WHY INTELLIGENT OTA FIRMWARE UPDATES ARE CRITICAL FOR IOT PRODUCTS

Over the air firmware updates

As IoT platforms have matured, they have embraced a novel way to remotely and reliably update connected devices in the field: over-the-air (OTA) firmware updates.
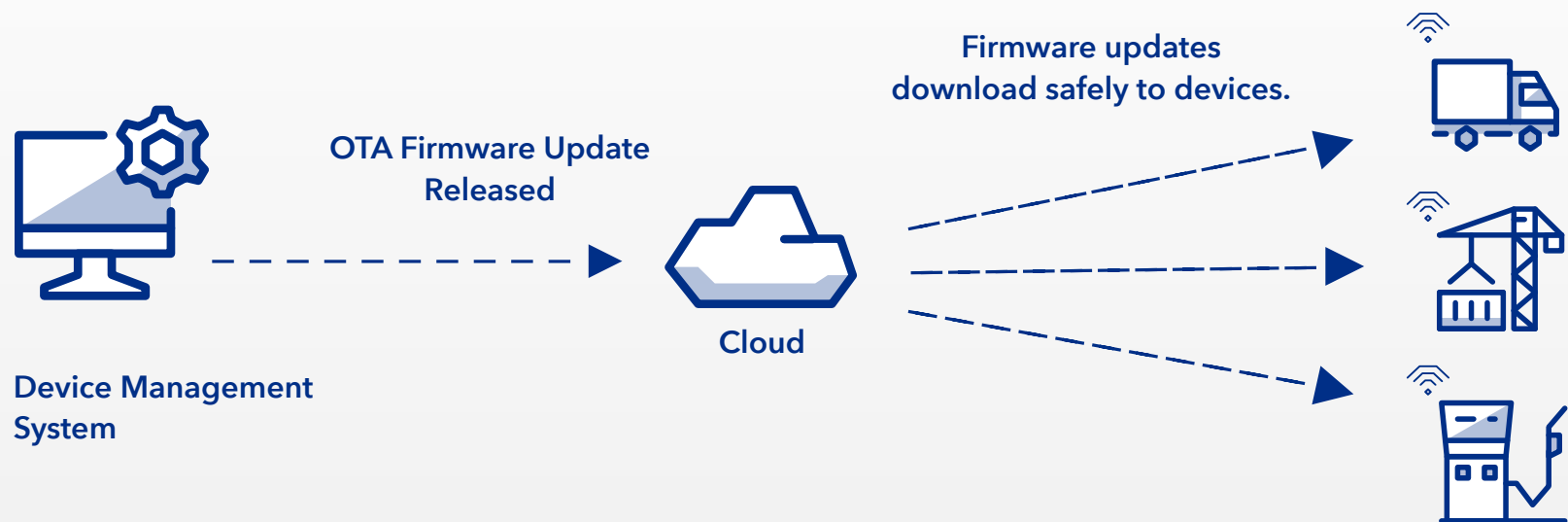
Over-the-air firmware updates refers to the practice of remotely updating the code on an embedded device. The value of incorporating OTA update capabilities into a connected product cannot be understated, and include:

OTA firmware update benefits

- **The ability to create new revenue streams** by adding new features to a product after a device has been deployed in the field.
- **The opportunity to cut costs** by immediately responding to software bugs and security vulnerabilities over the air.
- **The potential to speed up innovation cycles** by giving developers the ability to deploy frequently and reliably.

OTA firmware update challenges

To send out an OTA firmware update, you need a device management system that can interface with microprocessors and local software on IoT devices.

This is complicated to build because few companies have an IoT hardware, software, connectivity, and cloud ecosystem that can process OTA firmware updates and manage remote devices.

OTA firmware update challenges (continued)

Other IoT platforms may market an OTA feature, but in reality only provide a sliver of the functionality required to perform a complete, reliable, and secure update – leaving your team to piece together a bespoke solution that distracts them from spending valuable time on the features that make your IoT product unique.

Many platforms also fail to provide an OTA firmware update that is robust and safe to use. For example, they may not provide an OTA firmware update that is context-aware (i.e. the system could send updates even if the device is performing a critical task). These type of functionality is critical for avoiding device disruption and device bricking.

OTA firmware updates with Particle

At Particle, we have worked hard to integrate our hardware, software, connectivity and cloud infrastructure so you can seamlessly deliver OTA updates to devices at any scale. Some of the benefits of using Particle for OTA firmware updates include:

1. Complete solution

Particle is a complete IoT solution, providing the hardware, software, connectivity, and cloud infrastructure. Because we have all the pieces, no integrations are required, setting up is easy and you can push updates in minutes.

2. Reliable and resilient

Particle OTA firmware updates are built with failsafes to prevent disruption. For example, if an update is interrupted, Particle devices will fail gracefully by automatically reverting to the previous version of working firmware.

3. Secure

All messages between Particle devices and the Device Cloud are always encrypted, including firmware files. This eliminates potential man-in-the-middle attacks that seek to send fraudulent firmware to the device.

4. Scalable

Particle supports single-device and fleet-wide OTA firmware updates, meaning you can send updates to 1 or 1,000 devices without hardware or software scalability issues.

Intelligent firmware releases

An ideal OTA firmware update should be rapid and reliable, while ensuring that devices performing actions are not disrupted. That's why we recently released intelligent firmware releases, a new feature in the Particle Console that allows you to update remote devices immediately with zero disruption.

Time to complete firmware release
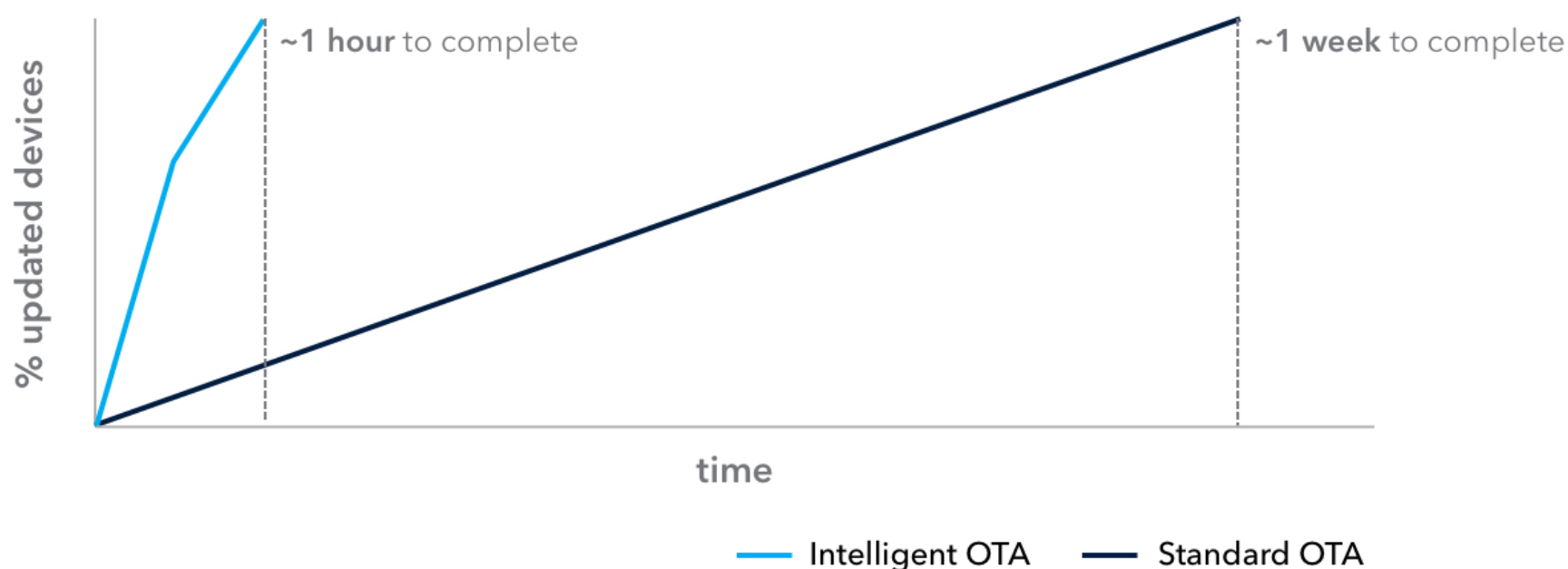
When you send an intelligent firmware release, busy or offline devices will only update after they finish a task or come back online. This built-in context awareness ensures updates are sent immediately based on when the device is ready to receive it. Full deployments can be completed in as little as minutes as a result.

Intelligent firmware release use cases

There are many applications where intelligent firmware releases can help improve device fleet management:

- **Ridesharing management** – Ensure rider safety by sending an intelligent firmware release to immediately eliminate new software bugs and security flaws.
- **Manufacturing compliance** – Maximize machinery and equipment uptime by sending smart updates that only update devices when they are ready to receive it.
- **Consumer product updates** – Build new revenue streams and improve customer satisfaction by sending new features to available remote devices immediately

Getting started with Particle and OTA firmware updates

If you're interested in learning more about OTA firmware updates, you can visit the Particle docs or request a demo by consulting our team of IoT experts today. If you already own a Particle account and have devices in-hand, you can log-in to the Particle Console and use our OTA firmware update features today.

Ready to use OTA firmware?

Visit the Particle Store to get started or log-in to the console if you have devices in-hand.

Want to request a demo?

Request a demo by contacting our team of IoT experts at Particle.io/sales.