Mastering Your Meraki Dashboard

Uncover Hidden Insights and Troubleshoot Effectively

Lina Alduaikat - CCIE #68079
Technical Consulting Engineer

BRKMER-2844

I can’t log in!

Network Down!

I can’t print!

Wi-Fi isn’t working!

The Internet is broken!

System is down

One device never connects!

The VPN is broken!

Can’t send emails

The whole office is offline!

Nothing works!

Servers are down!

About Me

- Hiking enthusiast
- Badminton Ninja
- Passionate about Oud
- Cisco Exam Advisory Group
- CCIE certified
- +5 Years experience in TAC

Webex App

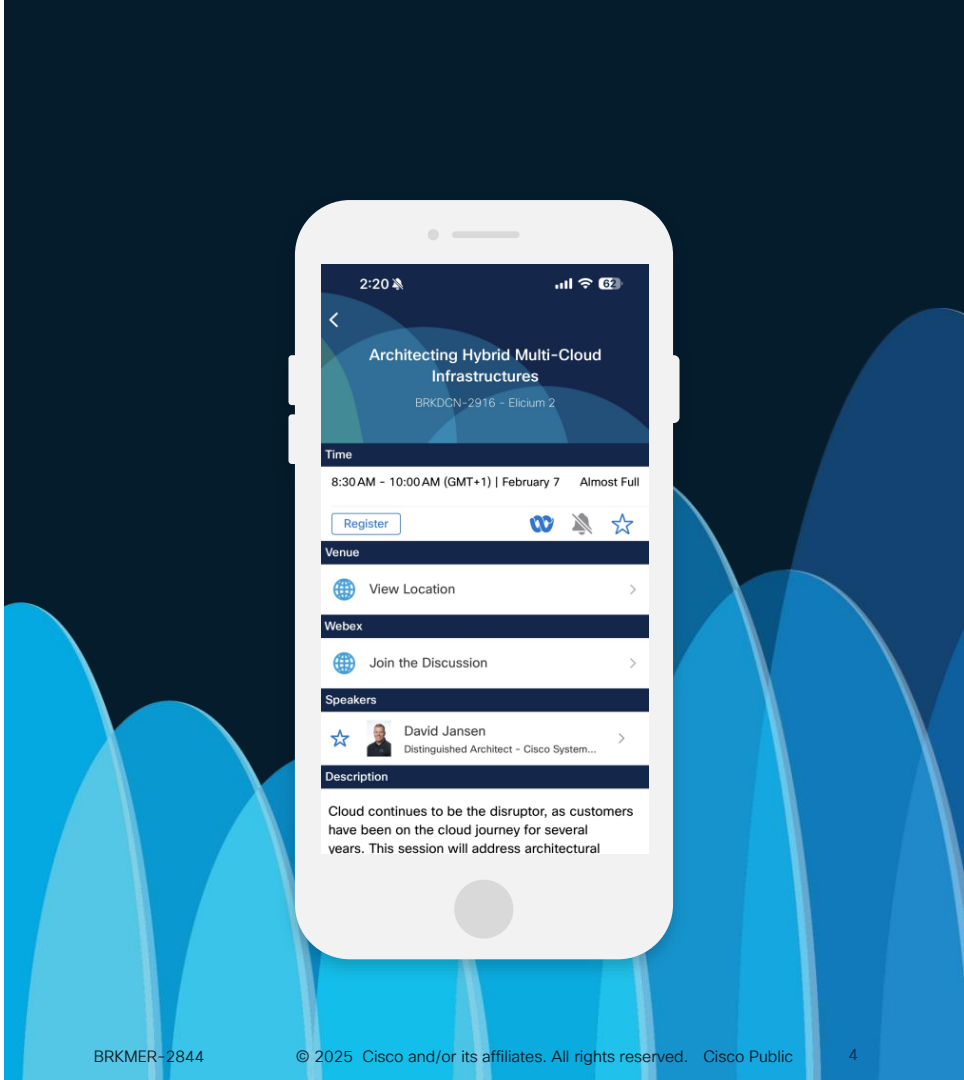
Questions?

Use the Webex app to chat with the speaker after the session

How

1. Find this session in the Cisco Events mobile app
2. Click “Join the Discussion”
3. Install the Webex app or go directly to the Webex space
4. Enter messages/questions in the Webex space

Webex spaces will be moderated by the speaker until February 28, 2025.



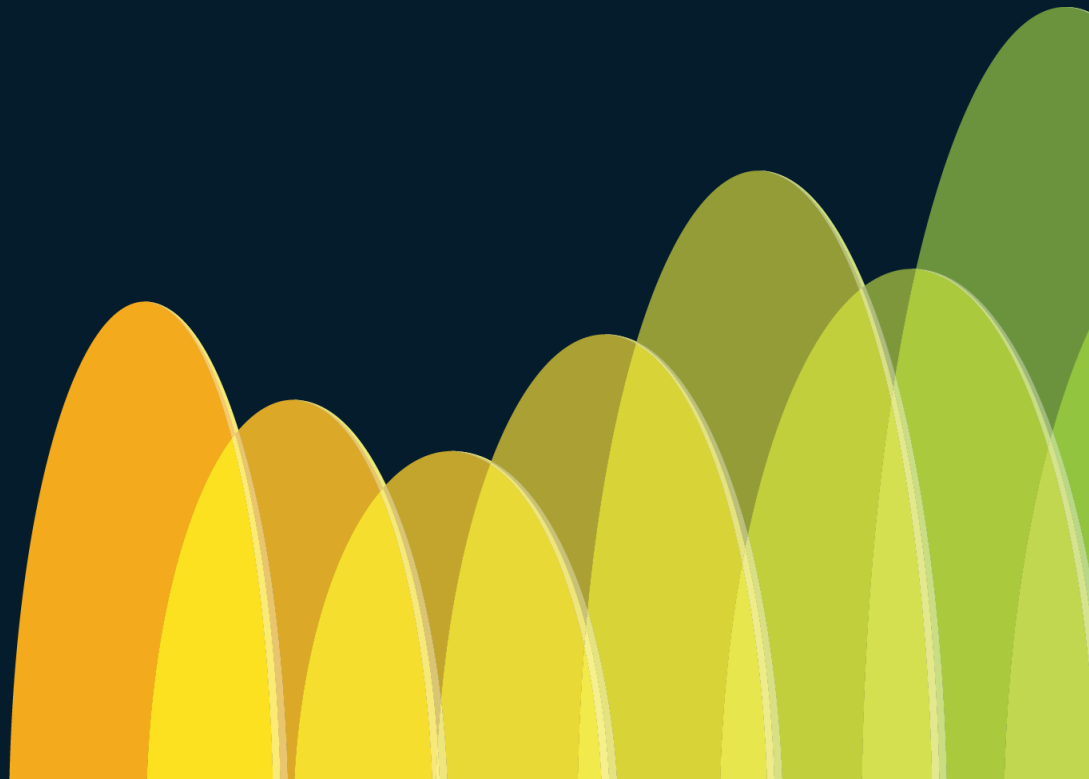
Agenda

- Introduction
- Overview of Meraki dashboard
- Unveiling Powerful Insights
  - ✓ Insights
  - ✓ Packet captures
  - ✓ Live Tools
- Troubleshooting
  - ✓ Dashboard Intelligence
  - ✓ Real-World Scenario
  - ✓ Getting Help
- Practical Tips
- Conclusion

Before We Go Pact

- Watch out for Hidden Slides 
- Key Insights for real challenges
- Make the most of what you have
- Demos cover:
  - ✓ Common problems you'll relate to
  - ✓ Core products MR, MX, and MS

Introduction



What You Will Learn

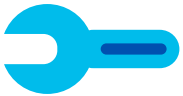
- Understand Meraki Cloud architecture and Dashboard Navigation
- Discover Insights and Tools for simplifying daily tasks
- Learn how to resolve common issues through practical demos
- Learn Tips and Hacks for efficiency

Why Mastering Troubleshooting Skills Matters Even with TAC Support?

Cost Efficiency

Business Impact

Faster Resolution



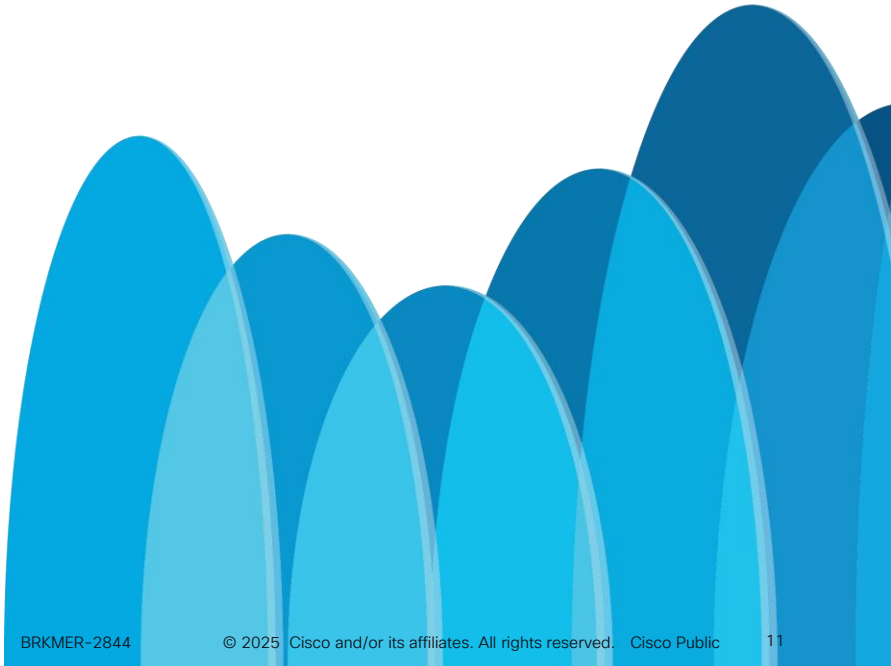
Proactive Maintenance

Collaboration with TAC

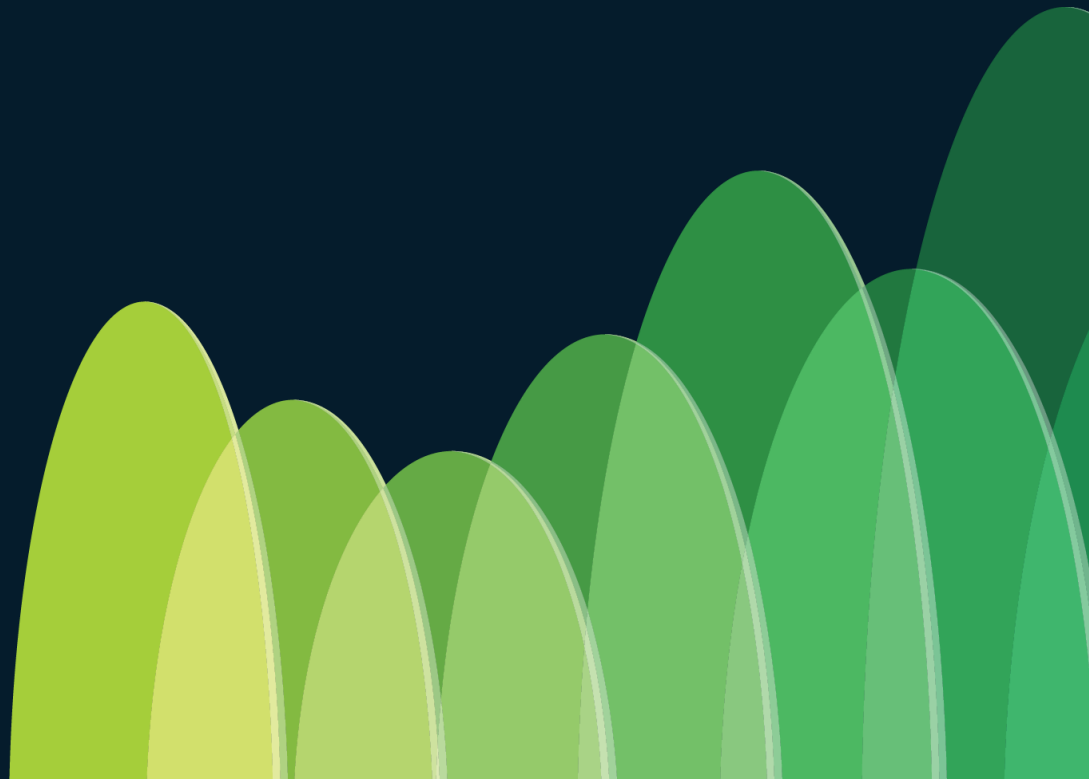
“Having the right tools is just the start; knowing how to use them unlocks their true potential.”

Lina Alduaikat

Cisco



Overview of Meraki Dashboard



cisco Live!

Meraki Cloud Architecture

out of band control plane

Scalable

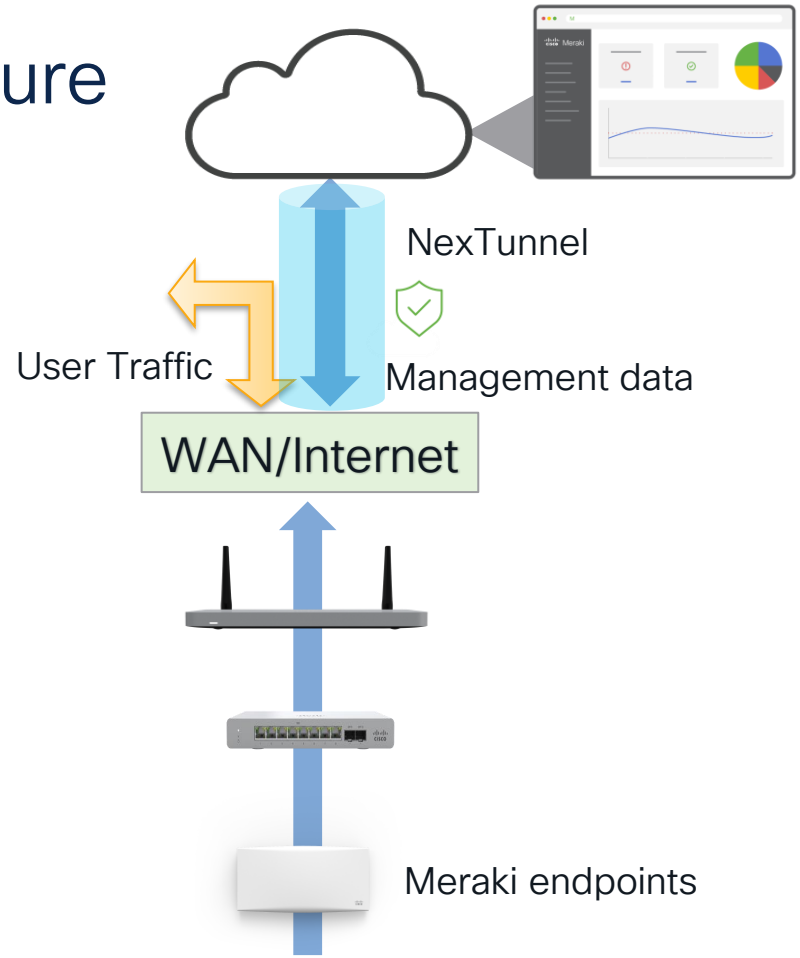
- Unlimited throughput: No bottlenecks
- Add devices or sites within minutes

Reliable

- Uninterrupted network during outages
- 99.99% uptime SLA Secure

Secure

- No user traffic passes through the cloud
- FIPS 140-2 compliant



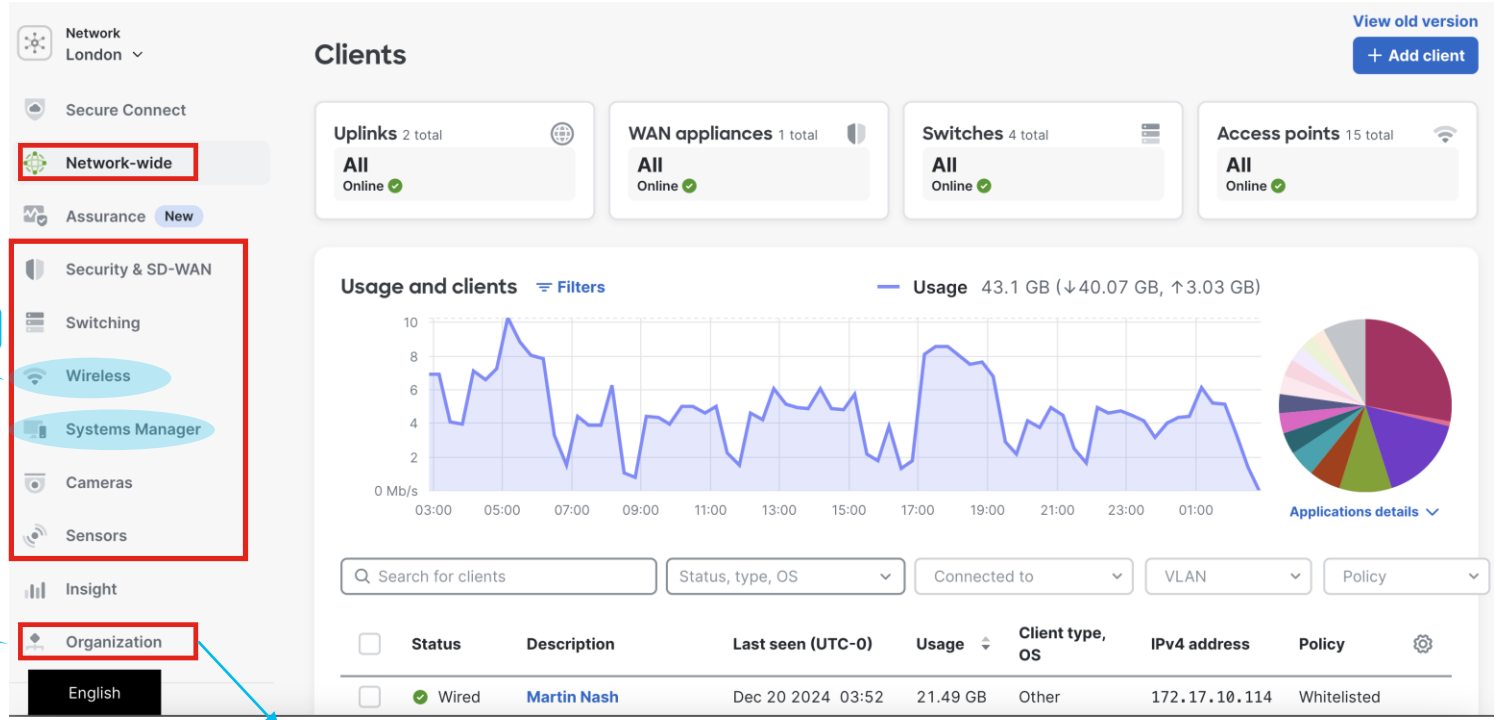
Meraki Dashboard Menus

Network

Product-specific

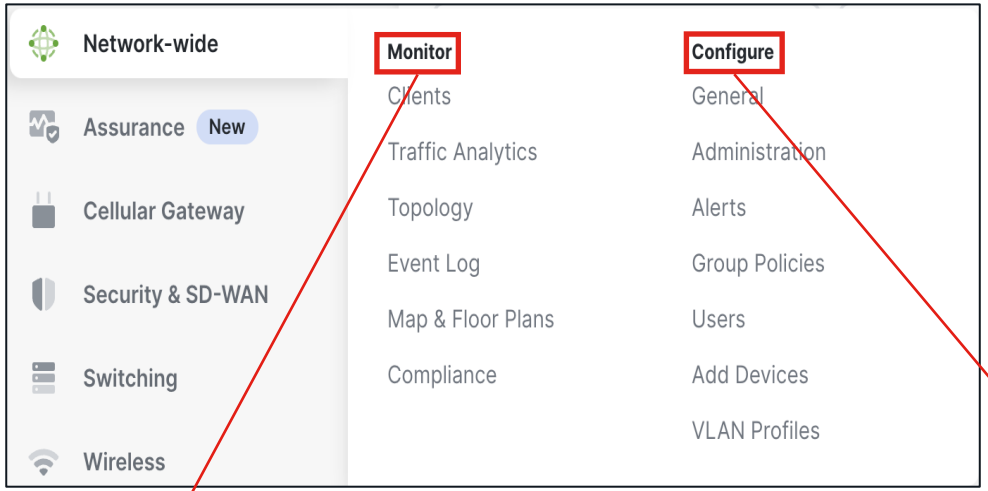
- ✓ Hardware
- ✓ Software

Organization



Only Organization admins have access

Meraki Dashboard Key Sections



Observe the status, performance, and health of your Meraki network devices and clients. It is primarily for monitoring and troubleshooting.

Set up and manage your Meraki network. This is primarily for configuring settings, policies, and device parameters.

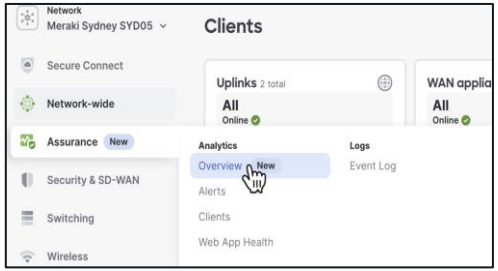
Unveiling powerful insights

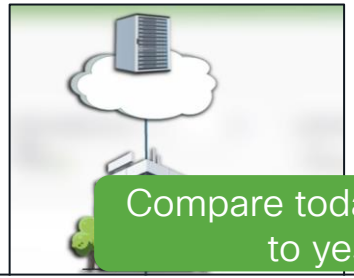
cisco Live!

Insights

Meraki Assurance

Proactive Insights, Trusted Uptime



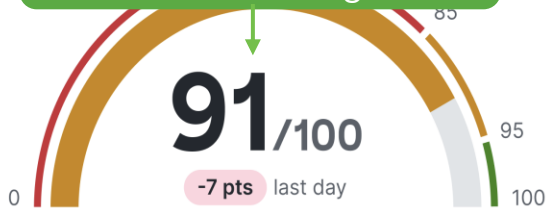


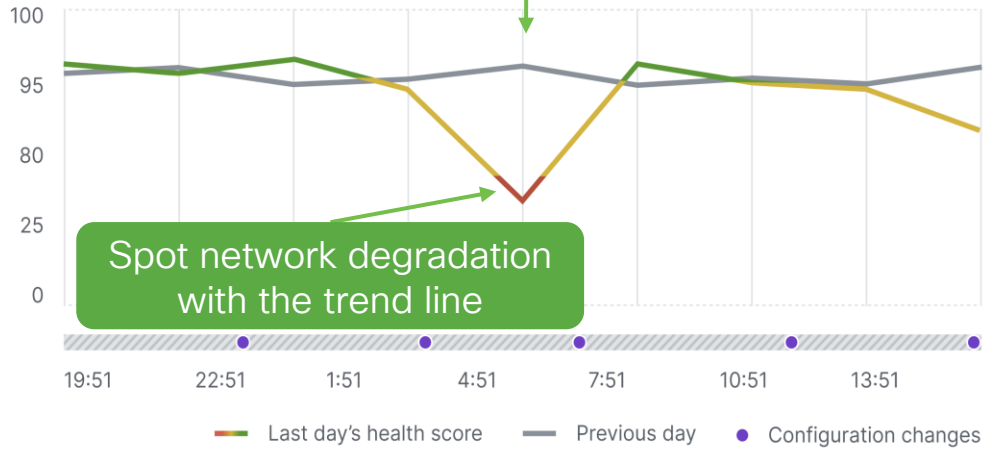
Compare today's experience to yesterday

Network health score Fair

Some end clients are unable to access their applications and have moderate interruption from the network.

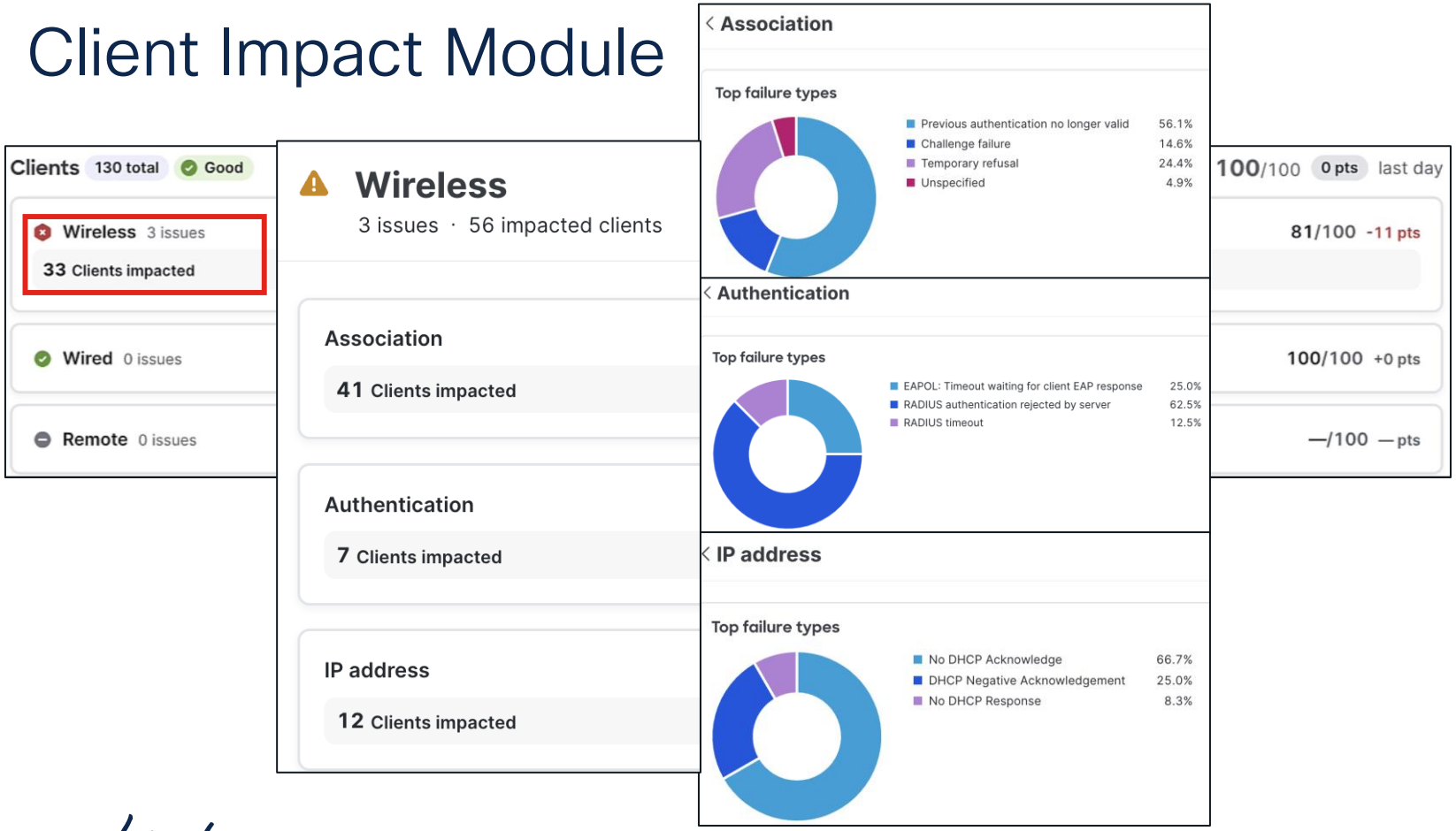
Overall network score and insights





Spot network degradation with the trend line

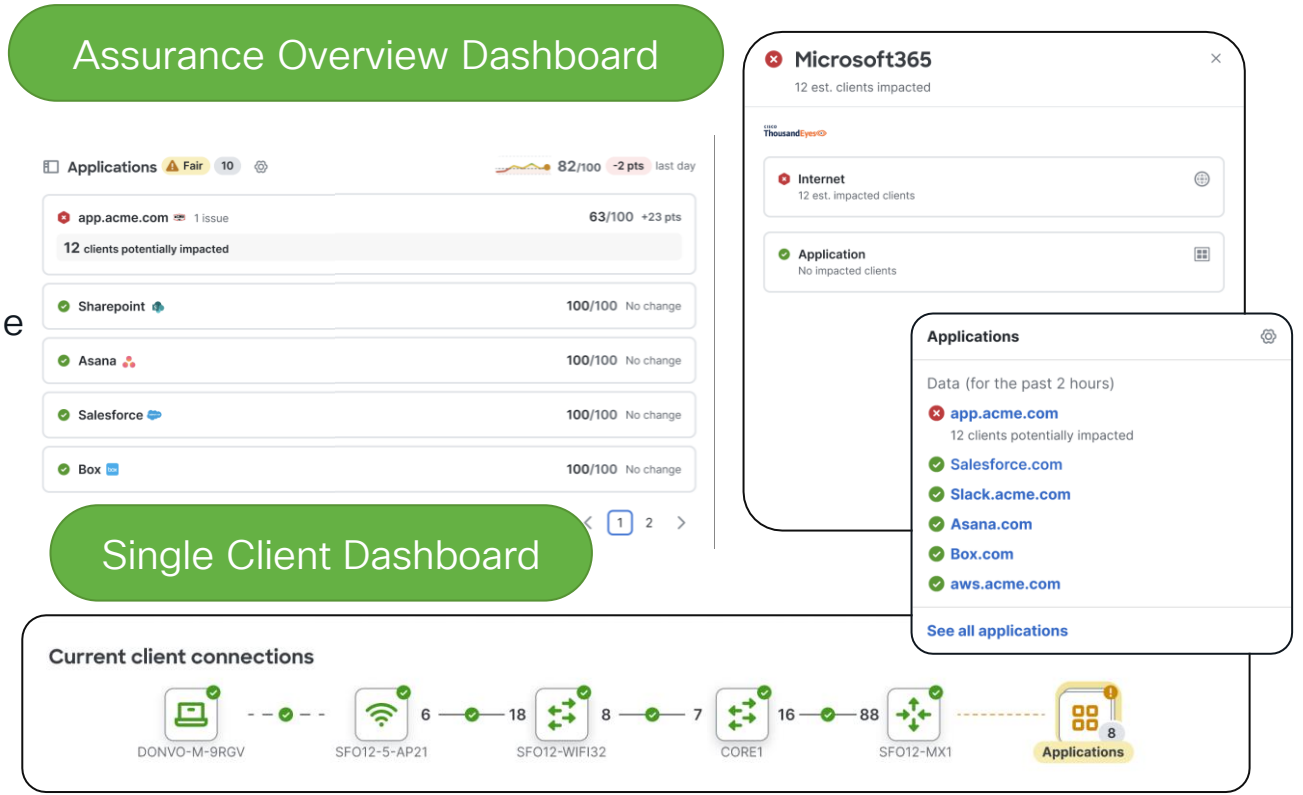
Client Impact Module



ThousandEyes Assurance Integration

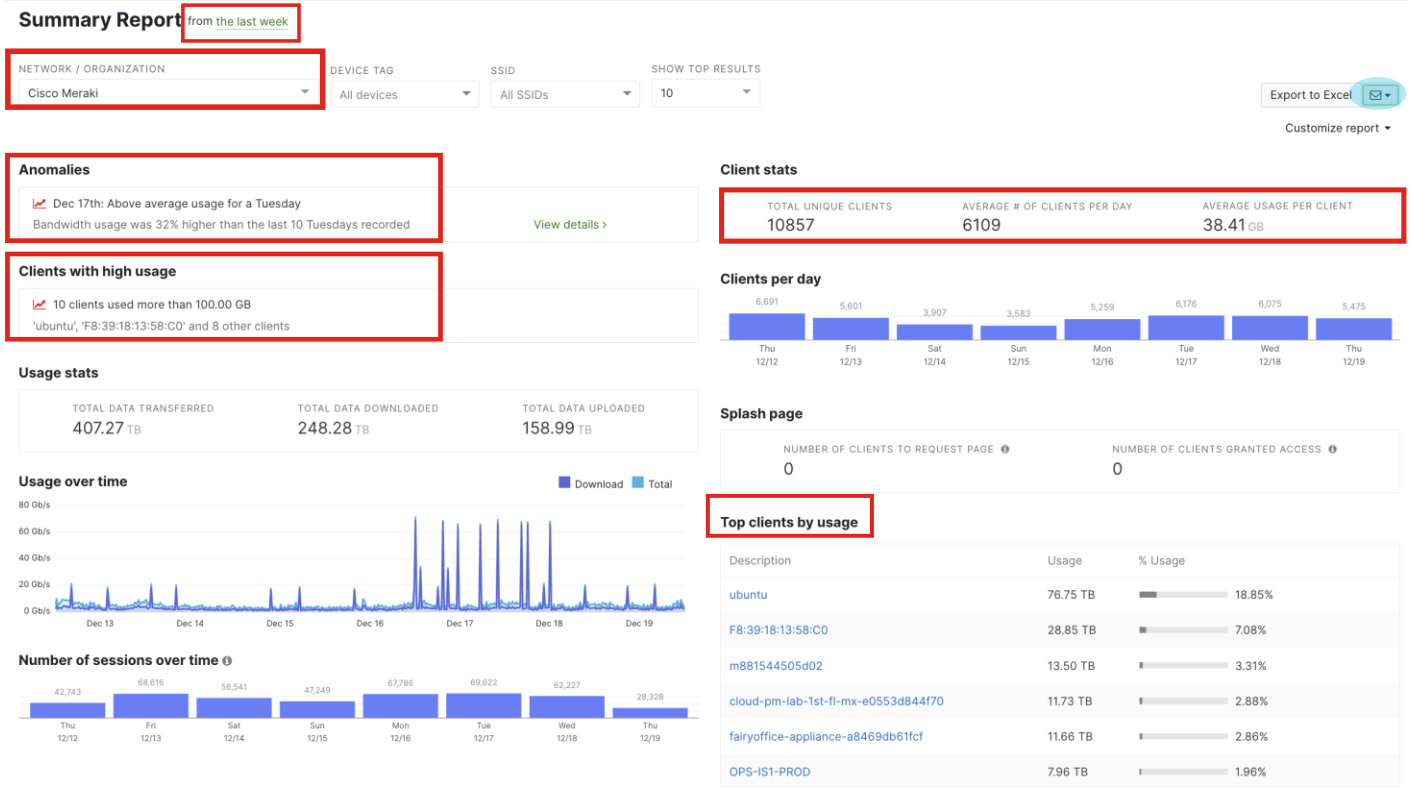
Seamless Visibility and Proactive Insights

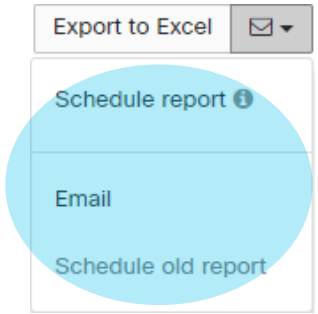
- Per-Application Health
- Visibility beyond the WAN
- Internet or application issue
- Single-client workflows



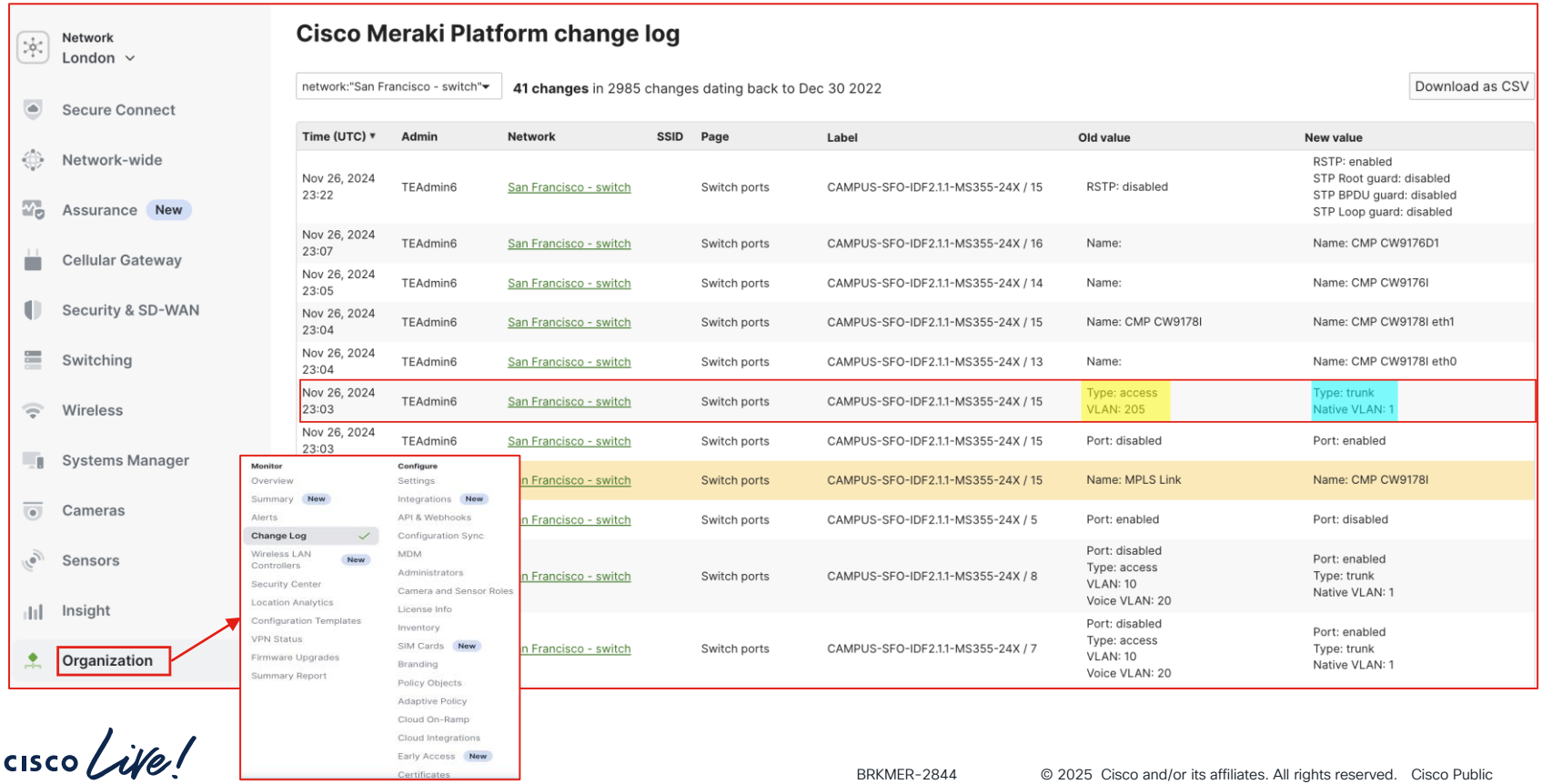
Summary report

Transform Data into Actionable Insights





Change Log



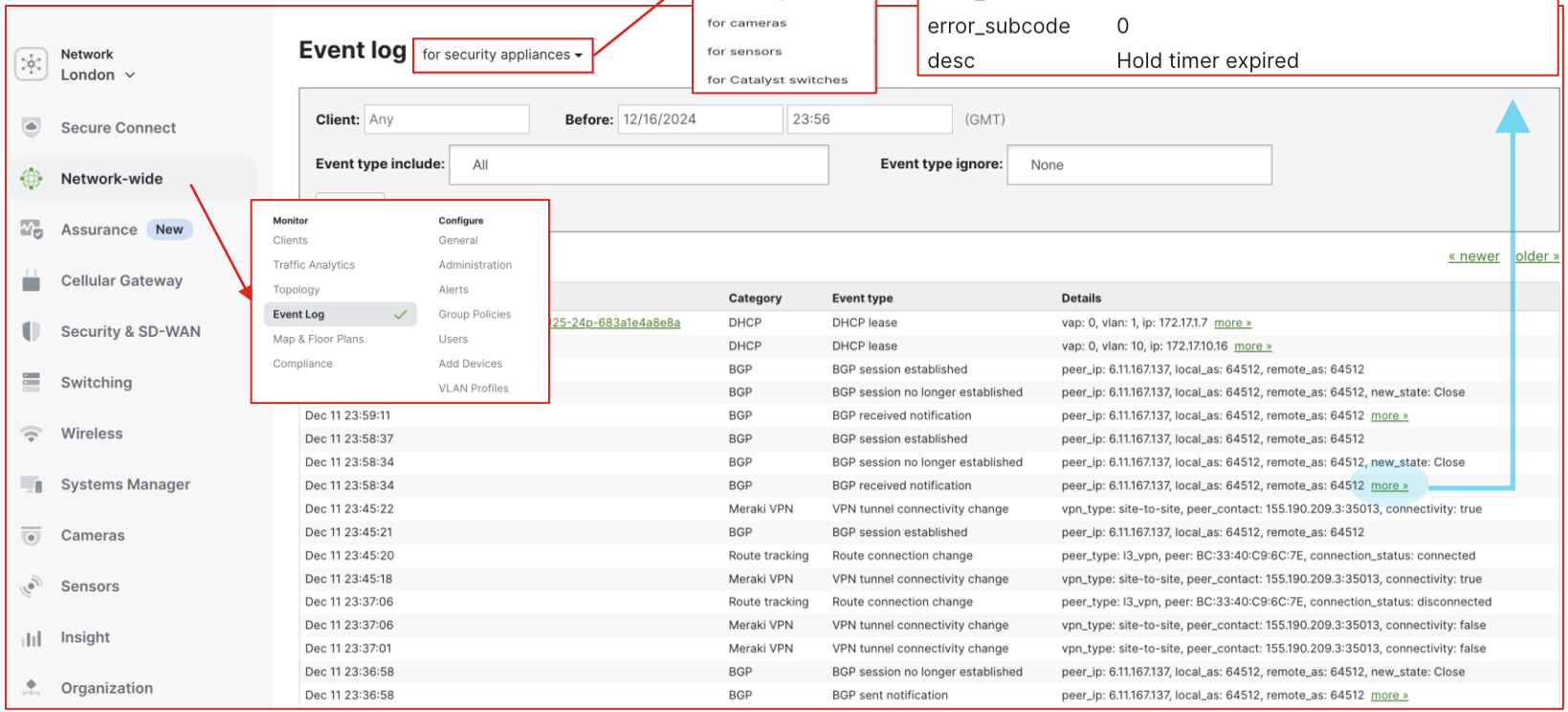
Cisco Meraki Platform change log

network:"San Francisco - switch" **41 changes** in 2985 changes dating back to Dec 30 2022 Download as CSV

Time (UTC)	Admin	Network	SSID	Page	Label	Old value	New value
Nov 26, 2024 23:22	TEAdmin6	San Francisco - switch		Switch ports	CAMPUS-SFO-IDF2.1.1-MS355-24X / 15	RSTP: disabled	RSTP: enabled STP Root guard: disabled STP BPDU guard: disabled STP Loop guard: disabled
Nov 26, 2024 23:07	TEAdmin6	San Francisco - switch		Switch ports	CAMPUS-SFO-IDF2.1.1-MS355-24X / 16	Name:	Name: CMP CW9176D1
Nov 26, 2024 23:05	TEAdmin6	San Francisco - switch		Switch ports	CAMPUS-SFO-IDF2.1.1-MS355-24X / 14	Name:	Name: CMP CW9176I
Nov 26, 2024 23:04	TEAdmin6	San Francisco - switch		Switch ports	CAMPUS-SFO-IDF2.1.1-MS355-24X / 15	Name: CMP CW9178I	Name: CMP CW9178I eth1
Nov 26, 2024 23:04	TEAdmin6	San Francisco - switch		Switch ports	CAMPUS-SFO-IDF2.1.1-MS355-24X / 13	Name:	Name: CMP CW9178I eth0
Nov 26, 2024 23:03	TEAdmin6	San Francisco - switch		Switch ports	CAMPUS-SFO-IDF2.1.1-MS355-24X / 15	Type: access VLAN: 205	Type: trunk Native VLAN: 1
Nov 26, 2024 23:03	TEAdmin6	San Francisco - switch		Switch ports	CAMPUS-SFO-IDF2.1.1-MS355-24X / 15	Port: disabled	Port: enabled
		n Francisco - switch		Switch ports	CAMPUS-SFO-IDF2.1.1-MS355-24X / 15	Name: MPLS Link	Name: CMP CW9178I
		n Francisco - switch		Switch ports	CAMPUS-SFO-IDF2.1.1-MS355-24X / 5	Port: enabled	Port: disabled
		n Francisco - switch		Switch ports	CAMPUS-SFO-IDF2.1.1-MS355-24X / 8	Port: disabled Type: access VLAN: 10 Voice VLAN: 20	Port: enabled Type: trunk Native VLAN: 1
		n Francisco - switch		Switch ports	CAMPUS-SFO-IDF2.1.1-MS355-24X / 7	Port: disabled Type: access VLAN: 10 Voice VLAN: 20	Port: enabled Type: trunk Native VLAN: 1

Event Log

splunk> a cisco company



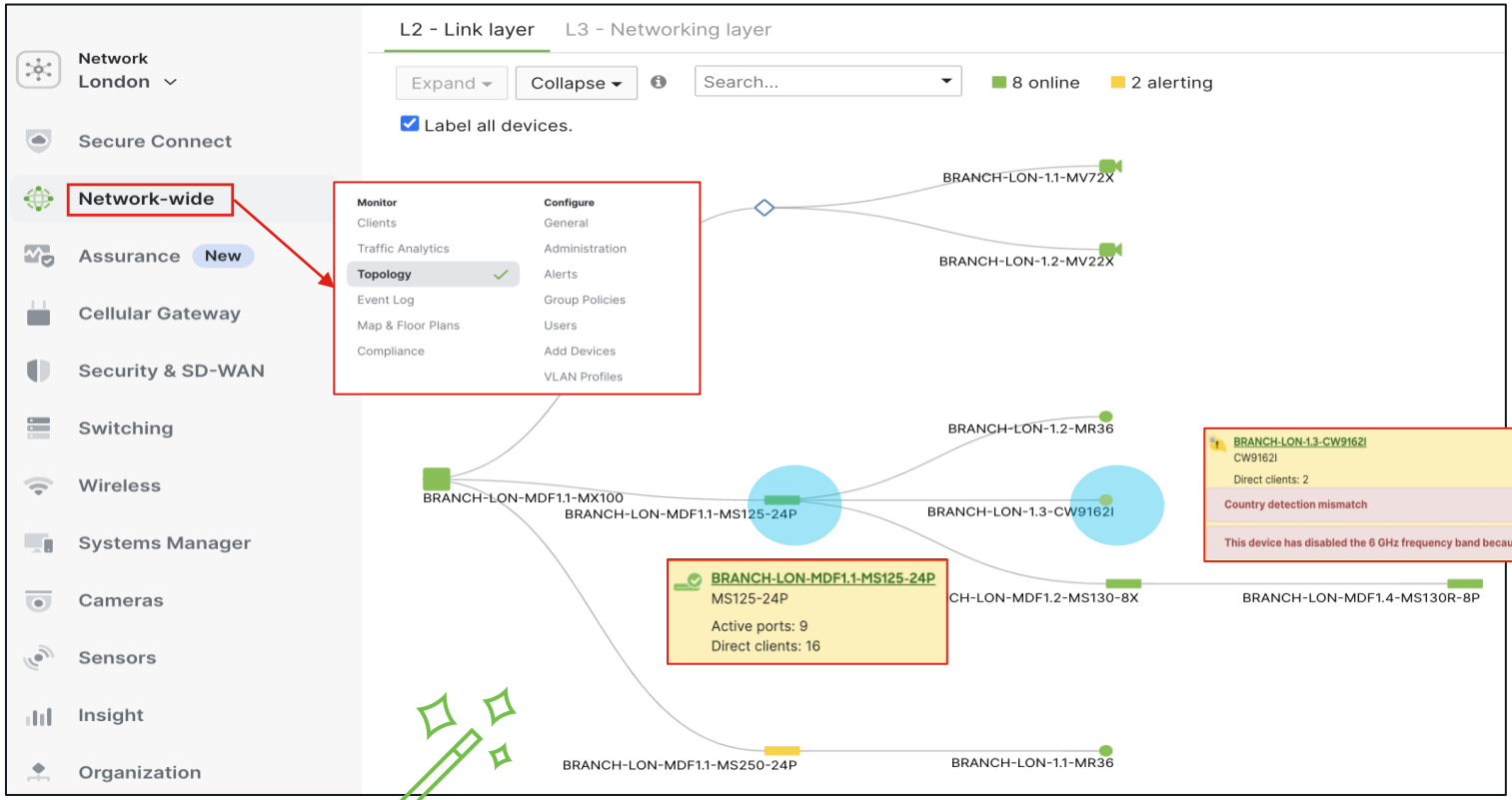
More on Meraki Splunk Integration?

https://www.youtube.com/watch?v=5jkwb2xgBQs

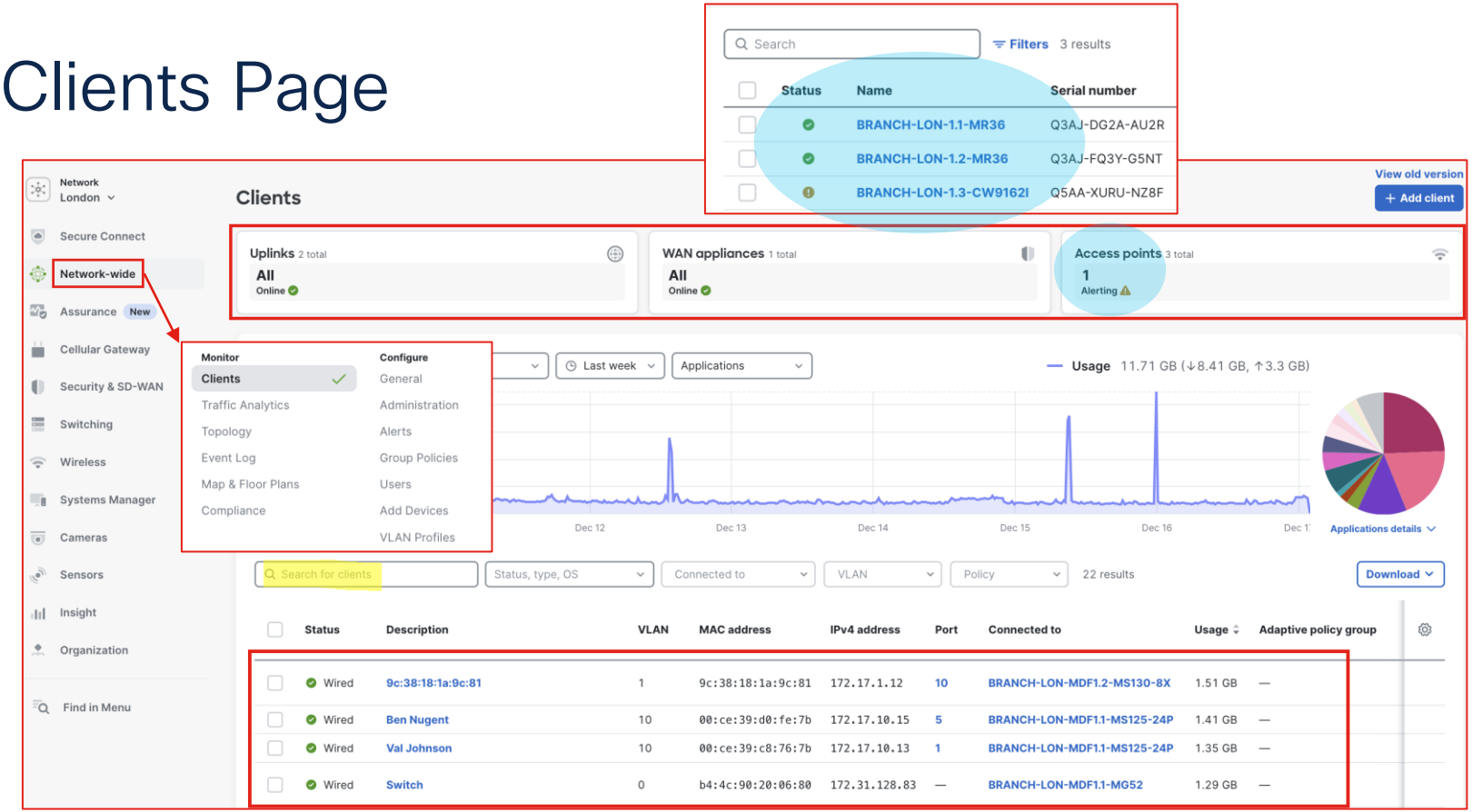
https://www.youtube.com/watch?v=R1B-YuF-7M8

Topology

Instant Network Map with Zero Prep!



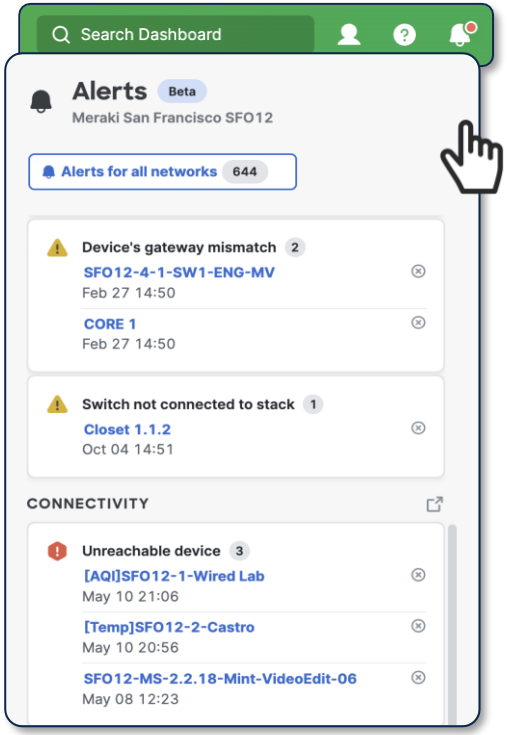
Clients Page



Alerts Hub

Network-level

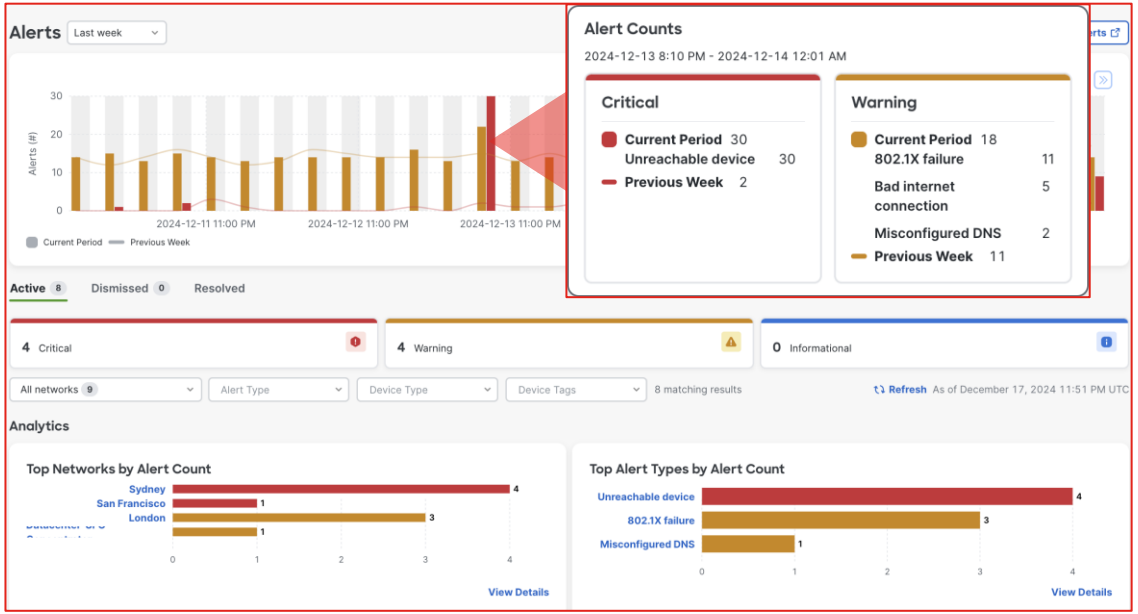
- Alerts are always one click away
- Quickly navigate to the problematic device
- Inline links to step-by-step troubleshooting
- Consolidates alerts from a single network.



Organization Alerts

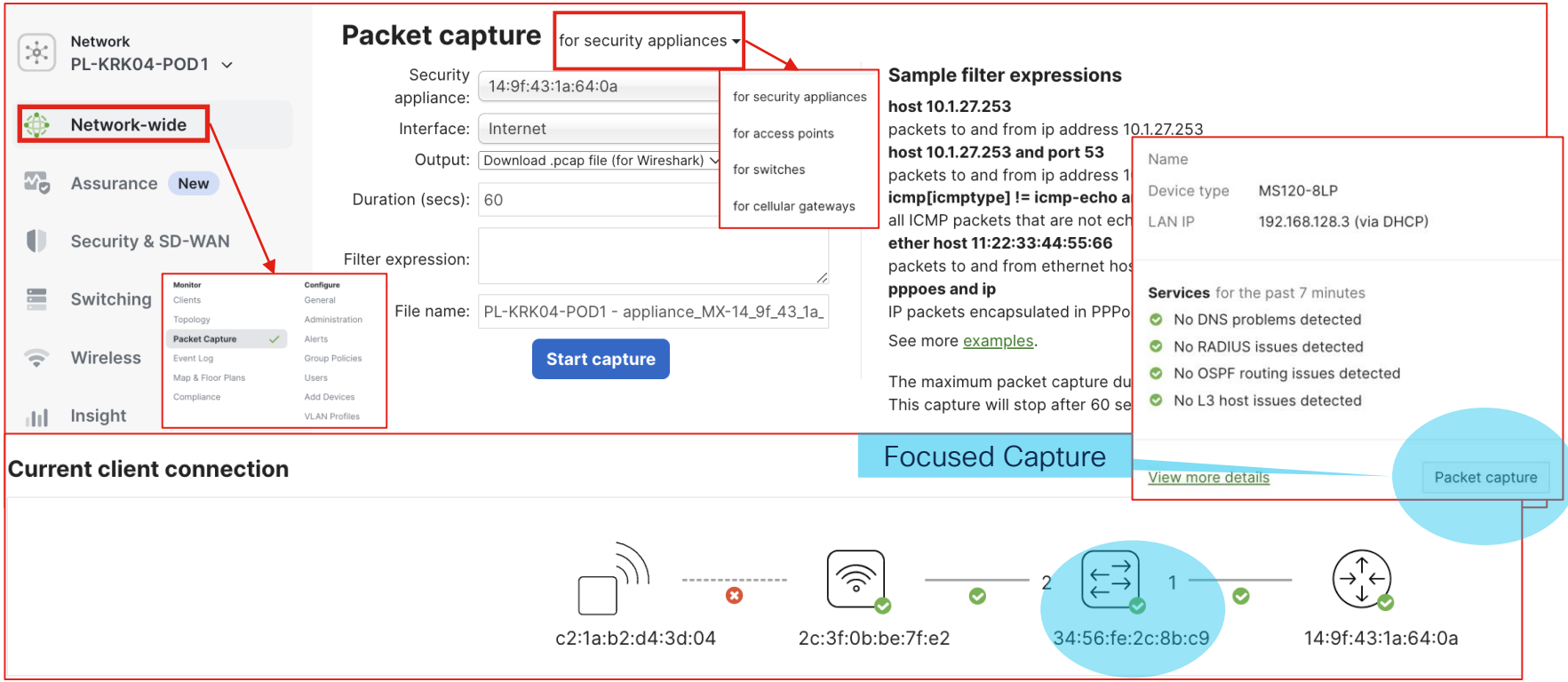
Organization level

- A timeline/trend line
- Analytics graphs
- All alerts in a single place

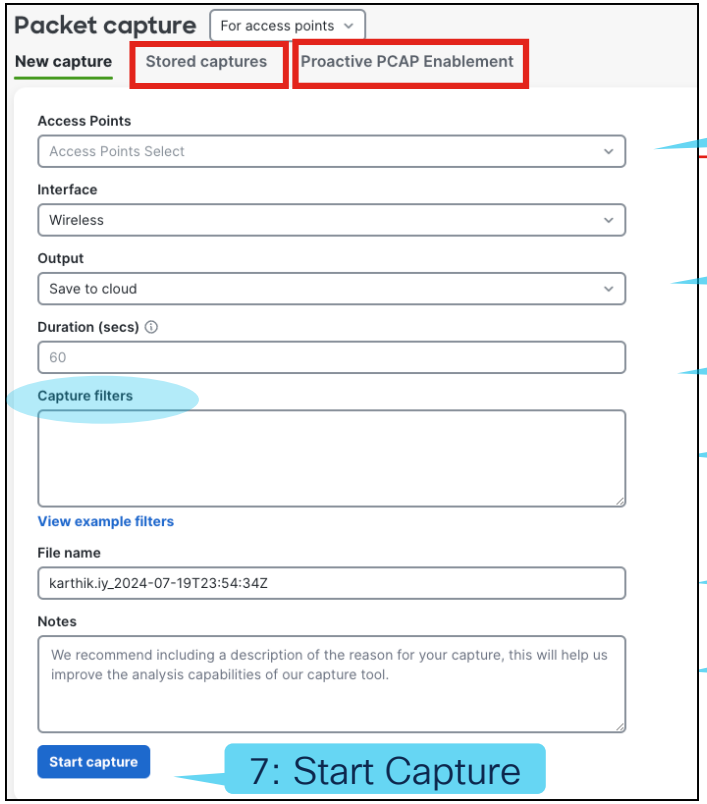


Packet Capture

Legacy Packet Capture



Intelligent Capture



1: Capture Device

2: Output

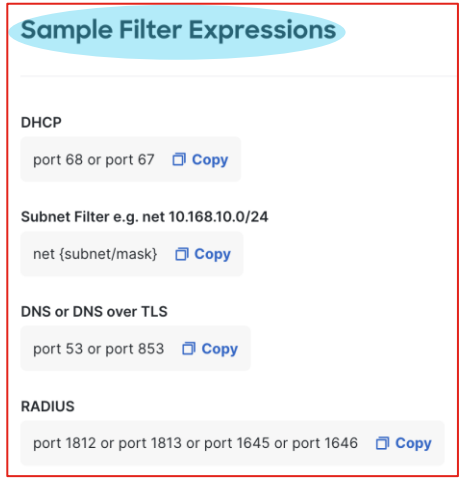
3: Duration

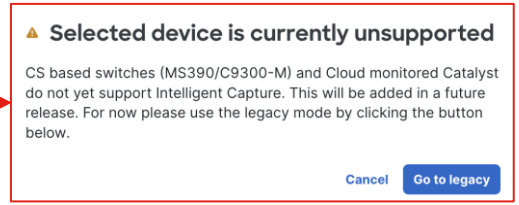
4: Filters

5: File name

6: Notes

7: Start Capture

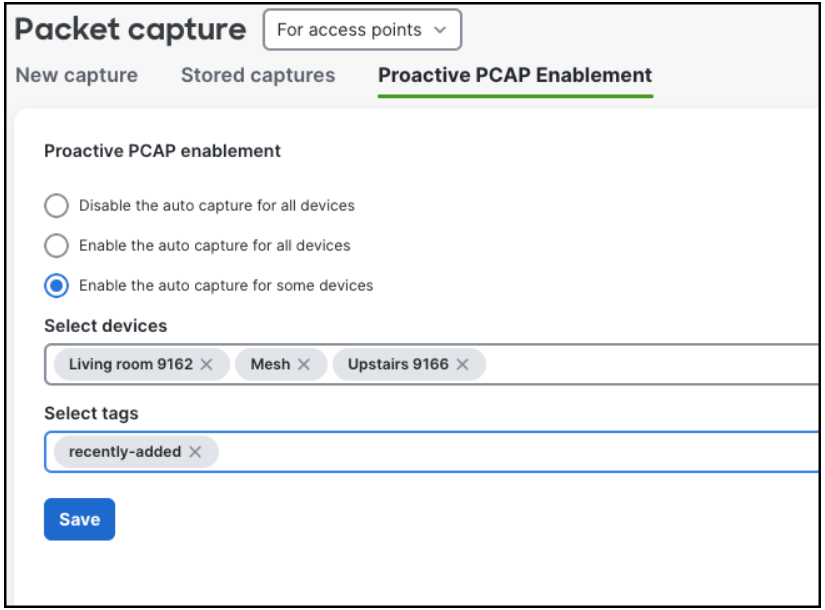




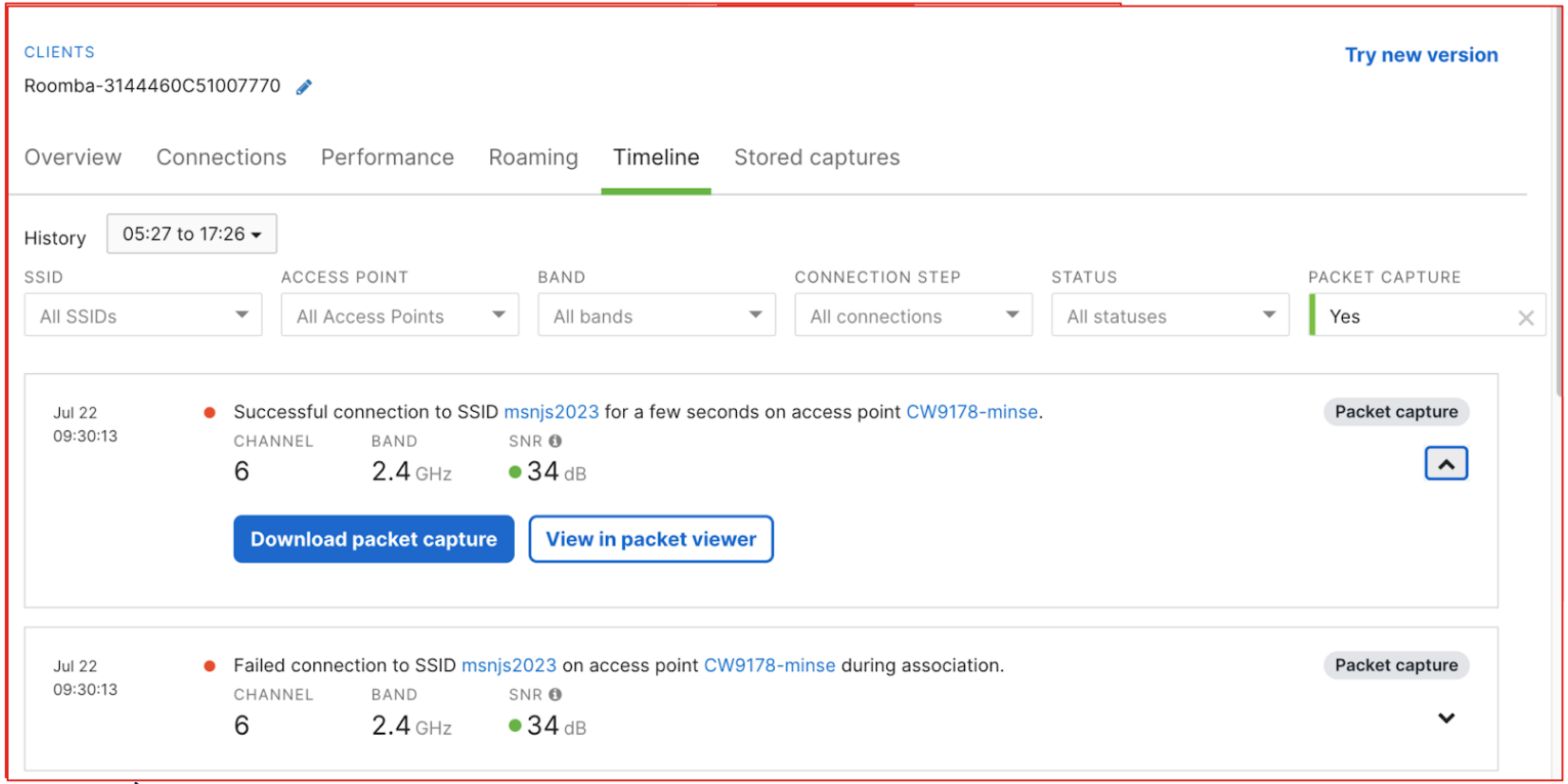
Proactive PCAP Enablement

Network-wide > Intelligent capture

- Navigate to Proactive PCAP Enablement tab
- Select Enable the auto capture for some devices.
- You can choose to enable this feature on a per access point basis, by tag, or for all devices
- To view proactive captures, go to the Network-wide > Monitor > Clients page and select the client you are troubleshooting from the list.



Use Assurance to View Proactive PCAP Taken for Clients

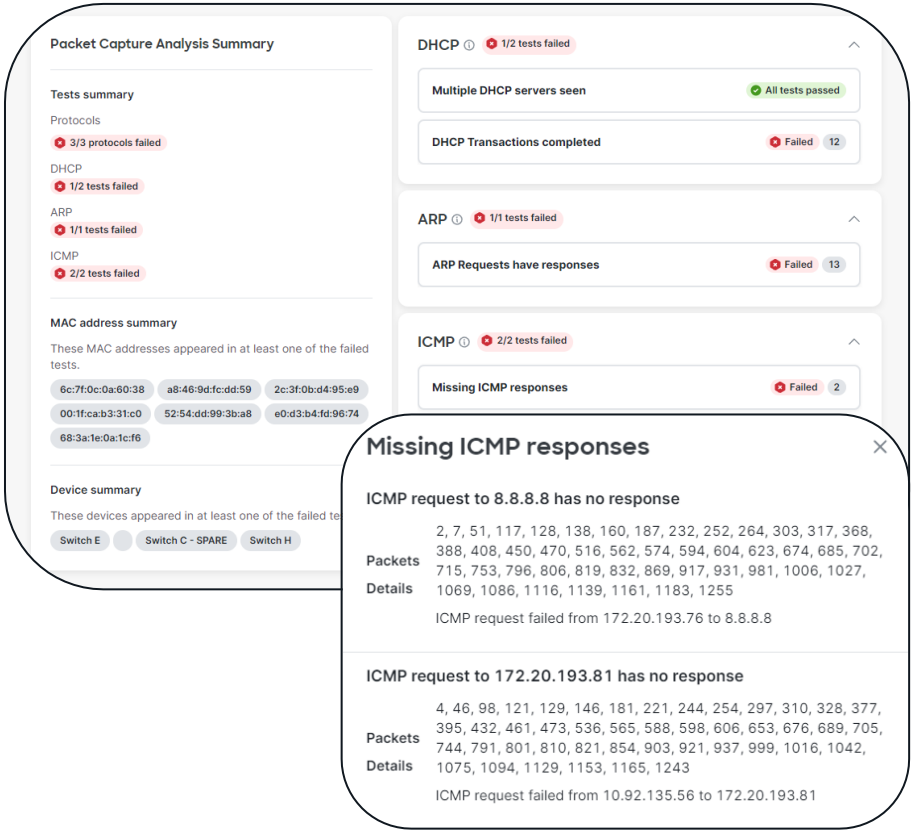


Packet Capture Analysis

Effortless Packet Diagnostics

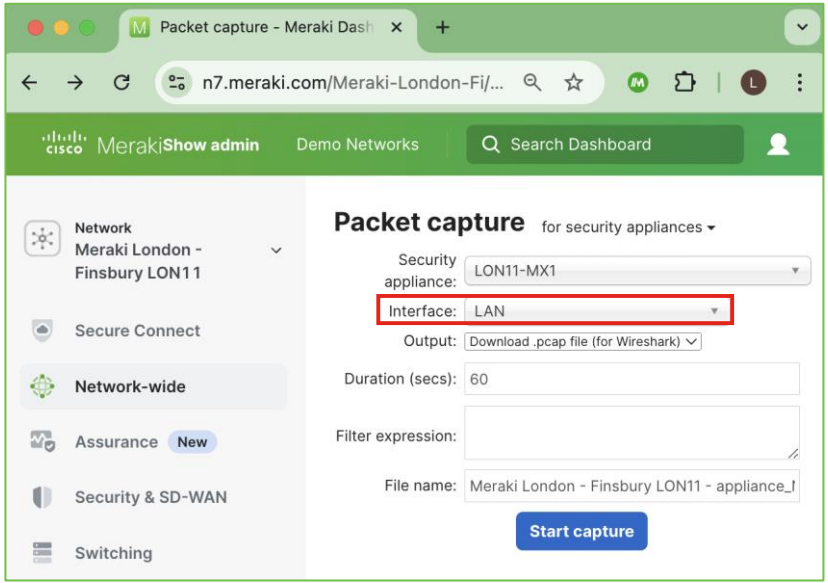
- Analyse common issues (DHCP, ARP, ICMP) quickly
- Supports uploaded, scheduled, or proactive captures
- Provides actionable findings and evidence

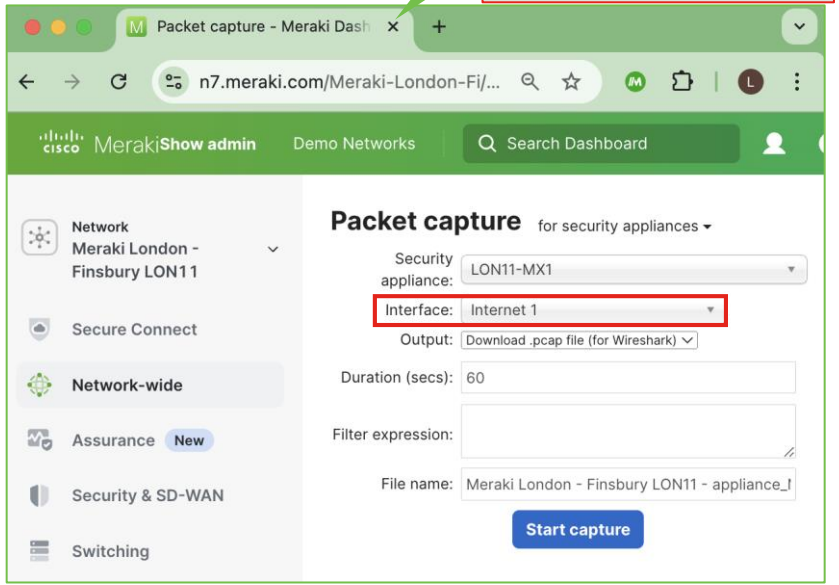
Dashboard Intelligence



Capturing Traffic on Multiple Interfaces

A complete picture of how traffic is flowing





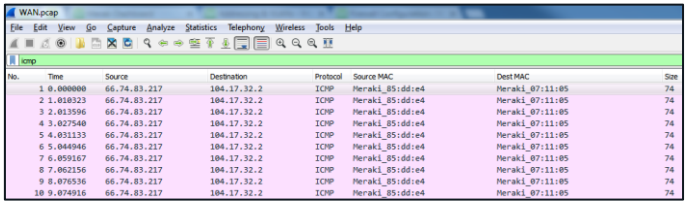
Why it matters?

1:1 NAT

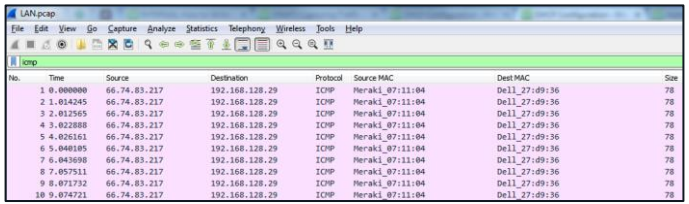
WAN and LAN Traffic on an **MX** Security Appliance

104.17.32.2 1:1 192.168.128.29

WAN



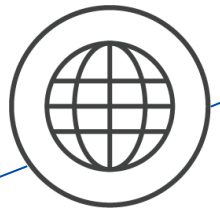
LAN



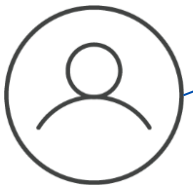
MX86

Pre-Processed

Post-Processed



Internet



66.74.83.217

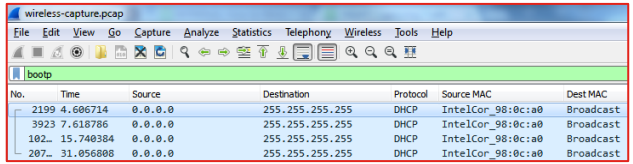
MS120

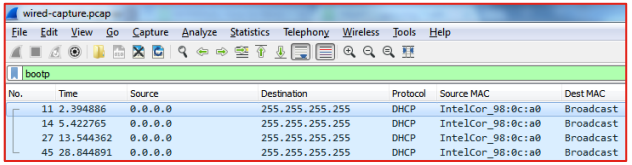
File Server

192.168.128.29

DHCP

Wireless and Wired Traffic on an **MR** Access Point





Wireless

Wired

MS120

Upstream

MR46

Downstream

0.0.0.0

DHCP Server

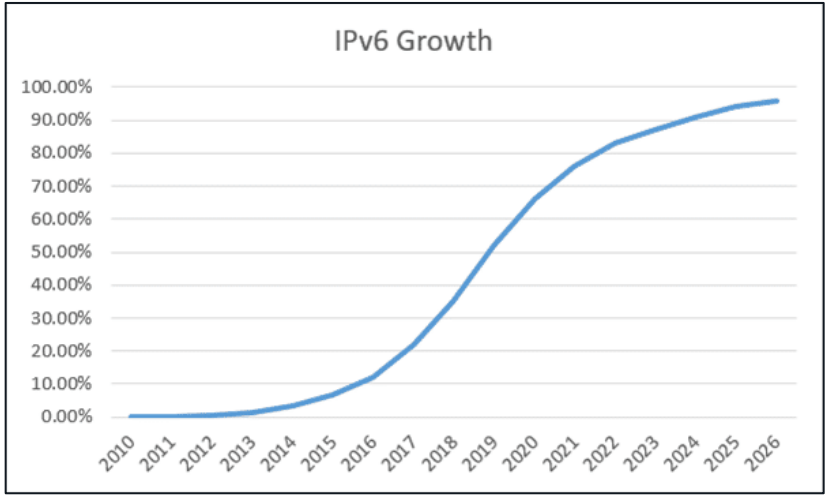
Live Tools Demo

cisco Live!

IPv6

Embracing the Future: IPv6 Transition and Troubleshooting

- **Larger** addressing space
- Simpler header (No IP-level checksum)
- **Efficient** forwarding/routing
- Simplified Network Configuration
- Auto-configuration (SLAAC)



Troubleshooting IPv6

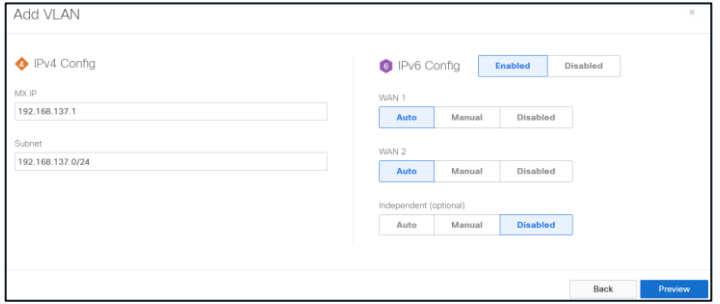
All Cisco Meraki networking devices can pass IPv6 traffic

Same link-local and solicited-node multicast for all VLANs

- ✓ Useful for analyzing pcaps and general IPv6 troubleshooting

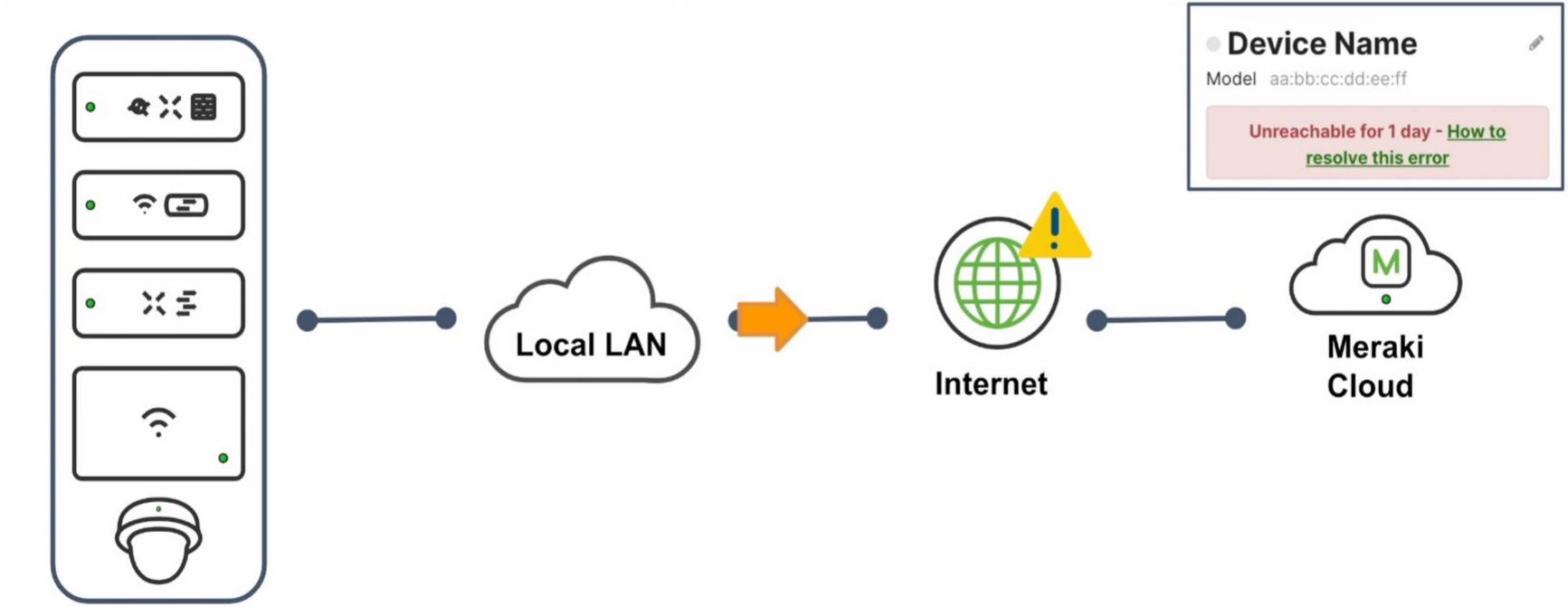
Tools for IPv6 are the same as those available for IPv4

- ✓ Ping
- ✓ Traceroute
- ✓ MTR
- ✓ DNS Lookup



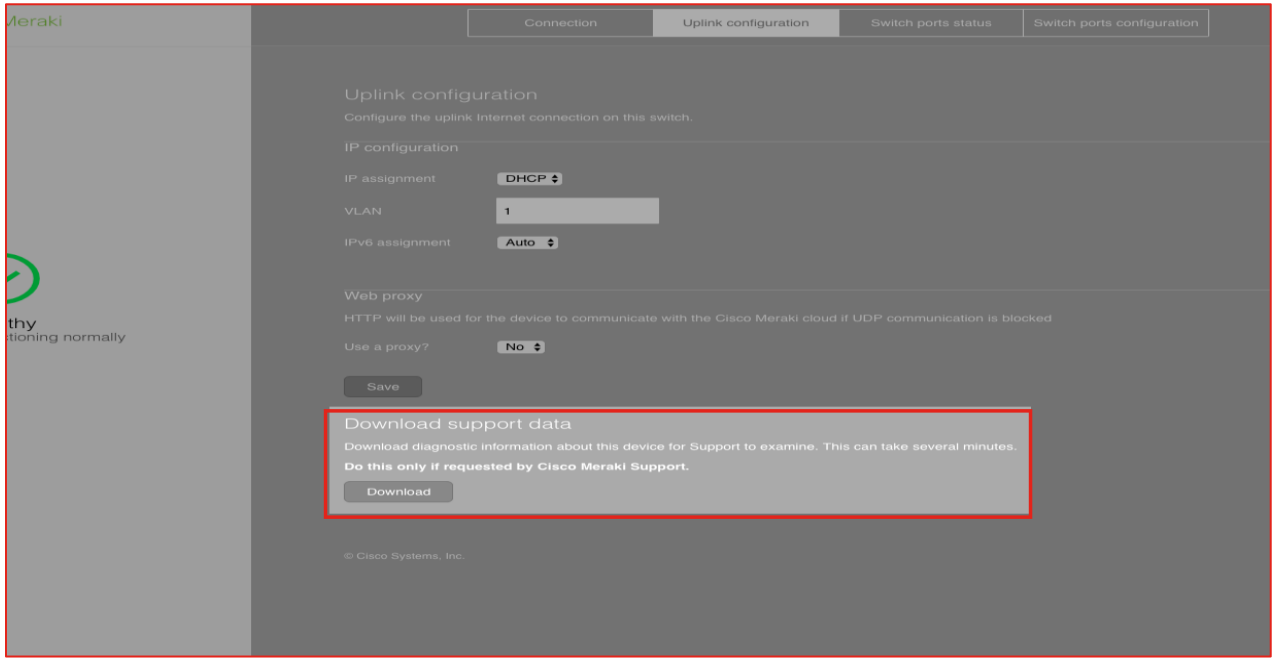
ID ▲	VLAN name	Version	Config	VLAN interface IP	Uplink	Group policy	VPN mode
1	Management	4	Manual	10.0.60.254/24	Any	None	Enabled
		6	Manual	2001:[redacted]1::/64	WAN 1		
		6	Auto	fe80::[redacted]f5 (Link-local)	--		
		6	Auto	ff02::[redacted]f5 (Solicited node multicast)	--		

Local Status Page (LSP)



Out-of-Band Log Fetching (OOB) Support Data Bundle (SDB)

For troubleshooting issues on devices that are unable to be accessed via the cloud.



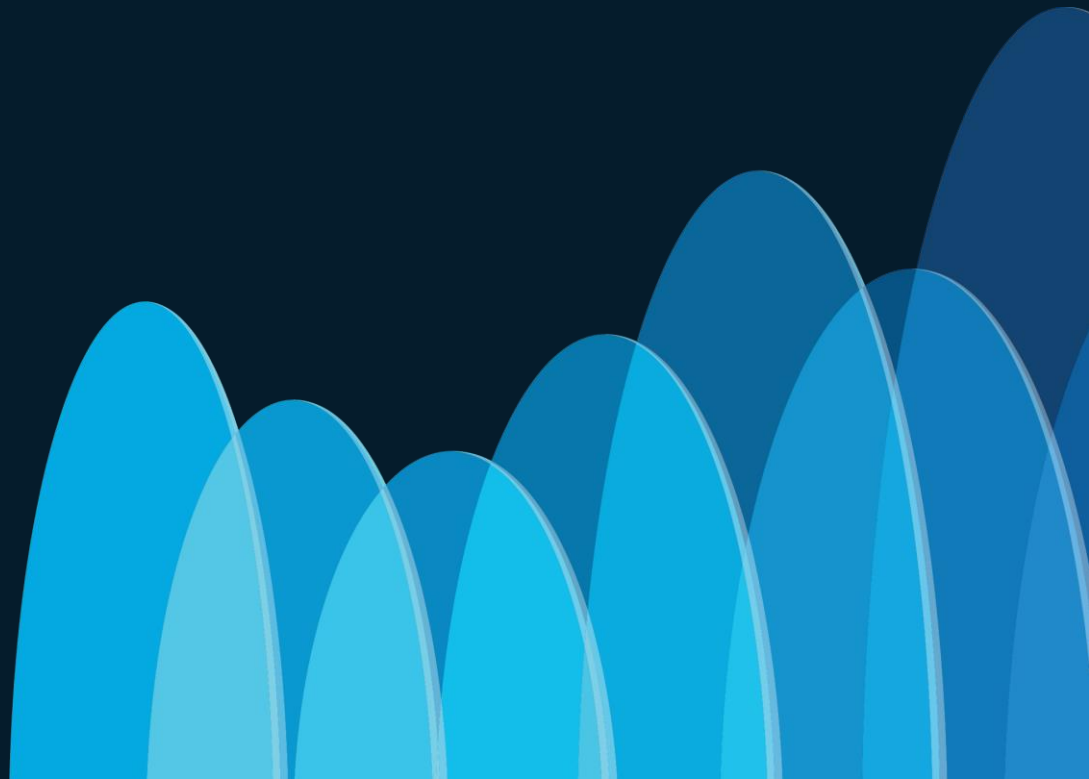
Encrypted

15sec to1min

Meraki support

It's recommended to use an up-to-date version of Chrome, Firefox, or Safari

Troubleshooting



Cisco Meraki Study

- IT departments **spend** 43% of their time troubleshooting issues in enterprise networks alone.
- 42% of organizations **saved** 50-70% or more time deploying, maintaining, and troubleshooting IT since they began using Meraki.

Dashboard Intelligence

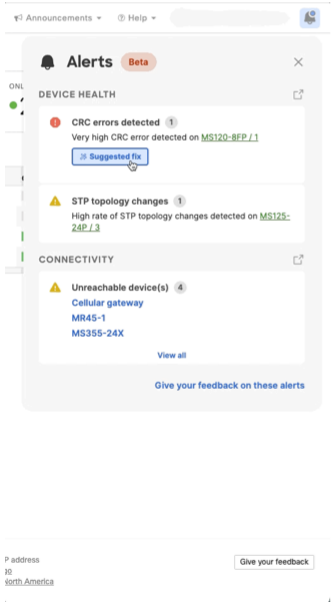
cisco Live!

Root Cause Analysis

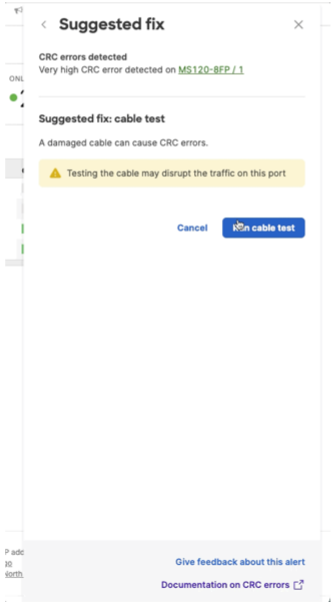
Guided Troubleshooting Flow

CRC

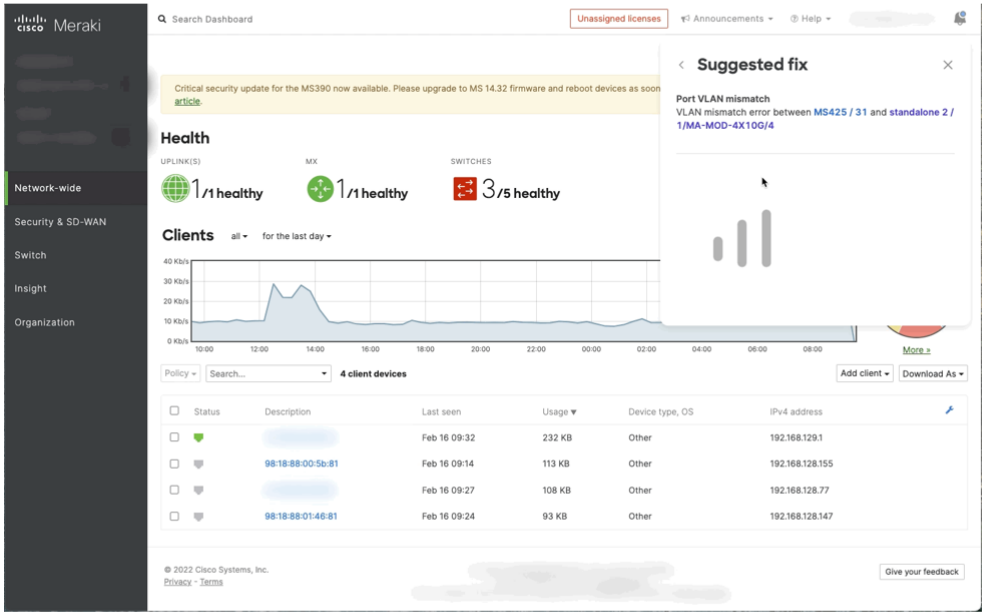
Configuration Mismatch issue



Cable and other issues



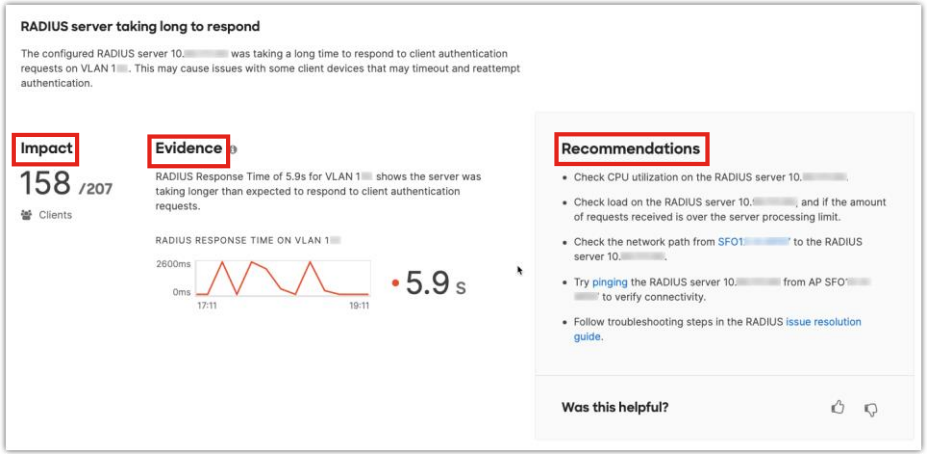
VLAN Mismatch



MR Automated Root Cause Analysis

Impact, evidence and recommendation

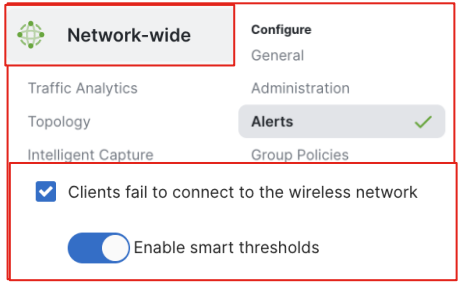
- Correlates network events for deeper insights.
- Identifies the scope of network issues.
- Provides actionable resolution steps.

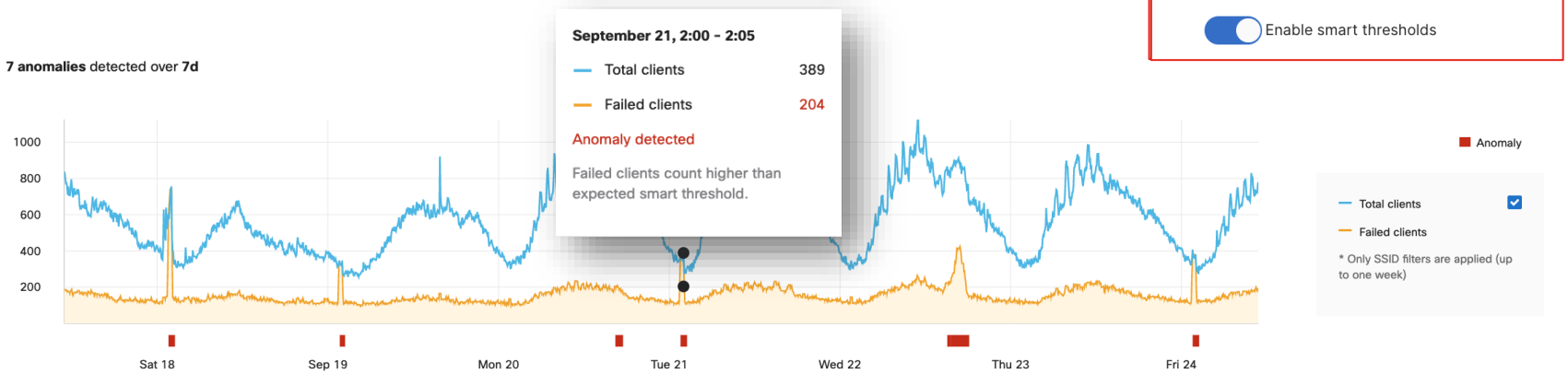


Smart Thresholds

Intelligent Limits for Enhanced Network Oversight

- Detects anomalies using intelligent, data-driven thresholds
- Reduces false alarms by adapting to network behaviour
- Highlights potential issues for proactive troubleshooting

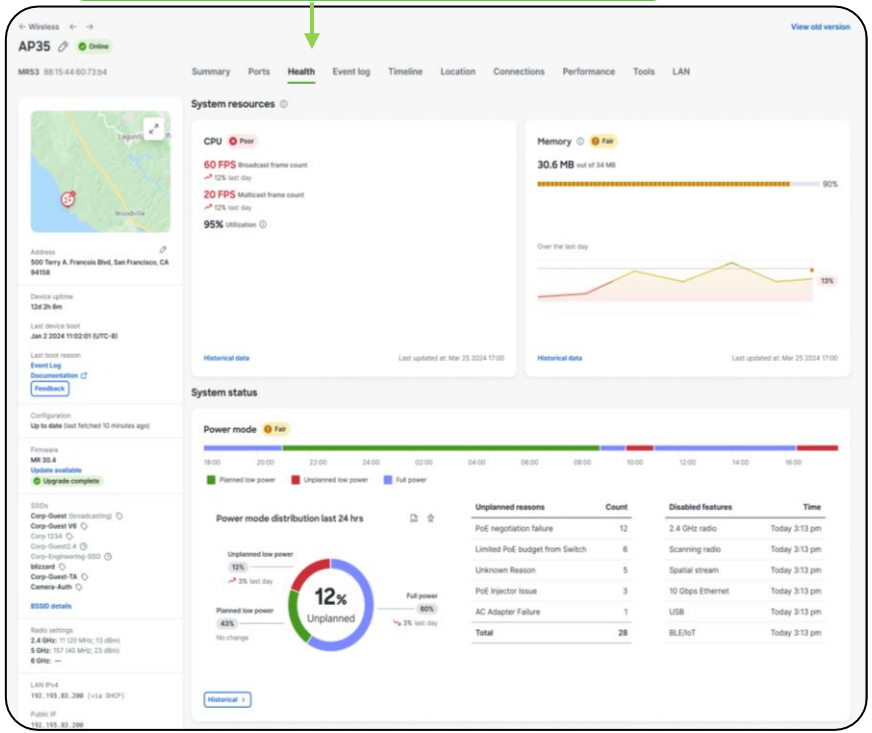




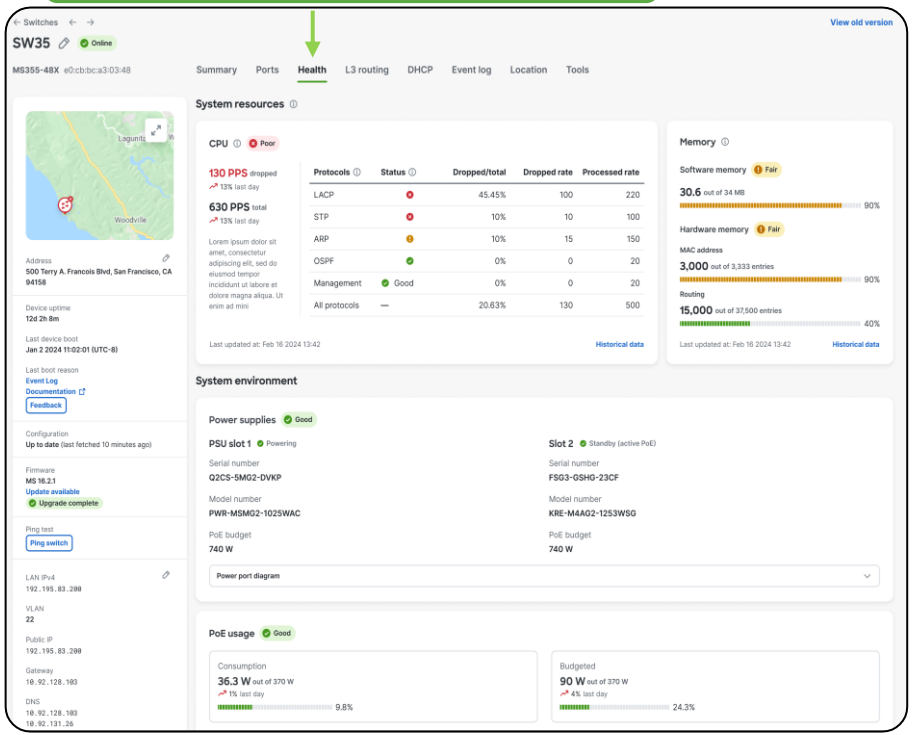
MR and MS Health Tab

Top-down assurance overview to single device troubleshooting workflow

New wireless Health tab



New switches Health tab



API-Driven Troubleshooting

cisco Live!

Meraki Dashboard API

How do APIs work?

1. User initiates an API request through the API's Uniform Resource Identifier (URI).
2. API receives the request and makes a call to the server.
3. Server sends a response containing the requested data to the API.
4. API forwards the requested data to the User.

- Meraki Developer Hub
- Postman Collections

Uses of the Meraki Dashboard API

include, but are not limited to

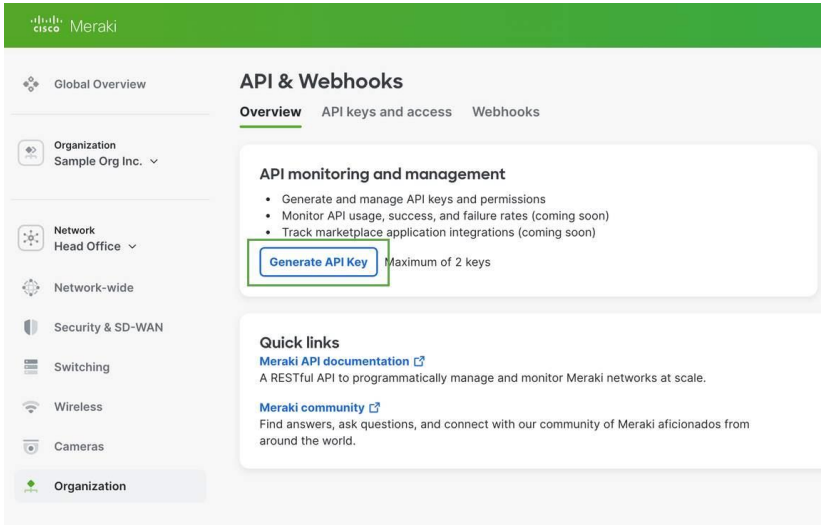
1. Add new organizations, admins, networks, devices, VLANs and SSIDs
2. Use automation scripts to rapidly provision multiple new sites
3. Automatically onboard and off-board teleworker devices
4. Build dashboards designed to meet the needs of unique use cases

Access and utilize Meraki Dashboard APIs

API key acts as the equivalent of a username and password

To generate an API key:

- ✓Navigate to Organization > Configure > API & Webhooks
- ✓Select the Overview tab
- ✓Click Generate API Key



Troubleshooting API requests

- What **call** am I trying to make?
- Is this call **appropriate** for the information I'm trying to return, update, post, or delete?
- What **behavior** is the API call displaying, and is it expected?*
- What data or response code is the API call returning?**

Common Errors and Behaviours

Status Code	Error Notification	Description and Troubleshooting
200	OK	The API request has been **successfully completed** and a response has been received from the server.
400	Bad Request	This error indicates a **malformed JSON payload**. Validate the text/JSON being used with a tool like jsonlint.com
401	Unauthorized	This error indicates an issue with the **API key** inputted. Confirm that the API key is correct.
403	Forbidden	This error occurs when a **read-only admin** attempts a call that will alter data in the dashboard **(PUT/POST/DELETE).** Adjust account admin rights if user must be able to return these calls.
404	Not Found	This error indicates an issue with the API endpoint. Confirm that the API endpoint/URL is correct.
429	Too Many Requests	This error indicates that the user has submitted more than the **maximum allowed API calls** per second, per organization. For Meraki Dashboard APIs, this limit is 10 calls. This error will also appear if: • One organization reaches the limit for API calls made across multiple organizations • Limit is exceeded when sourced from a single IP
500	Server Error	This error is most likely related to an **application error** and will require further investigation.
502/504	Request time out	This error occurs if the API request took longer than **60 seconds** to process and may require further investigation to establish a cause.

*API call responses contain a code that indicates the status of the information returned.
**Meraki Dashboard APIs use standard RFC 9110 HTTP Status Codes

Maximizing Efficiency with Smart API Usage

Efficient API endpoint

- "Get Organization Devices Statuses": Pulling all devices can return excessive data, especially with dozens of devices.
- Inefficient: Repeatedly pulling the same data leads to unnecessary overhead.
- Efficient Alternative: Use "Get Organization Devices Availabilities Change History" which only returns data for devices with status changes (e.g., 10 devices out of 100).
- No Changes: If no devices' status changes, the response will be null, reducing unnecessary data transfer.

Get Organization Devices Statuses

Operation Id: *getOrganizationDevicesStatuses*

Description: *List the status of every Meraki device in the organization*

```
GET /organizations/{organizationId}/devices/statuses
```

Get Organization Devices Availabilities Change History

Operation Id: *getOrganizationDevicesAvailabilitiesChangeHistory*

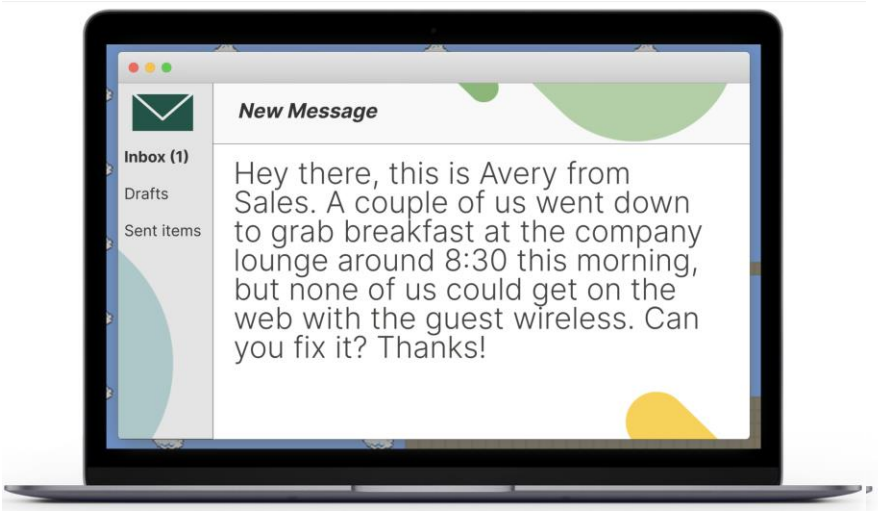
Description: *List the availability history information for devices in an organization.*

```
GET /organizations/{organizationId}/devices/availabilities/changeHistory
```

Real-World Scenario

Wireless Network Connectivity

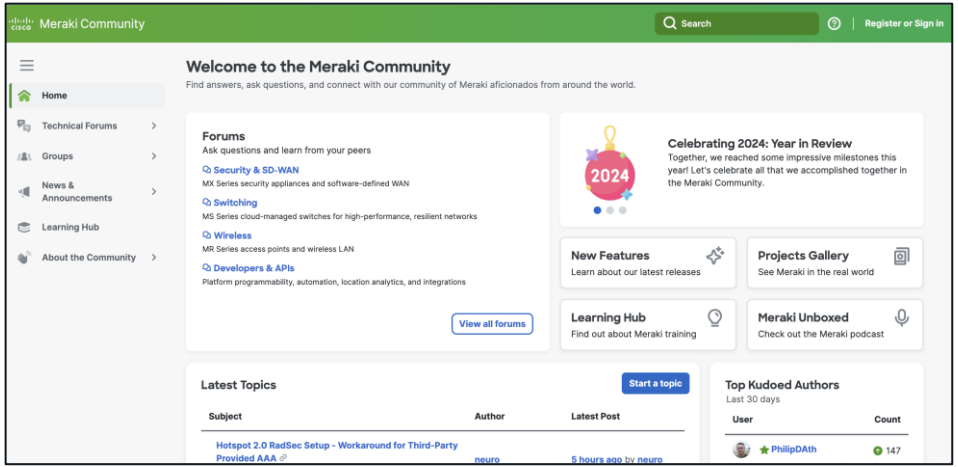
Let’s troubleshoot!



Getting Help

Meraki Community

- Official Meraki Forum
- Gain insights from experienced Meraki users
- Connect with a global community of peers
- Find answers to common issues
- No additional cost to join.
- Accessible at https://community.meraki.com/

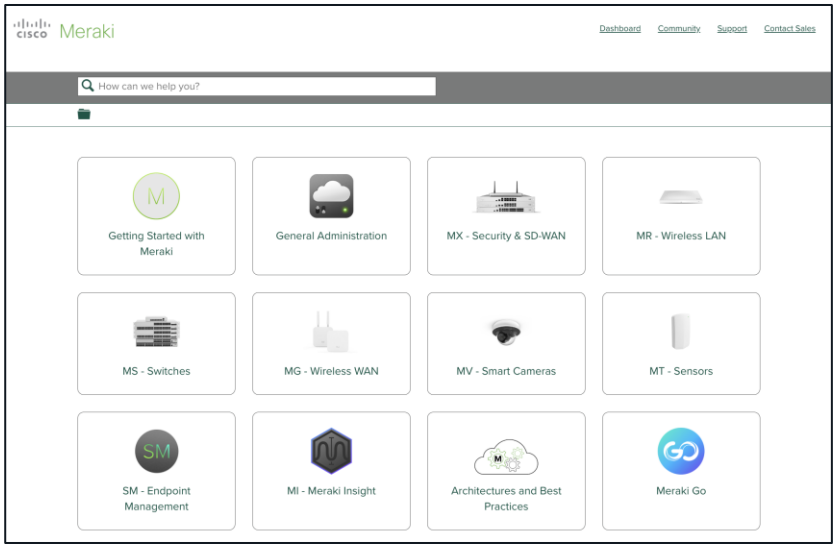


Scan me!

Meraki Documentation

- Comprehensive Knowledge Base
- Searchable and Organized
- Always Up-to-Date
- Backed by Experts
- Accessible either at https://documentation.meraki.com/

  Or via Help>Get help on the dashboard



Meraki Support

Recommended Actions and Best Practises

24x7 Telephone and E-mail support

- ✓ Error or Log Analysis: Open an email case and attach a screenshot of the error/log
- ✓ Service Impact: Call support immediately for urgent or complex issues
- ✓ Root Cause Analysis (RCA) Needed: Avoid rebooting; contact TAC first

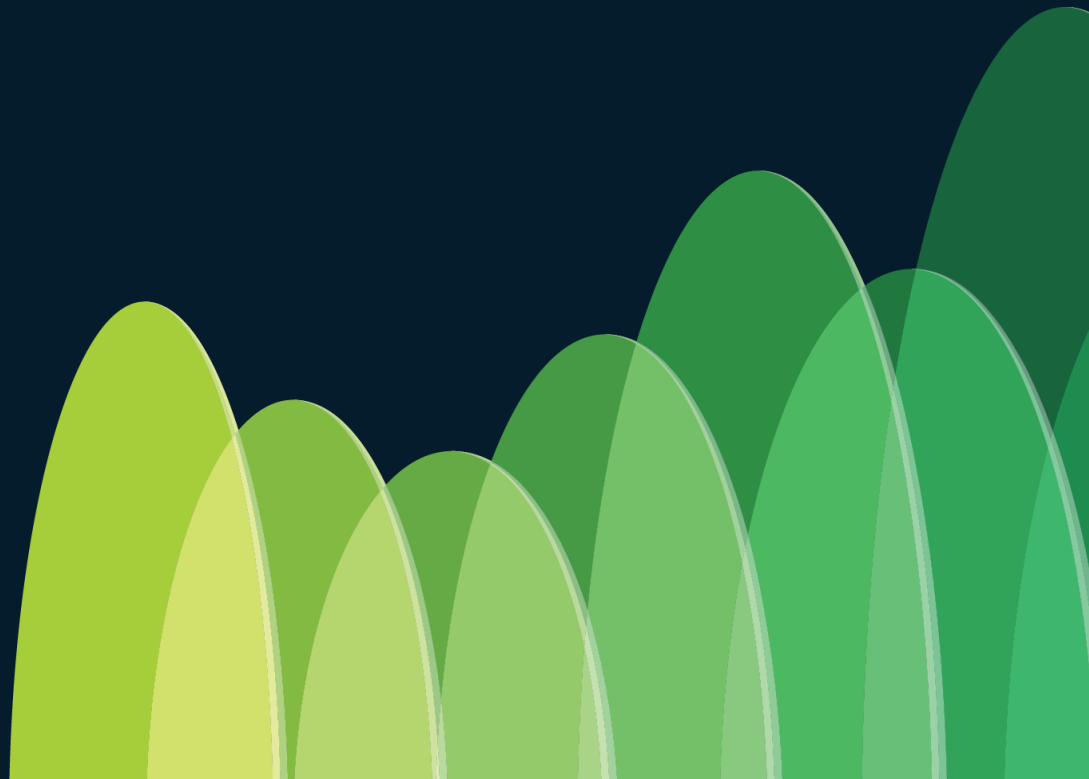
*Connect to support more easily using the ***"Call Me Now"*** option in the dashboard—no need to dial manually; the system links you directly to an engineer to support you.

Navigate to '?' icon > 'Get help & cases' > documentation > call me now

More on Call Me Now feature and Contacting Support

- https://documentation.meraki.com/General_Administration/Support/Contacting_Support
- https://documentation.meraki.com/General_Administration/Support/Contacting_Support/Call_Me_Now

Practical Tips



Smart Configuration for Better Performance

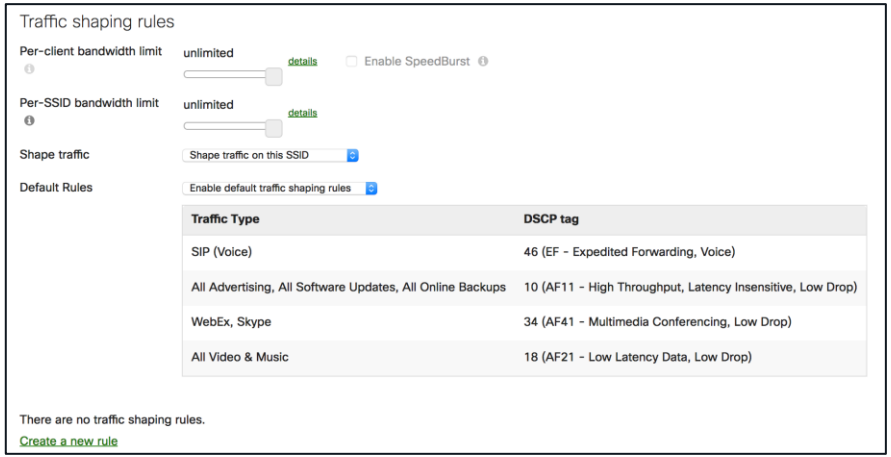
Security & SD-WAN > SD-WAN & traffic shaping

- **Traffic shaping**

Use traffic shaping to prioritize critical applications.

- **Bandwidth**

Adjust bandwidth settings based on your environment's needs.



Pro Tip: Regularly review and update settings as new applications or devices are added to the network

Stay Informed: Enable Alerts Proactively

Network-wide > Alerts

- **Major** Events

Set up for key events like device downtime.

- **Minor** Events

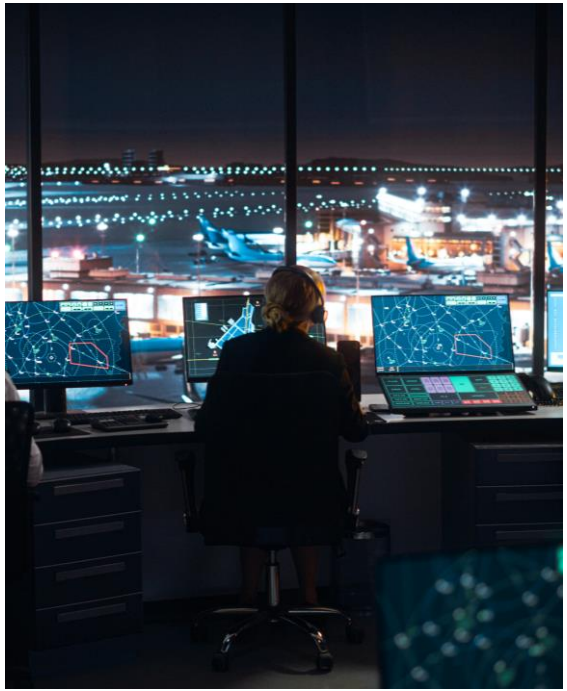
Avoid excessive notifications for minor events.

- **Tailor** Alerts

Customize alerts to match your network's needs.

- **Real-Time** Alerts

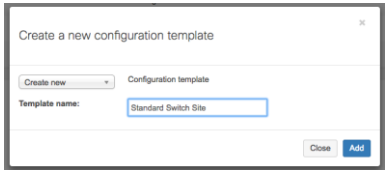
Use email notifications or webhooks for real-time alerts and integration.

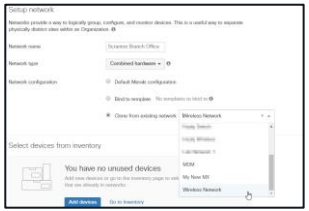


Available Alerts

Automate Device Management and Configuration

Templates	API	Clone	Firmware
Deploy configuration updates across **multiple locations quickly**	Leverage API integrations for custom automation	Clone networks or templates to deploy identical settings faster	Enable Auto-Update for Firmware to keep devices secure and up-to-date automatically

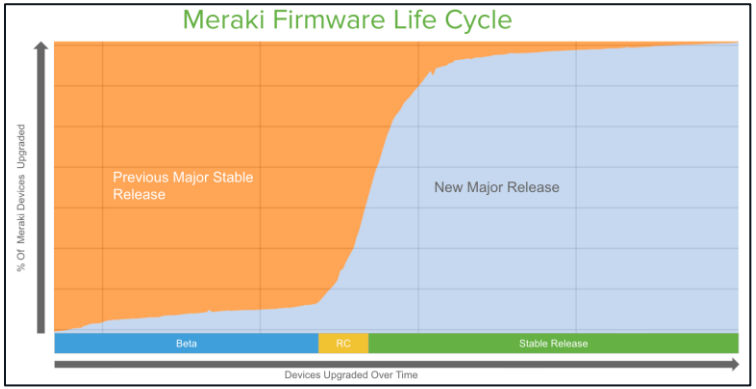


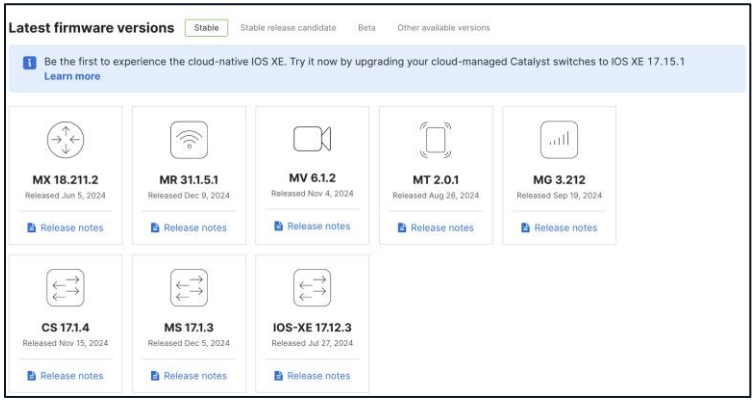


Firmware Upgrade

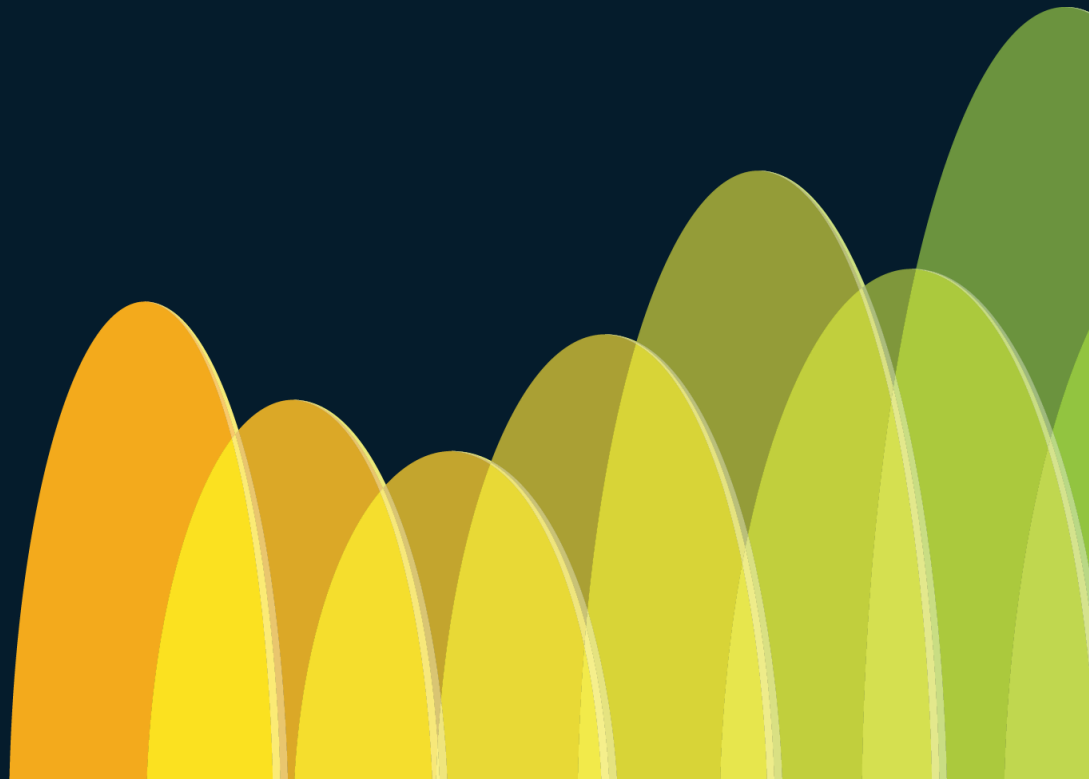
Organization > Firmware Upgrades

- Meraki's **default** firmware settings
  - ✓ No automatic beta firmware deployments
- Review Release Notes
- Leverage **Stable** Firmware Versions
- Test the **beta code** in your designated test networks first.
- Monitor the Upgrade Process
- **Revert** if Needed (The rollback option is available for customers for up to 14 days)





Conclusion



For the Curious: Detailed Sessions on Key Topics

Wed, Feb 12 3:30 PM

[DEVWKS-2845]
Automate Meraki Alerting & Response with Webhooks and AWS Lambda

Wed, Feb 12 4:00 PM

[BRKMER-1887]
Seeing the Invisible: Integrating Splunk and Meraki for Large Scale Data Analysis

Thu, Feb 13 8:45 AM

[BRKOPS-2528]
Succeed with Test-Driven Network Automation - Practical Examples Using Python and your Network's APIs

Thu, Feb 13 3:30 PM

Meraki and Ansible: A Collaboration Made in the Cloud [DEVNET-1399]

Thu, Feb 13 3:45 PM

[BRKEWN-2399]
Meraki Wireless from a Troubleshooter Perspective

Key Takeaways

Dashboard = Your Best Friend: Dive in and let it do the heavy lifting

Assurance: Let Meraki **watch** things for you.

PCAP Prodigy: Captures aren't scary—they're your **superpower**.

Troubleshooting – follow the clues with an **open** mind!

Live Tools = Real-Time Magic: **Quick** fixes are just a click away!

Fill Out Your Session Surveys

Participants who fill out a minimum of 4 session surveys and the overall event survey will get a unique Cisco Live t-shirt.

(from 11:30 on Thursday, while supplies last)

All surveys can be taken in the Cisco Events mobile app or by logging in to the Session Catalog and clicking the ‘Participant Dashboard’

Content Catalog

Continue your education

- Visit the Cisco Showcase for related demos
- Book your one-on-one Meet the Engineer meeting
- Attend the interactive education with DevNet, Capture the Flag, and Walk-in Labs
- Visit the On-Demand Library for more sessions at ciscolive.com/on-demand. Sessions from this event will be available from March 3.

Contact me at:
https://www.linkedin.com/in/lina-al-dwaikat/

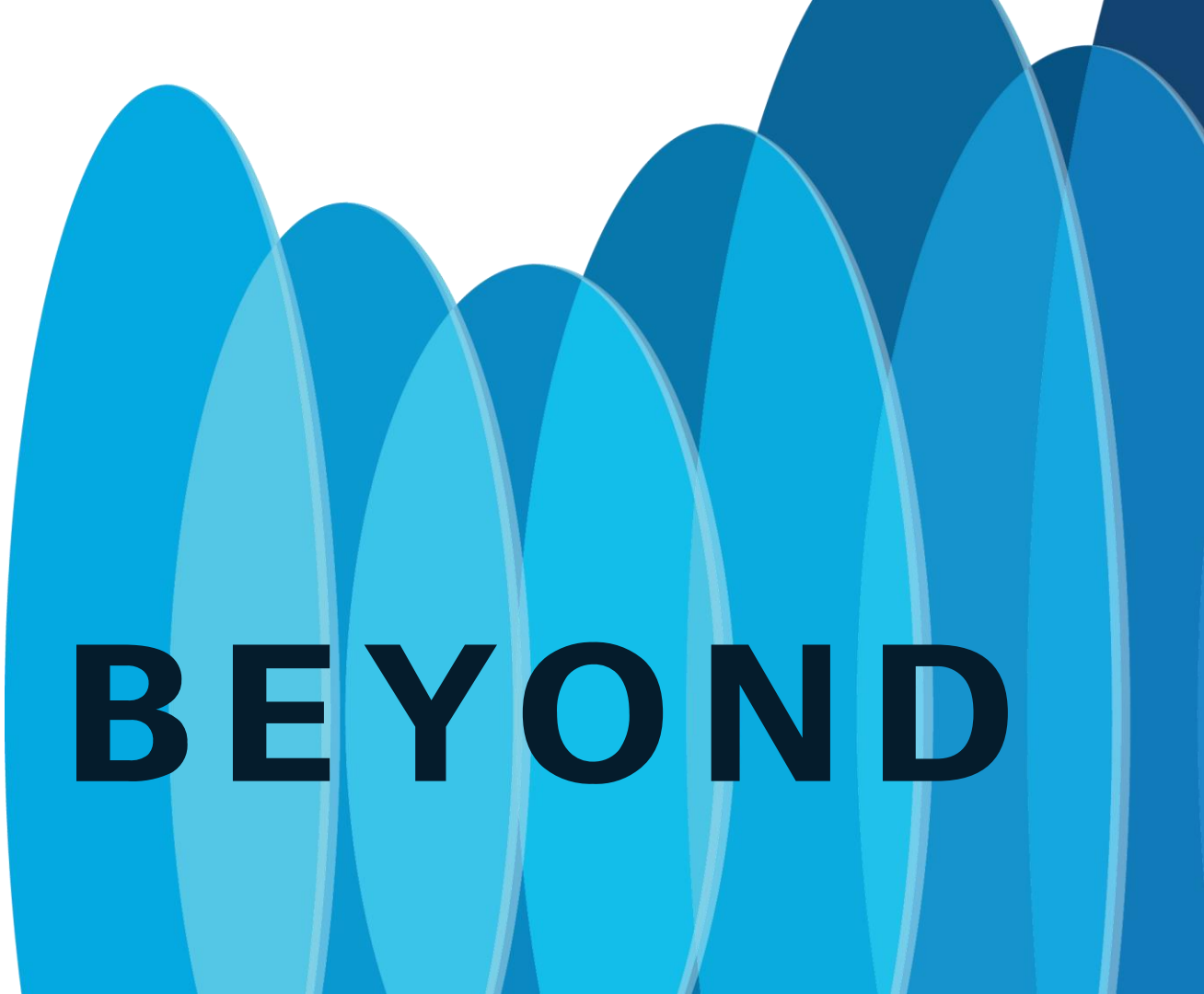
You’ve Earned the Troubleshooter Badge!

Call Of Action

- ✓ **Deep Dive:** Explore related sessions and on-demand resources
- ✓ Join the **Community**: Connect with the Meraki community for insights and support
- ✓ Explore Learning Hub: Boost your skills with the Meraki Learning Hub
- ✓ **Save Time:** Use AI-powered troubleshooting to streamline issue resolution
- ✓ **Stay Proactive:** Monitor and prevent issues with dashboard alerts and insights
- ✓ **Explore** More: Tap into Meraki Documentation for quick answers


cisco
Thank you
cisco Live!

cisco Live!



GO BEYOND