

Introduction to Meraki Integrations

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@theDeNap





Agenda

- The Meraki Platform
- Why APIs
- Dashboard API
- Webhook Alerts
- Location Scanning API
- MV Sense
- External Captive Portal

The background is a dark blue field filled with numerous small, semi-transparent squares and dots in various colors including light blue, green, yellow, orange, and red. These elements are scattered across the frame, with a higher concentration of yellow and orange squares forming a diagonal streak from the top right towards the bottom right.

The Meraki Platform

Meraki Cloud Platform

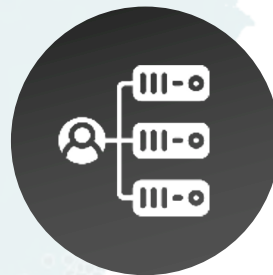
We run the largest and most battle-tested cloud platform in networking



▲ 450,000+
customers

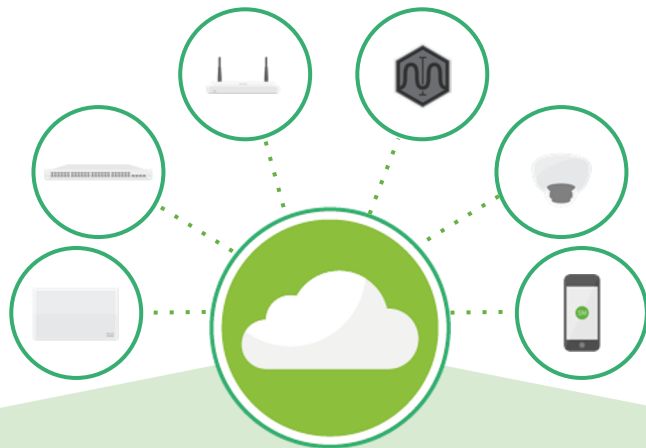


▲ 6.7M Meraki
devices



▲ 2.4M active
networks

A Comprehensive Cloud Platform



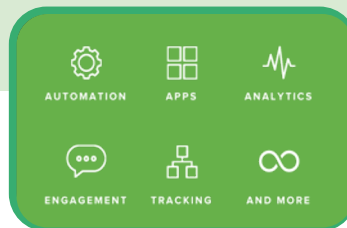
WWW

OUT-OF-THE-BOX
MANAGEMENT & ANALYTICS



{APIs}

INTEGRATIONS & SOLUTIONS
POWERED BY MERAKI

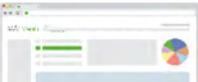


AN INTERFACE FOR EVERY USE CASE

	 Dashboard (Web UI)	 APIs
PROVISION	✓	✓
MONITOR	✓	✓
REPORT	✓	✓
ANALYZE	✓	✓
CUSTOM INTEGRATIONS		✓

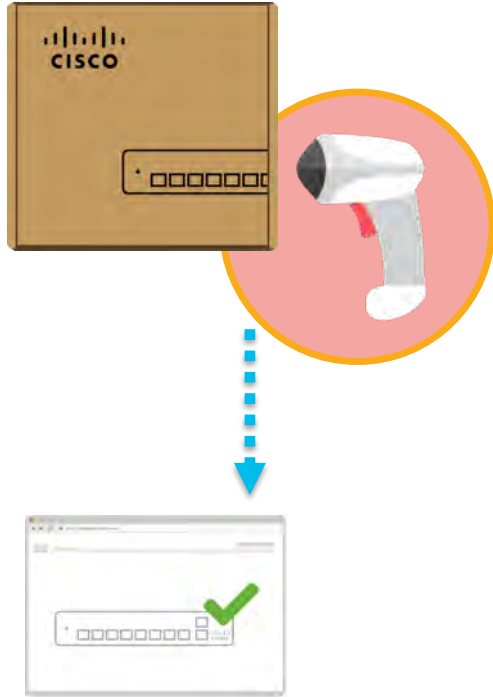
Meraki APIs and Their Value

AN INTERFACE FOR EVERY USE CASE

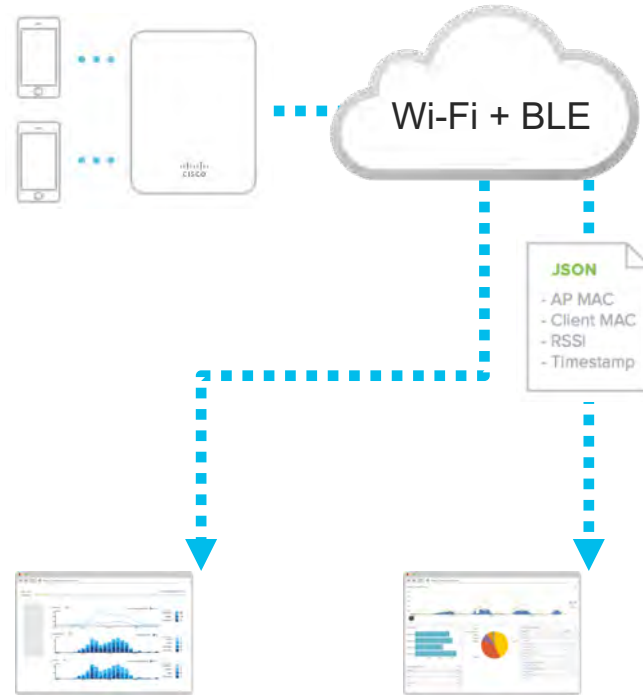
	 Dashboard (Web UI)	 APIs
PROVISION	✓	✓
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REPORT	✓	✓
ANALYZE	✓	✓
CUSTOM INTEGRATIONS		✓

Meraki APIs

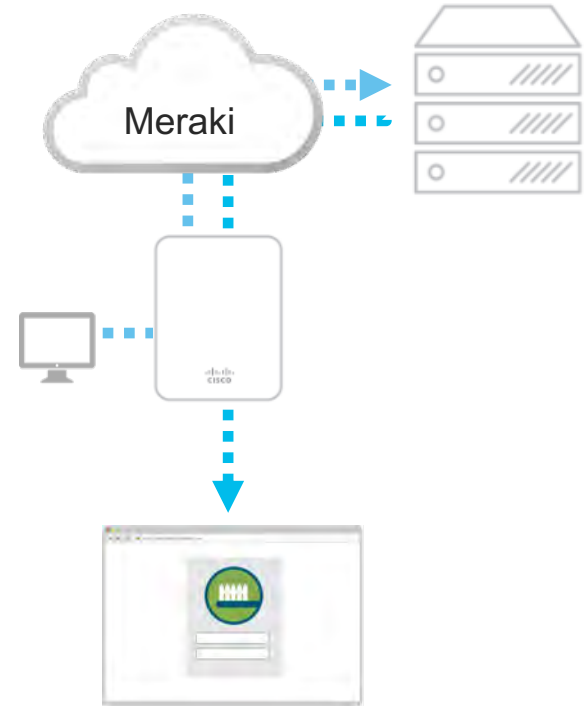
Dashboard API



Scanning API

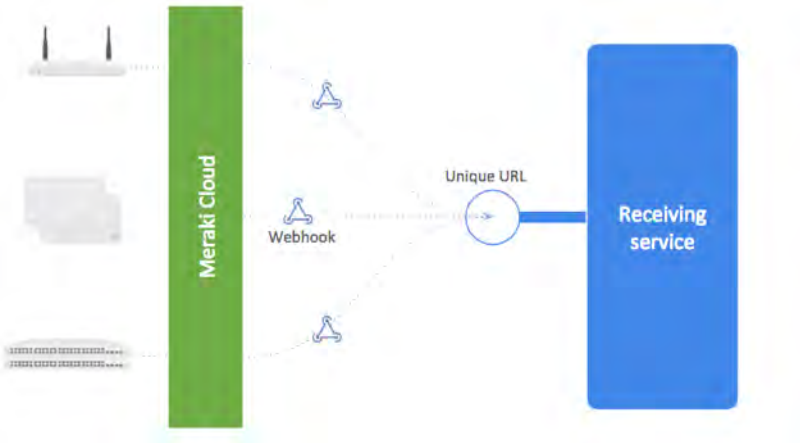


Captive Portal API



Meraki APIs – Continued

WebHook Alerts



MV Sense



APIs Enable Applications for How YOU Manage IT

Network Programmability & Automation



Provisioning

Setup 10K networks across 5 time zones



Configuration Management

Make a configuration change to 1,100 ports



Monitoring

Connection status of all 2,200 Meraki devices in Organization

Data Insights & Analysis



Reporting

Visualize what % of clients are on WiFi vs Wired



Meraki IQ

Processed data insights that deliver key business insights

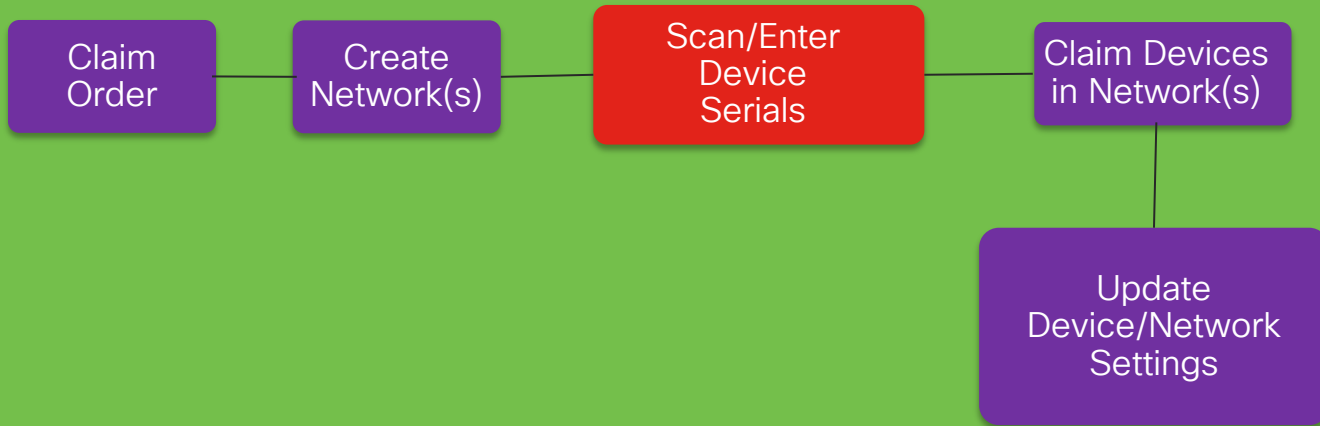
Dashboard API

Why use the Dashboard API?

- Service Providers: OSS/BSS integration
 - Provision the customers in the Meraki cloud
 - Allocate customer devices
 - Set initial network configuration
 - Add administrator accounts for NOC staff and/or end customer access
- Enterprise: Network Automation
 - Automation of large deployment projects, e.g. many branches
 - Teleworker Off-boarding to disconnect VPN home office routers
 - Configure many sites in minutes
 - Build your own dashboard with controlled access

Deploy thousands of sites in minutes

Meraki Management Application – (web app, mobile app, script, etc)



Meraki
API

Custom
App

Enabling the Dashboard API

API access

API keys

Key	Created at	Last used	
*****0327	Jul 12 2018 20:36 UTC	May 21 2019 15:02 UTC	Revoke

Generate new API key

1. Organization > Settings > Enable API access
2. Go to My profile and Generate API key.
3. Go to <https://developer.cisco.com/meraki/api/#/rest/getting-started>

Provisioning New Networks

- **POST** /organizations/{organizationId}/networks -> Network name, type
- Take the resulting networkId and
- **POST** /networks/{networkId}/devices/claim with device serial body

Hardening the newly provisioned network

- Segment with VLANs – **POST** /networks/{networkId}/vlans
- Content Filtering – **PUT** /networks/{networkId}/contentFiltering
- Group Policies – **POST** /networks/{networkId}/groupPolicies
- Network Malware Settings – **PUT** /networks/{networkId}/security/malwareSettings
- Firewalled Services – **PUT** /networks/{networkId}/firewalledServices/{service}
- MX L7 Firewall Rules – **PUT** /networks/{networkId}/l7FirewallRules
- MX L3 Firewall Rules – **PUT** /networks/{networkId}/l3FirewallRules
- MR L3 Firewall Rules – **PUT** /networks/{networkId}/ssids/{number}/l3FirewallRules
- Switchport Management – **PUT** /devices/{serial}/switchPorts/{number}

Monitoring the network

- Client level

- GET /networks/{networkId}/clients/{clientId}/securityEvents
- GET /networks/{networkId}/clients/{idOrMacOrIp}/events
- GET /networks/{networkId}/clients/{idOrMacOrIp}

- Network level

- GET /networks/{networkId}/devices/{serial}/lossAndLatencyHistory
- GET /networks/{networkId}/airMarshal
- GET /networks/{networkId}/traffic
- GET /networks/{id}/splashLoginAttempts
- GET /networks/{networkId}/clients/connectionStats
- GET /networks/{networkId}/clients/latencyStats

Dashboard API Release V1

- Enhanced Developer Experience (DX)

Improved organization of path structures, responses and documentation grouping

- Consistency and adoption of new REST standards

Standardized approach to authentication and consistency in value formats

- Increased Efficiency

Removal of duplicate path identifiers, focus on high-volume data retrieval for GET operations

- New Features & Capabilities



Dashboard API v1 Docs

DEVNET

DiscoverTechnologiesCommunitySupportEventsNew Announcement

Q

SIGN UP FREE

LOG IN

Documentation > meraki-api-v1-beta

v1 (beta)

Introduction

Meraki Dashboard API

What can you do with it?

What's New in v1

Getting Started

Endpoints

Overview

API

GENERAL

devices

networks

organizations

PRODUCTS

appliance

camera

cellularGateway

switch

wireless


sm

insight

Model

Meraki Dashboard API

A RESTful API to programmatically manage and monitor Meraki networks at scale.



What can you do with it?

- Add new organizations, admins, networks, devices, VLANs, and more
- Configure thousands of networks in minutes
- On-board and off-board new employees' teleworker setup automatically
- Build your own dashboard for store managers, field techs, or unique use cases

Checkout out the [Explore](#) section for open source projects, or browse the [Marketplace](#) for partner solutions.

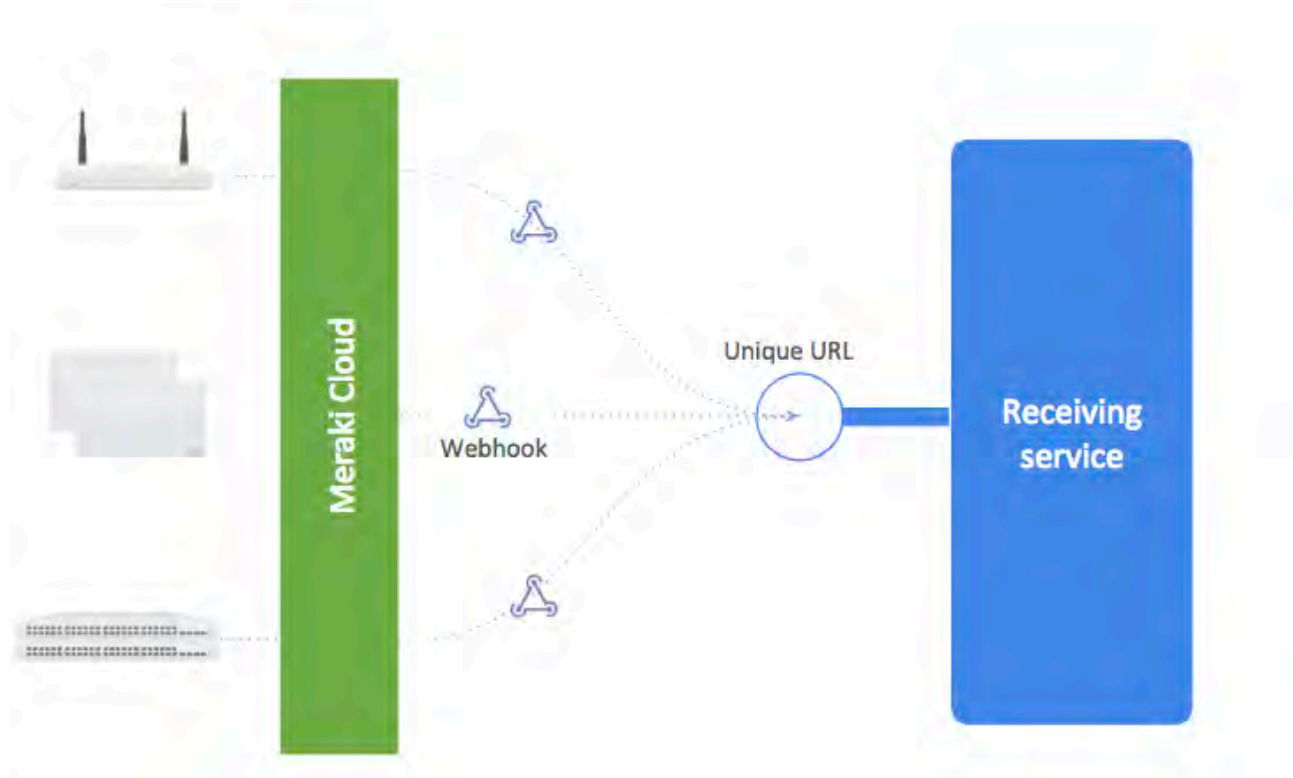
What's New in v1

The Dashboard API has evolved significantly, providing hundreds of endpoints to manage your Meraki networks!

Chat with Us!

Webhook Alerts

WebHook Alerts



Example WebHook Integrations and Solutions

Generate alarms or events in your monitoring or management system

solarwinds

pagerduty



zendesk

servicenow

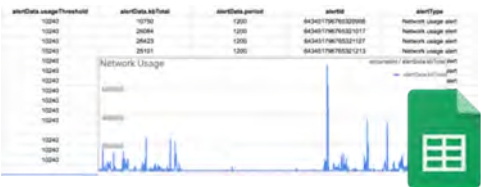
Automate workflows based on network events

```
{
  "alertId": "643451796765250686",
  "alertType": "A switch port was disconnected",
  "deviceMac": "00:11:22:33:44:55",
  "deviceName": "Office",
  "deviceSerial": "AAAA-BBBB-CCCC"
}
```



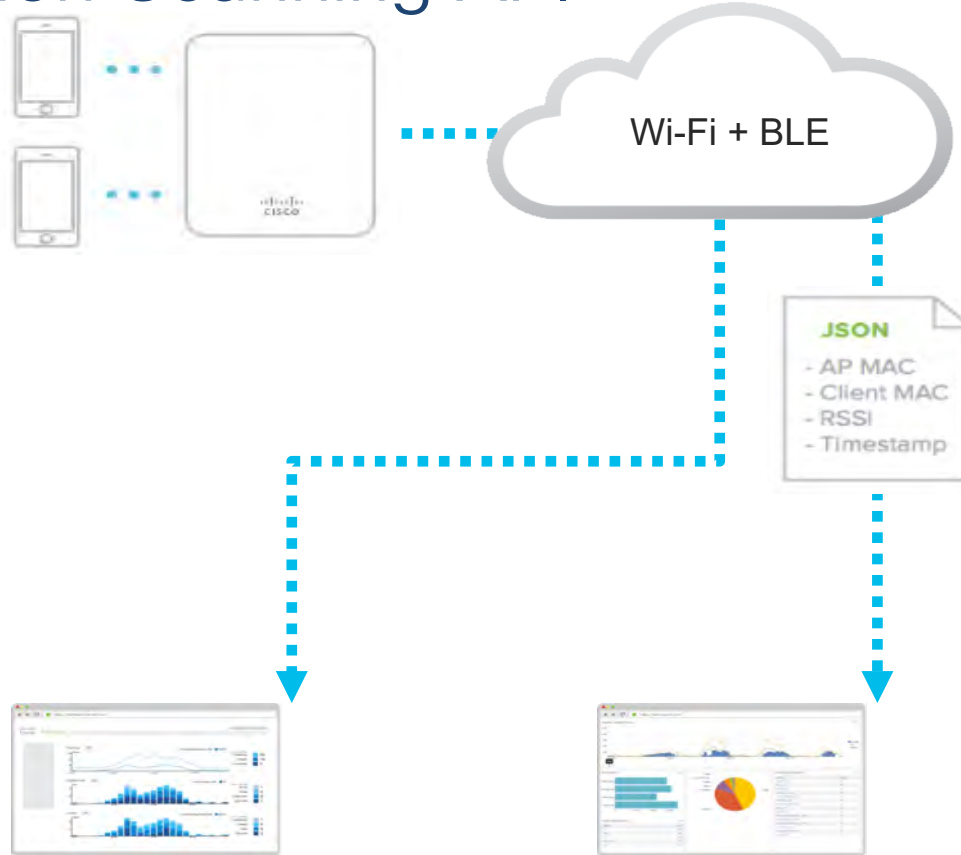
Webex Teams

Log alerts to a spreadsheet for interactive and flexible reporting



Location Scanning

Location Scanning API



```
{  
  "apMac": <string>,  
  "apTags": [<string>, ...],  
  "apFloors": [<string>, ...],  
  "observations": [  
    {  
      "clientMac": <string>,  
      "ipv4": <string>,  
      "ipv6": <string>,  
      "seenTime": <string>,  
      "seenEpoch": <integer>,  
      "ssid": <string>,  
      "rssi": <integer>,  
      "manufacturer": <string>,  
      "os": <string>,  
      "location": {  
        "lat": <decimal>,  
        "lng": <decimal>,  
        "unc": <decimal>,  
        "x": [<decimal>, ...],  
        "y": [<decimal>, ...]  
      }  
    }, ...  
  ]  
}
```

Dashboard Configuration and API Flow

Analytics ☐ Analytics enabled 

CMX API ☐ CMX API enabled 

Validator ⓘ `ffffffffffffsdalkfjsdalkfhdsda868c4c25b9d6325035f5`

Validated `http://mysite-zzz.dynamic-m.com:1880/cmx2`

Post URLs ⓘ

Post URL	Secret	API Version	
<input type="text" value="http://mysite-zzz.dynamic-m.com:1880/cmx2"/>	<input type="password" value="....."/> Show secret	2.0 	<input type="button" value="Validate"/> 

POST URL

`https://YourServer.com`

[GET]

YourServer responds with the **Validator** key defined by your Meraki Dashboard network.

[POST]

YourServer receives a JSON array of client observations, which includes a user defined **Secret** that can be used to ensure the integrity of the data.

Wi-Fi Location Scanning Elements

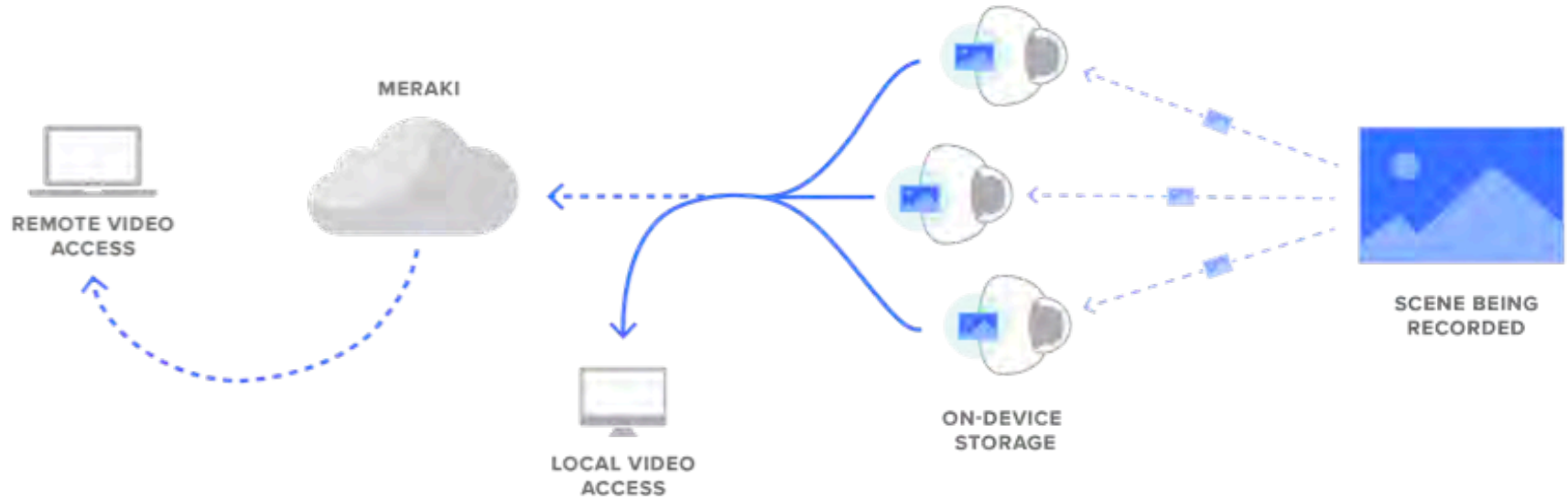
Name	Format	Description
apMac	string	MAC address of the observing AP
apTags	[string]	JSON array of all tags applied to the AP in dashboard
apFloors	[string]	JSON array of all floorplan names on which this AP appears
clientMac	string	Device MAC
ipv4	string	Client IPv4 address and hostname, in "hostname/address" format; only "/address" if no hostname, null if not available
ipv6	string	Client IPv6 address and hostname, in "hostname/address" format; only "/address" if no hostname, null if not available
seenTime	ISO 8601 date string	Observation time in UTC; example: "1970-01-01T00:00:00Z"
seenEpoch	integer	Observation time in seconds since the UNIX epoch
ssid	string	Client SSID name; null if the device is not connected
rssi	integer	Device RSSI as seen by AP
manufacturer	string	Device manufacturer; null if manufacturer could not be determined
os	string	Device operating system; null if the OS could not be determined
location	location	Device geolocation; null if location could not be determined
lat	decimal	Device latitude in degrees N of the equator
lng	decimal	Device longitude in degrees E of the prime meridian
unc	decimal	Uncertainty in meters
x	[decimal]	JSON array of x offsets (in meters) from lower-left corner of each floorplan
y	[decimal]	JSON array of y offsets (in meters) from lower-left corner of each floorplan

Bluetooth Scanning Elements

Name	Format	Description
apMac	string	MAC address of the observing AP
apTags	[string]	JSON array of all tags applied to the AP in dashboard
apFloors	[string]	JSON array of all floorplan names on which this AP appears
clientMac	string	Device MAC
seenTime	ISO 8601 date string	Observation time in UTC; example: "1970-01-01T00:00:00Z"
seenEpoch	integer	Observation time in seconds since the UNIX epoch
rssI	integer	Device RSSI as seen by AP
location	location	Device geolocation; null if location could not be determined
lat	decimal	Device latitude in degrees N of the equator
lng	decimal	Device longitude in degrees E of the prime meridian
unc	decimal	Uncertainty in meters
x	[decimal]	JSON array of x offsets (in meters) from lower-left corner of each floorplan
y	[decimal]	JSON array of y offsets (in meters) from lower-left corner of each floorplan

MV Sense

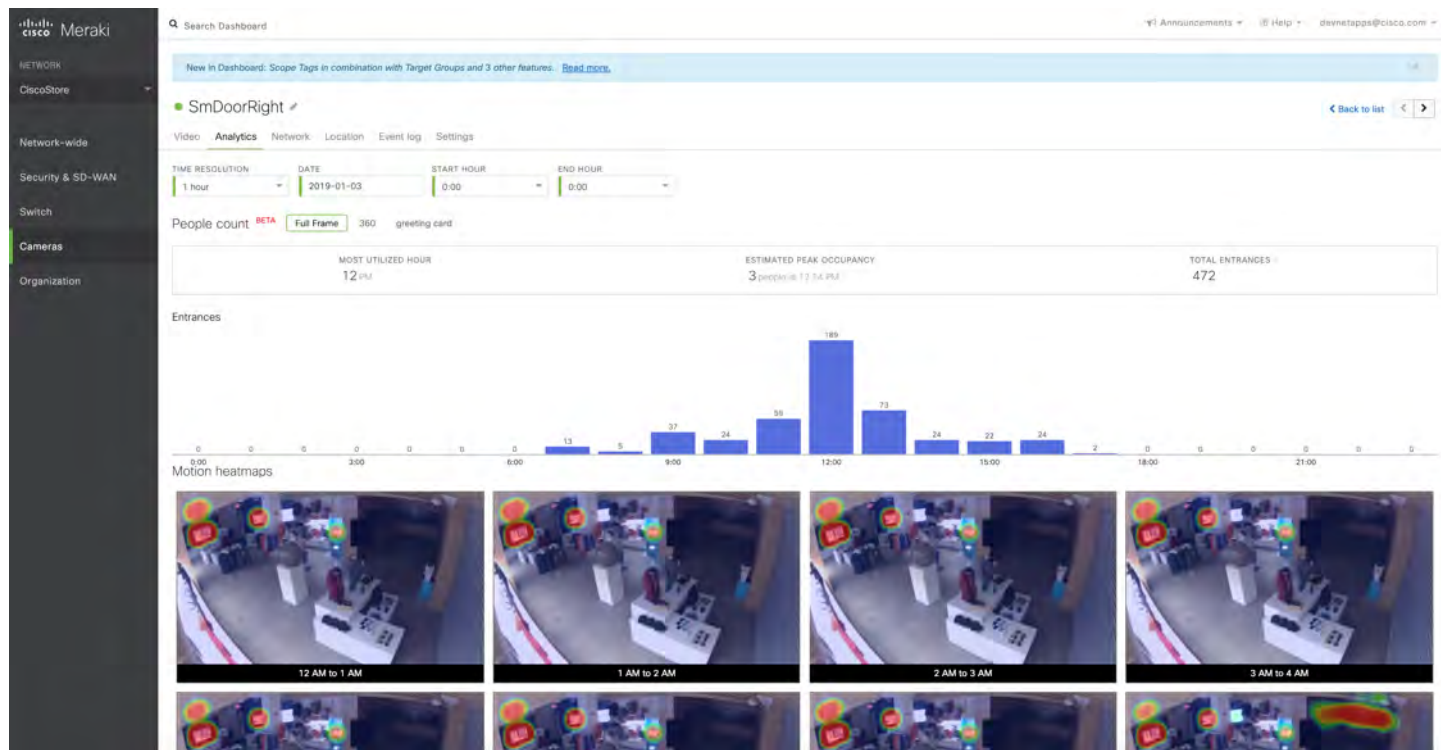
MV Sense



Dashboard: People detection in video

The screenshot displays the Cisco Meraki dashboard interface. On the left is a dark sidebar with navigation links: NETWORK, CiscoStore, Network-wide, Security & SD-WAN, Switch, Cameras, and Organization. The main content area has a top header with a search bar, 'Announcements', 'Help', and a user profile. Below this is a blue banner with a message about 'Scope Tags'. The central section is titled 'SmDoorRight' and includes tabs for 'Video', 'Analytics', 'Network', 'Location', 'Event log', and 'Settings'. The 'Video' tab is active, showing a live video feed of a retail store interior. Three people in the video are highlighted with yellow bounding boxes. Above the video feed are controls for 'Motion search', 'Hide People', 'Export', 'Link video', 'Screenshot', and 'Fullscreen'. At the bottom is a timeline for 'Jan 3' from 10 AM to 12:45 PM, with a play button and a 1x zoom level.

Dashboard: People Count Analytics



Dashboard: Interest Zones

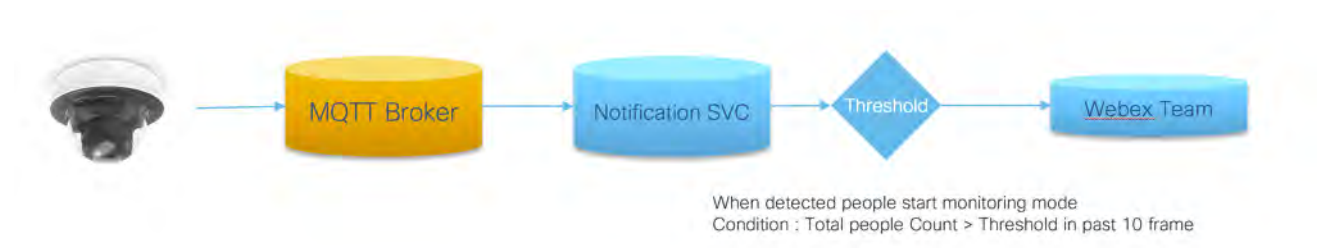
The screenshot shows the Cisco Meraki dashboard interface. On the left is a dark sidebar with navigation links: NETWORK, CiscoStore, Network-wide, Security & SD-WAN, Switch, Cameras (highlighted), and Organization. The main content area has a search bar at the top and a navigation menu with tabs: Video, Analytics, Network, Location, Event log, and Settings (selected). Below the tabs is the 'Zone config' section, which includes a 'New Zone' button and three existing zones: 'Mens Jackets & Shirts', 'PoS', and 'Queue'. Each zone has a video feed and 'DELETE' and 'EDIT' buttons. A 'Cancel' and 'Save' button are at the bottom right of the zone configuration area.

MV Sense Analytics REST API

- Returns an overview of aggregate analytics data for a timespan
 - /devices/[serial]/camera/analytics/overview
- Returns all configured analytics zones for this camera
 - /devices/[serial]/camera/analytics/zone
- Return historical records for analytic zones
 - /devices/[serial]/camera/analytics/zones/[zoneId]/history
- Returns most recent record for analytics zones
 - /devices/[serial]/camera/analytics/recent
- Returns live state from camera of analytics zones
 - /devices/[serial]/camera/analytics/live

MV Sense Real Time with MQTT

- MQTT is a Client Server publish/subscribe messaging transport protocol.
- MV Camera MQTT client publishes people detection count
- Meraki Camera Notification is sample app
 - App watches people count during off-hours
 - When unexpected people are detected it send alert message using WebEx Team bot.

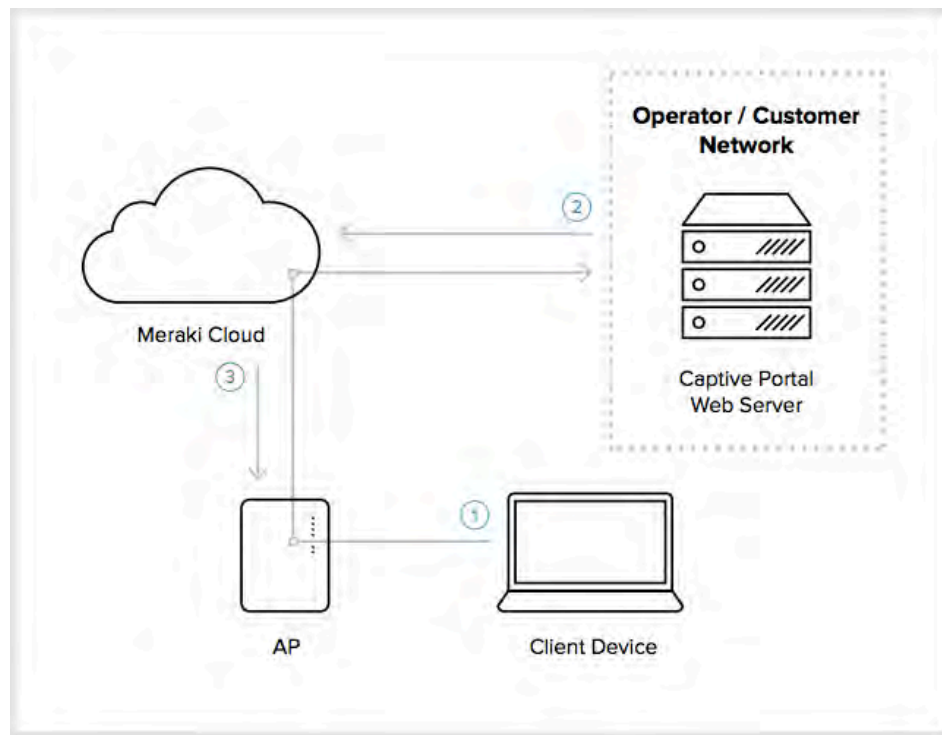


External Captive Portals

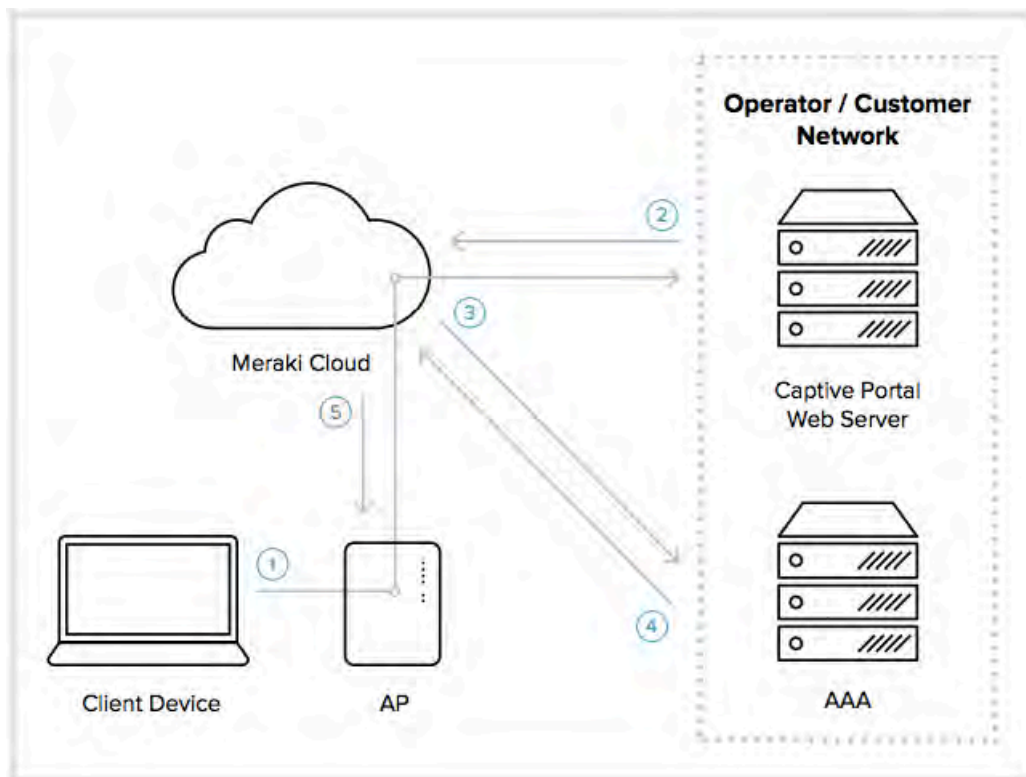
External Captive Portal (EXCAP)



External Captive Portal – EXCAP



EXCAP with AAA



Configuration in Meraki – Type of captive portal

Splash page

- ☐ None (direct access)
Users can access the network as soon as they associate
- ☒ Click-through
Users must view and acknowledge your splash page before being allowed on the network
- ☐ Sponsored guest login
Guests must enter a valid sponsor email and own email address before being allowed on the network
- ☐ Sign-on with **Meraki authentication**
Users must enter a username and password before being allowed on the network
- ☐ Sign-on with SMS Authentication
Users enter a mobile phone number and receive an authorization code via SMS.
After a trial period of 25 texts, you will need to connect with your Twilio account on the [Network-wide settings](#) page.
- ☐ Cisco Identity Services Engine (ISE) Authentication ⓘ
Users are redirected to the Cisco ISE web portal for device posturing and guest access
- ☐ Systems Manager Sentry enrollment ⓘ
Only devices with Systems Manager can access this network
- ☐ Billing (paid access) ⓘ
Users choose from various pay-for-access options, or an optional free tier

Configuration in Meraki – Walled Garden

Captive portal strength  Allow non-HTTP traffic prior to sign-on 

Walled garden  Walled garden is enabled 

Walled garden ranges  *.ngrok.io 
[What do I enter here?](#)

Controller disconnection behavior

The splash page for this SSID relies on the Meraki Cloud Controller. What should happen to new clients if your Internet uplink is down or the controller is otherwise unreachable?

☐ Open: devices can use the network without seeing a splash page, unless they are explicitly blocked

☐ Restricted: only currently associated clients and whitelisted devices will be able to use the network

☒ Default for your settings: Open

Configuration in Meraki – The Splash page

Splash page

SSID: Lycell

Splash pages on this SSID are enabled because a click-through splash page is enabled. You can change this setting on the [access control subtab](#).

Official themes ⓘ

☐ Modern ^{new}

☐ Fluid

Custom themes ⓘ

[Create something new](#)

Custom splash URL

ⓧ Or provide a URL where users will be redirected:

[What is this?](#)

Captive Portal APIs

PUT/networks/{networkId}/ssids/{number}

Parameters

splashPage – type of splash page
walledGardenEnabled
walledGardenRanges

Configuration

PUT/networks/{networkId}/ssids/{number}/splashSettings

Parameters

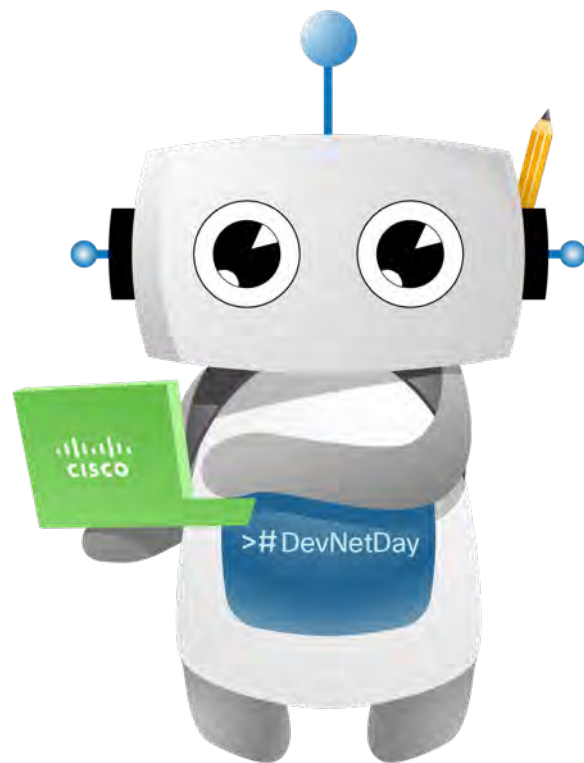
splashUrl
useSplashUrl

Monitor

GET/networks/{networkId}/splashLoginAttempts

Explore More

- Meraki Learning Track:
<https://developer.cisco.com/learning/devnet-express/devnet-express-meraki>



Thank you



Possibilities

#CiscoLive | #DevNetDay