How Memfault Accelerated Development and Enhanced Product Quality of Silvertree's Wellness Wearables

> *To this date, integrating Memfault was probably one of the best decisions I've made for this company because it saved us so many headaches and so much time.*
>
> **Konstantin Klitenik**
> Head of Engineering, Silvertree

About Silvertree

Silvertree is on a mission to build a simple tech solution for active older adults that promotes safety, wellness, and connectivity to their loved ones without compromise. Silvertree strives to create products that inspire confidence because they believe having more confidence can lead to a healthier, happier, and more independent lifestyle.

Company Profile

- **Industry:** Healthtech
- **Product:** Wearable Wellness Device
- **Location:** Boston, MA, USA
- **Chipset:** Nordic nRF52
- **Operating System:** Zephyr RTOS
- **Connectivity:** Bluetooth LE / Cellular / WiFi

Benefits

- **Go-to-market acceleration** without spending engineering resources building in-house
- **Streamlined cross-functional processes** for issue detection and resolution
- **Controlled, secure OTA updates** for more feature-rich products

Challenge

When Silvertree's Head of Engineering, Konstantin Klitenik, first joined the Silvertree team, he knew they needed a tool for monitoring the performance of their devices and firmware like those available to the software industry. At Konstantin's previous startup, if devices would crash due to unknown bugs, his team would have no visibility into what caused the faults. His team had to hook their devices to manual debuggers, and he knew that would not be enough for Silvertree's mission-critical devices. For OTA updates, Konstantin had experienced very simple systems at previous startups that were not robust enough and were challenging to build. Silvertree knew that taking the time to build monitoring, debugging, and OTA systems internally would unnecessarily delay the shipment and maintenance of their wearables.

Solution

Silvertree initially turned to Memfault for tracing and other monitoring capabilities because they knew they didn't have the time and resources to build something in-house. They saw that Memfault would provide the device observability needed to fix errors and improve devices over time. After discovering Memfault's OTA update capabilities, Silvertree saw how much more flexible the system was than any OTA system they had built into a previous product. They knew they'd be most successful using Memfault for a complete closed-loop solution with all features in one platform.

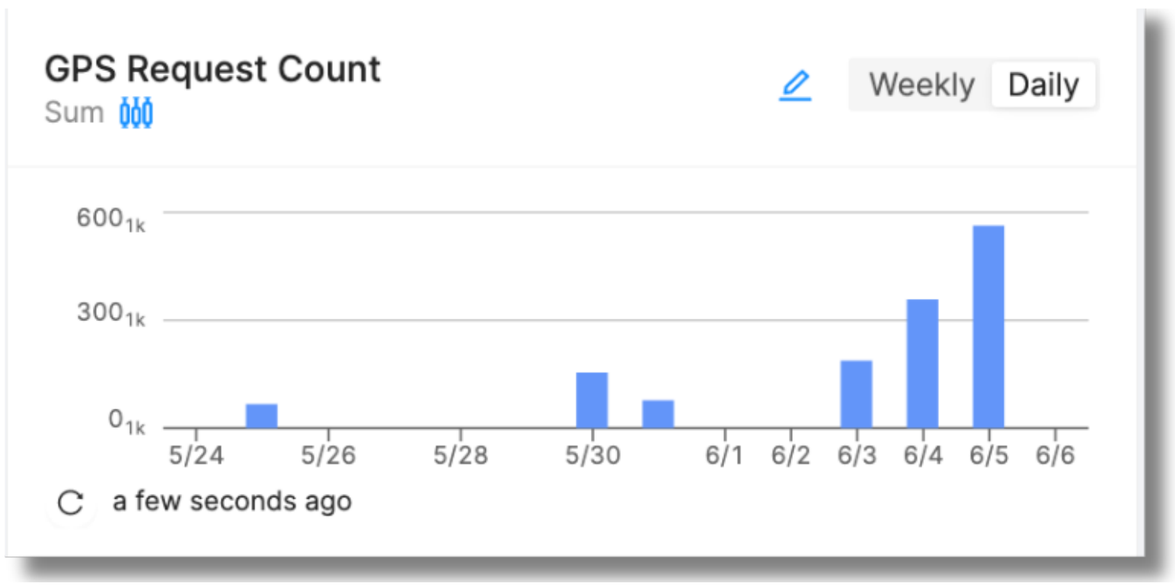
As a Nordic Semiconductor partner, Memfault comes pre-integrated in the Nordic nRF Connect SDK. This integration, coupled with Memfault's deep knowledge of Zephyr, enabled the Silvertree team to easily integrate Memfault into their nRF52 wearables in a few hours rather than spending days or weeks. In addition, the Memfault team was exceptional and Memfault's documentation helped streamline the integration process even more.

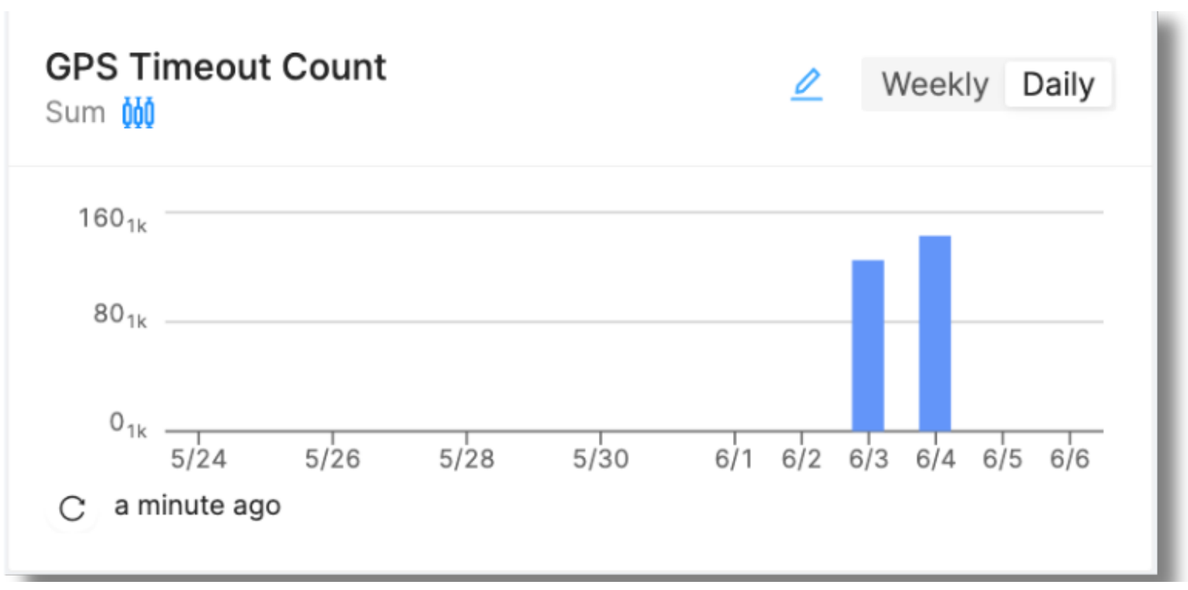
> *"Memfault's OTA functionality is great. They handle all the business logic of whether the device needs to be updated and serves new firmware when necessary.*
>
> ***Konstantin Klitenik***
> *Head of Engineering*

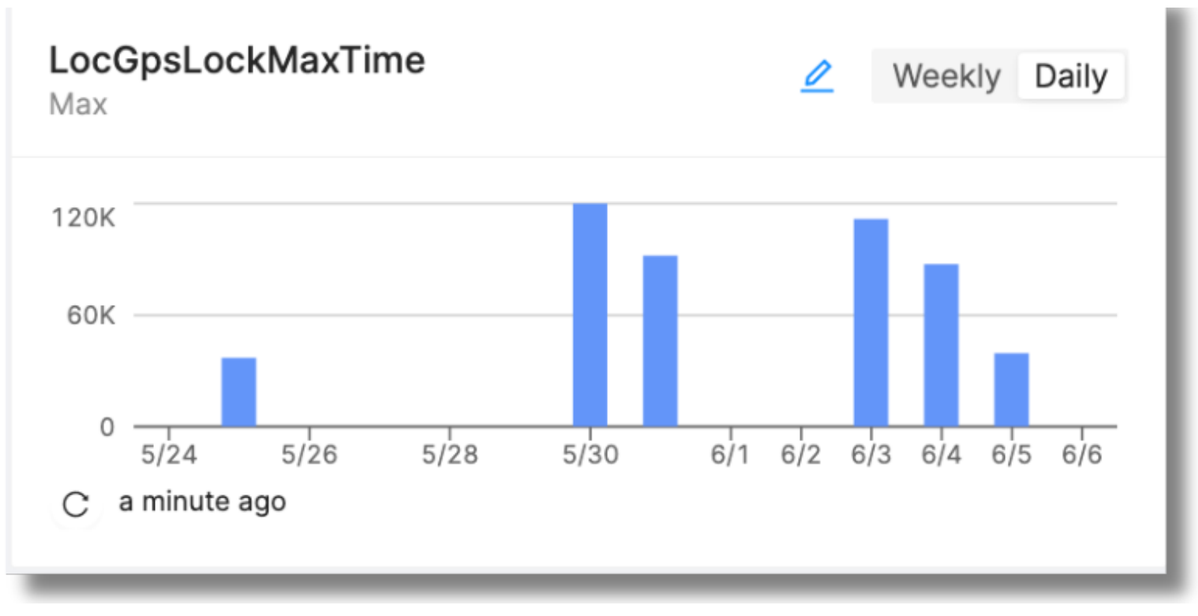
Results

Implementing Memfault early on significantly accelerated the development process for Silvertree, allowing them to get to market faster. With Memfault, Silvertree allocated money and engineering resources to build a more feature-rich wearable instead of internal systems. Memfault empowered the Silvertree team to detect and resolve bugs that would not have been discoverable without the platform in place.

Additionally, monitoring battery level, memory usage, and other metrics enabled Silvertree to make product decisions on key features, like GPS, for the wearables. By tracking GPS on-time across a defined range of devices, the data collected by Memfault revealed that they could reduce GPS on-time by 50%, saving battery but without jeopardising performance.







*Memfault app charts for monitoring GPS lock times Enables Silvertree to answer questions like "What % of fixes lock within 2 minutes?", helping them improve GPS tracking and reduce GPS on-time to save battery life.

"I can't imagine starting another embedded project without integrating Memfault from the beginning.

Adrienne Bolger
Senior Software Engineer

Silvertree dramatically improved cross-functional communication through the use of a single source of truth for device behavior and performance. For example, Silvertree's engineering team started using Memfault to test devices during development and to monitor and debug current firmware issues by filtering by the firmware release versions. If a customer called with an issue, the customer support team would first check Memfault to identify and resolve the issue. Even Silvertree's CEO checked Memfault often whenever he noticed his battery drain or another issue on his own Silvertree Reach wearable.

With Memfault's OTA functionality, Silvertree has shipped more frequent, controlled updates and fixes. Silvertree's GitHub CI automatically uploaded every pull request build to Memfault and automatically created an OTA update. To understand if new releases were working well, the Silvertree team would filter by specific device cohorts (e.g., production vs. non-production firmware) and dive into any issues. Although most of Silvertree's team has access to the platform, Memfault's access control features allow them to set boundaries on who can send OTA updates.

Learn more about **Silvertree** and read their **blog**.

"Without Memfault we would either have no visibility into what's happening on devices or have to build an in-house solution. One thing I really like about Memfault is the ability to get coredump details (including file and line numbers).

Konstantin Klitenik
Head of Engineering