



# TURN IT UP

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The bridge to possible

# Scale your WAN with utter simplicity

Steve Harrison, Senior Technical Marketing Engineer  
BRKMER-2019

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# Agenda

- Introduction
- What can SD-WAN help achieve
- About Cisco Meraki
- Cisco SD-WAN powered by Meraki
- Live demo
- Conclusion

# Why SD-WAN



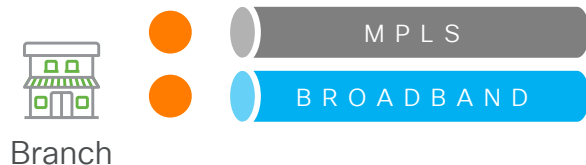
# WAN & Bandwidth Transitions



- Increasing bandwidth demands
  - Continued cloud migration of applications and resources
  - Increasing use of video & VoIP
- Private legacy WAN links are coming under increasing strain
- Other WAN technologies are maturing to become viable for enterprise consideration
  - Broadband
  - Fiber
  - Cellular

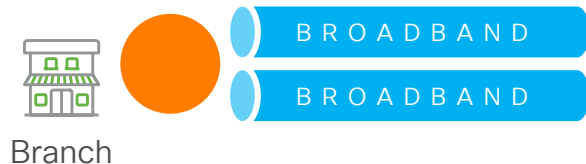
# Cost-Effective & MPLS-like Enterprise WAN Options

## AUGMENTED MPLS



- Supplement an existing MPLS network with broadband for increased bandwidth
- Offload traffic from MPLS to broadband with policy-based routing dynamic path selection

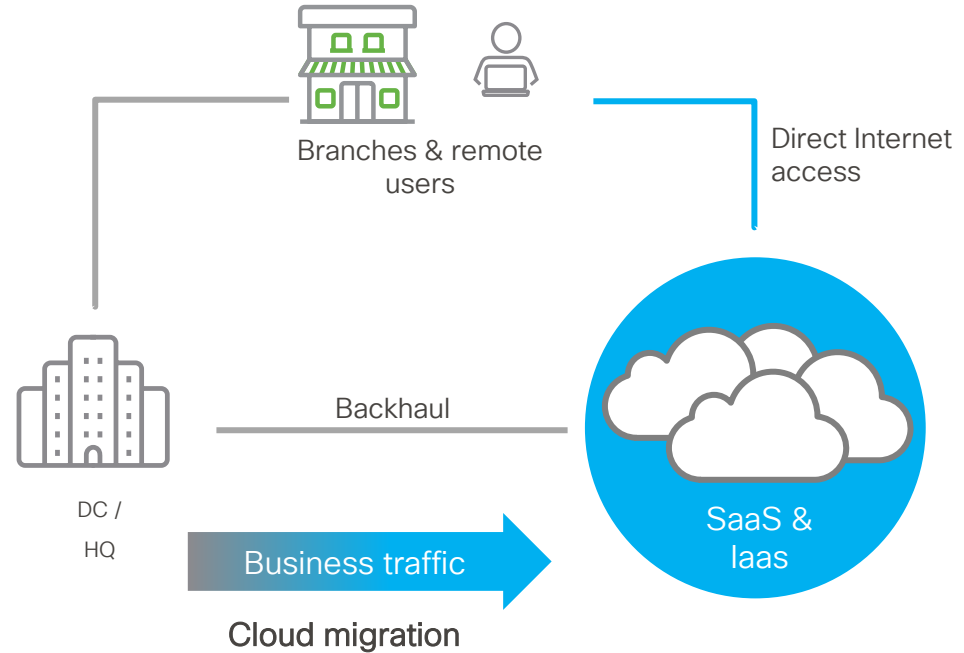
## BROADBAND-BROADBAND



- Dual high speed broadband connections
- Load balance business critical traffic based on policy or link performance

# Quality of Experience

- Business traffic continues transition to be more cloud-centric
- Acceleration of resources and workloads moving to SaaS & IaaS hosted in multiple cloud environments
- Branches and remote users are increasingly accessing SaaS & IaaS directly over the Internet
- Visibility through advanced analytics is becoming essential to deliver high quality user experience
  - End-to-end: from the user to the application server
  - WAN including the Internet

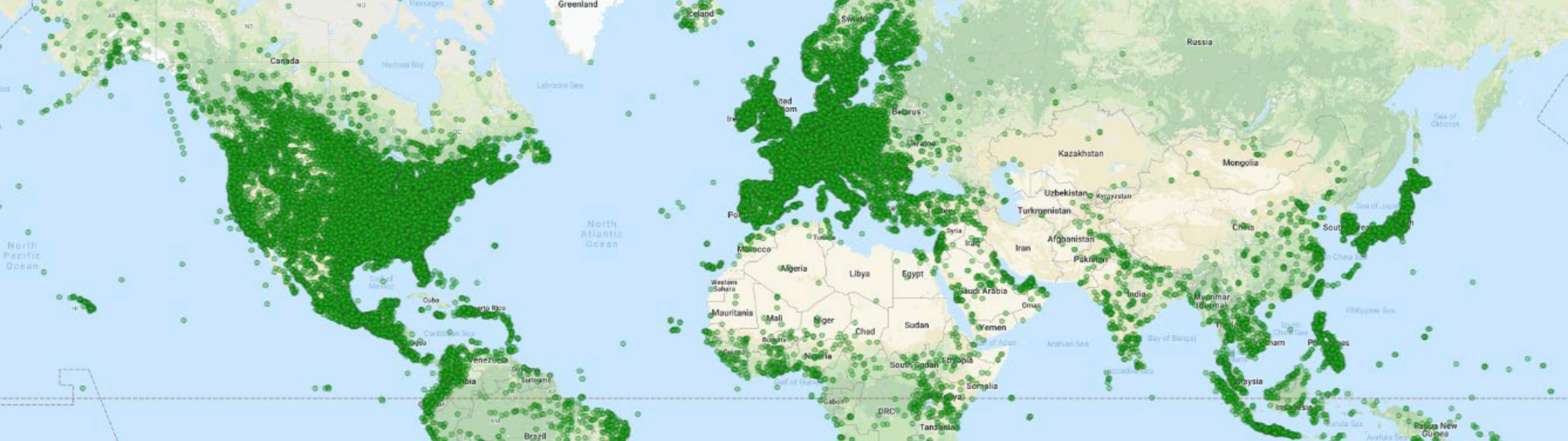


# About Meraki

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# Built on the Industry's **Most Trusted** Cloud Infrastructure



10+ years experience  
scaling cloud infrastructure



Served **500,000+**  
customers globally



Proven in **20,000+**  
location deployments

# The Platform

OUT-OF-THE-BOX  
MANAGEMENT & ANALYTICS

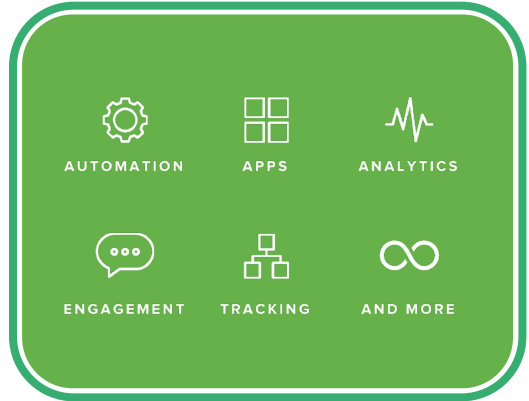


{ HTTPS }



{ API }

DIGITAL BUSINESS  
POWERED BY MERAKI

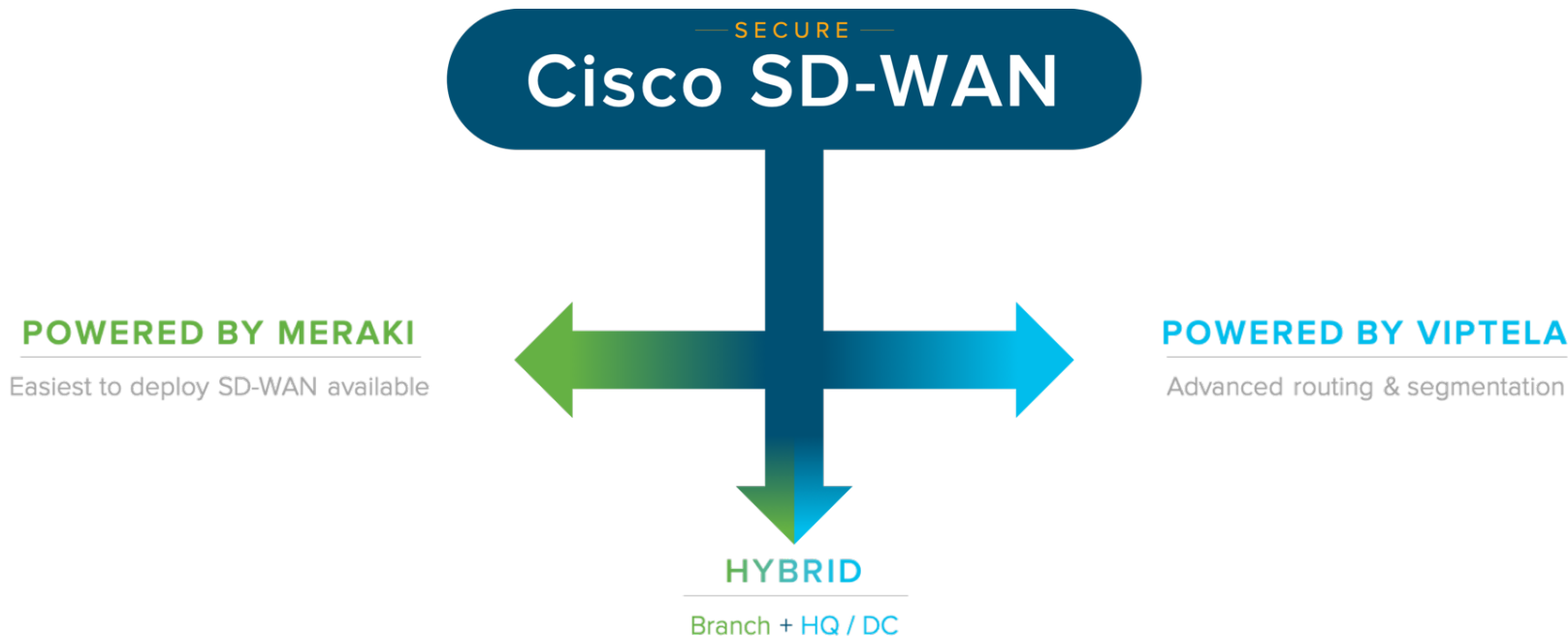


# Cisco SD-WAN

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# A Complete Market Leading Solution



# Cisco SD-WAN Powered by Meraki

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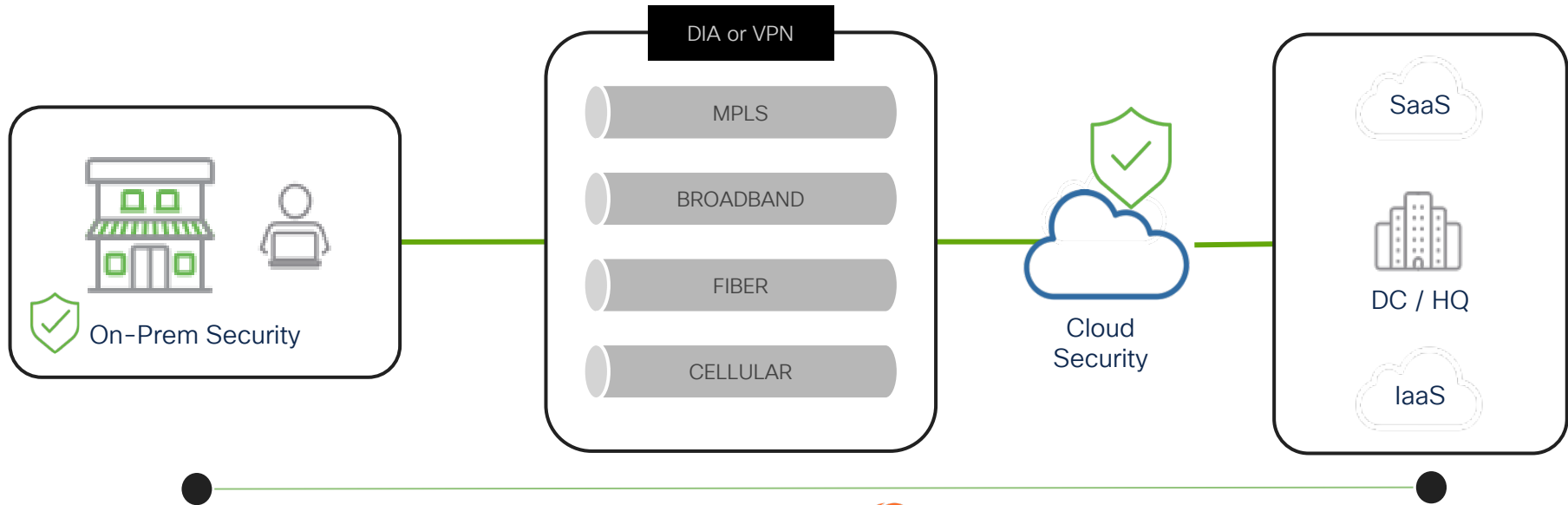


# Secure Cisco SD-WAN Powered by Meraki

BRANCHES &  
REMOTE USERS

CONNECTIVITY

WORKLOADS



ADVANCED ANALYTICS INCL. 

# Delivered by Meraki MX Security & SD-WAN Appliances



## Hardware highlights across all MX models



×2 WAN ports



3G / 4G / LTE USB as failover/active via MG



Models with embedded LTE modem

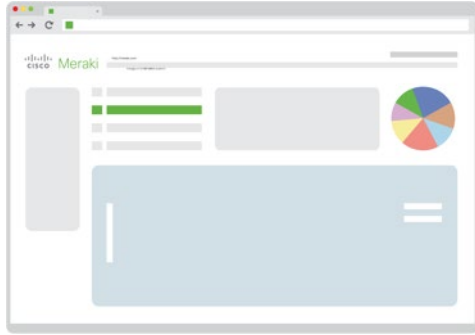


High availability mode and automatic WAN failover



Additional Ethernet ports with PoE/PoE+ options

# True Zero Touch Deployment



One-time **remote, web-based** configuration

Configuration **templates or APIs** simplify large multi-site deployments



**No pre-staging**

**No onsite configuration**



**Unbox and plug** in MX appliances at required locations



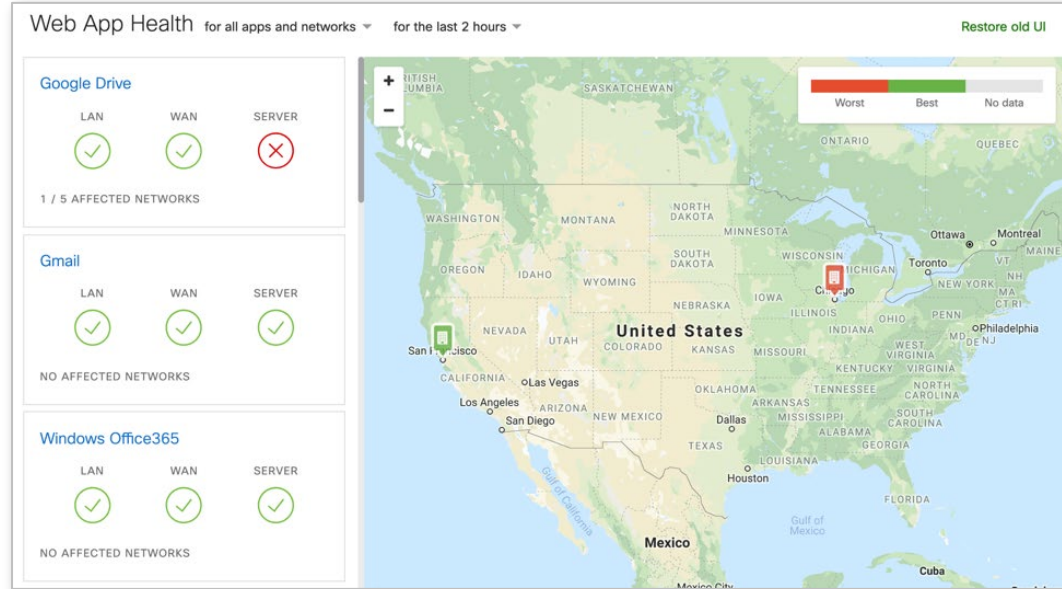
# Advanced Analytics with ML

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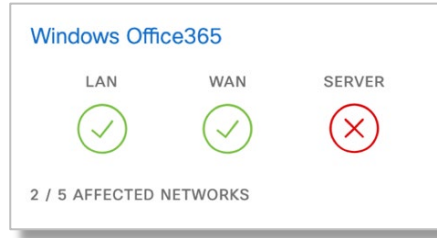
# Web Application Health

- Monitor performance for apps travelling via VPN or public Internet
- End-to-end visibility for SaaS application experience
- Network performance analytics and troubleshooting, including the LAN, WAN, servers and domains
- Accelerate IT and reduce time-to-resolution
- End-to-end network intelligence at work



# Pinpoint App Performance Issues At-a-Glance

*Where's the issue and so who should be contacted?*



*An IT admin can immediately tell which point in the network is failing and causing degradation*

*What's the exact reason and where's the evidence?*



*Within 2 clicks, an IT admin can understand the exact reason and drill down to generate specific evidence for the poor performance*

Suggested root cause of performance issues

# Don't Worry About Setting Thresholds

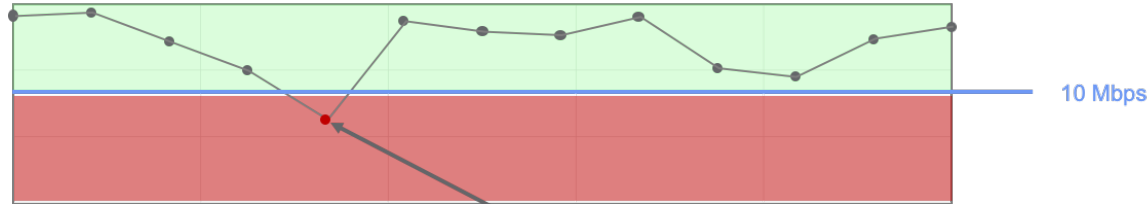


## Smart Thresholds

- No need to set any threshold
- Thresholds autonomously adjust through sophisticated machine learning models
- Based on past behavioral patterns of the specific network
- Takes into account previous performance, workloads etc.

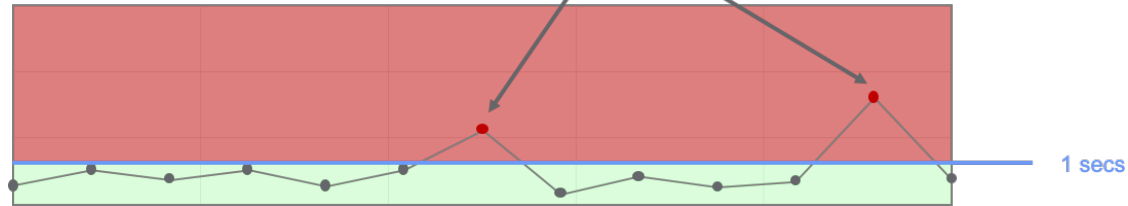
SMART  
THRESHOLDS

Goodput



True anomalies

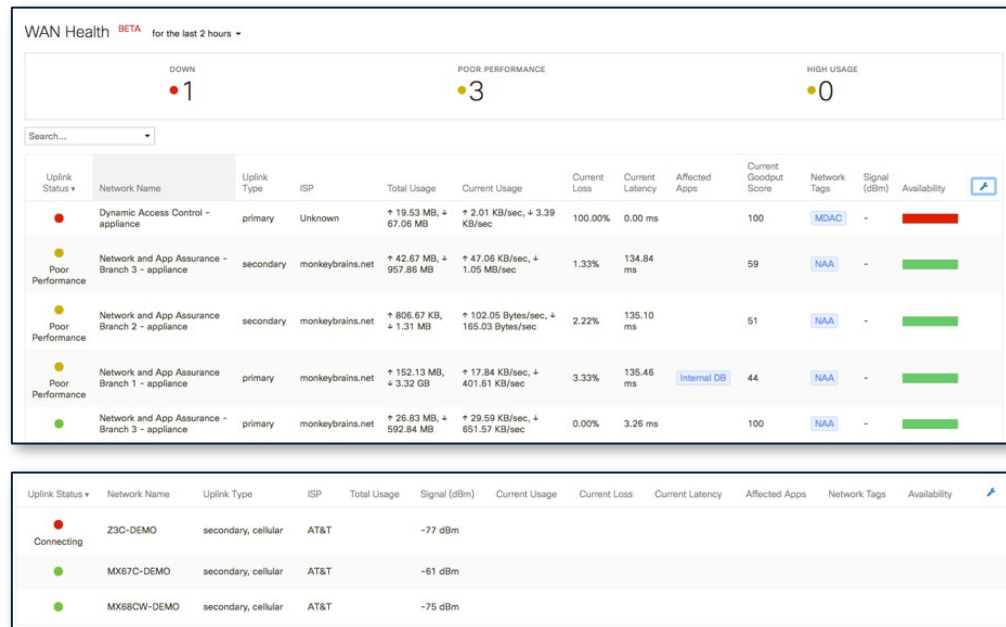
App response time



# WAN Health

- At-a-glance **health of all MX uplinks across all sites**
- Quickly **identify downed uplinks**, including cellular, across all sites
- Easily monitor **signal strength for cellular uplinks** across all locations
- Quickly isolate sites with **underperforming uplinks** to make the case for switching ISP or adding cellular as failover
- Discover** which sites are most reliant on cellular as failover

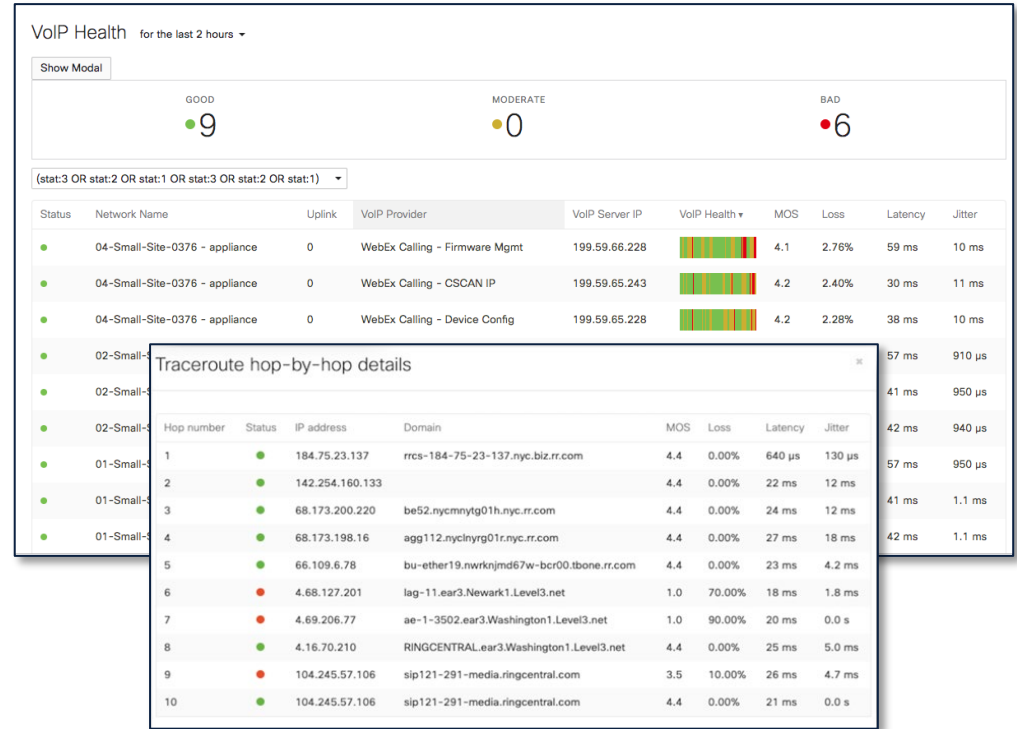
Provide proactive and reactive alerts based on your company's SLA/SLO to minimize operational costs



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 over all uplinks
- Simple to set up – add VoIP servers by domain name or IP addresses
- Quickly identify the cause of VoIP quality degradation through detailed hop-by-hop analysis
- Active monitoring of VoIP servers allows for ‘virtual’ PoC for multiple vendors



# Granular Alerts

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### Uplink Status

**WAN 1** status changes

Alert description (optional)

Ex: WAN 1 status changes

### Packet Loss

**WAN 1** packet loss is greater than **10** % for **2** minutes or more, within a **10** minute window.

Alert description (optional)

Ex: WAN 1 status changes

### Uplink Utilization

**WAN 1** usage is greater than

100 Kbps 1 Mbps 10 Mbps 100 Mbps 1 Gbps

for **5** minutes

Alert description (optional)

Ex: WAN 1 high utilization

### Uplink Latency

**WAN 1** a packet latency is greater than **10** ms for **1** minute or more, within a **1** minute window.

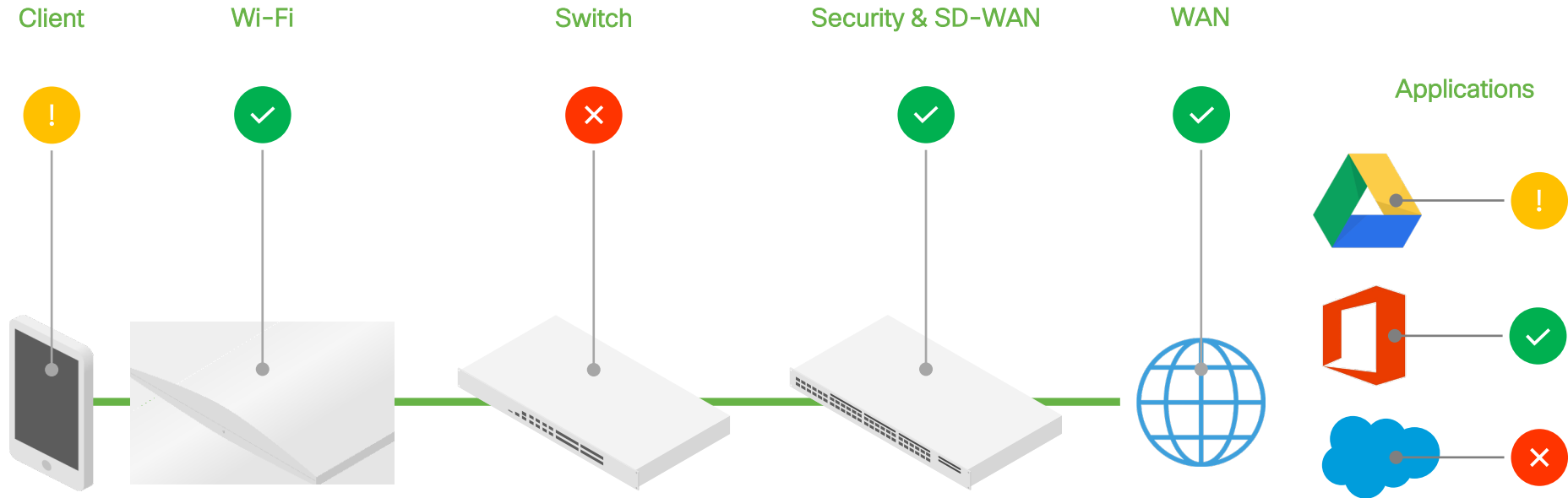
Alert description (optional)

Ex: WAN 1 high latency

[Add a uplink utilization alert](#)

[Add a packet loss alert](#)

# Unique End-to-End Platform Visibility





Coming Soon

ThousandEyes

# Connectivity & Intelligent Path Selection

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# Site-to-Site Auto VPN in Three Clicks



## Meraki Auto VPN

The ability to configure site-to-site, Layer 3 IPsec VPN tunnels in just three clicks in the Cisco Meraki dashboard over any WAN link

## Automatically configured VPN parameters

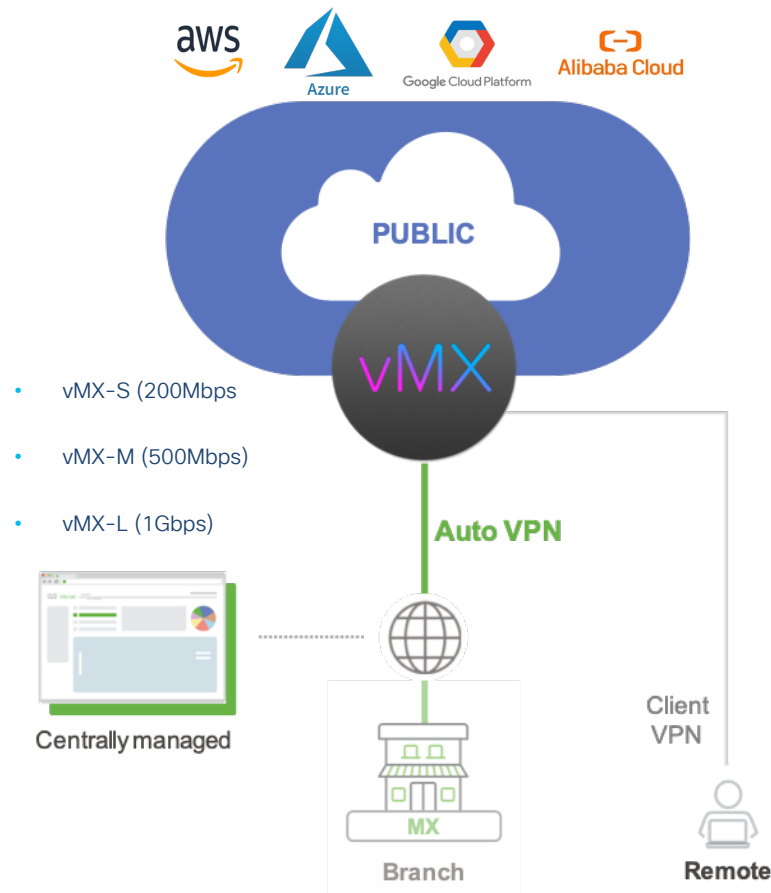
The Cisco Meraki dashboard uniquely acts as a broker between MXs in an organization, negotiating VPN routes, authentication and encryption protocols, and key exchange automatically to create hub-and-spoke or mesh VPN topologies

## Redundancy built-in

MXs with two uplinks will automatically self-heal to re-negotiate VPN tunnels if a primary uplink goes down

# Seamless Extension to Public Cloud Environments

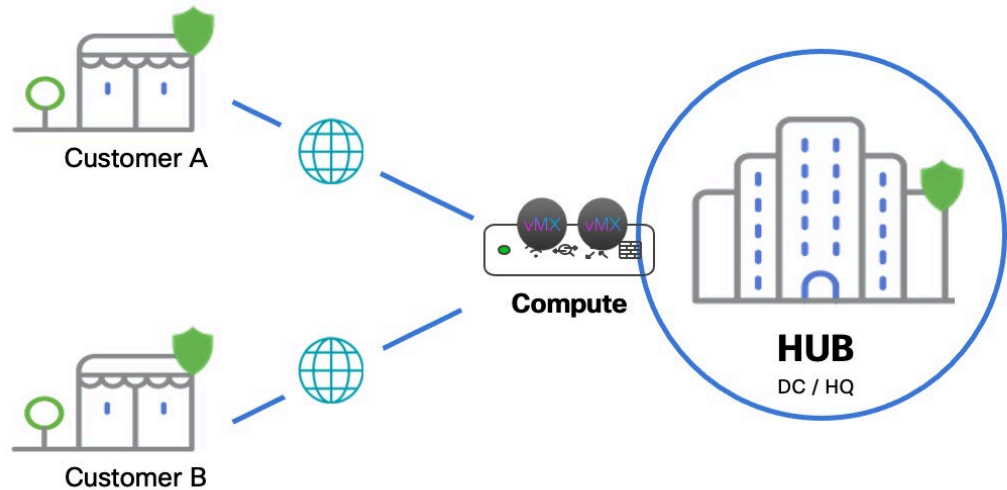
- Delivered by a **virtual** MX appliance (vMX)
- vMX is designed to extend the simplicity of site-to-site Auto VPN to **public cloud environments**
- Supported in **all major public clouds**: Amazon Web Services (AWS), Microsoft Azure, Google Cloud Platform (GCP)\*, Alibaba Cloud
- Extend the **Meraki SD-WAN fabric** to public cloud environments for optimized access to business-critical resources
- **Securely connect** branch sites with a physical MX appliance to resources in public cloud environments in three clicks with Auto VPN
- Supports client VPN for **remote users**



# Seamless Extension to Private Cloud Environments

## Introducing vMX on Cisco NFVIS

- Save space/resources in the DC by hosting multiple vMXs on 1U/2U servers
- Solution provided by Cisco NFVIS technology
- Allows for up to 27,000 tunnels and 27 Gbps encrypted throughput in a single server



# Simply Express Intent

## 1. Define acceptable performance thresholds

Custom performance classes	Name	Maximum latency (ms)	Maximum jitter (ms)	Maximum loss (%)	Actions
	Office365	10	10	10	X
<a href="#">Create a new custom performance class...</a>					

## 2. Select from built-in Layer-7 categories and applications

Uplink selection policy

Traffic filters

Windows Office365 X Add +

Category

- Health care
- News
- Online backup
- Peer-to-peer (P2P)
- Productivity
- Remote monitoring & management
- Security
- Social web & photo sharing

All Productivity

- Adobe Creative Cloud
- Sharepoint
- Simphony.NET
- Slack
- Windows Live Office
- Windows Office365 X

## 3. Choose preferred uplink and when fail over should occur

Uplink selection policy

Traffic filters

Windows Office365 X Add +

Policy

Preferred uplink: WAN 1

Fail over if: Poor performance

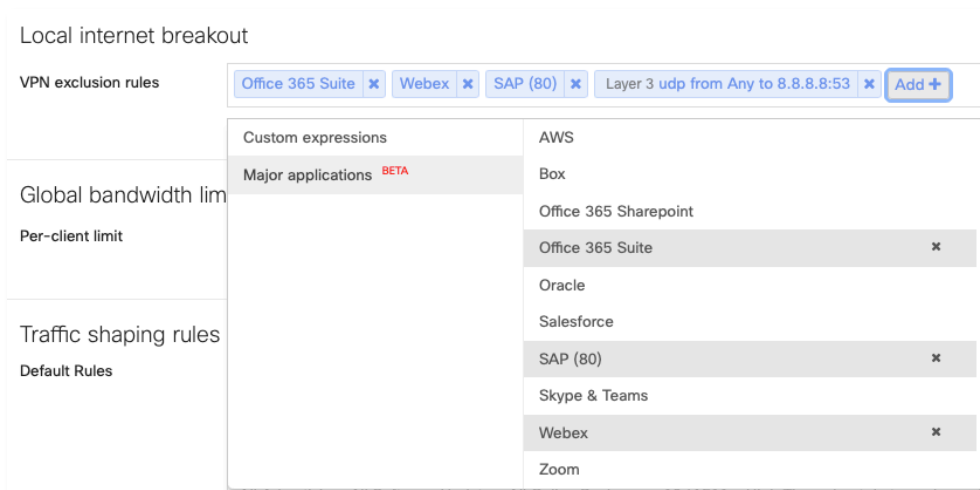
Performance class: VoIP

Custom classes: Office365

Save

# Controlled Path Selection for SaaS Applications

- Local Internet breakout for SaaS applications to use direct Internet access instead of VPN tunnels
- Seamless one-click setup for top applications
- Follow the global preference



# Optimized Quality of Experience for Internet

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- Apply new or existing performance thresholds to direct Internet access traffic
- Mitigate the performance impact of Internet brownouts with automatic failover of Internet traffic between uplinks
- Included with the Secure SD-WAN Plus License option

☐ Disabled  
Do not create VPN tunnels over the secondary uplink unless the primary uplink fails.

### Flow preferences

#### Internet traffic

Protocol	Source	Src port	Destination	Dst port	Uplink selection policy	Actions
<input type="text" value="Any"/>	192.168.129.254/31	<input type="text" value="Any"/>	<input type="text" value="Any"/>	<input type="text" value="Any"/>	Prefer WAN 2. Fail over if poor performance for "Slow".	⊕ ×
<input type="text" value="TCP"/>	192.168.129.255/31	<input type="text" value="1"/>	<input type="text" value="1.2.3.4/32"/>	<input type="text" value="2"/>	Prefer WAN 1. Fail over if uplink down.	⊕ ×
<input type="text" value="TCP"/>	192.168.129.253/31	<input type="text" value="1"/>	<input type="text" value="1.2.3.4/32"/>	<input type="text" value="1"/>	Prefer WAN 1. Fail over if uplink down.	⊕ ×

[Add a preference](#)

### SD-WAN policies

#### VPN traffic

Uplink selection policy	Traffic filters	Actions
Prefer WAN 1. Fail over if poor performance for VoIP. (TCP from Any to 169.254.169.250/32)		⊕ ×

[Add a preference](#)

#### Custom performance classes

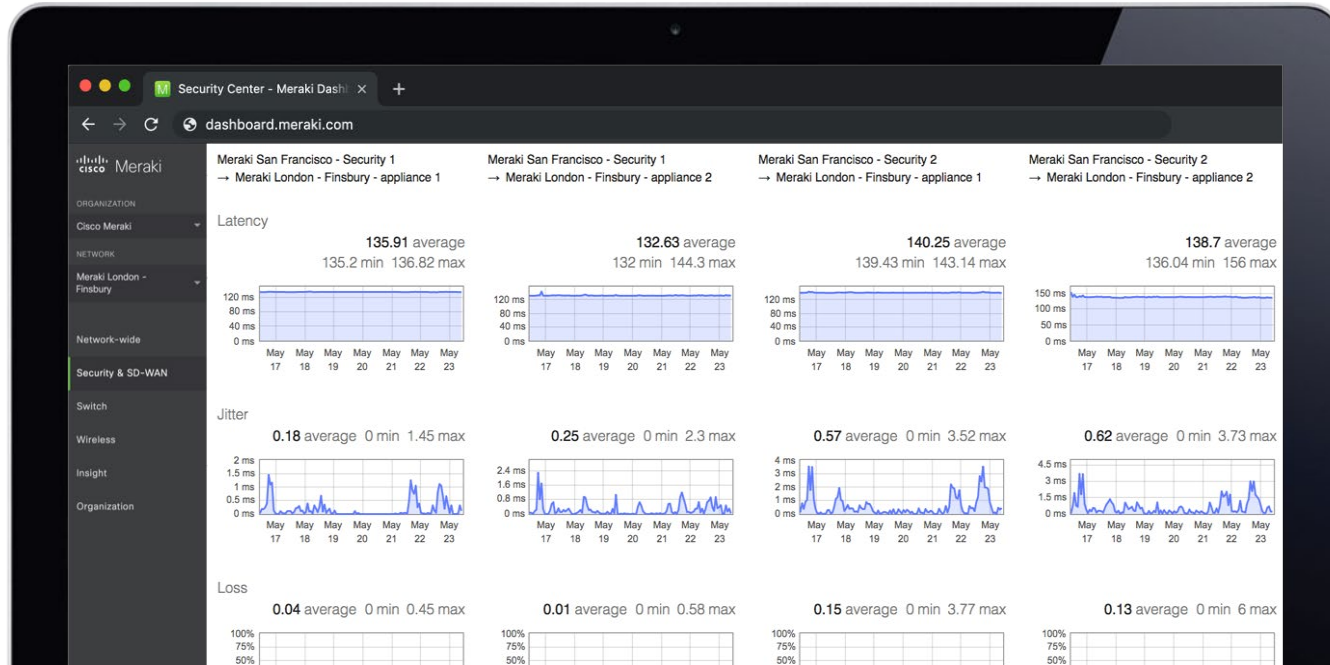
Name	Maximum latency (ms)	Maximum jitter (ms)	Maximum loss (%)	Actions
<input type="text" value="Slow"/>	<input type="text" value="1000"/>	<input type="text" value="500"/>	<input type="text" value="99"/>	×

[Create a new custom performance class...](#)

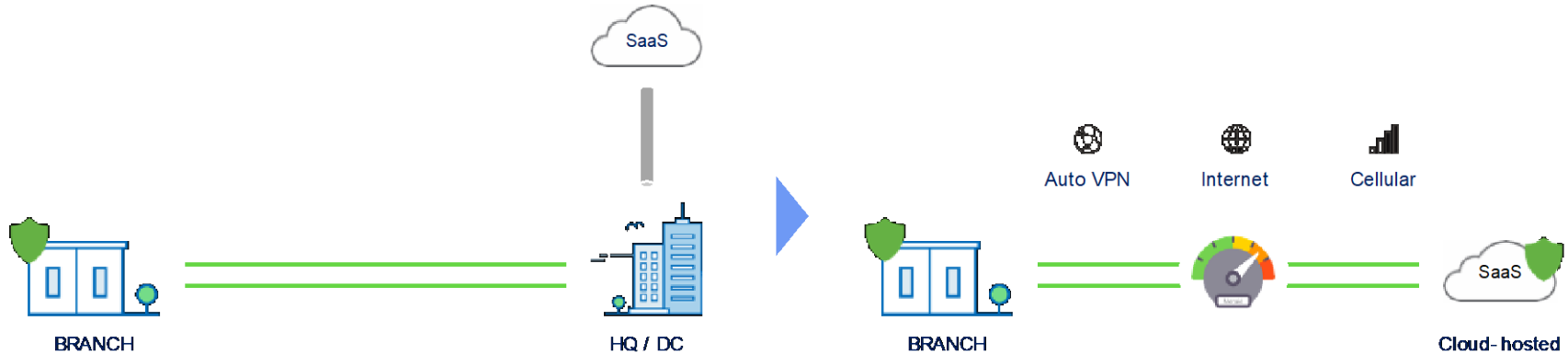


# Real-Time VPN Performance Monitoring

Latency | Jitter | Loss | MOS



# Shifts in Architecture Fuel Future Requirements



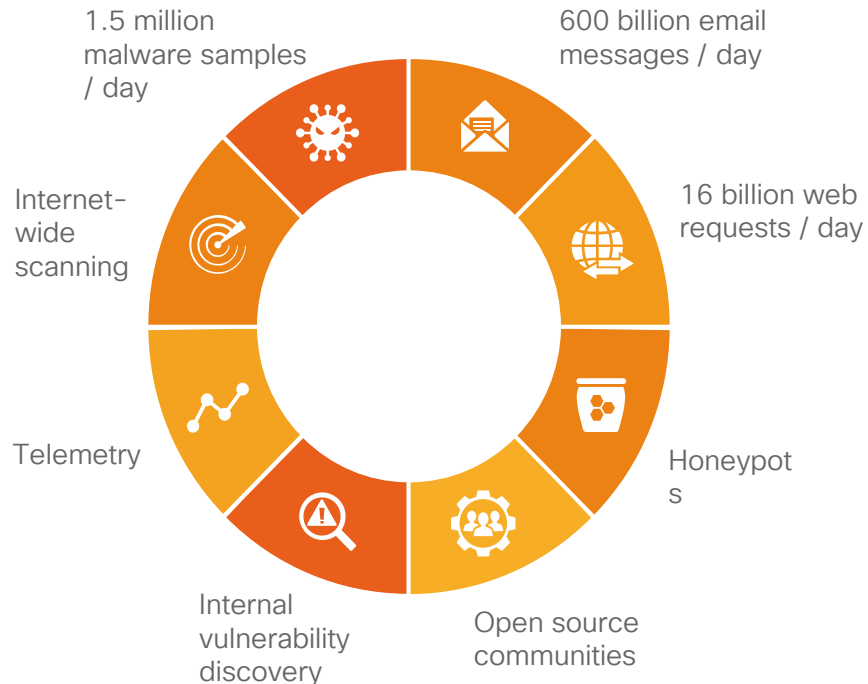
- SD-WAN and Security
- Local break out
- Dynamic path selection
- Policy based path selection
- Head-end scale

- Abundant bandwidth in the branch
- Cloud-based security
- Virtualization
- Traffic segmentation and Analytics
- Application optimization

# Natively Secure



# Informed by World-Renowned Cisco Talos Threat Intelligence



Over 250 full time threat researchers



Millions of telemetry agents



4 global data centers



Over 100 threat intelligence partners

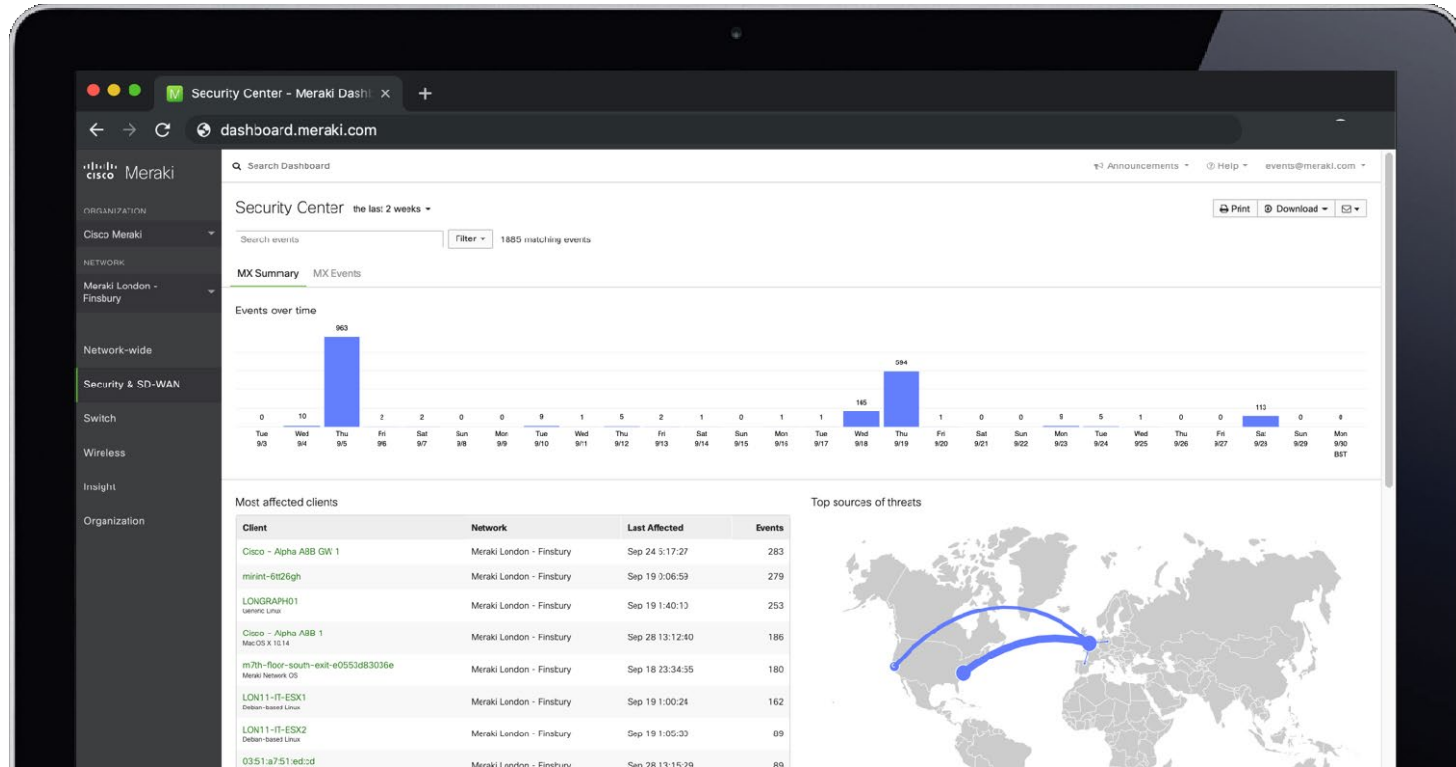


Over 1,100 threat traps

# Flexible Security Options



# Elegant Security Monitoring



# AnyConnect Client VPN

- Most anticipated MX feature
- Leveraging Cisco AnyConnect Software for remote connection to the MX
- Integrated with Cisco Licensing Portal for easy migration
- Automatic license checking workflow from dashboard

AnyConnect License

PLUS

Why?

- The simplest of all
- Most Consumed license
- Supports the features we are introducing
- Affordable pricing for Meraki users

IN BETA  
NOW

# Live Demo



## Why Meraki

# The World's Most Trusted SD-WAN Provider



True **zero-touch** provisioning



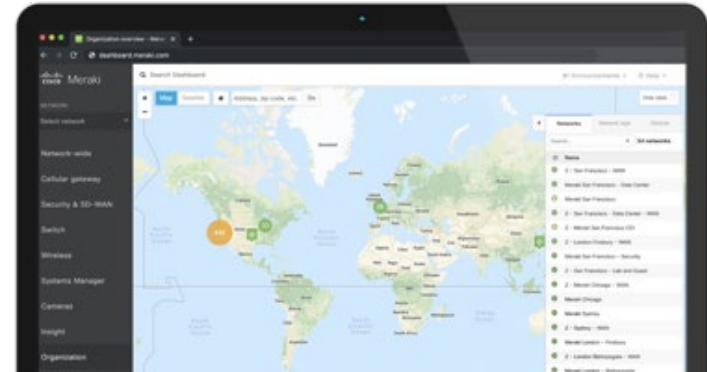
Advanced **analytics** with ML



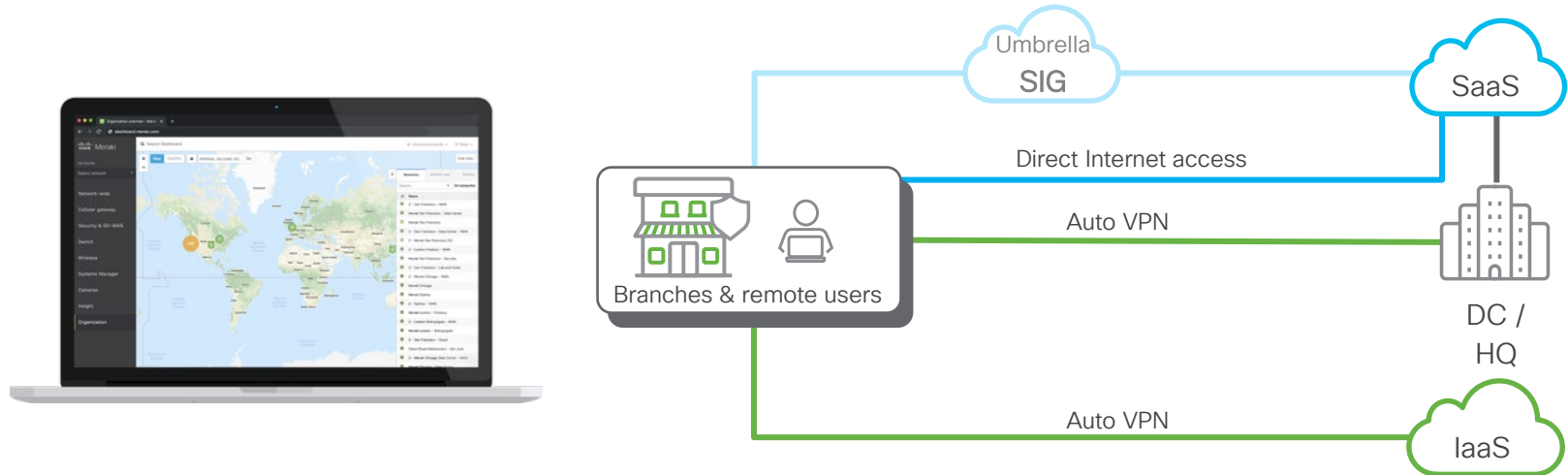
Natively integrated **security**



A complete **SD-Branch** platform



# Any Cloud. Any App. From Anywhere. Secured



# MX Security & SD-WAN Portfolio

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# A Model for Every Location

## SMALL BRANCH



MX64/W

~50 users  
802.11ac Wireless\* & PoE  
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

## VIRTUAL



Small

VPN  
throughput:  
200 Mbps



Medium

VPN  
throughput:  
500 Mbps



Large

VPN  
throughput:  
1 Gbps

## 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

# A License for Every Use Case

1:1 ratio of devices to licenses. Pair your chosen MX appliance(s) with the relevant license for your use case.



## 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*

# Call to action

Cisco Meraki's **mission** is to **simplify technology** so passionate **people** can **focus** on their **mission**

- Webinars & Freebies

<https://meraki.cisco.com/webinars>

- Customer references & whitepapers

<https://meraki.cisco.com/customers>

- Guides & CVDs

<https://documentation.meraki.com>



The bridge to possible

# Thank you

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The background is a vibrant, abstract composition of numerous overlapping, elongated, teardrop-like shapes in various colors including dark blue, light blue, green, yellow, orange, and red. These shapes radiate from a central point, creating a starburst or sunburst effect. Scattered throughout the composition are several small, solid-colored circles in blue, yellow, and red. The overall aesthetic is modern, energetic, and celebratory.

# TURN IT UP

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