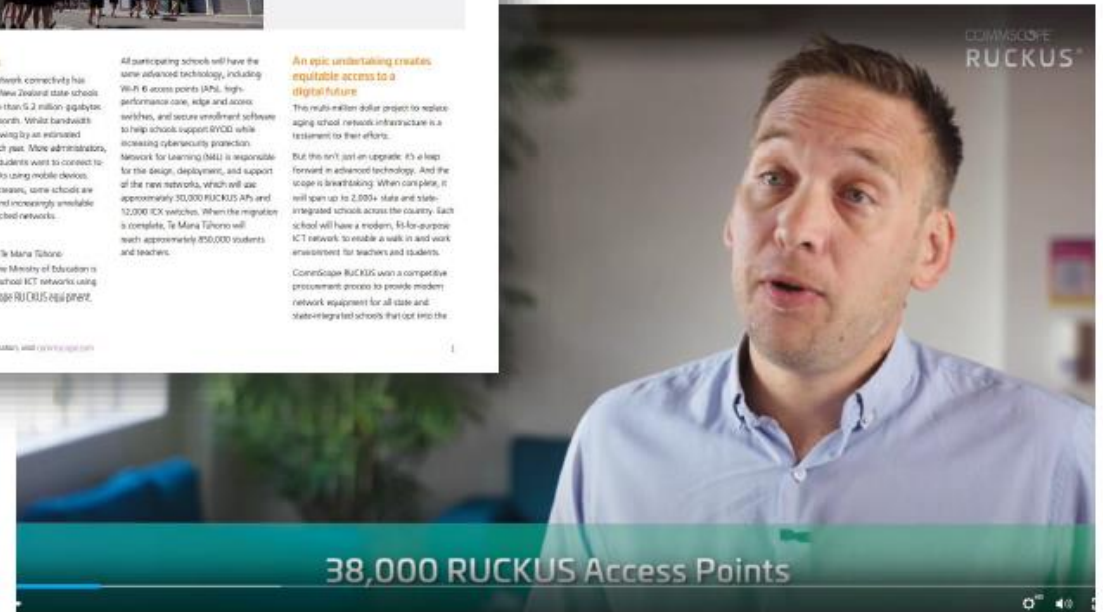
Challenges
Reliance on network connectivity has been soaring: New Zealand state schools consume more than 6.2 million gigabyte of data each month. While bandwidth demand is growing by an estimated 32 percent each year. More administrators, teachers and students want to connect to school networks using mobile devices. As demand increases, some schools are facing aging and increasingly unreliable Wi-Fi and switched networks.

Solution
As part of the Te Mana Tihono programme, the Ministry of Education is standardising school ICT networks using New CommScope RUCKUS equipment.

All participating schools will have the same advanced technology, including Wi-Fi 6 access points (AP), high-performance core, edge and access switches, and secure enrollment software to help schools support BYOD while increasing cyber-security protection. Network for Learning (NfL) is responsible for the design, deployment, and support of the new networks, which will use approximately 30,000 RUCKUS APs and 12,000 ICX switches. When the migration is complete, Te Mana Tihono will reach approximately 850,000 students and teachers.

An epic undertaking creates equitable access to a digital future
The multi-million dollar project to replace aging school network infrastructure is a testament to their efforts. But this isn't just an upgrade: it's a leap forward in advanced technology. And the scope is breathtaking. When complete, it will span up to 2,000+ state and state-integrated schools across the country. Each school will have a modern, fit-for-purpose ICT network to enable a work in and work environment for teachers and students. CommScope RUCKUS won a competitive procurement process to provide modern network equipment for all state and state-integrated schools that opt into the

For more information, visit www.commscope.com



Ruckus 大專院校

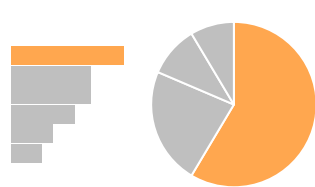
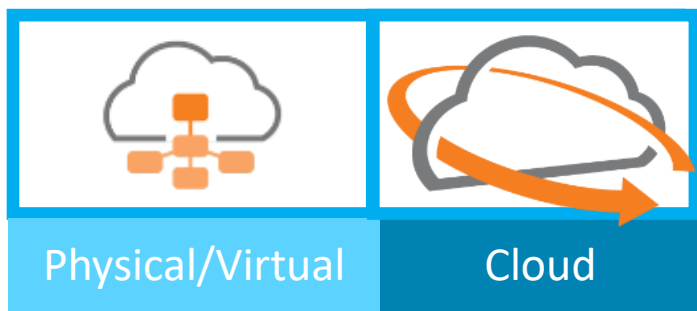
建議規劃 Solution



彈性佈建控制器 - 管理有線無線

SmartZone

Ruckus Cloud



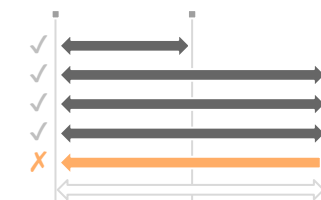
創新儀表板

快速存取網路狀態，聚焦重點跟解析問題



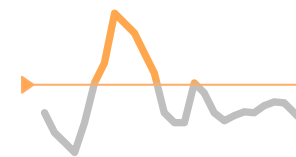
地圖整合

可以快速看到大樓及樓層的基地台狀態及所在位置



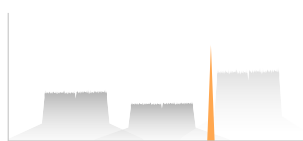
連線故障分析

找出連線流程中遇到的問題及中斷癥結



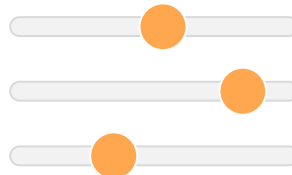
基地台健康

標誌基地台，可以簡單地找到效能相對不佳的基地台



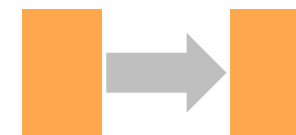
頻譜分析

使用基地台作為訊號干擾問題分析及問題排除



應用程式控管

針對應用程式下達禁止、限制或重新配置應用程式優先級別來控制使用量



有線無線功能設定

透過SZ無論有線無線設備皆可統一控管及配置

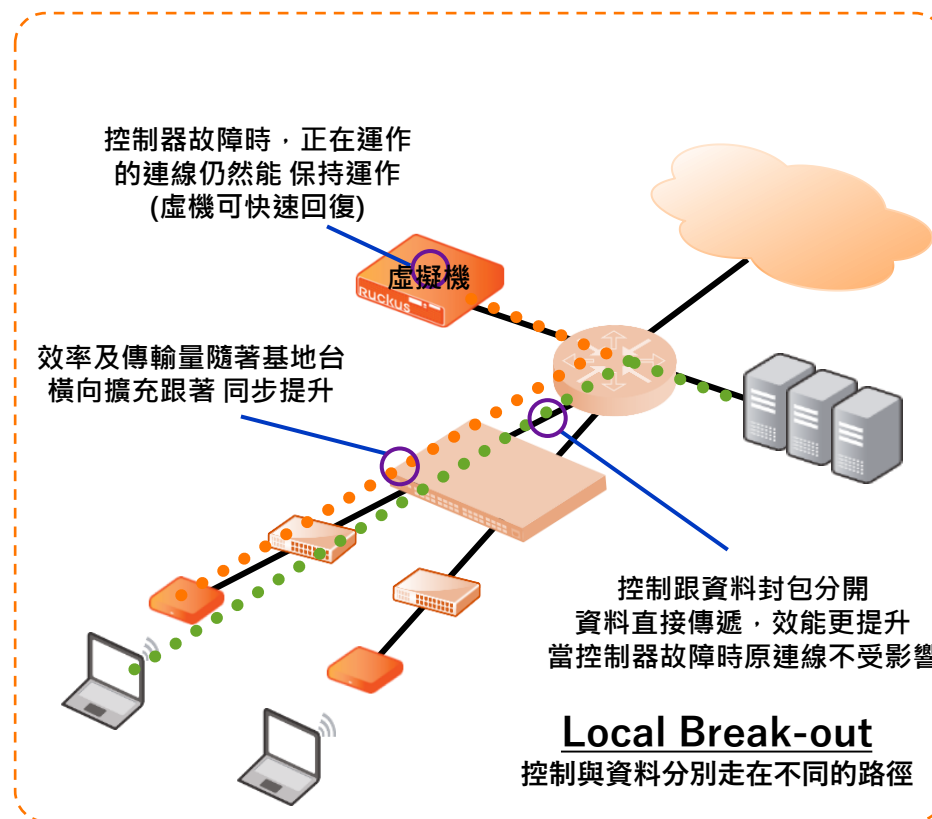
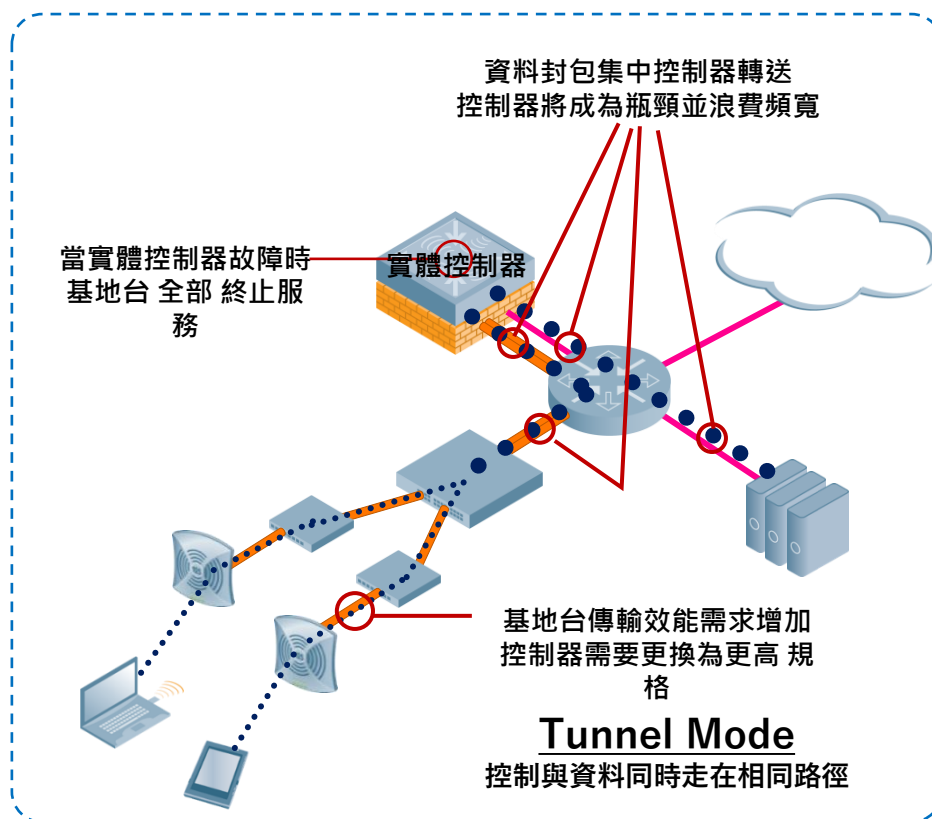


連線裝置追蹤

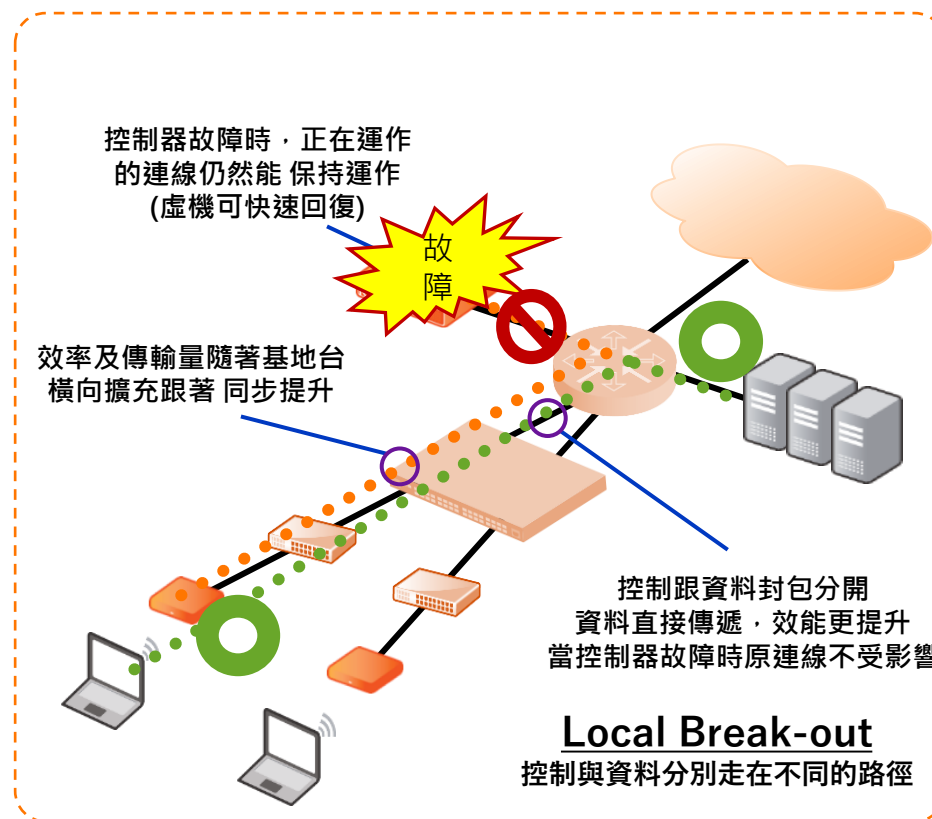
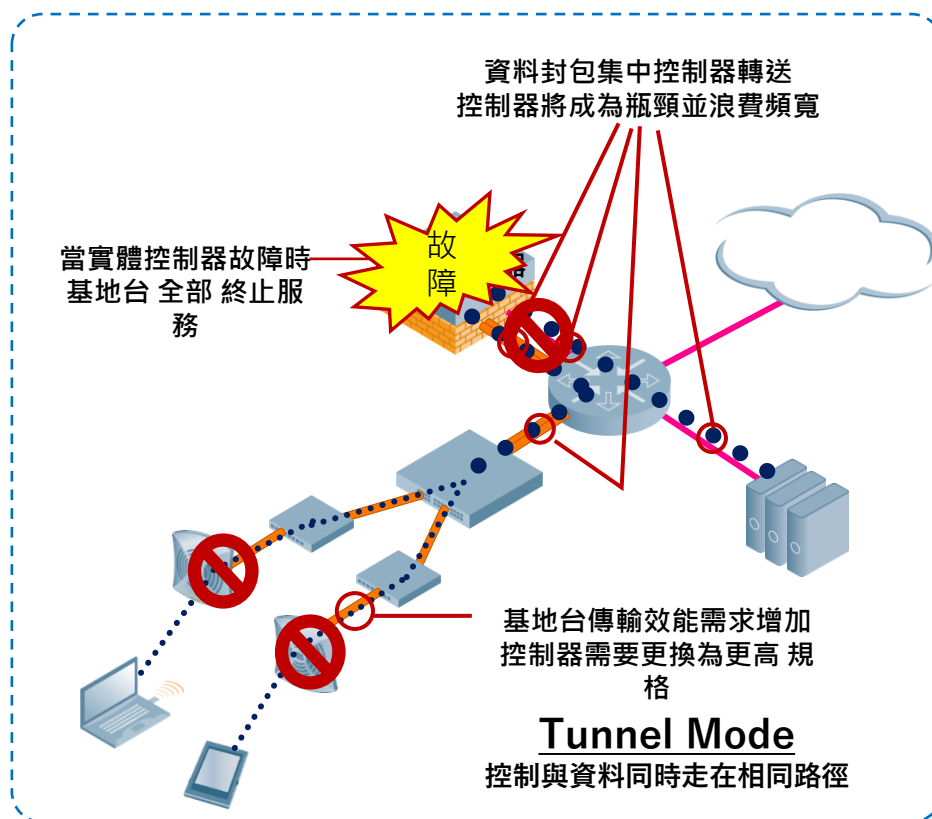
無論有線無線使用者，只要連線SZ皆可將連線軌跡呈現



硬體控制器(Tunnel)與虛擬機架構差異比較

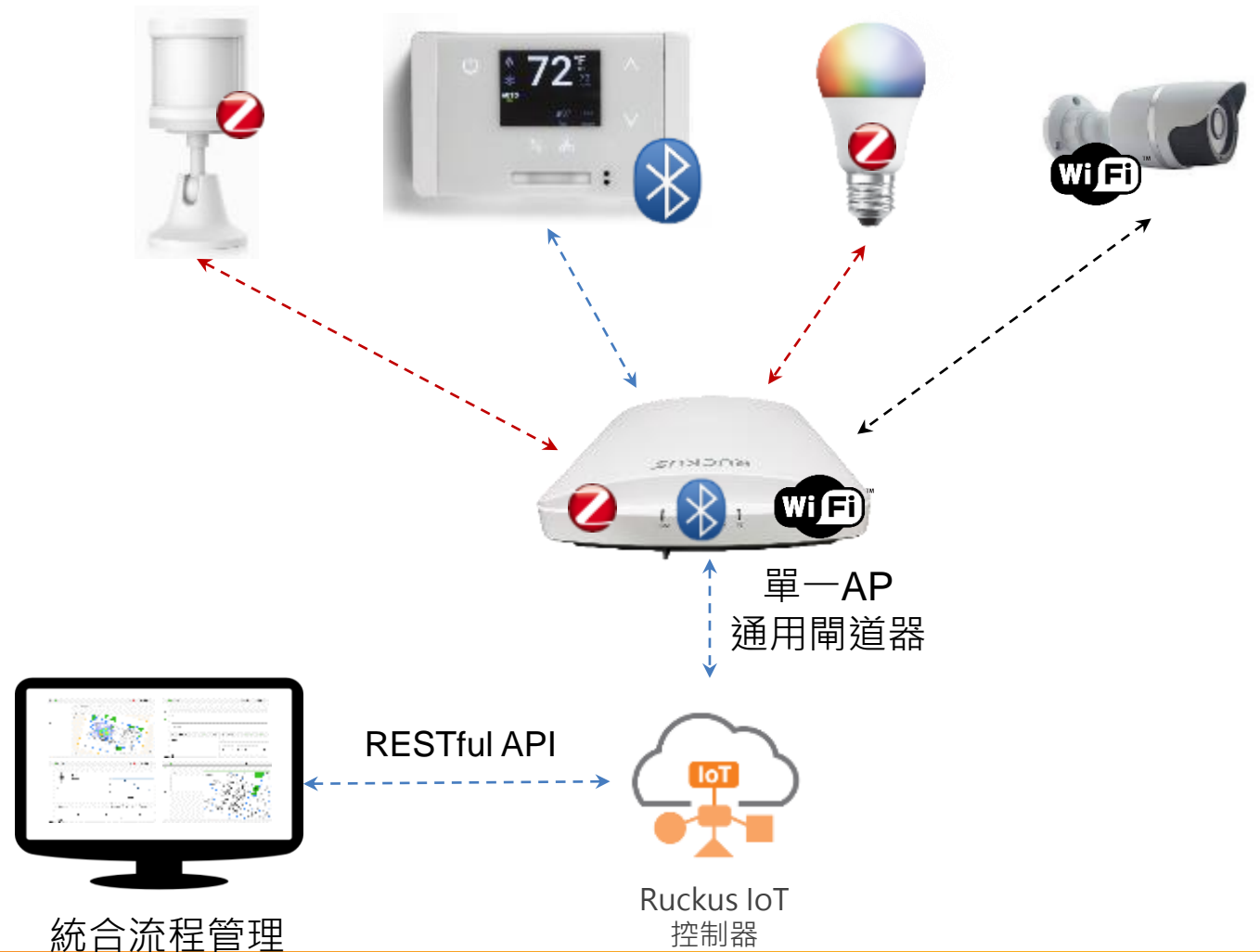


硬體控制器(Tunnel)與虛擬機架構差異比較



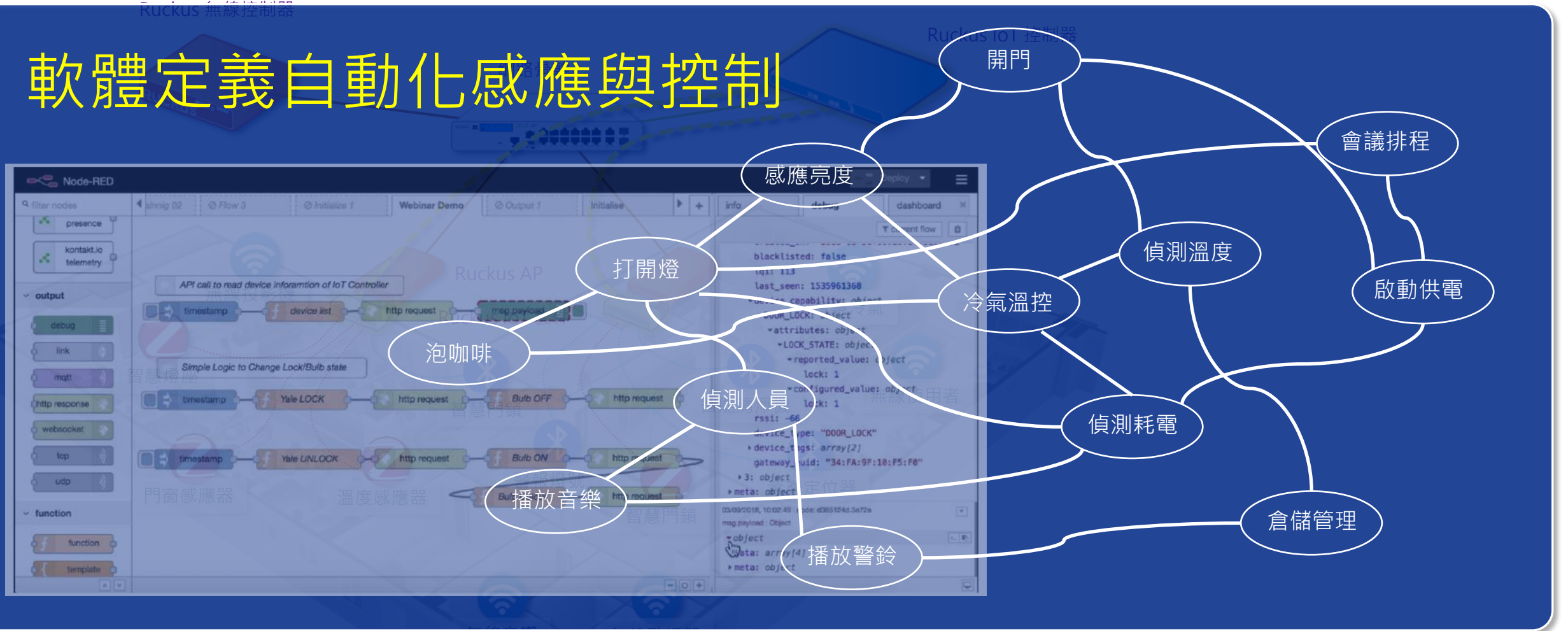
Ruckus IoT整合架構簡化網路

- AP 同時支援WiFi + IoT
- 單一通用閘道器，連接各廠商IoT設備
- 減少佈線 = 減少交換器數量
- 統合管理，整合容易
- 節省總體持有成本



給你一個平台，串起全新契機

軟體定義自動化感應與控制



無線百音

無線監視器

IoT Solutions

Security



- Access Control
- Alarm Monitoring
- Visitor Access & Monitor
- Patrol Route Monitoring

Management



- Building Operations
- Environmental
- Device Health
- Water Safety/Monitoring

Location



- Asset Tracking
- Geofencing
- Wayfinding
- Restricted Access Alarms

Occupancy



- Space Utilization
- Footfall Analytics
- Contact Tracing
- Resource Booking

Efficiency



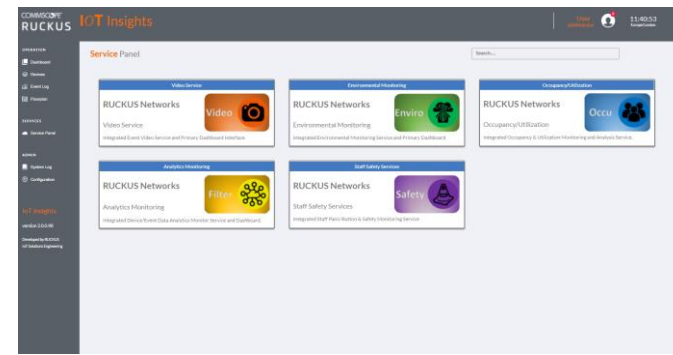
- Energy Management
- Environment control
- Staff/Contractor resource
- Building Maintenance

Cost Savings



- Energy Used
- Space Optimization
- Contracted Services
- Lost Goods/Materials

IoT Insights Solutions



Staff Safety

Vibration, Panic, Help, Bullying Monitor
SMS & e-mail Notification
Audit Log & Event Search, Video Playback

Occupancy Monitoring

Room, Floor Based Location Selection
Utilization/Occupancy Analysis
Time/Day/Date Reporting and Graphing

Video Event Playback

Location/Sensor Based Video Mapping
Recall Video for ANY IoT Event
Instant Event Video Playback and Export

Video Service

ID	Device	Type	Time	Camera
1085439	LoRa-Desk01	occupancy	07/02/2022, 17:05:57	F44-Office
1085438	RKSUK01-Office-PIR01	motion	07/02/2022, 17:05:56	F44-Office
1085436	PIR02	motion	07/02/2022, 17:05:50	F44-Lab
1085435	zwavepir01	motion	07/02/2022, 17:05:48	F44-Office
1085432	RKSUK01-Office-PIR01	motion	07/02/2022, 17:05:40	F44-Office
1085431	DOOR04	contact	07/02/2022, 17:05:39	F44-Office
1085430	zwavepir01	motion	07/02/2022, 17:05:17	F44-Office
1085429	PIR02	motion	07/02/2022, 17:05:17	F44-Lab
1085428	RKSUK01-BLE-Door01	contact	07/02/2022, 17:05:16	F44-Office
1085424	CICTHERMO01	motion	07/02/2022, 17:05:15	Hall_Cam
1085423	PIR02	motion	07/02/2022, 17:05:15	F44-Lab
1085421	CICTHERMO01	motion	07/02/2022, 17:05:01	Hall_Cam
1085419	PIRTEST02	motion	07/02/2022, 17:04:50	F44-Office
1085418	zwavepir01	motion	07/02/2022, 17:04:47	F44-Office
1085416	PIR02	motion	07/02/2022, 17:04:30	F44-Lab
1085415	PIR02	motion	07/02/2022, 17:04:28	F44-Lab
1085414	RKSUK01-Office-PIR01	motion	07/02/2022, 17:04:25	F44-Office
1085413	RKSUK01-BLE-Door01	contact	07/02/2022, 17:04:16	F44-Office
1085409	CICTHERMO01	motion	07/02/2022, 17:04:14	Hall_Cam
1085407	zwavepir01	motion	07/02/2022, 17:04:14	F44-Office

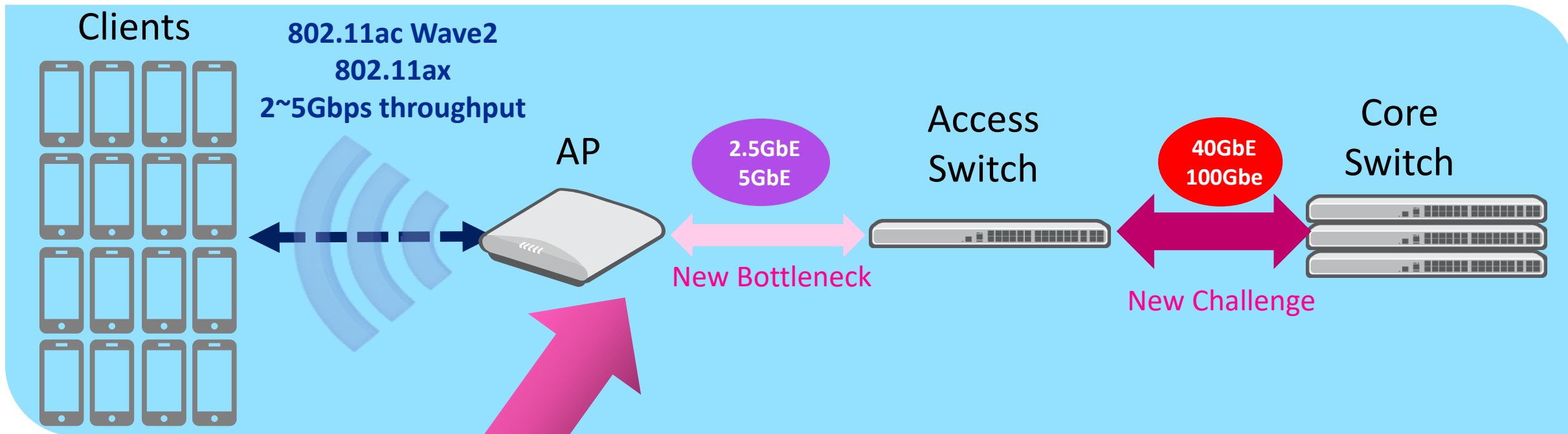
Location: RKSUK01 : Office
Event ID: 1085439 Event Time: 07/02/2022, 17:05:57
Camera: F44-Office Preview: 5 Seconds
Device: LoRa-Desk01 Type: occupancy
value: occupied
Comment: Office LoRa-Desk01 Event from Insights 2.0 Service

F44-Office

1X | 02:00 | 17:03:00 | 17:04:00 | 17:05:00 | 17:06:00 | 17:07:00 | 17:08:00 | 17:09:00

▶ Playback Video ■ End Playback Video

Wi-Fi 6 改變了Switch的要求



Clients

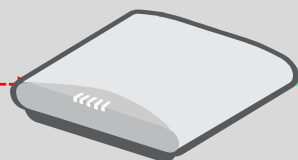


802.11n
< 1Gbps throughput



Old Bottleneck

AP



1GbE

Access
Switch



10GbE

Core
Switch



Infrastructure Life

Years

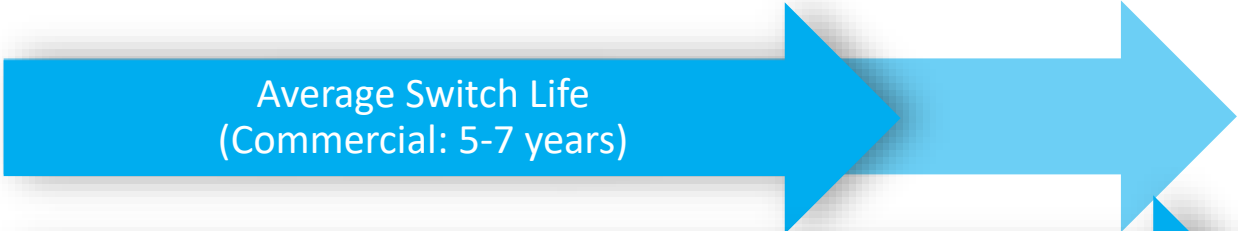


2 Points

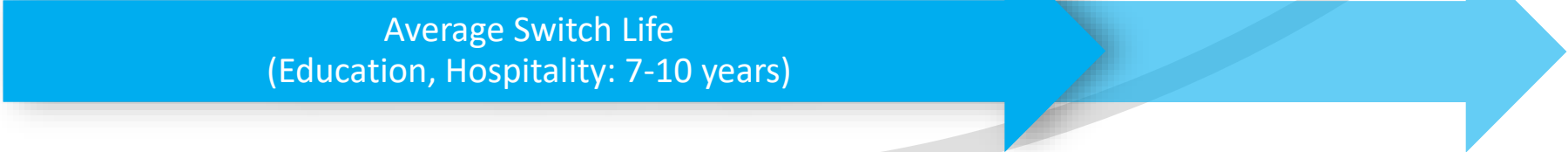


Port Interface

POE Power



ICX Switch



University Key Pain Points



即時 或 事後 處理師生連線問題

難以確保網路設備運行在最佳化

雲端趨勢，但是能幫電算中心解決什麼

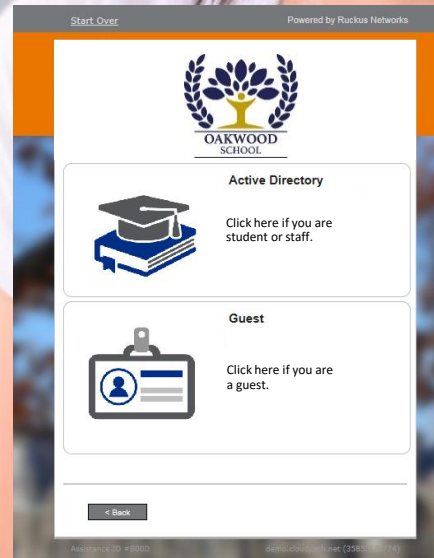
製作網路設備的KPI報告

輕鬆自助驗證安全身分

Internal and Guest Users



- Students
- Faculty
- Staff
- Contractors
- Visitors



Day 1
Self-service portal

Day 2+
Connect automatically

Ruckus Analytics透過AI/ML帶來新價值

網路拓樸 Network Topology

透過互動式網路拓樸描繪整體網路設備元素之間的物理連接

洞察交換器高記憶體用量分析

提早發掘交換器記憶體使用率異常和預測罹障時間

洞察 VLAN 配置問題

自動檢測所連接的網路元件是否遇到 VLAN 組態錯誤，例如 Vlan 設置或 編號錯誤

洞察 POE 供電不足的狀態

分析交換器或是交換器組是否沒有足夠的電源來為連接的設備供電

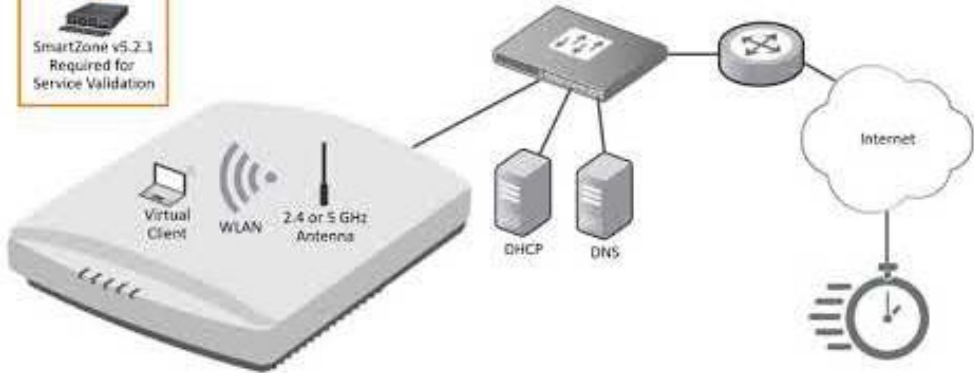


**RUCKUS NETWORK-WIDE
VISIBILITY & INTELLIGENCE |
SERVICE ASSURANCE**

RUCKUS Analytics – 4 Points



Service / Video Call Assurance



SARAVANAN-FT
APs Under Test: 7 APs | Test Result: 85.71% pass | WLAN: SARAVANAN-FT | Radio Band: 2.4 GHz | Authentication Method: WPA2-Enterprise

AP Name	AP MAC	802.11 Auth	Association	EAP	RADIUS	DHCP	DNS	Ping	Traceroute	Upload	Download
RuckusAP	80 D0 2C 1F 18 80	Pass	Pass	Pass	Pass	Fail	N/A	N/A	N/A	N/A	N/A
MUSA-R610-SwB01	84 79 08 04 08 75	Pass	Pass	Pass	Pass	Pass	Pass	96.6ms	⬅️	29.6 Mbps	22.2 Mbps
MUSA-R610-SwB02	38 38 FC 18 11 30	Pass	Pass	Pass	Pass	Pass	Pass	87.6ms	⬅️	34.8 Mbps	23.4 Mbps
MUSA-R720-SwB01	1C 3A 80 0C 09 2D	Pass	Pass	Pass	Pass	Pass	Pass	100ms	⬅️	30.4 Mbps	21.2 Mbps
MUSA-SwB02-R710	18 4B 03 1C 2										
RuckusAP	84 79 08 12										
SARAVANAN-AP-MUSA-T	38 FF 36 12										

Time	From	To	Direction	Duration	MOS
Nov 21, 2019, 3:45 PM	CA, United States (US) - (973) 826-9449	CA, United States (US) - (408) 479-9212 Ext. 1235	Inbound	00:01:07	4.5

[973] 826-9449 → Good Quality → [408] 479-9212 Grant MacLaren

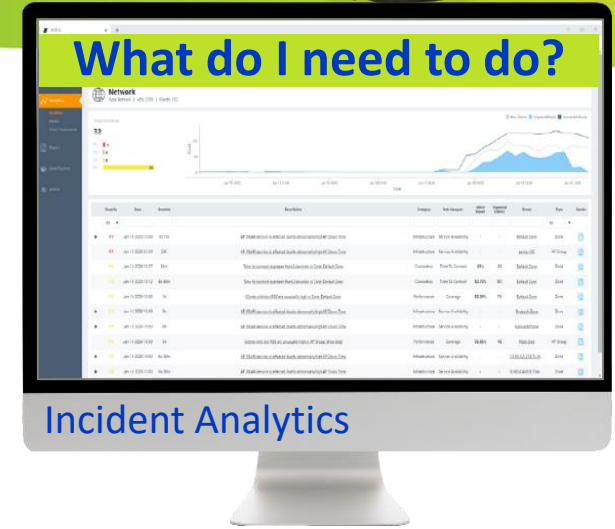
Coder	Bitrate (Kbps)	Sending	Receiving	Coder	Bitrate (Kbps)	Sending	Receiving
gsm	63.98	63.98	0	gsm	6.41	6.41	0
Packet Loss - Avg	0%	0%	--	Packet Loss - Avg	0%	0%	--
Packet Loss - Max	0.51%	0.51%	--	Packet Loss - Max	0%	0%	--
Jitter (ms)	0.24	0.24	--	Jitter (ms)	0.21	0.21	--
Network Delay	0	0	--	Network Delay	0	0	--
MOS	4.5	4.5	--	MOS	4.5	4.5	--

How am I doing?



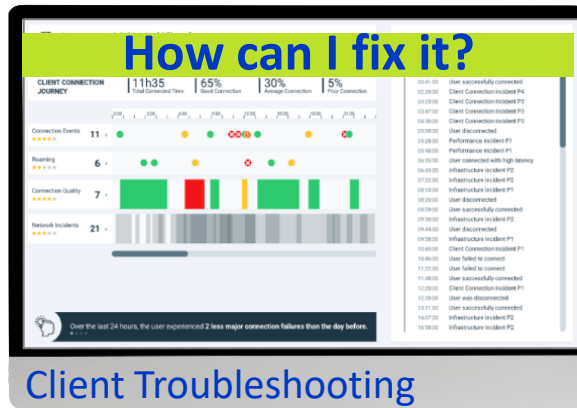
Health Monitoring

What do I need to do?



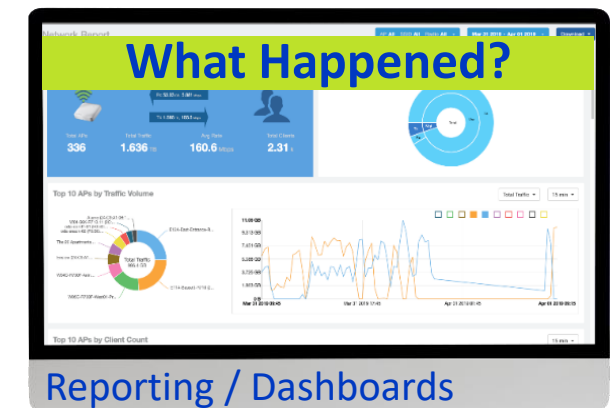
Incident Analytics

How can I fix it?



Client Troubleshooting

What Happened?



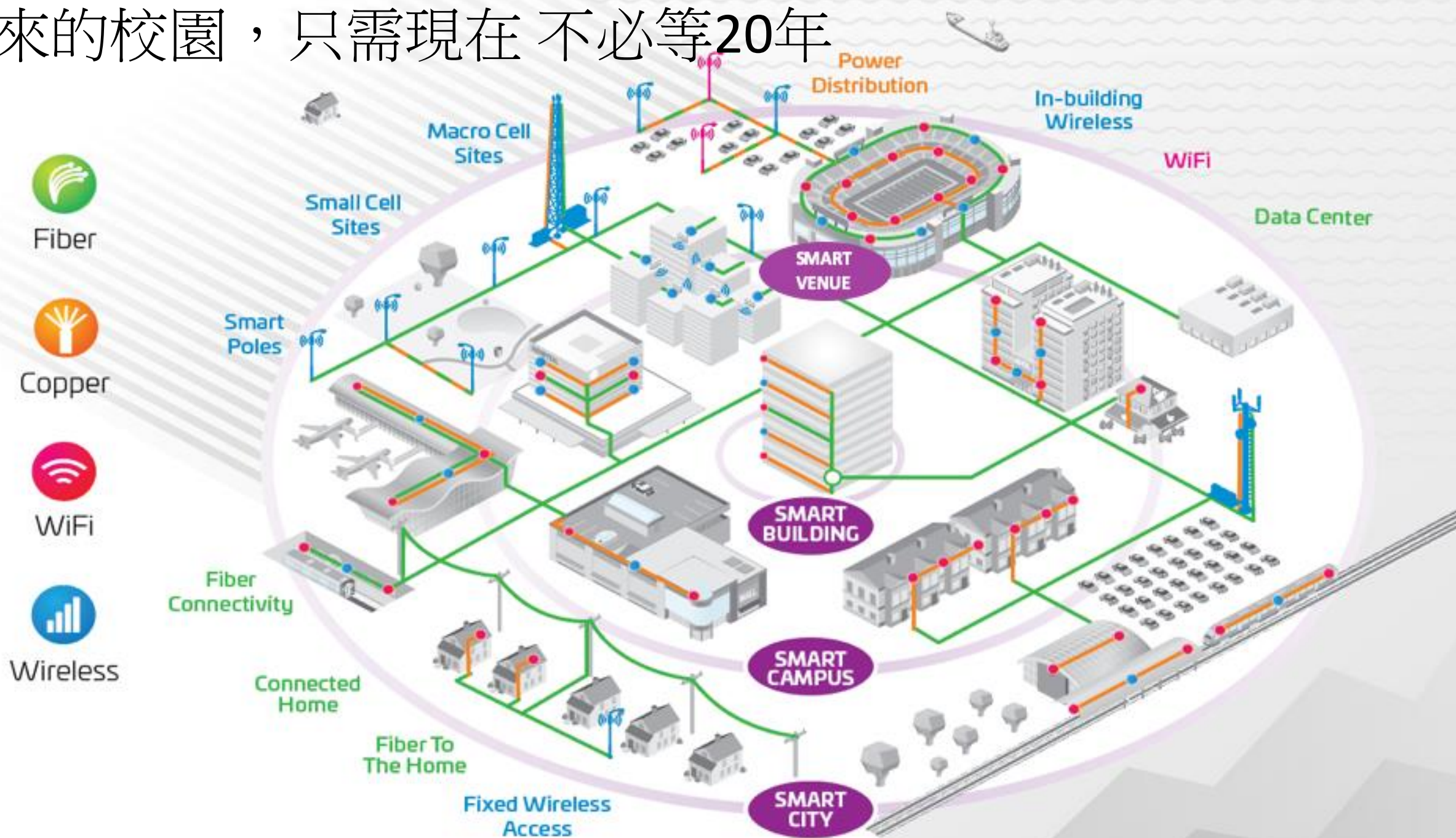
Reporting / Dashboards

COMMScope
RUCKUS®

RUCKUS Partner Conference

TAIWAN
COMMScope
RUCKUS®

未來的校園，只需現在 不必等20年



Thank you

