



Hyper Historian SQL Query Engine Quick Start



APPLICATION NOTE

June 2017

Description: Quick start document to use the SQL query engine in Hyper Historian.

General Requirement: Microsoft SQL Server, ICONICS Hyper Historian SQL Query Engine installed.

Introduction

Hyper Historian logs data to a proprietary (.HHD) file format. While you can use the TrendWorX64 and TrendWorX32 Viewers to see and edit your logged data in a graphical format, you may wish to create reports for the logged data or edit data in bulk. For this reason, Hyper Historian comes with a SQL Query Engine that allows you to use common SQL Data Manipulation Language (DML) queries to retrieve and edit data.

NOTE: For more information on the tables and stored procedures that can be queried using the Hyper Historian SQL Query Engine, see the Help Files under Hyper Historian → Reporting Options → "SQL Query Engine Quick Start" and "SQL Query Engine".

Hyper Historian Linked Server

To see if, the ICONICS Hyper Historian Linked Server, is already present, use the following steps in SQL Server Management Studio.

1. Open SQL Server Management Studio.
2. Connect to your local SQL server.
3. In the Object Explorer on the left, expand Server Objects.
4. Double-click on Linked Servers to expand it. You should now see a linked server called **HH2**, which stands for Hyper Historian.
5. Expand the **Providers** folder. You will discover a provider called **ICONICS.HHOLEDbProvider**, which is necessary for your queries to work.

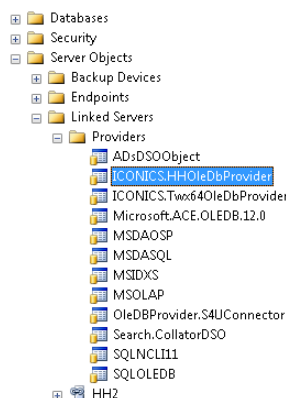


Figure 1 - Hyper Historian Provider

Building SQL Queries

In this example, you will use a simple SQL command that reads the list of all the tags available in one of the Hyper Historian Logging Groups. Additionally, you will also create another simple query to retrieve logged data related to a selected tag.

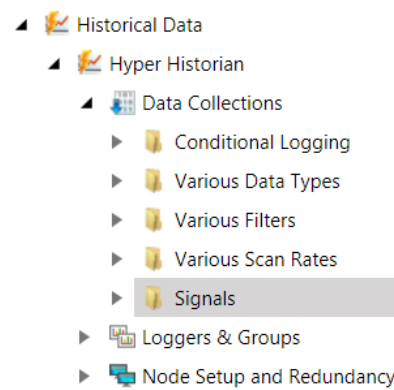


Figure 2 - Collector Group

NOTE: This example uses the collector group named, "Signals" from the sample Hyper Historian configuration.

1. Click on the **New Query** button, located in the standard Toolbar of Microsoft SQL Server Management Studio.
6. In the SQL Editor that opens, write the following query:

```
select * from openquery(HH2, 'select * from signals.tags')
```

7. Click the Execute button in the SQL Editor Toolbar. You will see a result for the query similar to Figure 3.

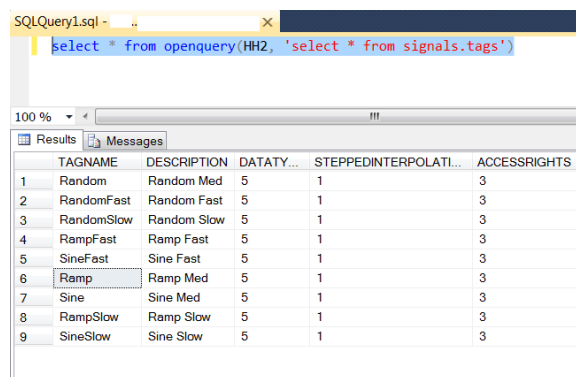


Figure 3 - Retrieving Tag Names

NOTE: If you get no results for the query, you probably have no logged data. Open Hyper Historian (with the default configuration) and go into runtime mode. Then repeat step 3.



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- Now select one of the tag names, and query the RAWDATA table. This will list all the logged values for the specified tag:

```
select * from openquery(HH2, 'select * from  
signals.rawdata where tagname = 'Ramp'')
```

SQLQuery1.sql -

```
select * from openquery(HH2, 'select * from signals.rawdata  
where tagname = 'Ramp'')
```

100 %

Results Messages

	TAGNAME	TIMESTAMP	QUALITY	VALUE
1	Ramp	2016-11-18 04:22:55.6260000	2147483648	
2	Ramp	2016-11-21 16:07:31.8990000	0	26.648333333333333
3	Ramp	2016-11-21 16:07:32.1410000	0	27.065000000000001
4	Ramp	2016-11-21 16:07:32.3560000	0	27.401666666666667
5	Ramp	2016-11-21 16:07:32.5800000	0	27.791666666666664
6	Ramp	2016-11-21 16:07:32.8270000	0	28.208333333333336
7	Ramp	2016-11-21 16:07:33.0790000	0	28.625

Figure 4 - Logged Data for the Ramp Tag

SQL Clients – Microsoft Excel

The Hyper Historian SQL Query Engine can also be used in other containers like Microsoft Excel. Following steps describe on how to get Hyper Historian data in Excel.

- Open Excel.
- In the Data tab, click the “From Other Sources” button.
- Select “From Data Connection Wizard” option.

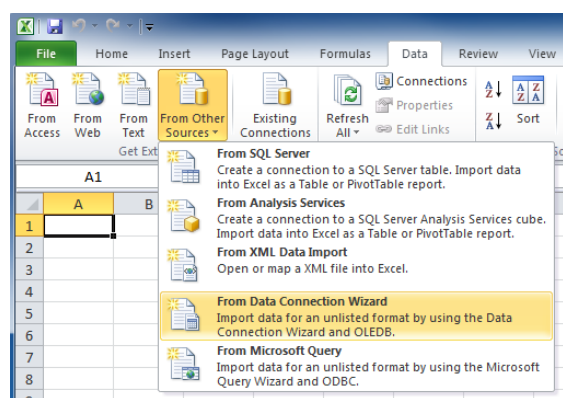


Figure 5 - New Data Connection

- Choose “Other/Advanced” data source, and click **Next**.
- Select **ICONICS HyperHistorian SQL Query Engine**, and click **Next**.

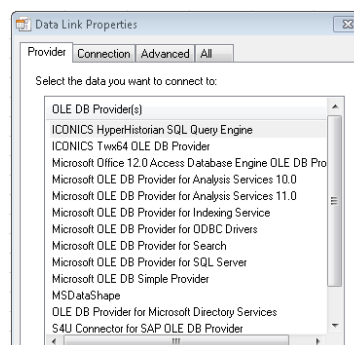


Figure 6 - Selecting Hyper Historian SQL Query Engine

- On the Connection properties table, enter “**HyperHistorian URL**” for a remote Hyper Historian Server or leave it blank (empty) for local server, select the Catalog (!Root) and Schema (!All) and press OK.

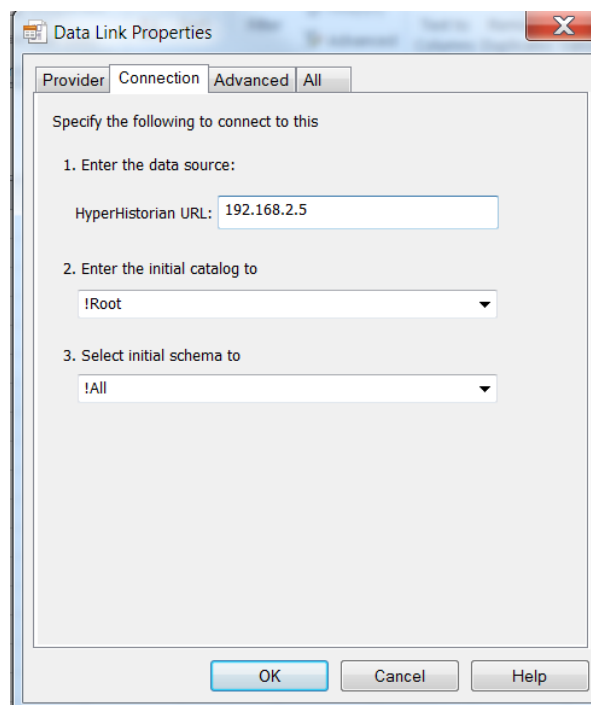


Figure 7 - Selecting Hyper Historian Server

NOTE: If you get an error message after clicking OK, check to see if your version of Microsoft Excel is 32-bit or 64-bit. There are known issues with Hyper Historian interacting with 64-bit Microsoft Office. Try installing a 32-bit version of Microsoft Excel and repeat step 6.

- You will see Database and Table pop-up. Select “**!Root**” from the dropdown. A list of tables appears as shown in Figure 8.



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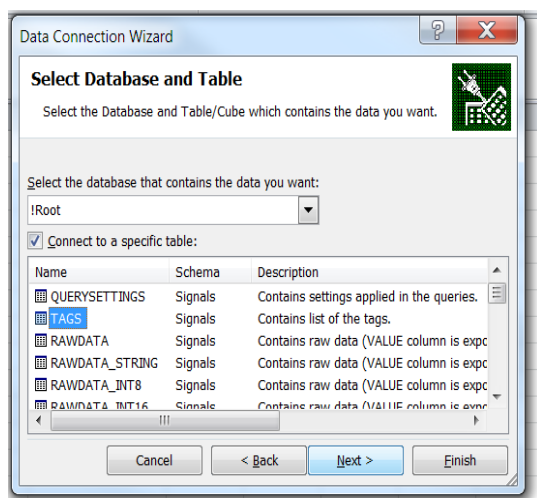


Figure 8 - Selecting Table

15. Select the TAGS table, then click **Next**.
16. The Data Connection Wizard window appears. Configure the name and description for your data connection file. Click **Finish**.

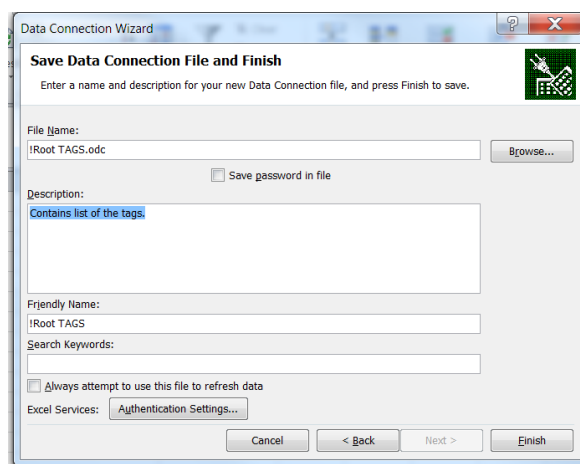


Figure 9 - Data Connection Wizard

17. The Import Data properties dialog will appear. Click **OK**, leaving all the default selections.

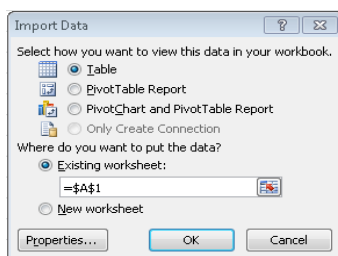


Figure 10 - Import Data Dialog

The result of the query will look like the following:

TAGNAME	DESCRIPTION	DATATYPE	STEPPEDINTERPOLATION
Random	Random Med	5	TRUE
RandomFast	Random Fast	5	TRUE
RandomSlow	Random Slow	5	TRUE
RampFast	Ramp Fast	5	TRUE
SineFast	Sine Fast	5	TRUE
Ramp	Ramp Med	5	TRUE
Sine	Sine Med	5	TRUE
RampSlow	Ramp Slow	5	TRUE
SineSlow	Sine Slow	5	TRUE

Figure 11 - HH "Tags" Names

To get a list of values for your tags, repeat these steps but choose the RAWDATA table in step 15.

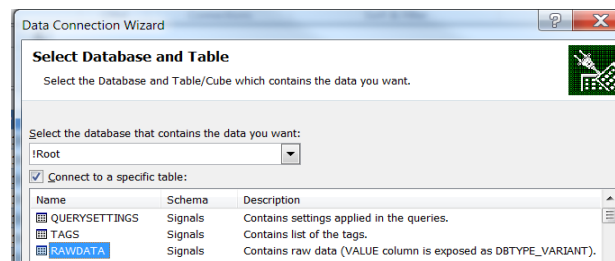


Figure 12 - RAWDATA (Signals)

	A	B	C	D
1	TAGNAME	TIMESTAMP	QUALITY	VALUE
2	SineFast	11/21/2016 16:07	0	6.555459151
3	Ramp	11/21/2016 16:07	0	26.64833333
4	Sine	11/21/2016 16:07	0	0.267917816
5	RampSlow	11/21/2016 16:07	0	45.32966667
6	SineSlow	11/21/2016 16:07	0	35.537383
7	RandomSlow	11/21/2016 16:07	0	35.02914518
8	RampFast	11/21/2016 16:07	0	33.24166667
9	RandomFast	11/21/2016 16:07	0	47.9873043
10	Random	11/21/2016 16:07	0	58.50093081
11	Sine	11/21/2016 16:07	0	0.420272052
12	Ramp	11/21/2016 16:07	0	27.065

Figure 13 - RAWDATA (Signals) Data in MS Excel

Retrieving Data for a Single Hyper Historian Tag in Excel

To get data for only a single tag, modify your existing connection and changing the "Command" details for Connection Properties.

1. Open Excel, go to the Data ribbon, select **Existing Connections**, choose your Hyper Historian connection and press **Open**.



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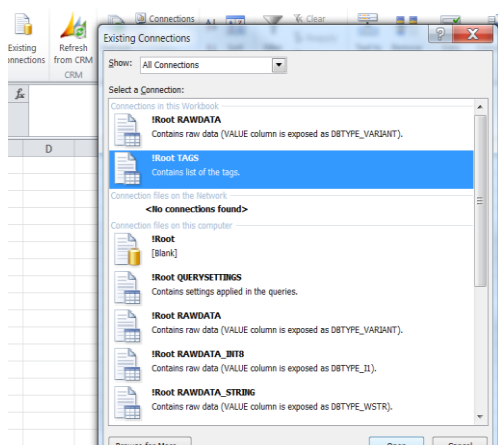


Figure 14 – Modifying Existing Connection MS Excel

18. The Import Data Window will appear. Click on **Properties**.

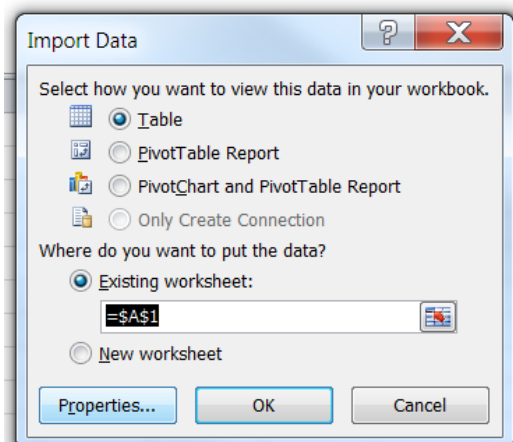


Figure 15 – Properties of an Existing Connection

19. Select the **Definition** Tab. Change the Command Type from "Table" to "SQL" and change the Command Text to your SQL statement, such as:

```
SELECT * FROM Signals.RawData
WHERE TagName = 'Ramp' AND Timestamp
BETWEEN '01/01/2017 00:00:00' AND
'01/02/2017 00:00:00'
```

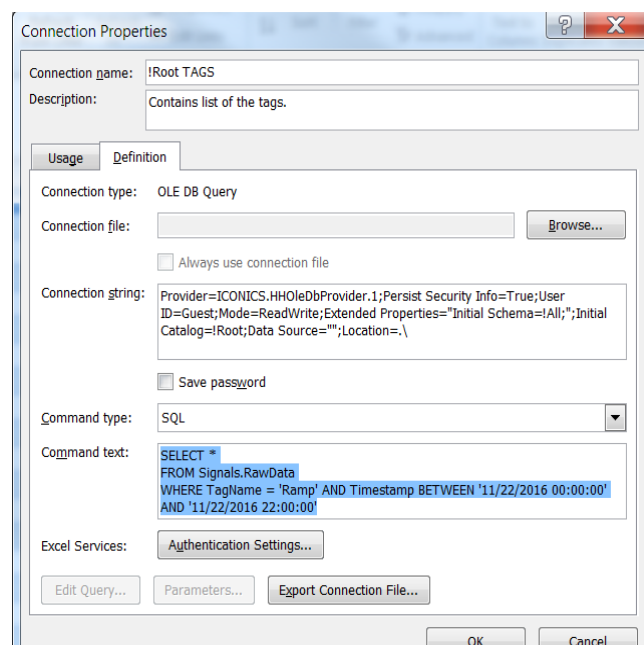


Figure 16 – Connection Properties /Command Type/Text

20. Press **OK** until you return to Excel. Your data table should now show you the History for a single tag.

TAGNAME	TIMESTAMP	QUALITY	VALUE
Ramp	11/22/2016 0:00	0	75.165
Ramp	11/22/2016 0:00	0	75.58166667
Ramp	11/22/2016 0:00	0	75.99666667
Ramp	11/22/2016 0:00	0	76.41333333
Ramp	11/22/2016 0:00	0	76.82833333
Ramp	11/22/2016 0:00	0	77.245
Ramp	11/22/2016 0:00	0	77.66166667
Ramp	11/22/2016 0:00	0	78.07666667
Ramp	11/22/2016 0:00	0	78.49333333
Ramp	11/22/2016 0:00	0	78.90833333
Ramp	11/22/2016 0:00	0	79.325
Ramp	11/22/2016 0:00	0	79.74166667
Ramp	11/22/2016 0:00	0	80.15666667
Ramp	11/22/2016 0:00	0	80.57333333
Ramp	11/22/2016 0:00	0	80.98833333
Ramp	11/22/2016 0:00	0	81.405
Ramp	11/22/2016 0:00	0	81.82166667
Ramp	11/22/2016 0:00	0	82.23666667

Figure 16 – History for a single tag (Ramp)