# MG51/51E Technical Specifications

## Overview

Connectivity is critical for any organization that depends on reliable internet access in order to function. Wireless WAN connectivity options, such as cellular networks used to serve as a reliable backup internet uplink in the event of a primary uplink failure. However, with 5G providing wired like speeds, MG51 provides an alternative to wired connection, providing same day connectivity and simpler management via the Meraki dashboard.

The MG51 cellular gateway simplifies the path to wireless WAN connectivity over 5G and makes cellular a viable primary uplink option for many networks bypassing the necessity for wired circuits. The MG51 acts as a gateway to the internet cellular networks by converting 5G and LTE signal from a cellular provider to an Ethernet handoff, which can be used as an internet uplink for a variety of use-cases.

MG51 can work with any routing or switching device, Meraki or non-Meraki. With additional 802.3at compatibility, the MG can be placed anywhere and powered via power over ethernet (PoE) like any access point. This gives users the option for optimal physical placement for signal quality  - a cornerstone for wireless WAN communications.

# MG51 and MG51E
## cellular gateways

**MG series and Meraki Cloud Management**: *A Powerful Combo*

All Meraki devices are managed via the Meraki cloud, with an intuitive browser-based interface. The MG series are self-configuring and managed over the web, and  can be rapidly deployed at remote locations without any assistance from end-users.

Meraki Cloud services monitor all devices 24x7 and deliver real-time alerts if any devices encounter a problem. Remote diagnostics tools enable real-time troubleshooting through any web browser. New features and enhancements are delivered seamlessly over the web, so you never have to manually download software updates or worry about missing critical security vulnerability patches.

# Features

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  | **Highlights** | ◦ Built in 5G Sub 6GHz with CAT20 LTE failover connectivity<br>◦ Dual SIM support<br>◦ Supports 2 separate downstream router connections<br>◦ Small form factor<br>◦ PoE+ or DC powered<br>◦ IP67 rating<br>◦ Optional Patch antenna |
  | **Management** | ◦ Manageability from the Cisco Meraki dashboard<br>◦ Self-configuring Cellular Gateway<br>◦ Automatic firmware upgrades with scheduling control<br>◦ Extensive API support |
  | **Remote Diagnostics** | ◦ Email, SMS and Mobile push notification alerts<br>◦ Ping, traceroute, cable testing, and link failure detection with alerting<br>◦ Remote packet capture<br>◦ Combined event and configuration change logs with instant search<br>◦ DM logging via Local Status Page |

> ⓘ The MG51 cellular gateway uses 6 to 8 megabytes a day of data for telemetry on dashboard and connection monitoring when the unit is idle. Any additional Cisco Meraki devices that are added to the MG51 may increase data usage further. Cisco Meraki products are cloud connected devices that report telemetry into Dashboard for network monitoring purposes. The usage will be reduced in future firmware updates.

# Use Cases

Note that the following use-cases refer to using a Meraki MX appliance with the MG51 as a WAN uplink. However, the use-cases can also apply to non-Meraki devices.

- **Antenna placement where cellular coverage is best**

  ◦ Signal strength is key for cellular performance. The MG51 makes cellular a viable option in situations where high bandwidth or throughput is needed or locations where the MX is not necessarily the best location for a strong cellular signal . The separation of cellular antenna and MX expands

cellular options for all networks, particularly for mid-range MXs mounted in a data center. The 4 x 4 DL MIMO is capable of supporting deployments that demands higher throughput capacity.

- **Primary WAN**

  ○ In areas where wired internet services are not available or wired connectivity takes too long or expensive, the MG51 provides a simple, viable option for wireless WAN connectivity.

- **Secondary WAN for Failover**

  ○ An MX's primary or secondary WAN interface connected to an MG51 may use the cellular network for both primary and secondary uplinks

- **Primary/Secondary WAN for SD-WAN**

  ○ An MX with an MG51 as a primary and/or secondary WAN uplink may use the cellular network to establish VPNs for SD-WAN.

- **High Availability Uplink**

  ○ The MG51 can be used as either a primary or secondary internet uplink for MX HA topologies. Its two LAN ports allow the MXs to share access to the same cellular network.

# Technical Breakdown

# Physical Specifications

| Models | MG51 | MG51E |
|---|---|---|
| **Dimensions (w x d x h)** | 173 x 173 x 36.5mm | 173 x 173 x 36.5mm |
| **Weight (without accessories)** | 560g | 717g |
| **Power Supply** | 12V/1A, 48-57V DC/0.35A | 12V/1A, 48-57V DC/0.35A |
| **Power Load** | 16 Watt Maximum (PoE 802.3AT) | 16 Watt Maximum (PoE 802.3At) |
| **Operating Temperature** | -40°F to 122°F (-40°C to 50°C) | -40°F to 122°F (-40°C to 50°C) |
| **Humidity** | 5% to 95% non-condensing | 5% to 95% non-condensing |
| **Storage and Transportation Temperature** | -22°F - 158°F<br>-30°C - 70°C | -22°F - 158°F<br>-30°C - 70°C |
| **Product Category** | 5G 6 Sub 6GHz NSA + LTE CAT20 | 5G 6 Sub 6GHz NSA + LTE CAT20 |
| **Maximum Wireless Data Rate (Down/Up) Passthrough** | 2 Gbps / 300 Mbps | 2 Gbps / 300 Mbps |
| **Maximum Wireless Data Rate (Down/Up) NAT** | 1.5 Gbps/ 300 Mbps | 1.5 Gbps/ 300 Mbps |
| **Antennas** | Internal | Dipole, optional patch antenna |

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|---|---|---|
| LAN Interfaces - Dedicated | 1x Dedicated 2.5 GbE RJ45 | 1x Dedicated 2.5 GbE RJ45 |
| LAN Interfaces - Convertible | 1x Convertible LAN/WAN 2.5 GbE RJ45 | 1x Convertible LAN/WAN 2.5 GbE RJ45 |
| SIM Slots | 2 | 2 |

## Physical Specifications (MG51 vs MG41)

| Models | MG51/E | MG41/E |
|---|---|---|
| Dimensions (w x d x h) | 173 x 173 x 36.5mm | 168 x 168 x 35mm |
| Weight (without accessories) | 717/560 | 670g |
| PoE Ports | PoE+ (2) | PoE (2) |
| External Antennas | 4 | 4 |
| Patch Antennas | 2 | 2 |
| Product Category | 5G Sub 6Ghz with CAT20 LTE failover | CAT18 LTE Advanced Pro |
| Maximum Wireless Data Rate (Down/Up) | 2 Gbps Mbps / 300 Mbps | 1.2 Gbps / 150 Mbps |
| LAN Interfaces - Dedicated | 1x Dedicated GbE RJ45 | 1x Dedicated GbE RJ45 |
| LAN Interfaces - Convertible | 1x Convertible LAN/WAN GbE RJ45 | 1x Convertible LAN/WAN GbE RJ45 |
| SIM Slots | 2 | 2 |
| Carrier Aggregation | DL - 7CA, UL - 2CA | DL - 5CA, UL - 2CA |

## Feature Specifications (MG51 vs MG41)

| Models | MG51/E | MG41/E |
|---|---|---|
| Auto SIM failover | Yes | Yes |
| Dual SIM Info | Yes | Yes |
| Custom APN configuration via dashboard | Yes | Yes |
| Carrier Aggregation info on dashboard (5G and LTE) | Yes | No (LTE only) |
| Troubleshooting tools (DM logging) on LSP | Yes | Yes |

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|---|---|---|
| **SIM switch via Dashboard/LSP** | Yes | Yes |
| **5G** | Yes | No |
| **Private 5G/LTE (CBRS)** | Yes | Yes |

## Interfaces

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|---|---|
| **LAN Interfaces** | 2x 2.5 GbE |
| **WAN Interfaces** | 1 * 5G NSA Sub6 CAT20 LTE Cellular modem |
| **SIM Card Slot** | Nano (4FF) |

## Product Category and Certifications

| | |
|---|---|
| 5G Category | 5G NSA Sub 6GHz |
| LTE Category | CAT20 |
| Certifications | PTCRB (US), RCM (ANZ, APAC), GCF (EU), IC (CA), FCC (US) |
| Certified Carriers | AT&T (US), T-Mobile (US) Conditional, Optus (AU) |
| AT&T FirstNet | Pending |
| Carriers leveraging GCF | https://www.globalcertificationforum...f-members.html |
| Carriers pending certification | Verizon Wireless (US), DoCoMo (Japan), Telstra (NZ), |
| Beta Tested Carriers | AT&T (United States), Verizon (United States),  Rogers (Canada), Telus (Canada), Bell (Canada), Deutsche Telekom (Germany), Sunrise (Switzerland), Vodafone (NZ, UK, Germany, Ireland), Telstra (Australia), Optus (Australia),  NTT docomo (Japan), KDDI (Japan) |

Carrier compatibility is generally based on having compatible bands on the modem. In the open market, carriers may only require regulatory domain certifications and open market certifications, like the PTCRB and GCF, to be compatible for their network. Sometimes carriers will require additional testing before a device can be used on their network. The section Tested Carriers is based on Meraki device certifications being approved by those specific carriers. A carrier being listed above means that they have officially certified the Meraki product for their cellular network. There maybe many unlisted carriers could be functionally compatible with Meraki devices. The list of tested certified carriers is based on the carrier validating Meraki per their network parameter requirements. If a carrier you are looking to use is not listed above, it could be that they do not require additional compliance testing for their network.

# MTBF Rating

| Model | MTBF at 25°C |
|-------|--------------|
| MG51 | 1,663,492 |
| MG51E | 1,663,492 |

# Licensing

| License SKU | Description |
|-------------|-------------|
| LIC-MG51-ENT-1Y | Meraki MG51 Enterprise License and Support, 1YR |
| LIC-MG51-ENT-3Y | Meraki MG51 Enterprise License and Support, 3YR |
| LIC-MG51-ENT-5Y | Meraki MG51 Enterprise License and Support, 5YR |
| LIC-MG51-ENT-7Y | Meraki MG51 Enterprise License and Support, 7YR |
| LIC-MG51-ENT-10Y | Meraki MG51 Enterprise License and Support, 10YR |

# Accessories

| Accessory SKU | Description |
|---------------|-------------|
| MA-PWR-30W-XX | Standard power adapter. Regional plugs per SKU. |
| MA-INJ-4 | Gigabit 802.3at PoE injector |
| MA-ANT-C2-A | Dipole Antenna pair included with MG51E |
| MA-ANT-DUAL-C1 | Patch Antenna pair for MG51E |

# Included In The Box

| Model | Contents |
|-------|----------|
| MG51 | 1 x MG51-HW<br>1 x Mounting plate and screw set |
| MG51E | 1 x MG51E-HW<br>1 x Mounting plate and screw set<br>4 x dipole antennas |

ⓘ  We only support and recommend having all 4 antenna's connected on the MG51E.

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## Non-Meraki Antenna not supported

Note: Non-Meraki antennas are not supported. The socket is a reversed RP-SMA that is designed to detect the official MG smart dipole antennas and smart patch antenna. Usage of non-Meraki accessories may damage the MG and degrade performance. The Cisco Meraki antennas are designed for the maximum allowable gain without exceeding the EIRP for local regulatory domains on their supported bands.

ⓘ  Power Adapter vs PoE : The MG can be powered using a PoE or via a power adapter. The power adapter always takes the first preference i.e if the MG is already powered via the PoE and then the power adapter is connected, then the MG will power off and power on using the adapter as the power source. The same scenario applies when the PoE and power adapter are connected simultaneously and the power source from the adapter goes down, the MG will power off and then power on. Plugging/unplugging PoE when power adapter is connected to the MG does not have any bearing on the operation of the MG as the device will always draw power from the adapter whenever it is connected.