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An OS to build, deploy and securely manage billions of devices

Latest News:

Apache Mynewt 1.10.0, Apache NimBLE 1.5.0 (/download) released (May 6, 2022)

Introduction

Welcome to Apache Mynewt

Apache Mynewt is an operating system that makes it easy to develop applications for microcontroller environments where power and cost are driving factors. Examples of these devices are connected locks, lights, and wearables.

Microcontroller environments have a number of characteristics that makes the operating system requirements for them unique:

- Low memory footprint: memory on these systems range from 8-16KB (on the low end) to 16MB (on the high end).
- Reduced code size: code often runs out of flash, and total available code size ranges from 64-128KB to 16-32MB.
- Low processing speed: processor speeds vary from 10-12MHz to 160-200MHz.
- Low power operation: devices operate in mostly sleeping mode, in order to conserve battery power and maximize power usage.

As more and more devices get connected, these interconnected devices perform complex tasks. To perform these tasks, you need low-level operational functionality built into the operating system. Typically, connected devices built with these microcontrollers perform a myriad of functions:

- Networking Stacks: Bluetooth Low Energy and Thread
- Peripherals: PWM to drive motors, ADCs to measure sensor data, and RTCs to keep time.
- Scheduled Processing: actions must happen on a calendared or periodic basis.

Apache Mynewt accomplishes all the above easily, by providing a complete operating system for constrained devices, including:

- A fully open-source Bluetooth Low Energy stack with both Host and Controller implementations.
- A pre-emptive, multi-tasking Real Time operating system kernel
- A Hardware Abstraction Layer (HAL) that abstracts the MCU’s peripheral functions, allowing developers to easily write cross-platform code.

Newt

In order to provide all this functionality, and operate in an extremely low resource environment, Mynewt provides a very fine-grained source package management and build system tool, called *newt*.

You can install *newt* for Mac OS (newt/install/newt_mac.html), Linux (newt/install/newt_linux.html), or Windows (newt/install/newt_windows.html).

Newt Manager

In order to enable a user to communicate with remote instances of Mynewt OS and query, configure, and operate them, Mynewt provides an application tool called Newt Manager or *newtmgr*.

You can install *newtmgr* for Mac OS (newtmgr/install/install_mac.html), Linux (newtmgr/install/install_linux.html), or Windows (newtmgr/install/install_windows.html).

Build your first Mynewt App with Newt

With the introductions out of the way, now is a good time to get set up and started (get_started/index.html) with your first Mynewt application.

Happy Hacking!

Next: Setup & Get Started (get_started/index.html)