MS Cloud Managed Access Switches

Overview

The Cisco Meraki MS brings the benefits of the cloud to networks of all sizes: simplified management, reduced complexity, network wide visibility and control, with lower operational cost for campus and branch deployments. Cisco Meraki access switching is available in both Layer 2 and powerful Layer 3 models. Mission-critical features — like deep, Layer 7 application visibility, network topology, virtual stacking, QoS for business critical applications, 802.1X access control, and more — are present in all models.

The MS350 is the flagship Meraki layer 3 stackable access switch, designed for high-speed connectivity and high availability, with optional redundant power supplies and fans. MS350 switches can be physically stacked up to 8 units, with 160Gbps of stack bandwidth.

The MS220 family provides layer 2 access switching and is ideal for deploying to branch locations. This family also supports an optional, rack-mountable remote PSU [1]

1 Except MS220-8/P models.

A FRESH APPROACH

Meraki switches are built from the ground up to be easy to manage without compromising any of the power and flexibility traditionally found in enterprise-class switches.

Cisco Meraki switches are managed through an elegant, intuitive cloud interface, rather than a cryptic command line. To bring up a Meraki switch, just plug it in; there's no need for complicated configuration files, or even direct physical access to the switch.

Meraki's centralized management gives administrators deep visibility into the network and how it's used. See which switches are near capacity across hundreds of sites. Find all configuration changes made by a certain person with instant search.

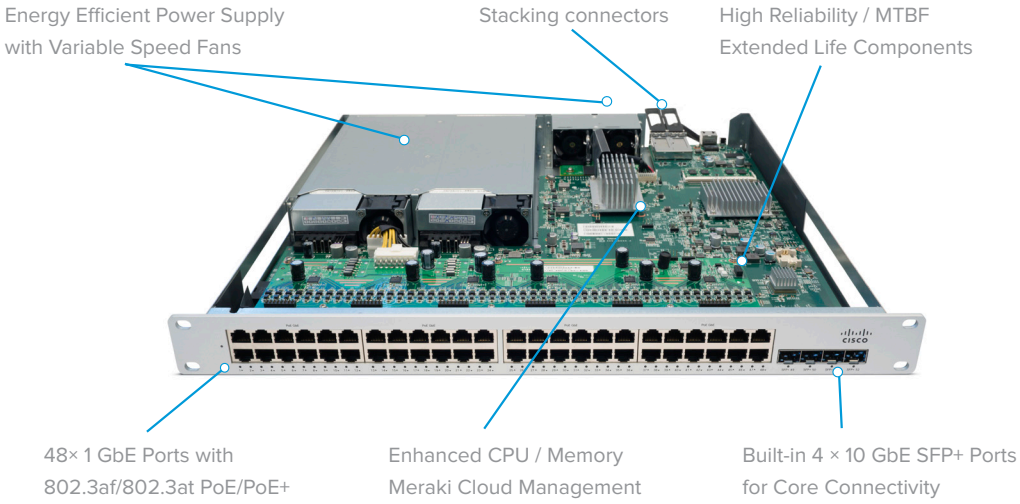
INDUSTRY-LEADING CLOUD MANAGEMENT

Cloud management has a number of benefits that make it easier to build networks large and small:

- Single pane of glass management of distributed switch deployments, wireless APs, and firewalls across multiple sites through the browser.
- Virtual stacking: manage up to thousands of ports from a single pane of glass.
- Layer 7 visibility with operating system, client, and hostname fingerprinting.
- Powerful Live Tools such as packet capture and cable test to isolate network issues.
- Alerts upon power loss, downtime, or configuration changes.
- Role-based administration and automatic, scheduled firmware upgrades over the web.
- Regular feature updates and enhancements delivered on demand from the Meraki cloud.
- True zero-touch provisioning

INSIDE THE MERAKI MS

MS350-48FP shown, features vary by model



ENTERPRISE-CLASS HARDWARE

Meraki switches feature high-end hardware and an exceptional feature set, including:

- Four built-in small form-factor pluggable SFP+ ports (two SFP ports for MS220-8/P)
- GbE and 10 GbE uplink ports for high-speed connectivity to aggregation layer switches or other upstream devices
- Wire-speed switch fabric (up to 176 Gbps) and QoS queues per port for converged voice, video, and data deployments
- High performance 160Gbps stacking bandwidth (MS350)
- Low power consumption, quiet acoustic designs, and shallow rack depth options, enabling flexible deployment in wiring closets as well as offices and classrooms
- Fanless design on select models
- Up to 740 watt PoE budget with PoE+ support for powering APs, phones, cameras, and other PoE enabled devices (124W for MS220-8/P)
- Lifetime hardware warranty and advanced replacement at no additional cost
- Field-replaceable, hot-swappable power supplies and fans. RPS option for mission-critical applications

FULL ENTERPRISE FEATURE SET

Meraki switches include all of the traditional Ethernet features found on the highest end products, including:

- Quality-of-Service (QoS) to prioritize mission critical traffic such as voice and video
- IEEE 802.1X support for port based network access control
- MAC-based RADIUS auth and MAC whitelisting
- Voice VLAN support for simplified VoIP deployments
- Port Mirroring to monitor network traffic
- DHCP snooping to prevent users from adding unauthorized DHCP servers on the network
- IGMP Snooping to optimize network performance with multicast traffic
- Link Aggregation Control Protocol (LACP) for high-capacity trunking, stacking, and increased availability
- Rapid spanning tree, BPDU guard, root guard, and other safeguards to help prevent misconfigurations and reduce convergence time
- Per port VLAN configuration
- Multiple administrative roles with sophisticated security policy management
- Layer 3 on MS320 and MS350 families extends routing down to the network edge

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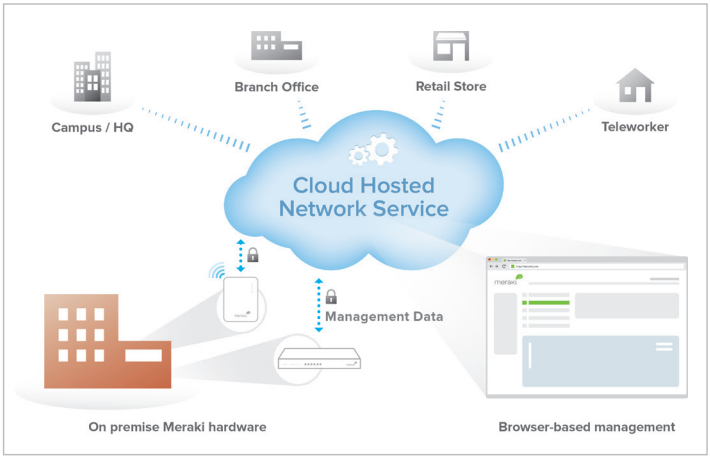
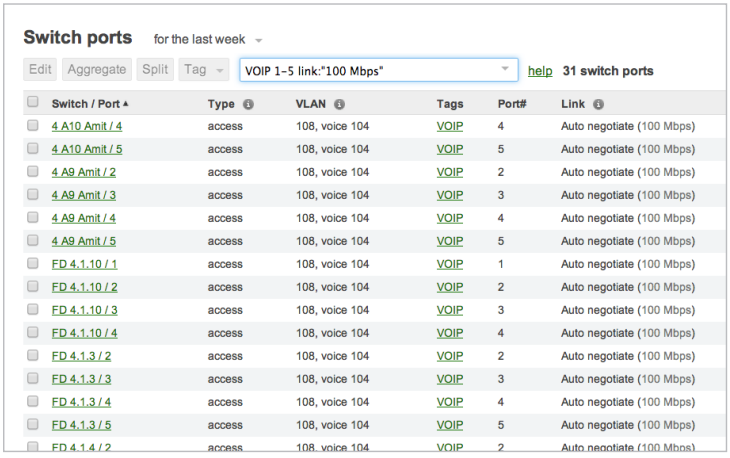
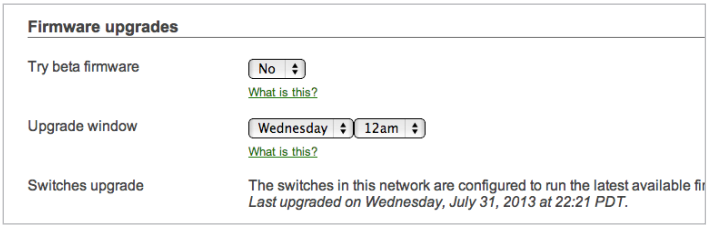


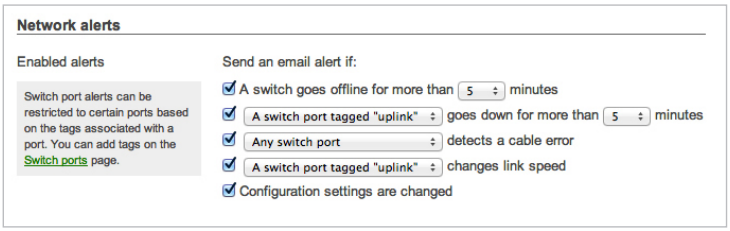
Meraki Cloud Management Architecture



Combined Views of Thousands of Ports



Scheduled Firmware Updates



Automatic E-mail Alerts

Simplified Management and Operations

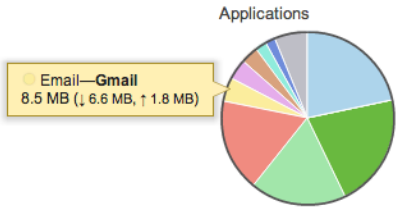
Meraki's cloud managed architecture makes it simpler than ever to quickly provision and reconfigure switch ports with security, QoS, and other parameters. The Meraki dashboard provides unified policies, event logs, and monitoring, which make it easy to manage and grow large network deployments.

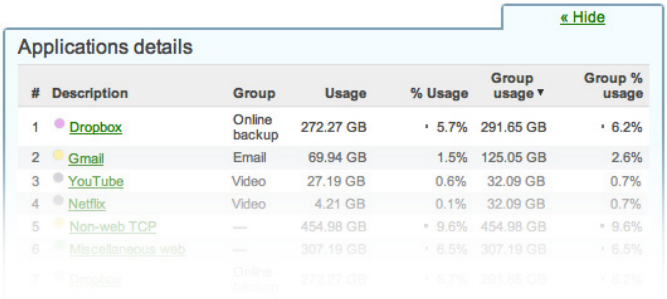
By providing a complete, powerful set of management functions over the web, Meraki's cloud-based management eliminates the need for proprietary command line configuration interfaces which require expensive and time consuming certifications. Meraki MS switches can be fully deployed and provisioned in minutes, without requiring any local configuration or staging. Additional or replacement switches can be sent to remote offices and installed by non-technical staff, saving thousands of dollars in time and travel expenses.

The Meraki MS family also includes several remote diagnostic features, from network connectivity and cable integrity tests to latency measurement tools. For deep client troubleshooting, administrators can even perform per-port remote pcap packet captures without any additional probes or hardware on site.

LAYER 7 VISIBILITY

Meraki is the only switch to include integrated Layer 7 fingerprinting. Identify hundreds of applications from business apps to BitTorrent and YouTube. User fingerprinting with Google-like search allows administrators to easily identify and control individual users, PCs, iMacs, iPads, Androids, and other devices. This unprecedented visibility allows optimizing of network resources and maintaining optimal network performance.





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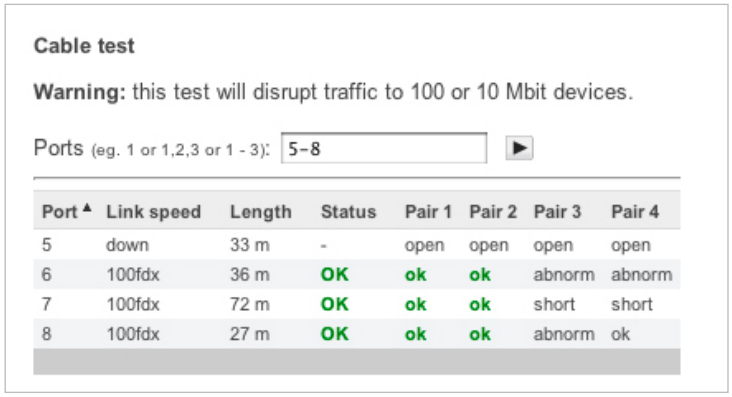
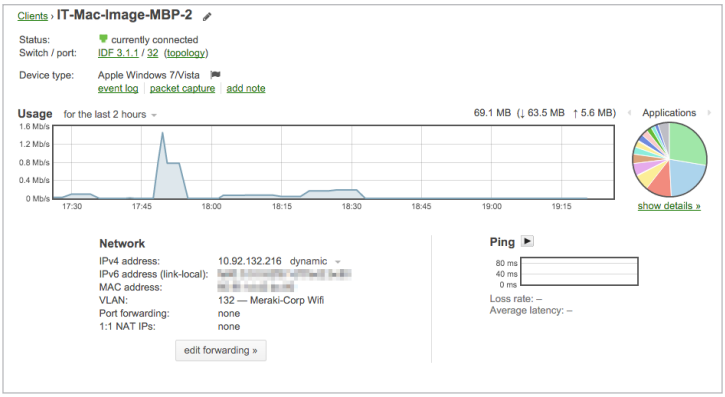


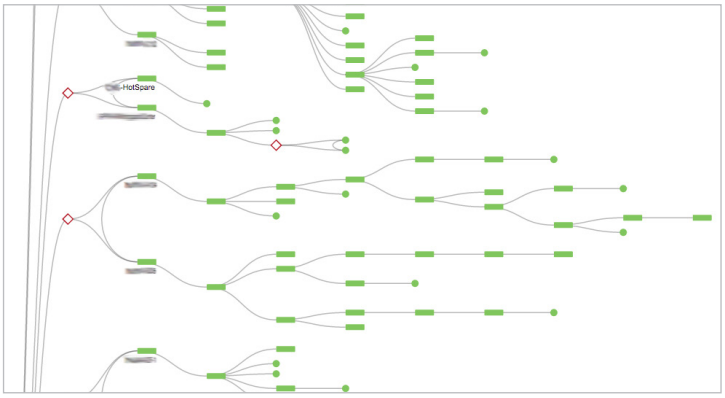
Integrated Remote, Live Tools



Detailed Views of Individual Devices

NETWORK TOPOLOGY

Cisco Meraki switches include integrated network topology, which automatically maps the whole network, shows direct and redundant links across wired and wireless infrastructure, and is essential for troubleshooting network issues that would otherwise require manual mapping, overlay monitoring software, or keeping track of MAC address tables.



Detail of a typical network topology view

CONVERGED VOICE, VIDEO AND DATA ENVIRONMENTS

The Meraki switch family is designed to unify data, voice, and video onto a single IP backbone. All Meraki switches support rich quality-of-service (QoS) functionality for prioritizing data, voice, and video traffic. The switches support eight class-of-service (CoS) queues on every port, enabling them to maintain end-to-end traffic prioritization.

PoE models provide power VoIP telephones, IP security cameras, wireless access points (APs), and other IP devices. The Meraki MS switches also support standards-based 25.5 watt (30 watt max per port) IEEE 802.3at for powering networked devices like multiple radio IEEE 802.11n APs, video phones and VDI terminals that may require more power than available with IEEE 802.3af. In addition, using CDP and LLDP, PoE power is intelligently budgeted to maximize the number of PoE clients supported.

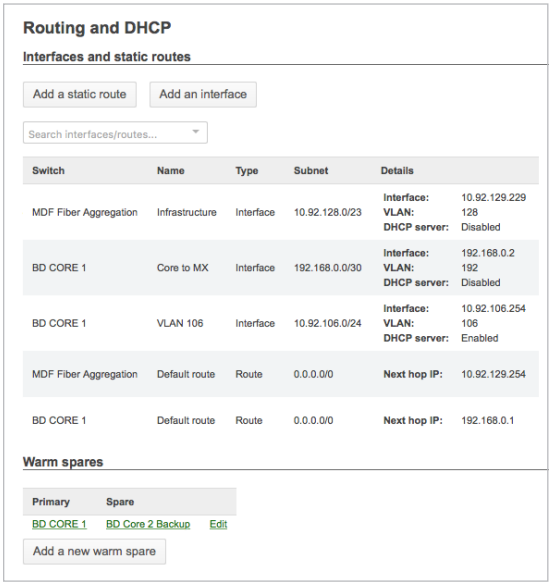
To ease deployment, Meraki switches support the industry-standard Link Layer Discovery Protocol (LLDP) and Cisco Discovery Protocol (CDP), enabling switches to automatically discover Ethernet-enabled devices, determine their power requirements and join the correct virtual LAN (VLAN).

MERAKI'S UNIFIED SOFTWARE ARCHITECTURE

Meraki switches run the same Meraki operating system used by Meraki's firewalls and wireless LAN products. The use of a common operating system allows Meraki to deliver a consistent experience across all product lines.

LAYER 3

Cisco Meraki MS320/350 series switches augment security and performance with built-in layer 3 features. Large network deployments can use warm spare redundancy, or OSPF to manage routing between VLANs through Meraki's intuitive, web-based dashboard.



Specifying Layer 3 Subnets and Routes

Designed for Reliability & Environmental Efficiency

The Meraki switch family was designed for reliable, long-lived operation in wiring closet environments, which may be prone to high temperatures and limited ventilation. By minimizing total component count and only using proven switching silicon, Meraki is able to deliver mean time between failure (MTBF) ratings of over 750,000 hours on products such as the Meraki MS220-8.

Each Meraki switch also operates with a split-plane architecture, where silicon-based switching and data forwarding are separated from software-based control and management. By decoupling the underlying switching logic from control, each unit is able to deliver wire-speed switching even when advanced software features such as Layer 7 host and OS fingerprinting are enabled.

Finally, the highly integrated designs of Meraki switches result in power and cooling savings in large deployment environments of 30-60% when compared with similar managed Gigabit switches.

DISTRIBUTED BRANCES & REMOTE SITES

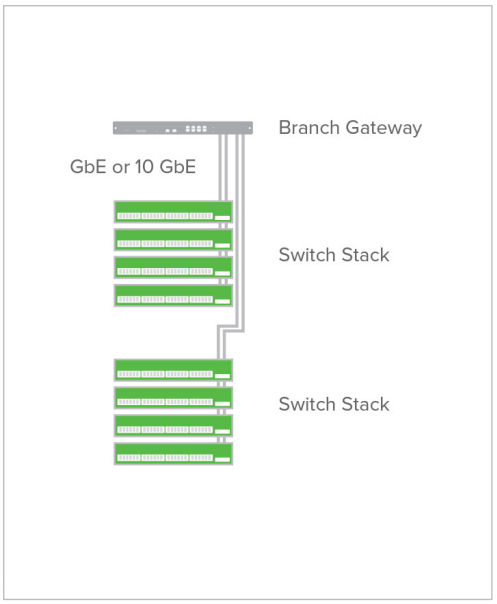
Meraki's cloud-based system makes it easy to manage a single switch, or thousands of distributed switches, from a single interface.

- Troubleshoot problems remotely, e.g., find which port has a bad cable attached.
- Add or replace switches without having to send a technician onsite. Switches automatically download their current configuration as soon as they are connected to the network.
- Receive email alerts or SMS messages whenever there's a problem at a remote site.

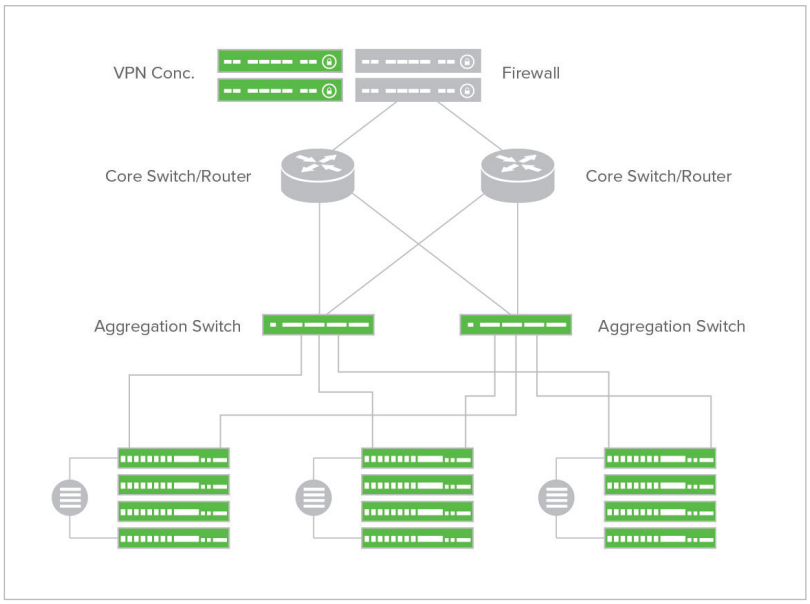
CAMPUS EDGE

MS switches are ideal for small and large scale campus deployments, where reliability, scalability, and managability are top priorities.

- Virtual Stacking lets administators manage up to thousands of ports in a single interface without having to physically connect stack members.
- 10GbE cable SFP+ ports with link aggregation provide high speed connectivity to aggregation switches such as the MS420.
- Get alerts when any switch fails or goes offline, before users complain.



Small Branch



Large Campus

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Accessories

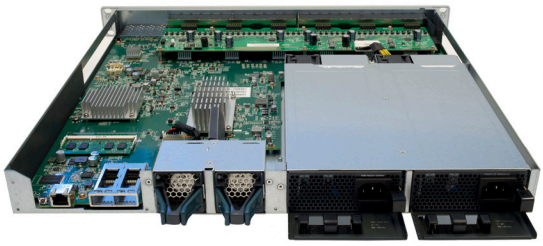
The Meraki MS family supports pluggable optics for high-speed connectivity. Meraki offers several standards-based Gigabit and 10 Gigabit pluggable modules. The stackable MS350 switches support QSFP stacking cables in various lengths.

Supported Meraki accessory modules for MS Switches (no lock-out of third-party optics):

Model	Description	Standard	Range	Compatibility
MA-SFP-1GB-TX	Meraki 1GbE Module for Category 5 Copper Wire, RJ-45	1000BASE-T	100m	MS220/320//350/420 Family
MA-SFP-1GB-SX	Meraki 1 GbE SFP SX Multi-Mode Fiber Module	1000BASE-SX	550m	MS220/320/350/420 Family
MA-SFP-1GB-LX10	Meraki 1 GbE SFP LX10 Single-Mode Fiber Module	1000BASE-LX10	10km	MS220/320/350/420 Family
MA-SFP-10GB-SR	Meraki 10 GbE SFP+ SR Multi-Mode Fiber Module	10GBASE-SR	400m	MS320/350/420 Family
MA-SFP-10GB-LRM	Meraki 10GbE SFP+ LRM Multi-Mode Fiber Module	10GBASE-LRM	220m	MS320/350/420 Family
MA-SFP-10GB-LR	Meraki 10 GbE SFP+ LR Single-Mode Fiber Module	10GBASE-LR	10km	MS320/350/420 Family
MA-CBL-TA-1M	Meraki 10 GbE Twinax Cable with SFP+ Connectors	10GSFP+Cu	1m	MS220/320/350/420 Family
MA-CBL-TA-3M	Meraki 10 GbE Twinax Cable with SFP+ Connectors	10GSFP+Cu	3m	MS220/320/350/420 Family
MA-CBL-40G-50CM	Meraki 40GbE Stacking Cable, 0.5 Meter	40GBASE-QSFP	0.5m	MS350 Family
MA-CBL-40G-1M	Meraki 40GbE Stacking Cable, 1 Meter	40GBASE-QSFP	1m	MS350 Family
MA-CBL-40G-3M	Meraki 40GbE Stacking Cable, 3 Meter	40GBASE-QSFP	3m	MS350 Family

Power Options

Rear view of MS350-48FP shown, highlighting redundant power supplies.



MS220 FAMILY

Model	Description	Available PoE/ PoE+ Power	Default Power Supply	Optional Redundant Power Supply
MS220-8-HW	Cloud-Managed L2 8 Port Gigabit Switch	–	Internal	–
MS220-8P-HW	Cloud-Managed L2 8 Port Gigabit 124W PoE Switch	124W	Internal	–
MS220-24-HW	Cloud-Managed L2 24 Port Gigabit Switch	–	Internal	External Redundant Power Option*
MS220-24P-HW	Cloud-Managed L2 24 Port Gigabit 370W PoE Switch	370 W	Internal	External Redundant Power Option*
MS220-48-HW	Cloud-Managed L2 48 Port Gigabit Switch	–	Internal	External Redundant Power Option*
MS220-48LP-HW	Cloud-Managed L2 48 Port Gigabit 370W PoE Switch	370 W	Internal	External Redundant Power Option*
MS220-48FP-HW	Cloud-Managed L2 48 Port Gigabit 740W PoE Switch	740 W	Internal	External Redundant Power Option*

* Cisco RPS Module (PWR-RPS2300)

MS320 / MS350 FAMILY

Model	Description	Available PoE/ PoE+ Power	Default Power Supply	Optional Redundant Power Supply
MS320-24-HW MS350-24-HW	Cloud-Managed L3 24 Port Gigabit Switch	–	MA-PWR-250WAC	MA-PWR-250WAC
MS320-24P-HW MS350-24P-HW	Cloud-Managed L3 24 Port Gigabit 370W PoE Switch	370W	MA-PWR-640WAC	MA-PWR-640WAC
MS320-48-HW MS350-48-HW	Cloud-Managed L3 48 Port Gigabit Switch	–	MA-PWR-250WAC	MA-PWR-250WAC
MS320-48LP-HW MS350-48LP-HW	Cloud-Managed L3 48 Port Gigabit 370W PoE Switch	370 W	MA-PWR-640WAC	MA-PWR-640WAC
MS320-48FP-HW MS350-48FP-HW	Cloud-Managed L3 48 Port Gigabit 740W PoE Switch	740 W	MA-PWR-1025WAC	MA-PWR-1025WAC

MS350 FAMILY ONLY

MA-FAN-16K	Field replaceable 16K Front-to-back fan

Specifications

Management
Managed via the Web with the Meraki cloud management platform
Integrated with Meraki wireless, security appliance, and device management
Zero-touch remote provisioning (no staging needed)
Detailed historical per-port and per-client usage statistics
DHCP, client, and hostname fingerprinting
SNMPD allows integration with third party network management solutions
Automatic firmware upgrades

Remote Diagnostics
Email and SMS (text) alerts [1]
Cable testing
Live remote packet capture
Aggregated event and configuration change logs with instant search

Scalable Stacking
Virtual stacking supports thousands of switch ports in a single logical stack for unified management, monitoring, and configuration
Physical stacking of up to 8 switches with 160Gbps stack bandwidth (MS350)

Ethernet Switching Capabilities
802.1p Quality of Service prioritization
802.1Q VLAN tagging for up to 4,095 VLANs
802.1D Spanning Tree Protocol (STP) and 802.1w Rapid Spanning Tree
Broadcast storm control
802.1ab Link Layer Discovery Protocol (LLDP) and Cisco Discovery Protocol (CDP)
802.3ad Link aggregation with up to 8 ports per aggregate
Port mirroring
IGMP snooping for multicast filtering
MAC forwarding entries: MS220-8/24: 8,000, MS220-48: 16,000, MS320 family: 32,000, MS350 family: 96,000 (applies to PoE and non-PoE models).

Security
Integrated two-factor authentication
Role-based administration
Corporate wide password policy enforcement
IEEE 802.1X port-based security
MAC-based RADIUS authentication
Sticky MAC
MAC whitelisting
BPDU guard
Root guard
IPv4 ACLs

Performance
Non-blocking fabric
2.5 microsecond latency
Jumbo frame support (9600 byte Ethernet frame)

Layer 3 (MS320/350 series) [2]
Static routing
DHCP Helper
OSPFv2 [3]
Warm Spare for L3 gateway redundancy [3]
DHCP server
Automatic DHCP failover in warm spare mode

Power
Power input: 100 - 240 VAC, 47-63 Hz
Power consumption: 5-888W

Mounting
Rack-mountable with included rack mount hardware (except MS220-8/P)
Desktop-mountable with included feet
Wall-mountable on MS220-8/P
Kensington lock on MS220-8/P

Environment
Operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 45 °C for MS350
Humidity: 5 to 95% non-condensing
Low acoustic noise for office environments; fanless for MS220-8/P and MS220-24

Regulatory
CSA (US)
IC (Canada)
CE (Europe)
C-Tick (Australia/New Zealand)
RoHS

Warranty
Full lifetime hardware warranty with next-day advanced replacement included

MS220 FAMILY		MS320 FAMILY		MS350 FAMILY	
Model	MTBF	Model	MTBF	Model	MTBF
MS220-8	756,000	MS320-24	490,820	MS320-24	808,000
MS220-8P	421,000	MS320-24P	474,570	MS320-24P	568,000
MS220-24	541,400	MS320-48	291,960	MS320-48	588,000
MS220-24P	329,440	MS320-48LP	282,970	MS320-48LP	536,000
MS220-48	329,440	MS320-48FP	282,970	MS320-48FP	516,000
MS220-48FP	329,440				

[1] Requires carrier-supported email to SMS gateway
[2] Layer 3 with stacking available Q1 CY2016
[3] OSPF and Warm Spare do not operate concurrently

MS220 FAMILY

Model	Physical Dimensions	Interface	Idle/Full Load Power (W)	Switching Capacity
220-8	WEIGHT: 2.37 lb. (1.08 kg) SIZE: 9.06” (w) x 8.66” (l) x 1.79” (h) (23 x 22 x 4.54 cm)	• 8x 10/100/1000BASE-T Ethernet RJ45 • 2x SFP for 1GbE uplink • Auto negotiation and crossover detection (auto-MDIX crossover)	5/10	20 Gbps
220-8P	WEIGHT: 2.97 lb. (1.35 kg) SIZE: 9.06” (w) x 8.66” (l) x 1.79” (h) (23 x 22 x 4.44 cm)	• 8x 10/100/1000BASE-T Ethernet RJ45 • 2x SFP for 1GbE uplink • Auto negotiation and crossover detection (auto-MDIX crossover)	13/159	20 Gbps
220-24	WEIGHT: 5.97 lb. (2.71 kg) SIZE: 19.08” (w) x 10.12” (l) x 1.75” (h) (48.46 x 25.7 x 4.4 cm)	• 24 x 10/100/1000BASE-T Ethernet RJ45 (4 shared with SFP) • 4x SFP for 1GbE uplink • Auto negotiation and crossover detection (auto-MDIX crossover)	9/18	48 Gbps
220-24P	WEIGHT: 8.6 lb. (3.9 kg) SIZE: 19.08” (w) x 10.12” (l) x 1.75” (h) (48.46 x 25.7 x 4.4 cm)	• 24x 10/100/1000BASE-T Ethernet RJ45 (4 shared with SFP) • 4x SFP for 1GbE uplink • Auto negotiation and crossover detection (auto-MDIX crossover)	30/447	48 Gbps
220-48	WEIGHT: 8.47 lb. (3.84 kg) SIZE: 19.08” (w) x 14.17” (l) x 1.75” (h) (48.46 x 36 x 4.44 cm)	• 48x 10/100/1000BASE-T Ethernet RJ45 • 4x SFP for 1GbE uplink • Auto negotiation and crossover detection (auto-MDIX crossover)	28/51	104 Gbps
220-48LP	WEIGHT: 10.88 lb. (4.94 kg) SIZE: 19.08” (w) x 14.17” (l) x 1.75” (h) (48.46 x 36 x 4.44 cm)	• 48x 10/100/1000BASE-T Ethernet RJ45 • 4x SFP for 1GbE uplink • Auto negotiation and crossover detection (auto-MDIX crossover)	45/505	104 Gbps
220-48FP	WEIGHT: 10.9 lb. (4.95 kg) SIZE: 19.08” (w) x 14.17” (l) x 1.75” (h) (48.46 x 36 x 4.44 cm)	• 48x 10/100/1000BASE-T Ethernet RJ45 • 4x SFP for 1GbE uplink • Auto negotiation and crossover detection (auto-MDIX crossover)	49/903	104 Gbps

MS320 FAMILY

Model	Physical Dimensions	Interface	Idle/Full Load Power (W)	Switching Capacity
320-24	WEIGHT: 8.22 lb. (3.73 kg) SIZE: 19.08" (w) x 18.8 (l)* x 1.75" (h) (48.5 x 47.8 x 4.4 cm) with power supply fitted	• 24x 10/100/1000BASE-T Ethernet RJ45 • 4x SFP+ for 10GbE uplink • Auto negotiation and crossover detection (auto-MDIX crossover)	24/39	128 Gbps
320-24P	WEIGHT: 8.93 lb. (4.05 kg) SIZE: 19.08" (w) x 18.8" (l) x 1.75" (h) (48.5 x 47.8 x 4.4 cm) with power supply fitted	• 24x 10/100/1000BASE-T Ethernet RJ45 • 4x SFP+ for 10GbE uplink • Auto negotiation and crossover detection (auto-MDIX crossover)	32/454	128 Gbps
320-48	WEIGHT: 8.92 lb. (4.04 kg) SIZE: 19.08" (w) x 18.8" (l) x 1.75" (h) (48.5 x 47.8 x 4.4 cm) with power supply fitted	• 48x 10/100/1000BASE-T Ethernet RJ45 • 4x SFP+ for 10GbE uplink • Auto negotiation and crossover detection (auto-MDIX crossover)	34/55	176 Gbps
320-48LP	WEIGHT: 9.7 lb. (4.4 kg) SIZE: 19.08" (w) x 18.8" (l) x 1.75" (h) (48.5 x 47.8 x 4.4 cm) with power supply fitted	• 48x 10/100/1000BASE-T Ethernet RJ45 • 4x SFP+ for 10GbE uplink • Auto negotiation and crossover detection (auto-MDIX crossover)	46/480	176 Gbps
320-48FP	WEIGHT: 9.7 lb. (4.4 kg) SIZE: 19.08" (w) x 18.8" (l) x 1.75" (h) (48.5 x 47.8 x 4.4 cm) with power supply fitted	• 48x 10/100/1000BASE-T Ethernet RJ45 • 4x SFP+ for 10GbE uplink • Auto negotiation and crossover detection (auto-MDIX crossover)	52/885	176 Gbps

MS350 FAMILY

Model	Physical Dimensions	Interface	Idle/Full Load Power (W)	Switching Capacity
350-24	WEIGHT: 12.37 lb. (5.61 kg) SIZE: 19.08" (w) x 18.8 (l)* x 1.75" (h) (48.5 x 47.8 x 4.4 cm) with power supply fitted	• 24x 10/100/1000BASE-T Ethernet RJ45 • 4x SFP+ for 10GbE uplink • Auto negotiation and crossover detection (auto-MDIX crossover)	56/66	128 Gbps
350-24P	WEIGHT: 13.14 lb. (5.96 kg) SIZE: 19.08" (w) x 18.8" (l) x 1.75" (h) (48.5 x 47.8 x 4.4 cm) with power supply fitted	• 24x 10/100/1000BASE-T Ethernet RJ45 • 4x SFP+ for 10GbE uplink • Auto negotiation and crossover detection (auto-MDIX crossover)	57/466	128 Gbps
350-48	WEIGHT: 12.85 lb. (5.83 kg) SIZE: 19.08" (w) x 18.8" (l) x 1.75" (h) (48.5 x 47.8 x 4.4 cm) with power supply fitted	• 48x 10/100/1000BASE-T Ethernet RJ45 • 4x SFP+ for 10GbE uplink • Auto negotiation and crossover detection (auto-MDIX crossover)	56/63	176 Gbps
350-48LP	WEIGHT: 13.82 lb. (6.27 kg) SIZE: 19.08" (w) x 18.8" (l) x 1.75" (h) (48.5 x 47.8 x 4.4 cm) with power supply fitted	• 48x 10/100/1000BASE-T Ethernet RJ45 • 4x SFP+ for 10GbE uplink • Auto negotiation and crossover detection (auto-MDIX crossover)	63/478	176 Gbps
350-48FP	WEIGHT: 14.26 lb. (6.47 kg) SIZE: 19.08" (w) x 18.8" (l) x 1.75" (h) (48.5 x 47.8 x 4.4 cm) with power supply fitted	• 48x 10/100/1000BASE-T Ethernet RJ45 • 4x SFP+ for 10GbE uplink • Auto negotiation and crossover detection (auto-MDIX crossover)	69/888	176 Gbps