



# GE MDS *PRODUCT RELEASE NOTES v7.6.4 Rev A*

RELEASE NOTE For: MDS Master Station Firmware Version 7.6.4  
RELEASE DATE: March 27, 2020

**FIRMWARE**

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## **MDS™ Master Station**

### **COVERING FIRMWARE – v7.6.4**

#### **Overview**

This section describes Software/Firmware updates for the MDS Master Station.

- Products: MDS Master Station
  - Variants: MPRS, MPRL, MPRU
- System Firmware Version: v7.6.4
  - SD Radio Module Firmware: v3.9.0
  - LN Radio Module Firmware: v3.1.9
  - NX Radio Module Firmware: v0.7.2
  - LW Radio Module Firmware: v0.4.8

#### **NOTICE FOR CUSTOMERS UPGRADING TO THIS VERSION**

As part of an enhanced security posture this release uses a SHA256 firmware certificate. When upgrading from earlier firmware versions (before 7.0) it is necessary to overwrite the previous GE MDS firmware certificate with this new one. Related information:

- The new certificate can be found at the GE Industrial Communications website at [https://www.gegridsolutions.com/Communications/MDS/software.asp?directory=Master\\_Station/Support\\_items](https://www.gegridsolutions.com/Communications/MDS/software.asp?directory=Master_Station/Support_items)
- Certificates can be loaded individually (see Certificate Management, at the bottom of the navigation pane)
- Certificates can be broadcast to a network using remote management.

#### **IMPORTANT NOTES:**

- This firmware applies to all MPR (MPRS/MPRL/MPRU) except as described below
  - This firmware does NOT support Evolution/Migration Master station (serial-router).
- Once running 4.x or later system firmware, 3.x system firmware **cannot** be downloaded into the Master Station. To preserve the ability to boot back to 3.x firmware, **do not** overwrite your inactive 3.x firmware image.
  - See the section labeled “Special Instructions: Booting to 3.x firmware in the inactive image (MPRS Only)” later in the release notes for detailed instructions.
- Both active and inactive Radio Modules have their own firmware that the MPR upgrades together and keeps in sync. The Radio modules use different versioning than the Master Station system firmware. See the firmware version list in the Overview section for the expected radio module firmware versions.

- When the Firewall experiences an error, all traffic is dropped with the exception of the HTTPS and SSH protocols. These protocols can be used to recover the device to a functional state.

## Supported Radio Modules

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- **MDS Master Station with LN Radio Modules (MPRL)**
  - LN1B
  - LN2X
  - LN4A
  - LN4C
  - LN4E
  - LN7A
  - LN9C
- **MDS Master Station with LW Radio Modules (MPRL)**
  - LW7
- **MDS Master Station with SD Radio Modules (MPRS):**
  - SDM4B
  - SDM4C
  - SDM4D
  - SDM9C
  - SDM9K
- **MDS Master Station with Unlicensed 900MHz Radio Modules (MPRU)**
  - NX

## New Features

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- **Features MDS Master Station since v7.2.9**
  - Added support for LW NIC module.
  - Create serial and network capture files from the web interface.
  - Added new modes for orbit LN: advanced and advanced-polling.
  - Added support in the DLINK switchover for new LN modes

## Changes to Existing Features

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- The connected remotes table for the NX/LN/LW radios will now show much more information about the connected remotes. These include the device name, the alarm state, link quality values (RSSI, EVM, etc.), running firmware. For this to fill in the remotes need to be running at least 7.6.4.
- In addition to the new advanced radio modes for LN, all devices with NX/LN/LW radios running at least 7.6.4 on each ends of the network will get enhanced performance.
  - The header compression is now improved that includes the layer 2 header, including the VLAN header.
  - The NX/LN/LW radios will now have the option to concatenate packets over the air, which improves the over the air performance with small packets.

## Resolved Issues (Fixed) & Improvements

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Note: numbers in brackets [] represent internal issue tracking numbers.

- **MDS Master Station since v7.2.9:**
  - Managing an IKE/IPSec VPN via the web interface is not functional. The CLI must be used for managing IKE/IPSec VPN connections. [1070]
  - In the initial setup wizard, the radius server authentication type may attempt to reset to CHAP. Review the summary and ensure the authentication type is correct. [1202]
  - The Firewall (Access Control Wizard) may get into a state where the summary screen displays changes that were not made by the user. It is recommended to cancel and restart the Wizard. Verify accuracy of all changes on the summary screen before saving the configuration. [1180]

- In some versions of Firefox, the rollback to snapshot page is not rendered correctly. You must double click the snapshot field to have the options appear. [976]
- Error message boxes may appear in the Destination NAT, ACL, and Interface Setup wizards. [1590] [1589] [1588] [1583] [1567] [1566] [959]
- An internal software error may be generated upon changing TCP terminal server configuration from streaming to polled. [1439]

## Preserving ability to run previous configuration

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New versions of Master Station code use updated configuration data models that are not backwards compatible with older releases. When a unit running a *previous* release is upgraded to this release, a snapshot of its configuration is made and stored on the unit called “Auto”. The unit’s configuration is automatically migrated to newer data model. The user can downgrade back to the *previous* firmware version only by choosing to revert to the legacy configuration snapshot as described here. Any firmware can be loaded that is greater than or equal to the Factory snapshot version, but may require a different firmware cert be loaded (See SPECIAL NOTICE FOR CUSTOMERS UPGRADING TO THIS VERSION section above).

To maintain ability to run previous firmware follow the procedure below.

1. Should it be determined that reverting to the *previous* firmware is necessary, perform the following command on the CLI to reboot to the old firmware, and restore the system using a configuration snapshot. The Auto or a user snapshot can be used if available, but the factory snapshot will always be available.

```
> request system recovery rollback which-image { inactive } snapshot Auto
```

2. You will be prompted to confirm this action:  
The current system configuration will be erased and replaced with the snapshot. Proceed? [no,yes]
3. Type ‘yes’ and press enter, and the system will restart to the *previous* configuration
4. Note that the recovery operation *may* include restoration of a previous SHA1 FW certificate. If so, then it will be necessary to reinstall the new SHA256 FW certificate before newer software can be downloaded again.

## Special Instructions: Booting to 3.x firmware in the inactive image (MPRS Only)

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To switch between 3.x firmware and 4.x system firmware on an MPRS follow the procedure below.

1. **IMPORTANT:** Once you are running 4.x firmware or greater, be sure to not overwrite the 3.x firmware in the inactive firmware location, or you will not be able to revert back to that version. E.g. copying active firmware to inactive location, or installing a new version to the inactive firmware location.
2. Should it be determined that reverting to the old 3.x firmware is necessary, perform the steps from the “Preserving ability to run previous configuration” section above to load the inactive image with a previous snapshot.

## Known Errata

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**Note:** numbers in brackets [] represent internal issue tracking numbers.

- **MDS Master Station Platform (Common):**
  - Syslog is not fully compliant with RFC5424. [1033]
  - Ping statistics may not be displayed after the ping command is interrupted by the escape key sequence. [1354]
  - A QoS modify policy will act like it is automatically applied to all interfaces. [1556] [2023]
  - When using QoS, undesired behavior will occur if a shaping policy is the next-policy of priority policy. [1555]

- **MDS Master Station with LN Radio Modules (MPRL):**
  - If operating an LN NIC in a simplex configuration using a single antenna port and no duplexer, simplex-mode must be enabled. When operating in simplex mode, the TX LED will be illuminated even when the transceiver is not actively transmitting. [1092]
  - The LNMS Retry Percentage alarm is non-functional. [1805]
- **MDS Master Station with SD Radio Modules (MPRS):**
  - The MPRS Multihost feature does not support multiple TCP connections. [1842] [1934]
  - Changes may not be applied immediately when changing Data Device Mode to either DCE or CTS Key mode. They will be applied after a reboot or failover. [1377] [1267]

## Operational Notes and Limitations

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Note: numbers in brackets [] represent internal issue tracking numbers.

- **MDS Master Station Platform (Common):**
  - In the CLI, deleting a single entry in a leaf-list will delete the entire list. Do not use brackets in the command when deleting an element in the list. [1325]
  - While the MDS Master Station supports management and routing via IPv6, not all services have support for IPv6. [1254] [1335] [1342] [1781]
  - The HTTP Protocol is not supported for exporting files. Files can be sent through a browser but not directly uploaded to an http server. [875]
  - If running a serial port at 300 baud it is recommended that vtime be set to at least 35ms. [1184]
  - If the system event log is very full, attempting to search the event log via the event log table on the Web UI may result in the system becoming unresponsive for a period of time. [1002]
  - A com port configured as Console mode only supports 8N1 formatting even though the serial settings can be set otherwise, operates correctly when in data mode. [1326]
  - SCEP operations require certificate information to contain a Common Name, otherwise the operation will fail. No direct indication of failure is provided. [2052]
  - On a Microsoft CA server, the SCEP template used should not include Extended Key Usage. [2053]
  - In the Web UI, there are no preconfigured file servers. This facility is only accessible from the CLI.
  - The USB port is currently intended for console access only.
    - Note: If the USB port is in use as a console OR Terminal Server and the system is rebooted (or connection interrupted) the USB cable may need be disconnected and reconnected and the Terminal Session on the connected device may need to be restarted.
  - Any member of a disabled bridge will be disabled. Members must first be removed from the bridge in order to regain access to the interface.
  - Date/Time settings are expressed in GMT format.
  - The “\” character is an escape character for the CLI. If you want to enter a “\” into a text field (such as a user password), you will need to use “\\”. [1234][876]
  - STP is not functional over interfaces belonging to a VLAN. [2051]
  - Tab completion is not available on the CLI when deleting list entries. The entry name must be manually entered using the name as displayed by the show command.
  - Displaying the active routes will not show all configured routes when connectivity to an affected subnet cannot be established.
  - A user may not modify an already saved 'user snapshot'. Instead, delete and remake the snapshot with the necessary changes. [992]
  - If attempting to ping an IPv6 link local addresses, you must also specify the outgoing interface. [1320]
  - To clear the Remote Detection Service table, disable the service, then reenale.
  - QoS traffic flows may not be prioritized properly if QoS settings are modified while it is in use. To prevent this, stop the traffic flows before changing QoS settings, and restart them after applying the new configuration. [1554]
  - When using QoS, DSCP traffic and custom IPv4 protocol may not be prioritized correctly. [1550]
  - When using Next Hop in Static Route leave Outgoing Interface Blank. [1598]
  - If web page display seems to render incorrectly, try refreshing the page. [1783]

- A QoS modify policy will act like it is automatically applied to all interfaces. [1556]
- When making changes to QOS settings, changes will not occur after committing if traffic flow is already in progress. Reset the interface (or reboot the device) to ensure that changes will be in effect.
- When a firewall rule is changed such that certain traffic was previously explicitly allowed, but now would match the default drop rule, any previously allowed flows would still have access to the channel. For instance if a rule allowing SSH was removed, any ongoing SSH sessions would still be allowed. Either reboot the unit after such a change, or explicitly block that traffic. [1562]
- When configuring custom layer-2 protocol filters use 0x as a prefix when entering the value as Hex, otherwise enter the decimal value. Example for ARP: Enter 0x0806 or 2054. [963]
- Timeout of MODBUS transactions, can cause an dropped TCP connections. Potential fixes to increase poll rate or increase transaction timeout. [1646]
- The configured power for Wi-Fi radio may not be used, instead a lower capped value is used depending on regulatory constraints. [1671]
- There may be issues managing a serial pass-through configuration in basic web mode if it was initially set up in advanced web, or the cli. [1706]
- If a remote unit is not responding to broadcast reprogram, connect to it directly via ssh or web and reset the remote management service. [1804]
- If the maximum user sessions is reached, then login on the web is not available. However the admin user can log in via CLI and force off another session. [1832]
- If recently booted an MPR from 5.x code to 7.x code, and you are experiencing unusual web page behavior, it may be browser caching issue and should try refreshing a browser (most commonly CTRL+F5). [1833]
- Header compression is not recommended for large serial polled system or system with only broadcast downstream messaging. [1951]
- After modifying serial passthrough parameters (Simple Serial), you may have to wait 5 minutes for the unit to go into data mode. [1970]
- In the case that a web file transfer fails, it is possible that the user must start a cli session and issue a cancel for the transfer. Alternately the unit can be rebooted to resolve the incorrect state. [1983]
- When disabling DHCP, a reboot is recommended to clear any stale settings provided by the DHCP server. [2035]

**MDS Master Station with LN Radio Modules (MPRL):**

- If the modulation is forced to 64 QAM, it is recommended that FEC (forward error correction) is enabled. [1327]
- Broadcast firmware push tries to keep pushing data until all data has been pushed, but if it takes too many errors it may have to be re-initiated. [1459]
- Com2 console may become un-responsive, recover by using another interface to commit a change to COM2 and then revert back to the original setting. [1835]
- Current release of MPRL NIC module hardware does not set the TX LED correctly, if operating in simplex mode. It is constantly on even when the NIC is receiving. [1165]
- With configuration change of radio parameters, an entire poll cycle may be needed in LN advanced polling mode. [1940]

- **MDS Master Station with SD Radio Modules (MPRS):**

- Operating as a Repeater with local-data when using modem “none” may not work properly when using SDM9C or SDM9K Radio Modules. In this case, set the repeater mode to “repeater” instead of “repeater-with-local-data”. This does not apply when using SDM4B or SDM4C Radio Modules. For these modules, “repeater-with-local-data” should be used. [542]
- If the operational mode of the radio is changed (e.g. from transparent to packet-with-mac), all mode specific parameters will assume their default values, even if previously set to a different value (e.g. MAC AP vs. Remote). [611]
- An SD Radio Module configured as a DLINK root will not send local DLINK messages over the air if the radio is also configured for Repeater Mode "repeater". An SD repeater that is also a DLINK root must be set to “repeater-with-local-data”. [750]

- When using PulseNET or PulseNET Enterprise to monitor an MPRS in Packet w/ MAC mode, the Passive Collection Repeat Interval (in PulseNET) must be changed from the default 5000ms to a recommended value of 130000ms. This value must be changed for EACH MPRS being monitored in PulseNET. [1328]
- An MPRS in transparent mode using ip-payload may require a reduction in the transparent-rx-timeout value, if the data streams are longer than 1480 continuous bytes. [1215]
- When operating in RTS keying mode, full-duplex operation is not supported. For full-duplex operation, continuous keying must be used. [324]
- When operating as a DATAKEY Repeater with SDx/x710 radios as remote endpoints in 9600 modem, it is recommended that the following parameters be configured in the remotes for best polling performance. [762]
  - SDx/MPRS Polling Remote SCD: 8ms
  - x710/SDx Remote SCD: 12ms
  - SDx/MPRS Polling Remote and x710/SDx Remote PTT
    - For baud 96008N1: 0ms
    - For baud 96008E1: 4ms
- When operating as a CKEY Repeater with SDx/x710 radios as remote endpoints in 9600 modem, it is recommended that the following parameters be configured in the remotes for best polling performance. [762]
  - SDx/MPRS Polling Remote SCD: 6ms
  - x710/SDx Remote SCD: 8ms
- An underbaud condition may occur when operating in transparent mode in a network with SDs or x790 units, if the Master Station's over-the-air data rate is greater than the serial port data rate. To avoid potential gaps in transmission, increase the SCD (soft carrier dekey) on x790 or data key hold time on the Master Station to at least 5. [1888]
- When operating as a repeater in x710 or transparent mode, using modem 9600 and baud rate 9600-8E1, the new repeater-tolerance parameter should be set to 'custom' to reduce errors. [758] [760]
- Due to a limitation of SD data compression when operating with certain modems, this feature is deprecated. Use is highly discouraged, but available for backward compatibility. [825]
- When configured with a SDM4B receiver frequency of 400.000, 425.000, 450.000, 475.000, or 500.000MHz, the radio will operate with reduced performance [700]
- On MPR, if SD interface returns error about unsupported mode, in some cases this is erroneous and can be ignored. There can be errors in the detection of the SD nic type that manifest this way. [2022]
- **MDS Master Station with LW Radio Modules (MPRL):**
  - For the LW radio in the MPR, the LED behavior on the card may not be as expected.
  - Static control of LW store and forward routes is not functional currently. [2019] [2025]