



Propelling the automotive industry forward.

Mender for Automotive

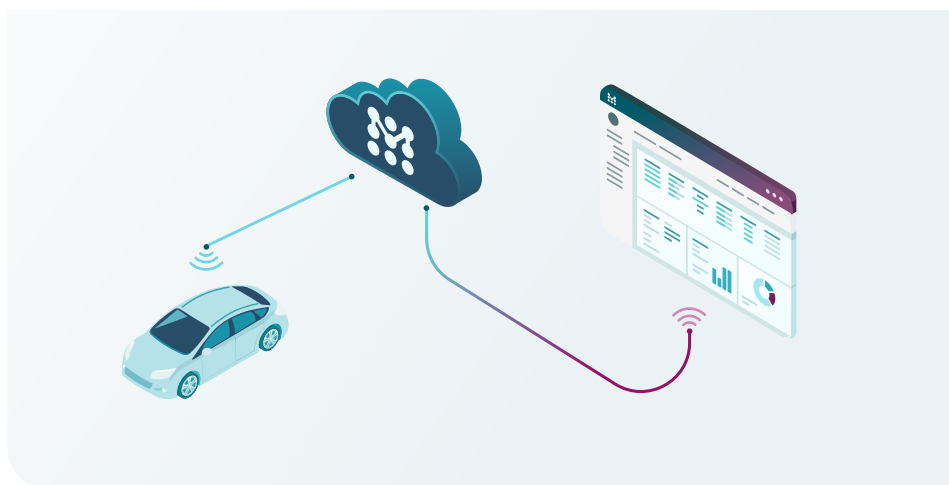
Robust, secure, and customizable over-the-air updates

Key Benefits

- ✓ **Focus on innovation.** Leverage a purpose-built OTA infrastructure instead of wasting resources reinventing the wheel.
- ✓ **Gain immediate value.** Enjoy our easy, out-of-the-box solution – sign up, install and start updating in minutes.
- ✓ **Stay in control.** Avoid vendor lock-in with an open-source client-server solution.
- ✓ **Ensure compliance.** Facilitate regulatory compliance with ISO/SAE 21434, UNECE R155, UNECE R156, AUTOSAR, and more.
- ✓ **Update effortlessly.** Manage and update any TCU, MCU, or ECU with customizable flashing modules.
- ✓ **Save network costs.** Reduce data transfer size with delta update support.
- ✓ **Rely on the experts.** Trust the leader in over-the-air with millions of devices already managed.

2.5B

By 2030, the connected car space is expected to grow to **2.5 billion connections.**



THE CHALLENGE

Today, the automotive industry faces multiple disruptions, including electrification, self-driving, and autonomous technologies.

Traditionally focused on physical products, the auto industry now exists in a software-centered world competing with software-defined vehicles. To not just survive but thrive, automotive vendors and their suppliers must differentiate. Differentiation requires innovation. Innovation in a software-centered world requires efficient, robust, and secure over-the-air (OTA) updates. Without it, innovation and, thereby, competitiveness, fail to progress.

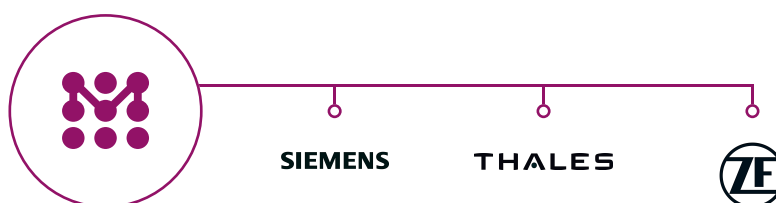
While critical, OTA infrastructure is not a product differentiator. **Yet, the industry still relies on old, legacy approaches for OTA software update management.** Focusing resources on building bespoke OTA solutions instead of innovating their core product line is both time- and resource-intensive. Not only is there a tangible cost to homegrown OTA solutions, but there's also an even higher opportunity cost for the business.

Similarly, the automotive supply chain often offers its own proprietary OTA solutions. However, vendor-specific solutions inadequately account for the heterogeneous and diverse ecosystem of the automotive industry. Vendor lock-in of core infrastructure like OTA updates is a critical concern for organizations.

The automotive industry needs a robust, secure, customizable, and vendor-agnostic OTA solution to innovate, differentiate, and truly compete in today's software-centered marketplace.

THE SOLUTION

Mender offers robust, secure, and customizable OTA updates for field devices with its open-source client and server solution.



Powering OTA updates for field devices for nearly a decade, Mender boasts a proven track record with Fortune 1000 clients, including Siemens, Thales, and ZF Group.

With Mender, quickly integrate the market-leading open-source OTA update management solution into connected vehicle software platforms – without the risk of lock-in or instability.

**Deliver secure, robust, and fail-safe remote updates.**

Optimize resource usage and mitigate risks with delta, automated, phased, and dynamic grouping deployments. Ensure your devices are never bricked and inaccessible with a fail-safe design.



Monitor your fleet in real time. Identify disruptions with system-wide log monitoring, automated alerts, and email notifications. Manage uptime with real-time visibility of services and applications across your fleet.



Configure devices and applications with ease. Define attributes, customize scripts, and track configuration changes. Manage and secure configuration changes with role-based access control and configuration history and change log audits.



Troubleshoot instantly, and resolve quickly. Diagnose and remediate issues immediately with real-time device access, file transfers, and device testing. Ensure security with complete remote terminal session replays, connection logs, and access control.

MENDER FEATURES:

Automotive-grade Capabilities

Robust A/B Updates. Eliminate expensive and damaging recalls due to update inconsistency. Instantaneous deployment, automatic rollback upon update failure, and phased, gradual rollouts ensure update success.

Full On-Premise Support. Retain complete control and flexibility to migrate as your business evolves. Mender is deployed quickly as a SaaS-hosted service or an on-premise solution.

Delta, Application, & Configuration Updates. Improve operations and slash resource requirements. Mender's delta updates and targeted application and configuration updates reduce network traffic and device downtime. Manage updates from the whole car to individual TCUs, MCUs, or ECUs, or entire fleet management (one vehicle to multiple).

Arbitrary Pre- & Post-Install Actions. Ensure that safety-critical updates are never installed while driving, and guarantee that vehicles have enough battery capacity to successfully complete the software update by encoding arbitrary validation conditions in update packages.

Extensive Logging, Audits & Reporting. Easily generate reports according to UNECE homologation requirements with an export of complete vehicle hardware identifiers and software bill-of-materials. Audit key security events like OTA update deployments, including who triggered updates and when.

Cryptographic Integrity Verification. Ensure that only authorized, integral binaries are installed on target systems with secure TLS communication between vehicle and server, and cryptographic verification of binary signatures.

Highest Standards of Secure Software Development. Enhance security and gain confidence with a trusted, third-party audited solution that ensures no critical vulnerabilities exist. Supporting clients with ongoing cybersecurity lifecycle management processes over the lifetime of every deployment, Mender also offers cybersecurity threat modeling and risk assessments for each OTA integration.

Regulatory Compliance. Easily comply with the latest regulations (UNECE R155/R156) and align to industry standards (ISO/SAE 21434).



Reduce network traffic by **up to 90%** with Mender delta updates.



Mender offers robust, secure, and customizable over-the-air (OTA) software updates for smart devices. Powering OTA software updates for more than a million devices worldwide over nearly a decade, Mender boasts a proven track record with Fortune 1000 clients, including Siemens, Thales, and ZF Group.

Learn more about OTA software update management.

Mender is developed and maintained by Northern.tech. Founded in 2008, Northern.tech is the leader in device lifecycle management with a mission to secure the world's connected devices.



Learn more about Mender
for your vehicle platform



Learn more about
Northern.tech for your
device security needs