

CISCO *Live!*



#CiscoLive



The bridge to possible

Cisco Meraki Secure SD-WAN

Arpitha Shetty
Product Manager, Cisco Meraki
BRKMER - 1001



#CiscoLive

About your speaker



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Product Manager,
Meraki Secure SD-WAN



Cisco Webex App

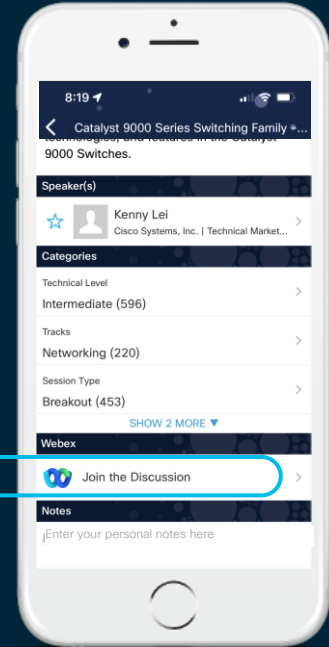
Questions?

Use Cisco Webex App to chat with the speaker after the session

How

- 1 Find this session in the Cisco Live 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 June 17, 2022.

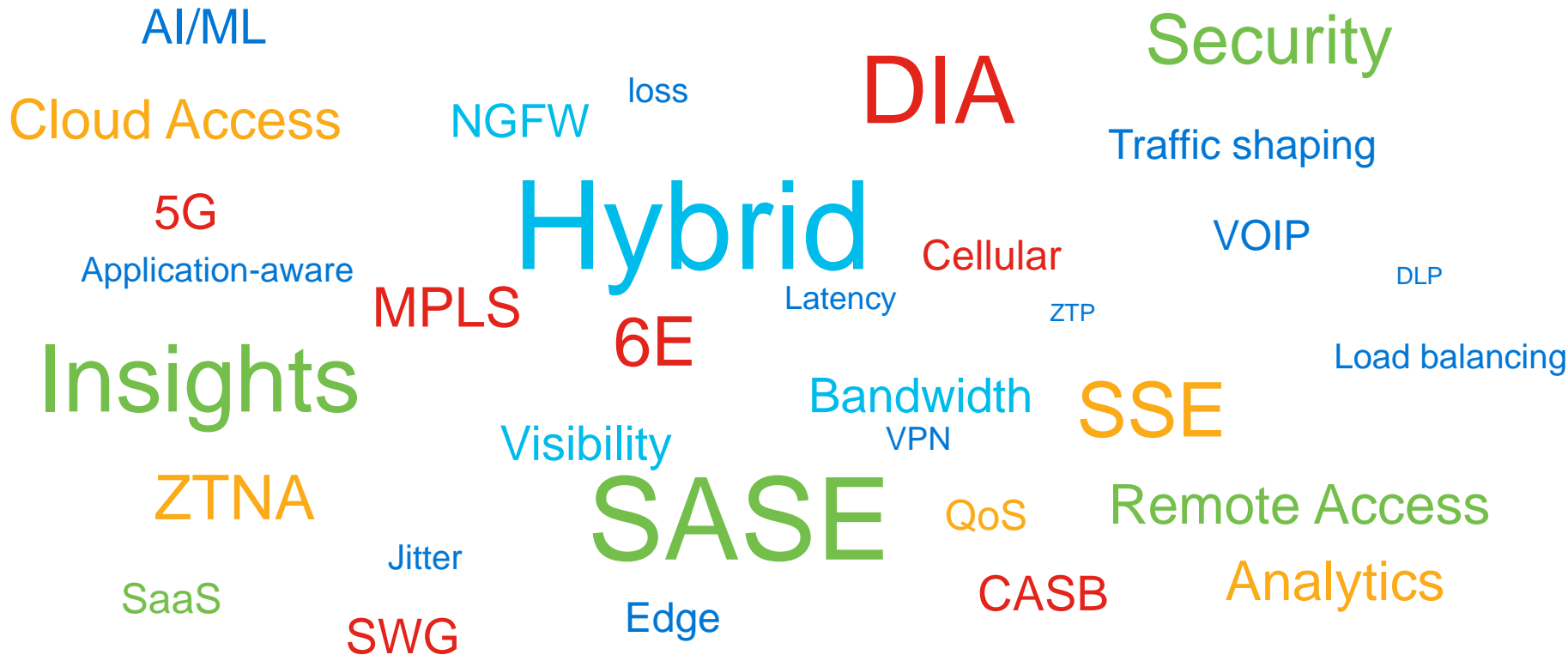


<https://ciscolive.ciscoevents.com/ciscolivebot/#BRKMER-1001>

Agenda

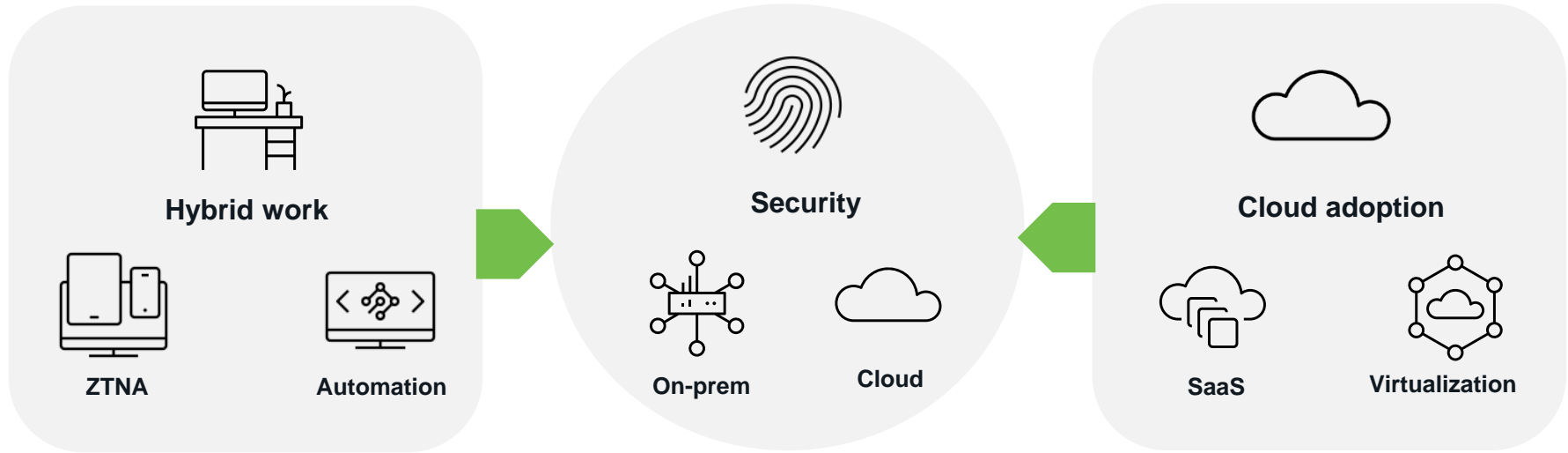
1. Who? Why? What?
2. Drivers of innovation
3. Introduction to Meraki
4. The 3 pillars of innovation
5. Meraki SD-WAN Platforms
6. Programmability
7. Licensing
8. Key Takeaways

SD-WAN



Drivers of innovation in the new Edge

Powering hybrid work



Our Mission

Connecting passionate people
to their mission by **simplifying**
the digital workplace.

Work **simple.**

The Meraki Platform

Software defined branch



SWITCHING



SECURITY
& SD-WAN



SD-WAN
Analytics



MOBILE DEVICE
MANAGEMENT



WIRELESS
LAN



WIRELESS
WAN



SENSORS

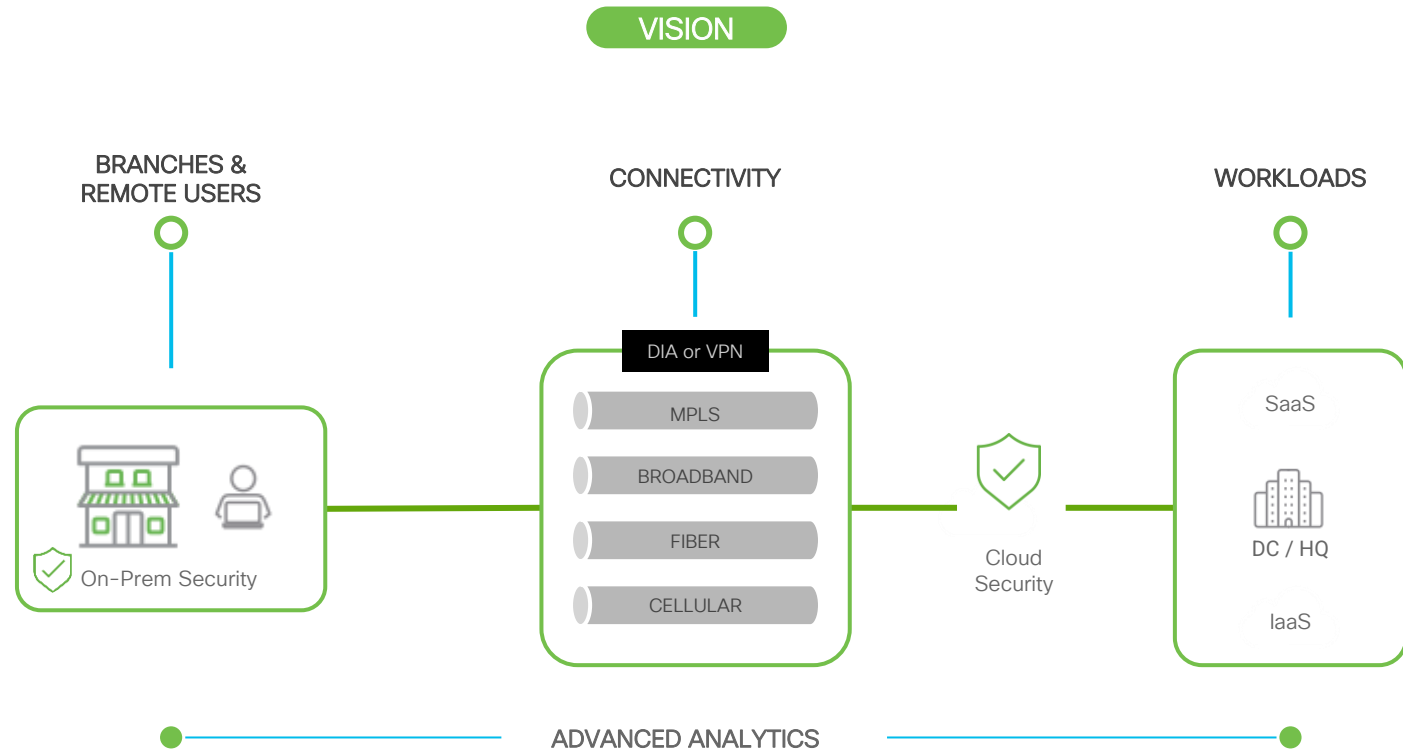


SMART
CAMERAS



Secure Cisco SD-WAN Powered by Meraki

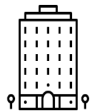
Powering hybrid work



Meraki Secure SD-WAN

How we innovate

Connect



Branch



Remote



Cloud

Connect anyone, anywhere

Secure



On-prem



Cloud

Natively integrated adv security

Automate



WAN



App



VOIP



Internet

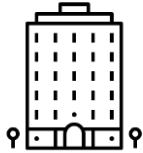
Analytics, powered by ML

Connect



Connect anyone, anywhere

Delivering exceptional network experiences



Branch

Site to Site



Remote

Client



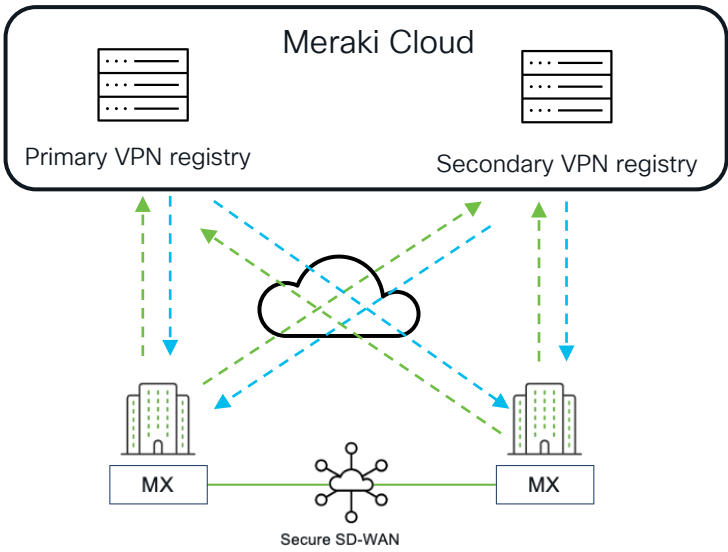
Cloud

Cloud connectivity

Site-to-site VPN

Intelligent connectivity with Meraki Auto VPN

- Secure SD-WAN in 3 clicks
- Automatically configured VPN parameters
- Self-healing redundancy



Peers	Usage	Latency	Connectivity Status
-------	-------	---------	---------------------

Non-Meraki VPN Peer

Simplifying 3rd party integrations

The screenshot displays a configuration window for a Non-Meraki VPN Peer. It is divided into two main sections: Phase 1 and Phase 2.

Phase 1

- Choose a Preset:** A dropdown menu is open, showing options: Default (selected), Default, AWS, Azure, Umbrella, Zscaler, and Custom.
- Encryption:** A dropdown menu.
- Authentication:** A dropdown menu.
- Pseudo-random Function:** A dropdown menu set to SHA1.
- Diffie-Hellman group:** A dropdown menu set to 2.
- Lifetime (seconds):** A text input field set to 28800.

Phase 2

- Encryption:** A container with four buttons: AES 256 x, AES 192 x, AES 128 x, and 3DES x.
- Authentication:** A container with two buttons: SHA1 x and MD5 x.
- PFS group:** A dropdown menu set to Off.
- Lifetime (seconds):** A text input field set to 28800.

At the bottom right of the window are two buttons: **Cancel** and **Update**.

Site-site VPN tunnels between a Meraki device and a Non-Meraki VPN endpoint

Client VPN

Simple and secure access

Flexibility to choose VPN based on security needs

- Cisco IPsec
- Cisco AnyConnect

NEW



Client VPN

[IPsec Settings](#)

[AnyConnect Settings](#)

[FAQs](#)

Anyconnect Client VPN

☒ Enabled

☐ Disabled

Client Connection Details

Hostname ⓘ

campus-sfo-czvtwdcnjp.dynamic-m.com ⓘ

AnyConnect Client
Download Links

[Download the AnyConnect Client v4.10.05085 for Windows](#)

[Download the AnyConnect Client v4.10.05085 for MacOS](#)

[Download the AnyConnect Client v4.10.05085 for Linux](#)

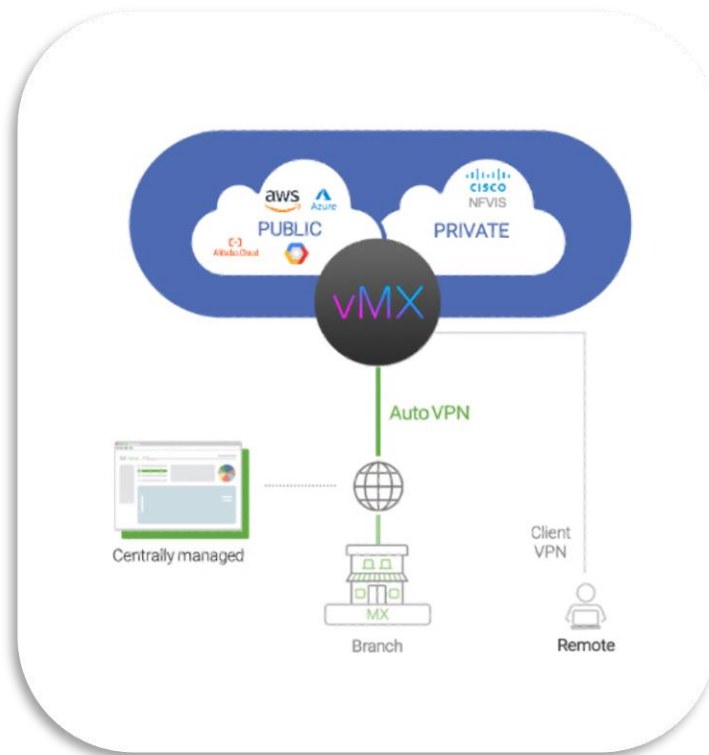
[Download the AnyConnect Profile Editor v4.10.05085 for Windows](#)

These links will expire within 5 minutes of loading this page. Please refresh this page if the link expires.

Meraki vMX

Extend the simplicity of SD-WAN to public clouds

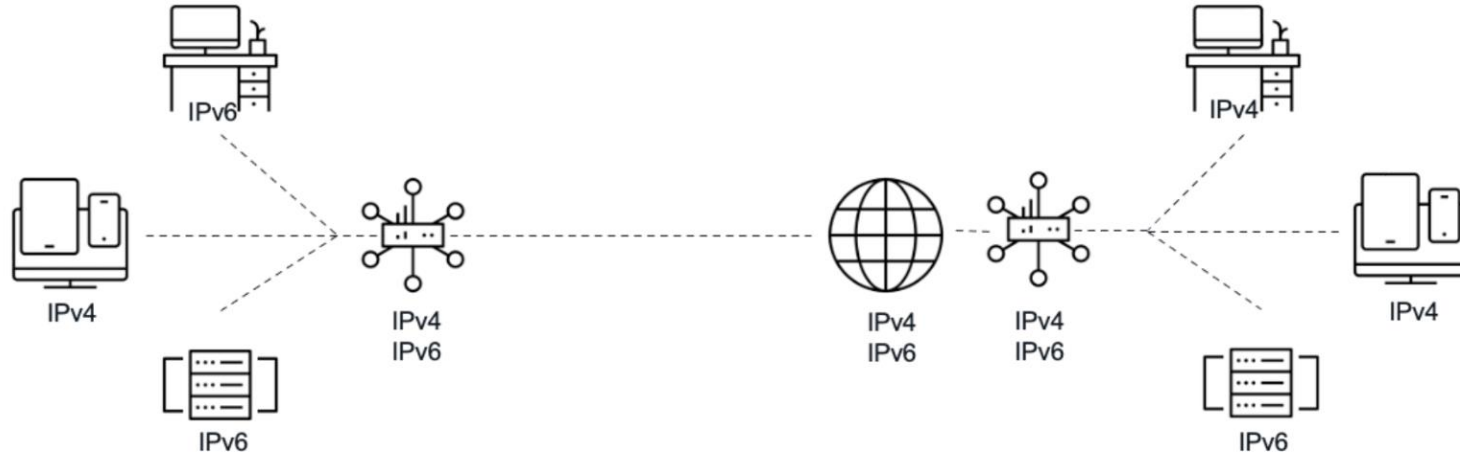
- Site-to-site AutoVPN to public cloud
- Leverages SD-WAN for best path selection of traffic
- Supported in **all major public clouds**:
AWS, Azure, GCP, Alibaba Cloud
- **Private cloud** support with Cisco NFVIS
- Supports on-demand client VPN for **remote users**



Dual Stack Support

Enabling IPv6 connectivity

NEW



Limitations with WAN connectivity



Performance

Network closets inhibits optimal cellular signal for LTE embedded routers



Efficiency

Not all WAN options—MPLS, Broadband, and Fiber—are best suited for all use cases



Availability

Unavailability of wired internet connection or limited options for connectivity



Throughput

Dissatisfaction with available throughput and flaky regional ISP connectivity

Meraki MG Series

Gigabit speeds and insights at your fingertips



MG41/MG21 Series

CAT 18/ CAT 6 connectivity



Signal strength

Signal quality

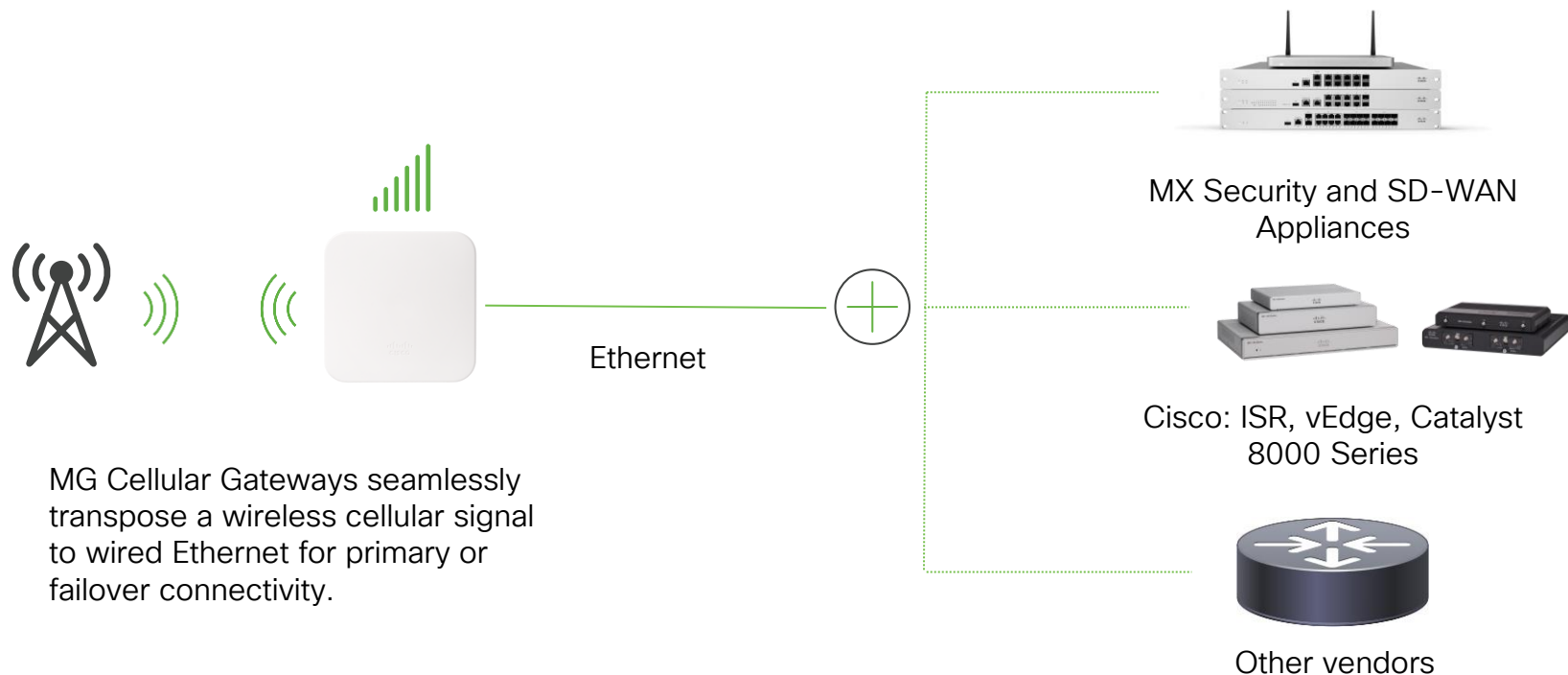
Loss/Latency

Network/Data Sessions

Carrier Aggregation

Roaming

Pair MG with any Edge device or SD-WAN appliance



Ease of cellular with MG

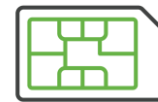
Feature Highlights



IP67-rated and
suited for **outdoor**
deployments



Higher
performance with
primary or failover
connectivity



Uninterrupted
connectivity with
dual SIM



Ultimate flexibility
with mounting,
antennas, and dual
PoE options



Ease of global
deployments with
single SKU



Remotely monitor
key stats and
settings: SIM
config, radio status
etc.

Postcards from the 5G Edge

Presenter: Bill Reilly

BRKMER – 2001

Monday, June 13th | 4:00 PM – 4:45 PM



[Learn More](#)



Secure

Natively integrated security suite along with seamless cloud integration



Advanced Security

Multi-functional security with analytics and insights

Meraki MX

On-prem security & SD-WAN

- Enhanced threat defense
- Contextual visibility
- Rapid detection & alerting
- Ease of management

Comprehensive, natively integrated security suite

Cisco Umbrella

Cloud Security

- Multiple layers of security from a single cloud-native service
- SSL decryption at scale
- DNS-layer security, Cloud-delivered firewall, SWG, CASB
- Advanced security with granular controls.

One-click integration of Cisco Umbrella with SD-WAN

Security

Unified Threat Management

Next Gen Firewall



IDS/IPS

Content Filtering

Advanced Malware Protection
(AMP)

Cisco Secure Malware Analytics
(Threat Grid)

DNS Layer Protection
(Cisco Umbrella)



TALOS

Get Advanced security – in a few clicks

Dashboard View

Meraki

NETWORK

Meraki Waterloo

Network-wide

Cellular Gateway

Security & SD-WAN

Switch

Wireless

Cameras

Insight

Organization

Search Dashboard

Threat protection

Advanced Malware Protection (AMP)

Mode **Enabled**

Allow list URLs **There are no URLs on the Allow list.**
[Add a URL to the Allow list](#)

Allow list files **There are no files on the Allow list.**
[Add a file to the Allow list](#)

Threat Grid

Mode **Disabled**

Intrusion detection and prevention

Mode **Prevention**

Ruleset **Balanced**

Disabled Detection

✓ Prevention

Umbrella protection

DNS layer protection (Cisco Umbrella) **✓ Security**

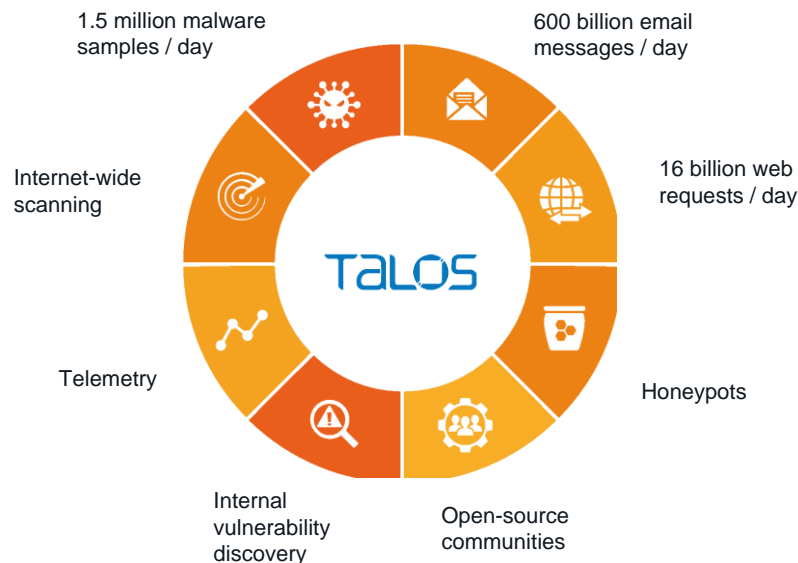
Route DNS requests through Cisco Umbrella DNS and deny DNS requests by linking Umbrella policies.

Connectivity

Balanced

Meraki Secure SD-WAN

Informed by World-Renowned Cisco Talos Threat Intelligence

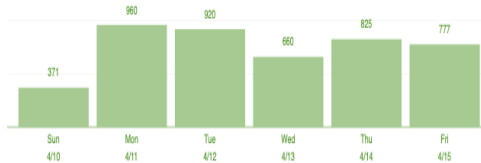


	Over 450 full time threat researchers
	Millions of telemetry agents
	4 global data centers
	Over 100 threat intelligence partners
	Over 1,100 threat traps

Security Center

Centralized view for all security events

Events over time



Most affected clients

Client	Network	Last Affected	Events
Alexander Fleming Meraki Network OS	San Francisco	Apr 24 13:55:43	5505
Rudolf Diesel Meraki Network OS	San Francisco	Apr 24 12:35:43	460

Most affected operating systems

OS	Events
unknown	7970
Meraki Network OS	5965

Top sources of threats



Most prevalent threats

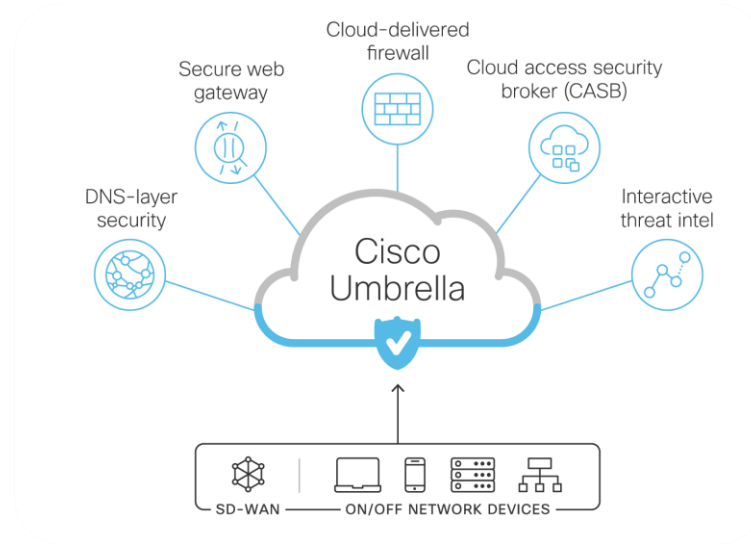
Threat	Occurrences
SERVER-OTHER Exim unauthenticated remote code execution attempt	7625
EICAR	5965
SERVER-OTHER Exim unauthenticated remote code execution attempt	341
SSH_EVENT_RESPOVERFLOW	4

Threats across networks

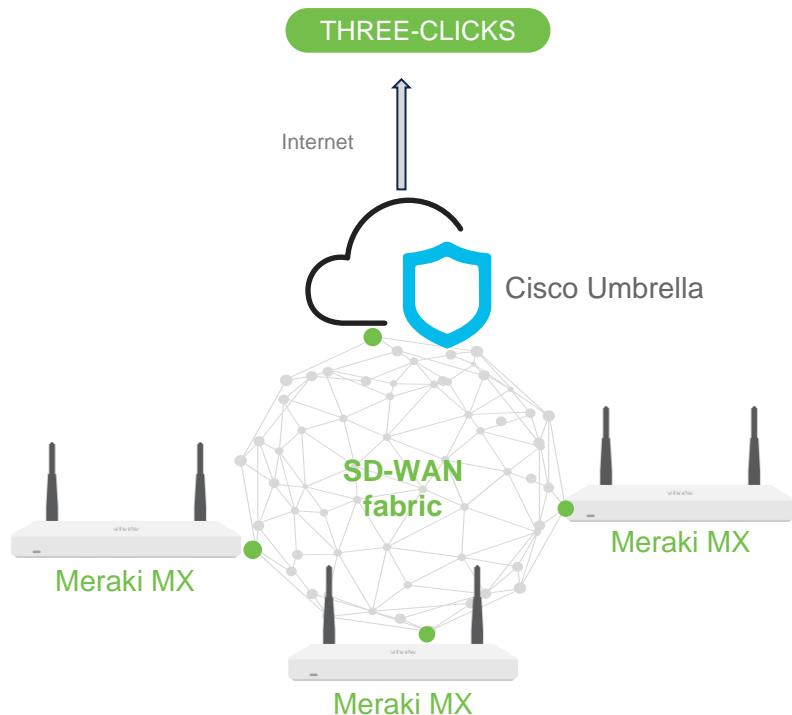
Threat Name	Networks
EICAR	2
SERVER-OTHER Exim unauthenticated remote code execution attempt	1
SERVER-OTHER Exim unauthenticated remote code execution attempt	1

Cisco Umbrella

Meets diverse security requirements for distributed locations and users



Supremely simple



Supremely secure

BEST-IN-CLASS



- ✓ Layer 7 firewall
- ✓ IDS/IPS
- ✓ Content filtering
- ✓ Malware protection
- ✓ Sandboxing
- ✓ AnyConnect remote VPN access
- ✓ Centralized enforcement, policy & reporting
- ✓ Site-to-site Auto VPN
- ✓ East-west security filtering
- ✓ URL filtering
- ✓ SSL decryption/inspection
- ✓ Data loss prevention (DLP)
- ✓ Remote browser isolation (RBI)
- ✓ Granular app control
- ✓ File type control
- ✓ SaaS tenant restrictions
- ✓ CASB

Easily **maximize productivity** with secure direct internet access

Automate

Meraki Secure SD-WAN & Analytics



Multiple uplinks supporting SD-WAN

- Efficiently utilizing bandwidth on links available
- Flexibility to choose WAN1/WAN2 or Cellular as the primary uplink
- Load balancing vs uplink preference

SD-WAN & traffic shaping

Uplink configuration

WAN 1	4 Gbps	details
WAN 2	4 Gbps	details
Cellular	unlimited	details

Uplink selection

Global preferences

Primary uplink WAN 1

Load balancing ☒ Enabled

Traffic will be spread across both uplinks in the proportions specified above. Management traffic to the Meraki cloud will use the primary uplink.

☐ Disabled

All Internet traffic will use the primary uplink unless overridden by an uplink preference or if the primary uplink fails.

Policy Based Routing (PBR)

Best path for VPN traffic



- Create policies to make routing decisions for VPN traffic
- Optimize the bandwidth available for VPN traffic
- Load balance traffic to use all available links

Policy based routing for VPN traffic

Best path for VPN traffic

1 Choose application/ custom expression

Uplink selection policy

Traffic filters

WebEx ✕ Add +

Health care	Custom expressions Protocol TCP Source ⓘ Enter a CIDR/hostname Destination ⓘ Enter a CIDR/hostname Add expression
News	
Online backup	
Peer-to-peer (P2P)	
Productivity	
Remote monitoring & management	
Security	
Social web & photo sharing	

2 Set uplink policy

Uplink selection policy

Traffic filters

Add +

Policy

Preferred uplink:

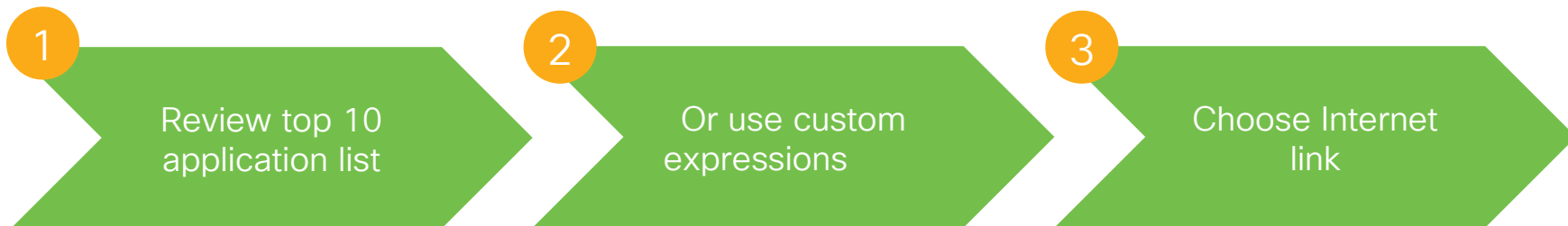
- WAN 1
- WAN 2
- ✓ Best for VoIP
- Load balance
- Global preference

Local Internet Breakout

AutoVPN Exclusion



- Offloading traffic from the branch or remote user sites
- Optimized bandwidth and experience for customers at the branch
- Improve end user experience



Local Internet Breakout for SaaS applications

Application and IP/URL Based

1

Choose application/ custom expression

The screenshot shows the 'AutoVPN Exclusion' configuration page. Under the 'Traffic Exclusion' section, there is an 'Add +' button. Below it, a list of 'Custom expressions' is shown, including Microsoft O365, SAP, Salesforce, GSuits, Oracle, WebEx, Zoom, Box, Citrix, and AWS SaaS. To the right of this list, there is a 'Custom expressions' section with a 'Protocol' dropdown set to 'TCP', a 'Destination' dropdown with the placeholder 'Enter a CIDR', and a 'Dst port' dropdown set to 'Any'. There is also an 'Add expression' button.

- Seamless **one-click setup** for top applications
- Choose a preferred public Internet path

2

Set uplink policy

The screenshot shows the 'AutoVPN Exclusion' configuration page. Under the 'Traffic Exclusion' section, there is an 'Add +' button. Below it, the 'Policy' section is visible. It shows 'Preferred uplink:' with a dropdown menu. The dropdown menu is open, showing four options: 'WAN 1' (selected with a checkmark), 'WAN 2', 'Load balance', and 'Global preference'. There is a 'Save' button at the bottom right of the page.

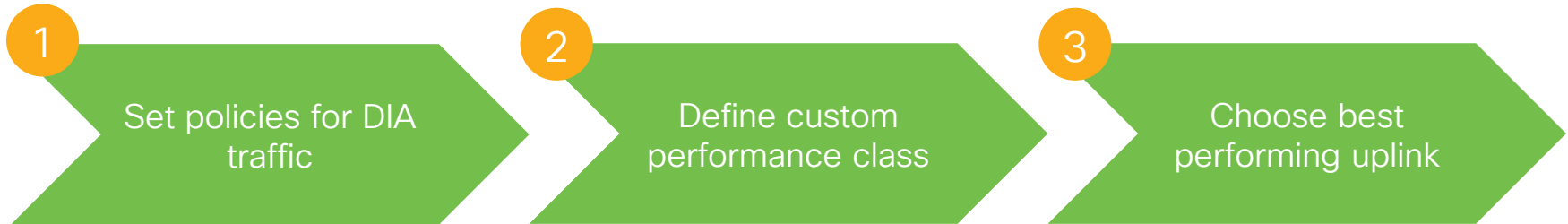
SD-WAN Internet Policies

NEW

SD-Internet



- Best path for critical applications
- Dynamic, performance-based path selection
- Improve end user application experience



Performance-based path selection for Internet traffic

Define acceptable performance thresholds

Name	Maximum latency (ms)	Maximum jitter (ms)	Maximum loss (%)
Telepresence	50	10	1
Create a new custom performance class...			

Custom Expressions

Custom expressions

Protocol
✓ TCP
UDP
Any

CIDR
Any

Port
Any

Destination
CIDR
Any

Port
Any

Policy
Preferred uplink
WAN 1
Fail over if:
Poor performance
Performance class:
VoIP
Add expression Cancel

Policies by application

Destination
Major Application
Webex
Office 365 Suite
Office 365 Sharepoint
Skype & Teams
AWS
Oracle
Webex
Zoom
Salesforce
SAP

Policy
Preferred uplink
WAN 2
Fail over if:
Poor performance
Performance class:
VoIP



WAN 1
WAN 2
✓ Best for VoIP
Load Balance
Global Preference

Traffic shaping rules

Default rules


Traffic Type	DSCP tag
SIP (Voice)	46 (EF - Expedited Forwarding, Voice)
All Advertising, All Software Updates, All Online Backups	10 (AF11 - High Throughput, Latency Insensitive, Low Drop)
WebEx, Skype	34 (AF41 - Multimedia Conferencing, Low Drop)
All Video & Music	18 (AF21 - Low Latency Data, Low Drop)

Customized rules


Rule #1  

Definition
This rule will be enforced on traffic matching any of these expressions.


Facebook




Add




Bandwidth limit


Choose a limit... 

5 Mbps  [details](#)

Priority

High 

DSCP tagging

8 (CS1 - Low Priority Data) 

[Add a new shaping rule](#)

SD-WAN Analytics

Reduce troubleshooting time from hours to minutes



Web App Health

At-a-glance performance of critical applications across your LAN, WAN, and application server—wherever it is.



WAN Health

Monitor ALL of your organization's diverse uplinks, including cellular, and home-user uplinks, in one view.



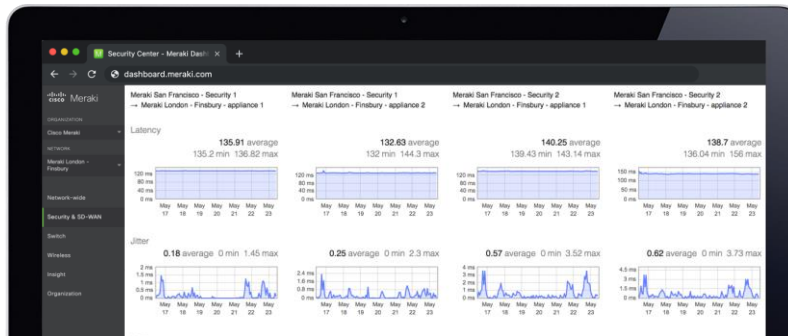
VoIP Health

Track VoIP quality by provider and uplink with detailed hop-by-hop analysis.



Internet Outages

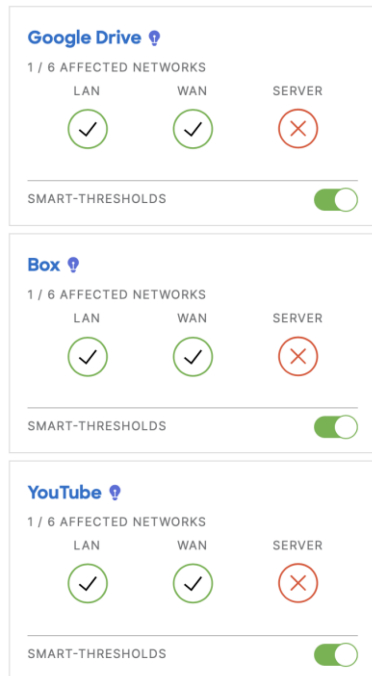
At-a-glance view of global internet health over the last 24 hours.



Web Application Health

End-to-end visibility for SaaS applications

Web App Health for all apps and networks



Trends



App Usage

Response time

Request rate

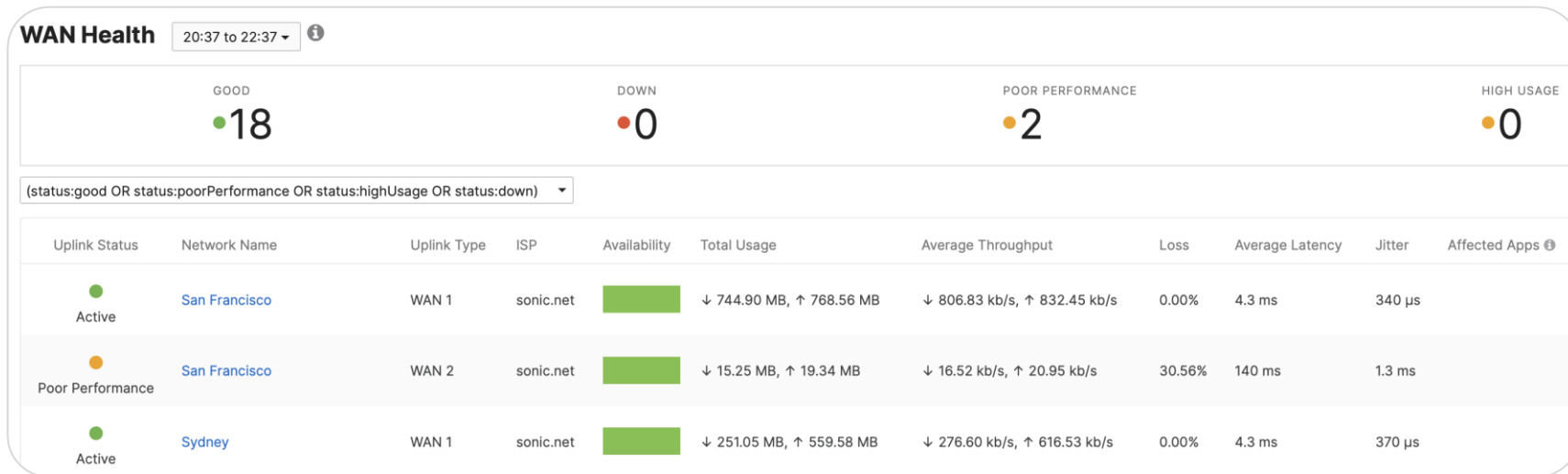
Domains

Clients

Uplinks

WAN Health

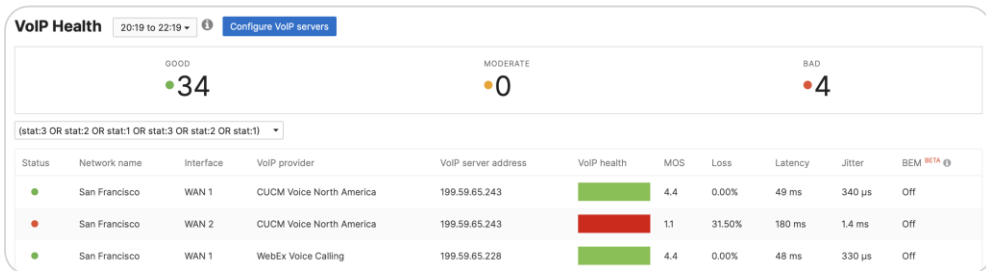
Monitor the health of all MX uplinks including cellular across all sites



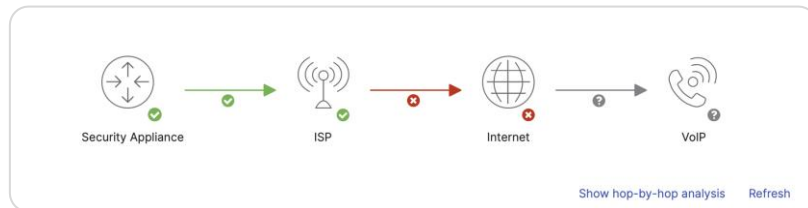
VoIP Health

Track the performance of SaaS and on-prem based VoIP services

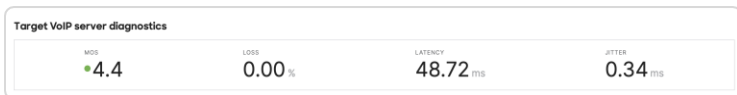
Monitor the path to the VOIP server



Detailed hop-by-hop analysis



Active monitoring of VoIP servers

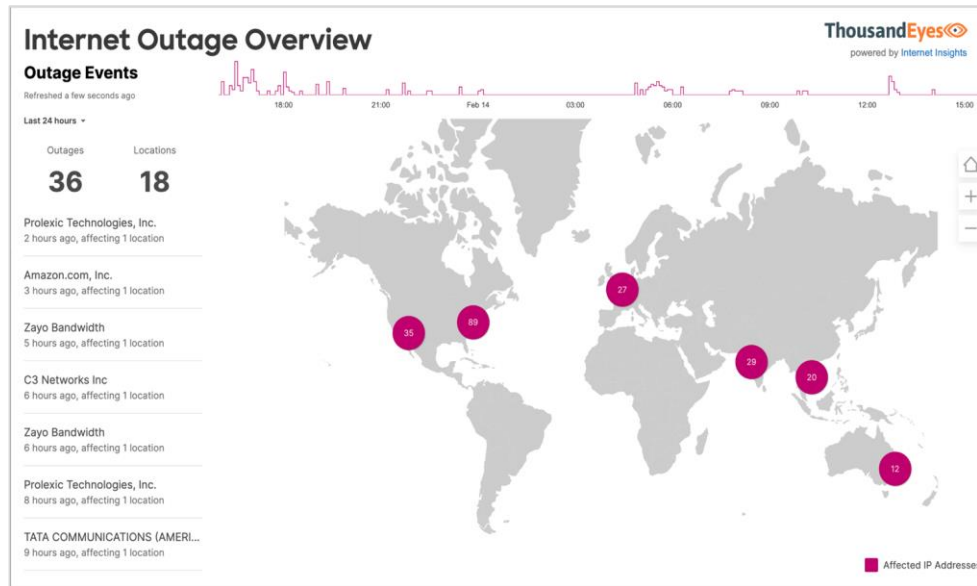


Internet Outages with ThousandEyes

Internet Insights powered by collective intelligence

NEW

- At-a-glance visualization of global internet health
- QoS patterns of internet services and their providers across the globe



SD-WAN granular alerts

Reduce mean time to resolution

NEW

WAN Alerts

Uplink
Status

Packet
Loss

Uplink
Utilization

Uplink
Latency

The image shows a stack of four screenshots of the WAN alert configuration interface. Each screenshot displays a dropdown menu for 'WAN 1' and a text field for the alert condition. The conditions shown are: 'status changes', 'packet loss is greater than', 'usage is greater than', and 'a packet latency is greater than'. Below each condition, there is an 'Alert description (optional)' field with an example: 'Ex: WAN 1 high latency'.

VOIP Alerts

Packet Loss

Jitter

MOS

The image shows a stack of three screenshots of the VOIP alert configuration interface. Each screenshot displays a dropdown menu for 'WebEx Voice Calling' and a text field for the alert condition. The conditions shown are: 'Packet Loss', 'Jitter', and 'MOS'. Below each condition, there is an 'Alert description (optional)' field with an example: 'Ex: WAN 1 low MOS for Cisco'.

Connect and Secure with Meraki

Presenters: Avinash Ramesh & Vaibhav (VB) malik

BRKMER – 1003

Tuesday, June 14th | 10:30 AM – 11:15 AM



[Learn More](#)

Meraki Platforms



A Model For Every Location

MX Security & SD-WAN Portfolio

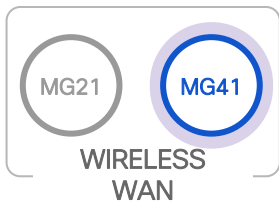
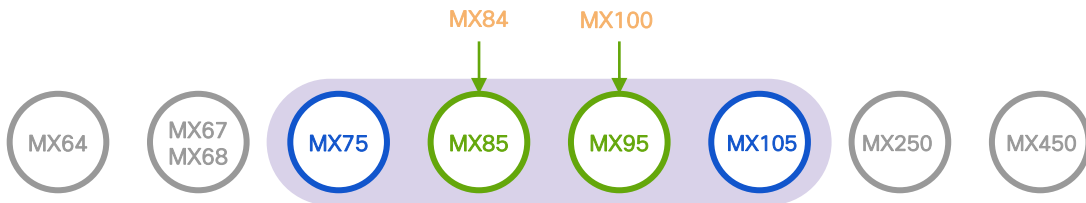
WAN PORTFOLIO

REFRESH

+

EXPANSION

WIRED WAN



CORE CAPABILITIES

- Sleek, low-profile design
- Gigabit throughput
- MX models with Integrated wireless, LTE modem
- PCI 3.2 compliance

Programmability

The value of APIs



What can APIs do?



Mass
Provisioning



Network
Automation



Advanced
Monitoring



Advanced
Analytics



Cloud
Integrations

Licensing



A license for every use case

1:1 ratio of devices to licenses



Enterprise

Essential SD-WAN features

Secure connectivity & basic security



*All I need is Auto
VPN and a firewall*



Advanced Security

All enterprise features plus:

Fully featured
unified threat management



*I connect to the internet,
so I need UTM security too*



Secure SD-WAN Plus

All advanced security features plus:

Advanced analytics with ML
Smart SaaS quality of experience



*My business relies on
SaaS/IaaS/DC served apps*

Secure SD-WAN Plus License

Secure SD-WAN packed with Best-in-class security and AI/ML driven Insights

Secure Connectivity

Site to site VPN
Client VPN
IP based local breakouts

Advanced Security

IDS/IPS
Content filtering
AMP/TG
DNS Security
Web search filtering
YouTube content restriction
Geo based firewall

Application QoE

Layer 7 deep packet inspection
Traffic shaping policies
App based local breakouts

Analytics

Web App Health

Smart Thresholds

WAN Health

VoIP Health

Internet Outages

Key Takeaways

1. Unified cloud-management platform
2. Enterprise-grade security built into every MX
3. Seamless, Cloud connectivity with vMX and cloud-native security with Umbrella
4. Static and Dynamic SD-WAN policies for VPN and internet traffic & advanced analytics
5. Sleek, powerful platforms for every location

Technical Session Surveys

- Attendees who fill out a minimum of four session surveys and the overall event survey will get Cisco Live branded socks!
- Attendees will also earn 100 points in the Cisco Live Game for every survey completed.
- These points help you get on the leaderboard and increase your chances of winning daily and grand prizes.



Cisco Learning and Certifications

From technology training and team development to Cisco certifications and learning plans, let us help you empower your business and career. www.cisco.com/go/certs

Pay for Learning with Cisco Learning Credits

(CLCs) are prepaid training vouchers redeemed directly with Cisco.



Learn

Cisco U.

IT learning hub that guides teams and learners toward their goals

Cisco Digital Learning

Subscription-based product, technology, and certification training

Cisco Modeling Labs

Network simulation platform for design, testing, and troubleshooting

Cisco Learning Network

Resource community portal for certifications and learning



Train

Cisco Training Bootcamps

Intensive team & individual automation and technology training programs

Cisco Learning Partner Program

Authorized training partners supporting Cisco technology and career certifications

Cisco Instructor-led and Virtual Instructor-led training

Accelerated curriculum of product, technology, and certification courses



Certify

Cisco Certifications and Specialist Certifications

Award-winning certification program empowers students and IT Professionals to advance their technical careers

Cisco Guided Study Groups

180-day certification prep program with learning and support

Cisco Continuing Education Program

Recertification training options for Cisco certified individuals

Here at the event? Visit us at **The Learning and Certifications lounge at the World of Solutions**



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 www.CiscoLive.com/on-demand



The bridge to possible

Thank you

CISCO *Live!*



#CiscoLive