MPLAB® Code Configurator MQTT Library Release Notes

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1. What is MCC MQTT Library

The MQTT Library v2.0.1 available in Microchip's MPLABX Code Configurator (MCC) allows for quick and easy C code generation of the latest stack according to the user's requirements. The library module uses a Graphic User Interface (GUI) presented by MCC within MPLABX which allows for selection of desired configuration, and custom configurations of the protocol. Based upon device supported within MCC, customized C code is generated within the MPLABX project, in a folder named "MCC Generated Files".

2. System Requirements

- MPLAB® X IDE v5.40 or later
- MPLAB® Code Configurator v4.0.0 or later
- MCC Core v5.0.0 or later (packaged with MCC)
- Libraries:
  - MCC Foundation Services v0.2.2 or later
  - WINC15XX Library v1.1.1 or later
  - TCP/IP Lite Stack v2.2.13
  - AVR8 MCU Library v2.4.0 or later
  - PIC10 / PIC12 / PIC16 / PIC18 MCU Library v1.81.5 or later
  - PIC24 / dsPIC33 / PIC32MM MCU Library v1.169.0 or later
- Compilers
  - For PIC 8-bit devices, XC8 compiler v2.20 or later
  - For PIC 16-bit devices, XC16 compiler v1.41 or later
  - For AVR devices, AVR GCC compiler v5.4.0 or later

3. Hardware

MQTT Library is a software stack, which uses underlying libraries (TCP/IPLite, WINC and Foundation Services). The stack itself doesn't have any specific hardware dependency. The stack is tested against following hardware plaforms:

- AVR-IoT WG Development Board (ATmega4808) + WINC Stack
- AVR-IoT WA Development Board (ATmega4808) + WINC Stack
- PIC18F26K42 with TCP/IP Lite Stack using ENC28J60
- PIC-IoT WG Development Board (PIC24FJ128GA705) + WINC Stack

4. Installing MPLAB® Code Configurator and the MQTT Library

To install the MPLAB® Code Configurator Plugin:

1. In the MPLAB® X IDE click on **Tools** → **Plugin**
2. Click on **Available Plugins** tab
3. Check the box for the **MPLAB® Code Configurator**, and click on Install
4. Close and re-launch MPLABX after installation

To install the MQTT Library:

1. Open the MPLAB Code Configurator webpage
2. Scroll to the bottom of the page and select the **Current Downloads** tabs
3. Download the MQTT library (**mqttLibrary-2.0.1.mc3lib**)
4. In the MPLAB® X IDE click on **Tools** → **Options**
5. Click on **Plugins** tab
6. Click on **Install Library**
7. Browse to the location where you saved the **mqttLibrary-2.0.1.mc3lib**, select and click Open to install the library

5. Running the Example

1. Create a new project in MPLAB® X IDE (for ex: ATmega4808)
2. Open MCC by clicking **Tools**→ **Embedded**→ **MPLAB® Code Configurator** or **click on** the MCC icon 
3. In the **Device Resources** panel under Libraries dropdown select MQTT
4. Check below for the **Notifications [MCC]** tab.
5. Resolve the notifications step by step. In GUI select:
   - Scheduler Service: **Foundation Services Timeout Driver**
   - Transport Service: **Wireless [WINC15XX]**
   - **Check** the Generate Example box
6. Configure dependent Libraries. For example
   - If Wireless [WINC15XX] library is selected configure: **WINC Library ->SSID, Authentication, Password**
   - If Wired TCPIPLite library is selected configure **TCP/IP Lite Library**
7. Configure MQTT Library GUI. For example:
   - Host Address: **mqtt broker address**
   - Publish Topic: **publish topic**
8. The tooltips  provide additional information for each MQTT UI option
9. Click Generate button
10. Build the firmware and program the hardware.
11. Connect to MQTT Server to observe the data being published by the hardware which acts as the MQTT Client.
12. Connect another MQTT Client on the same broker and subscribe to a topic to receive the messages published over that topic.

6. What's New?

v2.0.1

- Compatibility update with MCC Plugin v4.0.0 and MCC Core v5.0.0

v2.0.0

- New design of the interface for MQTT publish reception handler
- Added tooltips to the MQTT GUI

7. Repairs and Enhancements

v2.0.1

- Updated the library for MCC Plugin v4.0.0 compatibility

v2.0.0

- Fixed the bug related to the remainingLength field when processing a publish packet received over the subscribed topic
- Removed the unnecessary QoS level check when processing the messages received over the subscribed topic
- Removed unused variables from private static MQTT library functions
- Rearrangement of MCC GUI fields

8. Known Issues

- When TCP/IP Lite library gets unloaded, an exception is thrown in MPLABX IDE.
- QoS level 2 publish and subscribe messages are not supported

9. FAQ

For frequently asked questions, please refer to the FAQ post on the MCC Forum

10. Supported Devices and Families

MQTT Library is a software stack, which uses underlying layers (TCP/IP, WINC and Foundation Services). The stack supports 8 bit AVR and 8/16 bit PIC devices.

Following are the memory requirements depending on the transport layer used for MQTT communication:

Table 10-1. MQTT Library Memory Requirements (using XC8 optimization level 1)

Memory	MQTT using WINC15XX as the Transport Layer	MQTT using TCP/IP Lite as the Transport Layer
Flash	19 KB	54 KB
RAM	1300 bytes	2300 bytes

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