

Open Source solutions for connected applications tomorrow

By Andrew Mitchell, Sierra Wireless

This article introduces Legato, a new generation of M2M software - an open-source embedded platform designed to simplify the development of M2M applications. It is built on a fully-tested Linux distribution, with a tightly integrated application framework and M2M toolset.

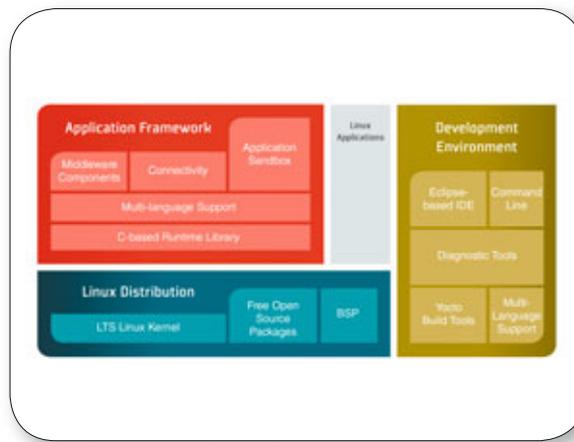


Figure 1. Legato is an open source embedded platform built on Linux, designed to simplify M2M application development.

■ The explosive growth in the Internet of Everything holds enormous potential. Modern machine-to-machine (M2M) technology can provide more processing power and intelligence at the edge than ever before, and support more complex and powerful connected applications. But the M2M marketplace presents a number of hurdles for developers seeking to capitalize on this potential. Barriers include:

No standardized, M2M-ready operation system (OS). Linux is increasingly becoming the OS of choice for M2M because it is open-source, easily customized and widely used among developers. But standard Linux is not designed for the unique requirements of embedded applications. Adapting it can be enormously time-consuming and expensive because you have to assemble all the necessary libraries, development tools and APIs, and then integrate with specific vendor hardware. Companies can spend many months and hundreds of thousands of dollars just to create a functional Linux-based application environment before they even begin testing and validation.

Poor scalability. Taking an M2M application from idea to proof-of-concept can be relatively easy. The problems begin once a prototype is approved for mass production. It can literally take years to evolve a proof-of-con-

cept to a working solution that complies with industry-specific standards and protocols, mobile network operator (MNO) specifications, and regulatory requirements.

Limited portability. M2M applications are typically tied to the proprietary software environment of a vendor. That means developers usually have to repeat the entire integration, testing, and validation process for each hardware platform deployed. If an application uses one chipset in North America, another in Europe, and another in China, developers have to build essentially custom solutions from scratch for each market.

Impeded innovation. The lack of a standardized, universal software platform is in many ways preventing the M2M industry from evolving as quickly as it should. Using proprietary, hardware-specific solutions makes it very difficult for anyone, other than the people building the device, to create software that runs on it. It also means that developers have limited ability to port their expertise from one project or platform to another, which makes it more expensive for OEMs and other companies building connected applications to bring in needed developer expertise. With 2 billion M2M connections projected worldwide by 2018 - representing nearly 20 percent of all mobile-connected devices - the time has

come for a standardized M2M platform that can support universal device-to-cloud solutions. The smartphone industry saw explosive growth only when a standardized mobile operating environment emerged that let people develop applications independently of the underlying hardware. It's time for that industry evolution in M2M.

Sierra Wireless is enabling this new generation of M2M software with Legato - an open-source embedded platform designed to simplify the development of M2M applications. It is built on a fully-tested Linux distribution, with a tightly integrated application framework and M2M toolset that provide everything developers need to quickly build, deploy and connect their embedded applications. Developers can ramp up applications from proof-of-concept to mass market deployment with more flexibility, using this fully customizable open-source platform that can support any vendor hardware, any cloud management platform, and any network or peripheral. How does Legato change the way developers create and deploy M2M applications? An automotive supplier building a government-mandated eCall emergency response system can use the same solution to run a third-party pay-as-you-drive insurance application - completely securely and on the same platform. An energy industry OEM can use

Legato development tools and included APIs to build a smart meter that connects to a customer-facing energy application over a home network. In both cases, developers benefit from the ability to use pre-existing, pre-validated building blocks and industry-specific protocols to build their applications. They also can securely manage and update applications over the air with pre-integrated cloud connectivity. In both energy and automotive, where solutions need long operational lifetimes, developers benefit by building applications on an open-source Linux kernel that will be supported by the industry for many years.

M2M has come a long way. But to support the explosive growth analysts anticipate over the next several years, the industry needs to evolve faster. As enterprises embrace more advanced M2M applications, developers need tools to simplify the process of developing embedded applications, and make them easier to design, deploy, and port. Legato provides these critical capabilities in a standardized, open-source platform right now. As a pioneer in M2M software development and creator of the Open AT application framework, Sierra Wireless is leading this industry transformation. With Legato, the company provides an

end-to-end solution to accelerate the development of connected applications, encompassing powerful multicore hardware with ARM processors, pre-tested and validated software, and a cloud platform capable of managing millions of devices over the air. By building these capabilities into a standards-based, open-source platform, Legato gives developers the flexibility to build embedded applications how they choose, independent of the underlying hardware. Developers can turn their skills and energy away from tedious integration tasks, and toward creating innovative new applications. ■