

The background features a vibrant, abstract design with a color gradient from dark blue on the left to bright yellow and white on the right. The design consists of overlapping, wavy horizontal bands and a radial pattern of lines emanating from a bright white point on the right side, creating a sense of motion and energy.

CISCO *Live!*

Let's go



The bridge to possible

Turn Buildings into Intelligent Spaces powered by the Cloud

Victoria Engh, Technical Solutions Architect
Leopold Fischer, Technical Solutions Architect



Backcountry skiing is like cloud networking...

Bridging the equipment and the smart
building



Mountain /
Building

Everything else/
IoT

Safety /
security

Skis/ Networking
HW

Agenda

Intelligent Spaces

Predictive Maintenance

Energy Management

Occupant comfort



Intelligent Spaces Smart Building

“As of 2023, less than 10% of commercial buildings are considered ‘smart’ ”

Thomas Kiessling, CTO of Siemens Smart Infrastructure (SI)

What is a smart building?

Let's ask ChatGPT?



How can I help you today?

Suggest some codenames
for a project introducing flexible work arrangements

Help me study
vocabulary for a college entrance exam

Come up with concepts
for a retro-style arcade game

Write a thank-you note
to my interviewer

Message ChatGPT...

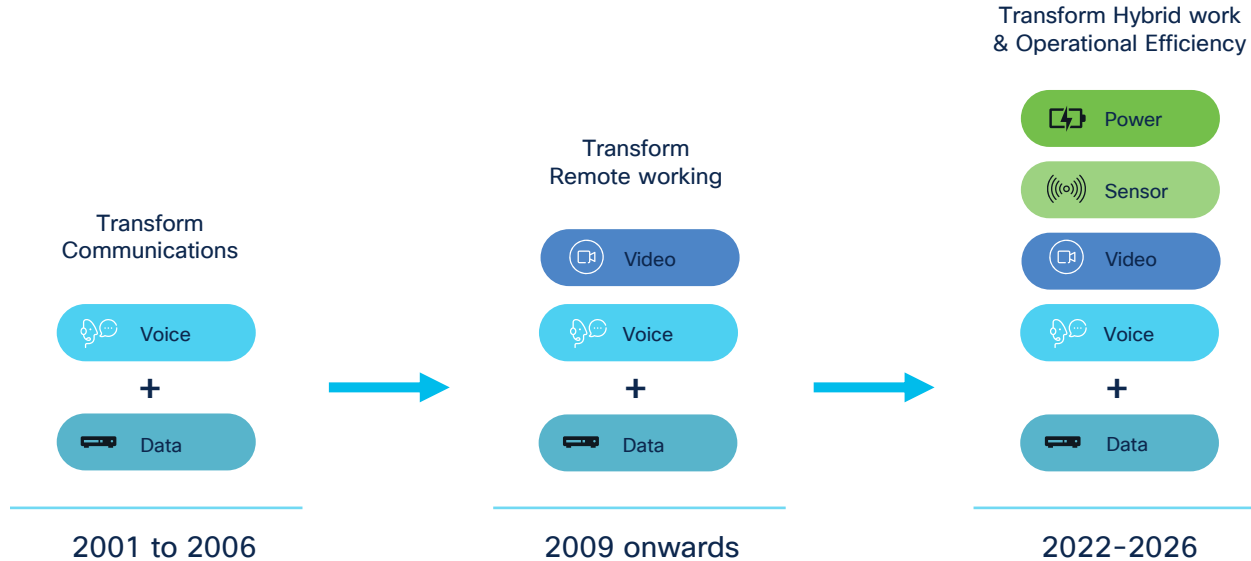


ChatGPT can make mistakes. Consider checking important information.

Why should we care?

Key Trends

Convergence – IT, OT & IoT



The network is the convergence point for Employee Experience, OT Integration and Sustainability enablement

Our customers are asking how do I...

Reduce Complexity

and modernize my security infrastructure

Automate

to save time

Keep people, data,
property and buildings

Safe and Secure

Use my **Data** to help
reduce costs and drive
greater efficiencies

Deliver **Better
Experiences**

to improve patient and staff outcomes

Build Resiliency

to adjust and deal with changes without
business interruption

Scale

a small IT
department

Connect

everything to
better collaborate across multiple sites

Cut IT support **time** to
get staff back to work
faster

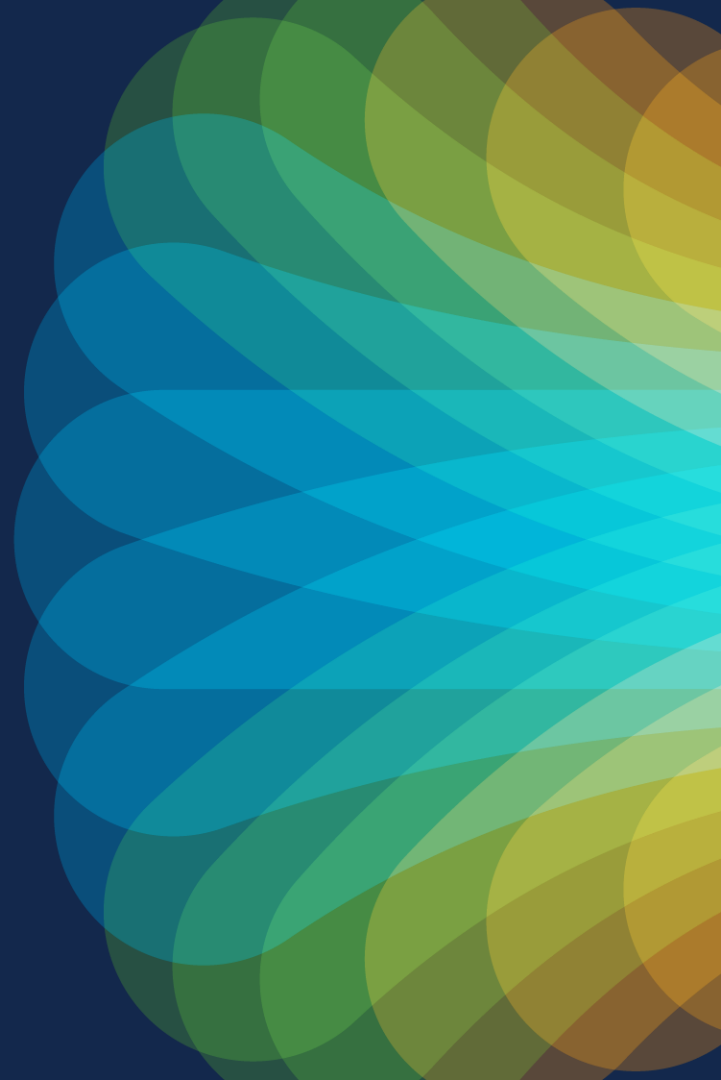
To do this, you need:

Complete **visibility** into the digital and physical world

The ability to **capture and analyze** energy and environmental data

Ways to **automate action** to remediate issues and improve operations

The cloud builds simple
and scalable **intelligent
spaces.**



Why should we care?

Key Trends

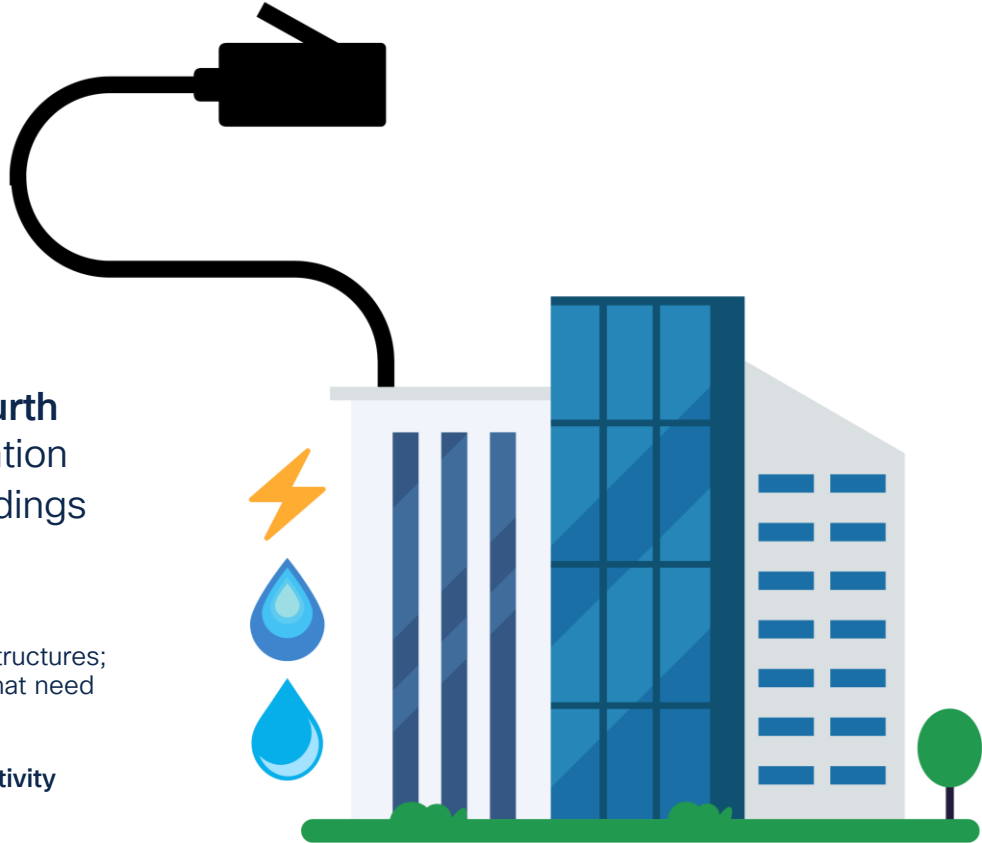
Smart Buildings

Technology is now the **fourth utility**, creating the foundation for smart, sustainable buildings



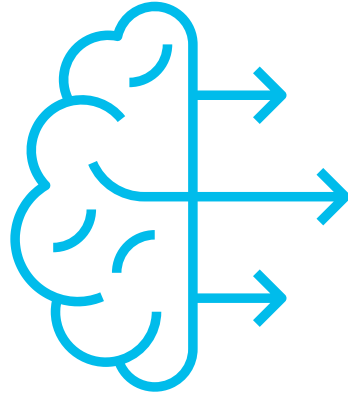
Buildings are no longer purpose-built structures; they are **programmable applications** that need to adapt on the fly

Programmability requires interconnectivity between discrete systems



Why do buildings care about data maturity?

Improved and increased data capabilities, insights and analytics.



Data Maturity helps generate sophisticated performance insights and enable dynamic decision-making.

Let's gather data to build
an **intelligent space**.

Cisco technology empowers the smart building



Cisco
access points



Cisco
Collaboration



Cisco switches



Cisco
sensors

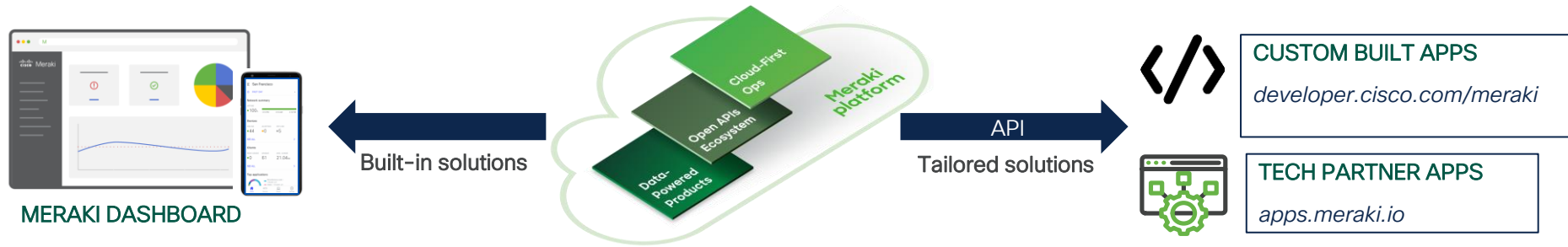


Cisco cameras



Wired and wireless
Third-party sensors

The Cloud Platform is our Foundation



Wireless



Switching



Mobile Device
Management



Security and
SD-WAN



Cellular
Gateways



Smart
Cameras



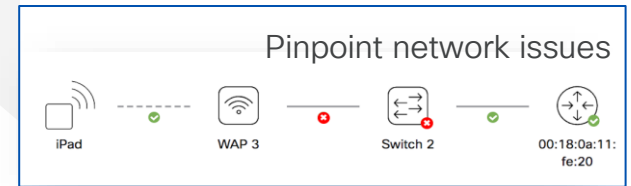
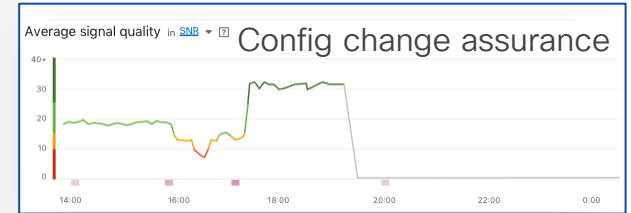
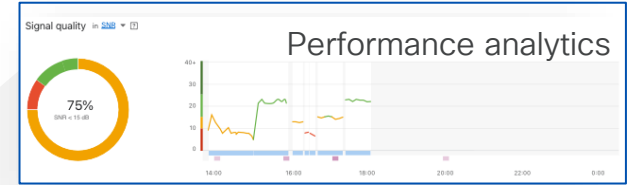
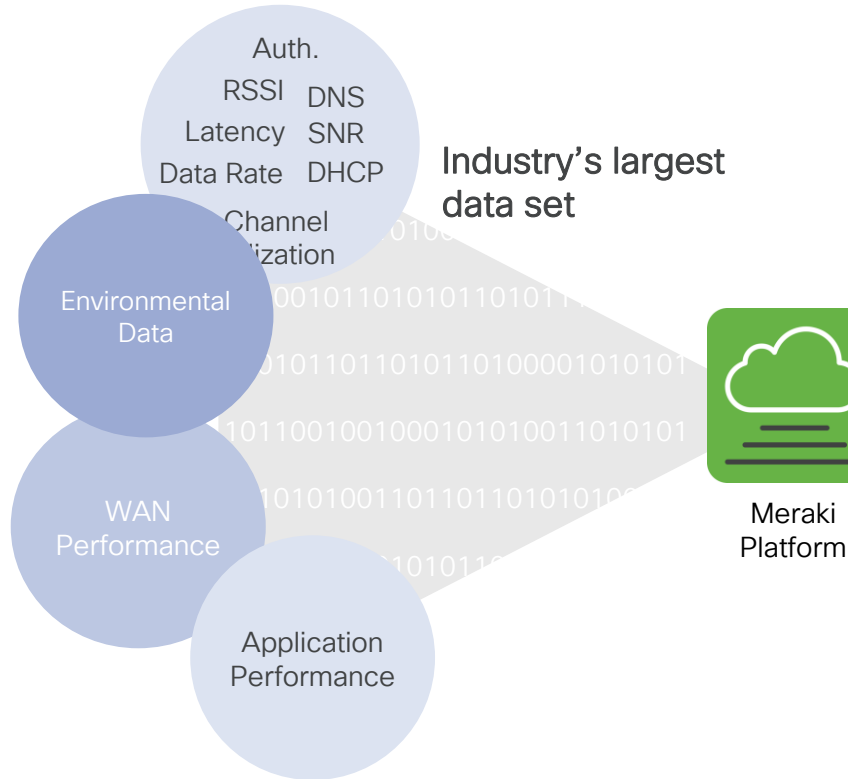
Sensors

ACCESS

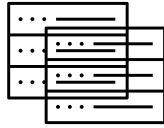
WAN

IOT

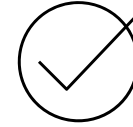
Using infrastructure insights for better outcomes



Built with Security in Mind : Meraki Platform



Highly Available Redundant
Architecture



99.99% Reliability SLA



ISO 27001 Certified Data
Centers (Non-US)



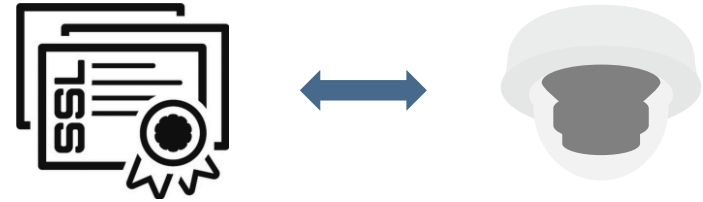
SSAE18 Type II Audited
Data Centers (US)

Meraki Trust

- Data centers, security processes, and certifications
- How we safeguard your data
- Best practices for securing your organization's network
- How Cisco Meraki networks continue to operate when disconnected from the cloud
- PCI compliance information, tools, and best practices
- Cisco Meraki's Service Level Agreement
- Our data privacy practices and subprocessors
- Privacy sensitive feature information

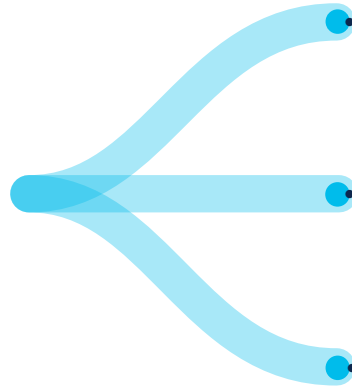


Built with Security in Mind : MV



Encryption by Default:

- ✓ Video at Rest
- ✓ Video During Transport
- ✓ Management Data



MV cameras are only accessible through Dashboard or Meraki Vision Portal, both via HTTPS

Cameras automatically obtain, provision and renew a publicly-signed SSL certificate

Certificate encrypts footage in transit from camera to the user

Built with Security in Mind : MV

THREAT TYPES

SOLUTIONS

Man-in-the Middle Attacks

- ✓ We rejected standard BLE encryption - does not meet our security standard
- ✓ Implemented our own encryption using Cisco Trusted Anchor Module (TAM) Elliptic-curve Diffie Hellman (ECDH) key exchange required with Dashboard to ensure secure, encrypted communication

Malicious Over-the-Air Firmware Attack

- ✓ Cisco Software Identity Management System (SWIMS) restricts on-board firmware to signed images

Malicious Hardware Firmware Attack

- ✓ JTAG ports removed from PCB during mass production

CISCO *Live!*





Demo

Occupant Comfort & Well-Being



A two-year study monitored CO2 levels in classrooms and student test scores

The results were clear: the higher the CO2 levels, the lower the scores on standardized tests

Forbes

Re-introducing the MT15



MT15 – Advanced indoor air quality sensor

Newest sensor in the lineup

- Measures 6 environmental metrics
- Adds carbon dioxide monitoring
- Customizable visual LED indicator
- Anti-tamper installation
- Helps detect vape fumes*
- Perfect for schools, colleges, and general workplaces

* MT15 requires connection to power

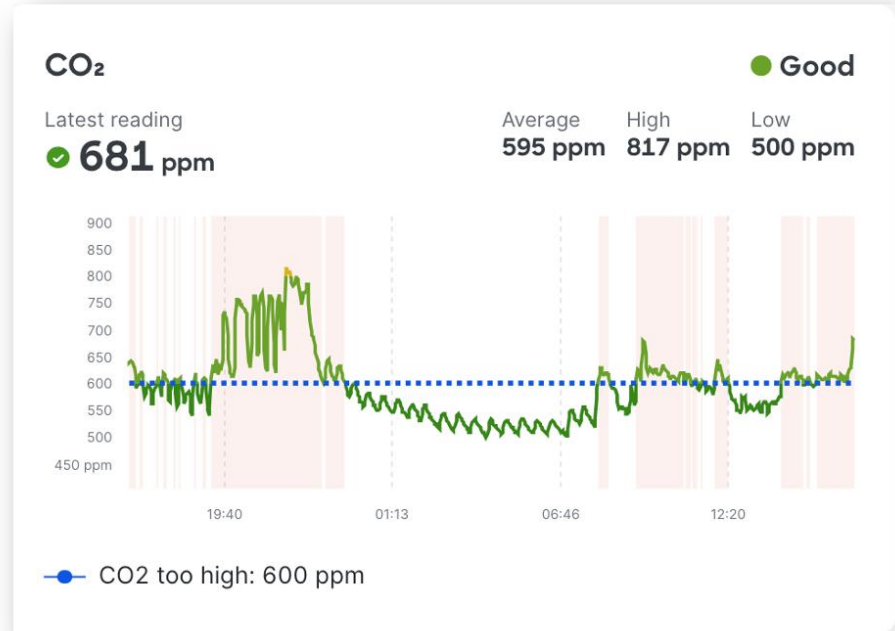
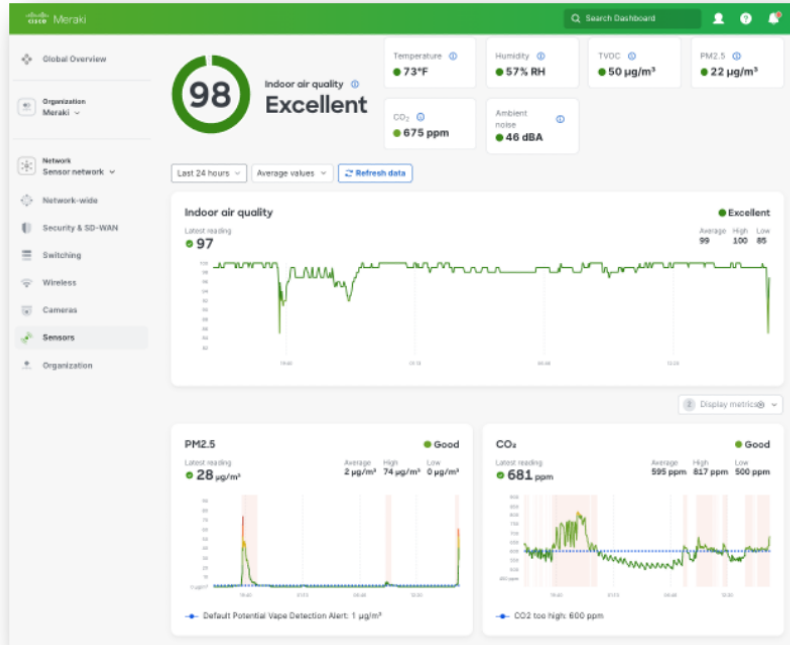


Case study: UK Schools

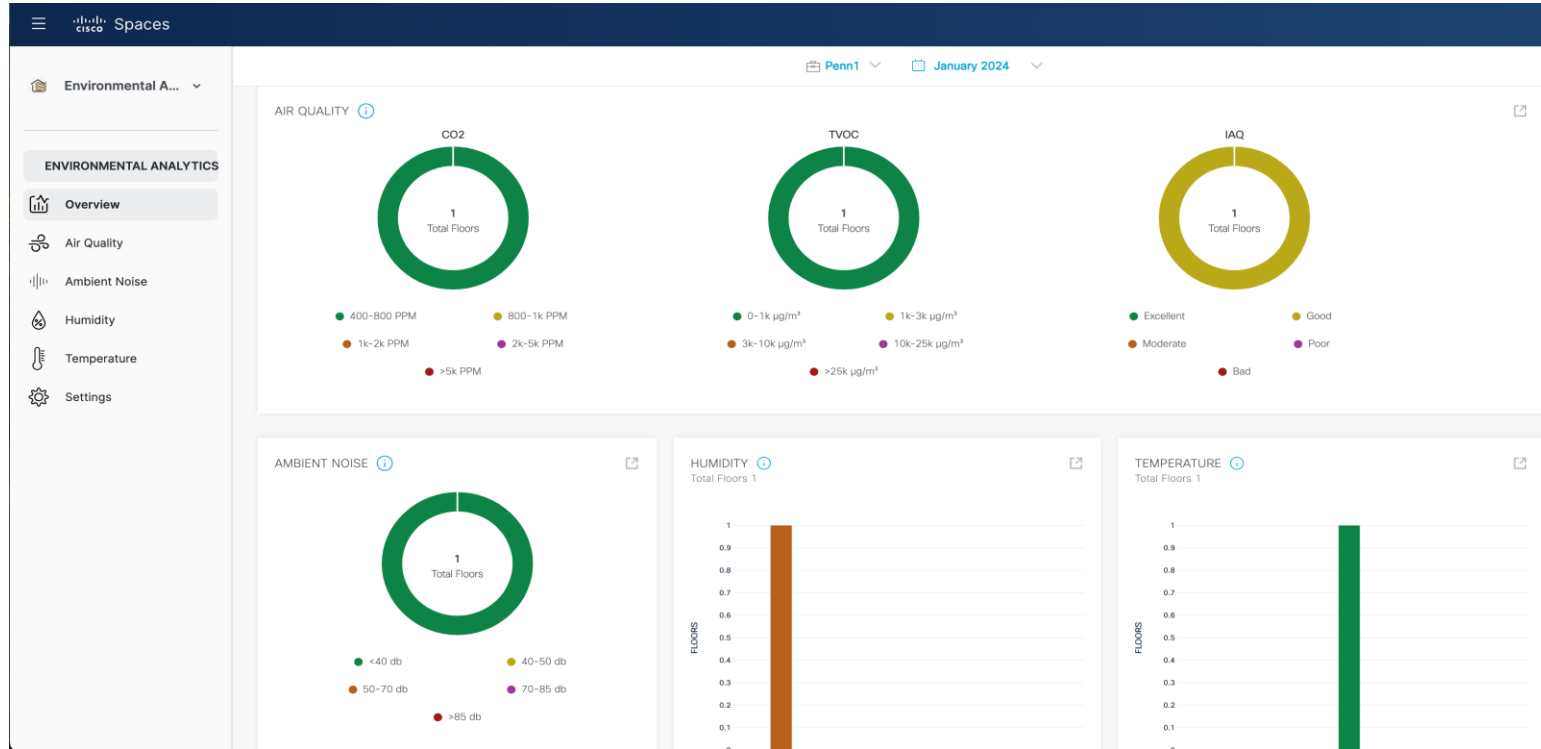
UK Government funding 20,000 schools

- Goal: Capture **indoor air quality** (including CO2), temperature, and noise levels to help improve the teaching environments
- Scope: Implemented MT sensors (MT14s and MT15s) across a selection of schools – 500 installed with 1,500 more within 6 months
- Initial Results:
 - Found cleaning companies were using too strong compounds
 - Changed curriculum timetables to protect students around noisy spaces
 - Vape detections were noticed in many surprising areas
 - Students helped teachers and staff to interrogate the data

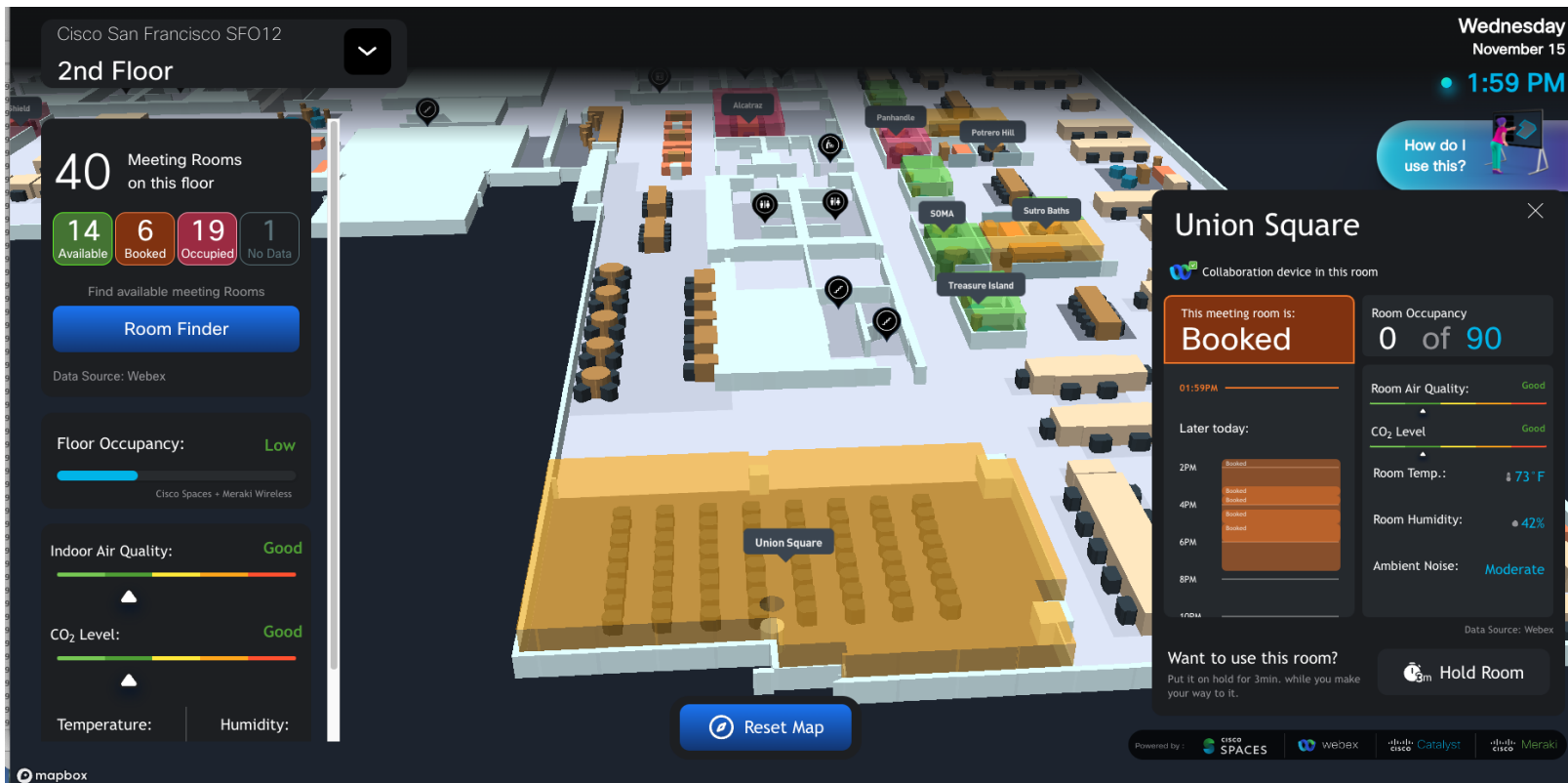
Air Quality directly reported in the Meraki Dashboard



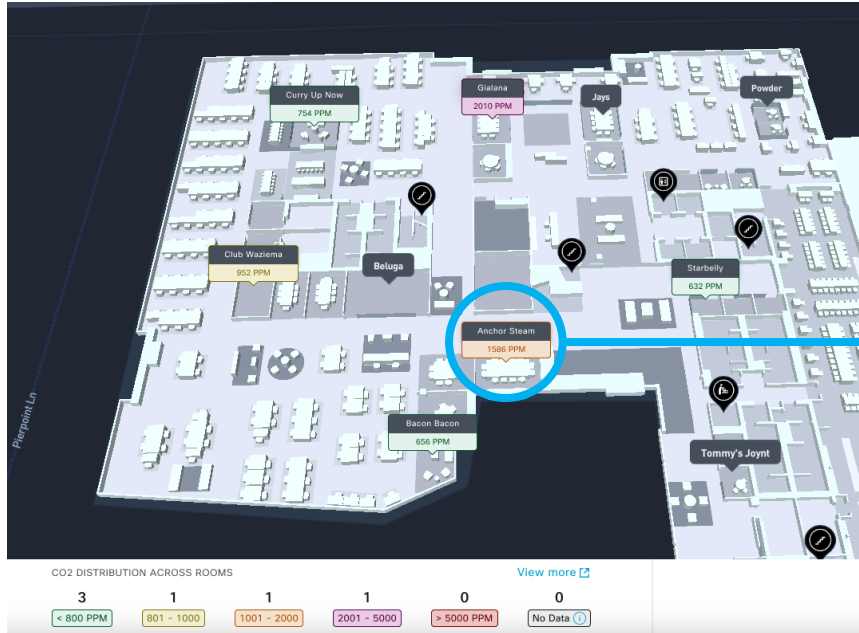
Or Within Cisco Spaces...



Visualize further with Cisco Spaces



Let's Integrate your building!



Anchor Steam

Workspace Type: Meeting Room
Location: 4th Floor
No. of Devices: 3 devices
Capacity: 12 People
Occupancy: Presence Not Detected
Room Status: Available

ENVIRONMENTAL METRICS

IAQ	TVoC	CO2	Temp.	Humidity	Noise
Moderate	1245 $\mu\text{g}/\text{m}^3$	1586 PPM	19°C	45%	28 dB

Case Study: Cisco Paris Office



Case Study: Cisco Paris Office



Meraki Cameras
Floor occupancy
(macro floor plate loading)



Cisco Wi-Fi Access Points

People count, people's physical location to track their journey through the office



Cisco Wi-Fi Access Points

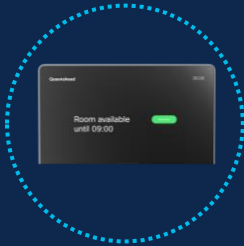
VOC (Volatile Organic Compounds, temperature, and humidity)



Meraki sensors
Temperature and humidity (MT10)



Cisco Room Devices
People count, Ambient Noise



Cisco Navigator
Temperature, Humidity, VOC (volatile organic compounds)



Cisco Spaces

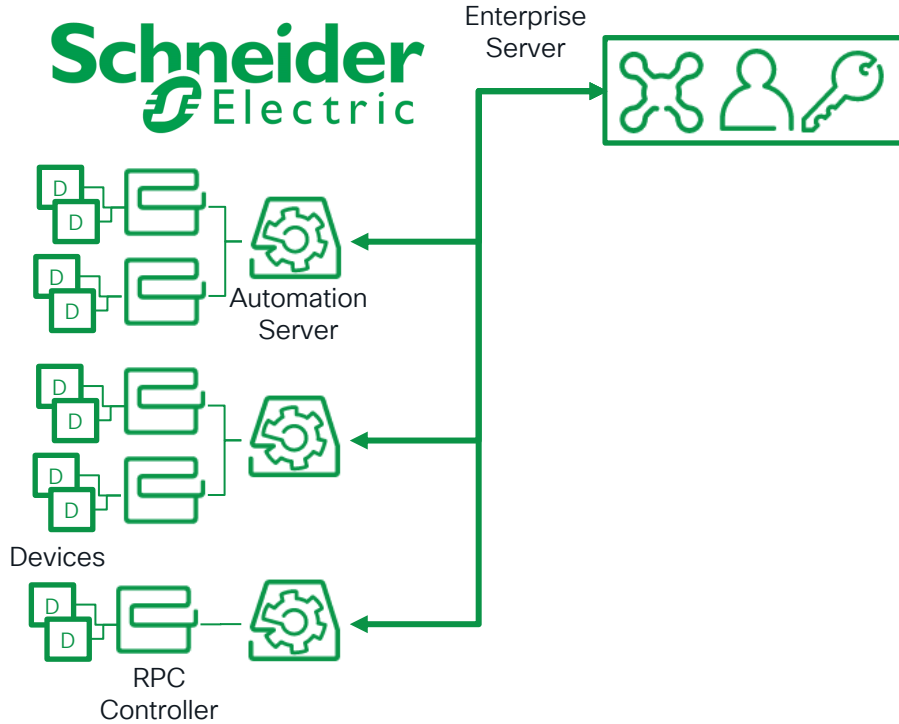
Smart buildings cloud platform that ingests & consolidates the "data exhaust" from these various sensors



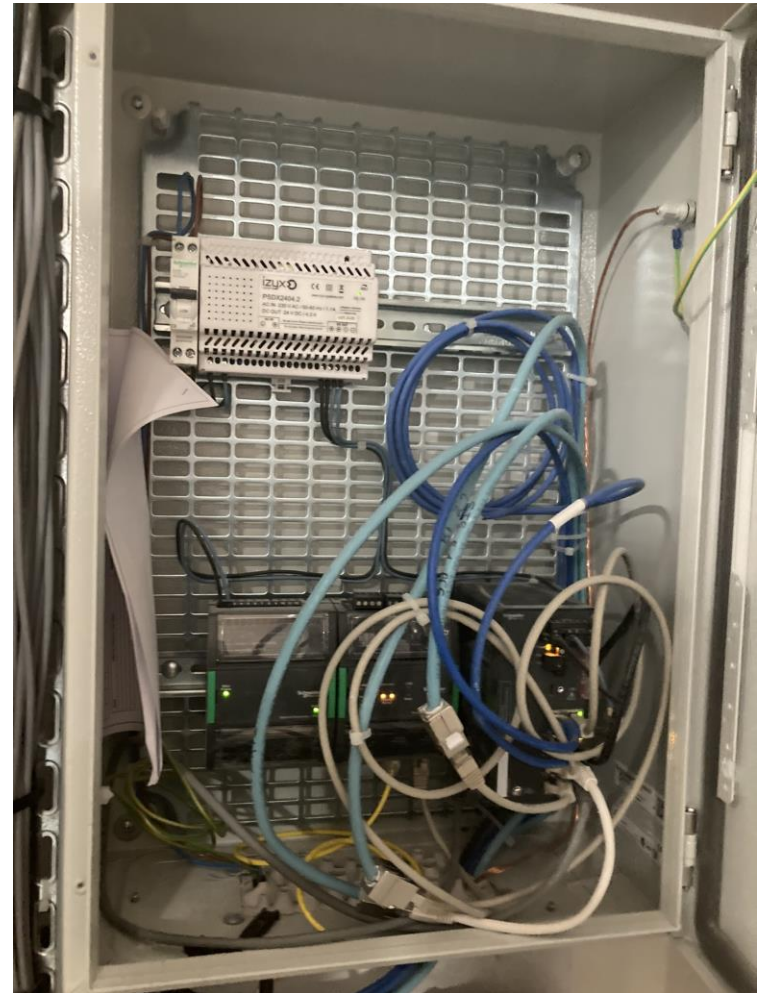
Building Management Integration

Schneider BMS system receiving data from Cisco Spaces to make smarter decisions.

Schneider



CISCO *Live!*



Building Management Integration

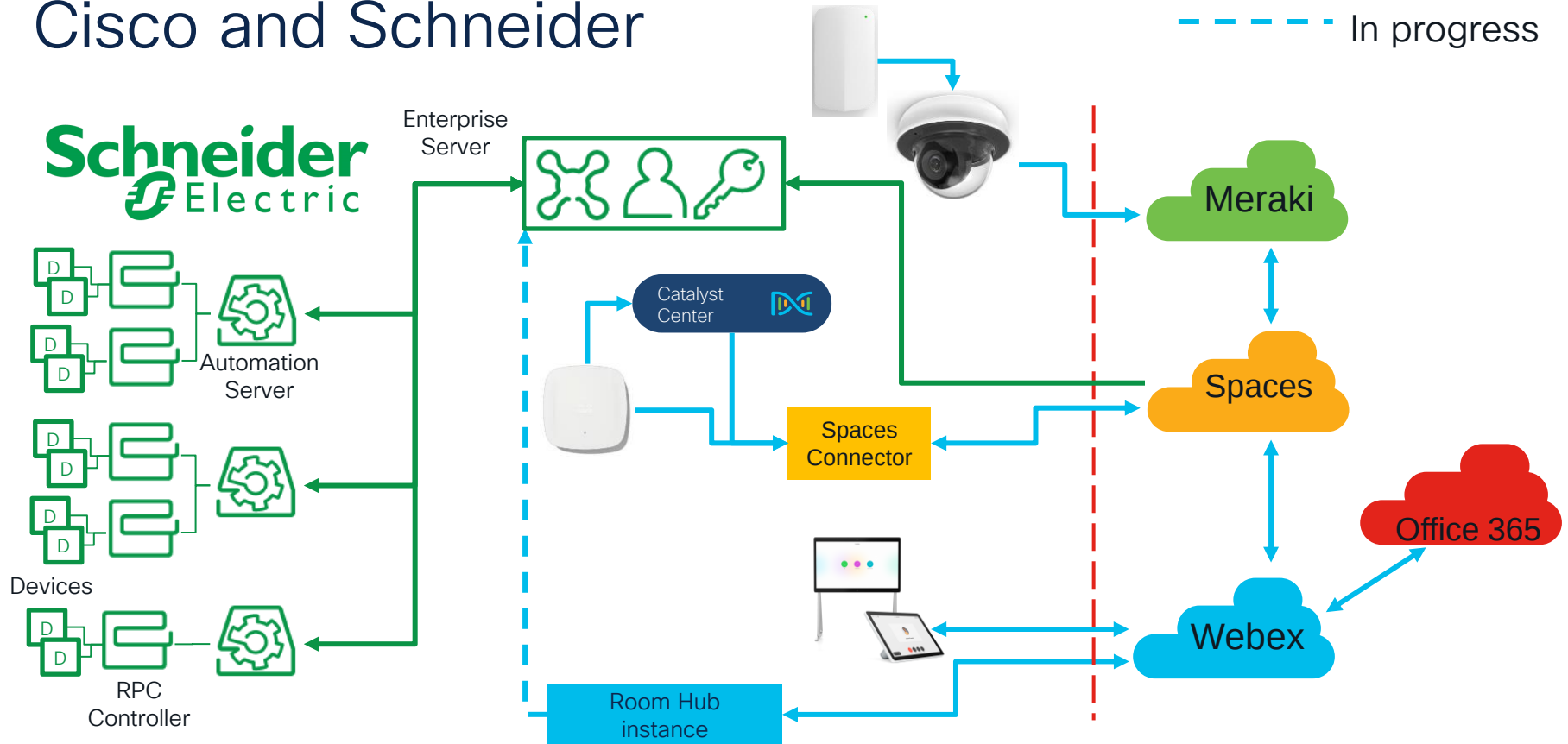


Reactive



Proactive

Cisco and Schneider



i You are running a demo license | Demo license will expire on: 01/04/2024

ULTEAM
20 RUE WASHINGTON - PARIS 8

0 52 4 13
Synthèse des Alarmes

CVC

Electricité

Complage

Confort

Plomberie

Ascenseurs

Divers

Météo

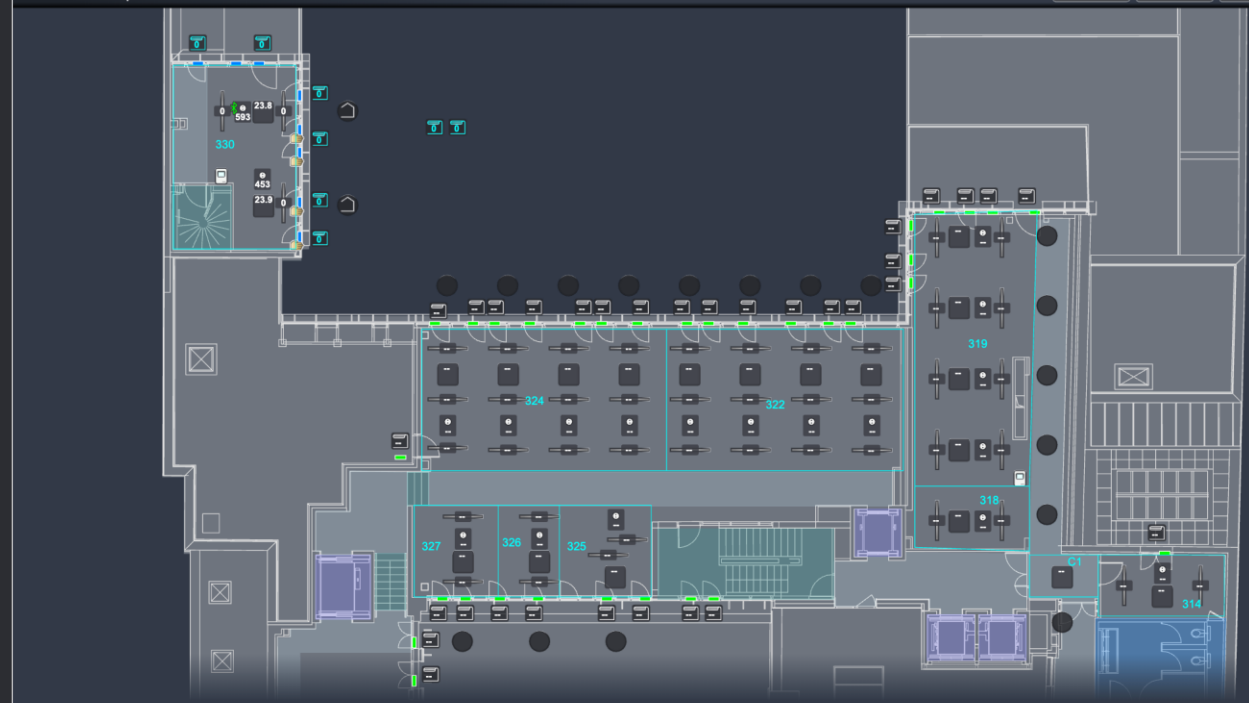
11.5 °C

Schneider Electric
04/02/2024 11:53:23



- Accueil
- Niveaux
- Réseau

Retour | Confort / R+3 / C1.1 | Exclude Zoning Zoning Popup



C1.1
C2.1

Alarm View Event View



Cisco Spaces config in Schneider



The screenshot shows a web-based configuration tool for Cisco Spaces. The interface includes a header with the Cisco logo and the text "Cisco Spaces". Below the header, there is a section titled "Cisco Spaces Configuration Tool". This section contains several input fields and a checkbox:

- Cisco Spaces Base Uri**: A text input field containing the value `https://partners.dnaspaces.io`.
- Cisco Client Api Key**: A text input field that is currently empty.
- Cisco Firehose Events Uri**: A text input field containing the value `api/partners/v1/firehose/events`.
- Commission Cisco Spaces**: A checkbox that is currently unchecked.
- Enable Test Mode**: A checkbox that is currently unchecked.

At the top right of the configuration area, there is a status message that says "Events will show here..".

We need a smarter way to build safe environments...

Smart spaces need contextual data

Cloud-managed physical security designed to give you more

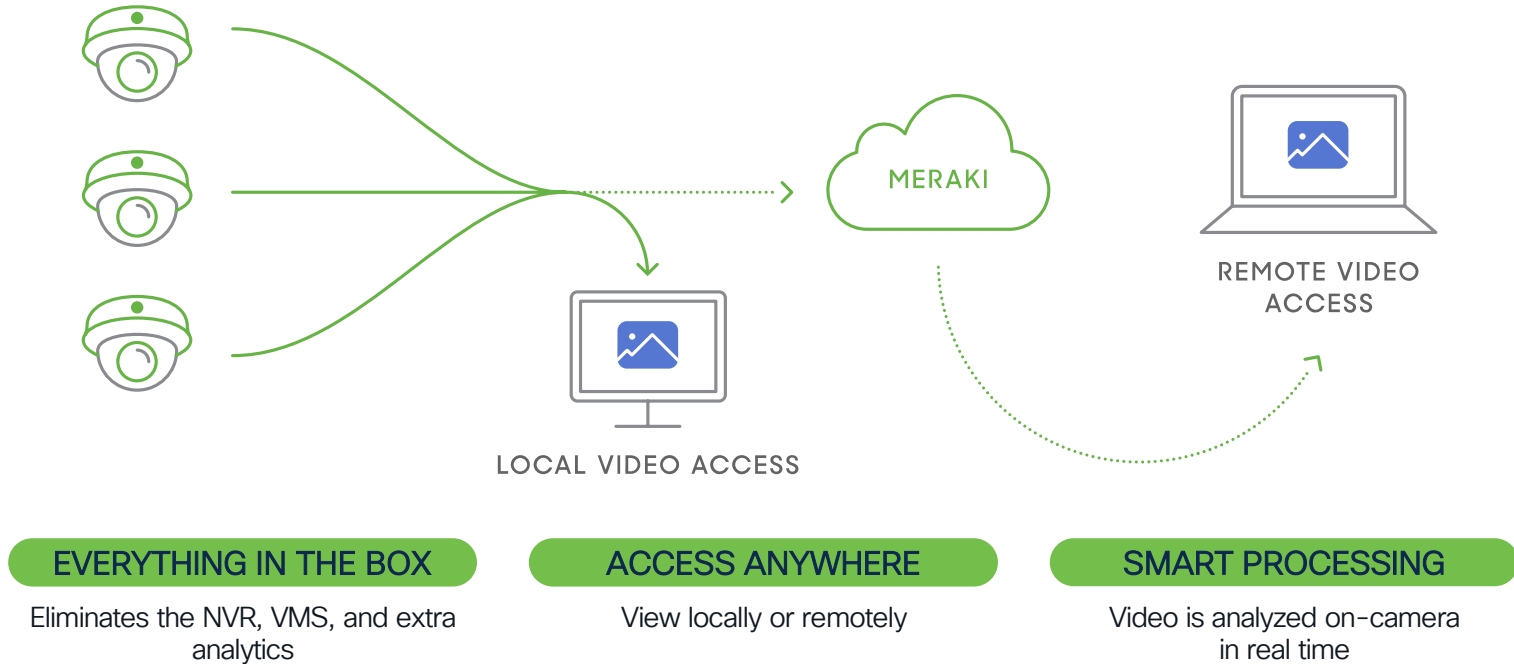
Scalable

Secure

Smart



Streamlined Architecture



Line Crossing



Analyze footfall patterns to increase conversion

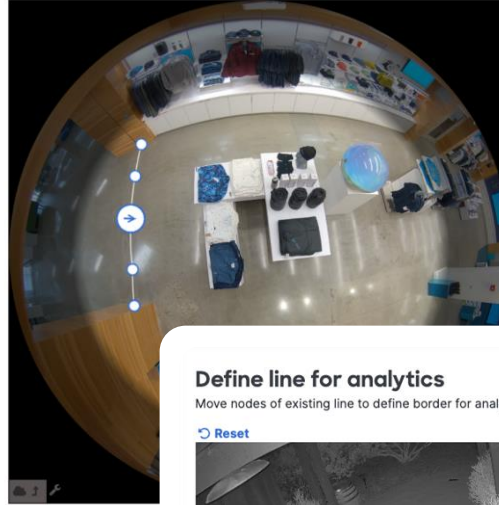


Monitor in-store busy hours to optimize staffing

Define line for analytics

Move nodes of existing line to define border for analytics detection. Define one side of the line as Enter or Exit.

[Reset](#)



Title:

SM Main Entry

Define line for analytics

Move nodes of existing line to define border for analytics detection. Define one side of the line as Enter or Exit.

[Reset](#)



Title:

TR Front Entrance

Detection

Choose objects for analytics data.

☐ People

☐ Vehicles

[Cancel](#)

[Save Changes](#)

Area Occupancy



Track queues to improve customer experience

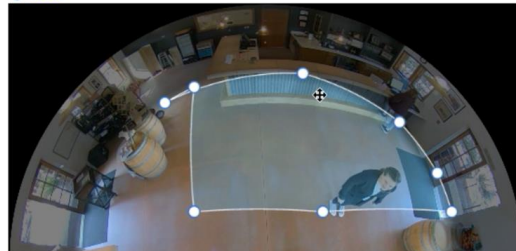


Measure area traffic to optimize engagement

Define area for analytics

Move nodes of the existing blue area to define area for analytics detection.

[Reset](#)



Title:

Tasting Room Service Counter

Sensitivity

How much of the object should be visible to be included in analytics?

50 60 70 80 90 100 75 %

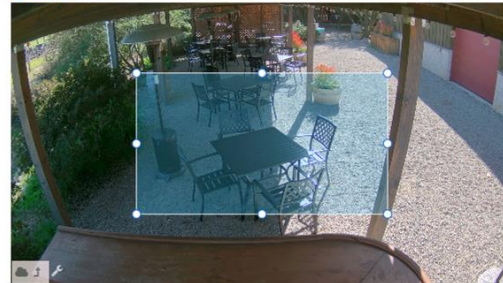
Duration

How long should the detection endure to be counted? (max. 180s)

Define area for analytics

Move nodes of the existing blue area to define area for analytics detection.

[Reset](#)



Title:

Back Patio Table 3

Detection

Choose objects for analytics data.

☐ People

☐ Vehicles

Sensitivity

How much of the object should be visible to be included in analytics?

50 60 70 80 90 100 75 %

Duration

How long should the detection endure to be counted? (max. 180s)

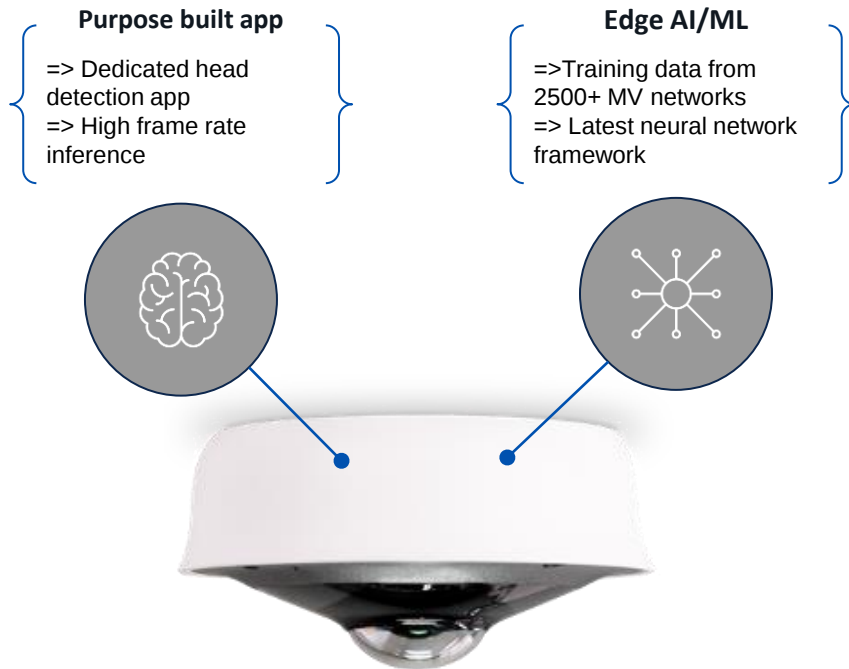
0 45 90 135 180 100 sec

[Cancel](#)

[Save Changes](#)

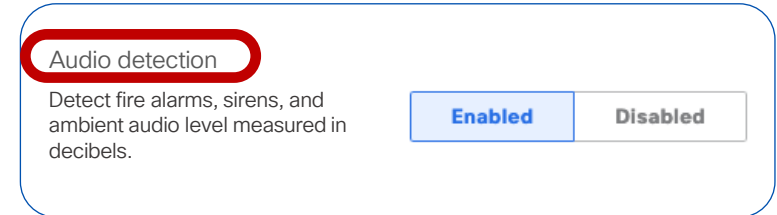
Advanced People Counting with MV93

High-accuracy business intelligence for retail and enterprise



See through the noise

Add insight with
object detection,
audio analytics, and
sensor data to
increase situation
awareness



EV Parking Space



Subjects (1) details

Show all

Charging Green

95%

3 boxes

Feb 7, 2024 7:33:13 AM

Media

Show empty fields

Media ID

KYTAMTXJNDYX36QSRRCOLOLOLPP

Created At

Feb 7, 2024 7:33:06:61 AM

Media Timestamp

Feb 7, 2024 7:33:04:60 AM

Filename

1707287584.6

Format

8 bit JPEG

Size

195 KB

Dimensions

2880px x 2880px

Domain Unit

d5d92427b15f52e8a2b6789f43690ffc

Uploaded by

devops-admin@coogniac.co

MDS Hash

d5d92427b15f52e8a2b6789f43690ffc

Set training Assignment

Enhance Contrast: ☐ off

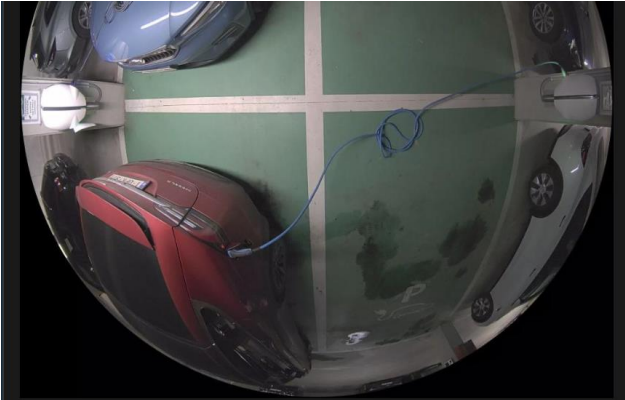
Clip Limit

20%

Tiles

1

Provide Feedback



Hi! Welcome to the Diegem EV Charging System (Bèta).

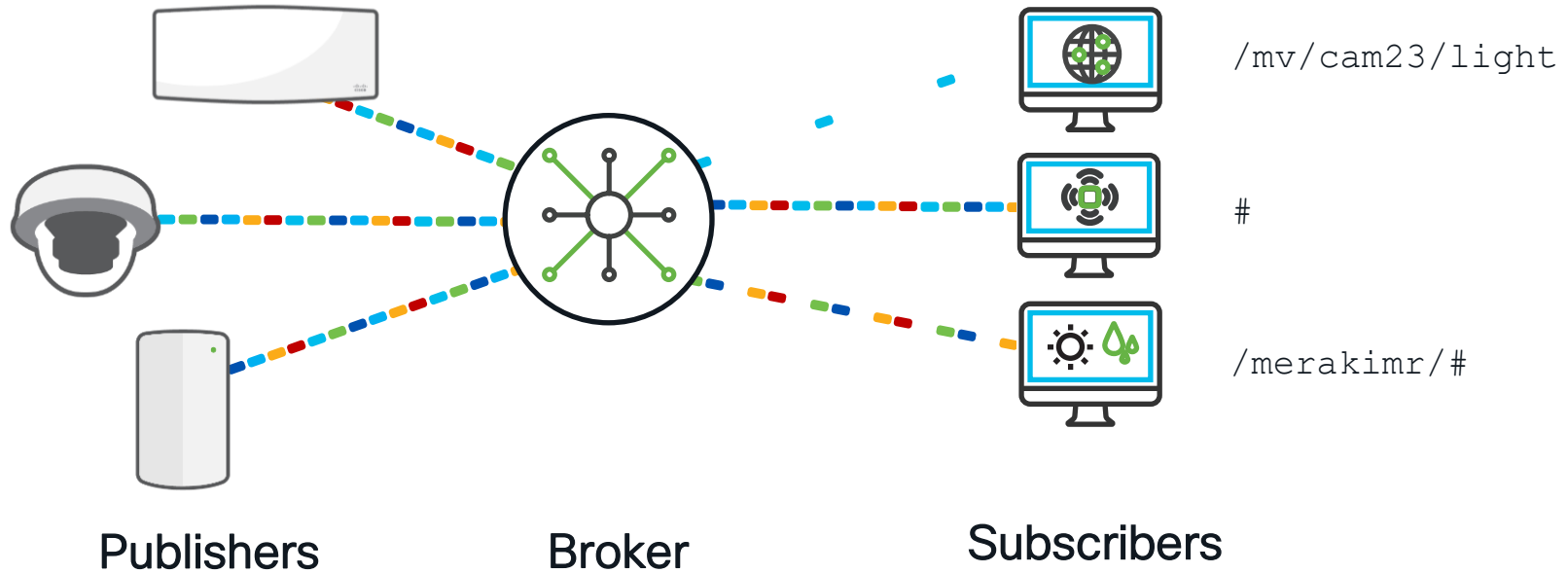
This system allows you to check for available parking spots, if the system is not processing too many request you should see a live picture of the parking above. Otherwise you will only get the machine learning analytics below. which are processed every 5 mnin.

Please find the current parking availabilities below:

- Parking Bay 1** Unavailable, since 07/02/24 11:43
- Parking Bay 2** Available, since 06/02/24 15:36
- Parking Bay 3** Unavailable, since 07/02/24 07:18
- Parking Bay 4** Available, since 07/02/24 10:48

Powered by Cisco Meraki

Network as a Sensor: MQTT



Network as a Sensor: MQTT



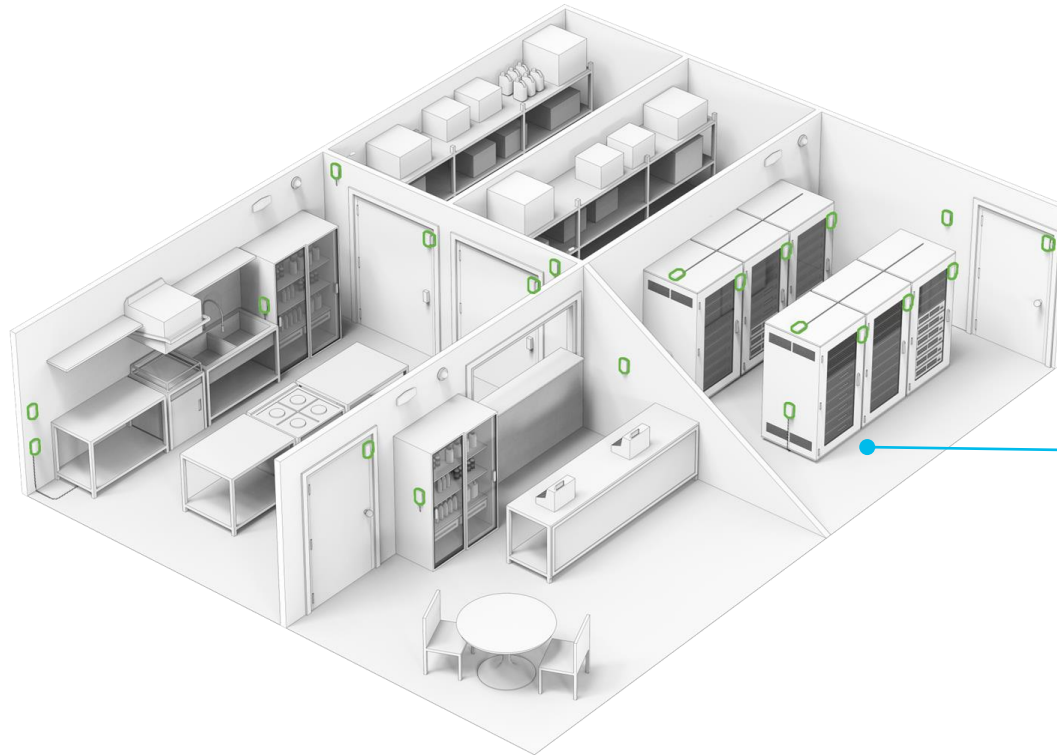
```
/merakimr {  
  "mrMac": "5C:AL:EA:B1:E0:00",  
  "clientType": "associated",  
  "clientMac": "BA:5E:BA:11:00:00",  
  "timestamp": "2021-10-19 20:06:35.696",  
  "networkId": "N_628252148018987654",  
  "rssi": "-51",  
  "radio": "wifi"  
}  
  
/merakimr {  
  "bleType": "unknown",  
  "mrMac": "0D:DB:A1:10:00:00",  
  "clientMac": "DE:AD:BE:EF:CA:FE",  
  "timestamp": "2021-10-19 20:06:36.244",  
  "networkId": "N_628252148018987654",  
  "rawPayload": "1bfff750042040180666407f652410000",  
  "rssi": "-90",  
  "radio": "ble"  
}
```



Demo

Predictive Maintenance

Insights into your physical environment.



Network closet/server room

- Improve HVAC efficiency
- Reduce carbon footprint
- Prevent network downtime

Case study: WPP

The leading creative transformation company with 109,000 global employees

- WPP's goal: Create a sustainable future
 - Implemented MT sensors in their global data centers
 - Reduced HVAC costs and their carbon footprint
 - One integrated network and IoT vendor experience

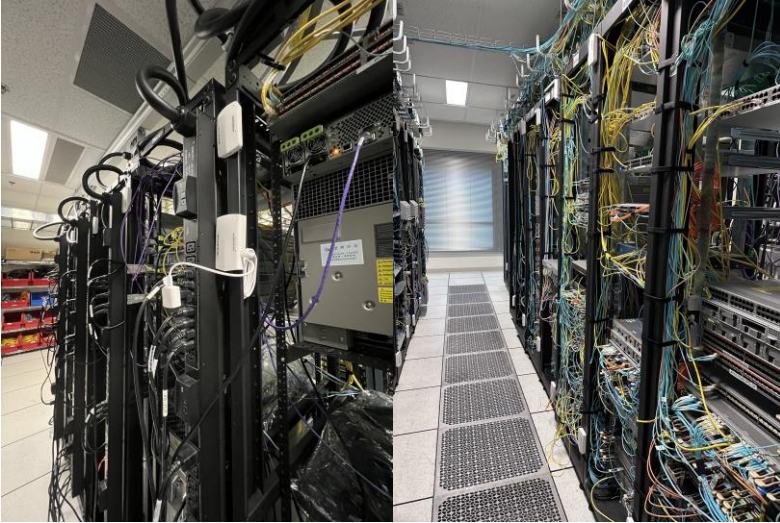


“We expect to see annual energy and CO2 savings between 15% and 50% per year (per campus).”

Chris Hyder

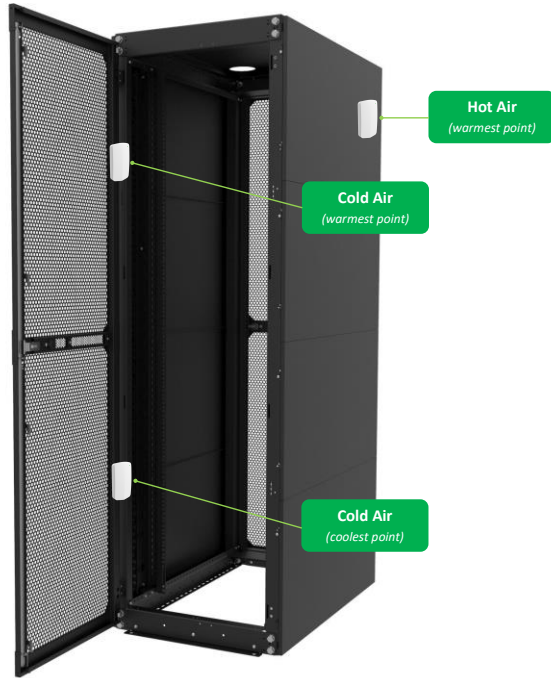
Enterprise Architect, WPP

Case Study: Data Center



- A Cisco lab looking for a granular view of the temperature, air quality and noise levels of their labs to identify and remediate issues quickly.
- A deployment of ~1000 MT sensors (and growing!) across 316 racks
- By deploying MT sensors, it allowed the lab to optimize their HVAC system.
- The clear outcome for the lab team so far is the immediate understanding of where they can reduce their power consumption

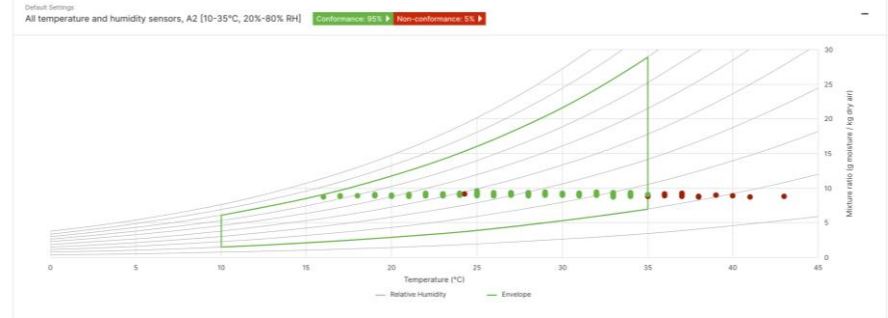
MT RTP Deployment



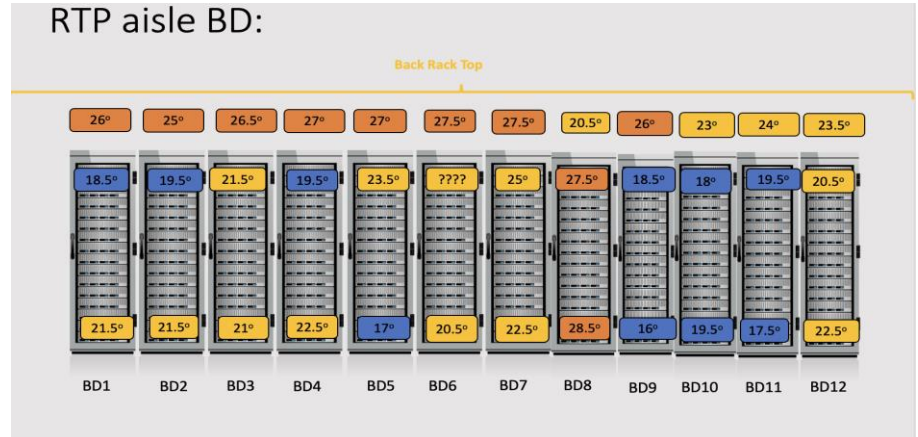
Sensors

Overview Sensors **Energy savings** Alert profiles Reports MQTT brokers Automations

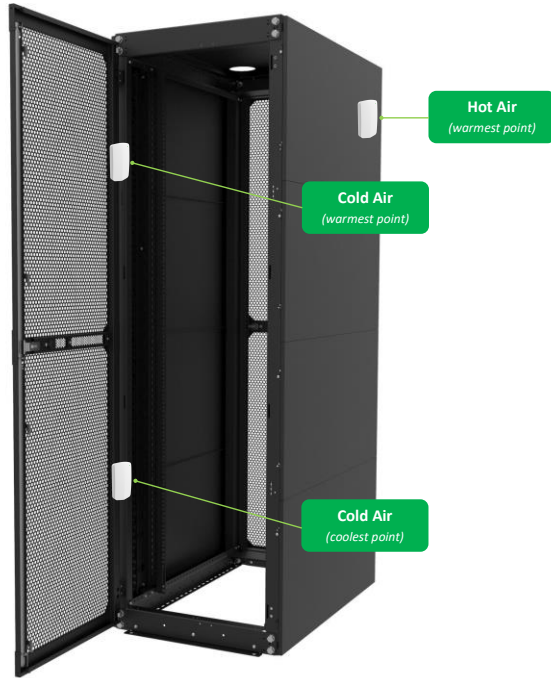
Current energy saving chart readings



RTP aisle BD:



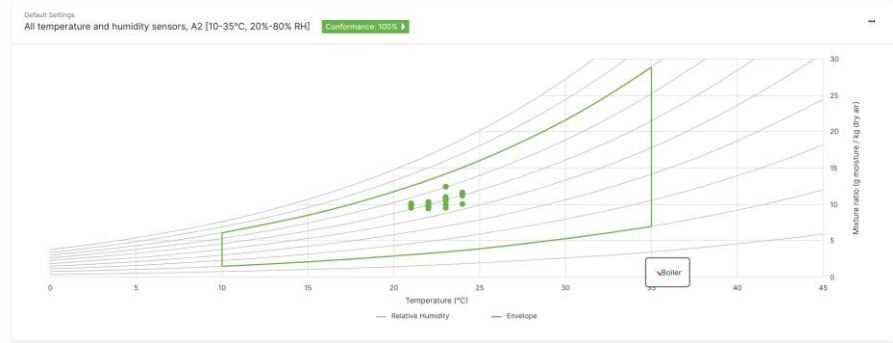
MT RTP Deployment



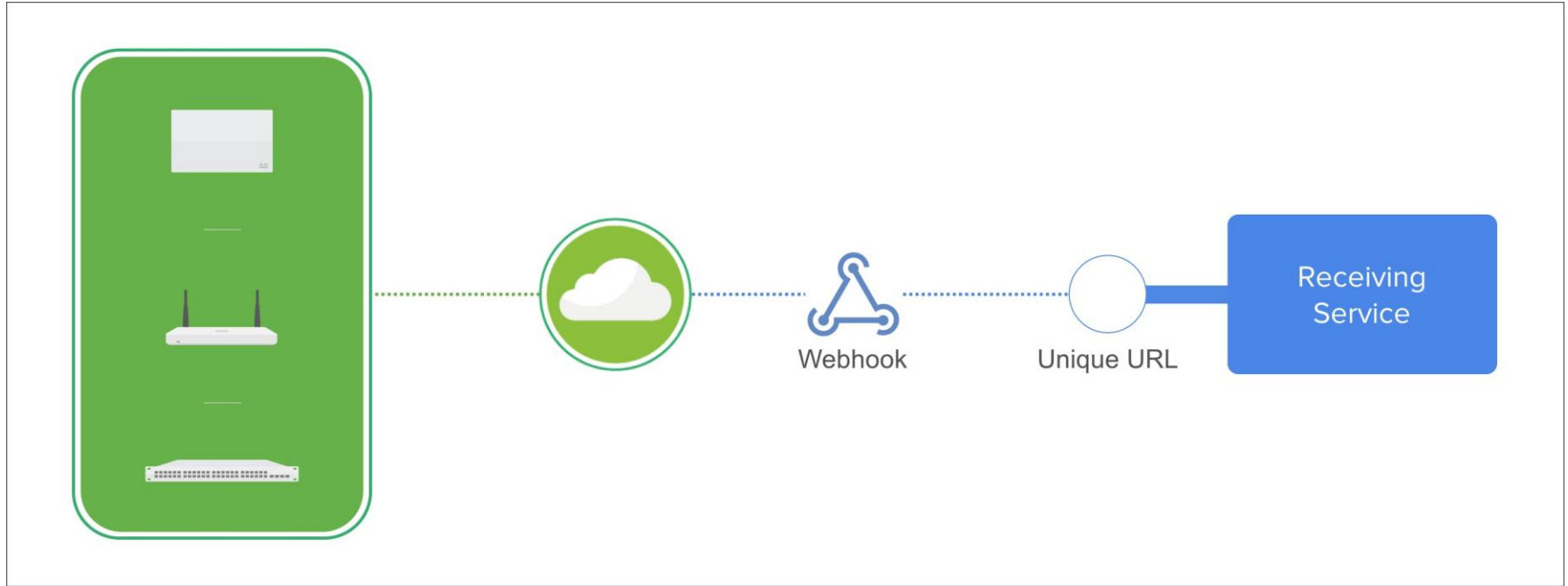
Sensors

Overview Sensors **Energy savings** Alert profiles Reports MQTT brokers Automations

Current energy saving chart readings



Alerting



You just that one time...

This morning, for an as yet unknown reason, both of the independent air conditioning systems in our datacentre failed within a short time. The Meraki MT14 was the first to alert us and allow us time for the engineers to get them back online before the servers etc. overheated.

Thank you Meraki (again)!

Now if only Meraki made AC units... 🤖

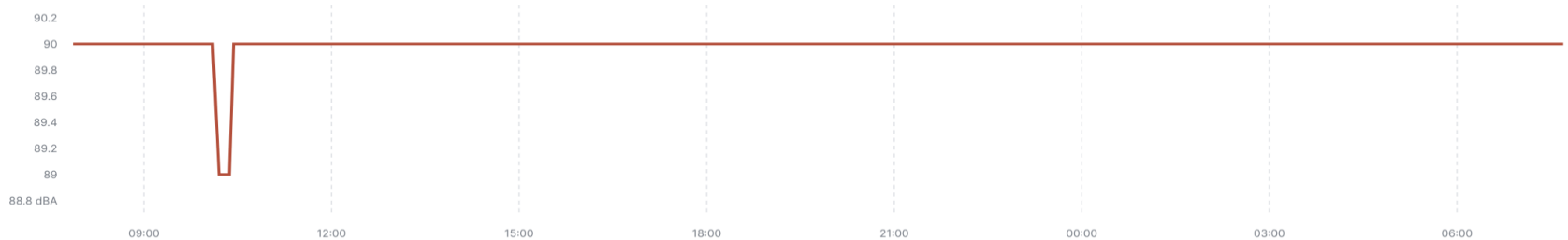
Ambient noise

Latest reading

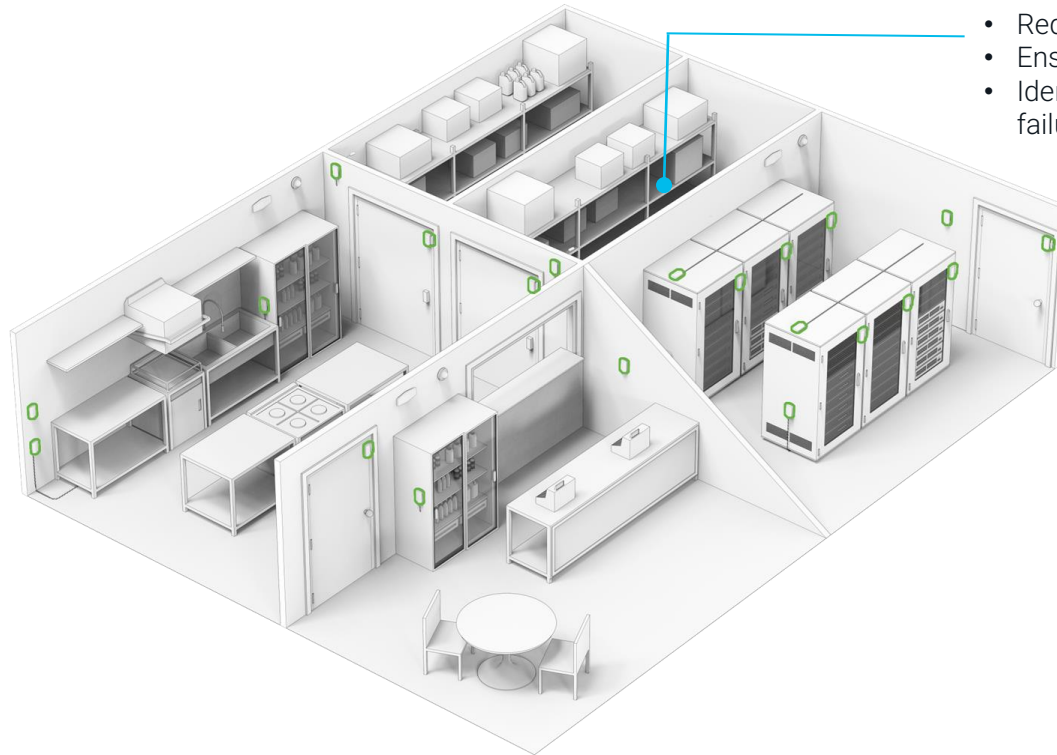
✓ 90 dBA

● Inadequate

Average 90 dBA High 90 dBA Low 89 dBA



Insights into your physical environment.



Cold storage

- Reduce inventory loss
- Ensure compliance
- Identify equipment failure

MT11 Versus traditional solution



MT11: Probe Sensor

Ready to Go Fridge 1



Online

MT11 a8:46:9d:74:da:a2

Sensor data

Device details

Location

Assign camera

Last 7 days

Average values

View event log

Download

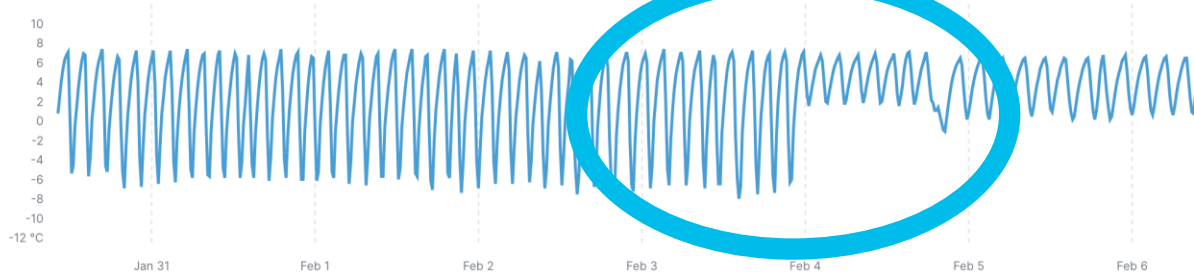


Temperature

Latest reading

5.0 °C

Average High Low
2.4 °C 7.4 °C -8.0 °C



- Anomalies detections
- Wrong settings
- Defrost cycles
- Blocked Airflows
- Energy consumption

Case study: Restaurant/Deli chain (600 stores)

Regulation requires temperature monitoring every 4 to 8 hours per day

- Goal: automating temperature monitoring for fridge/freezer
- Scope: Implementing MT11 with either bare metal or glycol probes
- Results:
 - Saving of 50 hours per quarter (based on 10 fridges/freezers every 4 hours)
 - Increased productivity by digitalizing the process
 - Pro-active maintenance by detecting anomalies early
 - Leveraging existing Meraki infrastructure

Energy Management

Did you know....

Ports | [Configure ports on this switch](#)

[Learn more](#)



Energy

Total usage

✓ **85.09 kWh**

Energy

■ 2.72 kWh

Jan 24 2024

AGGREGATED DATA

Average

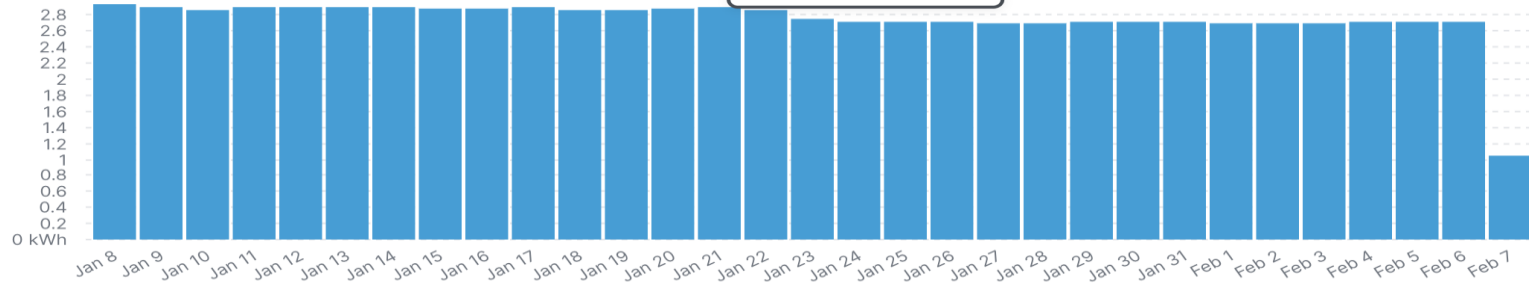
2.74 kWh

High

2.94 kWh

Low

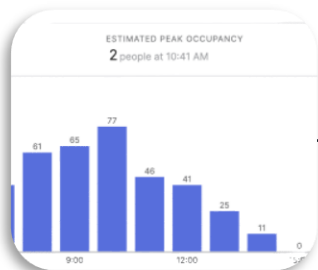
1.04 kWh



This equates to....

$$85\text{Kw/h} * 0.39 = 33.15\text{£/month } 397\text{£/year}$$

Leverage physical and network-level data to get insights and build automations



How are my spaces used?
What is the occupancy?
How many clients connect to the WiFi?
What are the lighting and sound levels?
When and where are doors opened?
Has a button been pressed?

...

Time-based



Time- and event-based



API



Apps

Converged Energy Management for IT/OT powered by Cisco Meraki

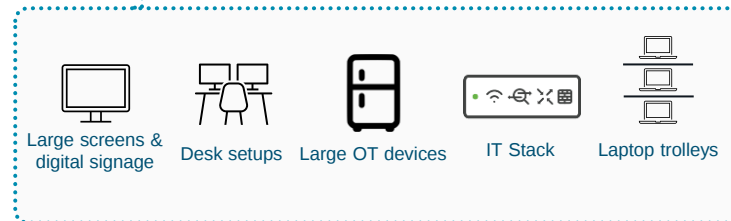


UPOE+ Switches Orderability:
Feb 13th, 2024



Monitor, control, **schedule** in Dashboard

Export data and control via central cloud API



End-to-end solution managed by central IT provides **lowered costs, intelligent control, new experiences**

We estimate that powering off 2,000 PoE devices (10W) for 12 hours a day saves up to approx.*:

435,000 kWh energy

€ 87,000 cost

109 metric tonnes CO2e emissions**

over 5 years.

*Based on internal analysis. Actual estimate that varies depending on the location where the devices are operated. Assumed energy price: 20c/kWh

**based on EU-27 2022 average emission factor:

<https://www.eea.europa.eu/en/analysis/indicators/greenhouse-gas-emission-intensity-of-1>

Discover



Act



Report



Mute Notifications for scheduled Meraki WiFi downtime

Network Home

Network-wide

Security & SD-WAN

Switching

Wireless

Cameras

Sensors

Insight

Organization

Welcome to the new Meraki dashboard experience!

To find out more about the next generation of the Meraki dashboard, visit our new [Early Access](#)

Alerts

Alerts Settings

Default recipients

All network admins x test@meraki.net x +

Network-wide

☐ Configuration settings are changed

☐ A VPN connection comes up or goes down ⓘ

☐ A rogue AP is detected

☐ Network usage exceeds 100 GB in 20 minutes

☒ Mute wireless alerts based on switch port schedules ⓘ

Wireless

☐ A gateway goes offline for 60 minutes

If toggled on, then wireless unreachable alerts will be muted when caused by a port schedule

Meraki MS/CS Software



+



Meraki MR/CW (Meraki mode)

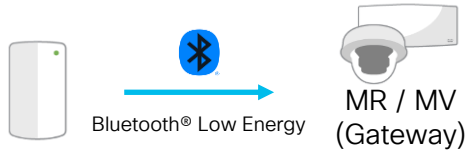
Meraki MTs make HVAC more efficient.



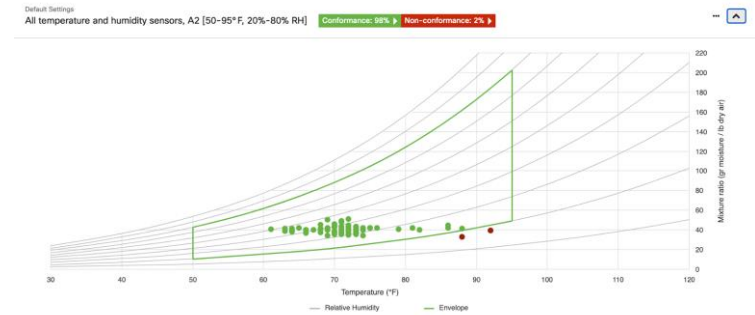
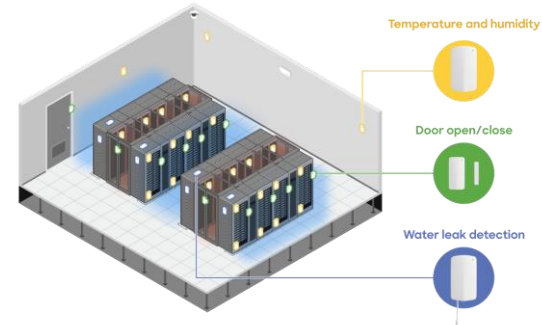
Meraki MT10
Temp/Humidity
Sensor

With today's best practices,
up to 50% HVAC energy savings are
possible

When the ultimate load is
uncertain, data center cooling
systems are often oversized and
operate at inefficient part loads.

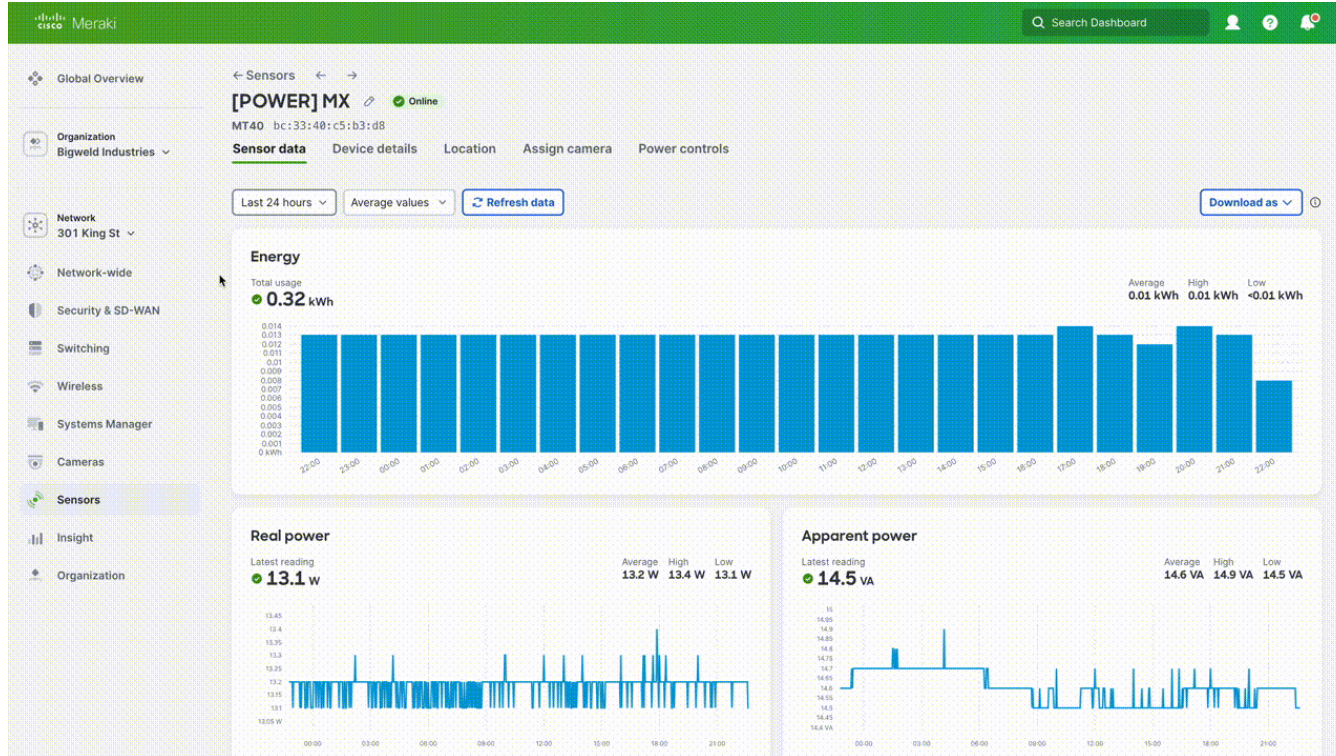


Meraki gateways expedite deployment time



[Meraki MT Sensors Energy Savings Chart](#)

Power consumption



Scheduling

Swich 24ports 

 Online

MT40 14:9f:43:e9:0c:e9

Sensor data

Device details

Location

Assign camera

Power controls

Settings

Sensor settings

Power saving schedule

Set a power saving schedule

Select a schedule to define when downstream devices should be automatically turned off to save power.

 + Add schedule



Demo



The bridge to possible

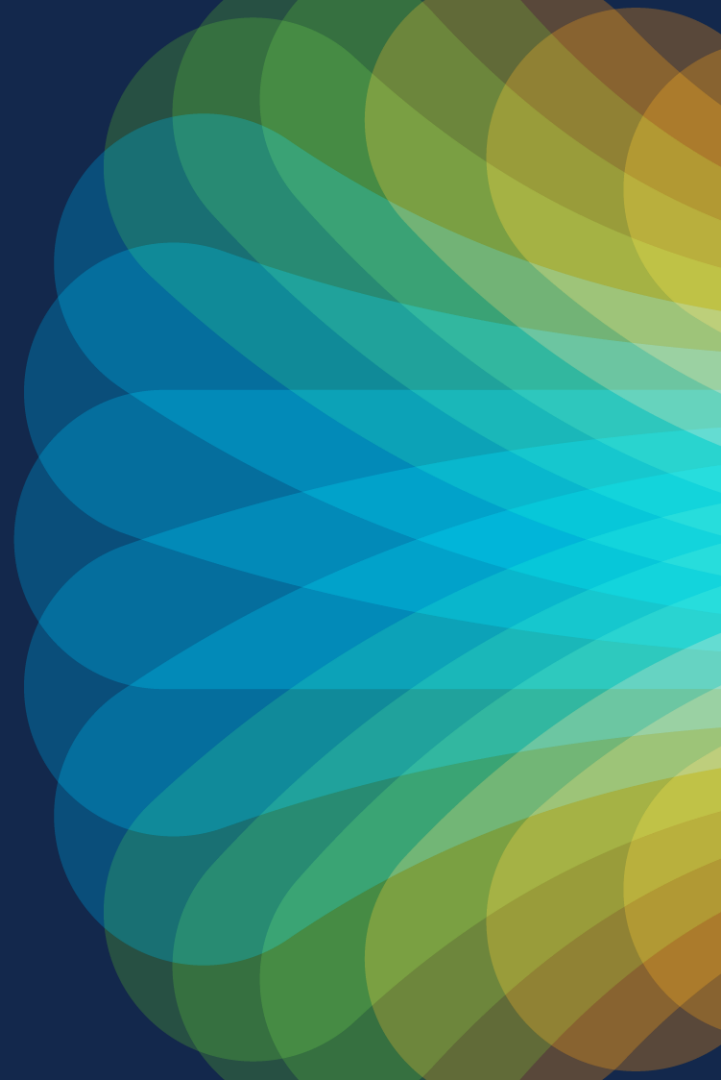


Delivering Smart Private 5G

and meraki to the smartest venue in Europe

Visit the Demo in The Hub to see more

The cloud builds simple
and scalable **intelligent
spaces.**



Thank you for joining us on this journey up to the
clouds...



We'd love to hear from you and how we can support!

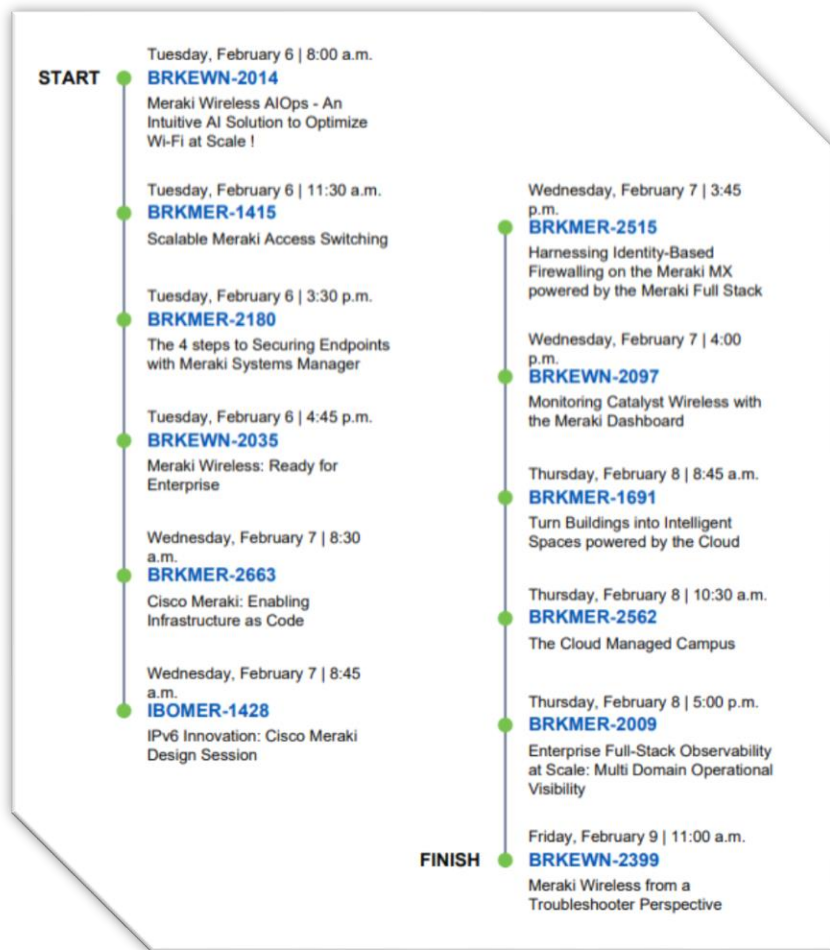
Would you like to provide feedback or request more information?
Do you have a project you'd like to collaborate on?



Cisco Meraki Learning Map

Expand your horizons and see what Cisco's cloud management platform can do for your business. The Meraki Learning map includes content that spans many topics ranging from programmability to cybersecurity.

Remember, there are also Lab and DevNet Sessions, Capture the Flag activities, and Meraki demos throughout the World of Solutions show floor.



Engage with us: Become a Cisco Meraki Insider



Join
the community



Complete
challenges



Receive
rewards



The bridge to possible

Thank you

CISCO *Live!*

The background of the slide is a vibrant, abstract graphic. It features a large, stylized cloud shape on the left side, composed of overlapping, semi-transparent bands of color in shades of red, orange, yellow, and green. To the right of the cloud, a bright, multi-colored sunburst or starburst pattern radiates outwards, with colors transitioning from yellow and orange in the center to blue and green towards the edges. The overall effect is energetic and colorful.

cisco *Live!*

Let's go