

## Hyper Historian SQL Query Engine Quick Start



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Visualize Your Enterprise

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

General Requirement: Microsoft SQL Server installed.

#### Introduction

Hyper Historian logs data to a proprietary database. 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.

#### Hyper Historian Linked Server

First, open SQL Server Management Studio to see the providers, which are automatically installed and configured together with Hyper Historian.

- Open SQL Server Management Studio by going to Start → Programs → Microsoft SQL Server 2005/2008/2012 → SQL Server Management Studio.
- 2. When asked, fill in credentials to connect to your local SQL server.
- 3. In the Object Explorer on the left, expand Server Objects.
- 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.



### **Building SQL Queries**

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

You'll use the default samples Logging Group:



Figure 2 - Logging Group

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

select \* from openquery(HH2, 'select \* from LogGrp.OPCUA.tags')

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

SQLQuery1.sql - (IoAdministrator (71))* ×										
<pre>select * from openquery(HH2, 'select * from LogGrp.OPCUA.tags')</pre>										
100 %	100 % - < III Results ☐ Messages									
	TAGNAME	DESCRIPTION	DATATYPE	STEPPEDINTERPOLATION	ACCESSRIGHTS					
1	Random	Random	5	1	3					
2	Sine	Sine	5	1	3					
3	Ramp	Ramp	5	1	3					
4	New HH Tag	New HH Tag	3	1	3					
5	Sine/SineDurGood	Sine Duration Good	0	1	3					
6	Sample/Step	Step	5	1	3					
7	Sample/=AvgOnRamp	Example calculation	4	1	1					
8	Ramp/RampAvg	Ramp Time Average	5	1	3					
9	Random/RandomMaxActTime	Random Maximum Actual Time	5	1	3					

Figure 3 - Getting 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.

4. Now select one of the tag names to query. On the next line of the query editor add the following query, which will list all values for the specified tag:

select \* from openquery(HH2, 'select \* from LogGrp.OPCUA.rawdata where tagname = ''Ramp''')



#### SQL Clients – MS Excel

The Hyper Historian SQL Query Engine can be used in other containers.

- Open MS Excel by going to Start  $\rightarrow$  Programs  $\rightarrow$  Microsoft 1. Office → Microsoft Office Excel 2010.
- In the Data tab, click the From Other Sources button. 2.
- 3. Select the From Data Connection Wizard option.



Figure 5 - Creating New Data Connection

- 4. Choose the Other/Advanced data source, and click Next.
- Select ICONICS HyperHistorian SQL Query Engine, and click 5. Next.



Figure 6 - Selecting Hyper Historian SQL Query Engine

On the Connection properties table, select the Catalog and Schema name, which correspond to the Hyper Historian logging group names. You should be able to leave the

💿 Data Link Properties 🛛 🔯									
Provider Connection Advanced All									
Specify the following to connect to this data:									
1. Enter the data source:									
HyperHistorian URL:									
2. Enter the initial catalog to use:									
LogGrp 👻									
3. Select initial schema to use:									
OPCUA 👻									
UK Cancel Help									

Figure 7 - Selecting Logging Group Name

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.

7. A list of tables appears as shown in Figure 8. You can select table TAGS (display all tags in HH configuration), RAWDATA (display logged data for selected logging group) or QUERYSETTINGS (display setting for the SQL query). Select one and click Next.

Select Database an Select the Database an	nd Table d Table/Cu	be which contains the data you want.				No.
elect the database that o	ontains the	e data you want:				
LogGrp		-				
Connect to a specific t	able:					
Name	Schema	Description	Modified	Created	Туре	
QUERYSETTINGS	Collect	Contains settings applied in the queries.	12:00:00 AM	12:00:00 AM	TABLE	
E TAGS	Collect	Contains list of the tags.	12:00:00 AM	12:00:00 AM	TABLE	
RAWDATA	Collect	Contains raw data (VALUE column is exposed as DBTYPE_VARIANT).	12:00:00 AM	12:00:00 AM	TABLE	
RAWDATA_STRING	Collect	Contains raw data (VALUE column is exposed as DBTYPE_WSTR).	12:00:00 AM	12:00:00 AM	TABLE	
RAWDATA_INT8	Collect	Contains raw data (VALUE column is exposed as DBTYPE_I1).	12:00:00 AM	12:00:00 AM	TABLE	
RAWDATA_INT16	Collect	Contains raw data (VALUE column is exposed as DBTYPE_12).	12:00:00 AM	12:00:00 AM	TABLE	
RAWDATA_INT32	Collect	Contains raw data (VALUE column is exposed as DBTYPE_14).	12:00:00 AM	12:00:00 AM	TABLE	
RAWDATA_INT64	Collect	Contains raw data (VALUE column is exposed as DBTYPE_18).	12:00:00 AM	12:00:00 AM	TABLE	
RAWDATA_UINT8	Collect	Contains raw data (VALUE column is exposed as DBTYPE_UI1).	12:00:00 AM	12:00:00 AM	TABLE	
RAWDATA_UINT16	Collect	Contains raw data (VALUE column is exposed as DBTYPE_UI2).	12:00:00 AM	12:00:00 AM	TABLE	
RAWDATA_UINT32	Collect	Contains raw data (VALUE column is exposed as DBTYPE_UI4).	12:00:00 AM	12:00:00 AM	TABLE	
		Contains you date (UALLIF and one is supported as DATABLE 1980)	12-00-00 AM	12-00-00 444	TABLE	

Figure 8 - Selecting Table

The Data Connection Wizard window appears. Configure the 8. name and description for your data connection file. Click Finish.



# Hyper Historian SQL Query Engine Quick Start



### APPLICATION NOTE

Data Connection Wizard	8 23
Save Data Connection File and Finish Enter a name and description for your new Data Connection file, and press Finish to save.	
File Name:	
LogGrp RAWDATA.odc	Browse
Save password in file	
Description:	
Friendly Name:	
LogGrp RAWDATA	
Search Keywords:	
Ajways attempt to use this file to refresh data Excel Services: Authentication Settings	
Cancel < <u>B</u> ack Next >	Einish

Figure 9 - Data Connection Wizard

9. The Import Data properties dialog appears. You can change properties to your liking or leave them as they are. Click **OK** when you are ready to continue.

Import Data	? 🛛				
Select how you want to view this data in your workbook. (a) $\underline{\bullet}$ ]able					
III ○ PivotTable Report           III         ○ Pivot⊆hart and PivotTable Report					
Only Create Connection Where do you want to put the data?					
Existing worksheet:					
=\$A\$1					
Properties OK	Cancel				

Figure 10 - Import Data Dialog

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- 10. The query may take a few moments to complete. The result of the query will look like the following:

TAGNAME	Ŧ	TIMESTAMP 🔽	QUALITY 🔽	VALUE 🔽
Ramp		6/10/2010 14:33	0	77
Random		6/10/2010 14:33	0	1.498458815
Random/RandomMaxActTime	e	6/10/2010 14:33	2147484672	1.498458815
Sample/Step		6/10/2010 14:33	0	73.68421173
Sine		6/10/2010 14:33	0	99.60573507
Ramp		6/10/2010 14:33	0	78.124
Sine		6/10/2010 14:33	0	99.03987682
Ramp		6/10/2010 14:33	0	79.124
Sine		6/10/2010 14:33	0	98.33081016
Ramp		6/10/2010 14:33	0	80.25
Sine		6/10/2010 14:33	0	97.30426794
Ramp		6/10/2010 14:33	0	81.25
Sine		6/10/2010 14:33	0	96.19397663
Ramp		6/10/2010 14:33	0	82.374
Sine		6/10/2010 14:33	0	94.72863613

#### Figure 11 - Logged Data in MS Excel

**NOTE:** You can also use Hyper Historian SQL Query Engine in the BizViz ReportWorX application for creating scheduled reports. See the application note *ReportWorX - Reporting on Hyper Historian Data*.