

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.

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.

Collections and Servers	3 - 40 Sci 10 (a. 12), (d. 14)			
p p		and the second sec		
Servers	Pilletiles Pillett [Pillege]			
a who loop the	There are Server (CONT) This paper (CONT) This paper (CONT) This paper (CONT) paper (CONT) This paper (CONT) This paper (CONT) This paper (CONT) This paper (CONT) This paper (CONT) This paper (CONT) This paper (CONT) (C	decide) Deviation the Adaptitions Pillipping president across The press Pillipping	Emign FIPS-present FIPS-previews FIPS-potential FIPS-potential FIPS-previews FIPS-prev	
Lowert Management Taxia	a runner mountain			
p p				
de la des de la des estas el Para el Para el Para el de la de la d	Second second		27	
	Contraction of the second second second			

PI System Management

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

New Use	? ?
Usemame:	PISyTech
Server:	WINSR2008FTH
Description	ſ
Password: Confirm Pass	word:
	Create Close
	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 Prope	ties	×
Windows Account:	FTHISTORIAN\SyTech	
Windows SID:	S-1-5-21-3924355571-510497229-951356670-1	C2
Description:		
PI Server:	FTHISTORIAN	
PI Identity:	PISyTech	
Mapping is disal	bled	
	OK Cano	el

Mapping Properites

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**.

121010	-
5	
Server - FTHISTORIAN	
Coastle AP trusts Coastle AP trusts Coastle explicit logn Coastle explicit logn Coastle explicit logn Coastle explicit logn Coastle halp passwork	
	1
5	
Session Record Unable to open a session on a server. [10727] PINET: RPC is Non-Existent. 12/12/2016 5:15:14 PM (ThIISTORIANS/Tech/PIOBS: Error connecting to server FTHISTORIAN. Unable to open a servery on a server. [10727 PM/SET BPC is Non-Existent.	445
	Server - FTHSTORIUM Server - FTHSTORIUM Server - FTHSTORIUM

.

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 seciont.

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.

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 <u>www.SyTech.com/</u>.

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**.

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

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.

Preview							1
ß	*	Date	MIXER_ZONE1_TEMP	MOGR_20NE2_TEMP	MOKER_SPEED	MORER_RAMPRESSURE	ŝ
Parameter		3/30/2012	71.3938171386719	77 1789534250895	33 1370187441508	64.6267203648885	
Setting Record Date	Value 3/30/2013	3/30/2012 1:00:00 AM	78.1625200907389	49.0242124239604	36.6801065444945	73.1387713114421	
report care	a so avia	3/30/2012 2:00:00 AM	63.6886056254242	53.4560168584188	38.8911759694417	82.3010019938151	
		3/30/2012 3:00:00 AM	74.5661202748617	76.0964968363444	50.6953378041585	88.9127839406331	
		3/30/2012 4:00:00 AM	78.5054092407227	65 9929971377055	54.0780683517456	90.6644298553467	
		3/30/2012 5:00:00 AM	72.0215874989828	63.6706168492635	53.4231768925985	86.9440397898356	
		3/30/2012 6:00:00 AM	65.3895225524902	53.5336532274882	59.6284706751506	79.0512536366781	
		3/30/2012 7:00:00 AM	71.5103735605876	74.3069140625	59.4726551055908	69.7432470586833	
		3/30/2012 8:00:00 AM	78.2382620493571	60.0908380508423	60.3853614171345	62.2715770085653	
		3/35/2012 5:00:00 AM	61.3350624084473	61.3104316383534	71.1325941721598	55 246310043335	
		3/30/2012 10:00:00 AM	70.8315608978271	56 1890864372253	77.1162390391032	61.7242600123088	
		3/30/2012 11:00:00 AM	77.7188284556071	56.4964746157328	77.6274737040202	68.8398073832194	۲
		3/30/2012 12:00:00 PM	72.8585931142171	62.9040375709534	73 2186347961426	78.1072875976563	
		3/30/2012 1:00:00 PM	60.1481925964356	60 267654800415	69.4468827565511	86.2893030802409	
		3/30/2012 2:00:00 PM	71.179417292277	76.4206968943278	70.5296145121256	90.5276397705078	
		3/30/2012 3:00:00 PM	77.8320638020833	76.4182764689128	68.1329851786296	89.3417254130045	
		3/30/2012 4:00:00 PM	67.2665041605631	68.3305636723836	65.6417427696771	83.1458344777425	١,
		*[н,				

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.



Real Time System Check

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**.

+ 🔞 🕾 🖗	3 🔜 💖 🕨 🖬 🗰						
ervices (Local)	Services (Local)						
	PLOPC HDA Server for PL	Name /	Description	Status	Startup Type	Log On As	
		SNUDIA Display Driver Service	Provides s	9:arted	Automatic	Local System	_
	200 the service	Contract Source Engine	Saves inst		Manual	Local System	
	Pouse the service	CocEnum		Started	Manual	Local System	
	the service	Performance Logs and Alerts	Collects pe		Manual	Network S	
		PI Alarm Subsystem		Sarted	Automatic	Local System	
	Description:	PI Analysis Framework Server	Manages t	Started	Automatic	Local System	
	PEOPC Historical Data Access Server for the PEOpt	PI Archive Subsystem		Started	Automatic	Local System	
	and a strength of the strength	PI Backup Subsystem		Sarted	Automatic	Local System	
		Po PI Base Subsystem		Started	Automatic	Local System	
		PI Batch Generator Interface			Manual	Local System	
		PI Batch Subsystem		9.arted	Automatic	Local System	
		Paper Buffer Subsystem			Manual	Local System	
		PI License Manager		Started	Automatic	Local System	
		PI Message Subsystem		Started	Automatic	Local System	
		PI Network Manager		Started	Automatic	Local System	
		PI OPC DA Server for PI	PI OPC Dat	Started	Automatic	.\OPC	
		PI OPC HDA Server for PI	PLOPC Mis	Started	Automatic	JOPC 4	4
		PI Performance Equation Sche		Started	Automatic	Local System	
		PI Ramp Soak Simulator (mp_s		Started	Automatic	Local System	
		PI Random Simulator (random)		Started	Automatic	Local System	
		PPI Recalculator Subsystem			Manual	Local System	

Services Window

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

COPE HDA SELVELIO	PI Properties (Local Com	puter) 🤗
General Log On Rei	covery Dependencies	
Log on as:		
C Local System acco Allow service to	ount 5 interact with desktop	
Ihis account	\OPC	Browse
Password:	•••••	
Confirm password:	•••••	—
You can enable or dis:	able this ceruice for the bardwy	are profiles listed below:
You can enable or dis Hardware Profile	able this service for the hardwa	are profiles listed below: Service
You can enable or disa Hardware Profile Profile 1	able this service for the hardwa	are profiles listed below: Service Enabled
You can enable or disu Hardware Profile Profile 1	able this service for the hardwa	are profiles listed below: Service Enabled
You can enable or disa Hardware Profile Profile 1	able this service for the hardwa	are profiles listed below: Service Enabled
You can enable or disa Hardware Profile Profile 1	able this service for the hardwo	ere profiles listed below: Service Enabled
You can enable or dis. Hardware Profile Profile 1	able this service for the hardwo	ere profiles listed below: Service Enabled
You can enable or dis. Hardware Profile Profile 1	able this service for the hardwo	are profiles listed below: Service Enabled le Disable

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

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.

Launch Permission	2
Security Group or user names: INTERACTIVE NETWORK SYSTEM	
Permissions for NETWORK Local Launch Remote Launch Local Activation Remote Activation	Add <u>Remove</u> Allow Dery V V V V
	OK Cancel

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 OSI HDA Server Prop	erties	<u>? ×</u>
General Location Sec	urity Endpoints Identity	
Which user account do	you want to use to run this applic	ation?
C The interactive user.		
C The Jaunching user.		
This user.		
Us <u>e</u> r:	.\OPC	Browse
Password:	NEN	
Confirm password:	NO.N.	
O The system account	(services only)	
	OK Cancel	Apply
D G O 1 C D		

DCOM Properties Identity Tab

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.

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			
Server: FTHistorian 💌 OK			
Use Windows NT Integrated security			
User ID: piSyTech			
Password: *******************			
Provider Options			
Log <u>Fi</u> le:			
Log Level: 0 💌			
Identifier Prefixes			
Time as Double			
✓ Function Errors as NULL			
Extended Properties:			
PI SQL Options			
Time Zone:			
Current Time Precision: 1			
Default Timestep: 1h			
Integers as Value			
🔽 Timestamp Interval Start			
✓ Support PI Wildcards			

PI Server Login



PI OLEDB Tester

RSLinx and FactoryTalk are registered trademarks of Rockwell Automation, Inc.