

**Product Change Notification
Software Release Notice**

MultiConnect[®] Conduit[®] Family of Gateways: Conduit IoT Programmable Gateway, Conduit IP67 Base Station and Conduit AP Access Point



Now Available

Date: April 30, 2019

I. Product Change Notification Number
PCN 043019-00

II. Overview

MultiTech has launched a firmware upgrade for the MultiConnect[®] Conduit[®] family of products, including the MultiConnect[®] Conduit[®] IoT Programmable Gateway, MultiConnect[®] Conduit[®] IP67 Base Station, and MultiConnect[®] Conduit[®] AP Access Point:

- New AEP Versions:
 - MTCDT AEP 1.7.3 (Conduit IoT Programmable Gateway and Conduit IP67 Base Station)
 - MTCDT AEP 1.7.2 (Conduit IP67 Geolocation Base Station)
 - MTCAP AEP 1.7.2 (Conduit AP Access Point)
- New mLinux Versions:
 - mLinux 4.1.7 (Conduit IoT Programmable Gateway and Conduit IP67 Base Station)
 - mLinux 4.1.6 (Conduit IP67 Geolocation Base Station and Conduit AP Access Point)

The purpose of this PCN is to provide customer information on these upgrades and an action plan for upgrading installed-base units.

III. Timing

- New AEP and mLinux firmware is now available
- Products ordered from MultiTech now include the latest AEP or mLinux firmware
- Firmware files, changelogs, and upgrade instructions are available for customers who choose to upgrade products with previous firmware versions
- Visit <http://www.multitech.net/developer/downloads/> for more information

IV. Models Covered

The following products and ordering part numbers are impacted by these updates:

Model Name	MTCDT AEP 1.7.3 Ordering Part Numbers	mLinux 4.1.7 Ordering Part Numbers
MultiConnect® Conduit® IoT Programmable Gateways	MTCDT-246A-US-EU-GB MTCDT-247A-US-EU-GB MTCDT-H5-246A-US-EU-GB MTCDT-H5-247A-US-EU-GB MTCDT-LAT1-246A-US MTCDT-LAT1-247A-US MTCDT-LDC3-246A-JP MTCDT-LEU1-246A-EU-GB MTCDT-LEU1-247A-EU-GB MTCDT-LSB3-246A-JP MTCDT-LVW2-246A-US MTCDT-LVW2-247A-US	MTCDT-246L-US-EU-GB MTCDT-247L-US-EU-GB MTCDT-H5-246L-US-EU-GB MTCDT-H5-247L-US-EU-GB MTCDT-LAT1-246L-US MTCDT-LAT1-247L-US MTCDT-LDC3-246L-JP MTCDT-LEU1-246L-EU-GB MTCDT-LEU1-247L-EU-GB MTCDT-LSB3-246L-JP MTCDT-LVW2-246L-US MTCDT-LVW2-247L-US
MultiConnect® Conduit® IoT Programmable Gateways with LoRa Accessory Cards	MTCDT-246A-868-EU-GB MTCDT-246A-915-US-EU-GB MTCDT-246A-923-JP MTCDT-247A-868-EU-GB MTCDT-247A-915-US-EU-GB MTCDT-H5-246A-868-EU-GB MTCDT-H5-247A-868-EU-GB MTCDT-LAT1-246A-915-US MTCDT-LAT1-247A-915-US MTCDT-LDC3-246A-923-JP MTCDT-LEU1-246A-868-EU-GB MTCDT-LEU1-246A-915-EU-GB-AU MTCDT-LEU1-247A-868-EU-GB MTCDT-LEU1-247A-915-EU-GB-AU MTCDT-LSB3-246A-923-JP MTCDT-LVW2-246A-915-US MTCDT-LVW2-247A-915-US	MTCDT-LAT1-246L-915-US MTCDT-LVW2-247L-915-US MTCDT-LVW2-246L-915-US MTCDT-LEU1-247L-868-EU-GB MTCDT-LEU1-246L-868-EU-GB MTCDT-H5-247L-868-EU-GB MTCDT-247L-868-EU-GB MTCDT-246L-868-EU-GB MTCDT-246L-923-JP MTCDT-LDC3-246L-923-JP MTCDT-LSB3-246L-923-JP
MultiConnect® Conduit® IP67 Base Stations	MTCDTIP-266A-868 MTCDTIP-266A-915 MTCDTIP-266A-923-JP MTCDTIP-267A-868 MTCDTIP-267A-915 MTCDTIP-LAT1-266A-915 MTCDTIP-LAT1-267A-915 MTCDTIP-LDC3-266A-923-JP MTCDTIP-LEU1-266A-868 MTCDTIP-LEU1-266A-915 MTCDTIP-LEU1-267A-868 MTCDTIP-LSB3-266A-923-JP MTCDTIP-LVW2-266A-915 MTCDTIP-LVW2-267A-915	MTCDTIP-266L-868 MTCDTIP-266L-915 MTCDTIP-LEU1-266L-868 MTCDTIP-LEU1-266L-915 MTCDTIP-LVW2-266L-915 MTCDTIP-LVW3-266L-915

IV. Models Covered (continued)

The following products and ordering part numbers are impacted by these updates:

Model Name	MTCDT AEP 1.7.2 Ordering Part Numbers	mLinux 4.1.6 Ordering Part Numbers
MultiConnect® Conduit® IP67 Geolocation Base Station	MTCDTIP-LAT1-270A-915 MTCDTIP-LEU1-270A-868 MTCDTIP-LVW2-270A-915 MTCDTIP-LAT1-275A-915 MTCDTIP-LEU1-275A-868 MTCDTIP-LVW2-275A-915	MTCDTIP-LAT1-270L-915 MTCDTIP-LAT1-275L-915 MTCDTIP-LVW2-270L-915 MTCDTIP-LVW2-275L-915 MTCDTIP-LEU1-270L-868 MTCDTIP-LEU1-275L-868

Model Name	MTCAP AEP 1.7.2 Ordering Part Numbers	mLinux 4.1.6 Ordering Part Numbers
MultiConnect® Conduit® AP (Access Point)	MTCAP-LNA3-915-001A MTCAP-LEU1-868-001A MTCAP-915-001A MTCAP-868-001A	MTCAP-868-001L MTCAP-LEU1-868-001L MTCAP-LNA3-915-001L MTCAP-915-001L

V. Overview of AEP 1.7.2 and AEP 1.7.3

Model Name	Current AEP Firmware Version	NEW AEP Firmware Version
Conduit IoT Programmable Gateway Conduit IP67 Base Station	MTCDT AEP 1.6.4	MTCDT AEP 1.7.3
Conduit IP67 Geolocation Base Station	MTCDT AEP 1.6.4	MTCDT AEP 1.7.2
Conduit AP Access Point	MTCAP AEP 1.6.4	MTCAP AEP 1.7.2

Minimum System Requirements:

To install the latest version of AEP firmware, the Conduit gateway must have the proper firmware version:

- MTCDT AEP 1.4.3 or higher
- MTCAP AEP 1.4.3 or higher
- If running a firmware version lower than AEP 1.4.3, please install AEP 1.4.3 before starting the installation process.

Feature Enhancements (MTCDT AEP 1.7.3 and MTCAP AEP 1.7.2):

An overview of the feature enhancements for firmware version AEP 1.7.3 and AEP 1.7.2 are listed below.

For a complete list of new firmware features, visit <http://www.multitech.net/developer/downloads/>

Feature Enhancements MTCDT AEP 1.7.3 and MTCAP AEP 1.7.2	Firmware Version	
	MTCDT AEP 1.7.3 MTCDT AEP 1.7.2	MTCAP AEP 1.7.2
	Conduit Conduit IP67	Access Point
LoRa Network Server: Updated to version 2.2.18	X	X
MultiConnect® mCard™ MTAC-XDOT Gateway Accessory Card: Support added	X	
MultiConnect® mCard™ Accessory cards: Support for two LoRa cards has been added	X	
MultiConnect® mDot and xDot Support		
Added RU864 (864- 870 MHz) to support Russia	X	X
Added support for Class B LoRa devices	X	X
Added multicast support for Class C LoRa devices	X	X
MultiConnect® Conduit® IP67 Geolocation Base Station: The LoRa v2.1 AES key is set by network server for accessing fine-timestamps for geolocation	X	
GPS functionality: Rearchitected for better performance and consistency	X	
Custom applications are no longer backed up automatically in the AppManager.json file in order to avoid synchronization issues during application updates.	X	X
An optional radio reboot feature has been added (in addition to the other cellular radio timers already enabled) to verify connection status.	X	X
Custom Apps install was enhanced: back up the current app if one exists, and restore if the new app install fails.	X	X

Bug Fixes MTCDT AEP 1.7.3 and MTCAP AEP 1.7.2	Firmware Version	
	MTCDT AEP 1.7.3 MTCDT AEP 1.7.2	MTCAP AEP 1.7.2
	Conduit Conduit IP67	Access Point
During power-up, GPS occasionally locks-up. This is corrected in bootstrap, u-boot, and kernel device tree. (MTCDT AEP 1.7.3 only)	X	
LoRaWAN Network Server - Send correct Channel Mask in first downlink for AU/US	X	X
The ICCID on the Radio Status Page has been added back	X	X
MTCAP-LNA3 models: Radio switching issue between AT&T and Verizon has been fixed		X
A number of help links in the Web UI have been fixed including SMS Configuration	X	X
Custom Apps: Fixed a race condition between restoring Custom Applications and reboot in User-Defined-Defaults restore	X	X
SMS issues with international numbers have been fixed	X	X
During power-up, GPS occasionally locks-up. This is corrected in bootstrap, u-boot, and kernel device tree. (MTCDT AEP 1.7.3 only)	X	

Visit <http://www.multitech.net/developer/downloads/> for a complete listing.

Upgrading AEP Firmware:

Instructions on upgrading AEP firmware can be found on the MultiTech Developer Website:
<http://www.multitech.net/developer/software/aep/upgrading-the-aep-firmware/>

1. Download the latest firmware file from the [Downloads](#) page.

NOTE: There are multiple versions of AEP firmware available. Please select the file that matches the hardware model being upgraded.

2. Log into the AEP Web interface.
3. In the left navigation pane, click **Administration > Firmware Upgrade**.
4. Click Browse and select the [conduit_AEP-X_upgrade.bin](#) file.
5. Click **Start Upgrade**.
6. After the firmware upgrade is complete, log back into the web GUI and verify the firmware version shown at the top of the page.
7. If you want to save any Node-RED applications, you have two options:
 - If you have a DeviceHQ account, upload Node-Red apps to DeviceHQ. (Recommended)
 - If you do not have a DeviceHQ account, save Node-RED apps you want to keep. Node-RED flows are stored on the Conduit at [/var/config/app/current/flows.json](#). You can export flows to the clipboard from the Node-RED menu or use a tool like WinSCP or SCP in Cygwin to copy [flows.json](#) to your PC.

VI. Overview of mLinux 4.1.6 and mLinux 4.1.7

Model Name	Current mLinux Firmware Version	NEW mLinux Firmware Version
Conduit IoT Programmable Gateway Conduit IP67 Base Station	mLinux 4.0.1	mLinux 4.1.7
Conduit IP67 Geolocation Base Station	mLinux 4.0.1	mLinux 4.1.6
Conduit AP Access Point	mLinux 4.0.1	mLinux 4.1.6

Minimum System Requirements:

To install the latest version of mLinux firmware, the Conduit gateway must have the proper firmware version:

- mLinux 3.3.9 or higher

Feature Enhancements (mLinux 4.1.7 and mLinux 4.1.6):

An overview of the feature enhancements for firmware version mLinux 4.1.7 and mLinux 4.1.6 are listed below. For a complete list of new firmware features, please visit <http://www.multitech.net/developer/downloads/>

Feature Enhancements mLinux 4.1.7 and mLinux 4.1.6	Hardware Version	
	Conduit Conduit IP67	Access Point
	mLinux 4.1.7 mLinux 4.1.6	mLinux 4.1.6
LoRa Network Server: Upgraded to version 2.2.18	X	X
LoRa Packet Forwarder 4.0.1	X	X
Sprint Radio Support: General support for Sprint LTE Category 1 radio added	X	X
IPV6 support enabled by default in PPP mode for some Sprint SIMs	X	X
Australia Radio Support: General support for LAP3 Category 1 radio added	X	X
MultiConnect mCard Custom Accessory Cards: MTS-IO rewritten into separate modules to simplify the work needed to create custom MTAC accessory cards.	X	
MultiConnect mCard Accessory Cards. Driver and utility support added for two new accessory cards: <ul style="list-style-type: none"> • MTAC-XDOT • MTAC-PULSE 	X	
GPSD (GPS Daemon) Integration Improvements. <ul style="list-style-type: none"> • Modified the stock GPSD to allow other applications in the operating system access to the GPSD data. GPS Update rate is 5 seconds. • GPSD 3.18.1 configuration using UBXTTOOL https://fossies.org/linux/gpsd/ubxttool.1 • GPSD compatibility with LoRa Packet Forwarder (mLinux 4.1.6 only) 	X	
To make future upgrades more modular, the RS9113 package has been split into kernel module, noarch (firmware + scripts), and user-space binaries (utils). The old rs9113 package must be removed first.	X	
List of package changes from mLinux version 4.0.1 http://www.multitech.net/mlinux/feeds/4.1.6/	X	X
List of package changes from mLinux version 4.0.1 http://www.multitech.net/mlinux/feeds/4.1.7/	X	

Bug Fixes mLinux 4.1.7 and mLinux 4.1.6	Hardware Version	
	Conduit Conduit IP67	Access Point
	mLinux 4.1.7 mLinux 4.1.6	mLinux 4.1.6
MTCAP was missing ifplugd package for setting up DHCP when Ethernet is reset (such as a switch reset). ifplugd support is now available on the Conduit AP models.		X
MTCAP was missing radio-reset package which executes radio-reset during boot. Radio-reset now included in Access Point.		X
Verizon Outgoing SMS Messages <ul style="list-style-type: none"> • Fix for a bug that prevented outgoing SMS messages on Verizon networks 		X
Removed gpsd-udev for USB GPS, which caused issues with certain cellular modems, discovered as a GPS.		X
Hostapd configuration file changed to create Wi-Fi device before starting hostapd. Previous configuration caused hostapd to abort with an error. Default for hostapd is still off.	X	

Bug Fixes mLinux 4.1.7 and mLinux 4.1.6	Hardware Version	
	Conduit Conduit IP67	Access Point
	mLinux 4.1.7 mLinux 4.1.6	mLinux 4.1.6
LoRa packet forwarder (AU915 beacons): Fix for beacon RFU field size calculation for datarate 12 in LoRa Packet Forwarder	X	X
During power-up, GPS occasionally locks-up. This is corrected in bootstrap, u-boot, and kernel device tree (mLinux 4.1.7 only)	X	

Upgrading mLinux firmware:

There are three means of upgrading the existing mLinux firmware

1. Upgrading mLinux using an image install
2. Updating packages during a reboot
3. Creating an update package that uses opkg

1. Upgrading mLinux using an image install

The command `/usr/sbin/mlinux-firmware-upgrade` may be used to upgrade the firmware. The upgrade file should be placed in `/var/volatile` or one of its subdirectories. The command must be run as the root user.

There are two types of upgrade files. One type is created by the build named `*upgrade*.bin` and found in the deploy image directory of the build see:

<http://www.multitech.net/developer/software/mlinux/mlinux-building-images/building-a-custom-linux-image/>

Example image upgrade files:

[build/tmp/deploy/images/mtcddt/mlinux-factory-image-mtcddt-upgrade.bin](#)

[build/tmp/deploy/images/mtcap/mlinux-mtcap-image-mtcap-upgrade-withboot.bin](#)

Files with `withboot` in the name include the bootstrap and U-Boot partitions. Unless you are upgrading from mLinux 3 to mLinux 4, it is usually not necessary to update bootstrap or U-Boot

2. Updating packages during a reboot

The second type of upgrade file does not do a complete firmware update. It updates packages using the `opkg` command. A package update only affects packages that are changed. Unlike an image update, most files are maintained.

The purpose of updating packages during a reboot is to provide greater resources (memory and temporary file space) for the upgrade. Very small upgrades to commands can be applied without rebooting using the `opkg` command and the feeds. See: <http://www.multitech.net/mlinux/feeds>

If you have initscripts 2.0-r155.43 (mLinux 4.0.0 or greater), it is possible to upgrade packages using `mlinux-firmware-upgrade`.

These files are found at <http://www.multitech.net/mlinux/upgrades> when available. The version pertains to the version where the fix applies.

Since these are not image updates, they may take longer to apply. They leave the configuration alone, except for the packages being updated. NOTE: Make sure that newly installed packages are correctly configured.

3. Creating an update package that uses opkg

This method uses opkg and local files.

See an update package example: <http://multitech.net/mlinux/upgrades/example/>

Carefully review the initial list of packages and verify that they match the final list. Packages may be split or merged. In these cases a package may need to be removed or added, not just updated. Packages may require other packages. So dependencies also need to be in the update package tree. An easy way to determine what packages are required is to use the mLinux feeds, <http://www.multitech.net/mlinux/feeds/> with **opkg**. The file `/etc/opkg/mlinux-feed.conf` may need to be configured for the desired level of mLinux in the update.

The update package is a tar file containing **IPK files** and a **shell script** to initiate the update.

VII. MultiConnect[®] Conduit[®] IoT Gateways

MultiConnect[®] Conduit[®] family of products is the industry's most configurable, manageable, and scalable cellular communications gateways for industrial IoT applications. Network engineers can remotely configure and optimize their Conduit performance through DeviceHQ[®], the world's first IoT Application Store and Device Management platform. The award-winning MultiConnect Conduit series comes in three variants designed to address specific IoT gateway use cases:

- **MultiConnect Conduit:** Indoor industrial gateway, ideal for environments that require metal casing for protection against particles and debris and require an industrial temperature range.
- **MultiConnect Conduit IP67 Base Station:** Outdoor IP67-rated gateway ideal suited for performing in harsh environments such as rain, snow, extreme heat, and high winds.
- **MultiConnect Conduit AP:** Indoor access point ideal for commercial environments (e.g., hotels, offices, retail facilities) to deepen LoRa coverage in difficult to reach places where cell tower or rooftop deployments may not perform as well.

VIII. Additional Information

If you have any questions regarding this Product Change Notification, please contact your MultiTech sales representative or visit the technical resources listed below:

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MultiTech Website: www.multitech.com

MultiTech Developer Site: www.multitech.net

MultiTech Support Portal: <https://support.multitech.com/support/login.html>