

WiFi-7世代即將來臨，RUCKUS將提供更快更安全的體驗

Ray Yu

Technical Consultant

# 一場疫情改變了世代學習

HOME



SCHOOL



COMMUNITY



SERVICES TO PLAN, DESIGN, IMPLEMENT, OPERATE NETWORKS IN ALL SEGMENTS

*Our Mission*  
突破技術限制  
創造未來藝術



# Digital Learning Transition

## Challenges

- 網路的需求大增
- 線上教學的品質及互動性
- 教學計劃及KPI
- 現代設備是否足夠

# 你準備好迎接未來了嗎?





58%

Of schools say that they are in Phase 3



### LAB

CURRENT 1%  
DESIRED 0%

#### ACCESS

- Lab-centric classrooms

#### USAGE

- Small files/PDFs

#### INFRASTRUCTURE

- Classroom switch
- 10/100Mbps edge
- 1Gbps backbone

PHASE 1



### TEACHER

CURRENT 26%  
DESIRED 2%

#### ACCESS

- Teacher-centric classrooms

#### USAGE

- Interactive E-Books
- Google Docs / Office 365

#### INFRASTRUCTURE

- Wi-Fi 5 (Cloud-managed)
- 1 Gbps edge with PoE
- 10 Gbps backbone

PHASE 2



### STUDENT

CURRENT 58%  
DESIRED 32%

#### ACCESS

- Student-centric classrooms
- Secure campus / remote access

#### USAGE

- Courseware and denser files
- VR, video and gaming

#### INFRASTRUCTURE

- 2.5 Gbps Wi-Fi 5
- 2.5 Gbps edge with 60W PoE
- 10/40 Gbps backbone

PHASE 3



### COMMUNITY

CURRENT 11%  
DESIRED 40%

#### ACCESS

- Community and industry (Smart Cities)
- Collaboration between schools and nations
- Outdoor Connectivity (School bus Wi-Fi)

#### USAGE

- Video conferencing and streaming
- Synchronous and Asynchronous learning
- E-Sports

#### INFRASTRUCTURE

- Wi-Fi 6 and CBRS (indoor & outdoor)
- 5 Gbps edge with 90W PoE+
- 40 Gbps backbone
- Cat 6A & Fiber

PHASE 4



### GLOBAL

CURRENT 4%  
DESIRED 13%

#### ACCESS

- Global / Internet of things

#### USAGE

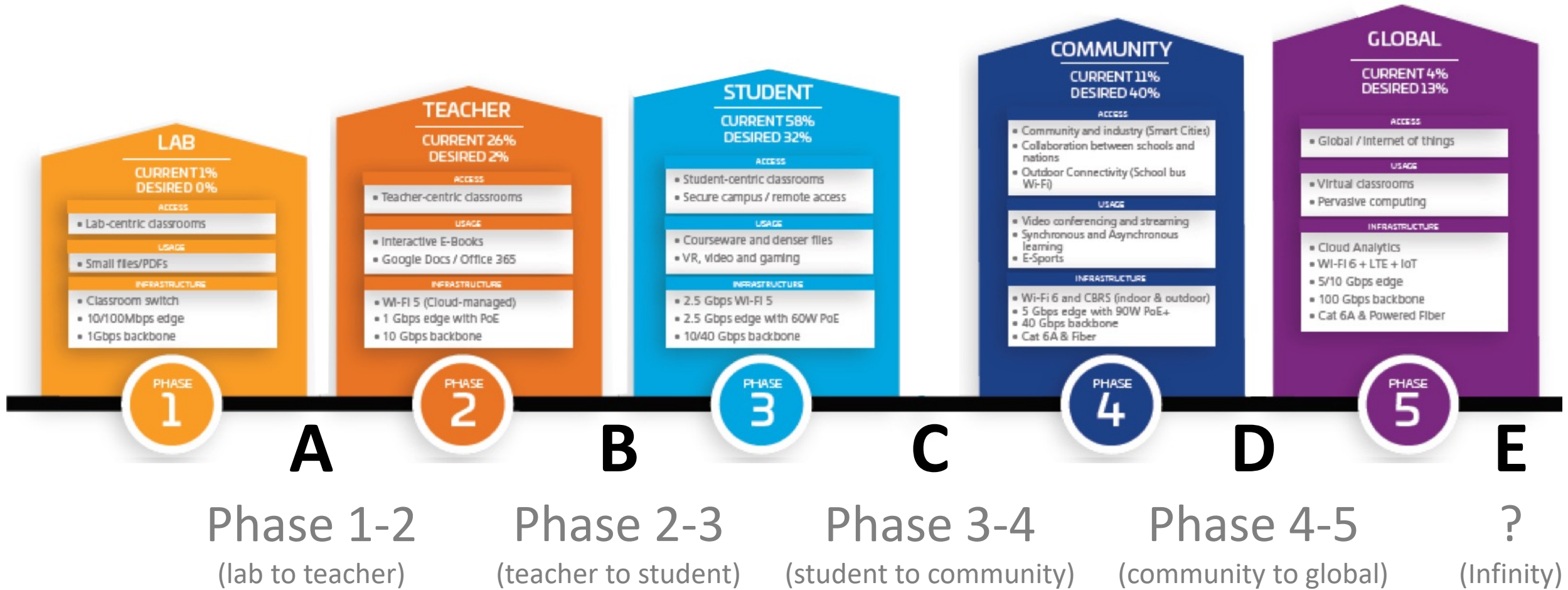
- Virtual classrooms
- Pervasive computing

#### INFRASTRUCTURE

- Cloud Analytics
- Wi-Fi 6 + LTE + IoT
- 5/10 Gbps edge
- 100 Gbps backbone
- Cat 6A & Powered Fiber

PHASE 5

# 5 Phases of Digital Learning Transition



# Where Are You In The Digital Learning Transition?

COMMSCOPE®



RUCKUS 的未來藝術

# Reliable School Networks Made Simple



Fiber & Copper Cabling



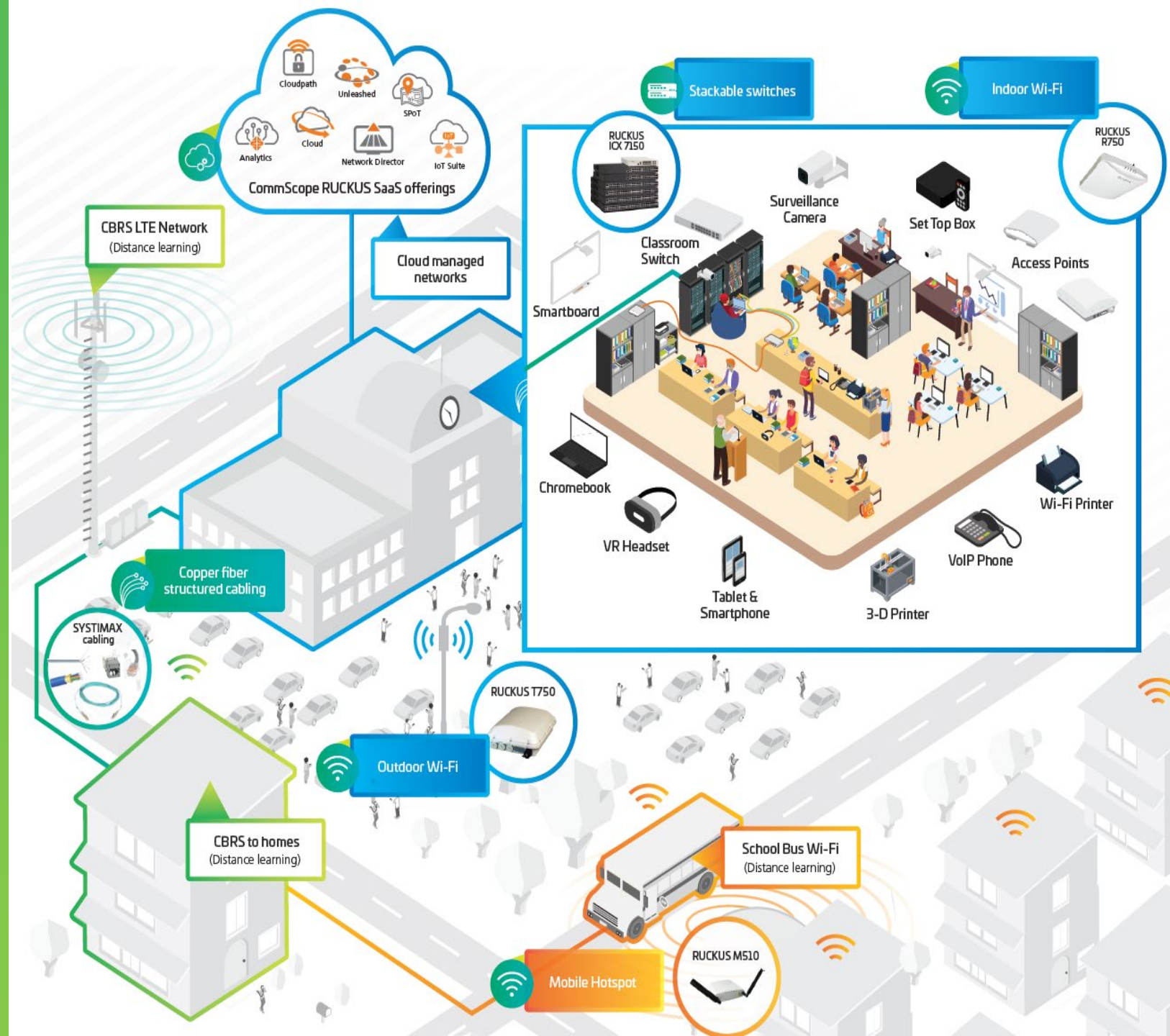
Wireless Technology



Switching Technology



All in One Managed





# 未來藝術 1：我們的天線 MIMO

## 傳統天線

1天線 = 1 x 1

8 x 8 = 8 x 天線

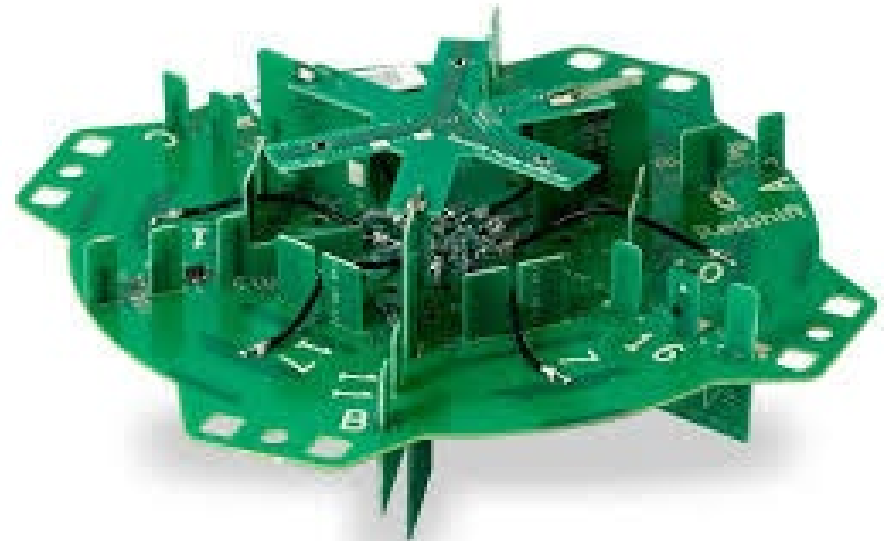
(訊號重疊?訊號增益?干擾迴避?)



## RUCKUS天線

2 x 2 AP = 12 x 天線 / 4 x 2 = 18 / 4 x 4 = 21

BeamFlex+ = 高覆蓋/高承載/高迴避

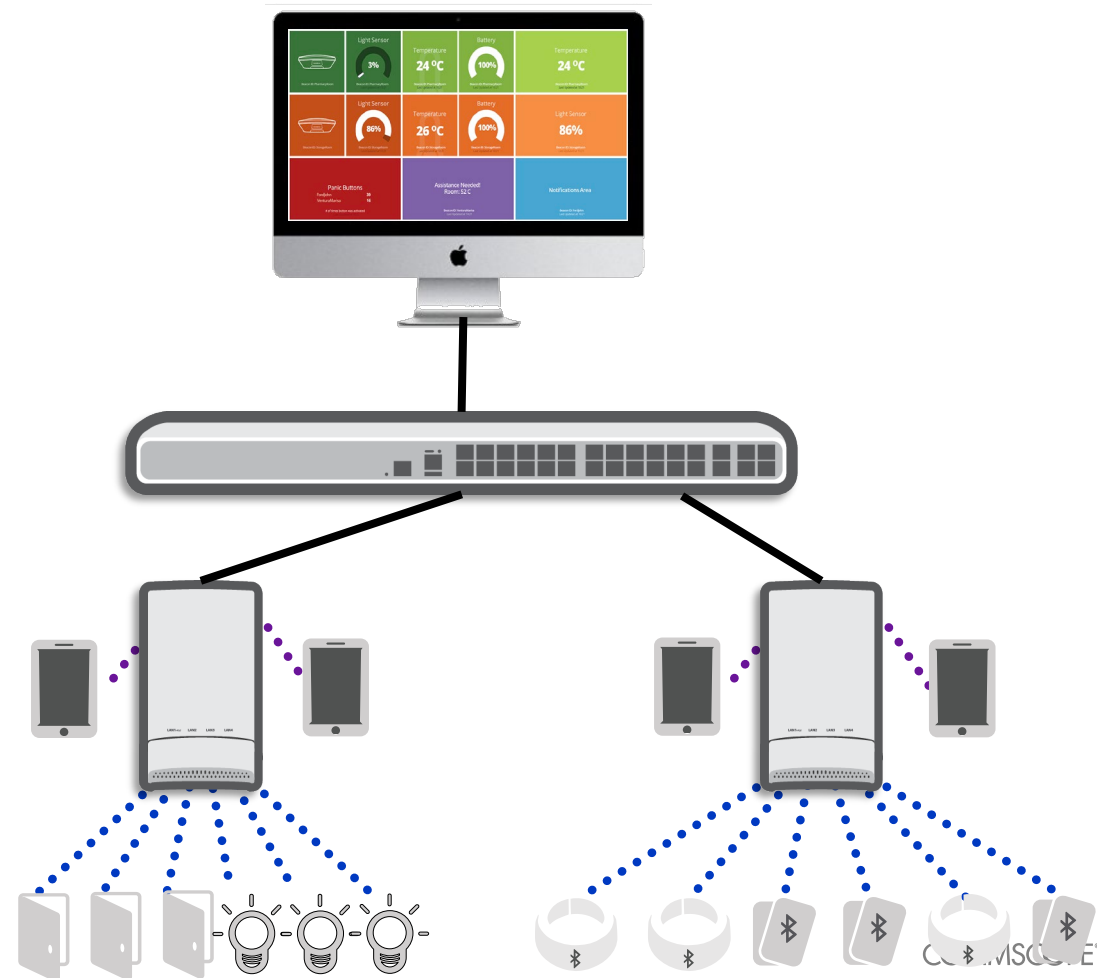
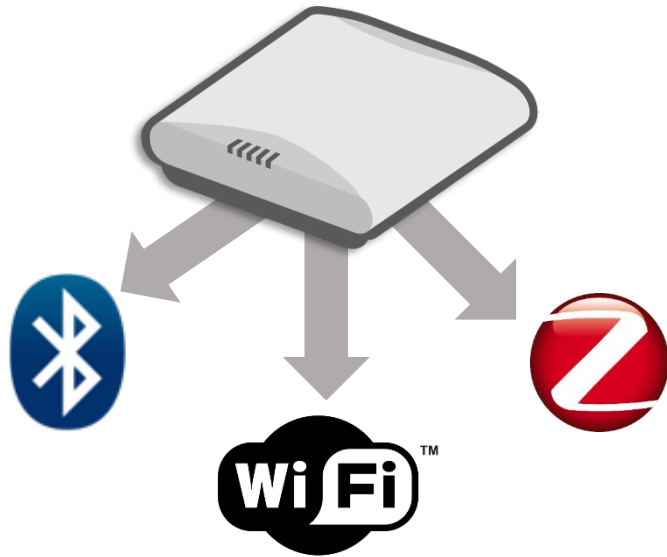


# 未來藝術 2 : IoT的領先

硬體端

管理端

內建 IoT Gateway



# IoT Solutions

COMMSCOPE RUCKUS IoT Insights

User administrator 17:06:05 Europe/London

OPERATION

- Dashboard
- Devices
- Event Log
- Floorplan

SERVICES

- Service Panel

ADMIN

- System Log
- Configuration

IoT Insights

version 2.0.0.100

Developed by RUCKUS IoT Solutions Engineering

### Video Service

Search...

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

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

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 Insights2.0 Service

# RUCKUS R760

Tri-Band Wi-Fi 6E Indoor Access Point with Multigigabit backhaul

## Highlights

- ✓ **Tri-Band** (2.4GHz/5GHz/6GHz), Concurrent access point
- ✓ **LPI** (Low Power Indoor) and **SP** (Standard Power)\*\* modes supported
- ✓ Multi-User MIMO support
- ✓ Orthogonal Frequency Division Multiple Access (OFDMA)
- ✓ BeamFlex+ adaptive antennas with Polarization Diversity (PD-MRC)
- ✓ Onboard support for IoT radio: BLE or ZigBee
- ✓ Up to 512 client associations per radio
- ✓ Multigigabit Ethernet Ports - 1x **10GbE** Base-T, 1x 1GbE Base-T
- ✓ 802.3bt class 5 PoE input, 48VDC input
- ✓ 1x USB Port
- ✓ Mounting support for hard wall & ceiling, desktop, lock security
- ✓ Control & Management: SmartZone, Ruckus Cloud\*

\* contingent on AFC ratification



Blue led when 6GHz

Green led when dual 5GHz

### 2 radio modes

2.4GHz + 5GHz + 6GHz

2.4GHz + 5GHz + 5GHz

# Now WIFI 6E/7 Status

1

NCC



2

Devices



3

Bands






# Preparing for WIFI 6E / 7

## ➤ NEW Site Survey

- Shortest range => 2 dB diff between 5GHz and 6GHz

## ➤ Check Switch support 2.5 Multigigabit and 802.3bt POE

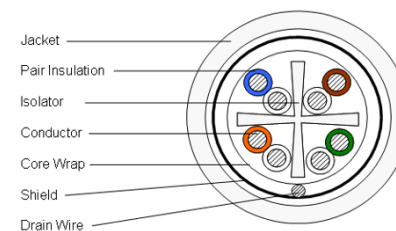
	<b>ICX 7650-48ZP</b> Premium Multigig 	<b>ICX 7150-C10ZP</b> Compact Multigig 	<b>ICX 7150-48ZP</b> Mid-Range Multigig 
2.5/5/10 GbE	✓ 24 ports	✓ 2 ports	
2.5 GbE		✓ 8 ports	✓ 16 ports
90W PoE	✓ 24 ports	✓ 4 ports	✓ 16 ports

## ➤ New Cabling

SYSTIMAX GigaSPEED X10D

Environment	SYSTIMAX Product Number
PVC	1291B
LSZH	3291B

Cat 6A F/UTP



SYSTIMAX 1291B F/UTP

# 未來藝術 3 : 新世代SPEC SW

## Advanced Functionality

- Uplink Port 25GE SFP28
- VXLAN

## Next Generation SPEC

- More MGig Port
- POE : 802.3bt , 90W

## High Value Features Included

- Stacking
- 3 Years TAC Support



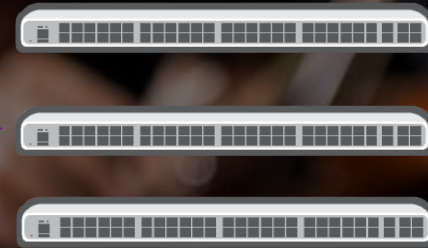
# 未來趨勢 : All in One Managed

Switching + Wi-Fi

SmartZone Network Controller



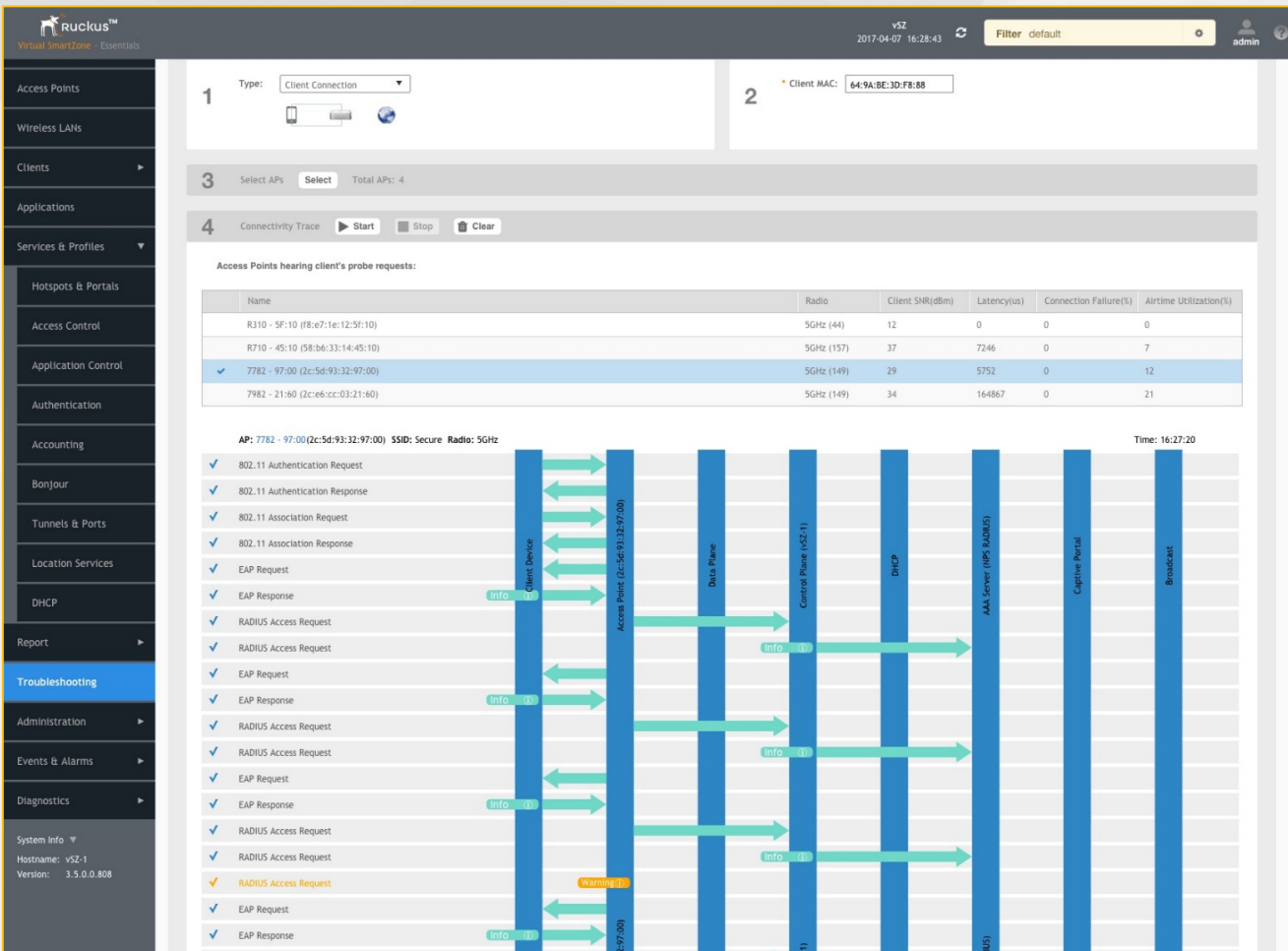
Access Points



Switches

*One network element: A SmartZone network controller*





## 1. IT ships pre-provisioned AP to employee

- SmartZone controller address
- Dual SSID
- Split tunnel configuration
- QoS settings for voice

## 2. Employee connects AP to home router and powers up

- AP connects to pre-provisioned SmartZone controller

## 3. IT approves AP and moves to appropriate Zone

- This can be automated using SmartZone REST API or by using Ruckus Network Director

## 4. Employee connects devices to the AP using appropriate SSID


- Corporate SSID for encrypted tunneled traffic. No VPN required on client.
- Home SSID for other devices

Visual Connection Diagnostics for remote troubleshooting

未來藝術 4 : 任何地方立即找到問題點

# 使用者自註冊


**Internal Users—BYOD Devices**



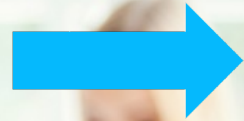
- Employees
- Contractors



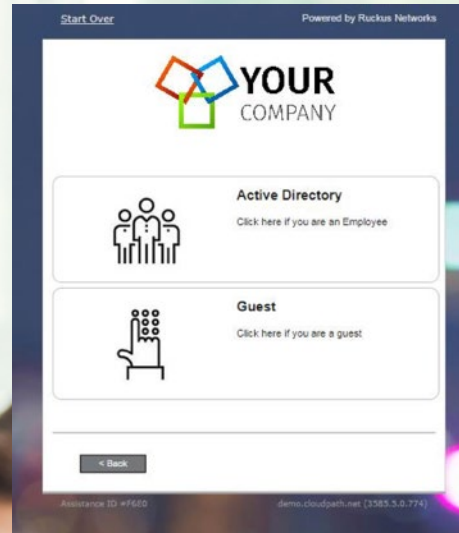
**Visitors—Guest Devices**



- Partners
- Customers
- Suppliers
- Any visitor

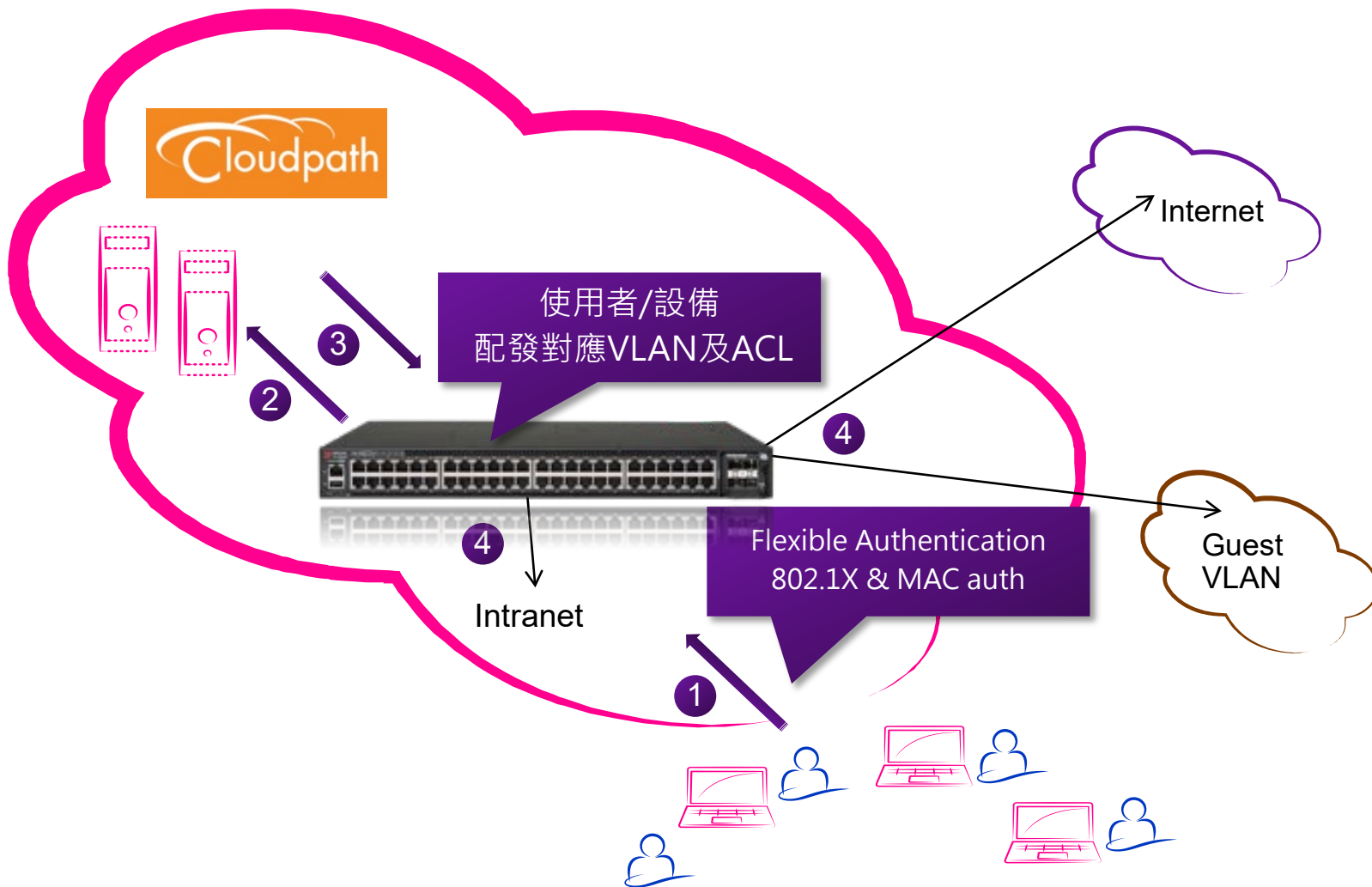


 **Day 1**  
**Self-service portal**



 **Day 2+**  
**Connect automatically**

# 集中認證，一致安全政策管理



支援功能:

- 802.1X 認證
- MAC 認證
- Web 網頁認證
- 提供多重認證機制 (802.1X, MAC auth)
- 隔離未通過認證設備
- CoA (Change of Authorization)

# 彈性佈建與Per-User授權

Cloud

On  
Premises  
(VM)

Subscription

Subscription

Perpetual

	Cloudpath Enrollment System	Cisco ISE	Aruba ClearPass
Secure network access for BYOD, guests, and IT-owned devices	✓	✓	✓
Vendor agnostic	✓	✓	✓
Choice of <b>on-premises</b> or <b>cloud-based</b> deployment	✓	—	—
Easiest to deploy and manage	✓	—	—
Superior cost-effectiveness—with all-in-one <b>user-based licensing</b>	✓	—	—

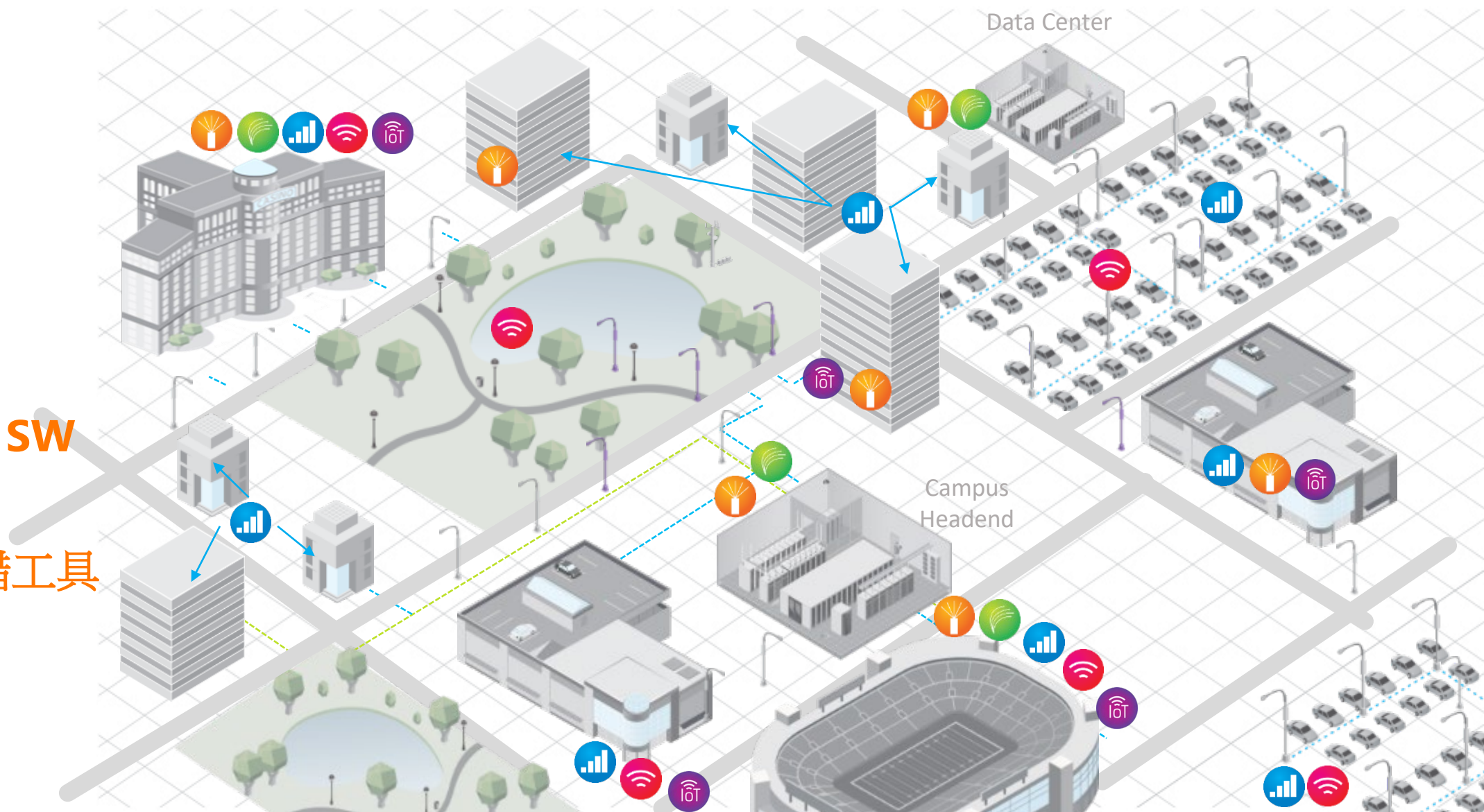
# 未來藝術，就在此刻

我的天線

IoT的領先

超前SPEC 的 SW

最快速的除錯工具



Thank You

