



Image credit: Northvolt

#### KEY BENEFITS

- Robust and secure updates for operating systems of IoT gateways
- Devices will not “brick” or fail in the event of power failure
- Saving on bandwidth by being able to deliver partial updates
- Supports code-signed, offline updates
- Secure, remote access to the device shell and logs

#### WHY MENDER

- Most robust and secure way to update operating systems of IoT gateways
- A/B partition design for update rollback
- Groups to ensure that the right devices get the right updates
- Responsiveness of Mender support team.

“Mender’s way of doing OTA software updates by having a separate A and B partition means we can do “brick free” upgrades of software to IoT devices both in the field with battery systems and in factories where the battery cells and battery systems are manufactured.”

Andreas Björshammar,

Platform Manager, Northvolt



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## Company Biography

In 2017, Northvolt announced a bold and simple plan: to enable the future of energy by developing the world’s greenest battery cell and establishing a European supply of batteries. Northvolt’s mission is to build the greenest battery in the world with a minimal carbon footprint and the highest ambitions for recycling to enable the European transition to renewable energy. Northvolt’s vision is to accelerate the transition to a decarbonized future, Northvolt is supplying sustainable, high-quality battery cells and systems by building Europe’s largest lithium-ion battery factory.

## Challenge

Northvolt builds battery cells and battery systems. Battery systems are modules that you put into heavy machinery, or on the grid as two examples. Northvolt relies heavily on cloud technology but none of the public cloud providers have a sufficiently good way of managing the operating systems of IoT devices.

## Solution

Mender provides a better way to provide updates to the operating system of IoT devices. The IoT gateway has an operating system that uses the Yocto custom Linux distribution, and software and firmware updates are provisioned to the IoT devices through Mender artefacts. Mender’s way of doing OTA software updates by having a separate A and B partition means that Northvolt can do “brick free” upgrades of software to IoT devices both in the field with battery systems but also in the factories where the battery cells and battery systems are manufactured.

Northvolt uses Mender Enterprise to update the battery systems fleet. Northvolt uses the groups to ensure that the right devices get the right versions, and they rely heavily on the delta updates to ensure that no more data needs to be downloaded to the devices than necessary in sometimes heavily congested or slow networks such as LTE.

Mender also supports offline and code-signed updates and this is important where you may have batteries deployed in remote and hard to reach locations such as old mines without a network access, or where Northvolt’s customers require air-gapped batteries; and thirdly to support a field service when the network access is down for some reason.

The **Remote Terminal** and remote logging features in Mender are also considered useful for being able to remotely inspect IoT devices securely and access the device logs to help with analysing root causes of failures with devices.

## Benefits

Mender provides a robust and secure way to get essential updates to the IoT devices in the field and code-signed offline updates can also be performed by technicians in the field on the battery systems. Mender is open source-based which is important to the Northvolt engineering team and the Enterprise version offers a host of beneficial features including delta updates, groups, and device filtering. The Mender support has also been found to be really responsive by the Northvolt team.

Learn more at [Northvolt](#)

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