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# ModusToolbox® AnyCloud 1.0 Release Notes

Production Release

## Overview

With the ModusToolbox AnyCloud collection of software libraries, you can rapidly develop Wi-Fi and Bluetooth applications on PSoC 6 MCU devices. AnyCloud is based on the industry-standard lwIP TCP/IP stack and Mbed TLS network security. It provides the ideal solution for applications that do not use commercial cloud management systems such as Arm Pelion or Amazon AWS IoT Core. AnyCloud enables development with custom or alternative third-party cloud management approaches with a fully open, customizable, and extensible source code distribution.

This document describes all the libraries and versions included with AnyCloud 1.0.

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## What's Included

This release of AnyCloud includes:

### ***Wi-Fi Middleware Core (wifi-mw-core 2.0.0)***

This is the core set of libraries for Wi-Fi applications. It bundles the FreeRTOS kernel (plus the abstraction-rtos), lwIP TCP/IP stack, Mbed TLS for security, Cypress Wi-Fi Host Driver (WHD), configuration files and associated code into a single unit that provides the essential Wi-Fi functionality.

ModusToolbox supports updating individual library versions within the wifi-mw-core bundle.

### ***Light-Weight TCP/IP Stack (lwIP Stable 2.1.2)***

lwIP is a small independent open source implementation of the TCP/IP protocol suite. The focus of the lwIP TCP/IP implementation is to reduce resource usage while still having a full-scale TCP. See <https://savannah.nongnu.org/projects/lwip/> for details.

The lwIP library is hosted on an external GitHub repository. Using this library in a project will cause lwIP to be downloaded onto your computer. It is your responsibility to understand and accept the lwIP license.

### ***WHD (wifi-host-driver 1.90.2)***

WHD is an independent, embedded Wi-Fi Host Driver that provides a set of APIs to interact with Cypress WLAN chips.

### ***Arm Mbed TLS (mbedtls Stable 2.16.6)***

Arm mbedtls is an implementation of the TLS and SSL protocols and the respective cryptographic algorithms. mbedtls is an open source TLS/SSL library which has cryptographic capabilities. Using this library in a project will cause mbedtls to be downloaded on your computer. It is your responsibility to understand and accept the mbedtls license and regional use restrictions (including abiding by all applicable export control laws). See <https://tls.mbed.org/> for details.

### ***FreeRTOS (freertos 10.0.1)***

This is a FreeRTOS kernel, which is distributed as standard C source files with configuration header file, for use with the PSoC 6 MCU.

### ***RTOS Abstraction Library (abstraction-rtos 1.2.1)***

The RTOS Abstraction Library provides a generic API that allows Cypress middleware to be written in an RTOS agnostic manner. It contains implementations of the Abstraction Layer for FreeRTOS, CMSIS RTOS, and ThreadX.

### ***MQTT (1.0.0)***

The MQTT client library that can work with the family of Cypress connectivity chips. This library uses the AWS IoT Device SDK MQTT client library and implements the glue layer that is required for that library to work with Cypress connectivity platforms.

### ***Over-the-Air (OTA 1.2.0)***

OTA is simple mechanism for updating your device's firmware over Wi-Fi. The library uses MQTT and TLS to securely connect to an MQTT Broker and download a new application. Upon device reset, the MCUBOOT bootloader copies the new version of the application over to the Primary slot (slot 0) and runs the application. This release supports OTA via the MQTT protocol.

### ***Secure Sockets (secure-sockets 1.0.0)***

Secure sockets library provides network abstraction APIs for underlying network and security library. Secure sockets library eases application development by exposing a socket like interface for both non-secure (LwIP) and secure (mbedTLS) TCP connections. The APIs are thread safe and enable both client and server mode operations. Secure sockets provide both synchronous and asynchronous APIs for data transfer. Additionally, socket options are supported to configure send/receive timeout, callback for asynchronous mode, TCP keep-alive parameters, certificates/key and TLS extensions.

### ***Wi-Fi Connection Manager (wifi-connection-manager 1.0.0)***

Wi-Fi Connection manager (WCM) provides a set of APIs that are useful to establish and monitor Wi-Fi connection on Cypress platforms that support Wi-Fi connectivity. WCM library APIs are easy to use, and the library also provides additional features such Wi-Fi Protected Setup (WPS) and connection monitoring.

### ***Low Power Assistant Middleware (LPA 2.0.0)***

The LPA middleware provides an easy way to make the low-power features of Cypress devices available to developers in the form of a portable configuration layer.

### ***Bluetooth FreeRTOS (bluetooth-freertos 1.1.0)***

Cypress WICED BT/BLE host stack solution includes bluetooth stack library, bluetooth controller firmware and platform/os porting layer.

### ***Bluetooth Stack (btstack 1.3.0)***

The BTSTACK is Cypress's Bluetooth Host Protocol Stack implementation. The stack is optimized to work on Cypress Bluetooth controllers. The BTSTACK supports Bluetooth BR/EDR and BLE core protocols.

## **Known Issues/Limitations**

This section lists the known issues/limitations of this release:

### ***WICED BT Stack Qualification Issue***

Problem	Workaround
Test case GAP/CONN/CPUP/BV-08-C fails when running the GAP conformance test.	There are no workarounds for this issue. However, there is no functional impact, and applications are expected to work as designed.  This will be addressed in the next release of the bluetooth-freertos library.

## GCC newlib Memory Leaks

Problem	Workaround
The implementation of newlib from GCC will leak ~1.4 kb of Heap memory per task/thread that uses stdio functions (such as, printf, snprintf, etc.).	<p>By default, no AnyCloud libraries suffer this issue unless they report an error. If you turn on information or warning messages in our libraries, then you can be exposed to this issue. This is only recommended for debugging purposes.</p> <p>For your own libraries, avoid using stdio functions in your tasks/threads. Especially avoid this when you have a design for a task type that is continually created and destroyed.</p>

## More Information

Refer to the following links for more information about AnyCloud:

- [AnyCloud Community Webpage](#)
- [AnyCloud Code Examples on GitHub](#)

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