



Hyper Historian Quick Start



APPLICATION NOTE

June 2017

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. 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.

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 three types of licenses, Express, Standard and Enterprise.

Hyper Historian **Express** is available in versions 10.9 or later. It is included with a GENESIS64 license. For more information on the Hyper Historian Express license, see the application note entitled "Hyper Historian Express – Differences between HH and TrendWorX64".

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.



Hyper Historian Quick Start



APPLICATION NOTE

June 2017

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, 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.
2. In the Project Explorer, expand Historical Data → **Hyper Historian**.

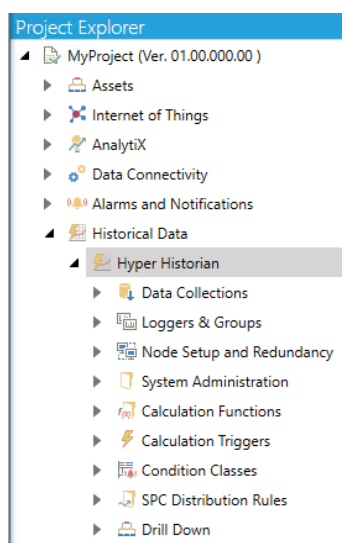


Figure 1 - Hyper Historian in the Project Explorer

NOTE: If you see nothing in the explorer after selecting Hyper Historian, it is possible that your security level has 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.

3. Expand the **Loggers & Groups** branch. By default, there are a couple of loggers already configured. You will most likely not need to change any of the settings on the loggers, but be aware that the logger configuration 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.

4. Expand the **Data Logger**. Under here are your logging groups. Again, you will most likely not need to change the settings on the logging group, but if you wanted to associate a snapshot logger with your data, here is where you would configure it.
5. Expand the **Sample Logging Group** and double-click on **Collector Group (1 second)**.

NOTE: For more information on aggregate groups, please refer to the Hyper Historian help files.

6. 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 tags that are configured to log aggregates, such as “maximum” or “most recent on time”). You can also define a condition, if you do not want this collector logging data all of the time.

NOTE: If you want to create your own collector groups, you may find it helpful to include the data collection rate in the name, as you’ll see with the example collector groups.

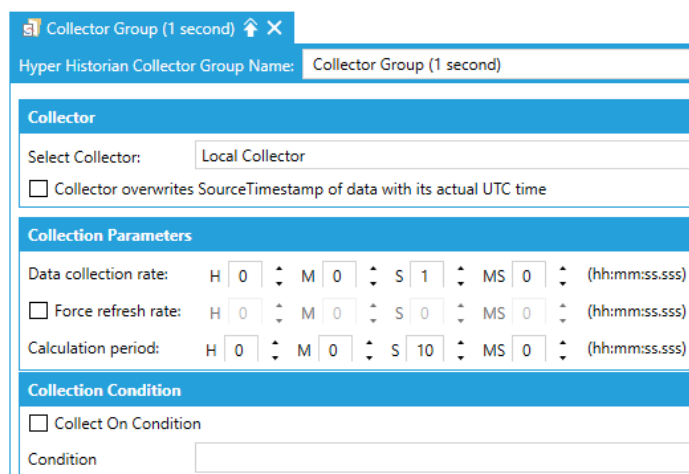


Figure 2 - Collector Group

7. Now, go back up the tree and expand **Data Collections**. Here are where we define all of our tags we’d like to collect. Tags can be organized into folders. Folders have no effect on tag settings. When browsing for OPC-HDA or OPC-UA-HDA data from Hyper Historian you will see the structure in the Data Collections section.
8. Expand Data Collections → **Various Signals**. You should see a few tags already added to the group.
9. Right-click on the Various Signals folder and select the **Add Tag** option.



Hyper Historian Quick Start



APPLICATION NOTE

June 2017

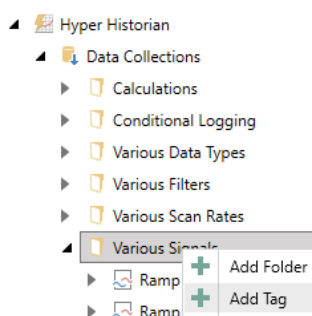


Figure 3 - Adding a Tag

10. Enter a name for the new Hyper Historian Tag, such as "MyTag".
11. On the General tab In the Properties section, find the **Signal Name** field. Drag a tag from Workbench's Data Browser into this field, or click the browse icon to the right of the Signal Name field. A good example tag to use is My Computer → Data Connectivity → OPC Data Access → Simulations → Long → Sine.
12. For the **In Group** field, choose a collector group, such as "Sample Logging Group/Collector Group (50ms)". This defines the logging settings (such as collection rate) for this tag.
13. If you used the suggested Sine tag above, change the Range to be -10 to 10.
14. Configure the rest of the settings for this tag as desired, such as the Engineering Units. Make sure to check the "Support Operator Comments" button if you would like to let the operator add comments to this tag from a TrendWorX64 Viewer. Click **Apply** when done.
15. Add more tags, if desired. If you'd like to add multiple tags at once, note that there is an option in the menu for "Add Multiple Tags". This option allows you to pick a set of tags and associate them all with the same collector group.
16. 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.

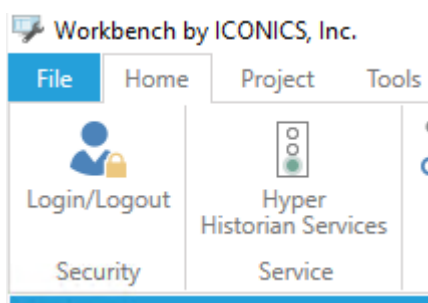


Figure 4 - Hyper Historian Running

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

Viewing Hyper Historian Data

1. Open GraphWorX64.
2. Go to the Data Browser panel and expand My Computer → Historical Data → Hyper Historian → Configuration → **Various Signals**.

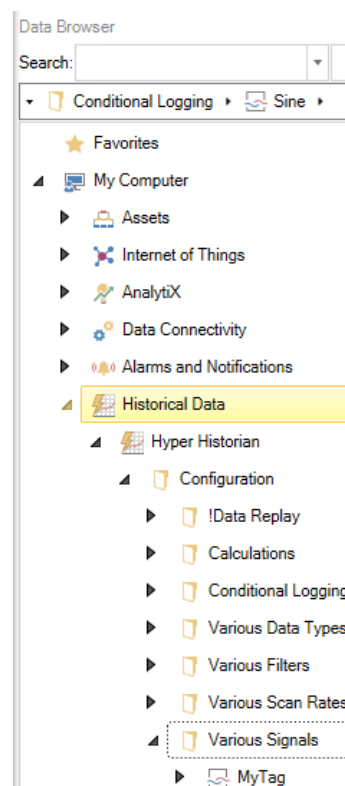


Figure 5 - Browsing for Hyper Historian Tags

3. Drag one or more of the tags you created from the data browser onto the GraphWorX64 canvas. A TrendWorX64 Viewer will be created with that tag as its pen. (If you dragged multiple tags, they will all be added in one trend viewer.)
4. Double-click on the viewer or select the viewer and hit Configure in the ribbon to open up the TrendWorX Viewer configuration dialog.
5. Select the pen in the tree. Its settings should look something like Figure 6.



Hyper Historian Quick Start



APPLICATION NOTE

June 2017

General Ranges Calculations Ideal Pen Advanced

Name

Data Source ...

Connection ...

Is Enabled Tag ...

Description ...

Units ...

Numeric Format ...

Time Zone ...

☐ Preserve sample text values

Appearance

Opacity 0% 100% ☒ Pen markers

Sample Style

Stroke 1 ...

Fill Markers ...

Text markers ...

Bad/Uncertain Quality

☒ Automatic style

Stroke ☒ 1 ...

Fill ☒ Markers ...

☒ Inherit plot mode

Uncertain quality ...

Bad quality ...

Figure 6 - Tag Settings

6. Change the settings as needed, and click **Close** when you are finished.
7. Go into Runtime to see your data.

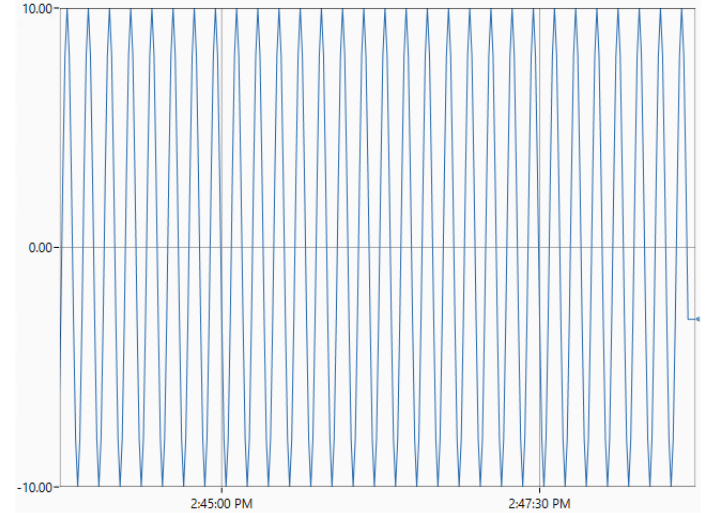


Figure 7 - Logged Hyper Historian Data