Technical Article

Develop Cloud-powered Prototypes with Mongoose OS and Google Cloud IoT Core

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Other Parts Discussed in Post: CC3220SF

The open-source Mongoose operating system (OS) from Cesanta enables embedded developers to move quickly from an idea to a prototype and smoothly transition to production. It helps accelerate cloud-powered Internet of Things (IoT) prototype development of connected devices and connects securely to Google Cloud IoT Core.

Out of the box, the Mongoose OS starter kit includes:

- Over-the-air updates (OTA) and remote management.
- A remote procedure call (RPC) infrastructure for full remote-control capability.
- Built-in flash encryption and cryptography chip support.
- Arm® mbed TLS-optimization for a small memory footprint.
- The ability to develop in C or JavaScript (with an embedded JavaScript engine – mJS).
- Ready-to-go apps.

Google Cloud IoT Core enables the connection and central management of millions of globally dispersed IoT devices. When used as part of the broader Google Cloud IoT solution, the Mongoose OS can ingest all IoT data and connect to Google Cloud's state-of-the-art analytics services, including Cloud Pub/Sub, Dataflow, Bigtable, BigQuery and Machine Learning.

We're proud to announce that the Mongoose OS starter kit is now based on TI's SimpleLink™ CC3220SF wireless microcontroller (MCU) LaunchPad™ development kit. The SimpleLink CC3220SF is a single-chip wireless MCU with 1MB of execute-in-place flash and 256KB of RAM. The MCU has two physically separate on-chip execution environments: one running on the user's application-dedicated host Arm® Cortex®-M4 MCU, and a second running on the network processor Arm Cortex-M3 MCU. The network processor takes care of all Wi-Fi® and internet logical layers, running advanced security features while offloading the host MCU from such tasks, and enabling a more secure connection from the chip to the cloud with a single device.

IoT software development kits (SDKs) for connecting embedded devices to cloud platforms usually contain a collection of source files and examples for sending and receiving data to the cloud over Message Queuing Telemetry Transport (MQTT). But this requires that you spend significant time and effort creating a prototype and developing all of the basic infrastructure functionality yourself. Because the Mongoose OS-based SimpleLink CC3220 starter kit and Google Cloud IoT Core implement the required infrastructure and components, you can have a prototype ready and send data to the Google IoT cloud in a matter of minutes.

The starter kit comes with step-by-step tutorials that include:

- Cloud-side setup – how to configure the Google Cloud IoT Core.
- Device setup – how to set up and flash your device with Mongoose OS in five minutes.
- Provision to Google Cloud IoT Core – how to provision the board and connect it to the Google Cloud IoT Core.

- IoT button example – a tutorial on how to set an internet button and send a message to Google Cloud IoT Core with that button.
- Remote-controlled light-emitting diode (LED) example – how to set and control LEDs remotely from Google Cloud IoT Core.

To start your project, simply order the SimpleLink CC3220SF wireless MCU LaunchPad development kit and follow the instructions.

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