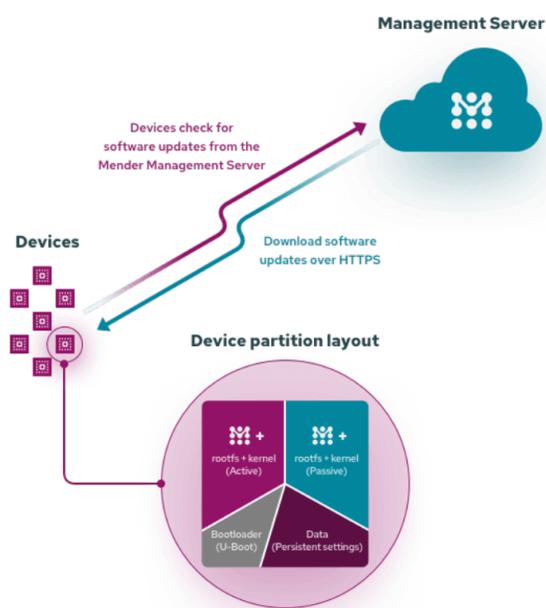**MENDER**
OPEN SOURCE

Robust and secure, end-to-end over-the-air (OTA) software update manager

Overview

Growing connectivity of embedded systems is causing justified apprehension in bringing new devices online. Many malicious attackers specifically scan for recently published security vulnerabilities with the intent of seeking outdated and vulnerable systems. The number of compromised devices is in the millions and growing. Research shows the probability of a vulnerability being exploited reaches over 90%. If the vulnerability is remediated within 5-10 days after discovery, that number drops to under 10%. Building a homegrown updater seems easy at first glance, but many custom updaters are built without security in mind. They also lack a robust update process where the devices are at risk of bricking if power failure or poor network connectivity occurs during and update. Reallocating development time and effort to your core product will accelerate your goals.

Open Source Offering

Mender is a free open source end-to-end over-the-air software update manager with a client-server architecture. Whether the need is to install the latest security patch, delight customers with new features, or fix bugs - every company must be able to deploy over-the-air (OTA) software updates to their fleet of devices.

Mender supports two methods for updating a connected device: system updates and applications updates. In system updates, the entire disk partition on a device is updated and provide the benefit of a secure and robust updates at the cost of file size, bandwidth, speed and memory footprint. In application updates only certain parts of software on the disk is updated which enable targeted application-level updates, which can be just a few kilobytes in size for much lower bandwidth usage, faster updates, and more frequent deployments.

Standard Features

- Out-of-the-box support for updates such as applications, packages, containers, files, and proxy deployment of attached peripherals

- Support for Yocto Debian, Ubuntu and Raspbian OSes.

- Dual A/B root filesystem updates with rootfs compression to save bandwidth

- Scripting support for custom actions (e.g. checks after the update is installed)

- eMMC, SD card, and raw NAND/NOR flash support

- Standalone deployments (no server)

- One mechanism to update your applications and kernel

- Device groupings for controlled rollouts

Security and Robustness

- Secure TLS client/server communication

- End-to-end signing and verification of image artifacts for authenticity and integrity

- Full image atomic updates, avoiding unmanageability of a package-based complications from partial updates

- Robust and failsafe support with a dual A/B partition setup if an update fails for any reason

- Brick-free updates with atomic rollback

Operating System & Board Support

Mender currently supports Linux-based embedded devices with a fast-growing number of boards and operating systems. Mender Hub is the only online open source community dedicated to enabling OTA software updates on any hardware platform and operating system. Mender's consulting services has deep expertise for all size projects, specializing in the rapid implementation of OTA update management. Mender also provides consulting for more generic embedded devices, including system design architecture and recommendations.

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