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MGOS 4.4.3

RELEASE NOTES

About MGOS 4.4.3

MGOS 4.4.3 includes updates specifically for customers with MG90 5G routers containing EM9190 5G radio modules.

This release may be used for all MG90 routers, including 4G routers (currently running MGOS 4.3.1.2+ or MGOS 4.4.2.1+) and 5G routers (currently running MGOS 4.4.0+).

Upgrade Recommendations:

- *Semtech strongly recommends that customers with MG90 5G routers (i.e., containing EM9190 5G radio modules) upgrade to this release to take advantage of an addressed 5G band n41 connectivity issue described below.*
- *Semtech recommends that all customers (FIPS and non-FIPS) keep their MG90 routers updated with the latest software.*
- ***(Important)** To stay current with security bug fixes, FIPS customers should upgrade to the following minimum MGOS versions:*
  - *MG90 5G Routers: MGOS 4.4.2.3*
  - *If using TAIP messaging: MGOS 4.4.2.2 or MGOS 4.4.2.3*
  - *If not using TAIP messaging: MGOS 4.4.2.1, MGOS 4.4.2.2, or MGOS 4.4.2.3*

Important:

- *Use the appropriate upgrade path described in Upgrade Paths on page 2.*
- *After upgrading to MGOS 4.4.3, **do not** downgrade below MGOS 4.4.2.1, as the radio instability and AirLink connection issues present in older MGOS releases may reappear.*

This release addresses:

- An EM9190 5G radio module issue relating to 5G band n41 connectivity (refer to source.sierrawireless.com/resources/airlink/software_reference_docs/technical-bulletin/sierra-wireless-technical-bulletin---5g-band-n41-issue/).'
- All items previously described in MGOS 4.4.2.1 Release Notes, MGOS 4.4.2.2 Release Notes and MGOS 4.4.2.3 Release Notes including:
  - Issue with GPS TAIP messaging (resolved)
  - Issue preventing PAP/CHAP APN authentication via AT$QCPDPP (resolved)
  - Issue with radio module firmware image switching (resolved)
  - MGOS 4.4.2 radio instability issue per MGOS 4.4.2 Radio Instability Issue Bulletin
  - AirLink connection issues per AirLink Connection Issues Bulletins
  - New features/updated functionality, addressed issues, and security updates

Note: *Semtech recognizes that our customers deploy devices in a wide range of network environments with varying configurations. It is always good practice to install a new MGOS release with the planned operation workflow on a few trial devices to ensure that standard operation is maintained within your environment before deploying the new release across your fleet of MG90 devices.*

Upgrade Paths

Important: *If your MG90 5G routers are operating with a Semtech engineering-supplied version of EM9190 5G radio module firmware, please contact Support for further instructions on how to upgrade to MGOS 4.4.3.*

The following upgrade paths to MGOS 4.4.3 are supported:

- MG90 4G:
  - (MG90 4G) Upgrade MGOS 4.3.1.2+ to MGOS 4.4.3 on page 2
  - (MG90 4G/MG90 5G) Upgrade MGOS 4.4.2 to MGOS 4.4.3 on page 4
  - (MG90 4G/MG90 5G) Upgrade MGOS 4.4.2.1 to MGOS 4.4.3 on page 5
  - (MG90 4G/MG90 5G) Upgrade MGOS 4.4.2.2 to MGOS 4.4.3 on page 5
  - (MG90 4G/MG90 5G) Upgrade MGOS 4.4.2.3 to MGOS 4.4.3 on page 5
- MG90 5G:
  - (MG90 5G) Upgrade MGOS 4.4.0 to MGOS 4.4.3 on page 3

    Important: *All MG90 5G customers running MGOS 4.4.0 must carefully follow the instructions. In brief, the required process is:*
    1. *Upgrade to MGOS 4.4.1 via AMM OTA (Over-The-Air) or via USB stick.*
    2. *Make sure the EM9190 5G module(s) are running the correct radio module firmware version.*
       If the wrong firmware is running, the router may not be able to connect to the carrier network.
    3. *Upgrade to MGOS 4.4.3.*

    If you upgraded directly from MGOS 4.4.0 to MGOS 4.4.2.x or MGOS 4.4.3 and are experiencing network connectivity issues, please contact Support for further instructions.

  - (MG90 5G) Upgrade MGOS 4.4.1 to MGOS 4.4.3 on page 4
  - (MG90 4G/MG90 5G) Upgrade MGOS 4.4.2 to MGOS 4.4.3 on page 4
  - (MG90 4G/MG90 5G) Upgrade MGOS 4.4.2.1 to MGOS 4.4.3 on page 5
  - (MG90 4G/MG90 5G) Upgrade MGOS 4.4.2.2 to MGOS 4.4.3 on page 5
  - (MG90 4G/MG90 5G) Upgrade MGOS 4.4.2.3 to MGOS 4.4.3 on page 5

(MG90 4G) Upgrade MGOS 4.3.1.2+ to MGOS 4.4.3

USB Stick Upgrade

1. Upgrade directly from MGOS 4.3.1.2+ to MGOS 4.4.3.
2. Reboot the MG90.

AMM OTA Upgrade

1. Confirm your AMM version — AMM 2.17.1 or newer is required to upgrade OTA to MGOS 4.4.3.

   Important: *Upgrading using older AMM versions will result in MGOS firmware upgrade failures, and can require a USB-stick install to recover. For more information, refer to Product Bulletin: AMM 2.16 Prerequisite to MG90 firmware upgrade.*

2. Make sure software update options are correctly configured — Set MGOS Auto Software Update Options on page 6.
3. In AMM, upgrade OTA to MGOS 4.4.3.

(MG90 5G) Upgrade MGOS 4.4.0 to MGOS 4.4.3

USB Stick Upgrade

1. Make sure software update options are correctly configured — Set MGOS Auto Software Update Options on page 6.
2. Upgrade via USB stick to MGOS 4.4.1.
3. Reboot the MG90.
4. Check the EM9190 firmware version — Upgrading from MGOS 4.4.1 — Confirm Correct EM9190 5G Radio Module Firmware on page 7.

   Important: *The MG90's EM9190 module(s) must be running the correct radio module firmware, otherwise it may not be able to connect to the carrier network.*

5. Upgrade via USB stick to MGOS 4.4.3.
6. Reboot the MG90.

AMM OTA Upgrade

1. Confirm your AMM version — AMM 2.17.1 or newer is required to upgrade OTA to MGOS 4.4.3.

   Important: *Upgrading using older AMM versions will result in MGOS firmware upgrade failures, and can require a USB-stick install to recover. For more information, refer to Product Bulletin: AMM 2.16 Prerequisite to MG90 firmware upgrade.*

2. Make sure software update options are correctly configured — Set MGOS Auto Software Update Options on page 6.
3. In AMM, upgrade OTA to **MGOS 4.4.1** (*do NOT upgrade to MGOS 4.4.3 yet*) from the Software Distribution panel.
   Wait until AMM indicates Download Complete. (Note — AMM performs two downloads. If 'Reboot when done' was selected, the MG90 reboots after the first download and then AMM starts downloading the second file. Wait until Download Complete displays a second time.)
4. Reboot the MG90.
5. Check the EM9190 firmware version — Upgrading from MGOS 4.4.1 — Confirm Correct EM9190 5G Radio Module Firmware on page 7.

   Important: *The MG90's EM9190 module(s) must be running the correct radio module firmware, otherwise it may not be able to connect to the carrier network.*

6. In AMM upgrade OTA to MGOS 4.4.3.
7. Reboot the MG90.

Important: *If you upgraded directly from MGOS 4.4.0 to MGOS 4.4.3 (instead of 4.4.0→4.4.1→4.4.3) and are experiencing network connectivity issues, please contact Support for further instructions.*

(MG90 5G) Upgrade MGOS 4.4.1 to MGOS 4.4.3

USB Stick Upgrade

1. Confirm your AMM version — AMM 2.17.1 or newer is required to upgrade OTA to MGOS 4.4.3.

   Important: *Upgrading using older AMM versions will result in MGOS firmware upgrade failures, and can require a USB-stick install to recover. For more information, refer to Product Bulletin: AMM 2.16 Prerequisite to MG90 firmware upgrade.*

2. Make sure software update options are correctly configured — Set MGOS Auto Software Update Options on page 6.
3. Check the EM9190 firmware version — Upgrading from MGOS 4.4.1 — Confirm Correct EM9190 5G Radio Module Firmware on page 7.

   Important: *The MG90 must be running MGOS version 4.4.1. Otherwise, it may not be able to connect to the carrier network.*

4. Upgrade via USB stick to MGOS 4.4.3.

AMM OTA Upgrade

1. Confirm your AMM version — AMM 2.17.1 or newer is required to upgrade OTA to MGOS 4.4.3.

   Important: *Upgrading using older AMM versions will result in MGOS firmware upgrade failures, and can require a USB-stick install to recover. For more information, refer to Product Bulletin: AMM 2.16 Prerequisite to MG90 firmware upgrade.*

2. Make sure software update options are correctly configured — Set MGOS Auto Software Update Options on page 6.
3. Check the EM9190 firmware version — Upgrading from MGOS 4.4.1 — Confirm Correct EM9190 5G Radio Module Firmware on page 7.

   Important: *The MG90 must be running MGOS version 4.4.1. Otherwise, it may not be able to connect to the carrier network.*

4. In AMM upgrade OTA to MGOS 4.4.3.

(MG90 4G / MG90 5G) Upgrade MGOS 4.4.2 to MGOS 4.4.3

USB Stick Upgrade

1. Upgrade directly from MGOS 4.4.2 to MGOS 4.4.3.
2. Reboot the MG90.

AMM OTA Upgrade

1. Confirm your AMM version — AMM 2.17.1 or newer is required to upgrade OTA to MGOS 4.4.3.

   Important: *Upgrading using older AMM versions will result in MGOS firmware upgrade failures, and can require a USB-stick install to recover. For more information, refer to Product Bulletin: AMM 2.16 Prerequisite to MG90 firmware upgrade.*

2. Make sure software update options are correctly configured — Set MGOS Auto Software Update Options on page 6.
3. In AMM, upgrade OTA to MGOS 4.4.3.

(MG90 4G / MG90 5G) Upgrade MGOS 4.4.2.1 to MGOS 4.4.3

USB Stick Upgrade

1. Upgrade directly from MGOS 4.4.2.1 to MGOS 4.4.3.
2. Reboot the MG90.

AMM OTA Upgrade

1. Confirm your AMM version — AMM 2.17.1 or newer is required to upgrade OTA to MGOS 4.4.3.

   Important: *Upgrading using older AMM versions will result in MGOS firmware upgrade failures, and can require a USB-stick install to recover. For more information, refer to Product Bulletin: AMM 2.16 Prerequisite to MG90 firmware upgrade.*

2. Make sure software update options are correctly configured — Set MGOS Auto Software Update Options on page 6.
3. In AMM, upgrade OTA to MGOS 4.4.3.

(MG90 4G / MG90 5G) Upgrade MGOS 4.4.2.2 to MGOS 4.4.3

USB Stick Upgrade

1. Upgrade directly from MGOS 4.4.2.2 to MGOS 4.4.3.
2. Reboot the MG90.

AMM OTA Upgrade

1. Confirm your AMM version — AMM 2.17.1 or newer is required to upgrade OTA to MGOS 4.4.3.

   Important: *Upgrading using older AMM versions will result in MGOS firmware upgrade failures, and can require a USB-stick install to recover. For more information, refer to Product Bulletin: AMM 2.16 Prerequisite to MG90 firmware upgrade.*

2. Make sure software update options are correctly configured — Set MGOS Auto Software Update Options on page 6.
3. In AMM, upgrade OTA to MGOS 4.4.3.

(MG90 4G / MG90 5G) Upgrade MGOS 4.4.2.3 to MGOS 4.4.3

USB Stick Upgrade

1. Upgrade directly from MGOS 4.4.2.3 to MGOS 4.4.3.
2. Reboot the MG90.

AMM OTA Upgrade

1. Confirm your AMM version — AMM 2.17.1 or newer is required to upgrade OTA to MGOS 4.4.3.

   Important: *Upgrading using older AMM versions will result in MGOS firmware upgrade failures, and can require a USB-stick install to recover. For more information, refer to Product Bulletin: AMM 2.16 Prerequisite to MG90 firmware upgrade.*

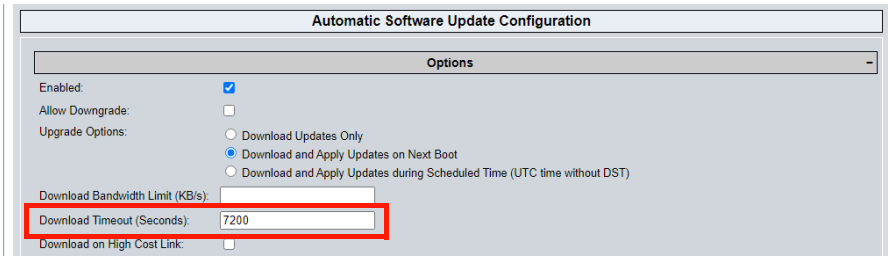
2. Make sure software update options are correctly configured — Set MGOS Auto Software Update Options on page 6.
3. In AMM, upgrade OTA to MGOS 4.4.3.

Set MGOS Auto Software Update Options

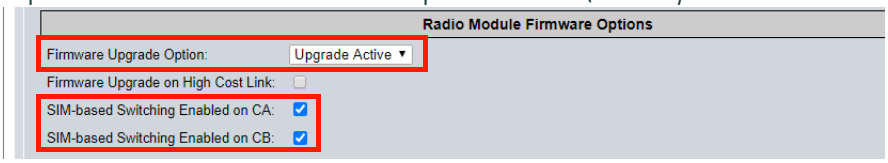
Make sure the MG90 is configured to perform automatic radio module firmware updates — this is required if EM9190 5G module(s) are running the wrong firmware version, and is recommended for all customers:

1. Go to General > Auto Software Updates.
2. Semtech recommends setting the download timeout value to 7200 s, to ensure the download completes in one attempt. (Otherwise, if the download times out, it will resume at the next opportunity — for example, when the active link changes, the next scheduled update window, when the device reboots, etc.)

   In Download Timeout (Seconds), enter 7200.



3. Expand the Radio Module Firmware Options section (click anywhere in the section heading).



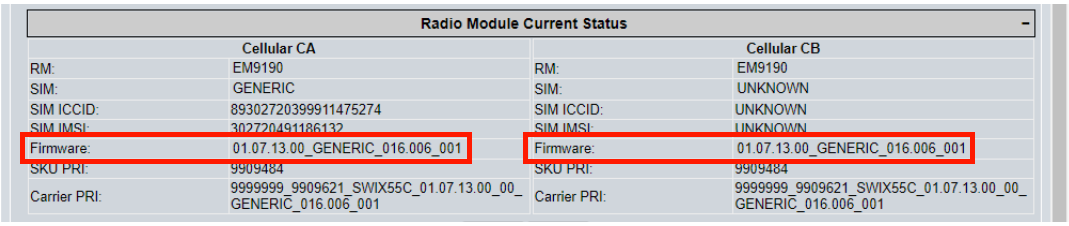
4. Make sure Firmware Upgrade Option is set to Upgrade Active or Upgrade All.
5. Make sure SIM-based Switching Enabled is selected for each radio module.
6. Click Submit.

Upgrading from MGOS 4.4.1 — Confirm Correct EM9190 5G Radio Module Firmware

Before upgrading from MGOS 4.4.1 to MGOS 4.4.3, it is important to ensure the MG90 5G router's EM9190 module(s) are running carrier firmware version(s) from the following list:

AT&T	01.07.13.00_00_ATT_012.007_001
GENERIC	01.07.13.00_00_GENERIC_016.006_001
T-MOBILE	01.07.13.00_00_TMO_001.005_001
VERIZON	01.07.23.00_01_VERIZON_012.019_000

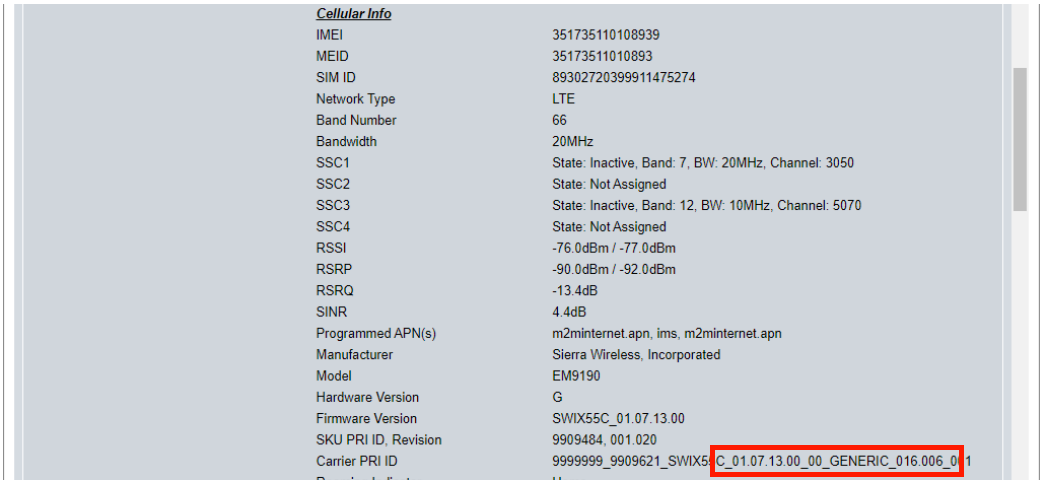
1. Display the currently running firmware version(s) for the EM9190 5G module(s) — Use either of the following methods, and compare them to the list above:
   - Go to General > Auto Software Updates — The firmware is listed in the Radio Module Current Status section as "Firmware".



Radio Module Current Status

	Cellular CA		Cellular CB
RM:	EM9190	RM:	EM9190
SIM:	GENERIC	SIM:	UNKNOWN
SIM ICCID:	89302720399911475274	SIM ICCID:	UNKNOWN
SIM IMSI:	302720491186132	SIM IMSI:	UNKNOWN
Firmware:	01.07.13.00_GENERIC_016.006_001	Firmware:	01.07.13.00_GENERIC_016.006_001
SKU PRI:	9909484	SKU PRI:	9909484
Carrier PRI:	9999999_9909621_SWIX55C_01.07.13.00_00_GENERIC_016.006_001	Carrier PRI:	9999999_9909621_SWIX55C_01.07.13.00_00_GENERIC_016.006_001

   - Go to Status > WAN > Extended Status — The carrier firmware is listed in the Cellular Info section as "Carrier PRI ID".



Cellular Info

IMEI	351735110108939
MEID	35173511010893
SIM ID	89302720399911475274
Network Type	LTE
Band Number	66
Bandwidth	20MHz
SSC1	State: Inactive, Band: 7, BW: 20MHz, Channel: 3050
SSC2	State: Not Assigned
SSC3	State: Inactive, Band: 12, BW: 10MHz, Channel: 5070
SSC4	State: Not Assigned
RSSI	-76.0dBm / -77.0dBm
RSRP	-90.0dBm / -92.0dBm
RSRQ	-13.4dB
SINR	4.4dB
Programmed APN(s)	m2minternet.apn, ims, m2minternet.apn
Manufacturer	Sierra Wireless, Incorporated
Model	EM9190
Hardware Version	G
Firmware Version	SWIX55C_01.07.13.00
SKU PRI ID, Revision	9909484, 001.020
Carrier PRI ID	9999999_9909621_SWIX55C_01.07.13.00_00_GENERIC_016.006_001

Important: *Make sure the entire version matches — sometimes only the last digit is different. (e.g., 01.07.13.00_00_GENERIC_016.006_00**0** vs 01.07.13.00_00_GENERIC_016.006_00**1**.*

2. If the wrong firmware is running, AMM should automatically download the correct firmware — AMM will indicate "Downloading" when it starts.

   When AMM indicates "Download Complete", reboot the MG90.

New Features / Updated Functionality

Radio Module Firmware

New radio module firmware for EM9190 (AT&T, Generic, T-Mobile) to resolve the Addressed Issues (Cellular) described below.

Addressed Issues

Cellular

Resolved an issue where North American MG90 5G single-radio routers may experience connectivity issues on 5G band n41 used by T-Mobile and Rogers. For details, refer to source.sierrawireless.com/resources/airlink/software_reference_docs/technical-bulletin/sierra-wireless-technical-bulletin---5g-band-n41-issue/

WAN Extended Status

Resolved issues where the WAN Extended Status screen would show incorrect NR5G information (e.g., "---") for an MG90 5G router connected to a 5G SA network.

LED

Resolved an issue where an MG90 5G router's Signal strength LED would always display Red (poor signal) when connected to a 5G SA network.

Known Issues

WAN Extended Status

Although LTE is not available when an MG90 5G router is connected to a 5G SA network, the Extended Status screen shows LTE signal strength fields (RSSI, RSRIP, RSRQ, SINR) with the value "Unknown".

These fields can be ignored.

LAN Segment Configuration

Devices on different LAN segments are unable to communicate with each other after the LAN Segment Configuration "Isolated" option has been selected (enabled) and then de-selected (disabled).

If this occurs, reboot the router to ensure all LAN Segment Configuration options are applied.

Wi-Fi Network Configuration

MGOS rejects an invalid configuration when selecting EAP-TLS as the Wi-Fi network Authentication method, but does not display a message indicating the rejection occurred.

To select EAP-TLS as the Authentication method, make sure a CA Certificate and a Certificate Profile are selected before saving the configuration.

VPN Configuration

In some cases, when an MG90 is configured with speed-based or signal strength-based WAN switching policies and a link switches from Wi-Fi to cellular, the VPN may go down for an extended period.

If this occurs, the VPN will remain down until the ping monitor fails or until the MG90 is rebooted.

Traffic cannot pass through a tunnel when IP compression is enabled on both the MG90 and ACM.

To enable traffic to pass between the MG90 and ACM, disable IP compression on either side. When this is done, the traffic will flow between the two devices.

When an MG90 is configured with one LAN subnet that is part of a FIPS full tunnel VPN, and a second LAN subnet for local internet access, the VPN subnet works but the second subnet cannot reach the internet.

To resolve this issue, add a "BOOT"-type advanced routing rule:

a. Go to General > Advanced Routing Rules.
b. Select the "BOOT" rule type and click Add New Rule.
c. Add the following rule in the editing screen and replace "x.x.x.x" with the address of the second subnet (that cannot reach the internet):

    "ip rule add from x.x.x.x/24 prio 200"

d. Click Save.

On FIPS-enabled MG90 routers, VPN exception rules apply to traffic from both the router and the router's clients, instead of only the router's traffic.