

## FactoryTalk® Historian SE Reporting

**XLReporter** generates Excel based reports from Rockwell Automation® FactoryTalk Historian SE using historical logged data.

The purpose of this document is to describe how to interface **XLReporter** to the FactoryTalk Historian.

## Historical Data

Creating reports from FactoryTalk Historian is performed by simply selecting the tags, a time frame and interval of interest, e.g. hourly averages of the previous day. In this manner, reports containing raw values, informative metrics such as run times and statistics can be easily produced, automatically.

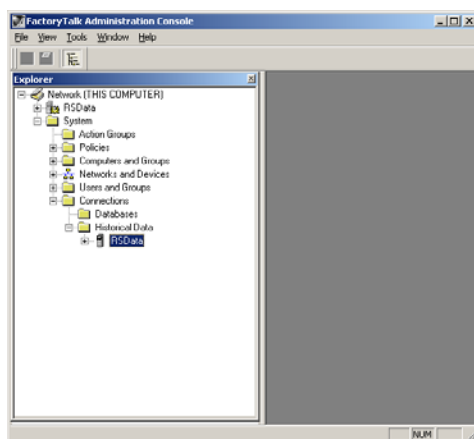
**XLReporter** has 4 methods of retrieving data from FactoryTalk Historian SE: via the PI OLE DB provider, via the PI ODBC driver, via the OPC-HDA server or via the VantagePoint SQL CLR (Common Language Runtime) feature. Based on your historian licensing, select the method that best fits.

## Pre-requisites to Data Logging

Before data logging can be performed by the FactoryTalk Historian, the **FactoryTalk Network Directory** must be configured with a valid user. This is done by opening the **FactoryTalk Directory Configuration Wizard** available from the **FactoryTalk Tools** program group in the Start menu.

## Setting up Data Logging

To setup data logging, open the **FactoryTalk Administration Console** and open the **Network Directory** you configured previously.



FactoryTalk Administration Console

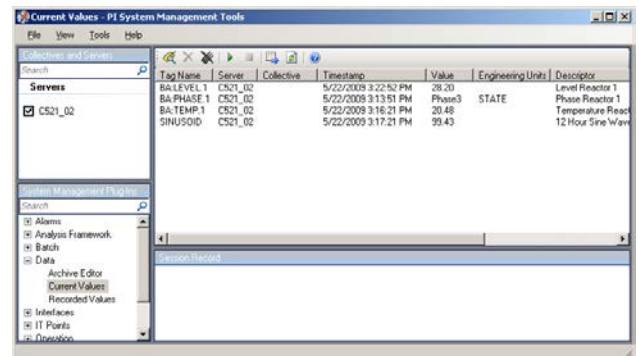
Configure the historian to log data from one or more interfaces including FactoryTalk View SE, RSLinx® or

any available OPC Server. Discovery tools are provided to assist in browsing for available interfaces.

With the FactoryTalk Historian running, any new point added to the Historical Data collection will begin archiving.

To start or stop the Factory Talk Historian, select **Start FT Historian System** or **Stop FT Historian System** from the **FactoryTalk Historian** program group in the Start menu.

The **PI System Management Tools** can be used to modify collection settings and validate that information is being collected. In the **System Management Plug-in** window, expand **Data** to view both **Current Values** and **Archived Values** logged to the FactoryTalk Historian.

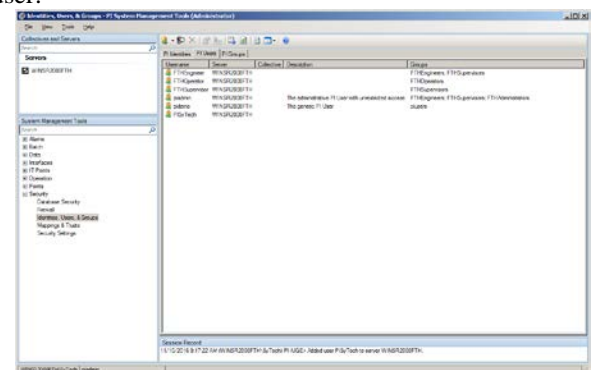


PI System Management Console

## PI OLE DB Provider Setup

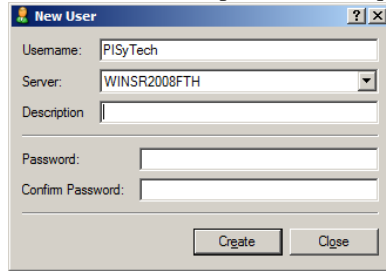
The **PI OLE DB Provider** is not installed by default with FactoryTalk Historian SE, it is a separate installation found on the installation media under *Advanced Server Options\PIDASSetup\OLEDB Provider*.

In order to make a remote connection, a valid user account and password is required. To add new users open the **PI System Management Tools** and select **Security, Identities, Users, & Groups**. Note that this step is only needed if you do not have access to another configured user.



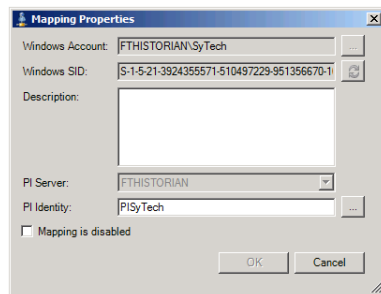
PI System Management

Select the **PI Users** tab and click **New** (person icon in top header). Add a **Username** and password if required.



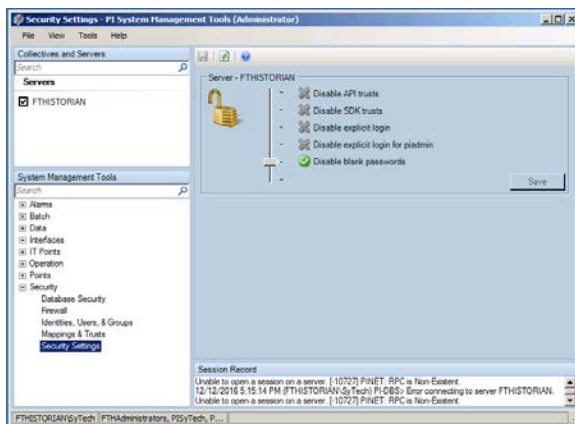
*New User*

The **PI System Management Tools** can be used to assign a Windows user the user credentials of a PI account. Open the **PI System Management Tools** and select **Security, Mapping & Trusts**. Assign a windows user the credentials of the **PI User** created.



*Mapping Properties*

To make a remote connection certain security settings are required. To modify these settings open the **PI System Management Tools** and select **Security, Security Settings**.



*Security Settings*

## PI ODBC Setup

The **PI ODBC** driver is provided as a separate installation that needs to be installed on the machine where **XLReporter** is installed.

The installation must be downloaded from the OSISOFT website. On the **PI ODBC Driver** webpage, click the **All Versions** tab then download and install **PI ODBC Client Install Kit** version **1.3.1.0**.

For information on the security settings, see the **PI OLE DB Setup** section.

## OPC-HDA Setup

In order for **XLReporter** to communicate with FactoryTalk Historian via the OPC-HDA interface, the machine where **XLReporter** is installed must also have the OPC core components installed. The OPC core components are provided in the tools folder of the **XLReporter** install CD or from [www.OPCFoundation.org](http://www.OPCFoundation.org).

If **XLReporter** is installed on a PC that is remote to FactoryTalk Historian then a number of settings need to be configured on both the server and client machines. This includes having matching Windows user accounts on both machines and enabling DCOM on the machine where FactoryTalk Historian is installed.

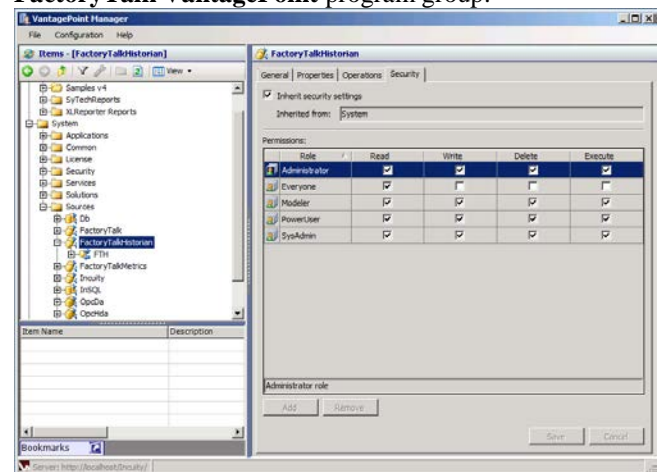
For a detailed explanation of what is needed, please read the OPC Training Institute document *OPC\_and\_DCOM\_5\_things\_you\_need\_to\_know* that is provided in the Tools folder of the **XLReporter** install CD or from [www.SyTech.com/](http://www.SyTech.com/).

The OPC-HDA server is not installed by default with FactoryTalk Historian SE, it is a separate installation found on the installation media under *Advanced Server Options\PIDASSetup\OPC DA\_HDA\OPC DA\_HA Server*.

## VantagePoint Setup

In order for **XLReporter** to communicate with the FactoryTalk Historian SE via the VantagePoint SQL CLR interface, the SQL CLR component of VantagePoint must be installed. During the installation of VantagePoint, the **SQL CLR** option is available under **Custom Setup**.

Within VantagePoint a connector must be created to the FactoryTalk Historian. Connectors are created in the **VantagePoint Manager** that can be opened from the **FactoryTalk VantagePoint** program group.



*VantagePoint Manager*

In the **Manager** expand **System** and then **Sources**. Right-click **FactoryTalkHistorian** and select **Add FactoryTalk Historian Connector**.

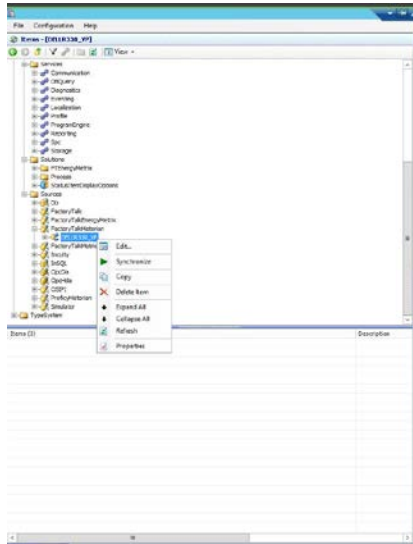
Specify a **Connector name**, select your **FactoryTalk Historian**, leave the **Import** option checked and click **OK**. This creates the connector for you.

## Synchronize Tags to Vantage Point

To synchronize the tags available through Vantage Point with the entire tag list available in the historian, open the Vantage Point **Manager** application.

Expand **Sources**, **FactoryTalkHistorian**. Right-Click the name of the historian server, and select **Synchronize**.

The tags in the resulting list reflect what is available in the **Data Connector** to the historian through Vantage Point.



## Creating a Historical Data Connector

From **XLReporter's Project Explorer**, open the **Data** tab, select **Connectors**, and then **Add**.

For the PI OLE DB or ODBC interface choose **Rockwell Automation, FactoryTalk Historian SE (OLE DB/ODBC)**. Under **Primary Server** click the browse pushbutton [...]. For **OLE DB** specify the name of the PI server along with credentials to connect. For **ODBC** select or create a DSN to connect to the PI Historian.

For the OPC-HDA interface choose **Rockwell Automation, FactoryTalk Historian SE (OPCHDA)**. Under **Primary Server**, if the historian is on a remote machine, specify the **Node** to the name of that machine, otherwise leave it as local to connect to the local historian.

For the VantagePoint SQL CLR interface choose **Rockwell Automation, FactoryTalk Historian SE (CLR)**. Under **Primary Database**, click the browse pushbutton [...] and connect to the SQL Server database where VantagePoint is configured.

Under **Settings**, set the **Historian Connector** to the connector you configured in VantagePoint for FactoryTalkView Historian SE data.

## Verifying the Historical Data Connector

Create a **Connector Group** to verify that data can be retrieved from the connector. **Connector Groups** are designed in **Project Explorer, Tools, Connector Groups**. Select your FactoryTalk Historian SE connector, and then select **Add**.

On the **Columns** tab of the group, select the tag **Name** and **Calculation** for each tag in the group.

On the **Time Period** tab, select the **Start Time**, **End Time** and **Interval** for the group. By default this is set to one hour intervals over the current day.

The **Preview** pushbutton at the top of the history group display can be pressed to preview the result of the current configuration.

Setting	Value	MXER_ZONE1_TEMP	MXER_ZONE2_TEMP	MXER_SPEED	MXER_RAMPRESSURE
3/30/2012 1:00:00 AM	71.3938171386719	77.1789534250895	33.1370187441508	64.6267203648885	
3/30/2012 2:00:00 AM	78.1625200907389	49.0242124239604	36.6801065444946	73.138773114421	
3/30/2012 3:00:00 AM	74.5661202748617	76.056496303444	50.695378041595	88.912783946331	
3/30/2012 4:00:00 AM	78.5054052407227	65.952997137025	54.078063517456	90.664428053467	
3/30/2012 5:00:00 AM	72.0215874888628	63.670616482635	53.4231708825805	86.9440397886356	
3/30/2012 6:00:00 AM	65.3885255244602	53.5356532274882	58.6284706781606	79.0612536366781	
3/30/2012 7:00:00 AM	71.510375665876	74.3889140625	59.4726551055088	69.7432478584833	
3/30/2012 8:00:00 AM	78.2382620493571	60.0908380508423	60.3883614171345	62.2175770086653	
3/30/2012 9:00:00 AM	61.3350624084473	61.3104316393534	71.1325941721088	59.246310043335	
3/30/2012 10:00:00 AM	70.8315608978271	56.1890864372253	77.116239381032	61.7242600122088	
3/30/2012 11:00:00 AM	77.7188284556071	56.4864746157328	77.6274727045202	68.8288073821584	
3/30/2012 12:00:00 PM	72.885831142171	62.9040375709534	73.2186347861426	78.1072878978563	
3/30/2012 1:00:00 PM	60.1481825964356	60.267854800415	69.4488827655511	86.2853030850409	
3/30/2012 2:00:00 PM	71.1784112922277	76.4200636843278	70.5296145121256	90.527676397750078	
3/30/2012 3:00:00 PM	77.8320638020833	76.4182764881928	68.1329851788296	89.3417254130046	
3/30/2012 4:00:00 PM	67.2665041628531	68.3326436723836	65.6417427896771	83.14583447771425	

Preview

Preview displays the data exactly the same way it will be written into the report.

## Retrieving Live Data

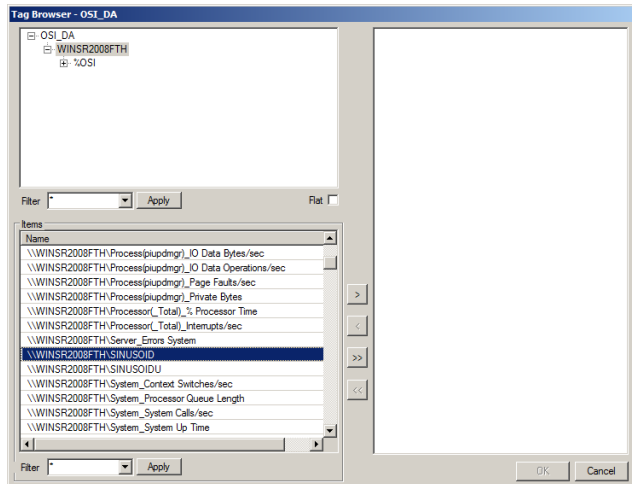
The FactoryTalk Historian also provides access to live data via the OPC server interface. In this case "live" refers to the last value stored by Historian.

## Creating a Live Data Connector

Create a connector the *OSI.DA.1* OPC server from **Project Explorer, Data, Connectors**. Select **OPC, OPC Real-time values**. To connect to live values for FactoryTalk Historian the **Primary Server** should be set to *OSI.DA.1*.

## Verifying the Data Connector

To verify that the **Data Connector** is functional, open **XLReporter's Project Explorer**. From the **Tools** tab start the **System Check** application and select the **Connector** tab. Select **Add**, choose your OPC connector to FactoryTalk Historian, and click the pushbutton [...] next to **Items** to open the **Tag Browser** window.



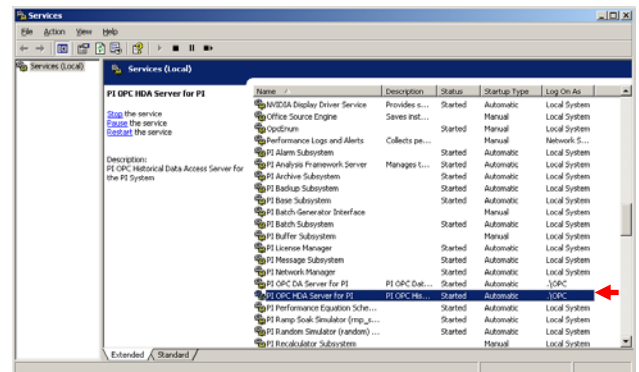
Select one or more tags and verify that they update with the current value using **Start** in the **System Check** window.

## OPC-HDA Tuning for Automation

For the OPC-HDA interface, the first time **XLReporter** accesses data from the FactoryTalk Historian, a popup window appears to the user. The reason this window appears is that an instance of the OPC or OPC-HDA server is started for each user that attempts to access it.

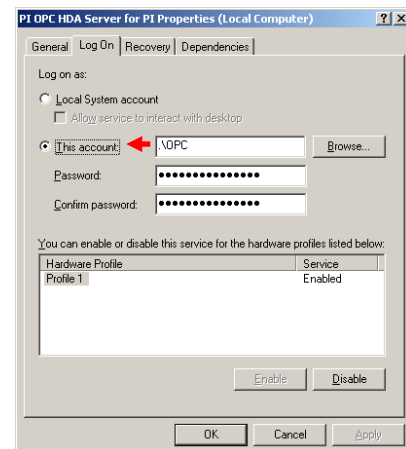
To prevent the popup window from appearing, the Windows Service installed for the OPC-HDA server and the server itself must be launched with the same Windows user account.

To configure the Windows Service to run under a specific user account, open the Windows Control Panel then select **Administrative Tools, Services**.



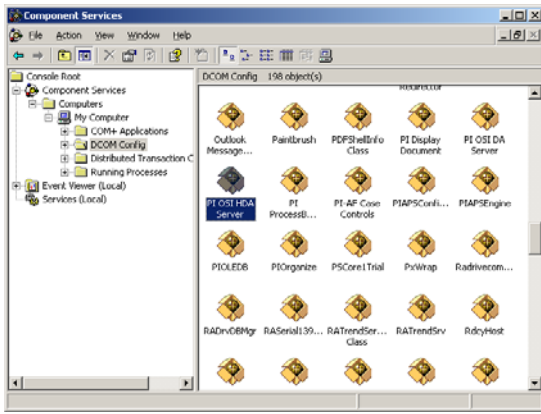
Services Window

Locate the **PI OPC HDA Server for PI** service, right-click and select **Properties**. Go to the **Log on** tab, select **This Account** and specify the account to run the service under.

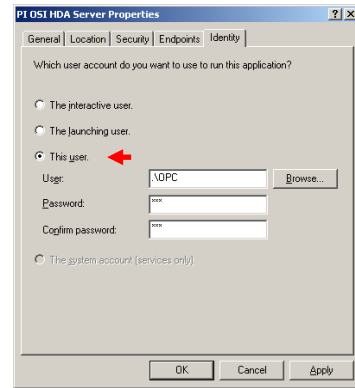


Service Properties

To configure the server itself to launch with the same account, you must configure the DCOM settings. To do this on a 32 bit operating system, select **Start, Run** and enter `dcomcnfg`. On a 64 bit operating system enter `comexp.msc /32`. Browse to **Component Services, Computers, My Computer, DCOM Config**. Locate **PI OSI HDA Server** right-click and select **Properties**.



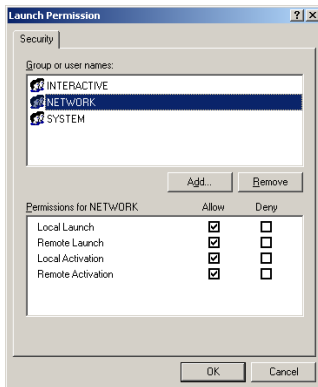
DCOM Config



DCOM Properties Identity Tab

Under the **Security** tab, set **Launch and Activation Permissions to Customize** and click the **Edit** button. SYSTEM, INTERACTIVE and NETWORK should always be listed. If **XLReporter's** Scheduler is set to run as a Windows Service, you must also add the Windows user the Scheduler Service is running. All other Groups or Users should be removed. To access data remotely with **XLReporter** Team Edition, the ASPNET user should also be listed. If you experience issues retrieving the data from a team client, also add the user group EVERYONE to the list.

For more information, please refer to **Running the OPC Server as a Service** section of the PI\_OSIOPC document provided with the FactoryTalk Historian installation.



DCOM Properties Launch Permissions

Under the **Identity** tab, set the account to **This user** and specify the same user account that you configured for the Windows Service to run under.

Note that the **PI OPC HDA Server for PI** service must be restarted before the DCOM changes take effect.

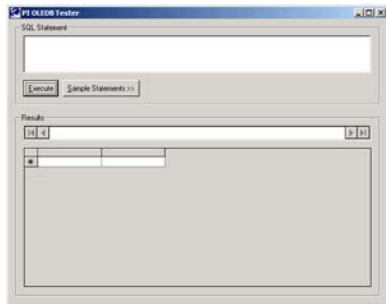
## PI OLE DB Tuning for Automation

When trying to run a large query against the PI Server from the PI OLE DB Provider you might receive an error: *Failed to retrieve events from server. [-11091] Event collection exceeded the maximum allowed.*

To increase the parameters open the **PI System Management Tools** and select **Operation, Tuning Parameters**. On the **Archive** tab right click *ArcMaxCollect* and edit the value. To apply this change open **Windows Services** and restart the *PI Archive subsystem*. If the issue still occurs, repeat the process and increase the **Value** again. See OSIsoft KB00646 for more information.

## PI OLE DB Troubleshooting

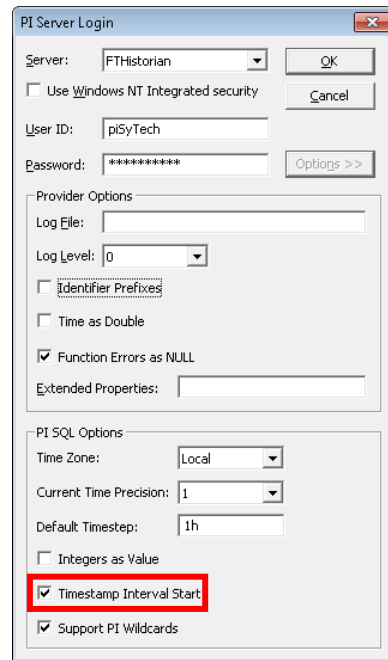
If the OLE DB provider is installed on the same machine as the Historian, from Windows Explorer go to *C:\Program Files (x86)\Rockwell Software\FactoryTalk Historian\PIPC\OLEDB\Tools\PI OLEDB Tester*.



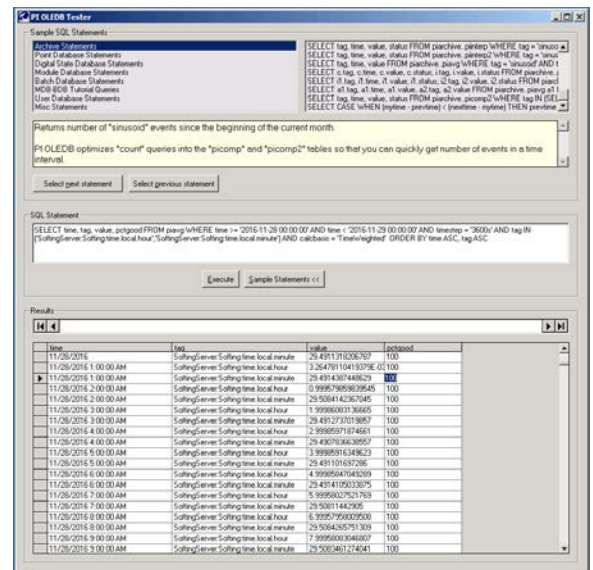
PI OLEDB Tester

The SQL Statement **XLReporter** has summited to the PI Server can be run from this utility. The *PI OLEDB Tester* can be copied to a remote machine to test from a network station.

In the **PI Server Login** under **PI SQL Options** select *Timestamp Interval Start*.



PI Server Login



PI OLEDB Tester

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