



Vijeo Historian

Quick-Start Tutorial

This tutorial will guide you through getting started with Historian, providing you with a basic working knowledge of configuration and data analysis.

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Tutorial Outline

In this tutorial we will describe the steps involved in installing and configuring Vijeo Historian. We will collect data from a Vijeo Citect control system, and view this data using a client application.

Before getting started, we will briefly cover an [overview of Historian](#), where it fits in with other Schneider Electric products and a discussion of Historian components and architecture.

As you proceed through the tutorial, take care to follow the steps completely and in order. Tips will be provided along the way (in the margin at right) to help you learn more about the task and adapt the steps to different environments. You can also see where you are in the tutorial by using the tutorial outline (bottom of margin).

Although you can follow the tutorial using older software versions, we will focus on using Vijeo Historian 4.40 and Vijeo Citect 7.30 on Windows 7 and Windows Server 2008 R2.

You will need to have Vijeo Citect installed and running to complete the tutorial. We will be using the Example project provided with Vijeo Citect, though you can use your own project if you wish.

Important Information

People responsible for the application, implementation and use of this document must make sure that all necessary design considerations have been taken into account and that all laws, safety and performance requirements, regulations, codes, and applicable standards have been obeyed to their full extent.

Schneider Electric provides the resources specified in this document. These resources can be used to minimize engineering efforts, but the use, integration, configuration, and validation of the system is the user's sole responsibility. Said user must ensure the safety of the system as a whole, including the resources provided by Schneider Electric through procedures that the user deems appropriate.

Further important information is contained in the [Important Information](#) supplement section of this document on page 39 and must be read forthwith in conjunction with the content that follows.

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Historian Overview

Vijeo Historian helps plant and IT personnel to optimize operational efficiency by providing powerful reporting tools that collect, store and deliver meaningful reporting data from multiple, disparate systems. By using the information provided by Vijeo Historian, you can make more effective decisions toward optimizing operational performance.

Vijeo Historian incorporates Microsoft® SQL Server® technology to efficiently capture and store data from plant control systems (including Vijeo Citect and any OPC DA-compatible systems). Microsoft Reporting Services is also leveraged to deliver reporting data, available out of the box.

Vijeo Historian also provides an industry-standard OPC HDA interface, allowing other systems to work with Historian data. Through this interface, Historian also works together with Schneider Electric's Manufacturing Execution System (MES) offering, Ampla, to improve production efficiency and profitability.

The Vijeo Historian environment is made up of a collection of applications and services. Next, we will describe some of these you should know about.

Server Applications and Services



Historian Configuration Manager

This application is used to create and manage Historian projects. You use this application to configure the data sources from which Historian collects data and to configure how data is published.



Historian Data Manager

This application is used to create and manage Historian databases – the storage for collected data. You can also use this application to back up and then restore Historian databases, or to import and export data.

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Configuration Backup and Restore

This application is used to create a backup of the Historian project configuration database, and restore from backups.



Historian Data Service

This is a Windows service which monitors and collects data from control systems.



Historian Status Indicator

This utility is used to control the Historian Data Service and also displays licensing status information.

Client and Reporting Applications



Web Client

This web-based application is hosted in the Historian Web Portal. It allows you to graph Historian data or present it in a data list. Historian data and real-time control system data that has been published can be viewed.



Process Analyst

This application is also hosted in the Historian Web Portal. It is identical in functionality to that provided with Vijeo Citect, allowing you to graph historical data



Excel Client

This add-on for Microsoft Excel allows importing Historian data to Excel worksheets, providing aggregations and allowing you to create your own graphs and calculations.

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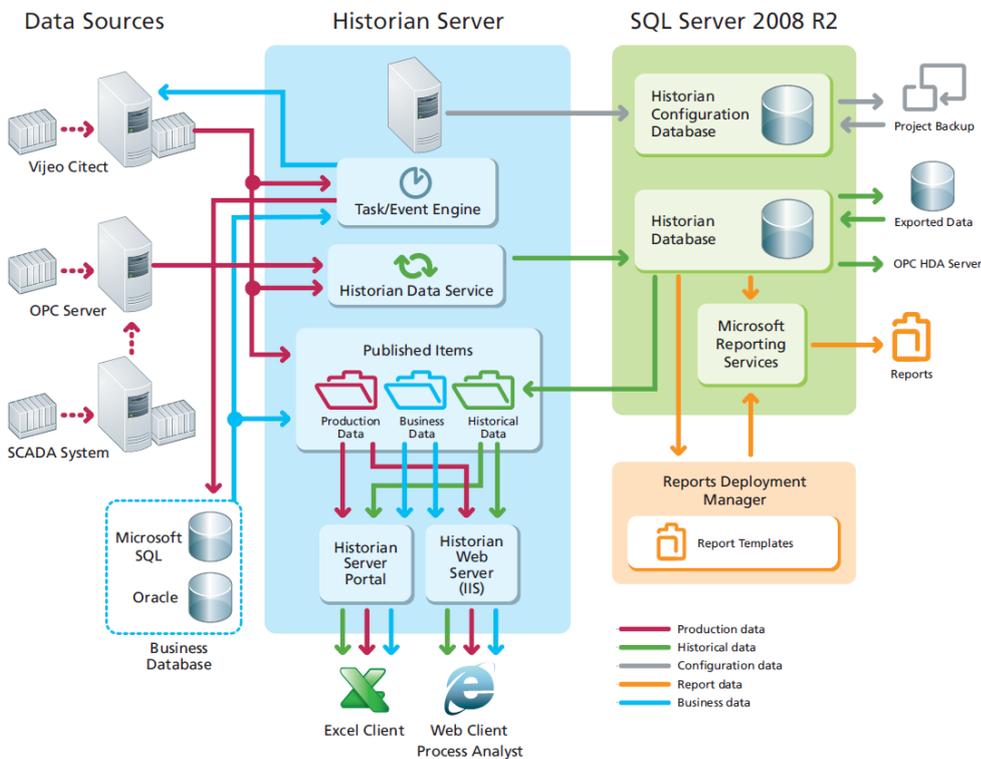


Microsoft Report Builder

This application is used to create reports using Historian data.

Architecture

While a complete understanding of the Historian architecture is not essential for this tutorial, it is helpful to be aware of how the systems and components fit together. In particular, note how Historian makes use of two SQL Server databases, one for the project (configuration), and another for Historian data.



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Installation

Several Vijeo Historian installation packages are available, with each including different SQL Server language variants, and one package without SQL Server. In this tutorial, we will use the Vijeo Historian installation package that includes English version SQL Server.

Preparing Your System

Before beginning installation, it is important to make sure your environment is prepared correctly. You will need the latest service pack and any Windows updates installed. You will also need the correct Windows features enabled on your computer. While the Historian installation will detect missing features based on what you choose to install, these features need to be activated manually.

In Windows 7, features can be changed via *Control Panel* → *Programs and Features* → *Turn Windows features on or off*. You should include the features shown below. Note that you can select additional features, but ensure *MSMQ Active Directory Domain Services Integration* is not selected as this component can interfere with normal Historian operation.

★ Note

Both 32-bit and 64-bit installations of SQL Server are included with Historian. The installation will automatically detect and install the correct version for your computer.

★ Tip

It is important to make sure your operating system is up to date with the latest Service Pack and updates as some features may not work correctly if your operating system files are out of date.

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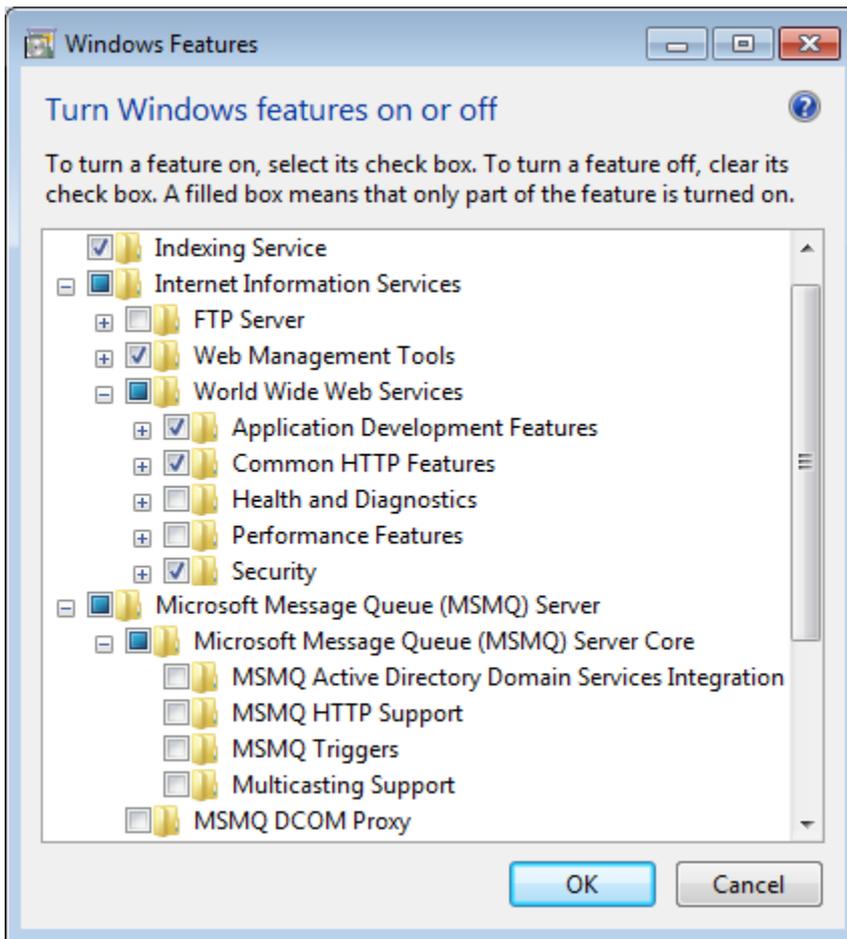
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When using Windows Server 2008 R2, clicking *Turn Windows features on or off* will display the *Server Manager*. In this utility, select *Roles* on the left pane and check that the required components are installed, using the screenshots below as a guide.

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Roles Summary [Roles Summary Help](#)

Roles: 3 of 17 installed

- Application Server
 - File Services
 - Web Server (IIS)

[Add Roles](#)
[Remove Roles](#)

Application Server [Application Server Help](#)

Provides central management and hosting of high-performance distributed business applications.

Role Status [Go to Application Server](#)

Role Services: 9 installed

[Add Role Services](#)
[Remove Role Services](#)

Role Service	Status
.NET Framework 3.5.1	Installed
Web Server (IIS) Support	Installed
COM+ Network Access	Installed
TCP Port Sharing	Installed
Windows Process Activation Service Support	Installed
HTTP Activation	Installed
Message Queuing Activation	Installed
TCP Activation	Installed
Named Pipes Activation	Installed
Distributed Transactions	Not installed
Incoming Remote Transactions	Not installed
Outgoing Remote Transactions	Not installed
WS-Atomic Transactions	Not installed

Description:
[Web Server \(IIS\) Support](#) enables Application Server to host internal or external Web sites and Web services that communicate over HTTP. It includes support for ASP.NET applications that can be accessed via a Web browser such as Internet Explorer, and Web services built using Windows Communication Foundation (WCF).

File Services [File Services Help](#)

Provides technologies that help you manage storage, enable file replication, manage shared folders, ensure fast file searching, and enable access for UNIX client computers

Role Status [Go to File Services](#)

Messages: None
System Services: All Running
Events: None in the last 24 hours

Role Services: 3 installed

[Add Role Services](#)
[Remove Role Services](#)

Role Service	Status
File Server	Installed
Distributed File System	Not installed
DFS Namespaces	Not installed
DFS Replication	Not installed
File Server Resource Manager	Not installed
Services for Network File System	Not installed
Windows Search Service	Not installed
Windows Server 2003 File Services	Installed
Indexing Service	Installed
BranchCache for network files	Not installed

Description:
[File Server](#) manages shared folders and enables users to access files on this computer from the network.

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Web Server (IIS) Web Server (IIS) Help

Provides a reliable, manageable, and scalable Web application infrastructure.

Role Status Go to Web Server (IIS)

Messages: None
 System Services: 4 Running, 2 Stopped
 Events: None in the last 24 hours
 Best Practices Analyzer: 0 noncompliant; 0 excluded; 6 compliant Last Scan: 4/04/2011 3:32:34 PM

Role Services: 39 installed Add Role Services
Remove Role Services

Role Service	Status
Web Server	Installed
Common HTTP Features	Installed
Static Content	Installed
Default Document	Installed
Directory Browsing	Installed
HTTP Errors	Installed
HTTP Redirection	Installed
WebDAV Publishing	Not installed
Application Development	Installed
ASP.NET	Installed
.NET Extensibility	Installed
ASP	Installed
CGI	Not installed
ISAPI Extensions	Installed
ISAPI Filters	Installed
Server Side Includes	Not installed
Health and Diagnostics	Installed
HTTP Logging	Installed
Logging Tools	Installed
Request Monitor	Installed
Tracing	Installed
Custom Logging	Not installed
ODBC Logging	Not installed
Security	Installed
Basic Authentication	Installed
Windows Authentication	Installed
Digest Authentication	Installed
Client Certificate Mapping Authentication	Installed
IIS Client Certificate Mapping Authentication	Installed
URL Authorization	Installed
Request Filtering	Installed
IP and Domain Restrictions	Installed
Performance	Installed
Static Content Compression	Installed
Dynamic Content Compression	Installed
Management Tools	Installed
IIS Management Console	Installed
IIS Management Scripts and Tools	Installed
Management Service	Installed
IIS 6 Management Compatibility	Installed
IIS 6 Metabase Compatibility	Installed
IIS 6 WMI Compatibility	Installed
IIS 6 Scripting Tools	Installed
IIS 6 Management Console	Installed
FTP Server	Not installed
FTP Service	Not installed
FTP Extensibility	Not installed
IIS Hostable Web Core	Not installed

Description:
[Web Server](#) provides support for HTML Web sites and optional support for ASP.NET, ASP, and Web server extensions. You can use the Web Server to host an internal or external Web site or to provide an environment for developers to create Web-based applications.

- To add Web Server (IIS), File Services and Application Server roles, click *Add Roles*.

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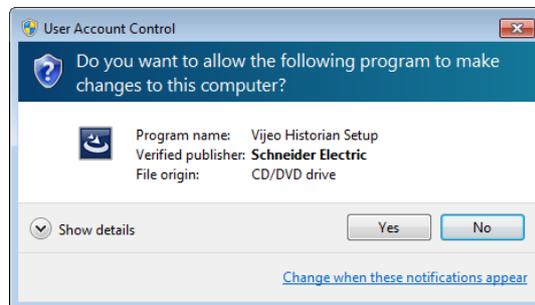
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- To ensure Microsoft Message Queue components are active, select *Roles* → *Application Server* on the left pane.
- To ensure the Indexing Service is active, select *Roles* → *File Services* on the left pane and ensure the *Indexing Service* is installed under *Role Services*.
- Finally, to ensure the correct Web Server (IIS) components are active, select *Roles* → *Web Server (IIS)* on the left pane and review the *Role Services*.

Installation

To launch the installation, double-click the setup.exe file on the Historian DVD, and proceed with the steps below.

1. You may be prompted with a User Account Control dialog requesting permission for the installation to be run as Administrator.



Click Yes.

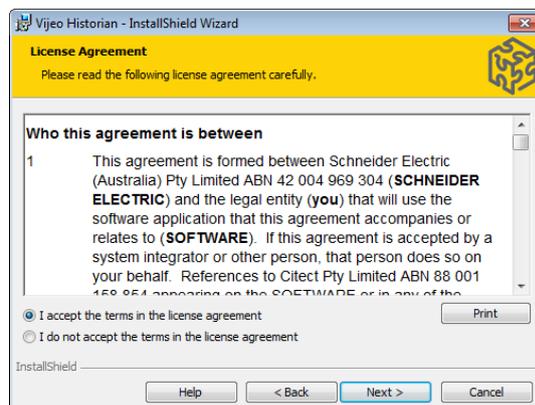
2. The Welcome screen may take a few moments to load as the installation detects your computer's settings.



Click Next.

3. You will be asked to accept the License Agreement.

Select I agree... and then click Next.



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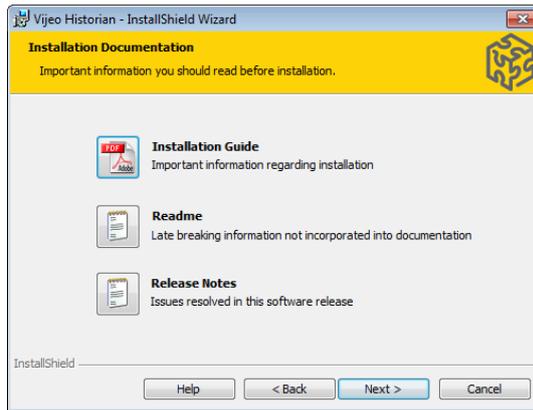
Start Service

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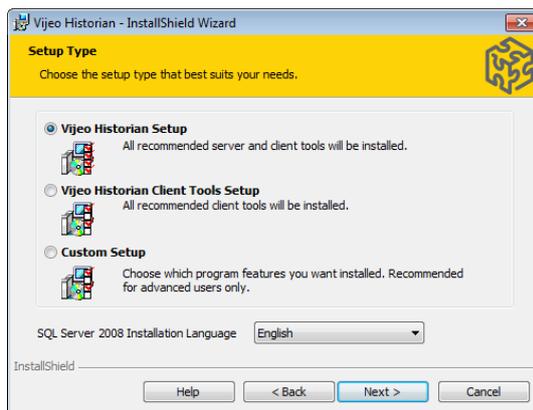
- The next screen provides links to further information about the installation and product release.

Click Next.



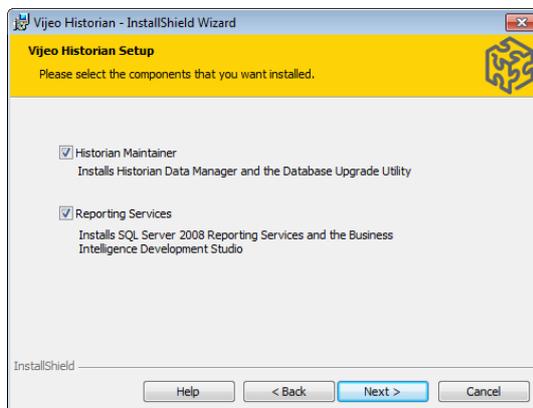
- You are now prompted to select a *Setup Type*. In this tutorial, we will install all components, including SQL Server. This screen also allows you to choose a SQL Server installation language.

Click Next.



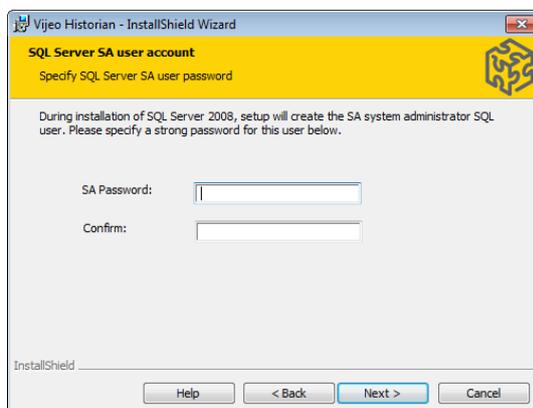
- The next screen allows you to select whether to install database management and reporting tools.

Click Next.



- As we selected to install SQL Server, in the next screen we need to choose a password for the SQL Server administrator account.

Type a password, and **click Next.**



★ Tip

When choosing a password for the SQL Server system administrator “SA” account, the Historian installation will validate this against your local network policies. These policies may require a combination of letters and numbers to ensure a “strong” password.

Keep a note of the password, as you may need to use it later.

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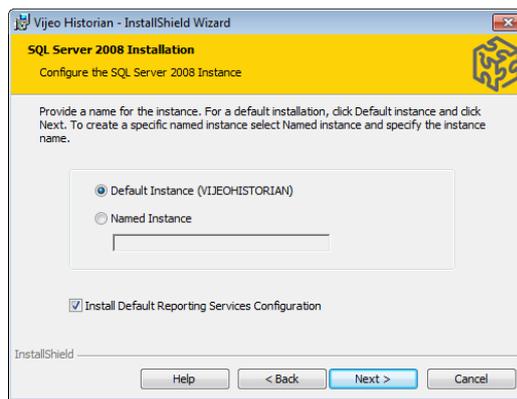
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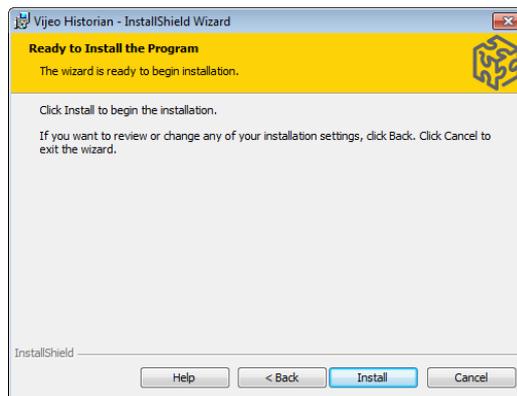
8. We are now given the option to choose a name for the SQL Server instance that will be installed. You can also select whether the installation will set up Reporting Services with default configuration.

Click Next.

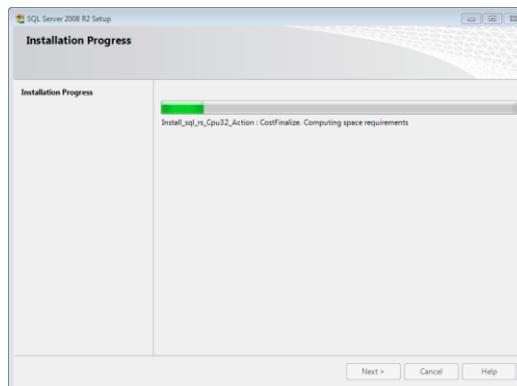


9. In the next screen, we will choose to begin the installation.

Click Install.

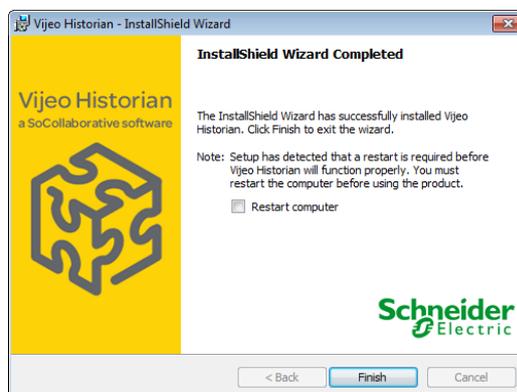


10. During the installation process, other windows may appear as the installer launches other programs to be installed. For example, you may see the Microsoft .NET Setup, or the SQL Server Setup windows appear.



11. Once the installation has completed, you may be asked to restart your computer.

Tick Restart computer, then **click Finish.**



★ Note

The installation process may take longer when running from a DVD containing multiple SQL Server versions. This is due to the SQL Server setup files being compressed on the DVD. The installation needs to extract these large files before proceeding, which can take time to complete.

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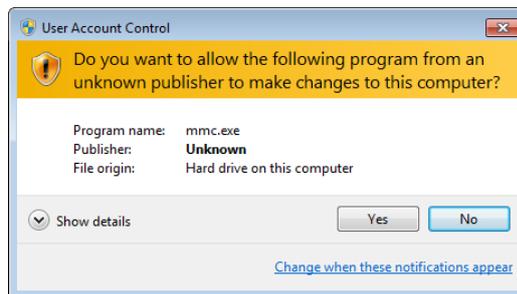
Creating the Project

To begin using Historian, you need to create a new project using the Historian Configuration Manager. Note that an Historian *project* is sometimes referred to as a *server* or *server project* in the Historian Configuration Manager.

1. Launch the Historian Configuration Manager using the Start Menu shortcut:
Start → All Programs → Schneider Electric → Vijeo Historian → Configuration Tools → Historian Configuration Manager.

You may receive a User Account Control message requesting privileges for the application.

Click Yes.



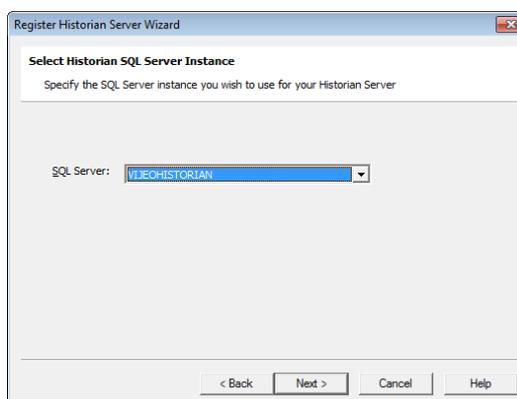
2. As we have not yet created a project, you will first be prompted with the *Register Historian Server Wizard*.

Click Next.



3. We now need to select a SQL Server instance to store the project database. In this tutorial, we only have a single instance (already selected here) that was created when SQL Server was installed earlier.

Click Next.



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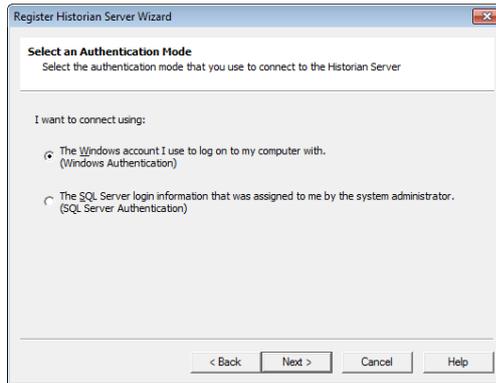
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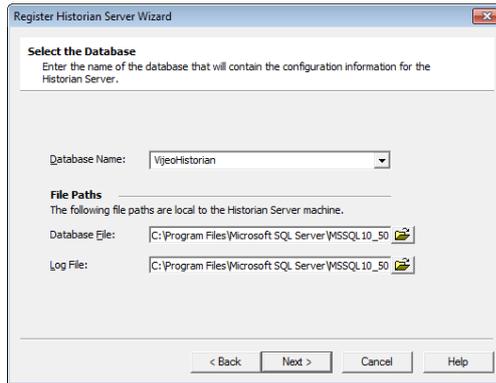
- The next step requires you to select an Authentication Mode. We will leave the default *Windows Authentication* selected.

Click Next.



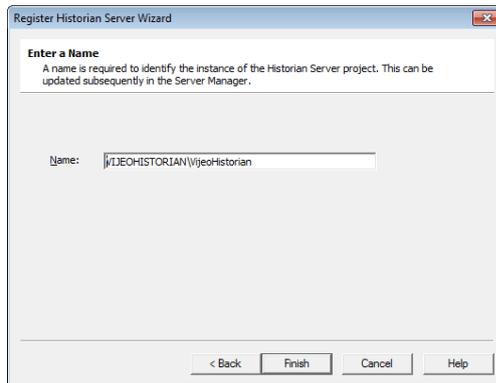
- We can now choose a name for the database, where the project configuration will be stored. We will use the default, *VijeoHistorian*.

Click Next.

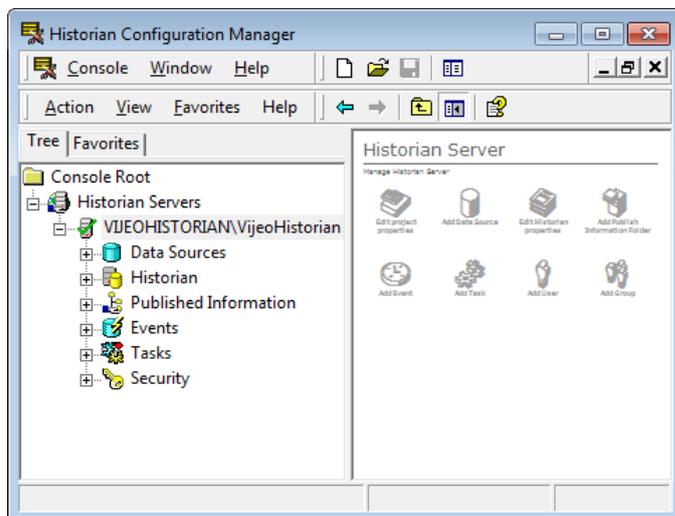


- Finally, we can choose to name the project. It is preferable to use the default, which contains the database name.

Click Finish.



The project will now be displayed in the *Historian Servers* tree in the *Historian Configuration Manager*.



★ Tip

The authentication type you choose will also later determine how Historian connects to the project database when loading configuration (for example, when the Data Service starts).

This setting can be changed later if required.

★ Note

When using Windows Authentication, the user account that connects to the Historian database will be determined by the account under which each application or service runs. For example, the Data Service will log on using a different account to IIS.

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Configuring the Data Source

Now that we have created a project, we can begin configuring the Historian Server. The first step is to create a data source from which Historian will collect data. You can configure any number of data sources, and point them to control systems (Vijeo Citect, OPC) or databases (SQL and Oracle). In this tutorial, we will create a Vijeo Citect data source, running on the local computer. The Vijeo Citect project will need to be running in order for Historian to connect to it.

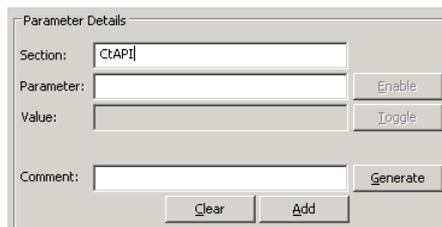
First, we need to ensure Vijeo Citect has been configured to allow CtAPI connections that Historian will use.

Vijeo Citect Configuration - CtAPI

1. Launch Citect Explorer, and then open the *Computer Setup Editor* from the *Tools* menu.

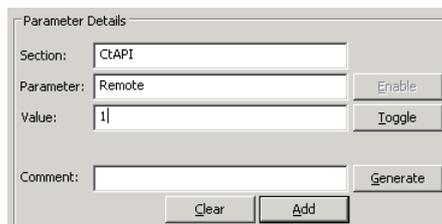
2. If it does not already exist, we need to add a section for CtAPI.

Type *CtAPI* in the *Section* field, then **click Add**.



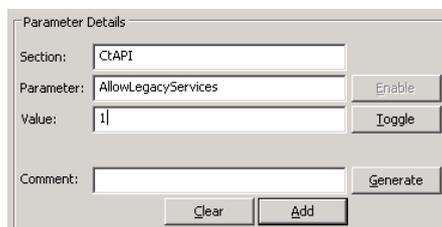
3. We now need to add the parameter *Remote*, to allow connections to the Vijeo Citect server.

Type *Remote* into the *Parameter* field, set the value to *1* and **click Add**.



4. We also need to add the parameter *AllowLegacyServices*.

Type *AllowLegacyServices* into the *Parameter* field, set the value to *1* and **click Add**.



5. **Select** *Save* from the *File* menu and **close** the Computer Setup Editor.

6. **Run** (or restart) the Vijeo Citect project.

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Vijeo Citect Configuration – Historize Setting

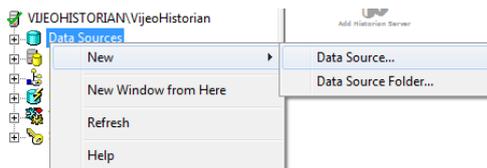
In Vijeo Citect version 7.30, a setting called *Historize* is provided that is used to set up which tags, alarms or trends should be configured for data collection in Historian. This setting is available in the extended properties, accessed by pressing the **F2** key.



Creating the Data Source

Using the Historian Configuration Manager, we will now create a data source to point to Vijeo Citect. During these steps, Historian will automatically download the Vijeo Citect configuration to the project database and configure the tags, alarms or trends for which we should collect data, based on the *Historize* settings in Vijeo Citect.

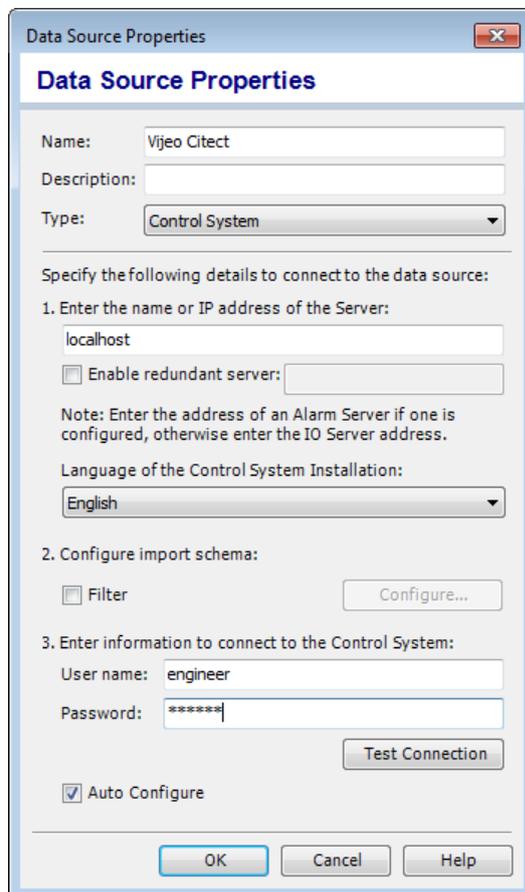
1. **Right-click** on *Data sources* and **select New→Data Source**.



2. **Type in** the following:
Name: Vijeo Citect
Server: localhost
User name: engineer
Password: citect

These settings instruct Historian to connect to the local Vijeo Citect server, using the engineer login. We have left the default option to *Auto Configure* the data source. We will see in the following steps that this will use Vijeo Citect configuration to *Historize* and *Publish* tags, alarms and Trends.

Following this step, *Import Schema* will automatically run. **Click OK**.



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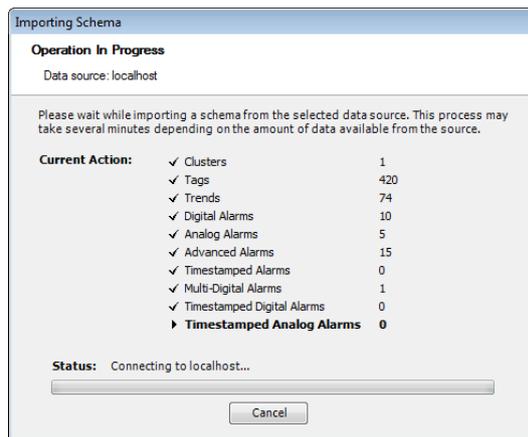
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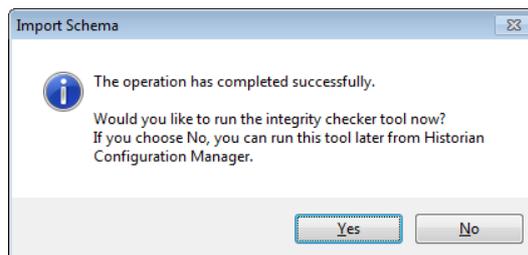
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- The Import Schema process will now automatically run. This process creates the tags, alarms and trends in the project database.

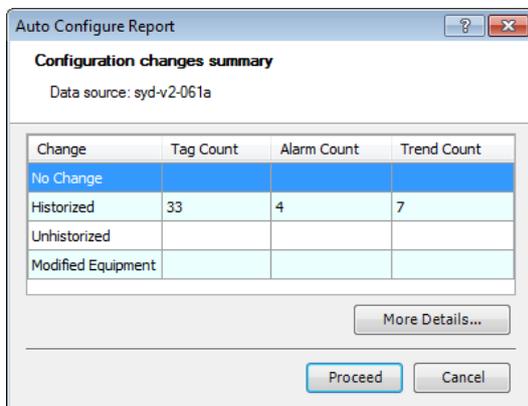


- When Import Schema has completed, you will be asked whether to run the Integrity Checker tool. This is useful where changes have been made in Vijeo Citect configuration. As this is the first time we are importing, we do not need to run it.



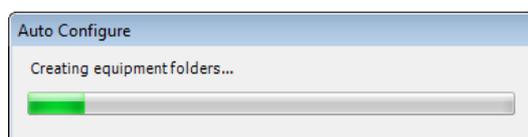
Click No.

- As we selected to *Auto Configure* the Historian in Step 2, we are now presented with details about any relevant configuration changes that have been made in Vijeo Citect relating to the Historize setting.



Click Proceed.

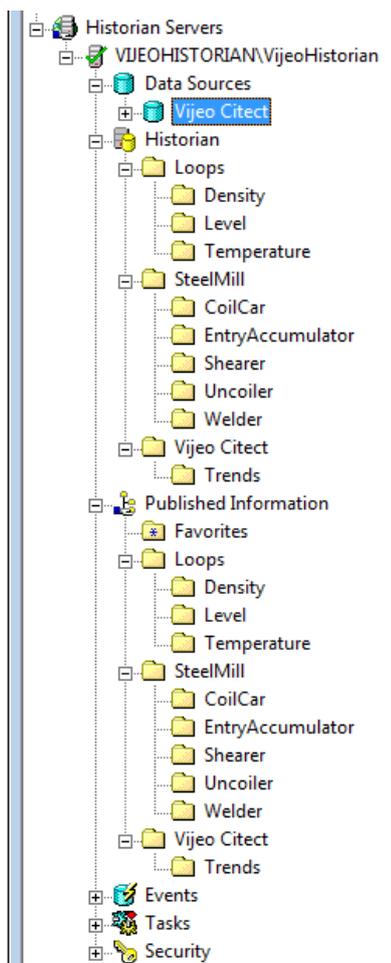
- A progress dialog is now shown while the Auto Configure process creates the Historian configuration.



- Once the automatic configuration process is complete, you will see folders have been created in the *Historian* and *Published Information* trees using the Equipment Hierarchies from the Vijeo Citect example project.

Within each equipment folder, the tags, alarms and trends that have their Historize setting set to true will be present. This avoids having to manually creating folders and configuring these items to be historized and published.

If you wish to change the configuration, you can do so by modifying the settings in the Vijeo Citect project and then running Import Schema again. Alternatively, you can modify the configuration within the Historian Configuration Manager.



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Historize and Publish

In the previous section, we saw that Historian will automatically historize and publish tags, alarms and trends based on Vijeo Citect configuration, when using Vijeo Citect 7.30 or higher. This approach significantly simplifies the workflow of managing Historian, though it is not the only way to configure what is historized.

If you are not using a Vijeo Citect 7.30 or higher data source, or you simply want to configure what is historized and published within Historian, you can use the Historian Configuration Manager interface to achieve this.

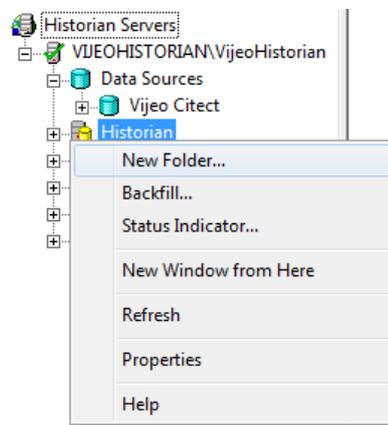
Regardless of data source type, we also need to set permissions on what has been published so that users can see data when they log in to the client applications.

Historizing

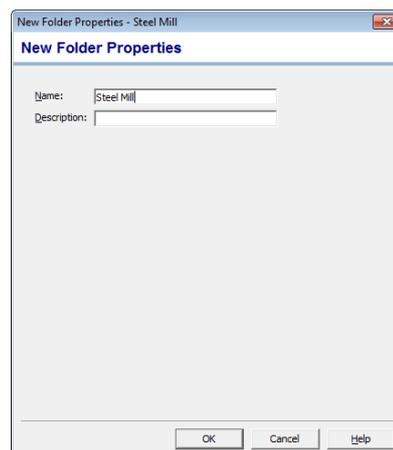
To configure Historian to collect data for a given tag, alarm or trend, it needs to appear under the Historian item in the Historian Configuration Manager. If you are using Vijeo Citect 7.30 with the Example Project, the following steps are not necessary.

1. As we saw with the equipment hierarchy examples earlier, it makes sense to organize tags into folders under the Historian item.

Right-click on *Historian* and **select New Folder...**



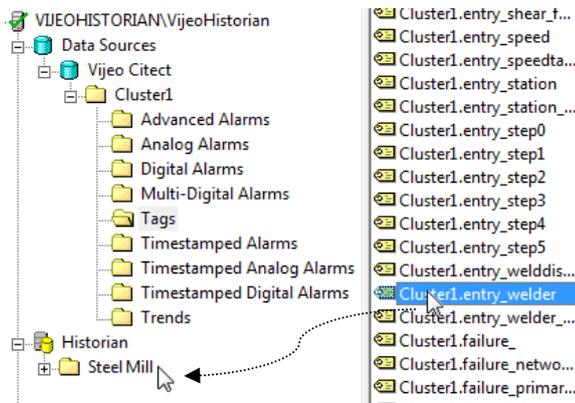
2. **Type in** a name (e.g. Steel Mill) and **click OK**.



3. **Expand** the Data Sources node and locate a tag you wish to historize.

For example, **expand** *Vijeo Citect, Cluster1* and **click** the *Tags* folder.

4. **Click and drag** the tag you wish to historize to the folder created in Step 2.



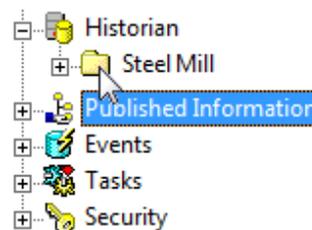
Publishing

To make tags, alarms or trends available to client applications, they need to be published to a folder under the Published Information node, and have appropriate permissions set.

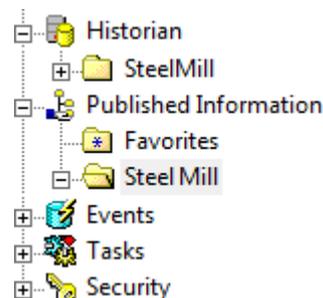
If you are using Vijeo Citect 7.30 with the Example project, you will already have some items published, and the steps below are not required. However, you will still need to configure permissions for these items, as we describe in the next section.

1. To publish Historian data, we can drag folders or items from the Historian node.

E.g. **Click and drag** the *Steel Mill* folder we created earlier to the Published Information node.



The Steel Mill folder will now appear under the Published Information node.



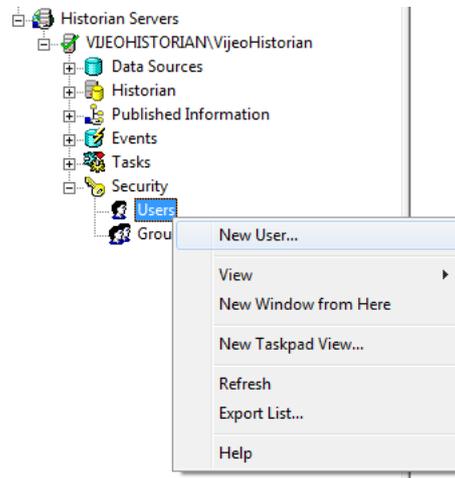
Permissions and User Security

Historian features a security model that allows you to make data available only to those users that should be allowed to access it.

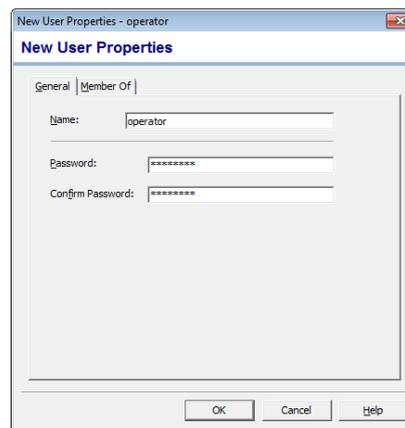
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In the previous steps, we have published data but have not yet made it available to the clients. Historian client applications require you to log in to access published information. We will now create a user so that we can later log in to client applications, and then assign permissions so that we can retrieve data.

1. **Expand** the *Security* node in the Historian Configuration Manager, **right-click** on *Users* and **select New User...**

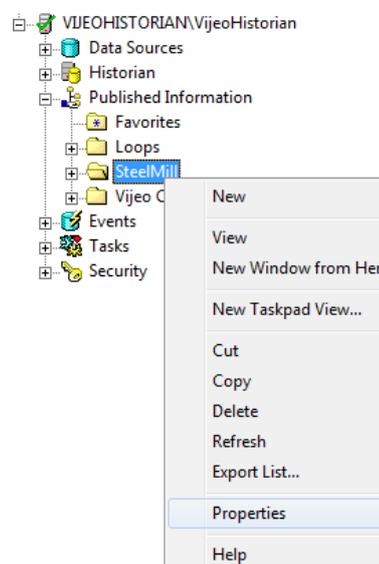


2. **Type in** a name and password and **click OK**.



3. We will now add permissions for the *operator* user to read the *SteelMill* folder.

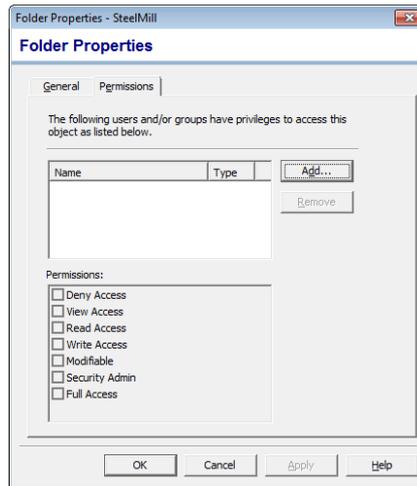
Expand *Published Information*, **right-click** on the *SteelMill* folder and **click Properties**.



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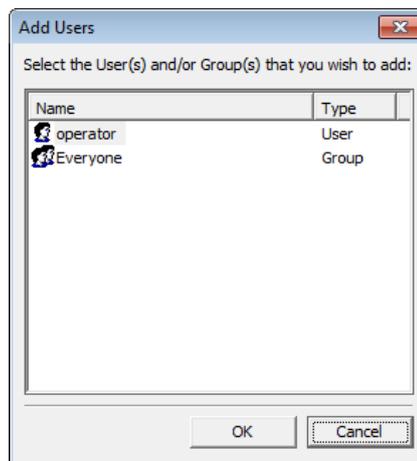
4. **Click** the *Permissions* tab. Notice that, by default, no users or groups have been given permission.

Click Add...



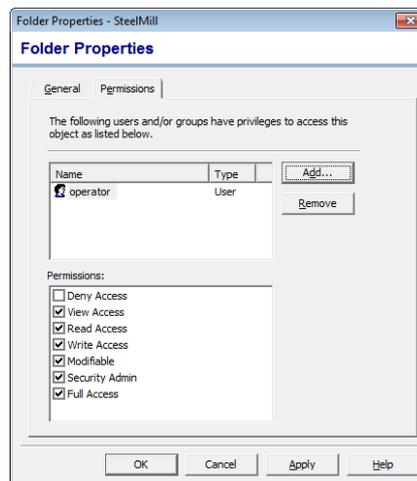
5. Notice that we also have the option of selecting the Everyone group. This is a built-in group that includes all users.

Select the *operator* user and **click OK**.



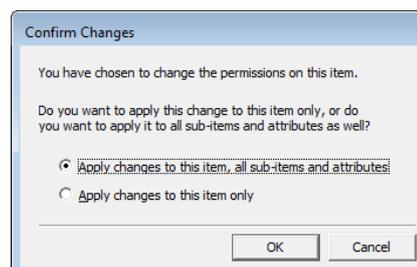
6. The operator user now appears in the list of users. By default, full permissions have been assigned.

Click OK.



7. We are now asked whether we want to apply these permissions to the folder ("item") only, or all "attributes" (i.e. tags, trends, alarms).

Click OK.



★ Tip

You can also assign permissions to groups that you create. By assigning permissions to a group, any users in that group will inherit those permissions.

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Creating the Historian Database

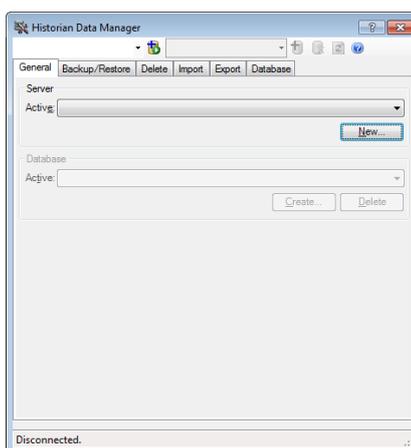
At this point, we have configured the data source from which we will collect data and which tags, alarms and trends are to be historized. We now need to create a database to store the collected data.

To create a new database, we will use the Historian Data Manager. We then need to configure this new database as the destination for the Historian, using the Historian Configuration Manager.

1. Launch the Historian Data Manager using the Start Menu shortcut:
Start → All Programs → Schneider Electric → Vijeo Historian → Management Tools → Historian Data Manager.

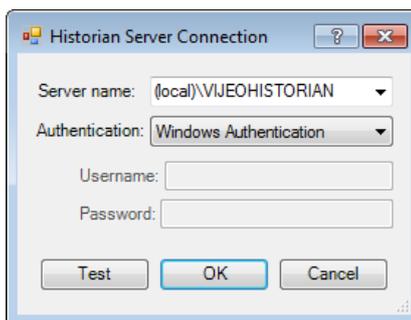
2. We first need to add a connection to the SQL Server instance. This connection is only for the purposes of managing the Historian database within the Data Manager application.

Click New...



3. **Type in** the SQL Server instance *(local)\VIJEOHISTORIAN* into the *Server name* field.

Click OK.



4. The newly created server connection will be selected in the *Server*→*Active* field. As we have not yet created a database, the *Database*→*Active* field will be blank.

To create a new database, **click Create...**

★ Tip

You can use the Historian Data Manager to manage remote Historian databases. To connect to a remote SQL Server instance, use the machine name (i.e. not the IP address).

When connecting to the local SQL Server instance, you can use the machine name or the text "(local)".

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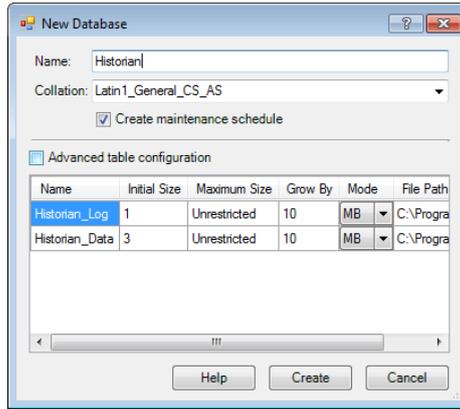
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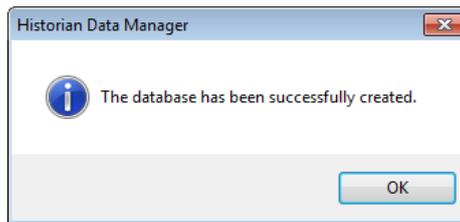
- We can now choose a name for the database. Other, more advanced, settings can also be changed at this stage.

Type in *Historian* and click **Create.**



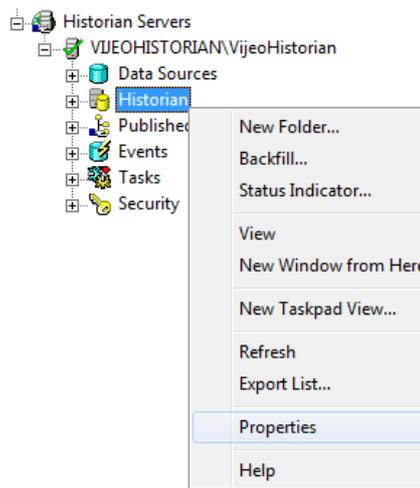
- A progress bar will appear in the status bar of the Historian Data Manager while the database is being created. Once this has completed, you will receive a confirmation message box.

Click **OK.**



- We now need to set this database as a destination store for Historian.

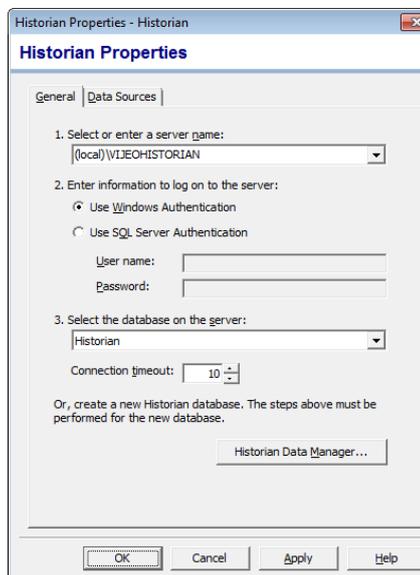
Returning to the Historian Configuration Manager, **right-click** on the Historian node and **select **Properties****.



- Using the Historian Properties dialog we now set the connection to the Historian database we just created.

Type in *(local)\VIJEOHISTORIAN* into the *server name* field and **select *Historian* as the database.**

Click **OK.**



★ Tip

The connection information you enter using the *Historian Properties* dialog will be used by all applications to connect to the Historian database. The two exceptions are the Historian Data Manager, and Reporting Services.

★ Note

When using Windows Authentication, the user account that connects to the Historian database will be determined by the account under which each application or service runs. For example, the Data Service will log on using a different account to IIS.

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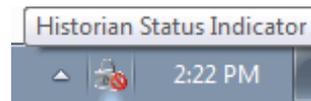
★ Note

The Data Service needs to be restarted whenever data collection settings are changed, for example, if you add tags to be historized or change deadband settings.

After following the steps in previous sections to set up Historian, we can now start the Data Service to begin retrieving data from our data source.

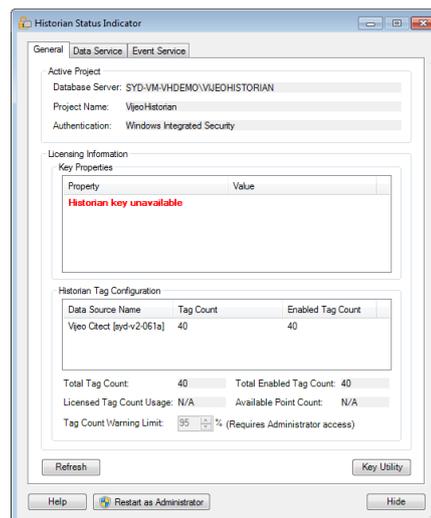
To do this, we can use the Historian Status Indicator.

1. The Historian Status Indicator is configured to start with Windows. If it is already running, locate it in the Windows System Tray and **double-click the icon**.



If it is not running, launch it using the Start menu:
Start → All Programs → Schneider Electric → Vijeo Historian → Management Tools → Historian Status Indicator.

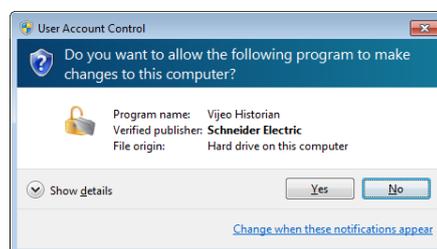
2. The Historian Status Indicator window will display some information about current configuration and license status. To start the Data Service, the application needs to be run as Administrator. Clicking the *Restart as Administrator* button will close the application and request administrative privileges.



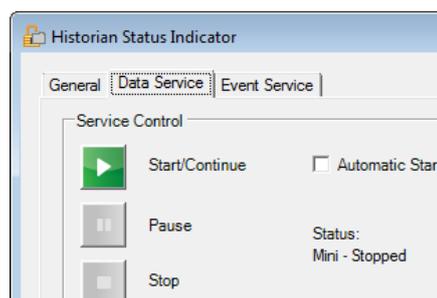
Click Restart as Administrator.

3. You may receive a User Account Control message requesting privileges for the application.

Click Yes.



4. Historian Status Indicator will restart. **Click** the *Data Service* tab.



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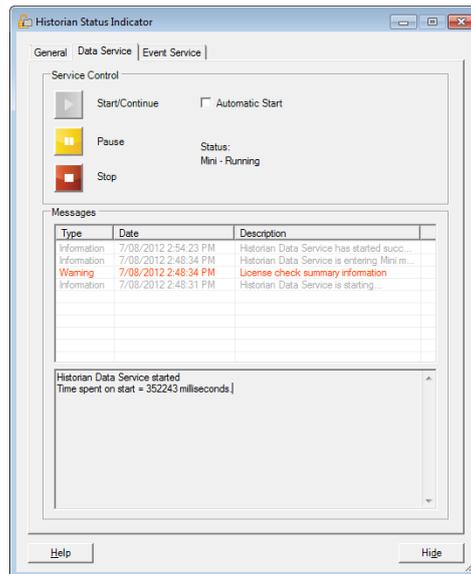
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5. The *Data Service tab* provides buttons to control the Data Service, and an information pane that will display messages about the service status.

Click Start/Continue.

Once the Data Service has started, the buttons will be updated and several messages will appear showing the status.



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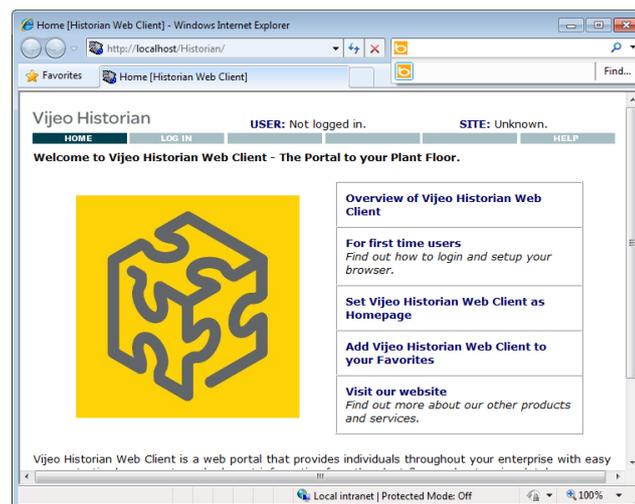
The Web Client shortcut will open the web portal in your default internet browser. Historian web client applications are compatible with Internet Explorer only – if the shortcut opens in another browser, you will need to launch Internet Explorer using the same web address.

Historian provides several client applications that allow you to retrieve data and perform data analysis. In this tutorial, we will take a brief look at Process Analyst.

Process Analyst

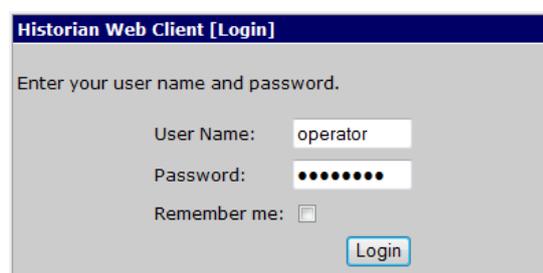
The Process Analyst is a powerful tool for analyzing data, allowing you to retrieve and graph Historian data. It is hosted within the Historian Web Portal, and so is accessible via the Historian Web Client shortcut.

1. Launch the Historian Web Client using the Start Menu shortcut: Start → All Programs → Schneider Electric → Vijeo Historian → Clients → Web Client.
2. An Internet Explorer window will be launched, and will open the Historian web portal web page.
3. **Click Log In.**



4. We will now log in using the details of the user we created earlier in the tutorial.

Type in *operator* and the password you chose when creating this user, then **click Login.**



5. After logging in, **click Process Analyst.**



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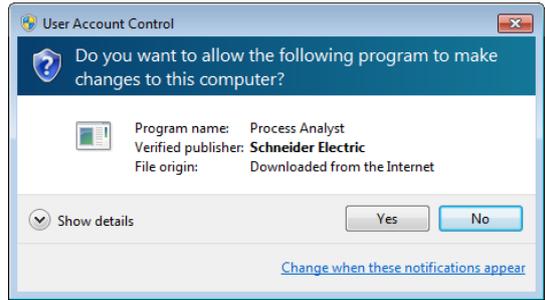
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- As this is the first time we are accessing Process Analyst, your browser will automatically download the install package and run the installation. You may receive a User Account Control message requesting privileges for the installation.



Click Yes.

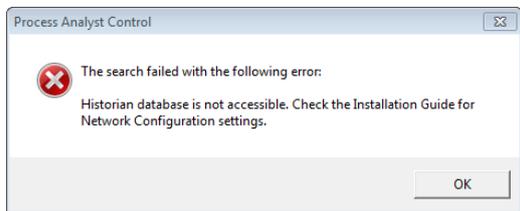
- Once Process Analyst loads, click the Add Pens button.



- We can now use the *Add New Pen(s)* dialog search for a historized tag.

Click Search.

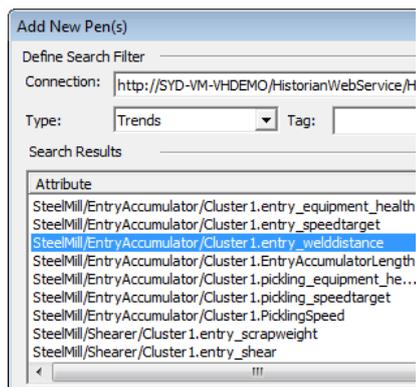
- You may receive a message indicating that the Historian database is not accessible. This is due to the Web Service not being able to connect to the database.



Before we can continue, we will need to follow the steps outlined in the Troubleshooting section – [Database Security for Process Analyst](#).

- Double-click** SteelMill/EntryAccumulator/Cluster1.entry_welddistance.

Click OK.



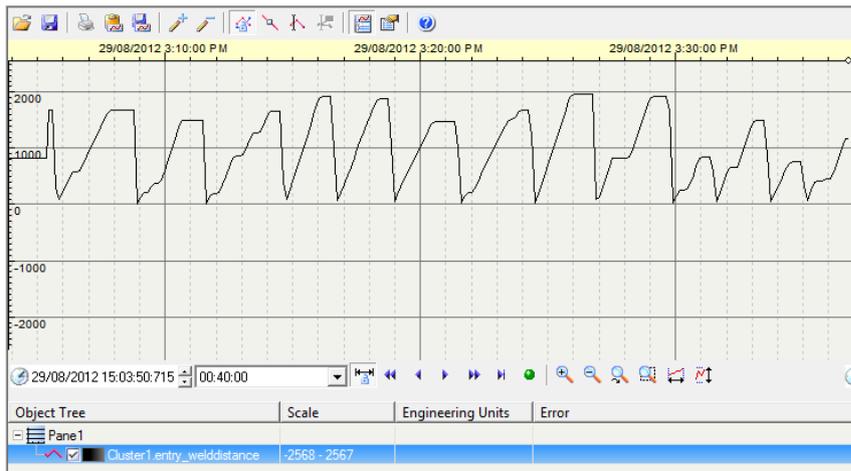
★ Note

Depending on your Internet Explorer security settings, you may receive a message that Internet Explorer has not loaded Process Analyst (an ActiveX control). To correct this, adjust the security settings under Tools→Internet Options→Security tab.

Consider adding the web portal address to the Trusted sites list and modify the settings for that zone by clicking the *Custom level...* button.

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The Cluster1.entry_welddistance tag will now be graphed.



★ Note

If you do not see data for the pen, it may be caused by not having collected data for the tag. Check the configuration for the tag and verify you have followed the steps described earlier.

If data is still not retrieved, or you receive a message in the *Error* column, there may be a problem with the IIS settings for the web service. Check the Troubleshooting section for tips on how to correct this.

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Database Security for Process Analyst

When using the Process Analyst to search for Historian items and data, a Web Service is used to retrieve information from the Historian server. This web service runs under a user account configured in Windows Internet Information Services (IIS). If we have configured database connections to use Windows Authentication, it is this user account that accesses the Historian databases when making a request.

By default, the user account IIS uses does not have sufficient permission to access these databases. We need to make configuration changes to correct this. There are several options:

- Select to use SQL Server Authentication.
- Change the user account in IIS to one that has access to the databases
- Add permission to the Historian databases for the user account configured in IIS.
- Create a new user for IIS to use, and add permission to the databases for this user

Selecting to use SQL Authentication is the easiest method, though not the most secure. Using this method, no Windows user account will be used. In some environments this is not an option, due to security policies – in this case, we need to choose one of the other options. We will now look at the settings that determine this behavior and steps to make adjustments where required.

Project Database

In order to retrieve Historian configuration, the project database needs to be accessible. The connection information for this database is configured when the project is created using the *Register Historian Server Wizard*. It can also be changed at any time using the Historian Server Properties dialog.

1. Launch the Historian Configuration Manager using the Start Menu shortcut:
Start → All Programs → Schneider Electric → Vijeo Historian → Configuration Tools → Historian Configuration Manager.

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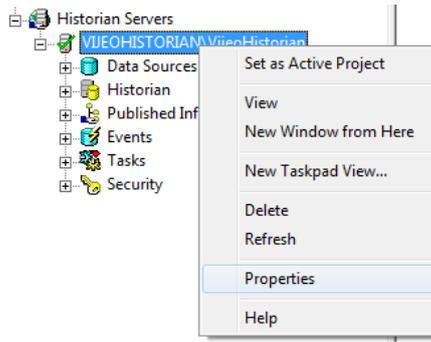
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2. **Right-click** the project and **select Properties.**



3. The *Historian Server Properties* dialog is displayed.

We can see that Windows Authentication is currently selected. This means that any application will use the configured user for that application to access the database.



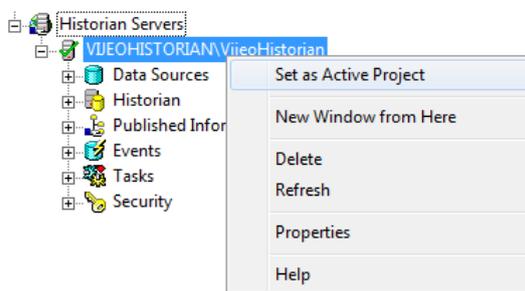
While not recommended, if your preference is to use SQL Server Authentication, **select Use SQL Server authentication** and **Type in** the following *Login name* and *Password*:

Login name: sa

Password: Use the password you chose during Installation

4. **Click OK.**

5. **Right-click** the project and **select Set as Active Project.**



If you would like to use Windows Authentication, the steps above are not necessary. Instead, follow the steps described later in this section.

★ Note

The SA (System Administrator) SQL Server account is a built-in user account created during installation. This account has full permission to all databases on the SQL Server instance. It is important to consider security requirements when choosing which account to use. For more control over database permissions, consider creating a SQL Server user account for use with Historian.

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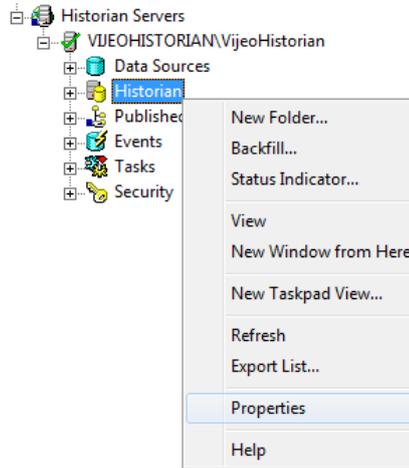
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Historian Database

In order to retrieve Historian data, the Historian database needs to be accessible. The connection information for this database is configured the Historian Properties dialog.

1. Again using the Historian Configuration Manager, **right-click** on the Historian node and **select Properties**.



2. The *Historian Properties* dialog is displayed.

We can see that Windows Authentication is currently selected. This means that any application will use the configured user for that application to access the database.

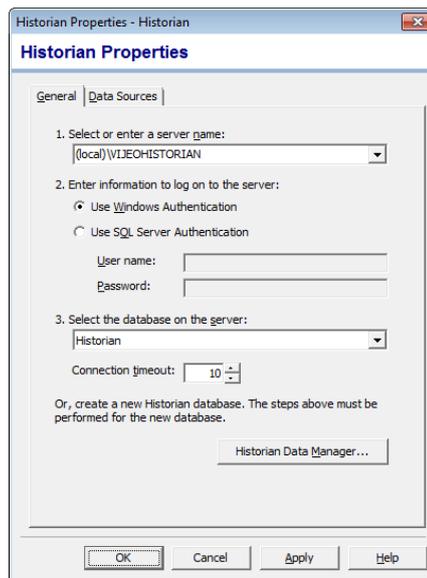
While not recommended, if your preference is to use SQL Server Authentication, **select Use SQL Server authentication** and **Type in** the following *Login name* and *Password*:

Login name: sa

Password: Use the password you chose during Installation

3. **Select** the *Historian* database.
4. **Click OK**.

If you would like to use Windows Authentication, the steps above are not necessary. Instead, follow the steps described later in this section.



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Using Windows Authentication

As described earlier, there are several options if choosing to use Windows Authentication:

- Changing the user account in IIS to one that has access to the databases
 - This is possible if you have already configured a Windows user with these permissions. Note that it is not recommended to simply change the user to one with Administrator privileges – this has potential security implications.
- Creating a new user for IIS to use, and add permission to the databases for this user
 - This is the most secure option, as it allows you to take control over what access the user has on your system.
- Adding permission to the Historian databases for the user account configured in IIS.
 - This is the method described in the following steps.

First, we need to determine which user account requires permission. This depends on the operating system you are using, as well as the version of IIS.

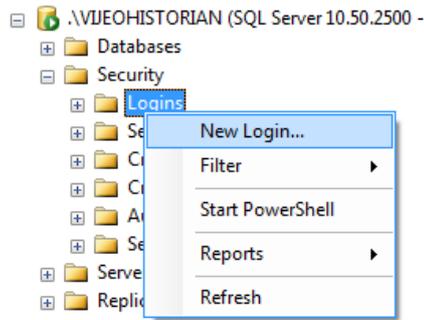
Operating System	IIS	User account
Windows XP	5.1	<machine name>\ASPNET
Windows Vista & Windows Server 2003	6.0	NT AUTHORITY\NETWORK SERVICE
Windows 7 & Windows Server 2008	7.X	IIS APPPOOL\ Classic .NET AppPool

We will use Microsoft SQL Server Management Studio to make the required permission changes based on the table above.

1. Launch SQL Management Studio using the Start Menu shortcut:
Start → All Programs → Microsoft SQL Server 2008 R2 → SQL Server Management Studio.
2. We need to log in to the server using the *Connect To Server* window. Use Windows Authentication or choose *SQL Server Authentication*, using the *sa* account and password set up during installation.
Click Connect.



3. **Expand** the *Security* folder, then right-click the *Logins* folder and **select New Login...**

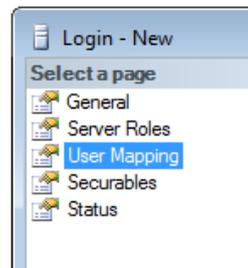


4. **Type in** the appropriate user account into the *Login name* field. For example, on Windows 7, type in *IIS APPPOOL\Classic .NET AppPool*

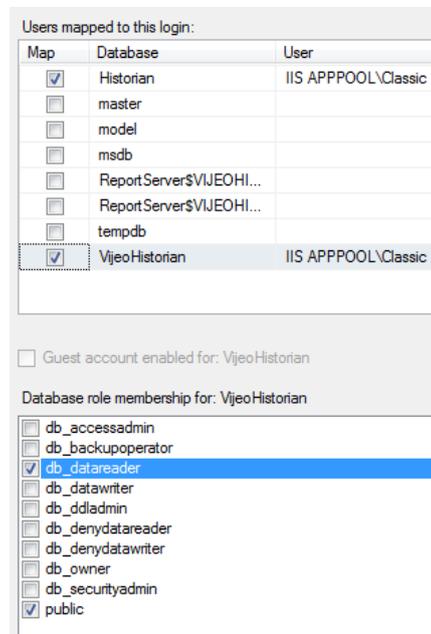


5. We will now set this new login to have permission to the Historian databases.

Click the *User Mapping* page in the left pane.



6. **Tick** the *Map* checkbox for the *VijeoHistorian* database, then **tick** the *db_datareader* checkbox under the *Database role membership* pane.
7. **Tick** the *Map* checkbox for the *Historian* database, then **tick** the *db_owner* checkbox under the *Database role membership* pane
8. **Click OK.**



For the Historian database, *db_owner* is required in order to execute certain stored procedures. An alternative (and more secure) method is to grant only *db_datareader* to the Historian database and then use the SQL statement `GRANT EXECUTE` on individual stored procedures (those that begin with `GetInterpolatedTag*`).

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Advanced Troubleshooting for Process Analyst

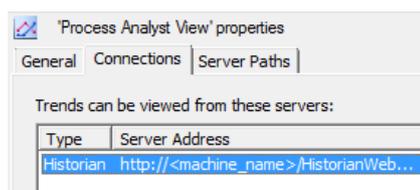
As Process Analyst uses web service technology to retrieve data, settings in IIS can affect this functionality. If you are not able to view data after adding a pen in Process Analyst, you may need to check that settings in IIS have been configured correctly.

One way to troubleshoot problems with the web service is to navigate to the web service address using Internet Explorer. First, you need to determine the web service address.

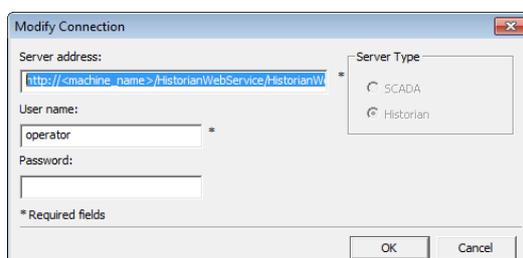
1. Using Process Analyst, **click** the *Process Analyst Control Properties* toolbar button.



2. **Click** the *Connections* tab then **double-click** the *Historian* connection listed in the server list.



3. **Select** the *Server address* text and copy to your clipboard using the **Control-C** keyboard shortcut.



4. **Click Cancel** in the Modify Connection window, then **click Cancel** in the Process Analyst Control Properties window.

5. **Open** a new browser window or tab using Internet Explorer and **paste** the text into the *Address* bar using the Control-V keyboard shortcut, then **press Enter**.

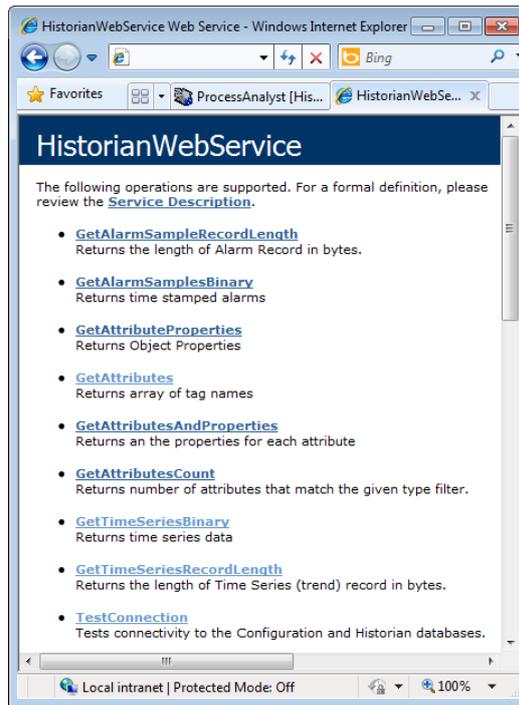
6. We will now be prompted with a security dialog asking for login information. **Type in** the user and password used earlier (i.e. the *operator* user), and then **click OK**.



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7. If the IIS settings are correct for the web service, we will see the web service description page.

If the page doesn't load or displays an error, IIS settings may be incorrect.



★ Tip

A common problem that may occur is related to the .NET version set in IIS. To check this, launch the IIS Manager and verify that the .NET version set for the *HistorianWebService* is set to .NET 2.0.

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Further Resources

If you have trouble completing steps in this tutorial, there are a number of resources to help you:

- Help files
 - To access help on any application, select Help from the menu bar of Historian applications, the Help button on dialog boxes or press the F1 key. The help files are also available in the installation folder, *%ProgramFiles%\Schneider Electric\Vijeo Historian*.
- Product documentation
 - Further documentation is available on the product DVD.
- Knowledge Base
 - To access the knowledge base for Historian, visit www.citect-kb.schneider-electric.com/ReportsKB

Overview

Install

Create Project

Configure Data Source

Historize & Publish

Create Database

Start Service

Data Analysis

Troubleshooting

Important Information

Notice

This document is not comprehensive for any systems and does not absolve users of their duty to uphold the safety requirements for the equipment used in their systems, or compliance with both national or international safety laws and regulations.

This document does not replace any specific product documentation.

The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **will result in** death or serious injury.

Failure to follow these instructions will result in death or serious injury.

WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result in** death or serious injury.

Failure to follow these instructions can result in death, serious injury or equipment damage.

CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **can result in** minor or moderate injury.

Failure to follow these instructions can result in injury or equipment damage.

NOTICE

NOTICE is used to address practices not related to physical injury.
Failure to follow these instructions can result in equipment damage.

Note: Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, operation and installation of electrical equipment, and has received safety training to recognize and avoid the hazards involved.

Before You Begin

Vijeo Citect is used to retrieve, collate and publish data from Supervisory Control and Data Acquisition (SCADA) systems to manage and monitor industrial systems and processes. Due to Vijeo Citect's central role in managing data within control systems and processes, you must appropriately design, commission, and test your Vijeo Citect project before implementing it in an operational setting.

WARNING

UNINTENDED EQUIPMENT OPERATION

Do not use Vijeo Citect or other SCADA software as a replacement for PLC-based control programs. SCADA software is not designed for direct, high-speed system control.

Failure to follow these instructions can result in death, serious injury or equipment damage.

WARNING

LOSS OF CONTROL

- The designer of any control scheme must consider the potential failure modes of control paths and, for certain critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop and overtravel stop, power outage and restart.
- Separate or redundant control paths must be provided for critical control functions.
- System control paths may include communication links. Consideration must be given to the implications of unanticipated transmission delays or failures of the link.
- Observe all accident prevention regulations and local safety guidelines
- Each implementation of a control system created using Vijeo Citect must be individually and thoroughly tested for proper operation before being placed into service.

Failure to follow these instructions can result in death, serious injury or equipment damage.

For additional information, refer to NEMA ICS 1.1 (latest edition) "Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control", and to NEMA ICS 7.1

(latest edition) "Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems" or their equivalent governing your particular location.

 **CAUTION**

EQUIPMENT INCOMPATIBILITY OR INOPERABLE EQUIPMENT

Read and thoroughly understand all hardware and software documentation before attempting any component substitutions.

Failure to follow these instructions can result in injury or equipment damage.

This automation equipment and related software is used to control a variety of industrial processes. The type or model of automation equipment suitable for each application will vary depending on factors such as the control function required, degree of protection required, production methods, unusual conditions and government regulations etc. In some applications more than one processor may be required when backup redundancy is needed.

Only the user can be aware of all the conditions and factors present during setup, operation and maintenance of the solution. Therefore only the user can determine the automation equipment and the related safeties and interlocks which can be properly used. When selecting automation and control equipment and related software for a particular application, the user should refer to the applicable local and national standards and regulations. The National Safety Council's Accident Prevention Manual also provides much useful information.

Ensure that appropriate safeties and mechanical/electrical interlocks protection have been installed and are operational before placing the equipment into service. All mechanical/electrical interlocks and safeties protection must be coordinated with the related automation equipment and software programming.

Note: Coordination of safeties and mechanical/electrical interlocks protection is outside the scope of this document.

Start Up and Test

Following installation but before using electrical control and automation equipment for regular operation, the system should be given a start up test by qualified personnel to verify the correct operation of the equipment. It is important that arrangements for such a check be made and that enough time is allowed to perform complete and satisfactory testing.

 **WARNING**

EQUIPMENT OPERATION HAZARD

- Follow all start up tests as recommended in the equipment documentation.
- Store all equipment documentation for future reference.
- Software testing must be done in both simulated and real environments.

Failure to follow these instructions can result in death, serious injury or equipment damage.

Verify that the completed system is free from all short circuits and grounds, except those grounds installed according to local regulations (according to the National Electrical Code in the USA, for example). If high-potential voltage testing is necessary, follow recommendations in the equipment documentation to prevent accidental equipment damage.

Before energizing equipment:

- Remove tools, meters, and debris from equipment
- Close the equipment enclosure door
- Remove ground from incoming power lines
- Perform all start-up tests recommended by the manufacturer

Operation and Adjustments

The following precautions are from NEMA Standards Publication ICS 7.1-1995 (English version prevails):

Regardless of the care exercised in the design and manufacture of equipment or in the selection and rating of components; there are hazards that can be encountered if such equipment is improperly operated.

It is sometimes possible to misadjust the equipment and thus produce unsatisfactory or unsafe operation. Always use the manufacturer's instructions as a guide for functional adjustments. Personnel who have access to these adjustments should be familiar with the equipment manufacturer's instructions and the machinery used with the electrical equipment.

Only those operational adjustments actually required by the operator should be accessible to the operator. Access to other controls should be restricted to prevent unauthorized changes in operating characteristics.

WARNING

UNEXPECTED EQUIPMENT OPERATION

- Only use software tools approved by Schneider Electric for use with this equipment.
- Update your application program every time you change the physical hardware configuration.

Failure to follow these instructions can result in death, serious injury or equipment damage.

Intention

This document is intended to provide a quick introduction to Vijeo Historian. It is not intended to replace any specific product documentation, nor any of your own design documentation. On the contrary, it offers information additional to the product documentation on installation, configuration and implementing the system.

The application described in this document is not a specific product in the normal commercial sense. It describes an example of how Schneider Electric and third-party components may be integrated to fulfill an industrial application.

A detailed functional description or the specifications for a specific user application is not part of this document. Nevertheless, the document outlines some typical applications where the system might be implemented.

The application described in this document is for illustration purpose. Your specific application requirements may be different and will require additional and/or different components. In this case, you will have to adapt the information provided in this document to your particular needs. To do so, you will need to consult the specific product documentation of the components that you are substituting in this application. Pay particular attention in conforming to any safety information, different electrical requirements and normative standards that would apply to your adaptation.

It should be noted that there are some major components in the application described in this document that cannot be substituted without completely invalidating the architecture, descriptions, instructions, wiring diagrams and compatibility between the various software and hardware components specified herein. You must be aware of the consequences of component substitution in the architecture described in this document as substitutions may impair the compatibility and interoperability of software and hardware.



CAUTION

EQUIPMENT INCOMPATIBILITY OR INOPERABLE EQUIPMENT

Read and thoroughly understand all hardware and software documentation before attempting any component substitutions.

Failure to follow these instructions can result in injury or equipment damage.