



Hyper Historian Quick Start



APPLICATION NOTE

October 2015

Description: Introduction to Hyper Historian, and guide to creating a basic Hyper Historian configuration

General Requirement: General understanding of logging data and databases.

Introduction

Hyper Historian is a high performance, robust, scalable, secure, enterprise-wide, real-time data historian. Hyper Historian leverages the latest operating systems such as Windows 8 and Server 2012, in addition to 64-bit processors. Some of Hyper Historian's features include:

- Designed from the ground up using 64-bit and .NET
- Web-based configuration and administration
- Robust, high performance, and scalable
- Industry standard connectivity:
 - OPC UA, OPC DA, OPC HDA
 - SNMP, BACnet
 - Databases
- Integrated redundancy with store and forward
- Unattended data archiving and backup
- Multiple remote collectors
- Integration with ICONICS BizViz Solutions

This application note will introduce you to the Hyper Historian. It includes examples of why it should be used, an overview of its design, and instructions on how to get started configuring it.

Why You Should Use Hyper Historian

There is a wide variety of reasons why customers have chosen the ICONICS Hyper Historian as their enterprise-wide data historian. ICONICS Hyper Historian is right for your project if the historian must do one or more of the following:

Maintain High Quality Data Integrity

In many industries, historical data must be available at all times. Using Store-and-Forward technology and Redundancy, Hyper Historian can store and preserve data in the event of a disruption in communication.

Be Scalable in a Changing Environment

Some projects are always evolving and increasing in size. With ICONICS Hyper Historian, you can easily adapt to changes in your system such as the addition of new devices. With optimistic concurrency through web-based configuration, updating a system is now easier than ever. Compatible with Windows 8.1

and Windows Server 2012 R2, Hyper Historian is compatible with the latest operating systems.

Optimize Space Used for Storage

While the cost of storage is decreasing, the amount of time spent maintaining storage can add up over time. The Hyper Historian uses a swinging door algorithm to optimize disk space. Furthermore, for improved efficiency the Hyper Historian does not log to a relational database. Instead, data can be stored in memory for a specified period or written to a flat file format. Hyper Historian also provides automatic archiving, which detaches older data and moves it to a remote location for long-term storage.

Provide High Resolution Data

Some processes require fast data collection rates for later data analysis. Using the processing power of 64-bit processors and additional memory capacity, Hyper Historian can handle over 50,000 data events per second.

Integrate with Other Software

Once you have a wealth of data you will want a way to utilize it. Hyper Historian provides many possibilities for integrating with other software. Using its OPC UA and OPC HDA interfaces you can replay data using ICONICS TrendWorX products or other OPC-compliant software.

Additionally, the Hyper Historian integrates smoothly with the BizViz suite of products such as BridgeWorX and ReportWorX. The SQL Query Engine provides access to logged data from relational databases such as Microsoft SQL Server.

Hyper Historian Architecture

The Hyper Historian architecture consists of the logger and collector modules. There is a separate service for the logger and the collectors. There are two types of licenses, Standard and Enterprise.

The **Enterprise** license has additional features including redundant collectors and loggers with Store-and-Forward technology, utilization of multiple CPUs, and remote collectors.

Loggers

The loggers receive data from one or more collectors, which take incoming data and efficiently log it to memory or hard disk.



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Collectors

The collectors actually connect to your OPC UA, OPC DA, BACnet, SNMP, etc., to receive data. These collectors can run remotely from the logger and, on a specified interval, they will send the data to the logger service to be stored.

How to Configure Hyper Historian

Hyper Historian is configured using Workbench Desktop, a centralized project management application for GENESIS64 and Hyper Historian. After installation, Hyper Historian can work "out of the box" without any further configuration.

Let's take a look at the configuration.

1. Open the Workbench Desktop by going to Start → All Programs → ICONICS → Workbench Desktop.
2. Once you are in the Workbench Desktop, select Historical Data->Hyper Historian in the Project Explorer.

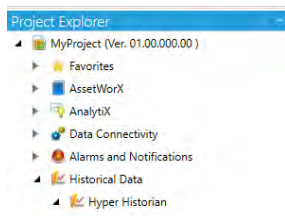


Figure 1 - Hyper Historian in the Project Explorer

3. Once you select the application, the Project Explorer will show the configuration tree as shown in Figure 2.

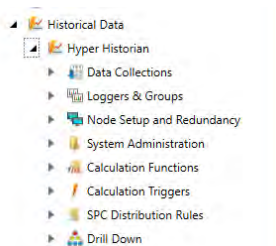


Figure 2 - Hyper Historian Configuration Tree

NOTE: If you see nothing in the explorer after selecting Hyper Historian, it is possible that your security level blocked it. In this case, click File and select Log in/Log out to bring up the security login dialog to log in as a user with the appropriate permissions.

4. Expand the Loggers&Groups tree. By default, there are a few loggers already configured; most are memory persistent loggers and others are File Based Loggers. A memory

persistent logger keeps most of the information in RAM and only logs data to file when certain events occur. A File Based logger always logs data to a file.

5. Since Hyper Historian works out of the box, you do not need to change anything. But be aware that the logger configurator is where you need to go to set up how long to keep data in a single file, where that file is kept, and when to archive data.
6. Next, take a look at the Groups section. Again, default logging groups are preconfigured in the sample configuration database.
7. Double-click Logging Group (under the Sample logger – the Data Logger) to open it on the current tab, and make sure that you have applied the settings if you made any changes. In the Logging Group, you can pick your associated logger and specify a condition for starting data collection. If no condition is specified, data collection begins when you start the Hyper Historian Logger. Again, you do not have to change anything here.
8. Expand Logging Group. There will be many Collector Groups (called "Collecting groups" and "Aggregate Group"). This document concentrates on collector groups; for information on the aggregate group, please refer to the help files.
9. Double-click on any of the collector groups to open it. Here, you can select the collector to which this collector group belongs, as well as the data collection rate (sampling rate) and the calculation period (used for tag aggregates that you can add to this group's tags).
10. If there is a different rate at which you would like to collect data samples feel free to change the Data collection rate.

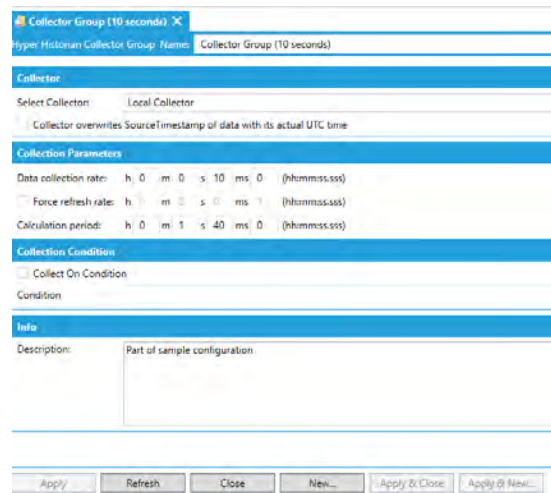


Figure 3 - Hyper Historian Collector Group

11. Your tags are located in the Data Collections section. By default the Data Collections tree is organized identically to



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the Groups tree, but they do not have to be identical. You can create as many folders and whatever structure you want under the Data Collections tree. When browsing for OPC-HDA or OPC-UA-HDA data from Hyper Historian you will see the structure in the Data Collections section.

- Expand Data Collections → Conditional Logging. You should see a few tags already added to the group, as well as another folder. Feel free to delete these tags and folder or leave them as examples.
- Right-click on the Conditional Logging and select the + Tag option.

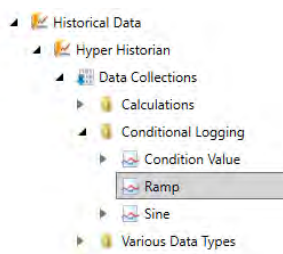


Figure 4 - Adding a Tag

- Enter a name for the new Hyper Historian Tag.
- In the Properties field, enter a Signal Name or click on the Signal Name field's data browser button to select an OPC tag from the Data Browser.
- Choose a logging group in the In Group field. This defines the logging settings (such as collection rate) for this tag.
- Enter the desired Engineering Units.
- If you want the ability to add comments to the Hyper Historian tag while viewing it in the Trend Viewer, check the option to Support Operator Comments.
- You can leave the rest of the settings as default for now, or change them as desired.
- Once you are done with the pen configuration (Hyper Historian Tag), click Apply to save the settings.
- Repeat steps 13-20 to add more tags, or you can try the + Multiple Tags option to add many OPC tags at once.
- When you are done configuring your tags, start the service by clicking on the traffic light in the Service section of the Home ribbon so that it becomes green.

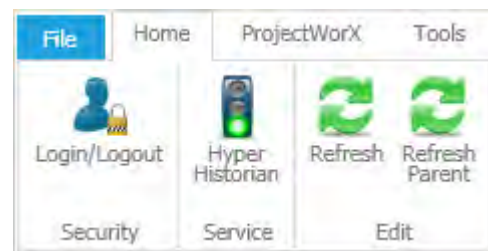


Figure 5 - Hyper Historian Running

Congratulations. At this point you are done configuring Hyper Historian and you have started logging data.

Viewing Hyper Historian Data

- Now open your TrendWorX application from the start menu
- Click the "New Trend" button in the TrendWorX64 section to open a new TrendWorX64 Viewer.
- Click the Configure Viewer button in the upper-left corner of the ribbon to bring up the Configure Your Control dialog.
- Right-click on Chart and select Add → Plot.
- Right-click on Plot and select Add → Pen.
- Select the New Pen object on the left and click on the ellipsis [...] button next to the Data Source field on the right.

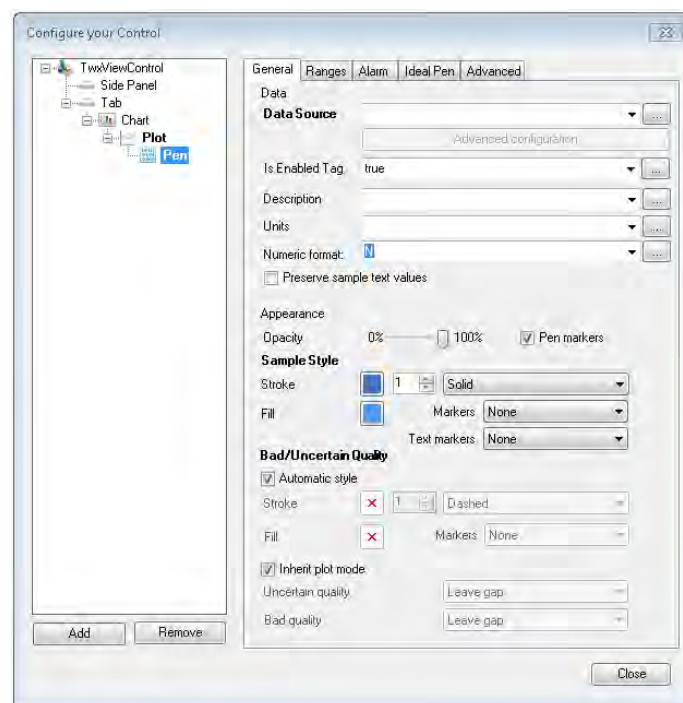


Figure 6 - New Pen Configuration



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7. In the data browser, double-click Historical Data, then Hyper Historian.

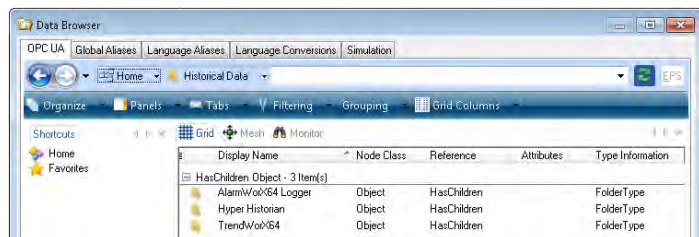


Figure 7 - Hyper Historian in the Data Browser

8. Double-click Logging Group, OPC UA collecting, and the folders as they appear, until you see the Hyper Historian tag(s) you have configured.
9. Click the tag you want to see and click OK in the Data Browser.
10. In the Configure Your Control dialog, you should see your tag path in the data item. It should look something like the example in Figure 8.

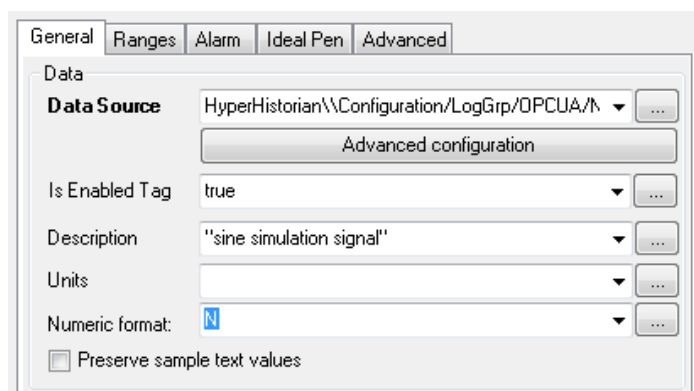


Figure 8 - Tag Path Format

11. Select the Stroke type and Fill type from *Sample Style* for the data you would like to graph.
12. In *Bad/Uncertain Quality*, check the checkbox *Automatic Style* if you wish the style for the pen lines and areas of Bad or Uncertain Quality to be predetermined. Uncheck the box if you wish to set your own criteria.
13. Click Close to close the dialog.
14. Click Runtime in the viewer to see your data.

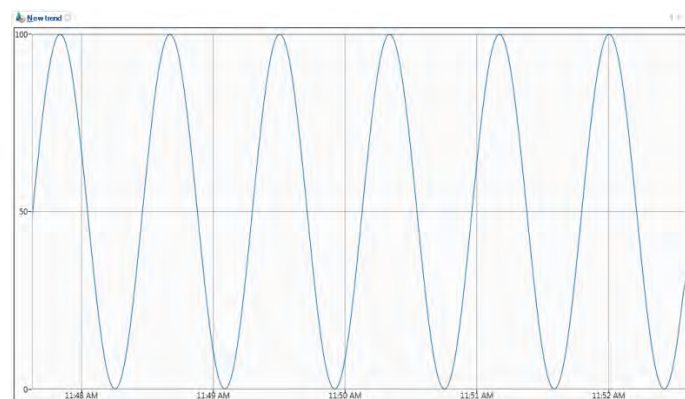


Figure 9 - Sample Hyper Historian Data

NOTE: You can do this in GraphWorX64 as well. The only difference is that you would need to add the TrendWorX viewer control on the canvas but the rest of the steps are all the same