



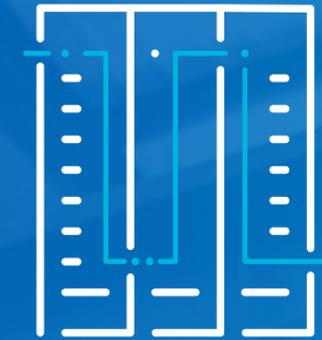
# Reduce Costs with Hybrid On-Prem/Cloud Industrial Data Management

Leveraging Historian Technology to Avoid the Red Flags of Cloud-Based Data Ingestion and Storage



# More and more, industrial organizations are talking about how they want to use cloud-based analytics suites to find optimization opportunities in their plants.

IT leaders see potential value in having a single platform for data storage and analytics. Pilot projects ensue, and one to two months into the project inevitably someone sees the bill for cloud-based data ingestion and storage — and the red flags go up.



Today's reality is that the cloud is not cost effective for the storage of time-series data. The question is how to leverage the power of cloud-based analytics tools on the vast amounts of data created by the machines in plants today.

Fortunately, the answer is clear: a hybrid data management model that uses historian technology near the source of the data (in the plant or corporate data center) and moves the relevant data at the right frequency to the cloud for analytics.



# High Costs of Cloud-Based Data Ingestion and Storage

Machine / process data gathered in the plants is often collected at 1 second or faster (!) intervals. When you do the math, each sensor generates about 2.6 million individual values that need to be processed and potentially stored.

Here's a common and real scenario involving a major cloud-based analytics platform provider. This provider charges both for the processing (i.e. loading of data) and the storage of that data. Using their storage option for the application, the cost of processing and storing the data for a year is \$200 (US).

Yes, \$200 per sensor. For a year. And, by the way, the storage option is limited to about 120 sensors at that rate. Another storage option is slightly cheaper and can store 10 times as much data, but that's still only 1200 sensors. 1200 sensors at \$150 per year is \$180,000 per year. Over 3 years, you'd be paying \$540,000. You'd have to find A LOT of industrial operations optimization to cover those costs.

Oh, and by the way, you can only store data on this platform for 13 months (400 days to be exact).

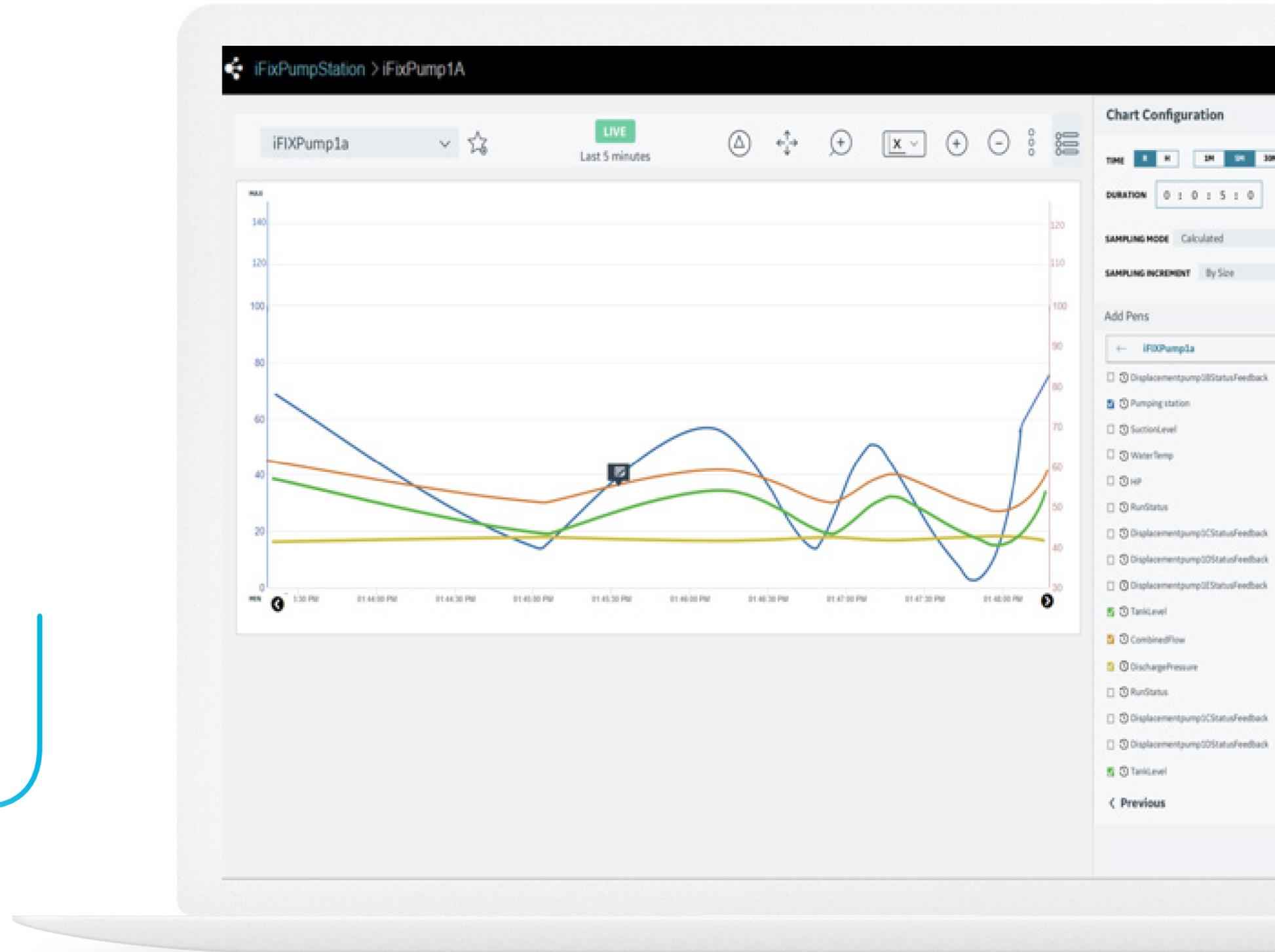


# Plant- or Enterprise-Wide Historian Reduces Costs by 80%

A traditional process historian, such as Proficy Historian from GE Digital, is purpose built to store time-series data very efficiently.

For a 12,000 tag historian license (10x the max of the cloud-based analytics platform provider), license and support cost PLUS the server to run the software would be less than \$90,000 over a three-year period. That's more than 80% savings compared to using the cloud for raw storage. Yes, there is electricity cost to think about and IT overhead. However, with 80% savings, the electricity and IT overhead are incremental. But... no cloud analytic suite.

**With a hybrid data model, industrial organizations can bridge these two technologies to obtain the benefits of both.**



# The Hybrid Data Model

In a hybrid data model, the industrial historian and cloud work together. This model helps meet the needs of IT and the operations team.

An industrial historian such as Proficy Historian is highly efficient at storing time-series data at scale. Users today often store tens of thousands of tags per plant for local analysis and reporting purposes. Industrial historian technology is built for this purpose with key features for cost effectiveness, efficiency, and security.

01

One of the key technologies used to store this large amount of data is compression, which minimizes the data stored to disk or moved between servers.

03

Industrial historian technology also improves query performance. Asking a question of terabytes of data can mean an answer in minutes while other technologies might experience a crashed server and never come back with an answer.

02

Historian technology also has built-in aggregation features – for example, provide 15-minute average of a sensor value. Consider the significant value of a productized collection, storage, and retrieval function. If the first line of the manual is “Install your favorite Java or C# toolset” then you didn’t invest in a product.

04

Furthermore, industrial historian technology has Collectors, which move data from a source to a destination. These Collectors can use the compression and aggregation functionality to dramatically reduce the amount of data moved from a source to a destination. Using the historian’s Collectors, users can define both compression ratios and aggregation that result in sending only the important data value changes at the right rate needed for analytics to the cloud.

This means very large amounts of high-resolution data stored at the plant and a small subset of that data sent to the cloud for analytics, at the right rate.

This combination of on-prem historian coupled with cloud storage for the specific data required for analytics – the Hybrid Data Model – provides industrial organizations with a balanced approach to data storage that supports local plant management, optimization programs, and minimizes overall cost.



# Historian Wins Over RDB in the Hybrid Data Model

For the on-prem technology in the hybrid data model, it's important to remember that historians offer significant advantages over relational databases (RDBs).



Relational databases (RDBs) have helped many manufacturers gain more information about their operations by supporting simple operator queries, answering questions such as:

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*“Which customer ordered the largest shipment?”*

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They are built to manage relationships and are ideal for storing contextual or genealogical information about manufacturing processes but are rarely the best approach for vast amounts of process data collection and optimization.

On the other hand, historians are designed for manufacturing and process data acquisition and presentation. They maximize the power of time series data and excel at answering questions that manufacturing typically needs to address real-time decisions in production such as:

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*“What was today’s hourly unit production average compared to where it was a year ago or two years ago?”*

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Historians offer key advantages over RDBs, including:

- Built-in data collection capabilities
- Faster speeds
- Higher data compression
- Robust redundancy
- Enhanced data security
- Quicker time to value

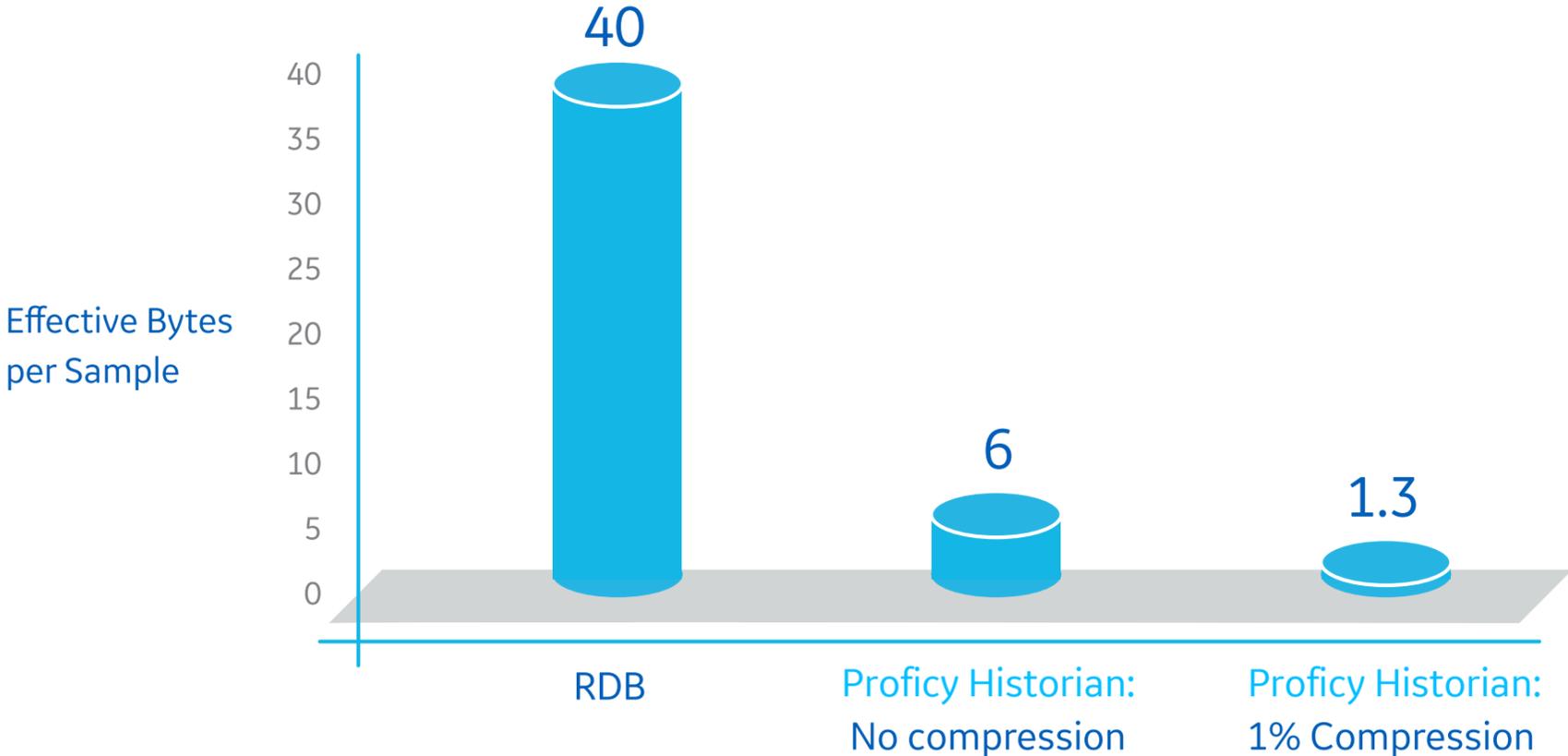
# Cost Savings with Greater Compression

In a hybrid cloud model, compression is particularly important. With an RDB, the maintenance alone can be a full-time job because users have to continually manage archives and disk space due to the lack of compression; performance can be severely undermined, even with proprietary, pre-compressed data workarounds. Additionally, there's no online maintenance so tag imports and maintenance must be performed during scheduled downtime—requiring additional resources, time and costs.

However, the powerful compression algorithms of plant- or enterprise-wide historians enable users to store years of data easily and securely online, which enhances performance, reduces maintenance and lowers costs. For example, users can configure GE Digital's Proficy Historian without the active maintenance and back-up routines that a traditional RDB requires. Archives can be automatically created, backed up, and purged—enabling extended use without the need for a database administrator.



Comparing the disk space efficiency of an RDB versus Proficy Historian



As an example, with no compression at all, a plant-wide historian like GE Digital's Proficy Historian offers much higher disk space efficiency than an RDB. When using a 1% dead band compression, it delivers even greater efficiency for enhanced performance and reduced maintenance. †This data represents a specific test on 400,000 samples logged to a standard RDB and GE Digital's Proficy Historian. Results will vary depending on the raw data set used and the RDB schema employed.

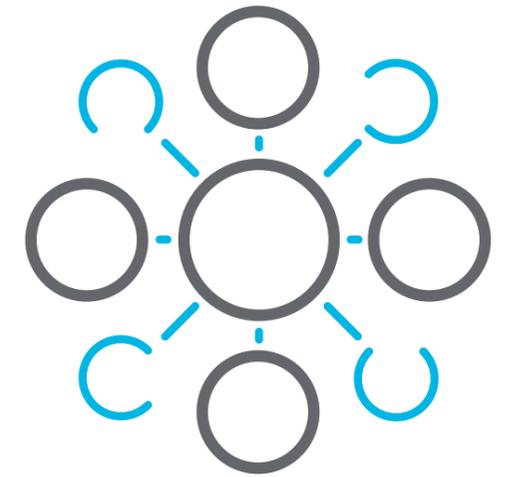
As a result, industrial organizations can leverage increased process visibility for better and faster decisions, increased productivity, and reduced costs for a sustainable competitive advantage.

# Success with the Hybrid Data Model

With the increase in analytics, industrial organizations cannot fully predict what data they will need to answer the next issue. Fortunately, the hybrid data model allows companies to use historian technology to secure a cost-effective, flexible way to collect all the data — and have it available for sending to the cloud and driving analytics.

For example, Asset Performance Management solutions typically leverage historian technology such as Proficy Historian from GE Digital, which sends the relevant data to the cloud. The APM solution accesses the data from the cloud for analytics and optimization. The hybrid model reduces costs and maintenance while ensuring that process engineers have the data that they need for analysis.

In another example, a food manufacturer uses GE Digital's HMI/SCADA and MES solutions in conjunction with Proficy Historian for time-series and A&E data management in a hybrid on-prem/cloud data model. The Proficy Historian system collects data at very high speed from the multiple data sources, aggregates it, and stores it efficiently and securely. A subset of the data is sent to the cloud and leveraged by GE Digital's analytics software. This solution has reduced raw materials costs and decreased customer complaints by 33%.



# Claim Your Free Historian Software

Ready to see a best-in-class historian in action?

For a limited time, you can download Proficy Historian from GE Digital for free.

## Free Proficy Historian Details:

- 25 tags
- No time out / time limit
- Includes alarm and event option

Register today to download the free Proficy Historian system!

[Claim Your Free Historian Software](#)





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