



Sensing risks in a chemical plant long before fatalities can emerge

IBM and SingleStore collaborate to build a powerful new IoT solution

by Brittany King

5-minute read

In a chemical plant, safety is the top priority. Chemicals are toxic and highly flammable, making chemical manufacturing plants extremely dangerous. Companies are constantly searching for new ways to reduce the risk of accidents, injuries and chemical contamination. Chemicals that are not correctly stored and maintained can become contaminated, resulting in wide scale adverse outcomes.

If the affected containers are mistakenly shipped in this condition,



customers could experience severe and sometimes even fatal consequences. And even if the contaminated inventory is identified before shipping, many problems can still arise. The chemical company would have to discard

the unusable barrels, impacting inventory levels and its ability to fulfill orders – which in turn could affect quarterly revenues, increase production costs and, ultimately, cost it a great deal of money.

IBM Business Partner SingleStore worked to solve a similar safety issue for one customer, a chemical research plant. Within this facility, containers held various chemicals that were under study and required maintenance within certain thresholds. For instance, the minimum temperature threshold for this specific plant's inventory is 27°F and the maximum is 30°F. Such data needs to be tracked using IoT sensors attached to all the stored containers, but this plant experienced fluctuating temperatures within those containers.

"They needed a digital transformation to help them become more of a data-driven organization. We needed to help them detect these temperature anomalies," says Mark Lochbihler, SingleStore's Global Director of Technical Alliances. "If container temperatures are too low or too high, the consequences could be fatal. Hence, swift action must be taken when the container's temperature crosses the defined threshold."

Delivers chemical
container
temperature
readings in

real-time

for actionable insights

Quality control,
inventory and
revenue will

increase

at chemical plant

Fast and flexible data processing

SingleStore, which offers a modern database for data-intensive applications by the same name, opted to build an IoT solution for its client that would stream data coming from the sensors on the chemical plant containers. Looking to modernize the facility's private cloud and digitally transform its workloads using the [Red Hat® OpenShift®](#) platform, SingleStore partnered with IBM. The development teams for the two companies worked closely together to plan, build and deploy a new solution using [IBM Cloud Pak® for Data](#) and its ecosystem while also utilizing [IBM® Cognos® Analytics](#), [IBM Event Streams](#) and [IBM Watson® Studio](#) technology.



“We were laser-focused during the planning phase. We tested the streaming aspects of the solution first. Once this was working, we moved on to build the Anomaly Detection models using Watson ML,” Lochbihler explains. “We then optimized the SingleStore database queries and their performance. Finally, we made sure the Cognos Dashboards were working as expected and meeting customer response SLAs.”

Lochbihler adds that the integration of IBM solutions with SingleStore’s services was seamless.

“IBM’s team was incredibly knowledgeable with their streaming, AI/ML, dashboard capabilities and how they ran on a hybrid cloud,” Lochbihler continues. “Our SingleStore team are experts with our modern operational and analytical database. Together, we were able to develop this IoT solution in a third of the time it would have taken without IBM’s expert assistance.”

“We felt that partnering with IBM would be the natural thing to do as we built out this modern IoT solution for our client and joint ones to come.”

Mark Lochbihler, Global Director of Technical Alliances,
IBM Business Partner SingleStore

A give and take partnership

Once implemented, the new solution will enable SingleStore and IBM clients to:

- Have better quality control within the plant's storage facilities
- Increase revenue and reduce operational costs
- Improve inventory and on-time deliveries

“Chemical Storage Quality Control is the main problem, and we will solve it with this new IoT solution. The temperatures in our customer's storage facilities will automatically adjust to the correct temperatures based on the new solution we are deploying with



IBM,” says Lochbihler. “Our clients are then automatically alerted if storage temperatures are at an unsafe range.”

Along with the partnership, IBM sellers can include the SingleStore solution as a cloud-native, hybrid, real-time and historical data hub in solution proposals for customers. IBM teams can also incorporate and resell SingleStore as a modern data layer for data-intensive applications, jointly with IBM Cloud Pak for Data.

“IBM and SingleStore are already offering hybrid cloud solutions for the world’s most challenging digital transformation projects. We felt that partnering with IBM would be the natural thing to do as we built out this modern IoT solution for our customer,” Lochbihler says. “As we worked together, we learned that we have a tremendous value proposition for our joint customers. We are truly better together when it comes to enabling digital transformation and data-driven solutions at a customer site.”

“With Cloud Pak for Data on OpenShift, it can run anywhere and enable us to seamlessly deploy the services needed for our IoT solution.”

Mark Lochbihler, Global Director of Technical Alliances,
IBM Business Partner SingleStore



About SingleStore

IBM Business Partner [SingleStore](#), previously MemSQL, offers a distributed, highly-scalable, modern SQL database built for data-intensive applications. With over 300 employees, the platform can ingest millions of events per second, while simultaneously analyzing billions of rows of data. SingleStore gives applications maximum performance for real-time decisions and dynamic experiences.

Solution components

- IBM Cloud Pak® for Data
- IBM® Cognos® Analytics
- IBM Event Streams
- IBM Watson® Studio
- Red Hat® OpenShift®

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