6550 ION Firmware Update Instructions

QR Firmware: G1MU003 – March 04, 2025

Scope

This document provides:

- Upgrade instructions for the QR FW G1MU003

This document describes how to upgrade the firmware on a Micron 6550 ION Gen5 NVMe SSD using either nvme-cli or msecli. For further assistance with this process please contact your local Micron representative.

Notes

Bridge firmware

If updating firmware on a drive that previously ran firmware G1MU001E, it is required to first update to the bridge firmware (G1MUB079) before updating to G1MU003. The steps to update from G1MU001E to the bridge firmware are the same as provided here to update to G1MU003 (see `Firmware upgrade and downgrade compatibility table`).

If the bridge firmware was previously loaded on the drive (for example, when updating to a previous release) then the bridge firmware will not be needed again. This step is only required to be done once per drive.

Ping Pong Testing

Use G1MU003P firmware for testing firmware upgrade/downgrade.

When testing firmware upgrade/downgrade between these versions, AWOR (Commit Action 3) can be utilized, and no power cycle is required.

Firmware upgrade and downgrade compatibility table:

From		To	AWOR support	Notes
G1MU003	<->	G1MU003P	Yes	Recommended for Ping-Pong testing
G1MU002	<->	G1MU003	Yes	Upgrade recommended
G1MU000	<->	G1MU003	Yes	Upgrade recommended
G1MU002X	-->	G1MU003	Yes	Upgrade only - with Sanitize after upgrade
G1MU001X	-->	G1MU003	Yes	Upgrade only - with Sanitize after upgrade
G1MU000X	-->	G1MU003	Yes	Upgrade only - with Sanitize and namespace re-create after upgrade
G1MU001E	-->	G1MUB079 --> G1MU003	Yes, with a power cycle required after G1MUB079	Upgrade only - with bridge FW G1MUB079, then upgrade to G1MU003 - Sanitize and namespace re-create after upgrading is complete

Namespace Recreation

Due to a change in the supported LBA count in firmware from IDEMA to SFF-8447, after successfully updating firmware, customers should recreate the namespace to ensure that the appropriate drive capacity is reported.

Capacity	IDEMA LBA Count	SFF-8447 LBA Count
30TB	512B LBA: 60,011,664,048 4K LBA: 7,501,458,006	512B LBA: 60,001,615,872 4K LBA: 7,500,201,984
60TB	512B LBA: 120,023,306,928 4K LBA: 15,002,913,366	512B LBA: 120,001,134,592 4K LBA: 15,000,141,824

The commands to recreate the namespace through nvme-cli are as follows:

1. Detach Namespace: nvme detach-ns -n 1 -c 0 /dev/nvmeX
2. Delete Namespace: nvme delete-ns -n 0xffffffff /dev/nvmeX
3. Create Namespace with the new SFF-8447 LBA Count from the table above:
    - For 512B LBA: nvme create-ns -f 0 -s <LBA Count> -c <LBA Count> /dev/nvmeX
    - For 4K LBA: nvme create-ns -f 1 -s <LBA Count> -c <LBA Count> /dev/nvmeX
4. Attach Namespace: nvme attach-ns -n 1 -c 0 /dev/nvmeX

Post Update Sanitize

When updating to G1MU003 firmware from certain previous firmware releases for the first time, as indicated in the firmware upgrade and downgrade compatibility table, it is also required to issue a sanitize block erase command before testing. This step is only necessary to perform once per drive.

The sanitize command can be issued with either nvme-cli or msecli.

nvme-cli:

- nvme sanitize -a 2 /dev/nvmeX

Note: When issuing the sanitize command through nvme-cli, the command will immediately return success. However, the user will need to monitor the sanitize command progress through the sanitize log as all commands will be aborted until the sanitize is complete.

msecli:

- msecli -X -B -n /dev/nvmeX

Note: msecli will not return completion until the sanitize command is complete.

Sanitize Recovery limitation

Due to a known issue on the G1MU001E firmware, if a drive previously encountered an assert and was recovered with the sanitize action, you may be unable to update to any of the newer released firmware binaries. If this issue is encountered, please contact your Micron representative who can assist with recovering the drive or provide feedback on potential next steps.

Upgrade using nvme-cli (commands verified on version 2.4)

1. Download and install latest version of nvme-cli from github.com:
    a. https://github.com/linux-nvme/nvme-cli/releases
2. Obtain the required firmware from your Micron contact:
    a. Firmware name: Micron_6550ION_G1MU003_release.ubi.enc
3. List the SSDs in the system:
    a. nvme list

Note: The target name (nvmeX) for the SSD

4. To download the firmware, use the following nvme-cli commands:
    a. nvme fw-download /dev/nvmeX -f Micron_6550ION_G1MU003_release.ubi.enc

Note: The same firmware file is used for all form factors and densities

5. To commit the firmware, use the following nvme-cli command:
    a. nvme fw-commit /dev/nvmeX -s 2 -a 1
6. Power cycle the SSD to commit/activate the firmware
7. Confirm the firmware has been successfully updated to version G1MU003
    a. nvme list

Upgrade using msecli (commands verified on version 10.07.072024.00)

1. Download and install latest version of msecli (v10.07.072024.00) from micron.com:
    a. https://www.micron.com/sales-support/downloads/software-drivers/storage-executive-software
2. Obtain the required firmware from your Micron contact:
    a. Firmware name: Micron_6550ION_G1MU003_release.ubi.enc
3. List the SSDs in the system:
    a. msecli -L

Note: The target name (nvmeX) for the SSD

4. To download the firmware, use the following msecli command:
    a. msecli -F -U Micron_6550ION_G1MU003_release.ubi.enc -C 1 -S 2 -n /dev/nvmeX

Note: The same firmware file is used for all form factors and densities

5. Power cycle the SSD to commit/activate the firmware
6. Confirm the firmware has been successfully updated to version G1MU003
    a. msecli -L