



AN INFLUXDATA CASE STUDY

Crosser Uses InfluxDB to Create Modern Data Historian for Industry 4.0



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Deploy at scale using pre-configured Docker containers

Company in brief

Founded in 2016, Crosser is a Swedish company with the goal of building the most user-friendly and smart solution for industrial IoT and enterprise integration and automation. The company designs and develops software for edge, on-premises, and cloud environments, and its Crosser Platform enables real-time processing of streaming or batch data for industrial IoT, data transformation, analytics, automation, and integration.

Technologies used:

InfluxDB, Docker, Grafana

Case overview

Crosser seeks to take the data from a connected, sensor-rich world and integrate it in real time to deliver faster insights and innovation. It does this by collecting and processing data as close to the source as possible. Users can combine Crosser's streaming analytics platform with InfluxDB and Grafana to build their own data historian. In this case, the data collected from edge sources gets sent to InfluxDB for storage and to Grafana for visualization. The Crosser platform contains configurable nodes and a cloud orchestration layer. By utilizing Docker containers, the Crosser platform is nimble and easily deployable in different environments and at scale.

“To get the historian's capabilities, we need a database. And then of course, InfluxDB is a perfect choice for that by providing a high-performance database that is optimized for storing time series data. So that's a perfect match for these kinds of use cases.”

Goran Appelquist, Crosser CTO

The business challenge

The need to modernize industrial data historians stems, in part, from the new requirements of industrial operations. Industrial processes need to collect data from a wider range of sources than ever before, and to integrate that data to create a single source of truth. Access to plant data also extends beyond the shop floor nowadays as business analysts and other key decision makers need it to make informed decisions. Businesses also have higher expectations from the data their machines generate. Applying advanced logic, like machine learning (ML) or artificial intelligence (AI), unlocks new trends and insights.

Legacy data historians are deeply integrated into operations technology and are familiar to factory floor operators. However, these solutions are often proprietary and siloed, making them almost impossible to integrate with other systems and solutions.

The Crosser platform accelerates the adoption of digital transformation and industrial IoT by enabling streaming analytics for any edge, on-premises, or cloud systems with easy-to-use and smart software solutions. Crosser built its streaming analytics platform to collect, process, and analyze data from industrial machines. And while the company doesn't sell a turn-key data historian for these industrial use cases, it provides the pieces to easily build one, using InfluxDB as the data store.



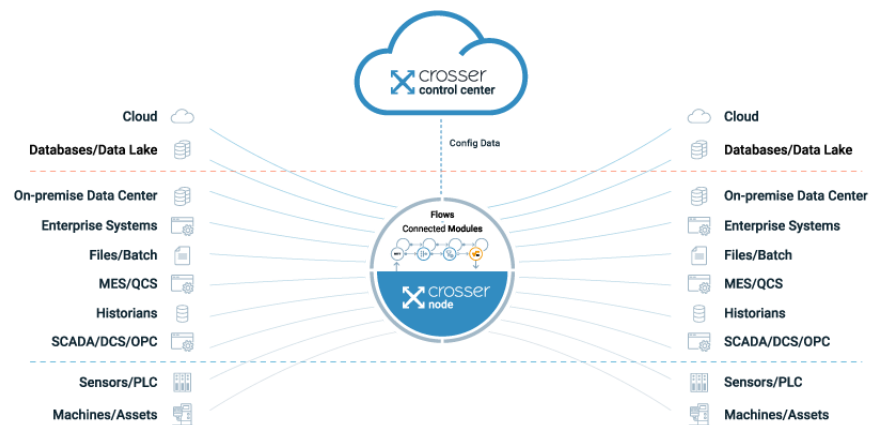
The technical challenge

To address these business challenges, Crosser also needed to address some related technology challenges. New use cases created necessary sub-functions for the platform and each of these sub-functions had its own technical requirements. Crosser made the decision to use best-of-breed solutions for each sub-function, like using InfluxDB for its time series data storage.

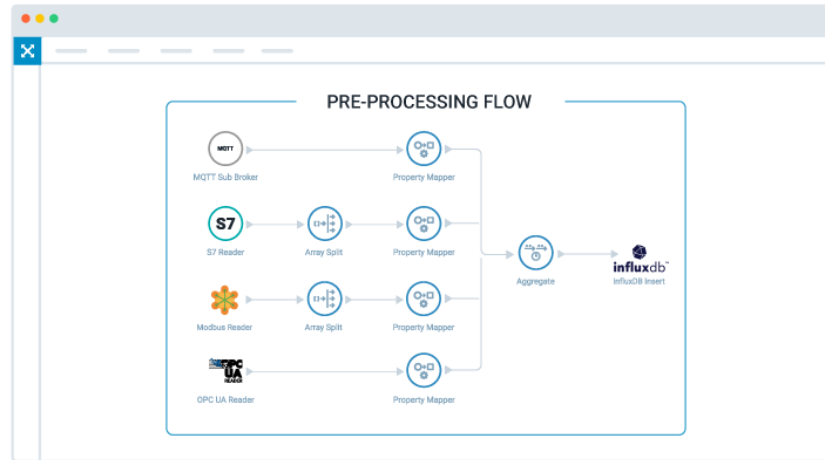
Another technological hurdle revolved around deployment. Siloed data historians inhibit integration and interoperability. Therefore, a modern digital data historian needed to be flexible, and able to run at the edge, on-premises, in the cloud, or a combination of these. To accomplish this, Crosser utilized Docker to containerize its deployments, making them lightweight and able to run any place that supports Docker. This allows businesses to position Crosser as close to industrial machines as possible — that may be on the machine itself or a gateway — to reduce lag in data collection and analysis.

The solution

Crosser's platform consists of two primary components: Crosser Control Center and Crosser Node.



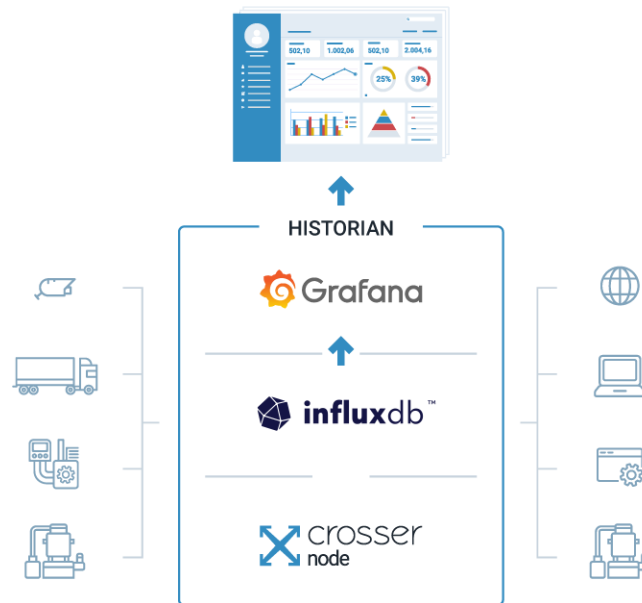
Crosser Control Center is the platform's orchestration and management layer. One of the key tools in Crosser Control Center is the Flow Studio, which is a visual interface that enables users to design custom data workflows using pre-built modules. These modules include common IIoT protocols, like [MQTT](#), [OPC UA](#), [Modbus](#), and more. Users can parameterize these flows so they can work dynamically with different input sources but create consistent output.



Once users build a workflow, they can use Crosser Control Center to test the workflow on a deployed Crosser Node. This enables verification with live data, so users can quickly see if the workflow meets their needs. Users can then deploy these workflows to active nodes, which then run autonomously.

Crosser Nodes are the pieces that live next to, or on data sources. Crosser Nodes read data from edge sources and perform initial transformations on that data at the edge so it's in a consistent format. Data analysis also takes place locally on the Crosser Node, so companies can gain valuable insights faster. Then Crosser sends the data to a storage system on premises or in the cloud.

Crosser provides an alternative, modern data historian using its own platform in conjunction with InfluxDB and Grafana. Crosser provides the streaming analytics, data collection and normalization, machine learning, and anomaly detection.



From there, Crosser sends cleaned data to InfluxDB for storage. InfluxDB is the perfect choice for Crosser because it provides a high-performance database optimized for storing time series data. The fact that InfluxDB is schema-less means Crosser can store any type of data structures without having to predefine a schema. In the world of IIoT, where data shapes can vary and change quickly, having this kind of flexibility is critical. InfluxDB's REST APIs make it so that anyone who needs to access the data can do so, whether those applications and use cases are internal to the data historian or external to it.

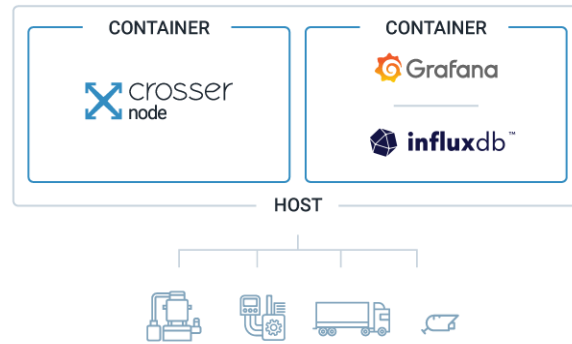
To visualize data, Crosser uses [Grafana](#). InfluxDB easily integrates with Grafana so users can pull data to build custom dashboards and other visualizations.

Results

Deploying this data historian is simple, repeatable, and scalable. Crosser containerized all the components, i.e., Crosser Node, InfluxDB, and Grafana, so users simply need to deploy the necessary Docker containers to get a data historian up and running.

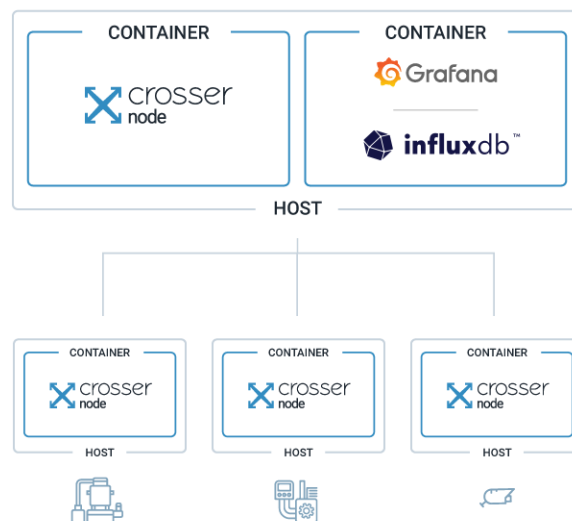
There are many different configuration and deployment options, but the following are some of the most common ones.

Local historian



This scenario deploys the data historian containers on a single local host. It provides a local UI and uses a single Crosser node for pre-processing and historical analysis. This is something that users might want to install on a per unit, area, or facility level.

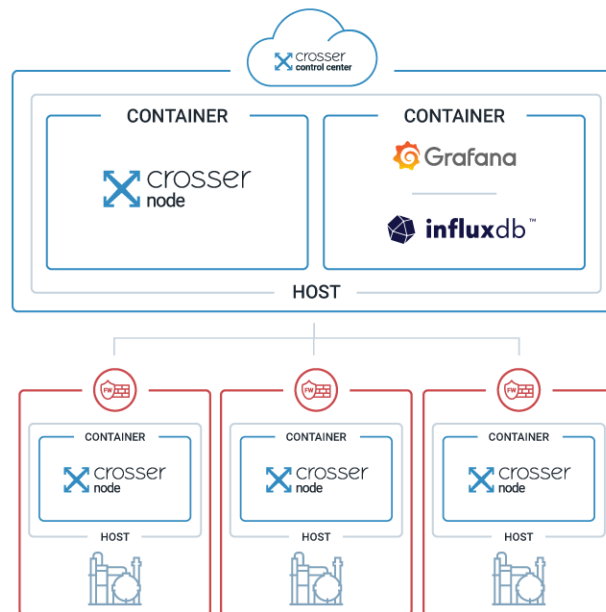
Scale-out historian



This scenario deploys a Crosser node on (or near) each data source so each node only collects and processes data from a single source. These distributed nodes then transmit data to a centralized deployment of InfluxDB for storage and Grafana for visualization. Deploying another

Crosser node in this location also allows users to analyze historical data. In this configuration, the distributed nodes can also facilitate low-latency machine-to-machine connections.

Cloud historian



This configuration is similar to the scale-out iteration, but instead of hosting InfluxDB, Grafana, and the optional Crosser node on-site, they live in the cloud. The distributed Crosser nodes collect and analyze data locally but transmit data to the cloud where users can aggregate data across multiple facilities for a global view of operations.

Crosser's flexibility gives IIoT operators many options for deploying advanced, modern digital historians. InfluxDB provides the critical data store in this architecture, enabling interoperability and broad access to mission-critical industrial data.

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