

# Cisco Meraki

Cloud Managed Networks

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Simplifying powerful technology to free  
passionate people to focus on their  
mission.

*Work Simple*

# Benefits of a cloud-based solution



Security



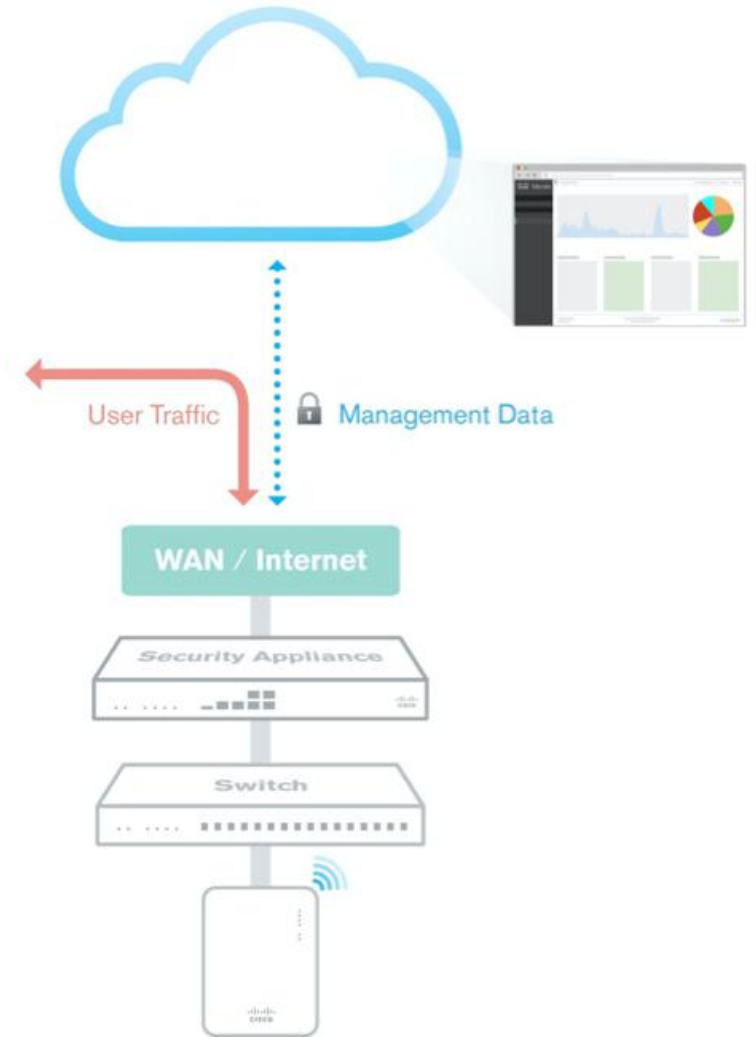
Reliability



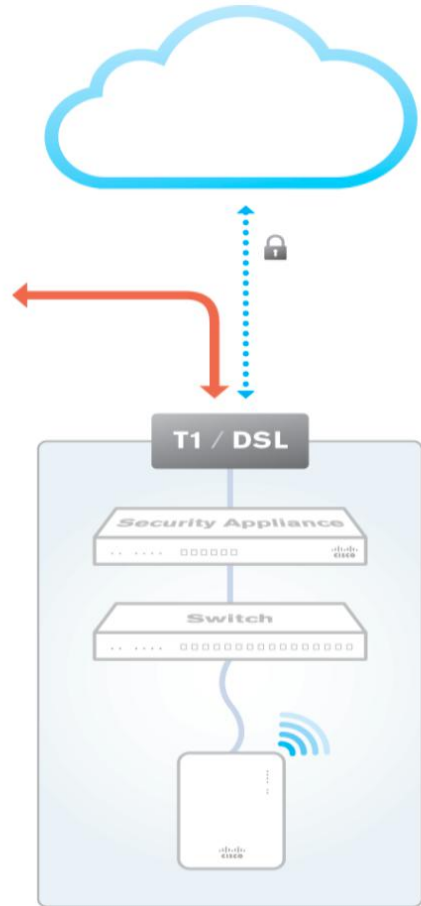
Scalability



Future-proofing

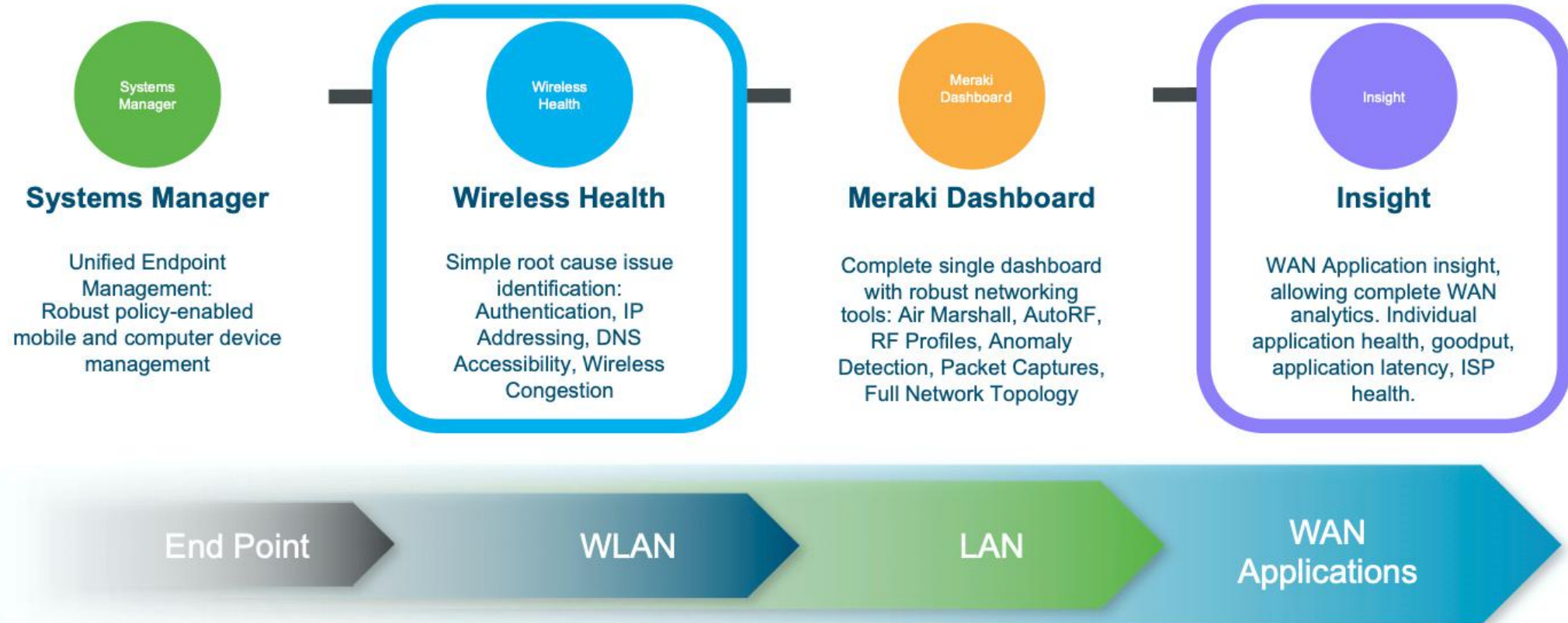


# Brings the benefits of cloud to enterprise networks



- Secure
  - No user traffic passes through the cloud
  - Fully HIPAA / PCI Compliant (level 1 certified)
  - 3<sup>rd</sup> party security audits, daily vulnerability testing
  - Automatic firmware and security updates (user-scheduled)
- Scalable
  - Unlimited throughput, no bottlenecks
  - Add devices or sites in minutes
- Reliable
  - Highly available cloud with multiple datacenters
  - Network functions even if connection to cloud is interrupted
  - 99.99% uptime SLA
  - Reliability and security information at [meraki.cisco.com/trust](https://meraki.cisco.com/trust)

# End-to-End Networking Intelligence & Assurance



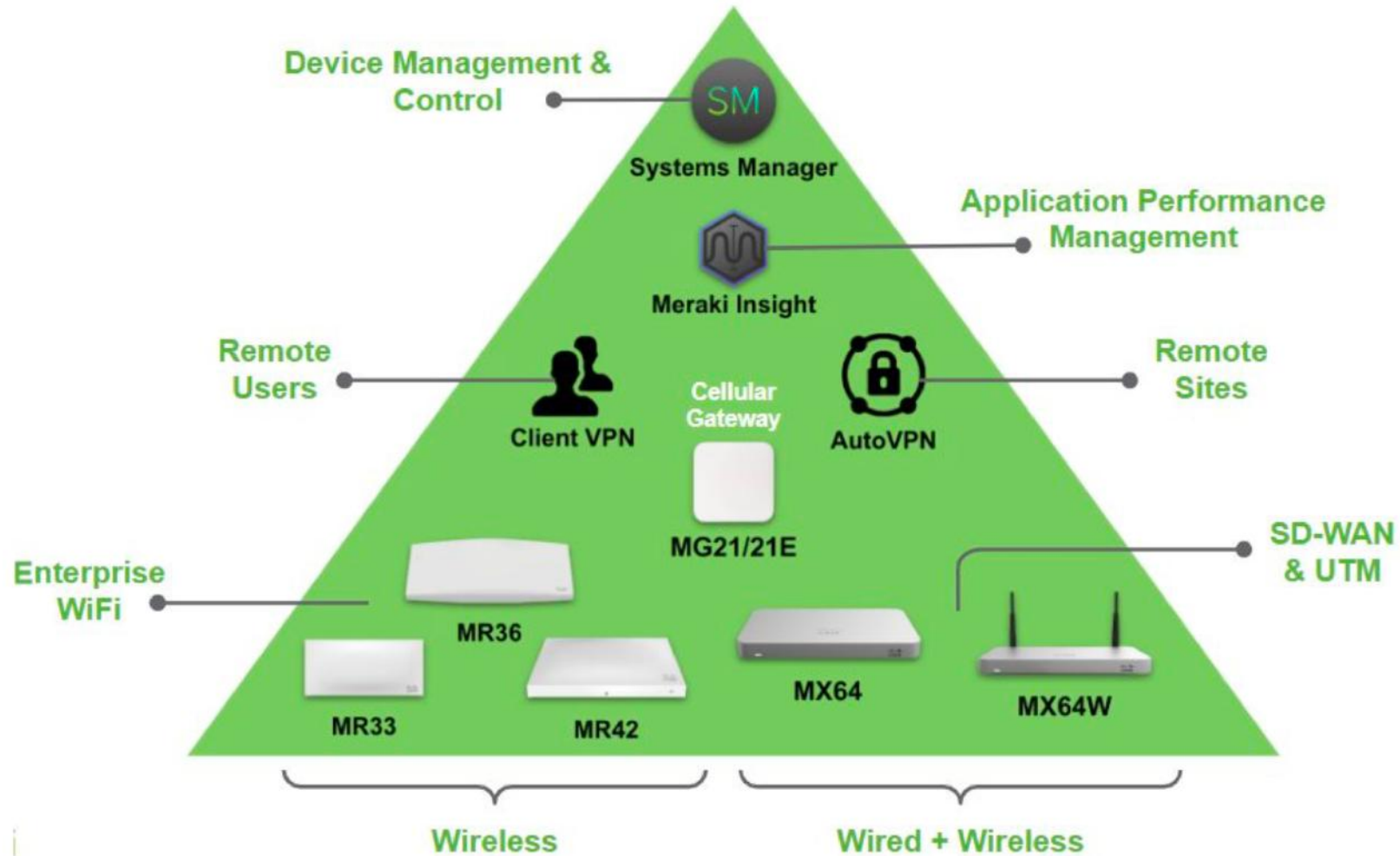


# Meraki Products

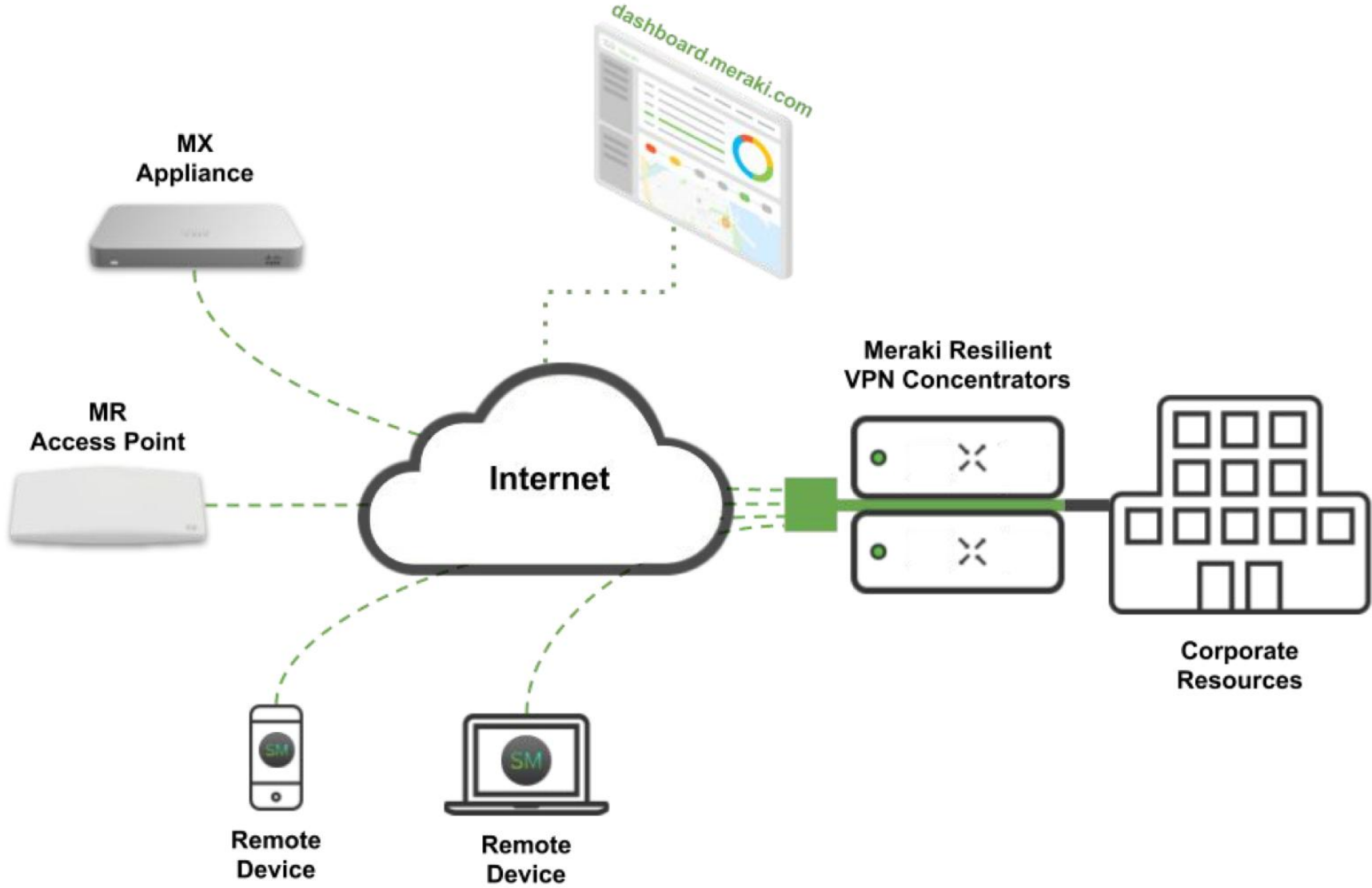


- MR** - Meraki Wireless (Access Points)
- MX** - Meraki UTM / SD-WAN
- MS** - Meraki Switching
- MI** - Meraki Insight Intelligence
- SM** - Meraki Cloud based MDM
- MV** - Meraki Security Cameras

# A solution for all use cases

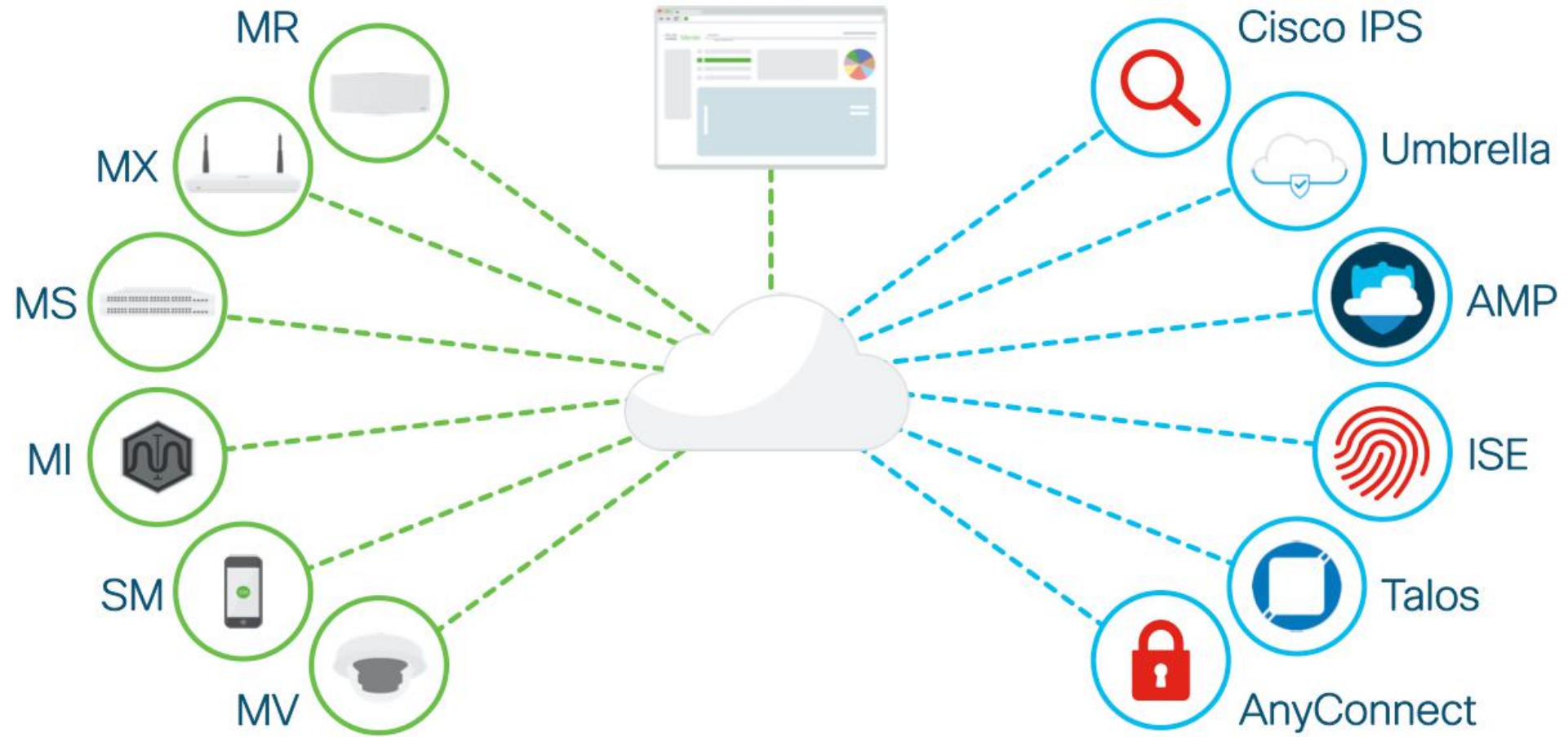


# Solutions





# Meraki with Cisco



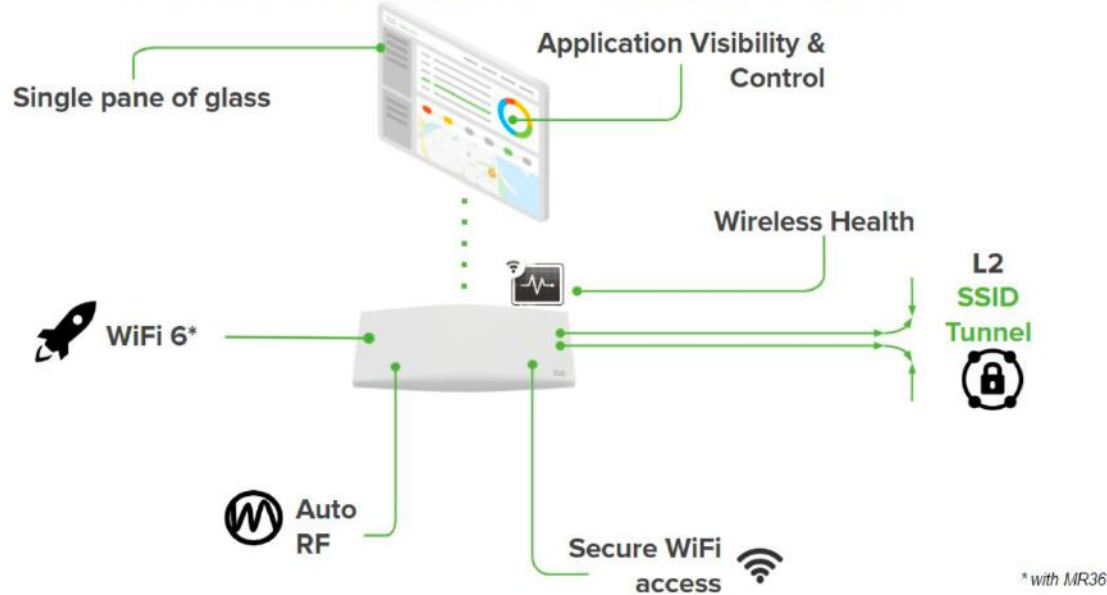


# Meraki Cloud Managed Wireless



# MR

## WorkConnect MR Access Point



- **Requirement:** MX at customer's HQ in Concentrator Mode (NAT Mode unsupported)
- Cisco Meraki access points are built from the highest grade components and carefully optimized for a seamless user experience. The outcome: faster connections, greater user capacity, more coverage, and fewer support calls.
- **Positioning:**
  - Customers that want to have the same SSID configurations they have on their corporate offices (same SSID name, same authentication process etc.).
  - With MR's, you can have the Meraki-Corp SSID at home. Plug and play!

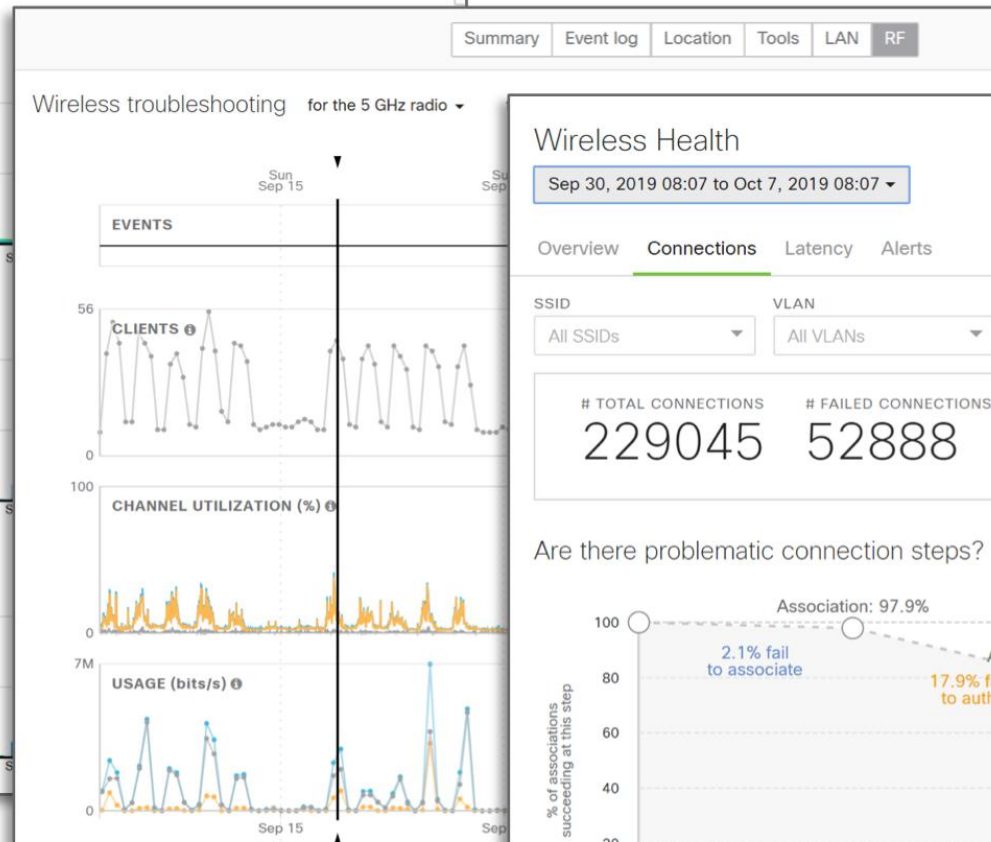


# How are we making wireless more intuitive?

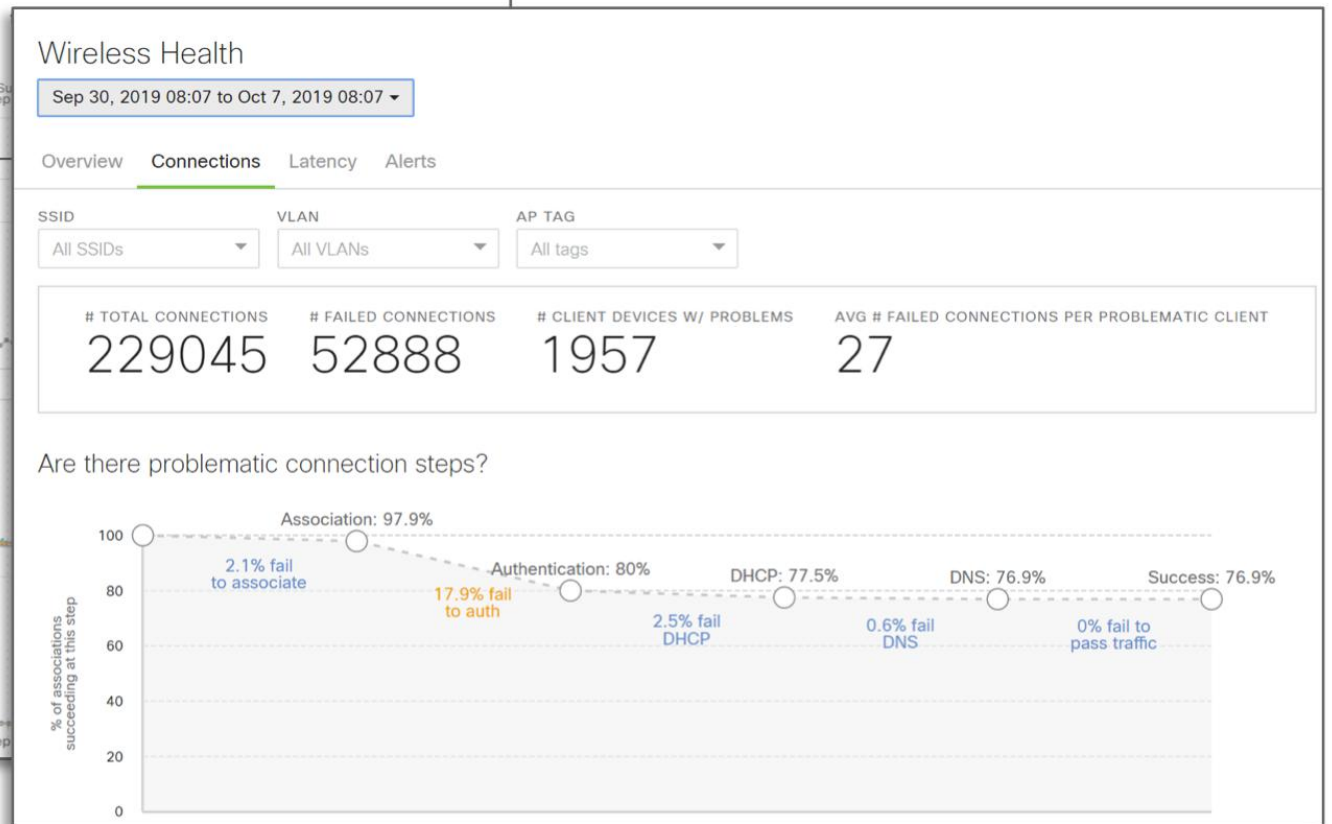
## Location Analytics



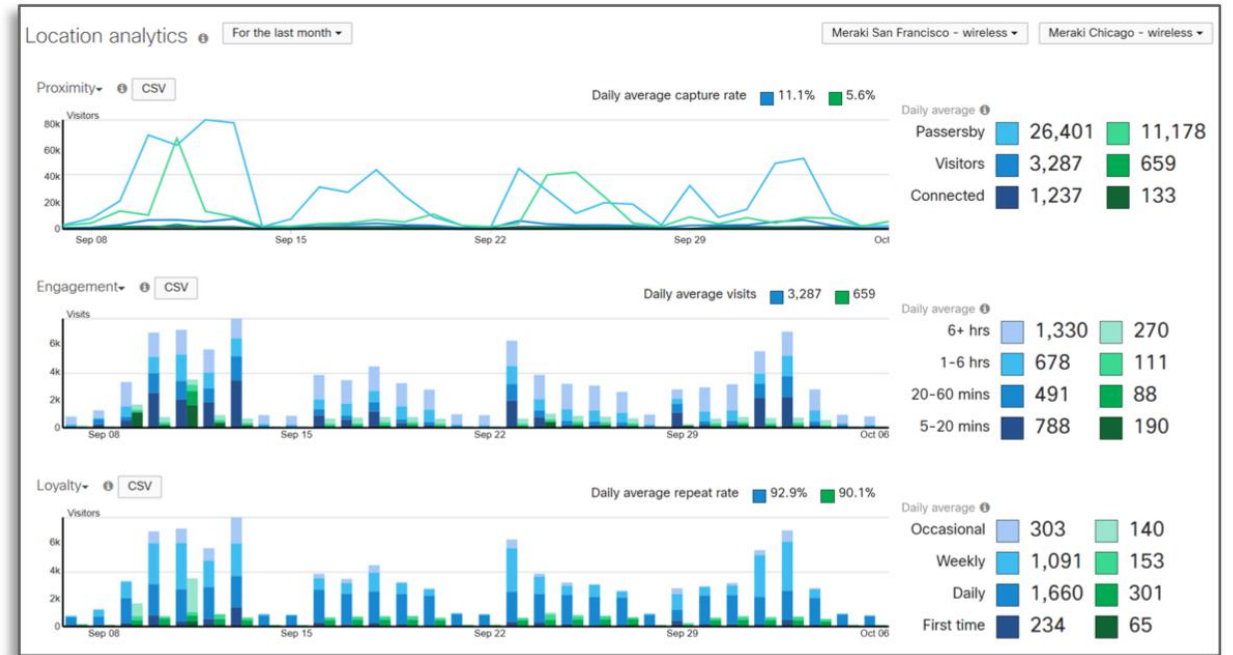
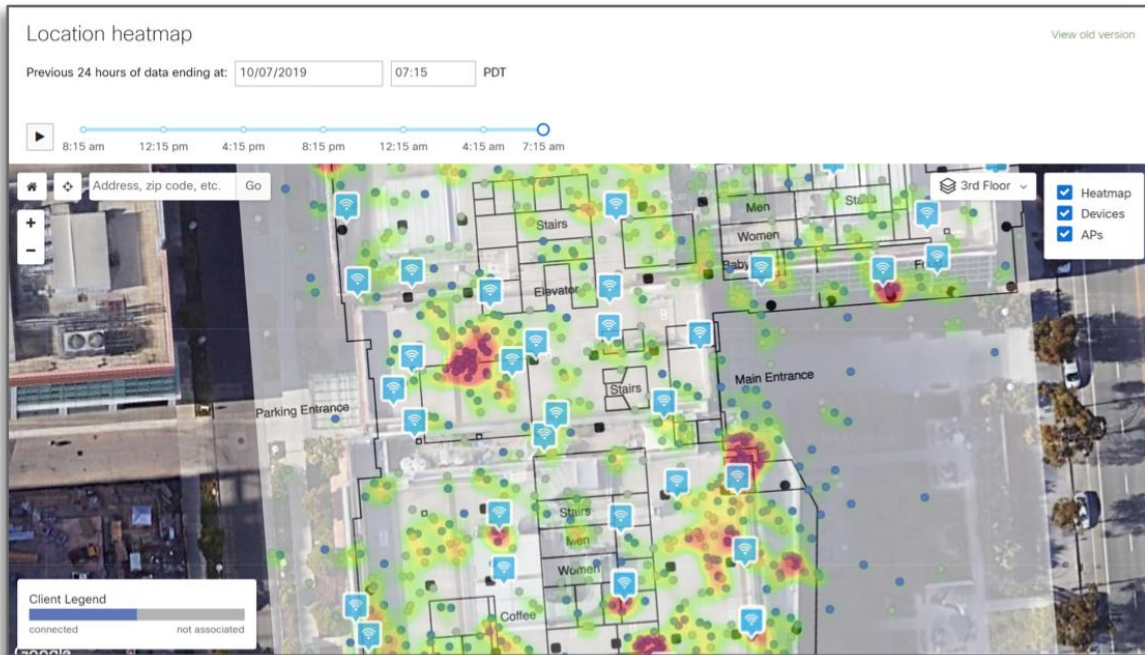
## Historical RF Visibility



## Wireless Health

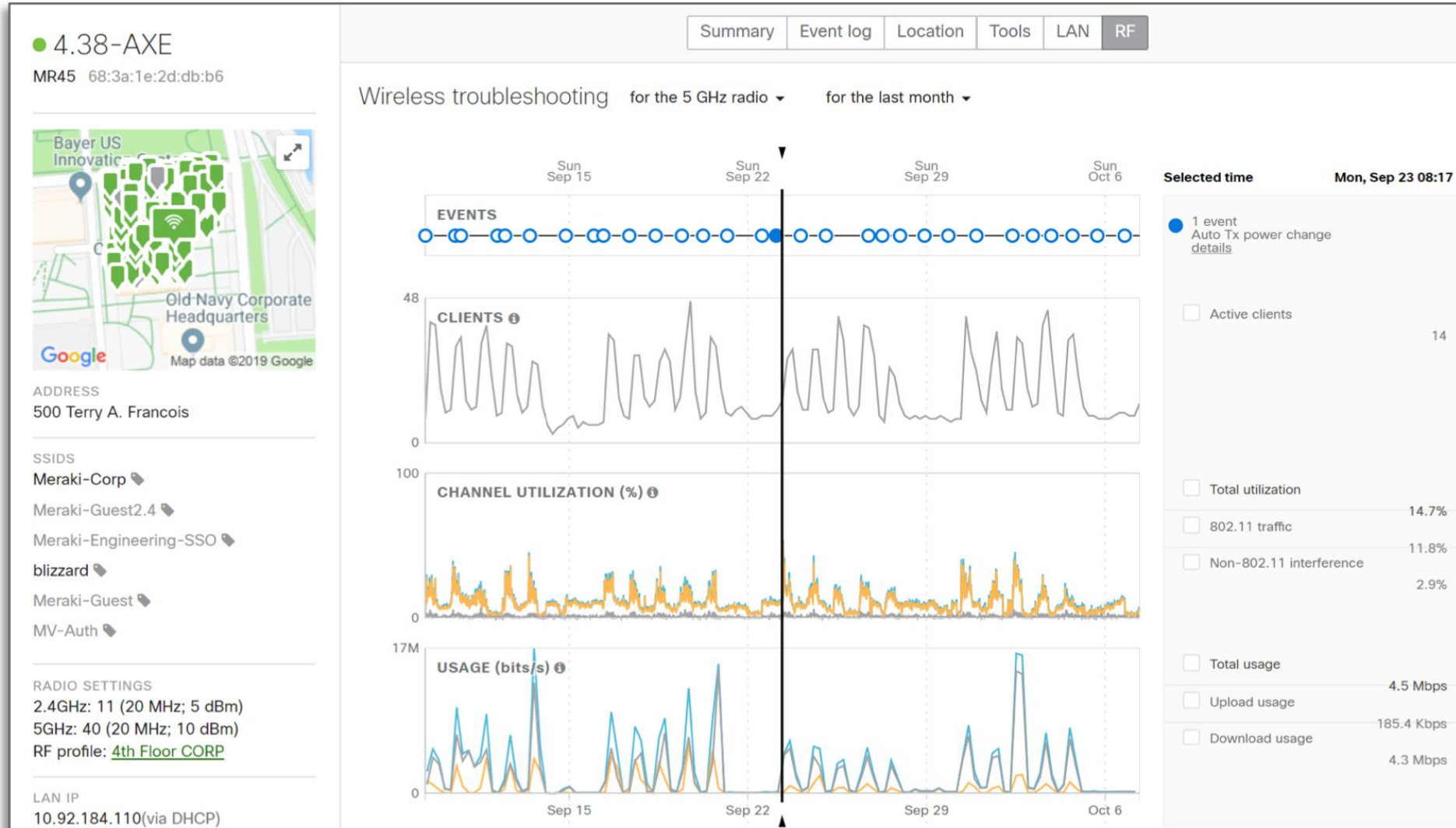


# Location Analytics

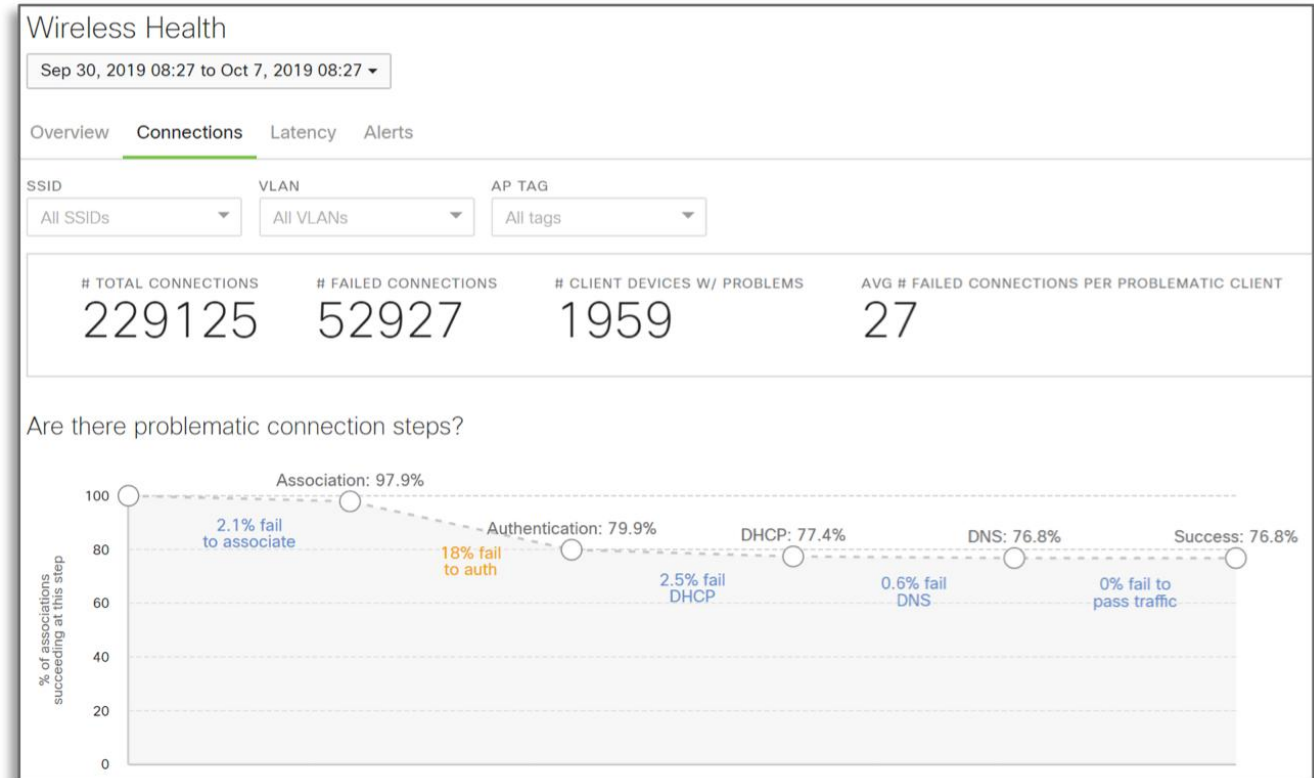
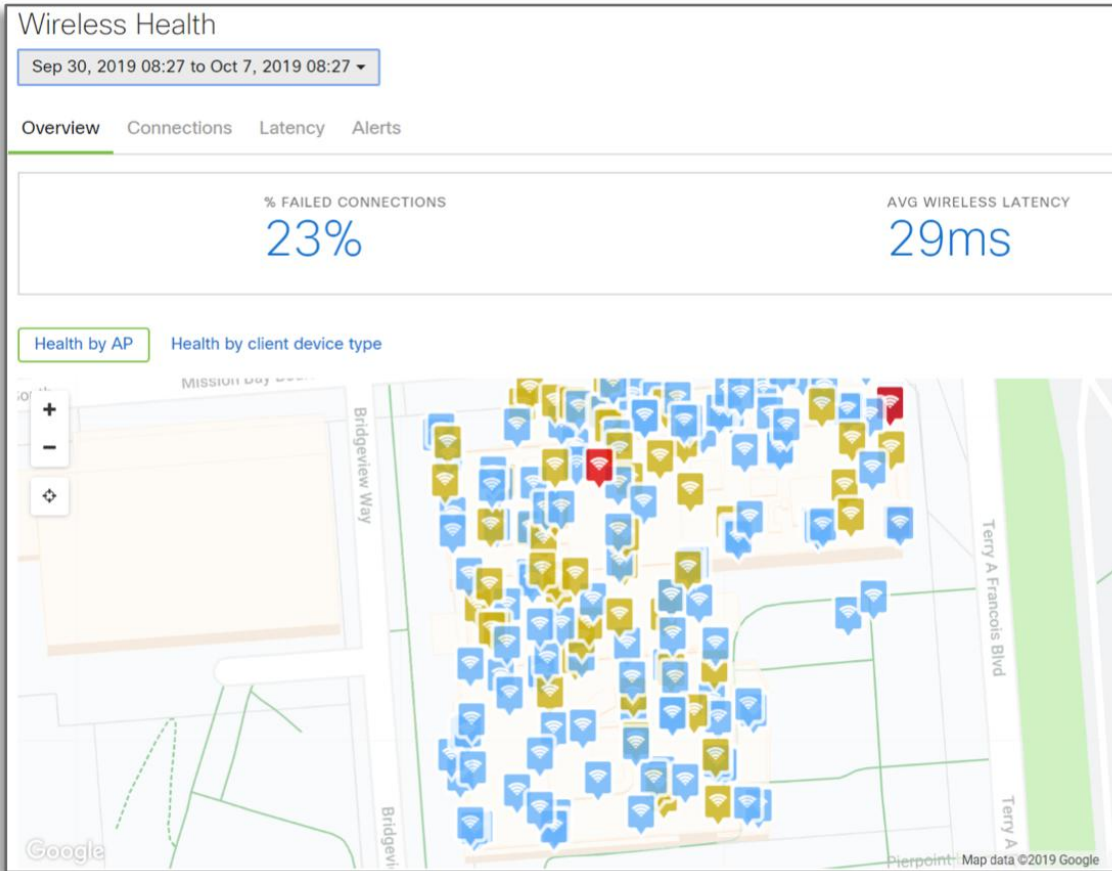




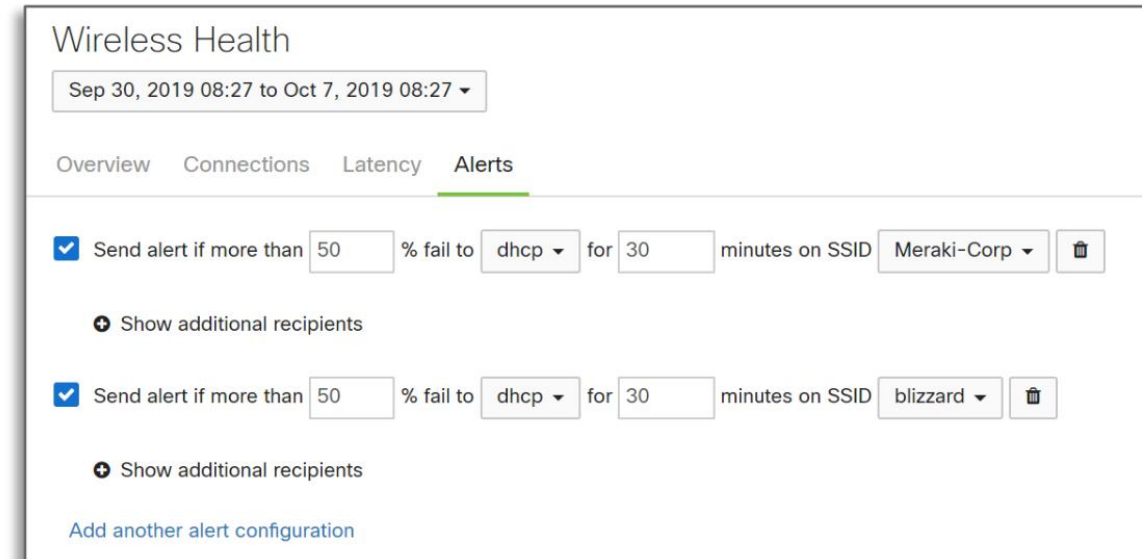
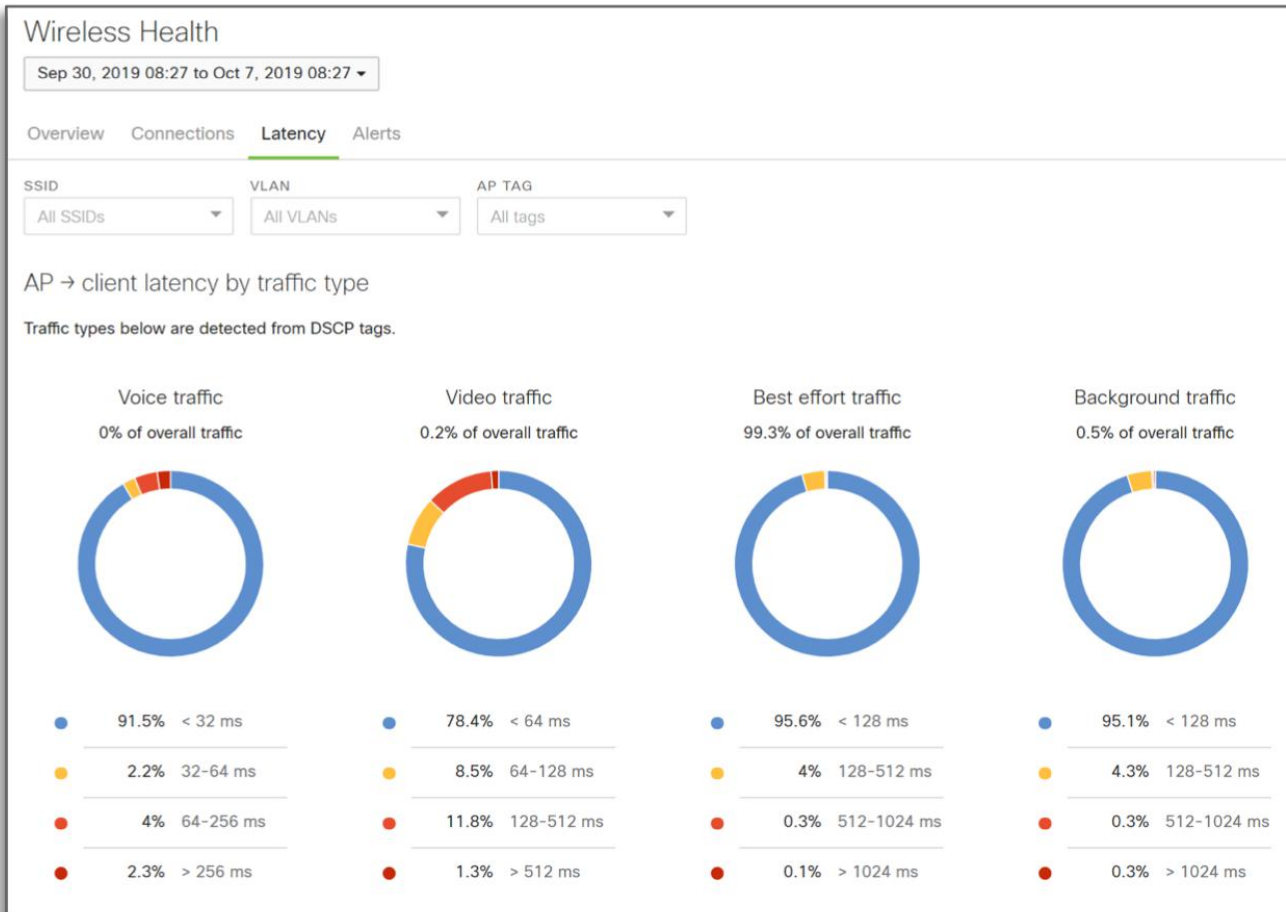
# Historical RF Visibility



# Wireless Health - Summary and Connections



# Wireless Health – Latency and Alerts



# Client Health - Current Connection

**Clients** › aCarbonX1

Status: associated since Oct 07 07:55  
SSID: WirelesslyWired  
Access point: [Kitchen \(topology\)](#)  
Splash: N/A  
Signal: 50dB (channel 157)

Device type: Intel Windows 10   
Capabilities: 802.11ax - 2.4 and 5 GHz [details »](#)  
[event log](#) | [packet capture](#) | [add note](#)

Current client connection

Usage for the last day

Device type MR55  
LAN IP 10.10.0.150 (via DHCP)  
LAN IPv6 2603:300b:806:df11:ae17:c8ff:feff:e312 (via Autoconf)

**Channel quality on 5 GHz radio** 07:04 - 09:04 MDT (6 minutes ago)

Channel utilization 15.5%  
 6 current connected clients

**Usage on 5 GHz radio** 07:10 - 09:09 MDT (1 minute ago)

7.1 Mbps usage

[View more details](#)

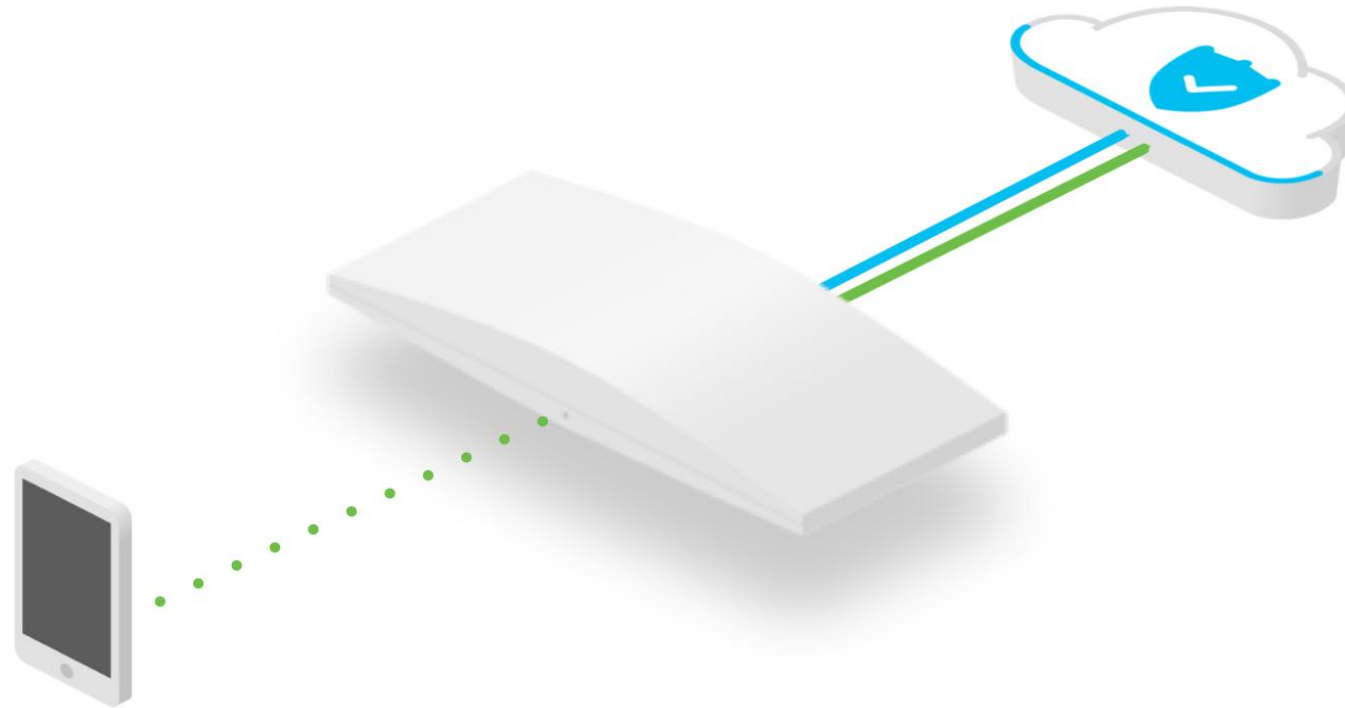
**Connected to WirelesslyWired**

**Usage on Kitchen** 07:54 - 09:00 MDT (6 minutes ago)

17.6 Kbps ↗8.5 Kbps ↗9.1 Kbps

# Meraki MR + Cisco Umbrella

ADVANCED & UPGRADE LICENSE

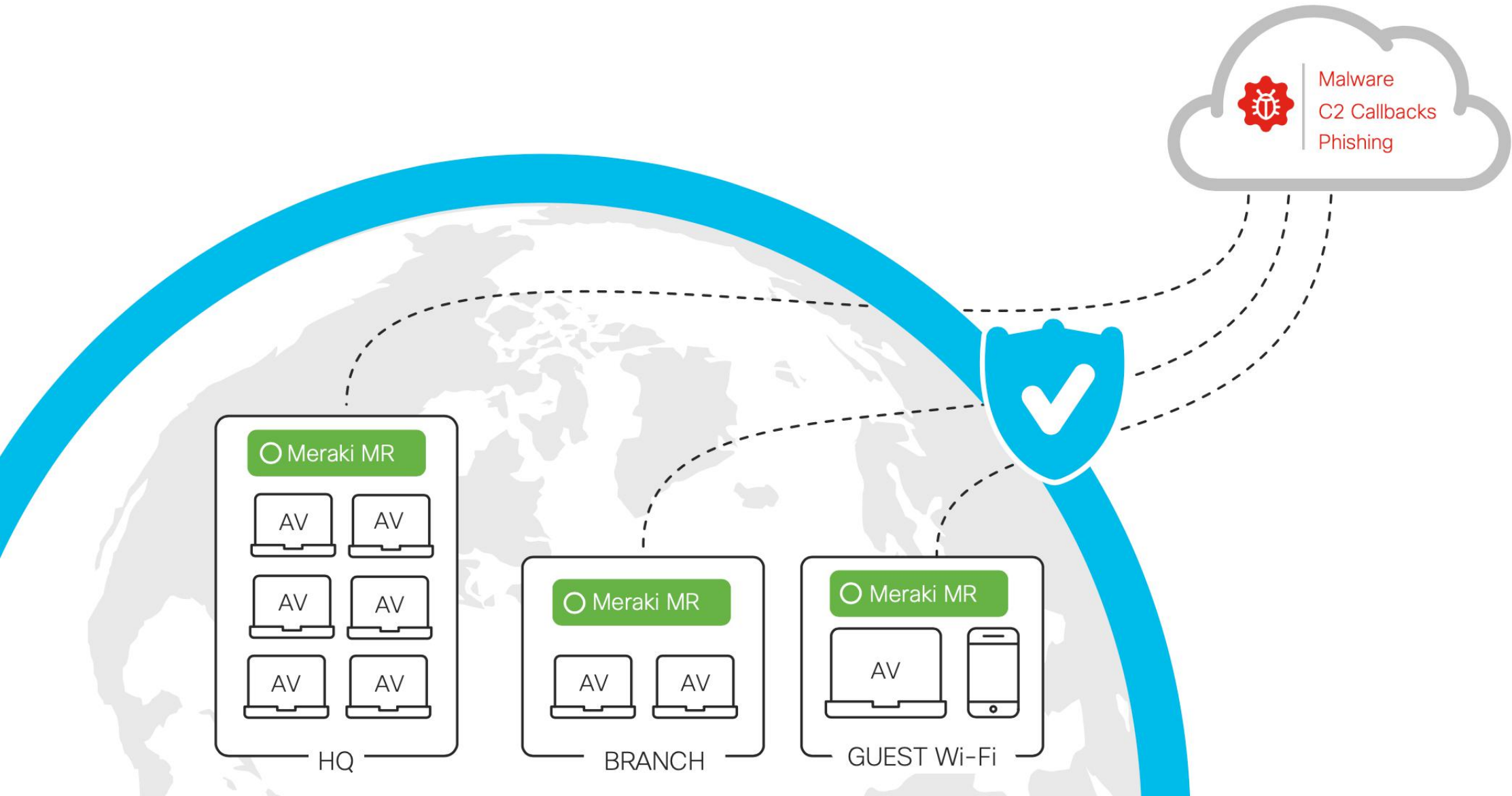


Zero touch DNS traffic protection and content filtering

Available on Wi - Fi 6 APs and APs with Firmware MR26.x+



# How does it work ?



# Umbrella security events in Dashboard

The screenshot displays the Cisco Umbrella Security Center dashboard. At the top, there is a search bar labeled "Search Dashboard". Below it, the "Security Center" section is active, showing "the last 2 weeks" as the selected time range. A search input field contains "Search events", and a "Filter" dropdown is set to "3426 matching MR DNS events". A note states "All times are in UTC".

Navigation tabs include "MX Summary", "MX Events", and "MR DNS Events", with the latter being the active tab. Below the tabs, the text "Powered by Cisco Umbrella" is displayed.

The main content is a table of security events with the following columns: Time, Type, Internal IP, External IP, Network, Destination, Action, and Details. The table lists several blocked events, including phishing attempts, malware, and command and control traffic.

Time	Type	Internal IP	External IP	Network	Destination	Action	Details
Aug 30 21:15:59	security	172.17.249.2	70.160.49.178	Branch_Secure__ Branch_02	www.internetbadguys.com	blocked	Phishing
Aug 30 21:15:39	security	172.17.249.2	70.160.49.178	Branch_Secure__ Branch_02	www.examplemalwaredomain.com	blocked	Malware
Aug 30 21:15:38	security	172.17.249.2	70.160.49.178	Branch_Secure__ Branch_02	www.examplemalwaredomain.com	blocked	Malware
Aug 30 21:14:54	security	172.17.249.2	70.160.49.178	Branch_Secure__ Branch_02	www.examplebotnetdomain.com	blocked	Command and Control
Aug 30 21:14:54	security	172.17.249.2	70.160.49.178	Branch_Secure__ Branch_02	www.examplebotnetdomain.com	blocked	Command and Control
Aug 30 21:14:10	content	172.17.249.2	70.160.49.178	Branch_Secure__ Branch_02	www.match.com	blocked	Dating Social Networking
Aug 30	content	172.17.249.2	70.160.49.178	Branch_Secure__	www.guns.com	blocked	Weapons Forums/Messag boards

# Meraki MR - Access Point models

<https://meraki.cisco.com/products/wireless#models>

Wifi 6 Ready



MR55 

HIGH EFFICIENCY WIRELESS

8x8:8 stream MU-MIMO + OFDMA (DL)

5 Gbps Multigigabit Ethernet

Recommended for high-density coverage



MR45 

HIGH EFFICIENCY WIRELESS

4x4:4 stream MU-MIMO + OFDMA (DL)

2.5 Gbps Multigigabit Ethernet

Recommended for high-density coverage

Low End



MR30H 

BASIC COVERAGE

2x2:2-stream MU-MIMO

Integrated 4-port gigabit switch

Recommended for hospitality and in-room coverage



MR20

BASIC COVERAGE

2x2:2-stream MU-MIMO

Recommended for entry-level, medium-density coverage



MR56 


ULTRA HIGH PERFORMANCE WIRELESS

8x8:8 UL/DL MU-MIMO and OFDMA

5 Gbps Multigigabit Ethernet

Recommended for high-density coverage



MR46 

HIGH PERFORMANCE WIRELESS

4x4:4 UL/DL MU-MIMO and OFDMA

2.5 Gbps Multigigabit Ethernet

Recommended for high-density coverage

High Performance

# Meraki Cloud Managed Security & SD-WAN



# MX security appliance



A complete unified threat management solution

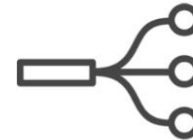
9 models scaling from teleworker and small branch to campus / datacenter

## Feature highlights



### Security

NG Firewall, Client VPN,  
Site to Site VPN,  
IDS/IPS, AMP



### Networking

SD-WAN, 3G/4G Cellular,  
Static/Dynamic Routing,  
Link Balancing



### Application Control

Traffic Shaping, Content  
Filtering, Geo Firewall  
Rules



# MX Portfolio

## Teleworker



Z3

5 users

802.11ac Wave 2 Wireless & PoE

FW throughput: 100 Mbps

CAT 3 LTE (Z3C)



Z3C

## Small Branch



MX64

~50 users

802.11ac Wireless\*

FW throughput: 250 Mbps



MX67/68

~50 users

802.11ac Wave 2\* & PoE

FW throughput: 450 Mbps



MX67C/68CW

~50 users

802.11ac Wave 2\* & PoE

FW throughput: 450 Mbps

CAT 6 LTE

## Medium Branch



MX84

~200 users

FW throughput: 500 Mbps



MX100

~500 users

FW throughput: 750 Mbps

## Large Branch, Campus or Concentrator



MX250

~2,000 users

FW throughput: 4 Gbps



MX450

~10,000 users

FW throughput: 6 Gbps

## Virtual



vMX100 for AWS & Azure

FW throughput: 750 Mbps

VPN & SD-WAN features

*\*Available with wireless models  
(MX64W, MX67W, MX68W, MX68CW)*

# Licensing that fits the business' needs



Enterprise License

Stateful firewall

Site-to-site VPN

SD-WAN

High availability failover

Application control

Traffic shaping

Client VPN



Advanced Security License

All enterprise features, plus

Content filtering (with Google SafeSearch)

Cisco AMP for Malware protection

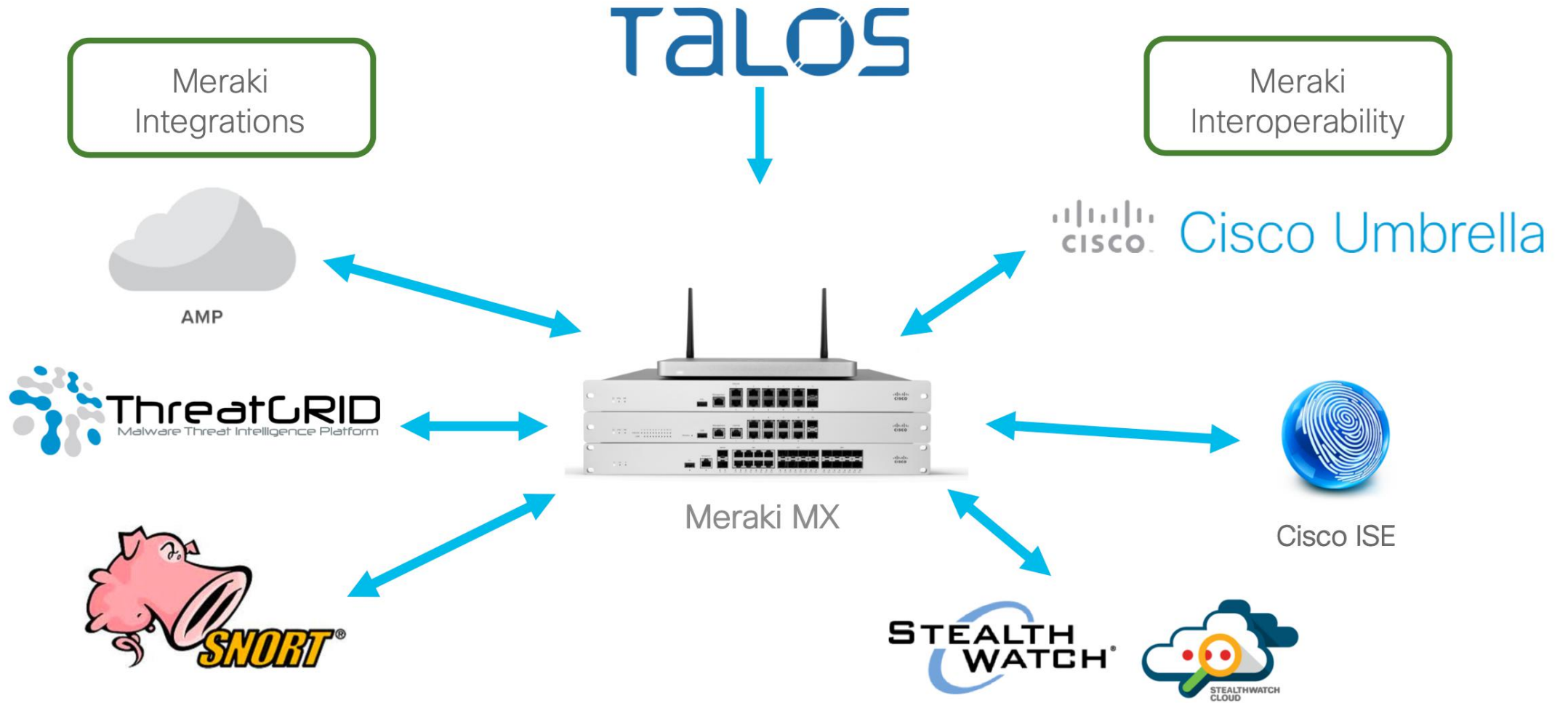
Sourcefire IDS/IPS

Threat Grid integration\*

Geo-based firewall rules

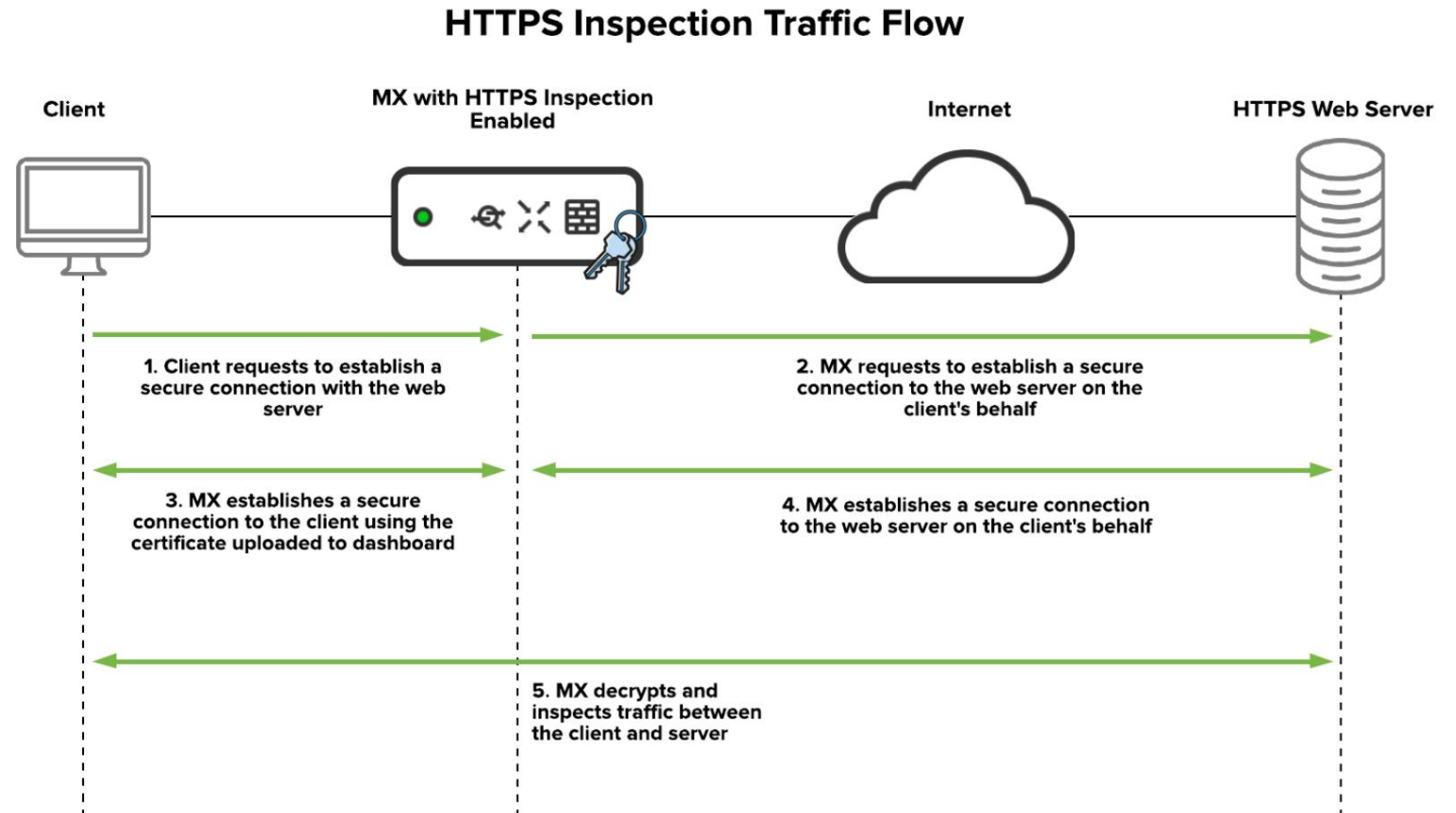
\*additional Threat Grid subscription required

# Security Integrations/Interoperability



# HTTPS Inspection

- Provides visibility into HTTPS traffic flowing through the MX
- Utilizes MiTM and custom certificates
- Significantly reduces performance of all platforms



# Meraki AutoVPN

## Supported Topologies

- Each MX or Z device can be configured as a Hub or Spoke
- **Hub:** MX/Z will establish VPN Tunnels to all remote VPN peers also configured in this mode
- **Spoke:** MX/Z will establish VPN Tunnels only to Specified Hubs
- Full-Tunnel or Split Tunnel Option

Site-to-site VPN

Type

- Off  
Do not participate in site-to-site VPN.
- Hub (Mesh)**  
Establish VPN tunnels with all hubs and dependent spokes.
- Spoke  
Establish VPN tunnels with selected hubs.

Exit hubs

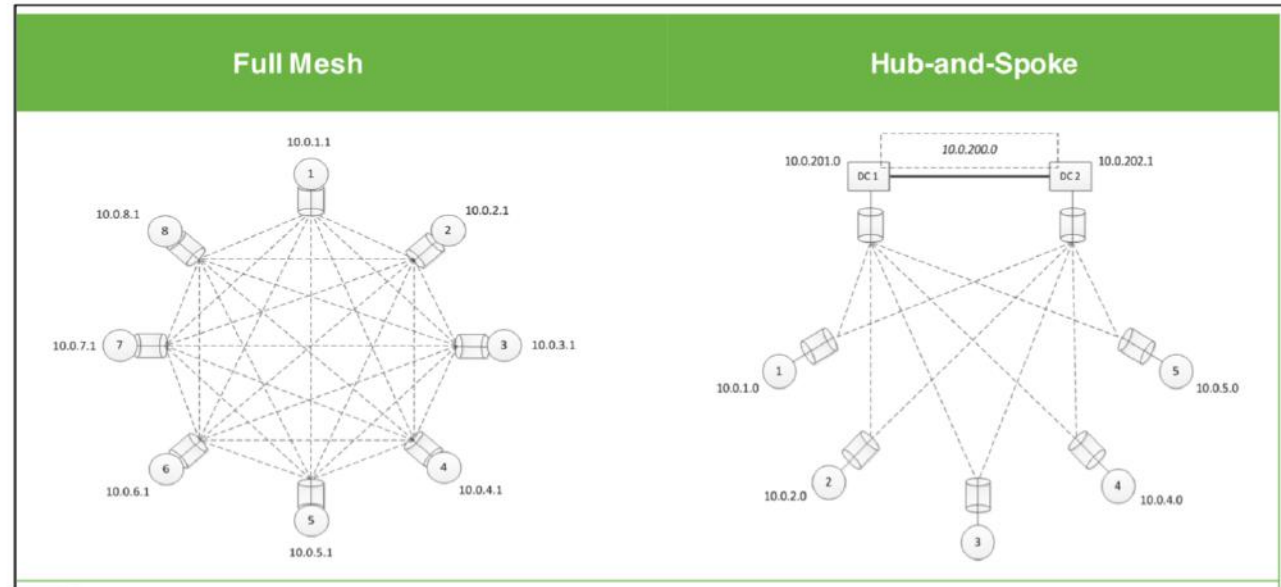
Site-to-site VPN

Type

- Off  
Do not participate in site-to-site VPN.
- Hub (Mesh)  
Establish VPN tunnels with all hubs and dependent spokes.
- Spoke**  
Establish VPN tunnels with selected hubs.

Hubs

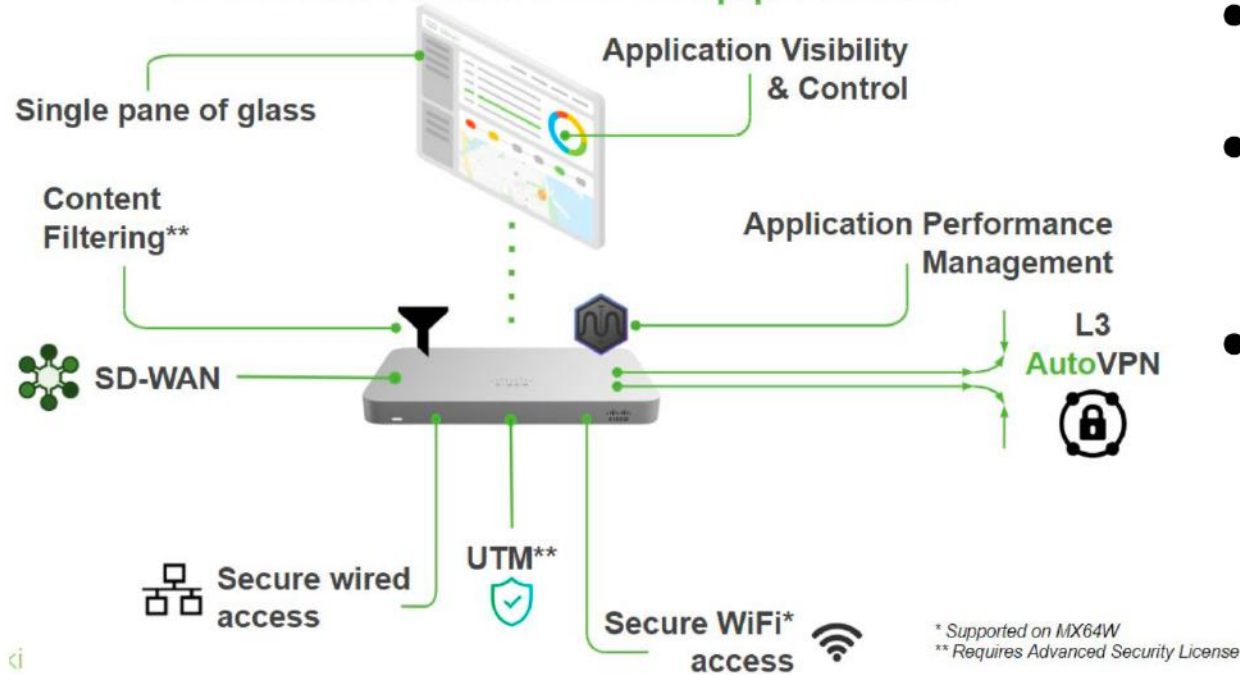
#	Name	Default route	Actions
1	<input type="text" value="My Hub 1 MX65W - appliance"/>	<input type="checkbox"/>	
2	<input type="text" value="My Branch New MX65 - appliance"/>	<input type="checkbox"/>	





# MX

## WorkConnect MX Appliance

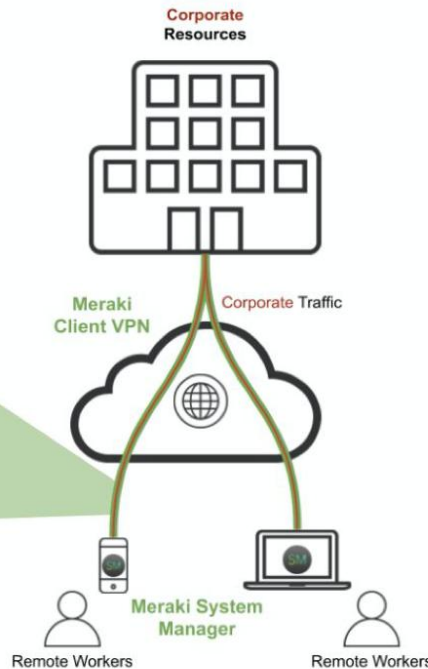


- Cisco Meraki Security Appliances can be remotely deployed in minutes using zero-touch cloud provisioning.
- Security settings are simple to synchronize across thousands of sites using templates.
- Auto VPN technology securely connects branches in 3 clicks, through an intuitive, web-based dashboard.
- Positioning:
  - Customers interested on remote connectivity;
  - SD-WAN to ensure application performance;
  - Content-filtering, Threat Prevention (IDS/IPS), Advanced Malware Protection (AMP) included with Adv. Security License

# Client VPN

## WorkConnect with Client VPN

- No need to install any VPN software
- Supported on all machines and operating systems
- Connect users remotely and securely
- Authentication users using Radius or Active Directory
- Supports TFA
- Tunnel corporate traffic
- Local breakout



- **Requirement:** MX at customer's HQ.
- Customers that don't want to ship equipment to the remote worker's address.
- Full-tunnel only
- Pros:
  - Included with MX license;
  - No hardware at remote worker location;
- Cons:
  - Roll-out can be cumbersome due to amount of distributed endpoints and different operating systems.
  - Systems Manager customers can leverage SM to overcome this issue, by pushing the VPN profile. Better together!

# Z3

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- **Requirement:** MX at customer's HQ
- The Cisco Meraki Z3 is a teleworking-focused appliance suited for home office deployments. The Z3 includes integrated wireless, cellular failover (on Z3C), and PoE for devices like VoIP phones.
- Positioning:
  - Customers have existing MX at HQ
  - Each remote user will have IP phone
  - Cellular failover is critical
  - Customer wants to use wireless devices in addition to IP phone
  - Want to connect multiple devices
  - VPN throughput limited to 50Mbps
- Recommendations: larger MX at HQ -- MX250 or MX450
- Notes: use of IPS/IDS and AMP is limited to “Full Tunnel” when setting up Z3, meaning that the MX @ HQ will provide these services. The Z3 does not provide local IPS/IDS or AMP

# Security features comparison

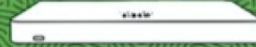
Feature	Z3/Z3C	MX	MR	Client VPN
Access Corporate Assets	✓	✓	✓	✓
Cellular Connectivity	!	!	✗	✗
VoIP Phone Support	✓	!	!	✗
WAN Failover	✓	✓	✗	✗
On-Prem RADIUS/AD Support	✓	✓	✗	✓
Requires MX at HQ	✓	✓	✓	✓
Multi-Device Support	✓	✓	✓	✗
Full Tunnel Only	✗	✗	✗	✓
Full and Split Tunnel Support	✓	✓	✓	✗
AMP	!	✓	!	!
IPS/IDS	!	✓	!	!
Umbrella Support	✗	✓	✓	✗
No Addl. HW Required	✗	✗	✗	✓
QoS/Traffic Shaping	✓	✓	✓	!
L3 Firewall	✓	✓	✓	!
L7 Firewall	✓	✓	✓	!



# Cisco Meraki Teleworker Solutions

## MX

- All-in-one security appliance
- Cellular backup options
- Wireless models available



## Z3

- Designed for tabletop teleworker
- PoE+ port for phones
- 802.1X port security



## MR

- **Requirement:** Hub MX in concentrator mode
- No local security



## CLIENT VPN

- Can be deployed manually or using **Meraki Systems Manager (MDM)**
- Direct VPN for mobile workers



## HOW TO SIZE YOUR HUB

	MX84	MX100	MX250
Clients	200	500	2,000
T.	320 Mb	650 Mb	2 Gb
VPN Tunnels	100	250	3,000
VPN T.	250 Mb	500 Mb	1 Gb



Ask us how *Meraki Insight (MI)* can help monitor application, VoIP, and WAN performance.

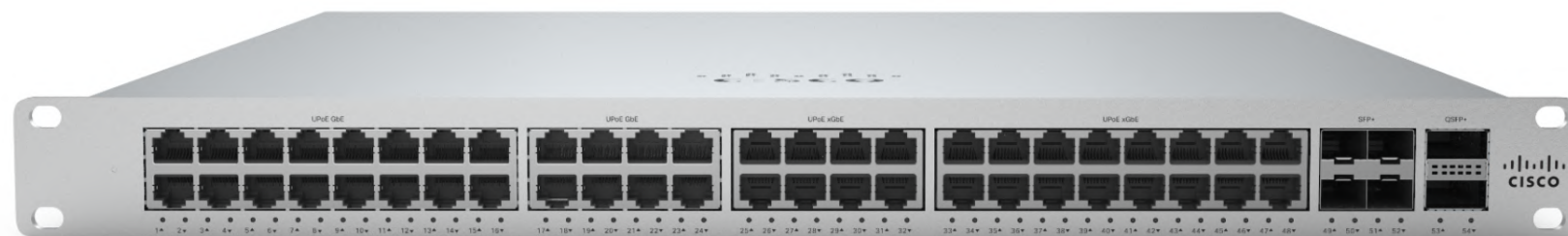


Need cellular? The *Meraki Gateway (MG)* has you covered!

[meraki.cisco.com/products](http://meraki.cisco.com/products)



# Meraki Cloud Managed Switching















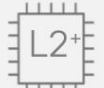





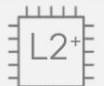



# Why customers choose MS

- Centralized management
- Application (L7) visibility
- Virtual Stacking
- Automatic upgrades
- Zero Touch Provisioning
- Enterprise-grade security
- Remote troubleshooting tools

















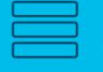














# Layer 2
























MS120-8		 PoE+ options	 1G SFP Uplinks	 Slim Form Factor		
MS120		 PoE+ options	 1G SFP Uplinks			
MS125		 PoE+ options	 10G SFP+ Uplinks			
MS210		 PoE+ options	 1G SFP Uplinks	 80G Stacking	 L3 Static Routing	 RPS Optional
MS225		 PoE+ options	 10G SFP+ Uplinks	 80G Stacking	 L3 Static Routing	 RPS Optional

Compatible Stacking

# Layer 3

MS250		 PoE+ options	 10G SFP+	 80G Stacking	 Layer 3 Routing	 Modular Power		
MS350		 PoE+ options	 10G SFP+	 160G Stacking	 Highly Scalable L3 Routing	 Modular Power	 Modular Fans	
MS350-24X		 PoE+/UPoE	 10G SFP+	 160G Stacking	 Highly Scalable L3 Routing	 Multigigabit	 Modular Power	 Modular Fans
MS355 MS390		 PoE+/UPoE	 10G/40G	 400/480G Stacking	 Highly Scalable L3 Routing	 Multigigabit	 Modular Power	 Modular Fans

# Meraki Aggregation Portfolio

<b>MS410</b>		 1G SFP links	 10G SFP+ Uplinks	 160G Stacking	 Highly Scalable L3 Routing	 Modular Power	 Modular Fans	
<b>MS425</b>		 10G SFP+ links	 40G QSFP+ Uplinks	 160G Flexible Stacking	 Highly Scalable L3 Routing	 Deeper Buffer	 Modular Power	 Modular Fans
<b>MS450</b>		 40G QFSP+ links	 100G QSFP28 Uplinks	 400G Stacking	 Highly Scalable L3 Routing	 Deeper Buffer	 Modular Power	 Modular Fans



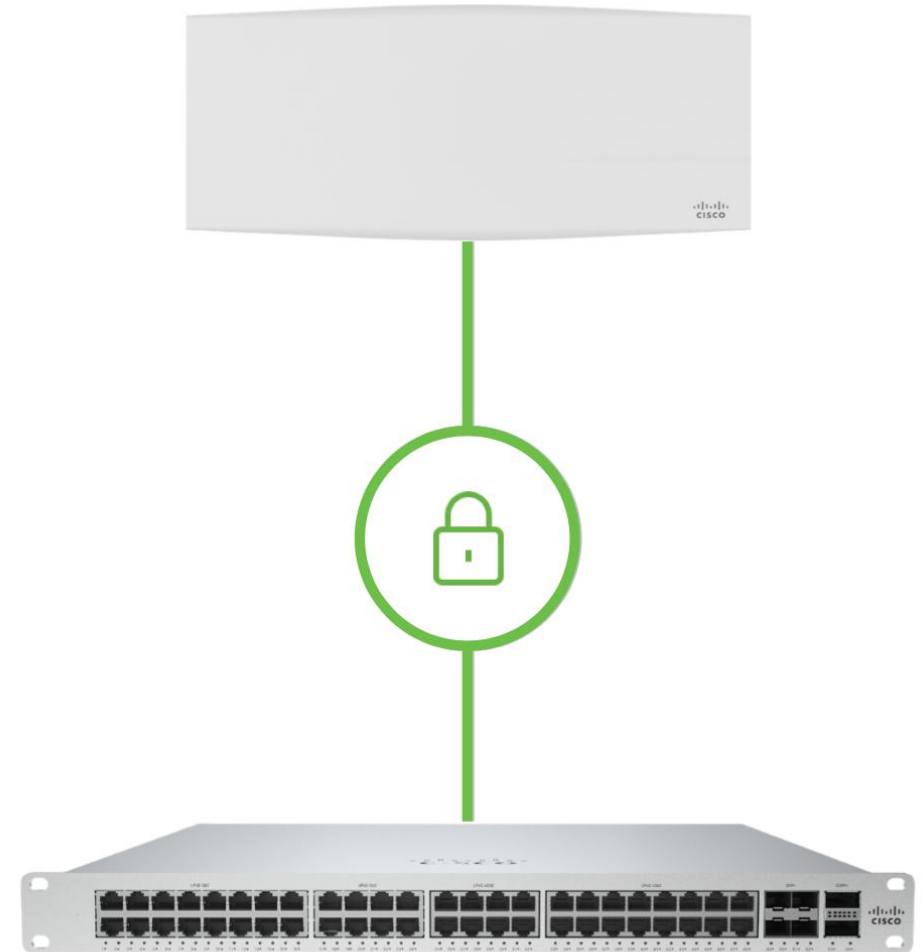
# SecureConnect

BETWEEN MR + MS DEVICES

*On MS210 and above*

*On MR 802.11ac Wave 2 and 802.11ax APs*

Automated switch port protection  
and configuration between MR and  
MS



# SecureConnect Advantages



## Reliable Security

Cryptographically secured authentication using EAP-TLS



## Fully Automated

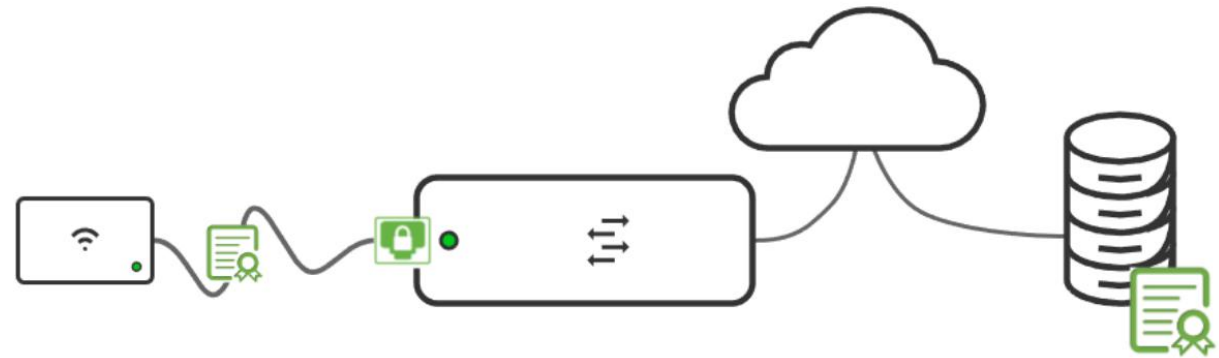
Dynamic and automatic configuration from MS to MR removes manual per-access-port configurations



## Consistent Configuration

Automating configurations results in reduced configuration review and remediation

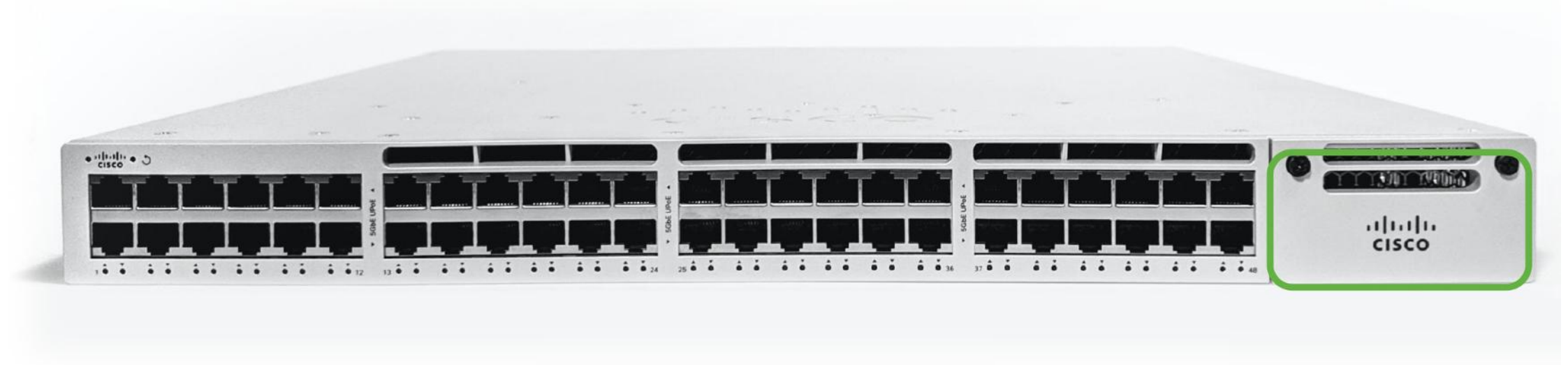
# SecureConnect Order of Operations



1. Meraki device detection and dashboard connection
2. Certificate request to Cisco PKI over mtunnel
3. MR authentication with EAP-TLS certificate
4. MS Port authorization and configuration with profile
5. MR is unplugged and port returns to original configuration

**NEW**

# MS390 Hardware

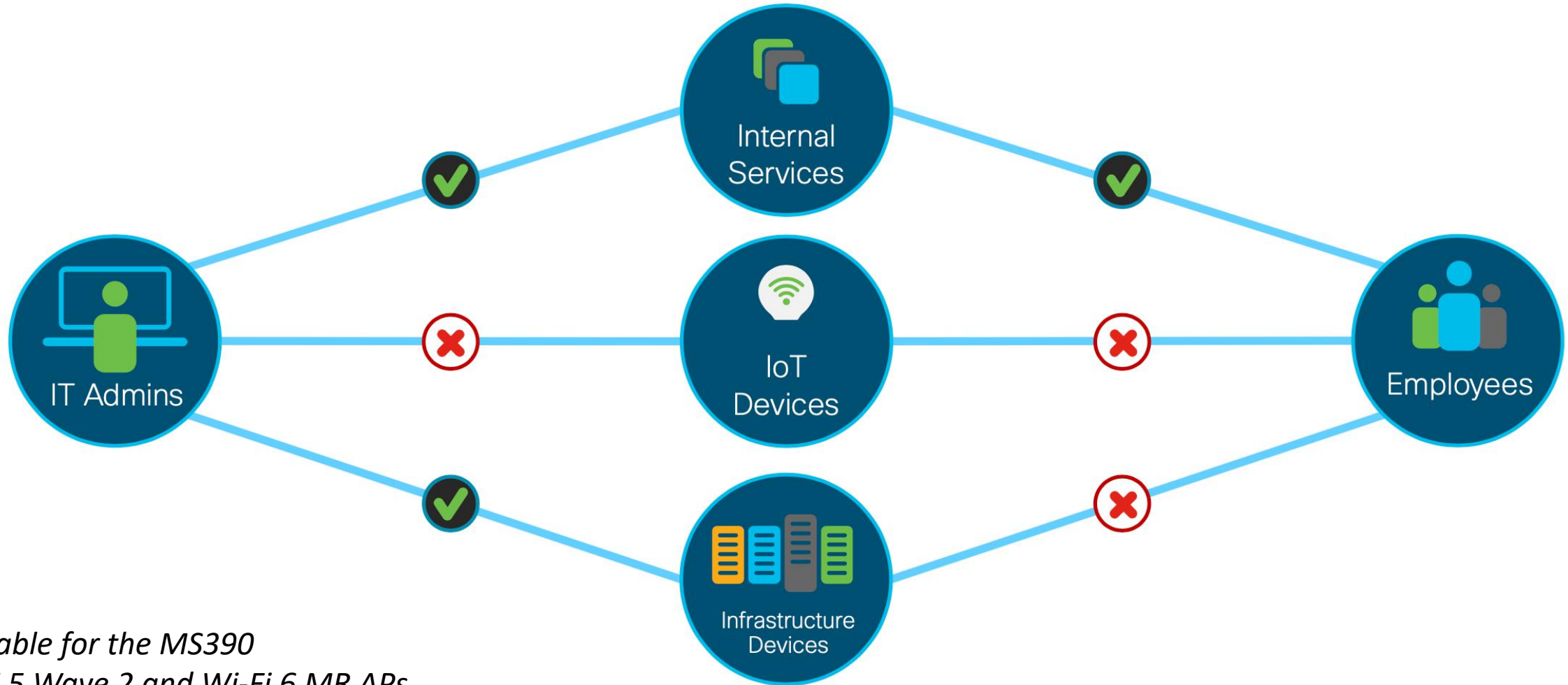


MS390 is the most powerful access switch ever produced by Meraki

The MS390 the power of purpose-built Cisco silicon with the simplicity of the Meraki dashboard to micro-segment different users and devices in a network

# Introducing Adaptive Policy

Policy decoupled from IP addressing delivers scale and consistency organization-wide, simply



*Available for the MS390  
Wi-Fi 5 Wave 2 and Wi-Fi 6 MR APs*



# Organization-wide Groups and Policies are defined

Adaptive policies **BETA**

Groups Policies

Search... **Add Group** 10 groups

<input type="checkbox"/>	Name	SGT value ▲	Description	
<input type="checkbox"/>	Unknown	0	Unknown group applies when a policy is specified for unsuccessful group classification	
<input type="checkbox"/>	MerakiInternal	2	MerakiInternal group is used by Meraki devices for internal and dashboard communication	
<input type="checkbox"/>	General Access	4	General access tag	
<input type="checkbox"/>	Media Services	5	Media Servers and Storage	
<input type="checkbox"/>	IoT Manager	9	IoT Management devices	
<input type="checkbox"/>	IoT Tag	10	IoT Devices	
<input type="checkbox"/>	LAB Net	20	Lab net device tag	
<input type="checkbox"/>	Domain Services	50	Domain Controller and services	
<input type="checkbox"/>	Quarantine	666	Quarantined devices	
<input type="checkbox"/>	DMZ subnet	999	DMZ network tag	



Adaptive policies **BETA**

Groups Policies

Source groups: IoT

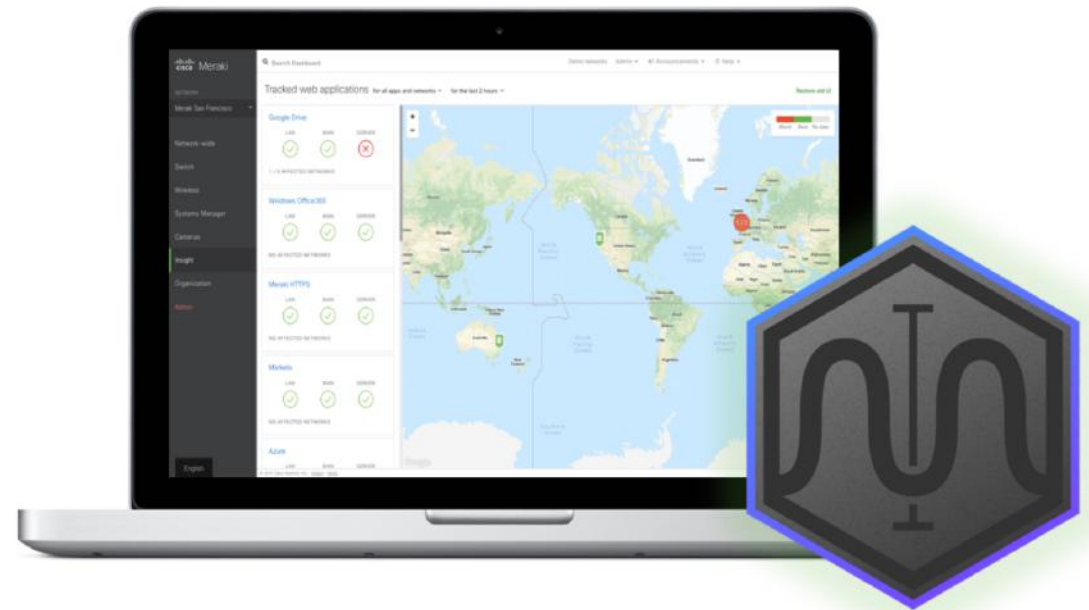
Destination groups: IoT Global default policy

1 policy selected **Allow** **Deny**

<input checked="" type="checkbox"/>	Name	SGT value	Description
<input type="checkbox"/>	IoT Manager	9	IoT Management devices
<input checked="" type="checkbox"/>	IoT Tag	10	IoT Devices

- Granular Bi-Directional Rules
- Will support SG-ACLs at launch

# Meraki Insight Intelligence



# Web-based application analytics



Feature highlights

End-to-end visibility to SaaS applications

Application performance management

Application performance troubleshooting

Monitor network and application layers

data

WAN Health monitoring

Offers data for external factors, including the entire WAN, ISPs and cloud applications like Office 365, Salesforce.com, etc.

At first, the MX is used as a probe for gathering data...

# Meraki Cellular Gateway



# The MG21 and MG21E

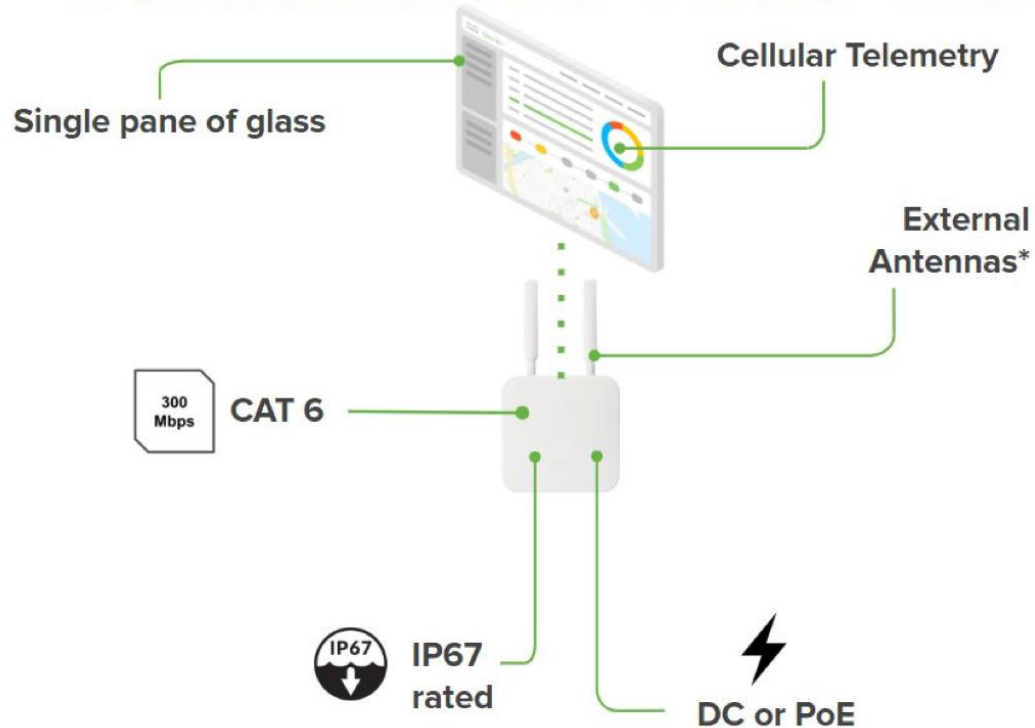


- Integrated CAT6 modem with up to 300Mbps
- DC / PoE power in
- 2x Ethernet ports for HA
- Nano SIM card slot
- IP67 rated
- Multi-surface mounting bracket (wall, ceiling, and tabletop)
- LTE connectivity out-of-the-box
- External antennas\*
  - Dipole included
  - Patch available as an accessory
- API support



# MG

## WorkConnect MG Cellular Gateway



- Cisco Meraki MG Cellular Gateways seamlessly transpose a wireless cellular signal to wired Ethernet for primary or failover connectivity.
- **Requirement:** The customer must have an existing edge device (e.g. MX).
- Positioning:
  - Locations without a wired Internet Service Provider;
  - The cellular signal (coverage) is not strong enough (e.g. basements, rural areas etc.)

# Meraki Security Cameras

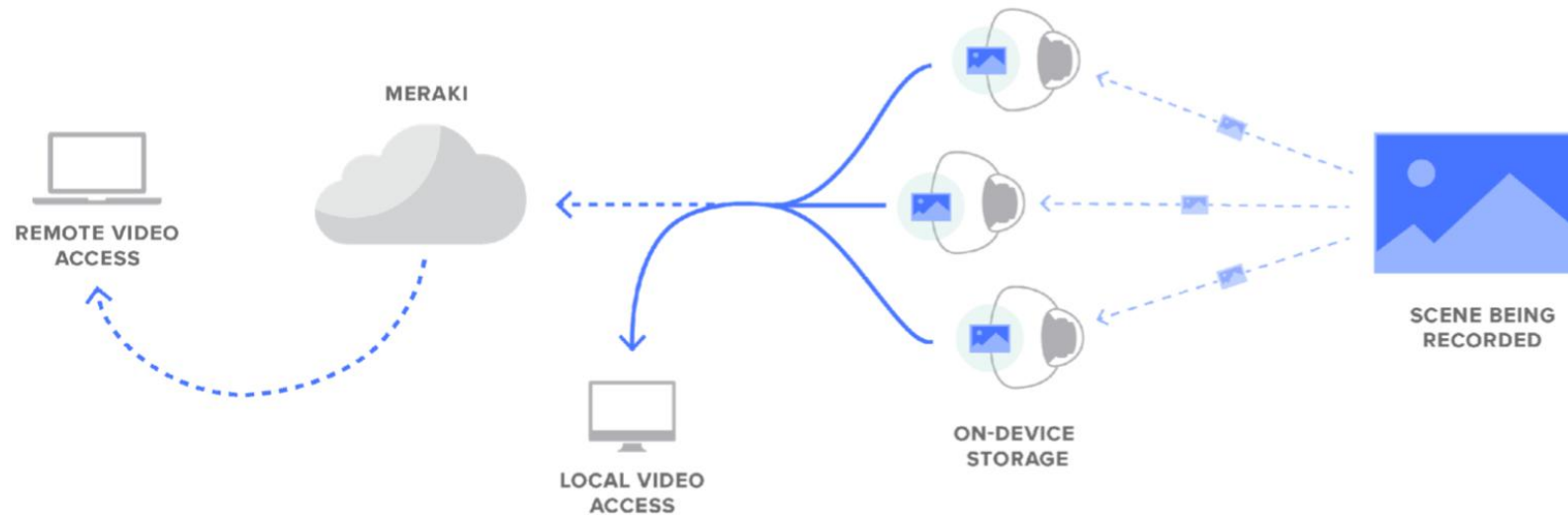


# Cutting Edge Architecture

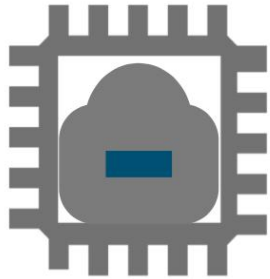
Less than 50kbps upstream bandwidth per camera

Configuration, thumbnails, and metadata stored in the cloud

Hybrid video processing: video is analyzed on camera, motion indexed in the cloud



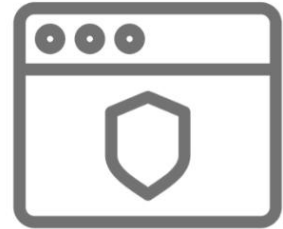
# Encryption by Default



VIDEO  
AT REST



VIDEO DURING  
TRANSPORT



MANAGEMENT  
DATA

# MV Product Family



**MV32**

360° fisheye  
Ultra compact form factor  
VR enabled



**MV12**

Fixed lens (3 models)  
Compact form factor  
Advanced analytics

**INDOOR**



**MV22**

Varifocal (zoom capable)  
Easy installation  
Multipurpose



**MV72**

Varifocal (zoom capable)  
IP67 and IK10+ rated  
Demanding environments

**OUTDOOR**



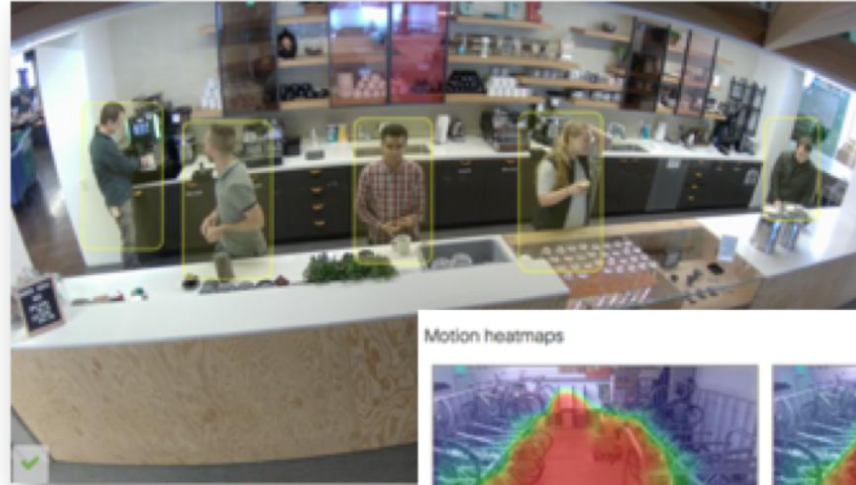
# Built-in Analytics

## Meraki MV as a sensor

Optimize business performance

Enhance public safety

Streamline operational objectives

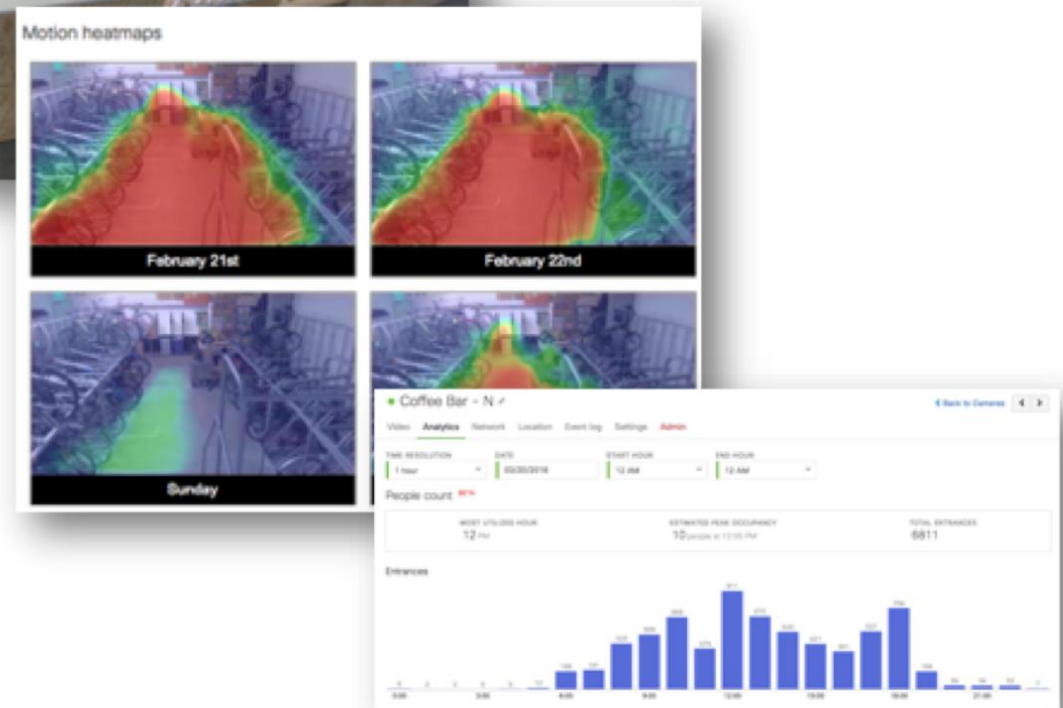


## Motion Heat Maps and Object Detection\*

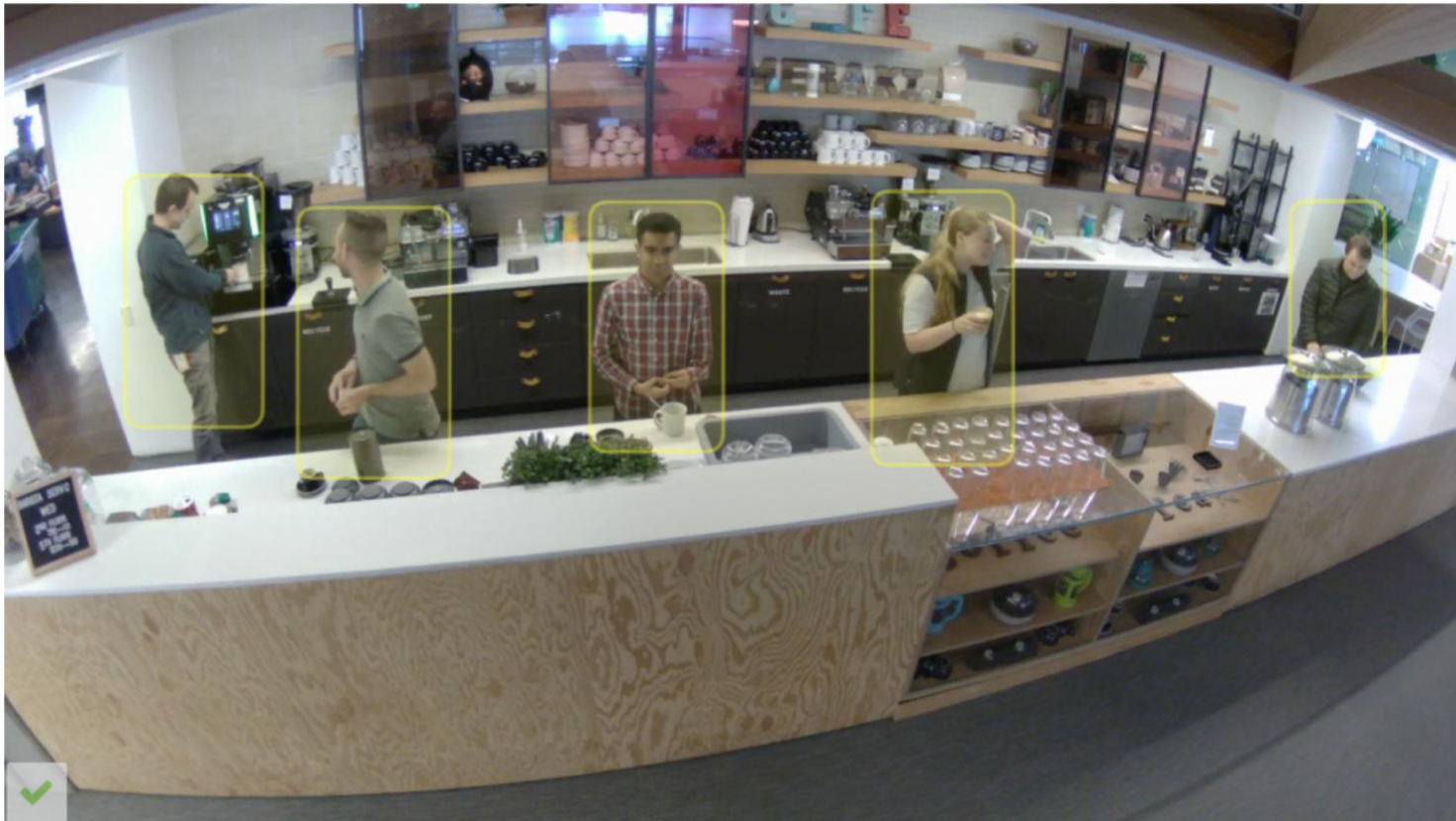
Provides insightful business intelligence

Easily uncover and identify behavioral patterns and trends

Hourly or daily levels of granularity



# Object Detection (Person Detection)



## FUNCTIONALITY:

Anonymized person detection for business intelligence

## EXAMPLE USE CASE:

People counting to better understand in-store customer behavior patterns



# Motion Recap

- Composite images built in camera
- Summarized activity in a single image
- Find the answer without watching video



# Wireless details

1x1 dual band 802.11ac wireless  
Supports 2.4 GHz and 5 GHz bands

Easy to use:

1. Configure a primary and backup SSID
2. Connect camera to LAN for configuration download
3. Power camera up within range of an access point\*

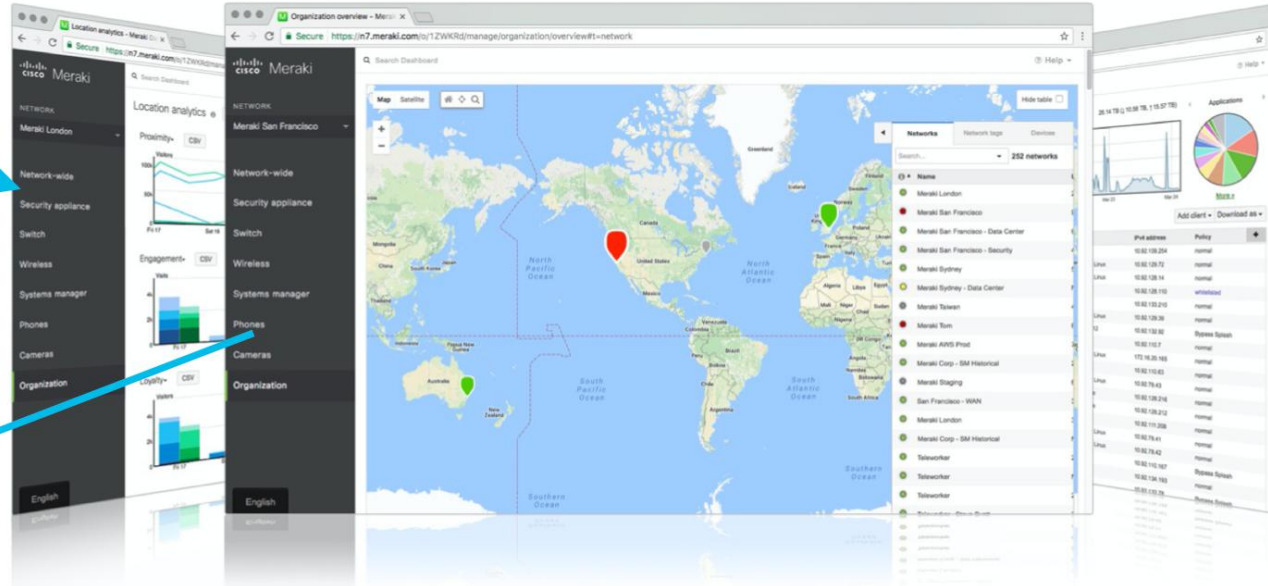


*\*Works with any brand of access point*

# Meraki cloud managed IT

REST API  
JSON

Webhooks  
https receiver



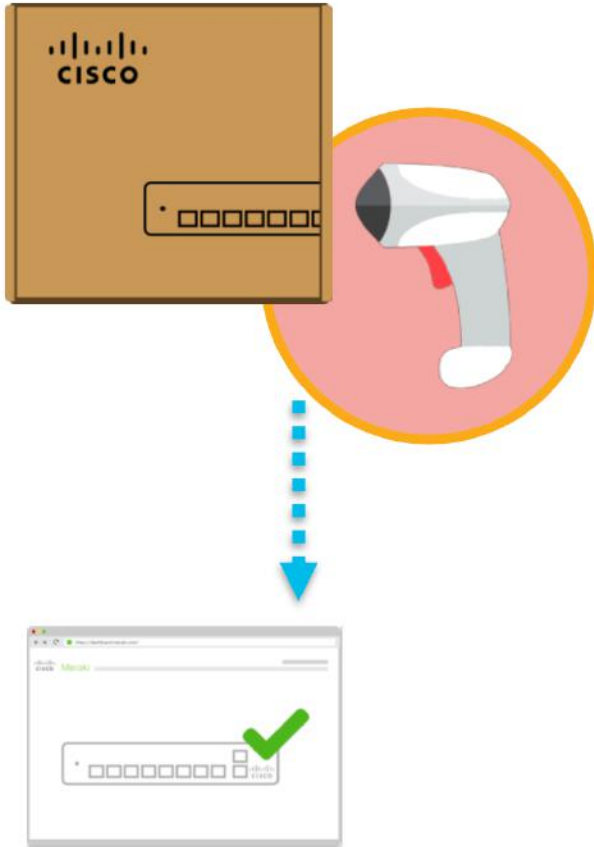
MQTT Broker



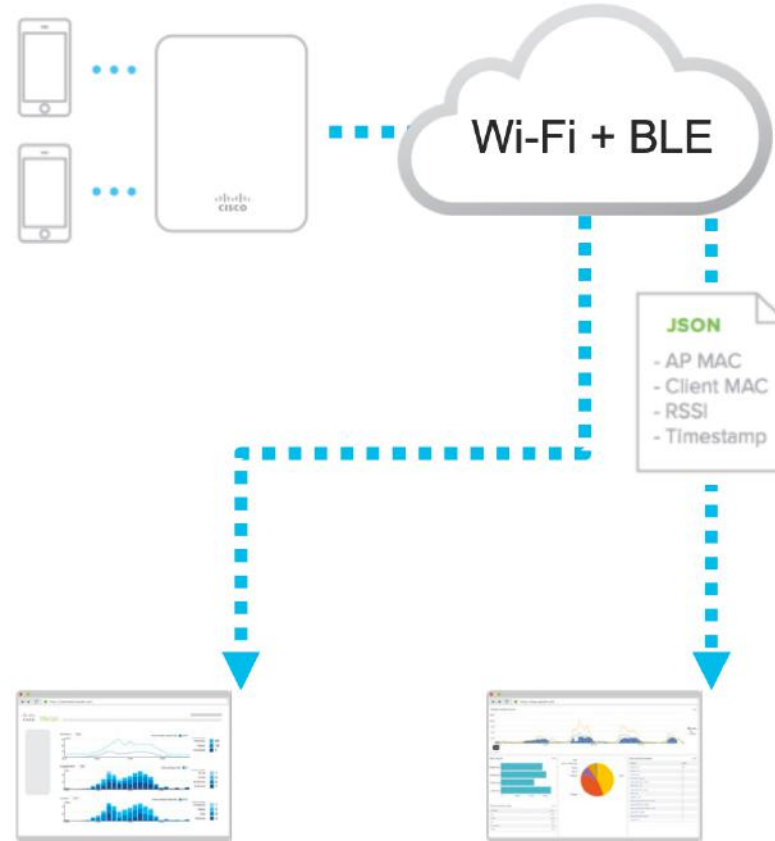


# Meraki APIs

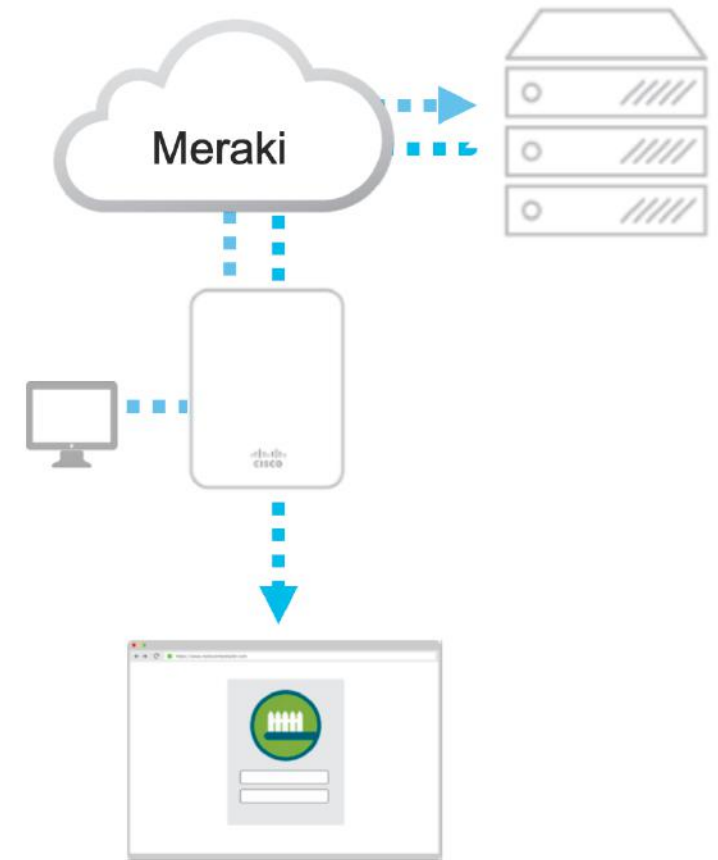
## Dashboard API



## Scanning API



## Captive Portal API



# Nadcházející webináře



Téma: Monitoring a optimalizace chodu aplikací s Cisco AppDynamics a Workload Optimization Manager

Datum: 02.04.2020, 10:00 – 11:00

Téma: Best practices při používání nástrojů na spolupráci on-line

Datum: 07.04.2020, 10:00 – 11:00

Téma: Využití technologie Cisco SD-WAN pro budování moderních pobočkových sítí

Datum: 09.04.2020, 10:00 – 11:00

Více informací na [webu Cisco Tech Club Webinářů](#)