

# Cloud Managed Access Switches

## MS220 & MS320 Series



### 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 MS320** is a powerful switch designed for branch access, with high-speed connectivity, high availability, PoE+, and optional redundant power supplies. **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 <sup>1</sup>

<sup>1</sup> 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.

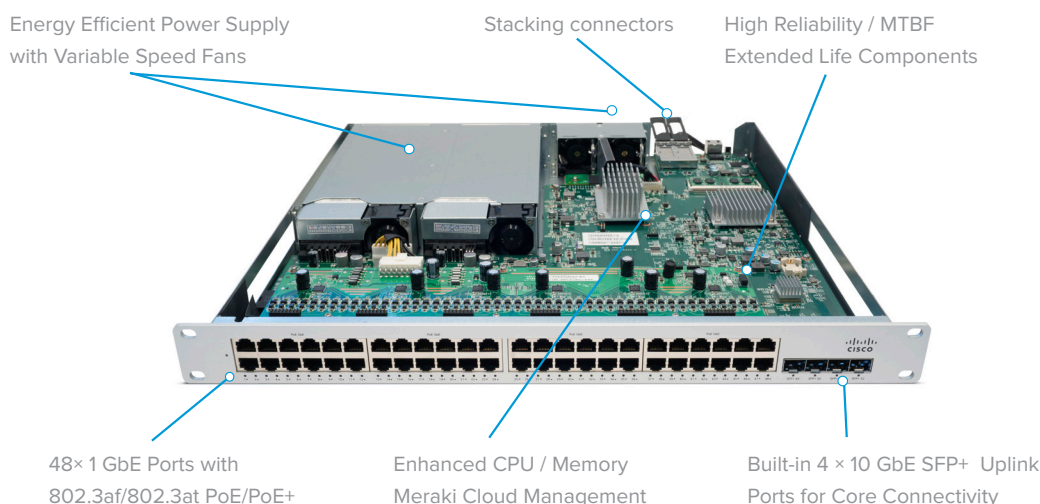
### INDUSTRY-LEADING CLOUD MANAGEMENT

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

MS320-48FP shown, features vary by model



## ENTERPRISE-CLASS HARDWARE

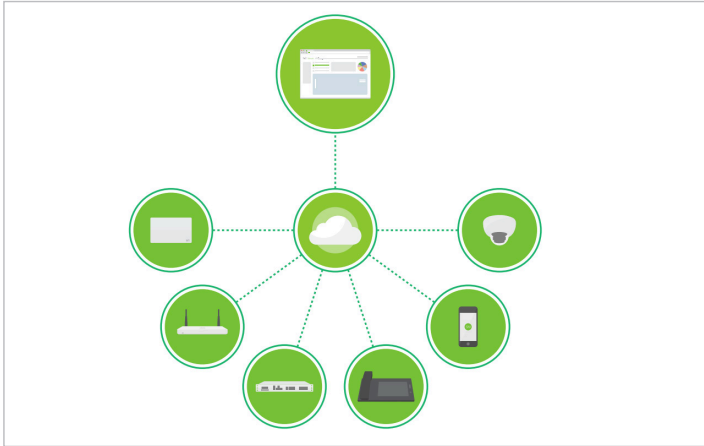
Meraki switches feature high-end hardware and an exceptional feature set, including:

- Four built-in SFP/SFP+ ports (two SFP ports for MS220-8/P, shared on MS220-24 models)
- GbE, 10 GbE and 40 GbE uplink ports for high-speed connectivity to aggregation layer switches or other upstream devices
- Multigigabit ports providing up to 10Gbps on a single Ethernet cable, supporting the latest WiFi performance capabilities
- Wire-speed switch fabric (up to 432 Gbps) and QoS queues per port for converged voice, video, and data deployments
- 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)
- Power over Ethernet and Universal PoE (UPoE), up to 60W
- 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 series extends routing down to the network edge



Meraki Cloud Management Architecture

**Firmware upgrades**

Try beta firmware

No

What is this?

Upgrade window

Wednesday
12am

What is this?

Switches upgrade

The switches in this network are configured to run the latest available firm...  
Last upgraded on Wednesday, July 31, 2013 at 22:21 PDT.

Scheduled Firmware Updates

# 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.

**Switch ports**
for the last week

Edit
Aggregate
Split
Tag

VOIP 1-5 link:"100 Mbps"
help
31 switch ports

Switch / Port	Type	VLAN	Tags	Port#	Link
4 A10 Amlt / 4	access	108, voice 104	VOIP	4	Auto negotiate (100 Mbps)
4 A10 Amlt / 5	access	108, voice 104	VOIP	5	Auto negotiate (100 Mbps)
4 A9 Amlt / 2	access	108, voice 104	VOIP	2	Auto negotiate (100 Mbps)
4 A9 Amlt / 3	access	108, voice 104	VOIP	3	Auto negotiate (100 Mbps)
4 A9 Amlt / 4	access	108, voice 104	VOIP	4	Auto negotiate (100 Mbps)
4 A9 Amlt / 5	access	108, voice 104	VOIP	5	Auto negotiate (100 Mbps)
FD 4.1.10 / 1	access	108, voice 104	VOIP	1	Auto negotiate (100 Mbps)
FD 4.1.10 / 2	access	108, voice 104	VOIP	2	Auto negotiate (100 Mbps)
FD 4.1.10 / 3	access	108, voice 104	VOIP	3	Auto negotiate (100 Mbps)
FD 4.1.10 / 4	access	108, voice 104	VOIP	4	Auto negotiate (100 Mbps)
FD 4.1.3 / 2	access	108, voice 104	VOIP	2	Auto negotiate (100 Mbps)
FD 4.1.3 / 3	access	108, voice 104	VOIP	3	Auto negotiate (100 Mbps)
FD 4.1.3 / 4	access	108, voice 104	VOIP	4	Auto negotiate (100 Mbps)
FD 4.1.3 / 5	access	108, voice 104	VOIP	5	Auto negotiate (100 Mbps)
FD 4.1.4 / 2	access	108, voice 104	VOIP	2	Auto negotiate (100 Mbps)

Combined Views of Thousands of Ports

**Network alerts**

Enabled alerts

Send an email alert if:

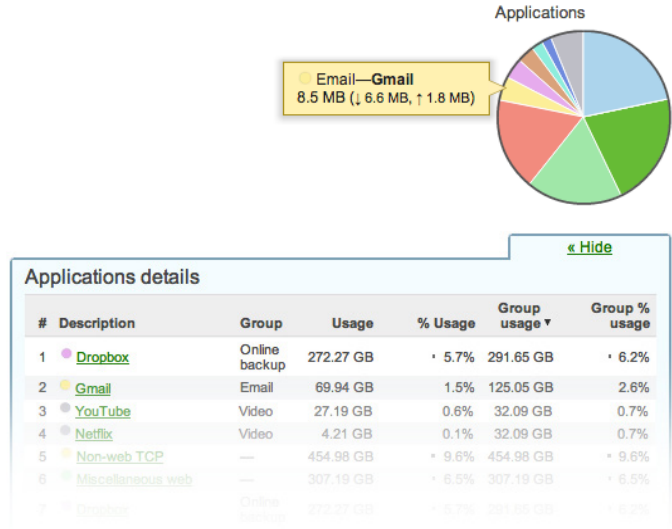
- A switch goes offline for more than 5 minutes
- A switch port tagged "uplink" goes down for more than 5 minutes
- Any switch port detects a cable error
- A switch port tagged "uplink" changes link speed
- Configuration settings are changed

Switch port alerts can be restricted to certain ports based on the tags associated with a port. You can add tags on the Switch ports page.

Automatic E-mail Alerts

## 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.



## Cable test

**Warning:** this test will disrupt traffic to 100 or 10 Mbit devices.

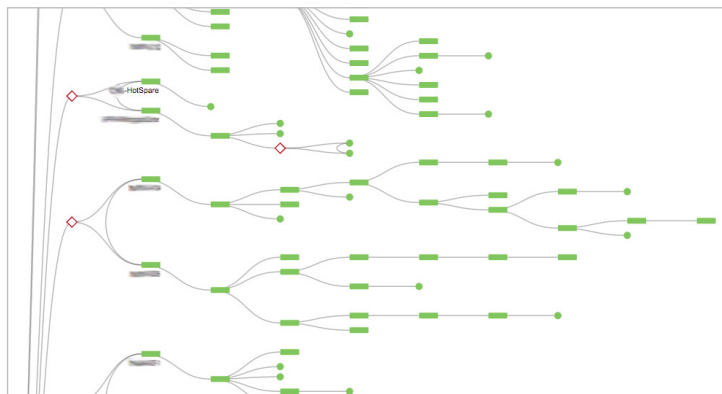
Ports (eg. 1 or 1,2,3 or 1 - 3):

Port ▲	Link speed	Length	Status	Pair 1	Pair 2	Pair 3	Pair 4
5	down	33 m	-	open	open	open	open
6	100fdx	36 m	OK	ok	ok	abnorm	abnorm
7	100fdx	72 m	OK	ok	ok	short	short
8	100fdx	27 m	OK	ok	ok	abnorm	ok

Integrated Remote, Live Tools

## 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.

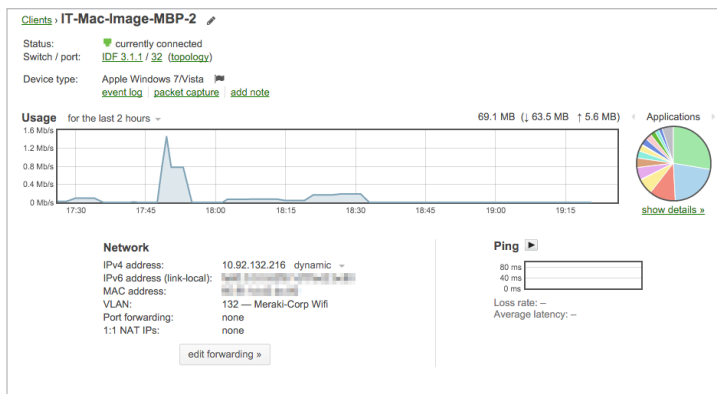


Detail of a typical network topology view

## 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. For the most power-hungry applications, support for Cisco UPoE is also available.



Detailed Views of Individual Devices

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 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.

Routing and DHCP				
Interfaces and static routes				
<input type="button" value="Add a static route"/> <input type="button" value="Add an interface"/>				
<input type="text" value="Search interfaces/routes..."/>				
Switch	Name	Type	Subnet	Details
MDF Fiber Aggregation	Infrastructure	Interface	10.92.128.0/23	Interface: 10.92.129.229 VLAN: 128 DHCP server: Disabled
BD CORE 1	Core to MX	Interface	192.168.0.0/30	Interface: 192.168.0.2 VLAN: 192 DHCP server: Disabled
BD CORE 1	VLAN 106	Interface	10.92.106.0/24	Interface: 10.92.106.254 VLAN: 106 DHCP server: Enabled
MDF Fiber Aggregation	Default route	Route	0.0.0.0/0	Next hop IP: 10.92.129.254
BD CORE 1	Default route	Route	0.0.0.0/0	Next hop IP: 192.168.0.1
Warm spares				
<div>Primary Spare</div> <div>BD CORE 1 BD Core 2 Backup Edit</div> <div><input type="button" value="Add a new warm spare"/></div>				

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 BRANCHES & REMOTE SITES

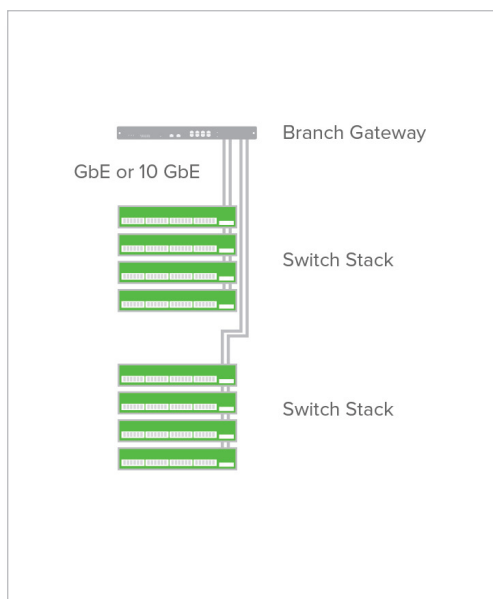
Meraki's cloud-based system makes it easy to manage a single switch, or thousands of distributed switches, from a single interface.

- 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.

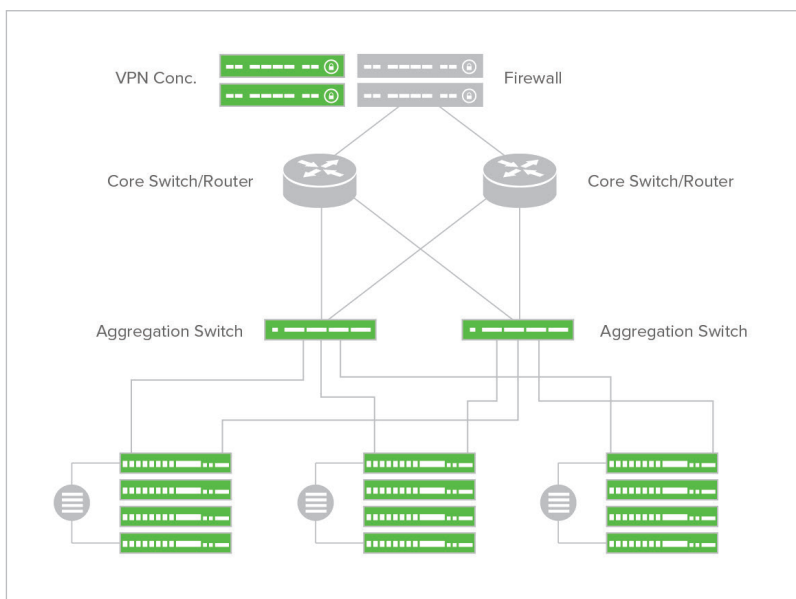
### CAMPUS EDGE

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

- Virtual Stacking lets administrators 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 MS425.
- Get alerts when any switch fails or goes offline, before users complain.



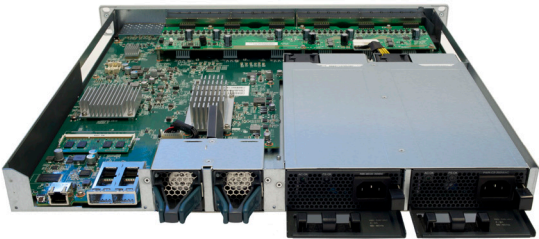
Small Branch



Large Campus

# Power Options

Rear view of MS320-48FP 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 FAMILY

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



## MS220 FAMILY

Model	Physical Dimensions (H x W x D)	Weight	Interface	Idle/Full Load Power	Switching Capacity
MS220-8	INCHES: 1.75 x 9.05 x 8.66  CENTIMETERS: 4.46 x 23 x 22.9	2.37 lb. (1.08 kg)	<ul style="list-style-type: none"> <li>• 8x 10/100/1000BASE-T Ethernet RJ45</li> <li>• 2x SFP for 1GbE uplink</li> <li>• Auto negotiation and crossover detection (auto-MDIX crossover)</li> </ul>	5/10 W	20 Gbps
MS220-8P	INCHES: 1.75 x 9.05 x 8.66  CENTIMETERS: 4.46 x 23 x 22	2.96 lb (1.34 kg)	<ul style="list-style-type: none"> <li>• 8x 10/100/1000BASE-T Ethernet RJ45</li> <li>• 2x SFP for 1GbE uplink</li> <li>• Auto negotiation and crossover detection (auto-MDIX crossover)</li> </ul>	13/159 W	20 Gbps
MS220-24	INCHES: 1.74 x 19.1 x 10.11  CENTIMETERS: 4.44 x 48.5 x 25.7	5.97 lb (2.71 kg)	<ul style="list-style-type: none"> <li>• 24 x 10/100/1000BASE-T Ethernet RJ45 (4 shared with SFP)</li> <li>• 4x SFP for 1GbE uplink</li> <li>• Auto negotiation and crossover detection (auto-MDIX crossover)</li> </ul>	9/18 W	48 Gbps
MS220-24P	INCHES: 1.74 x 19.1 x 10.11  CENTIMETERS: 4.44 x 48.5 x 25.7	8.59 lb (3.9 kg)	<ul style="list-style-type: none"> <li>• 24x 10/100/1000BASE-T Ethernet RJ45 (4 shared with SFP)</li> <li>• 4x SFP for 1GbE uplink</li> <li>• Auto negotiation and crossover detection (auto-MDIX crossover)</li> </ul>	30/447 W	48 Gbps
MS220-48	INCHES: 1.74 x 19.1 x 14.17  CENTIMETERS: 4.44 x 48.5 x 36	8.47 lb (3.84 kg)	<ul style="list-style-type: none"> <li>• 48x 10/100/1000BASE-T Ethernet RJ45</li> <li>• 4x SFP for 1GbE uplink</li> <li>• Auto negotiation and crossover detection (auto-MDIX crossover)</li> </ul>	28/51 W	104 Gbps
MS220-48LP	INCHES: 1.74 x 19.1 x 14.17  CENTIMETERS: 4.44 x 48.46 x 36	10.88 lb (4.93 kg)	<ul style="list-style-type: none"> <li>• 48x 10/100/1000BASE-T Ethernet RJ45</li> <li>• 4x SFP for 1GbE uplink</li> <li>• Auto negotiation and crossover detection (auto-MDIX crossover)</li> </ul>	45/505 W	104 Gbps
MS220-48FP	INCHES: 1.74 x 19.1 x 14.17  CENTIMETERS: 4.44 x 48.5 x 36	10.9 lb (4.94 kg)	<ul style="list-style-type: none"> <li>• 48x 10/100/1000BASE-T Ethernet RJ45</li> <li>• 4x SFP for 1GbE uplink</li> <li>• Auto negotiation and crossover detection (auto-MDIX crossover)</li> </ul>	49/903 W	104 Gbps

## MS320 FAMILY

Dimensions and weight include the chassis assembly as it is shipped, with one power supply and one power supply slot blank.

Model	Physical Dimensions (H x W x D) (depth includes PSU)	Weight	Interface	Idle/Full Load Power	Switching Capacity
MS320-24	INCHES: 1.74 x 19.1 x 20.39  CENTIMETERS: 4.44 x 48.6 x 51.79	10.69 lb (4.85 kg)	<ul style="list-style-type: none"> <li>• 24x 10/100/1000BASE-T Ethernet RJ45</li> <li>• 4x SFP+ for 10GbE uplink</li> <li>• Auto negotiation and crossover detection (auto-MDIX crossover)</li> </ul>	24/39 W	128 Gbps
MS320-24P	INCHES: 1.74 x 19.1 x 20.39  CENTIMETERS: 4.44 x 48.6 x 51.79	11.85 lb (5.37 kg)	<ul style="list-style-type: none"> <li>• 24x 10/100/1000BASE-T Ethernet RJ45</li> <li>• 4x SFP+ for 10GbE uplink</li> <li>• Auto negotiation and crossover detection (auto-MDIX crossover)</li> </ul>	32/454 W	128 Gbps
MS320-48	INCHES: 1.74 x 19.1 x 20.39  CENTIMETERS: 4.44 x 48.6 x 51.79	11.38 lb (5.16 kg)	<ul style="list-style-type: none"> <li>• 48x 10/100/1000BASE-T Ethernet RJ45</li> <li>• 4x SFP+ for 10GbE uplink</li> <li>• Auto negotiation and crossover detection (auto-MDIX crossover)</li> </ul>	34/55 W	176 Gbps
MS320-48LP	INCHES: 1.74 x 19.1 x 20.39  CENTIMETERS: 4.44 x 48.6 x 51.79	12.62 lb (5.72 kg)	<ul style="list-style-type: none"> <li>• 48x 10/100/1000BASE-T Ethernet RJ45</li> <li>• 4x SFP+ for 10GbE uplink</li> <li>• Auto negotiation and crossover detection (auto-MDIX crossover)</li> </ul>	46/480 W	176 Gbps
MS320-48FP	INCHES: 1.74 x 19.1 x 22.31  CENTIMETERS: 4.44 x 48.6 x 56.67	13.13 lb (5.95 kg)	<ul style="list-style-type: none"> <li>• 48x 10/100/1000BASE-T Ethernet RJ45</li> <li>• 4x SFP+ for 10GbE uplink</li> <li>• Auto negotiation and crossover detection (auto-MDIX crossover)</li> </ul>	52/885 W	176 Gbps



## What's Included

### MS220 Family

MS220-8	1 x Power Cord (MA-PWR-CORD-US), Integrated slide-out mounting brackets
MS220-8P	1 x Power Cord (MA-PWR-CORD-US), Integrated slide-out mounting brackets
MS220-24	1 x Power Cord (MA-PWR-CORD-US)
MS220-24P	1 x Power Cord (MA-PWR-CORD-US)
MS220-48	1 x Power Cord (MA-PWR-CORD-US)
MS220-48LP	1 x Power Cord (MA-PWR-CORD-US)
MS220-48FP	1 x Power Cord (MA-PWR-CORD-US)

### MS320 Family

MS320-24	1 x Power Cord (MA-PWR-CORD-US), 1 x 250WAC Power Supply (MS-PWR-250WAC), 1 x Power supply slot blank
MS320-24P	1 x Power Cord (MA-PWR-CORD-US), 1 x 640WAC Power Supply (MS-PWR-640WAC), 1 x Power supply slot blank
MS320-48	1 x Power Cord (MA-PWR-CORD-US), 1 x 250WAC Power Supply (MS-PWR-250WAC), 1 x Power supply slot blank
MS320-48LP	1 x Power Cord (MA-PWR-CORD-US), 1 x 640WAC Power Supply (MS-PWR-640WAC), 1 x Power supply slot blank
MS320-48FP	1 x Power Cord (MA-PWR-CORD-US), 1 x 1025WAC Power Supply (MS-PWR-1025WAC), 1 x Power supply slot blank

## Accessories

The Meraki MS family supports pluggable optics for high-speed connectivity. Meraki offers several standards-based Gigabit and 10 Gigabit pluggable modules. 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	All access switches
MA-SFP-1GB-SX	Meraki 1 GbE SFP SX Multi-Mode Fiber Module	1000BASE-SX	550m	All access switches
MA-SFP-1GB-LX10	Meraki 1 GbE SFP LX10 Single-Mode Fiber Module	1000BASE-LX10	10km	All access switches
MA-SFP-10GB-SR	Meraki 10 GbE SFP+ SR Multi-Mode Fiber Module	10GBASE-SR	400m	MS320 Series
MA-SFP-10GB-LRM	Meraki 10GbE SFP+ LRM Multi-Mode Fiber Module	10GBASE-LRM	220m	MS320 Series
MA-SFP-10GB-LR	Meraki 10 GbE SFP+ LR Single-Mode Fiber Module	10GBASE-LR	10km	MS320 Series
MA-CBL-TA-1M	Meraki 10 GbE Twinax Cable with SFP+ Connectors	10GSFP+Cu	1m	All access series
MA-CBL-TA-3M	Meraki 10 GbE Twinax Cable with SFP+ Connectors	10GSFP+Cu	3m	All access series

Full specifications and compatibility information is available in the Meraki Accessories datasheet: [https://meraki.cisco.com/lib/pdf/meraki\\_datasheet\\_sfp.pdf](https://meraki.cisco.com/lib/pdf/meraki_datasheet_sfp.pdf)

# 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 <sup>1</sup>

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

## 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, (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

Port security: Sticky MAC, MAC whitelist

MAC whitelisting

STP Enhancements: BPDU guard, Root guard

Hybrid authentication

IPv4 ACLs

## Performance

Non-blocking fabric

2.5 microsecond latency

Jumbo frame support (9600 byte Ethernet frame)

## Layer 3 (MS320 series only)

Static routing

DHCP Relay (Also supported on MS220)

OSPFv2 <sup>2</sup>

Warm Spare for L3 gateway redundancy <sup>2</sup>

DHCP server

Automatic DHCP failover in warm spare mode

## Power

Power input: 100 - 240 VAC, 47-63 Hz

Power consumption: 5-1655W

## 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)

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

Model	MTBF
MS220-8	756,000
MS220-8P	421,000
MS220-24	541,400
MS220-24P	329,440
MS220-48	329,440
MS220-48LP	329,440
MS220-48FP	329,440

### MS320 FAMILY

Model	MTBF
MS320-24	490,820
MS320-24P	474,570
MS320-48	291,960
MS320-48LP	282,970
MS320-48FP	282,970

<sup>1</sup> Requires carrier-supported email to SMS gateway

<sup>2</sup> OSPF and Warm Spare do not operate concurrently