5 Reasons to Deploy Enterprise Historians in Your Organization
Background
The term Process and Data Historian has been around for decades. It is a proven technology for collecting process data and production data from plant floor equipment and control systems. The data, which is considered “Time Series Data,” typically can be displayed in a trend and seen as changing over time.

As the Industrial Internet of Things (IIoT) increases both the volume of and the demand for data, there’s a need to make data available from multiple plants and sites to enable analytics. Connecting multiple historians up to a higher level Enterprise Historian allows customers to apply best practices across sites. The data can be analyzed and reported across the entire enterprise providing useful insights for managing the plants and production, as well as decision making.
Multi-layered Data Store and Data Collection

With the introduction of the Enterprise Historian, a *new layer* for data collection was introduced.

In traditional systems, data was typically collected in both SCADA systems for operator trending, and in the Plant Historian for long-term storage and analysis of processes and production.

The Enterprise Historian provides a third level for data—for Enterprise and/or Business level—and is typically used for purposes other than the traditional process historian, which is primarily used by Process Engineers.
5 Reasons to Deploy an Enterprise Historian

1. Optimal Control Network Loading
   Collects data once and makes it available to users, without further load on the controls network.

2. Security
   Secures the Process Control Network, while still allowing Enterprise users to access data.

3. Fast and Easy Data Access
   Allows direct access to Enterprise servers without having to connect to the remote plant/site servers via slow WAN connections.

4. Central Integration
   Single point to integrate to higher level systems, as opposed to having to integrate at each site.

5. Decision Support
   Provides actionable Enterprise-wide information to help with production, scheduling and energy decisions.
Reason 1: Optimal Control Network Loading

Collects data once and makes it available to users, without further load on the controls network.

By deploying an Enterprise Historian that is continuously synchronizing data with multiple Plant and Site Historians, the load on those lower level Historians is effectively minimized for all enterprise client requests. The user pulls the data from the Enterprise Historian directly, which would get the data once from the Plant and Site Historians only.

Layering an Enterprise Historian above traditional Plant or Site Historian allows the user to have the right amount of data at the right location. Plant engineers generally need access to a large number of process parameters at the highest possible collection rates to analyze and tune control loops, investigate incidents, and detect changes in equipment behavior. By separating out the Enterprise Historian, business decision-makers have a database that is optimized for them, adding business metrics, but often reducing data volume to key production data, often reduced from seconds or milliseconds to minutes, but with decades of storage.
Reason 2: Security

Secures the Process Control Network, while still allowing Enterprise users to access data.

As the lines between Information Technology and the Operating network blur, it’s critical to protect the process control network from denial of service and other attacks. By deploying an Enterprise Historian, you can effectively lock down the process network, and restrict enterprise-level users and applications to the business network. Additionally, a premier Enterprise Historian has built-in security keeping your process secure and limiting firewall communications to a very small number of secure customer-defined ports.

The Enterprise Historian often resides between the process control network and the business network. Here it has access to collect data from the Plant Historians in the process network and provide data to the business users and applications at level 4.

Plants can completely lockdown the servers and operator stations in the process network, and only allow access to the internet for the business users. The process network can be completely protected from outside threats via the network.
Reason 3: Fast and Easy Data Access

Allows direct access to Enterprise servers, without having to connect to the remote plant/site servers via slow WAN connections.

Traditional data access for Enterprise clients using dashboard and reporting systems can put a significant load on Wide Area Network systems, slowing down response times. Using an Enterprise Historian eliminates this problem as the bandwidth only has to go through one network.

The Enterprise Historian also eliminates the complexity of maintaining multiple connections to get data from multiple sites or plants. Many customers may deploy different control systems or historians at the plant level. By deploying an Enterprise Historian, the user can leverage a single data source and set of tools regardless of the underlying data sources.
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Reason 4: Central Integration

Single point to integrate to higher level systems, as opposed to having to integrate at each site.

The Enterprise Historian provides much broader information about the entire enterprise. It has a data abstraction layer between the real-time process network, and more transaction-oriented business and financial systems for the business network.

It becomes a key element for decision support, integrating intelligence derived from process data correlated with production and scheduling data from Enterprise Resource Planning (ERP) systems, and with supply chain information from Supply Chain Management (SCM) systems. Data from the Enterprise Historian can provide near real-time process data into the ERP systems.

In addition, the ERP data can be pulled into the Enterprise Historian and shared with the Plant and Site Historians, where the data could provide a base for better decisions at the lower level of production.

Today, the Enterprise Historian has become a key element of most Manufacturing Execution Systems (MES) or applications. It helps provide an efficient data store for key process KPIs for MES and is a very efficient engine for retrieving large amounts of data in real-time for reporting and analysis.
**Reason 5: Decision Support**

The Enterprise Historian systems provide actionable information regarding production, scheduling and maintenance decisions, and much more, across the entire enterprise.

The need for leveraging data and applying powerful analytics, visualization, and the Enterprise Historian is a key enabler for IIoT integration includes enterprise level analytics, dashboard, business and process analytics.

Traditionally, enterprise reporting was about getting spreadsheets from individual plants and businesses, and then consolidating the information for the entire enterprise. This could be a very tedious and time consuming process, and was typically only done once a month for financial reporting and analysis.

With new advances in business analysis technology, there is a need for more direct access to information. In response to this need, the approach for consolidating plant and site data at an enterprise level was developed. This ultimately provided Enterprise Historian users with direct access to the data and the ability to analyze the data in near real-time.

Decision support is now a completely different concept than the traditional function of helping process and control engineers tune loops and monitor temperature trends. Instead, the Enterprise Historian systems provide actionable information regarding production targets, scheduling plans, energy consumption, feedstock prices and much more across the entire enterprise.

Monitoring the information in the Enterprise Historian with other systems at the enterprise level allows businesses to make more informed decisions involving a much broader set of inputs and outputs.
A large driver for deploying Enterprise Historians is real-time decision support and analytics, including dashboards for correlating information from disparate data sources in the enterprise.

Emerging analytics tools help users align data from historians and other data sources, assist users with clean up of data and help users visualize patterns across similar assets and processes. When comparing dashboard tools, it is important that the tools can display not only information from the Enterprise Historian(s), but also from other data sources such as relational databases, higher level systems such as maintenance systems, scheduling systems and other production level systems.

The dashboard systems should be able to connect to all the data directly, and be able to correlate data from the different data sources. This way, data can be left where it is and critical correlations can uncover new actionable information for the enterprise.
Highly Scalable Solution: Uniformance® Process History Database (PHD)

**Scalable**
- Collects data from disparate data sources into a single consistent database
- Provides long-term alarm and event archiving for incident investigation

**Secure**
- Provides support for commonly required firewall configurations
- Protects historical records from unauthorized access
- Keeps traffic off the process network by avoiding load on the control system

**Robust**
- Provides data collection and history recovery features
- Ensures availability of complete data records

**Open**
- Interfaces to collect data from numerous Honeywell and third-party systems

Honeywell’s Uniformance PHD is a highly scalable solution for any Enterprise Historian application. A variety of real-time data interfaces combine with a distributed architecture to gather data from one or more real-time data sources and make the data available for users and applications. Data may be consolidated at the plant or regional “shadow” server, and optionally transferred to the Enterprise Peer servers, or any servers at higher levels in the organization. This is done utilizing Tag Synchronization which ensures distributed systems are automatically kept consistent. This allows for millions of tags to be collected in real-time, stored throughout the entire enterprise and made available to users at every level.
For more information about Uniformance PHD and Honeywell’s complete Uniformance Suite, visit uniformance.com