



avassa

# Avassa for Industrial IoT Case Description

# Case Description

In this case, we'll look at a case description for the preceding challenges, key drivers, and accomplished benefits of an implementation of Avassa for Industrial IoT. For this case, we'll study an industrial machinery vendor, developing and selling high-precision industrial machines.

This is a company that has earned a reputation for delivering exceptional quality products, making it a trusted player in an international market. However, while it excels in delivering precision and quality for the industrial machinery equipment, it faced challenges in the areas of remote application version updates, remote application monitoring, and predictive maintenance — making them fall behind their competitors.

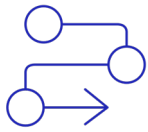


## Challenges

From a technical point of view, the application stack for the industrial machinery was based on a real-time operating system with in-house developed applications. After leaving the factory, there was previously no way to remotely update, monitor or troubleshoot the in-machine applications. The company was forced to on-sites visits whenever they were required to install new software, new versions or to perform maintenance.

The application primarily consists of a data flow to analyze machinery sensor data. There is also a real-time controller for performing the industrial machinery tasks. The applications were all developed in C and Python.

The company initiated a project to address the following challenges:



**Customers was asking for faster feature updates.** Some customers also had custom tooling connected to the machine and needed special features for that, this was previously a costly process.



**The machines are part of a complex process at the end-customers locations.** Before, there were no way to connect remotely, monitor, and troubleshoot incidents at the end-customer locations. This both gave a bad impression and reputation, as well as costly onsite visits.



**Connecting the machines to internet and corporate networks exposes them to numerous security threats.** Security aspects must be seriously addressed from day one.



**Inability to wait any longer, the containerized revolution is happening and it's time to get aboard.** The internal software organisation are pressing the leadership to move to modern software standards and retire the proprietary realtime OS.

But the company needed a more modern platform based on modern software standards. You guessed it: Linux and containers. This would give them a much faster development cycle, make it easier for them to attract relevant people and also reduce the total cost-of-ownership of the software stack.



## Drivers for implementing Avassa for Industrial IoT

The drivers behind implementing Avassa for Industrial IoT circles around the need to efficiently, easily and securely manage the software at end-customer locations.

- **Reduce the number of on-site visits:** Remote software updates are required to decrease overhead.
- **Much faster time-to-restore:** Remote monitoring is needed to faster identify and act on incidents.
- **Predictive maintenance:** Uninterrupted application operations at all times.
- **Security:** Maintain a robust security posture for the machines.

## Avassa for Industrial IoT implementation description

After the implementation of Avassa for Industrial IoT the challenges of uncomfortable and costly machinery application management were quickly addressed. The engineering team containerized the applications and an immutable Linux OS was selected. Machinery sensor data is fed through MQTT to a containerized data flow application managed by the Avassa Edge platform.

Since the controller application is mission critical for the customers, each machine is equipped with three industrial PCs in order to provide local self-healing capabilities. The controller application is also managed by the Avassa Edge platform on the machine, which enables full autonomous clustering. Any compute failure will migrate the controller to any other host in the machine.

The complete solution underwent rigorous testing for various security aspects. Avassa shared their internal security test results with the customer and also provided assistance in setting up comprehensive end-to-end system security tests.

From the Avassa Control Tower, the support organisation can perform software updates over the air. They can also perform fine-grained troubleshooting and support. Proactive alerts and dashboards give the support organisation instant insights into the customer experience.

### Other features used in the Avassa Edge platform:

- **Data flow forwarding to the cloud:** The machine vendor has developed a central analytics application running in the cloud and with the Avassa pub/sub bus data forwarding, the cloud solution got machine data securely delivered.
- **Management of machine application networking.** The machine applications are separate containerized applications with a need to communicate internally. The Avassa platform automatically configures necessary micro-segmentation of the network in parallel with enabling inter application networking.
- **Distributed secrets manager.** Secrets like ssh keys and machine local passwords are automatically distributed to the machines and rotated periodically.
- **Automatic ingress configuration.** The application in the machine has a REST endpoint that end-customers can use for local displays and dashboards. The Avassa system automatically configures opening of that ingress port.
- **Automatic upgrades of the Linux operating system in the machines.** Avassa controls the updates of the underlying OS and the applications in a synchronized manner. This makes it possible to update the host OS without impacting the application availability as well as managing maintenance windows at scale.



## Key benefits of implementation

The implementation of Avassa for Industrial IoT, the company benefitted from several key improvement:

- **Much faster feature updates.** Instead of yearly onsite visits for updates, the vendor can now fully automatic update the software in their machines.
- **Instantaneous customer support.** If there is an issue at a customer site, the Avassa platform enables full remote support.
- **Proactive maintenance.** Dashboards and alerts giving instant insights into customers.
- **Unprecedented machinery availability.** With Avassa for Industrial IoT for autonomy and self-healing the vendor could increase the availability of their machines at the customer sites.
- **Built-in validated security features** and hardening.

Using Avassa for Industrial IoT, the industrial machinery vendor was able to accomplish new levels of efficiency, robustness, speed of innovation and easy-of-use. This allows them to not only achieve operational excellence, but deliver industrial machinery solutions to their end-customers with a higher quality, robustness, durability, and security.

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“Before including Avassa as part of our delivery, we had to manually install, version, and troubleshoot our devices which quickly became very time-consuming as we began to scale. With Avassa, we are able to deliver our product as-a-service and lifecycle manage the distributed software in a centralized, remote, and secure fashion. This helps us significantly reduce overhead and instead focus on creative competitive new features for our customers.”

Team leader

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