

Product Change Notification
Software Release Notice

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



New Firmware Available
mPower[™] Edge Intelligence

Date: December 6, 2019

Product Change Notification Number
PCN 120619-CONDUIT-001

I. Overview

MultiTech is about to launch a new firmware versions for the MultiConnect[®] Conduit[®] family of products, including:

- MultiConnect[®] Conduit[®]
- MultiConnect[®] Conduit[®] IP67 Base Station
- MultiConnect[®] Conduit[®] AP Access Point

The purpose of this Software Notification is to alert customers that new code is available for evaluation and to provide customers important information on this new release, including the anticipated timing of the final firmware release.

New Application Enablement Platform (AEP) Versions:

- MTCDT AEP 5.1.2 (Conduit and Conduit IP67 Base Station)
- MTCAP AEP 5.1.2 (Conduit AP Access Point)

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II. Schedule

There are multiple versions of mPower Edge Intelligence firmware available for customer evaluation and final release.

- Downloadable Versions
 - AEP 5.1.2 Availability: Late December
 - Visit <http://www.multitech.net/developer/downloads/>
- DeviceHQ[®]
 - Cloud-based IoT Device Management
 - AEP 5.1.2 Availability: Late December
 - https://www.devicehq.com/sign_in

III. mPower™ Edge Intelligence

mPower™ Edge Intelligence is a new embedded software offering, building on its popular application enablement platform, to deliver programmability, network flexibility, enhanced security and manageability for scalable Industrial Internet of Things (IIoT) solutions.

mPower Edge Intelligence simplifies integration with a variety of popular upstream IoT platforms to streamline edge-to-cloud data management and analytics, while also providing the programmability and processing capability to execute critical tasks at the edge of the network to reduce latency; control network and cloud services costs, and ensure core functionality – even in instances when network connectivity may not be available.

In response to evolving customer security requirements, mPower Edge Intelligence incorporates a host of new security features including signed firmware validation, enhanced firewall and VPN settings, secure authentication and more.

IV. Models Impacted

The following Conduit models are impacted by these firmware updates:

- MultiConnect[®] Conduit[®] IoT Programmable Gateways
- MultiConnect[®] Conduit[®] IoT Programmable Gateways with LoRa Accessory Cards
- MultiConnect[®] Conduit[®] IP67 Base Stations
- MultiConnect[®] Conduit[®] IP67 Geolocation Base Station
- MultiConnect[®] Conduit[®] AP (Access Point)

For a specific list of the ordering part numbers impacted, reference [Ordering Part Numbers Impacted](#)

V. AEP 5.1.2 Overview

Minimum System Requirements (MTCDT AEP 5.1.2, MTCAP AEP 5.1.2)

To install AEP 5.1.2, the Conduit gateway must have the proper firmware version:

- AEP 1.4.3 or higher
- If running a firmware version lower than AEP 1.6.4, please install AEP 1.6.4 before loading the appropriate version of AEP 5.1.2

Feature Enhancements (AEP 5.1.2):

Firmware version AEP 5.1.2 includes the following new features and feature enhancements.

1. Hardware Support
 - a. Radio support **updated** for the following cellular technologies

Cellular WAN Support	Wireless Carrier
4G-LTE Category 4 North America (-L4N1 models)	AT&T Verizon

2. Feature Enhancements
 - a. First-Time Setup
 - Setup Wizard: option added for Remote Management – DeviceHQ
 - b. Network Interfaces
 - Added support for IPV6 in several specific network configurations

Network Interface	IP Mode
Bridge (Br0)	STATIC
Ethernet (Eth0)	STATIC DHCP Client
PPP Interface (ppp0)	PPP PPP – Addresses Only

- IPv6 WAN on cellular only
- c. Global DNS
 - Option added to configure the hostname of the device
 - d. Dynamic Host Configuration Protocol (DHCP) Server
 - Support added for configuring and enabling IPv6 DHCP server(s).
 - e. Setting up Wi-Fi as a WAN
 - Support added for connecting to hidden SSID networks

- f. Updated Destination and Source Interface Firewall Rules now include OPENVPN option
 - Pre-routing rules
 - Post-routing rules
 - Input filter rules
 - Inbound forwarding rules
 - Output filter rules

- g. Added Cellular Configuration Fields
 - Cellular Mode: Select the cellular mode from the drop-down menu based on the cellular radio module in the device (Auto (default), LTE only, LTE prefer, 2G only, 3G only, or 3G prefer)
 - Modem Configuration (allows user to switch firmware from one MNO network to another).
 - L4N1 Models: AT&T (Default) or Verizon

- h. Added Password Complexity Rules: Administrative user can choose rules and limitations for user passwords, including:
 - Minimum length of passwords
 - Upper and lower case requirements
 - Special characters (non-alphanumeric)
 - Characters that are not permitted

Two modes are available:

 - Default Mode: Minimum character length and specific number of characters
 - Credit Mode: Credits are granted for each password character and extra credits are applied for certain character classes. Administrators specify a minimum number of classes. Longer passwords are the strongest.

- i. Configuring Device Access: How the device can be accessed as well as security features that decrease susceptibility and malicious activity.
 - Added remote SSH Server

- j. Managing Devices Remotely (DeviceHQ): Updates to DeviceHQ Check-In Settings
 - Single Check-In: Configure device to check-in to DeviceHQ at a specific date and time
 - Repeatable Check-In: Configure device to check-in to DeviceHQ at a specific time daily or on a specific day of the week.

- k. Upgrading Firmware from MultiTech website or DeviceHQ
 - Signed Firmware Validation is automatically used once it is enabled after upgrading from version 5.1 and higher.

I. LoRaWAN

- Spectral scan support with reporting to Lens
- Multicast support for Class B
- Multicast field added to device session:
 - 0: None
 - 1: Class B
 - 2: Class C
- No longer need to set Uplink Counter to 1 for multicast sessions to schedule downlinks
- Session can be modified for managing Multicast sessions
- LoRaWAN 1.0.4 support
 - Join Server nonce counters
 - Includes validation of end-device DevNonce counter if LoRaWAN 1.0.4 support is specified in Device Profile
 - Use AU/US LinkAdrReq sub-band channel mask commands if LoRaWAN 1.0.4 support is specified in Device Profile

m. LoRaWAN FUOTA

- Customers using FUOTA should be advised to upgrade to AEP 5.1.2
- If a customer is using AEP 5.0.x with FUOTA to Dot v3.2.x, then the Dot firmware should be updated to the next release v3.3.x before updating the hardware to AEP 5.1.2
- mPower 5.1.1 compatible Beta firmware for mDot/xDot is available at <https://github.com/MultiTechSystems/Dot-AT-Firmware>
- FUOTA is being updated to be compliant with LoRa Alliance specifications
- FUOTA has been tested with the following implementations
 - ARM mbed (<https://github.com/armmbed/mbed-os-example-lorawan-fuota>)
 - Semtech/Stackforce (<https://github.com/Lora-net/LoRaMac-node>)
 - MultiTech Dots v3.3.x (Release Date TBD)
- The update will break compatibility with MultiTech Dot v3.2.x as issues were found
 - Fragment and Parity indexes started at 0
 - Key Encryption had the encrypt/decrypt operations flipped, decrypt was incorrectly used on the end-device
 - Status messages were incorrect

Bug Fixes (AEP 5.1.2):

Firmware version AEP 5.1.2 includes the following bug fixes.

1. Known Issue: Parity packet index was still using 0, which will break FUOTA for compliant devices
 - Issue exists in MTCAP AEP 5.1.1 and MTCDDT AEP 5.1.1 versions and AEP 5.1.0 BETA versions only
 - AEP 5.1.1 was an intermediate release for select LTE Category 4 (-L4E1) models
 - AEP 5.1.0 BETA was a beta release for select LTE Category 4 (-L4E1) models
 - Issue fixed in MTCAP AEP 5.1.2 and MTCDDT AEP 5.1.2
2. Known Issue: When using a roaming SIM card, cellular PPP issues are experienced
 - Issue exists in MTCAP AEP 5.1.0 and MTCDDT AEP 5.1.0 versions
 - Issue fixed in MTCAP AEP 5.1.2 and MTCDDT AEP 5.1.2

VI. Upgrading Firmware

At any time in the upgrade process, customers can send an email to support@multitech.com or call +763-717-5863.

It is recommended that customers backup their configuration before performing an upgrade.

- If the firmware upgrade fails, or it does not show the login page again, wait an additional 10 minutes.
- Power off and on the hardware and log in using the web interface to check the version.
- If the version does not show the latest, then the upgrade was not successful.
- Try to perform the firmware upgrade again by repeating all the steps.

Instructions:

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 appropriate file:
 - [MTCAP_5.1.2_upgrade-signed.bin](#)
 - [conduit_5.1.2_upgrade-signed.bin](#)
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.

VII. Ordering Part Numbers Impacted

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

Model Name	MTCDT AEP 5.1.2 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-L4E1-246A-EU-GB MTCDT-L4E1-247A-EU-GB MTCDT-LAP3-246A-AU MTCDT-LAT1-246A-US *	MTCDT-LAT1-247A * MTCDT-LAT1-247A-US * MTCDT-LDC3-246A-JP MTCDT-LDC3-247A-JP MTCDT-LSB3-246A-JP MTCDT-LSP3-246A-US MTCDT-LVW2-246A-US * MTCDT-LVW2-247A * MTCDT-LVW2-247A-US *
MultiConnect® Conduit® IoT Programmable Gateways with LoRa Accessory Cards	MTCDT-246A-868-EU-GB MTCDT-247A-868-EU-GB MTCDT-247A-915-US-EU-GB MTCDT-H5-246A-868-EU-GB MTCDT-H5-247A-868-EU-GB MTCDT-H5-247A-915-US MTCDT-L4E1-246A-868-EU-GB MTCDT-L4E1-246A-915-EU-GB-AU MTCDT-L4E1-247A-868-EU-GB	MTCDT-L4E1-247A-915-EU-GB-AU MTCDT-LAP3-246A-915-AU MTCDT-LAP3-247A-915-AU MTCDT-LAT1-246A-915-US * MTCDT-LAT1-247A-915-US * MTCDT-LDC3-246A-923-JP MTCDT-LSB3-246A-923-JP MTCDT-LVW2-246A-915-US * MTCDT-LVW2-247A-915-US *
MultiConnect® Conduit® IP67 Base Stations	MTCDTIP-266A-868 MTCDTIP-266A-868/2 MTCDTIP-266A-915 MTCDTIP-266A-915/2 MTCDTIP-266A-923-JP MTCDTIP-267A-868 MTCDTIP-267A-868/2 MTCDTIP-267A-915 MTCDTIP-267A-915/2 MTCDTIP-L4E1-266A-868 MTCDTIP-L4E1-266A-915 MTCDTIP-L4E1-267A-868	MTCDTIP-LAP3-266A-915 MTCDTIP-LAP3-266A-915/2 MTCDTIP-LAP3-267A-915 MTCDTIP-LAT1-266A-915 * MTCDTIP-LAT1-266A-915/2 * MTCDTIP-LAT1-267A-915 * MTCDTIP-LAT1-267A-915/2 * MTCDTIP-LDC3-266A-923-JP MTCDTIP-LSB3-266A-923-JP MTCDTIP-LVW2-266A-915 * MTCDTIP-LVW2-266A-915/2 * MTCDTIP-LVW2-267A-915 * MTCDTIP-LVW2-267A-915/2 *
MultiConnect® Conduit® IP67 Geolocation Base Station	MTCDTIP-LAT1-270A-915 * MTCDTIP-LAT1-275A-915 *	MTCDTIP-LVW2-270A-915 * MTCDTIP-LVW2-275A-915 *
MultiConnect® Conduit® AP (Access Point)	MTCAP-868-001A MTCAP-915-001A MTCAP-915-041A MTCAP-L4E1-868-001A	MTCAP-LNA3-915-001A MTCAP-LNA3-915-041A MTCAP-LSP3-915-001A MTCAP-LSP3-915-041A

* Products must be individually updated by the customer using information on www.multitech.net/developer/downloads or using DeviceHQ https://www.devicehq.com/sign_in

VIII. 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.

IX. Additional Information

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

World Headquarters – U.S.A.

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EMEA Headquarters – UK

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MultiTech Developer Resources:

www.multitech.net

An open environment where you can ask development related questions and hear back from MultiTech engineering or a member of this community.

Knowledge Base:

<http://www.multitech.com/kb.go>

Immediate access to support information and resolutions for all MultiTech products.

MultiTech Support Portal:

<https://support.multitech.com/support/login.html>

Create an account and submit a support case directly to our technical support team.

MultiTech Website:

www.multitech.com